EXPERT REPORT

YNAC FEDERAL COURT COMPENSATION ACTION

FEDERAL COURT OF AUSTRALIA/WAD 37/2022

ARCHAEOLOGY REPORT REPORT RESPONSIVE TO PROFESSOR P.VETH AND DR C.BIRD

BY

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Introduction

1. This expert report responds to a report authored by Professor Peter Veth and Dr Caroline Bird entitled *Applicant's Expert* Witness *Report,* filed in support of Yindjibarndi Ngurra Aboriginal Corporation RNTBC (ICN 8721) (YNAC) in their Federal Court of Australia compensation claim[1] against Fortescue Metals Group (FMG).

2. This report is confined to my area of expertise, that being archaeology and archaeological heritage management. I do not seek to offer comment or opinion on matters of Indigenous anthropology or spiritual beliefs, such subject matter being outside my area of expertise.

3. I have been instructed by the lawyers for the FMG respondents to provide my independent expert opinion in response to the expert archaeology report of Professor Peter Veth and Dr Caroline Bird (Veth and Bird) dated 10 June 2024. Copies of my letters of instruction are at Annexure 4.

4. Professor Veth and Dr Bird were asked to respond to thirteen questions that were put to them by Blackshield Lawyers (for the Yindjibarndi claimants), as set out in paragraph 8(a) to (m) on pages 5 to 8 of the Blackshield letter of instructions annexed to the Veth and Bird report. My opinions are based on the documents provided by A&O Shearman, desktop research and based on my experience working in the Pilbara and elsewhere. I have read and complied with the Expert Evidence Practice Note (at Annexure 1) and agree to be bound by it.

5. My opinions are based wholly or substantially on my specialised knowledge arising from my training, study and experience. I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Court.

6. In preparing this document I have been provided research support by Dr Christopher Carter, who assisted with reviewing the heritage-related material that I was briefed with. The opinions expressed in this report are my own.

Qualifications and Experience

7. My name is Mr Douglas Williams and at the time of preparation of this document my address is 20 Brinsmead Street Pearce, ACT, 2607. I have been an archaeologist and heritage manager in Australia for 32 years. My qualifications are:

   - Bachelor of Arts (Honours) from the Australian National University (Majors in Prehistory and Australian History).
   - Graduate Diploma of Applied Science from the University of Canberra (Cultural Heritage Management).
   - Full Member International Committee On Monuments and Sites (ICOMOS).

8. My curriculum vitae is provided at Annexure 2.

[1] Federal Court of Australia/WAD 37/2022 – Yindjibarndi Ngurra Aboriginal Corporation Compensation Claim - Yindjibarndi Ngurra Aboriginal Corporation RNTBC (ICN8721) and State of Western Australia & Ors

9. My expertise in archaeology and Aboriginal Cultural Heritage Management has been recognised by appointments to:

   - ACT Heritage Council – Expert for Archaeology (2014-2020 ,2023-2026). ACT Ministerial appointment. In this role I am responsible for assessing nominations to the ACT Heritage Council for inclusion into the ACT Heritage Register and am required to do so against heritage significance criteria specific to the ACT.
   - Kosciuszko National Park Wild Horse Scientific Advisory Panel (2019-2021). NSW Ministerial Appointment, three extensions.
   - Australia ICOMOS Indigenous Heritage Reference Group.
   - ICOMOS International Committee on archaeological heritage management.
   - State Representative to Australian Archaeological Association (NSW-2019, ACT-2020-2023).

10. I have published scholarly articles in peer reviewed journals (listed in my CV at Annexure 2) on Aboriginal archaeology and heritage management, including a paper on a key Pilbara site where I was Director of Excavation (Marsh et al 2018). I have also made numerous presentations to national and international conferences on similar subjects to the range of publications, including Pilbara archaeology. For one presentation in 2011 I was awarded the *Laila Haglund Award for Excellence in Consulting Archaeology* by the Australian Association of Consulting Archaeologists Inc.

11. I have been involved in Aboriginal and historical heritage assessments and management at all levels of importance and significance up to places inscribed on the World Heritage List for Cultural Values. Notably I was the Executive Officer for the Willandra Lakes Region World Heritage Area (WLRWHA) from 2000-2004. As part of this role, I was responsible for the management of features in the WLRWHA which were of national significance. Subsequently I was engaged to review and update the WLRWHA Plan of Management (2005) and later review and analyse historical information with regard to repatriation and reburial of human remains, and for references to establishment of a keeping place. I attended World Heritage Management workshops in New Zealand and Australia and a meeting of the World Heritage Committee in Cairns, at all of these meetings issues of national and world heritage significance were discussed.

12. From 1998-2000 I was Victoria's Senior Project Archaeologist, managing the Key Aboriginal Places Program. In this position I was required to visit, record, assess and provide management recommendations for Aboriginal places regarded as being of State and national significance within Victoria.

13. Between 2008-2013 I worked almost exclusively in the Pilbara region of Western Australia on the assessment of Aboriginal heritage in relation to proposed and existing open cut mining projects, associated infrastructure and telecommunications. In this time I participated in and/or organised archaeological surveys of more than 1000km^2 of Pilbara landscape both on the Hamersley Plateau and lowland margins, and undertook test excavation and salvage excavation of rockshelters and open sites. In the course of this work significance assessment was regular task. I have not worked in the Solomon Hub area, or for FMG but I am familiar with the general environment.

14. I am currently a consultant archaeologist and run Access Archaeology as a sole trader. The assessment of heritage significance is a key task in this role – as it has been for the past 32 years.

15. I acknowledge the statements of qualifications and experience presented by Veth and Bird and record no issues with them. They are both well respected professionals of long standing who have made significant contributions to Australia's archaeology and specifically Pilbara archaeology.

Responses to Veth and Bird

16. I have reviewed the Veth and Bird report. Veth and Bird address 13 questions/issues in 94 pages of numbered paragraphs supported by references and attachments. From Veth and Bird's report I have identified a number of matters which I address below. I do not address all the points made by Veth and Bird and I should not be taken to necessarily agree with their opinion if I have not expressly disagreed below. I have sought to focus on what I perceive to be the main issues raised in relation to the archaeological investigations and surveys at FMG's Solomon Hub Project (SHP).

17. At paragraphs 28, 47 and 64 Veth and Bird state that they were unable to identify salvage reports for sites YIN09-002, YIN11-053, TRYINPAD13-03, TRYINRS12-01, TRYINRS13-11 and TRYINSC13-02. I have been provided with copies of the salvage reports relating to those sites.

18. I have reviewed the reports for the sites relied upon by Veth and Bird as significant and, in particular, I have reviewed the salvage reports Veth and Bird note that they were unable to identify. In my opinion, the archeological salvage that was undertaken in each of these cases was done competently and has achieved the stated purpose of "investigating and assessing all archaeological values contained within the heritage place" (Coutant, 2018a:10). In a number of cases, as I explain below, the features of the salvaged sites were relatively limited. I also agree with Veth and Bird at paragraph 27 that "a key issue is the work carried out at sites to mitigate their loss before disturbance of the area" and their conclusion at paragraph 28 that the volume of descriptive reports of artefacts salvaged from rockshelter excavations is high and "represents a significant effort to mitigate the loss of cultural materials". The salvage exercises undertaken by the heritage consultants at the SHP, as recorded in the salvage reports, appear to have been carried out competently and serve to substantially mitigate the losses associated with those sites that were subsequently impacted by mining activities.

The historical depth of Aboriginal occupation and use of the Warrie (No 2) determination area

Overview

19. At paragraph 22, Veth and Bird conclude that "the historic depth of occupation and use by Aboriginal people of the Warrie (No 2) determination area began by at least 47,000 years ago and possibly earlier". There is heavy reliance on a table provided in a report by Howard and Coutant (2016:17-21) which lists 24 Solomon Hub sites and their associated dates. I have had regard to an updated version of that table from Coutant (2018b:5-9) which provides additional potential dates of occupation from this group of 24 sites.

20. In my opinion, the conclusion by Veth and Bird relies on a relatively uncritical analysis of this group of dates. The dates for these sites were collected in the course of investigation and mitigation projects, and appear to have been collected using a standard and consistent method (notwithstanding attempts to retrieve very fine charcoal, as described below). The results have not been put through a rigorous peer-review process where the authors have had to defend interpretations of occupation age. The evidence provided in the documents does not, in my opinion, contain sufficient justification for the claim by Veth and Bird that Aboriginal occupation of the determination area began at least 47,000 years ago.

21. Discussing this matter requires an understanding of how dates for archaeological sites are determined. There are two main techniques of dating used in Australia – Radiocarbon dating (^{14}C dating) and Optically Stimulated Luminescence dating (OSL). ^{14}C is an 'unstable' isotope and dating with it measures its decay, which has a known 'half life'. OSL dating dates the last time grains of sand saw sunlight. The technique of *thermoluminescence* is also used in Australia, but is less widely applied than ^{14}C or OSL, and I do not

consider it further in my comments. I have provided further information of these dating methods, and how dates may be calibrated and represented, in Annexure 3.

22. When using the term 'unreliable' or 'unreliability' below with regard to dating methods, I do not mean to infer the techniques themselves produce an unreliable result. I use these terms to infer a lack of confidence in the direct spatial/temporal association between a dating result and a cultural object or objects.

23. The main issue I raise that affects the reliability of results is the process of dating by association, which is whether a date for a sample (eg charcoal) can be taken to be a reasonable proxy for a cultural object in close proximity at the time of excavation. It is important to understand that both cultural materials (eg a stone artefact) and the material that is being dated (eg charcoal) in an archaeological site can move even when buried and therefore, it can be uncertain whether a particular date is the actual time at which a cultural object was discarded at the site. This movement can occur through a variety of mechanisms which I describe in Annexure 3.

Antiquity of occupation in the Solomon Hub

24. I consider, based on the suite of reports available the commencement of human occupation would appear to be more likely approximately 42,500 years ago. Occupation of this age is consistent with the earliest occupation of a number of sites in the Pilbara region, although there are a few examples which are older. I discuss some of these sites later in my report.

25. While human occupation in the Solomon Hub area is clearly ancient as demonstrated by a number of the salvage reports, a commencement date of 47,000 years ago as suggested by Veth and Bird is not supportable based on current evidence from the work done at the SHP.

26. It is my opinion that dates for human occupation presented in archaeological reports, or even published papers cannot necessarily be taken to be reliable. Interrogation of site records is often required to determine whether claims of antiquity are verifiable and reliable.

27. My reasoning in support is as follows.

28. Taking the sites reported in table 5 of Coutant (2018b) the oldest occupation date recorded is from **TRYINPAD 13-03** being 53,000 +/- 6,000 BP (OSL). TRYINPAD 13-03 is a small to moderate size shelter with a deposit 90cm deep at its deepest point, which had no identified features (ie, a hearth or cluster of artefacts). A plan area of 2 m^2 was excavated and just 22 artefacts were recovered (Curtis *et al* 2015a). There is a diffuse scatter of artefacts through this deposit and given the age of the result the stratigraphic integrity of this deposit must be questioned.

29. The OSL sample dated to ~ 53,000 years was taken from a level containing three artefacts. In my view, the stratigraphic integrity of the site is questionable for the following reasons. First, the overall uniform nature of the deposit (very similar Munsell recordings,[2] soil descriptions and pH readings) suggests mixing over time of the accumulating deposit. It is feasible that artefacts located in the level dated to ~53,000 years ago did not originate there, but from higher in the deposit. Second, while it is broadly acknowledged that sediment in Pilbara rockshelters accumulates slowly, the charcoal sample dated to 40,660-38,130 years BP (Curtis et al 2015a, page 205) and the OSL sample of ~53,000 years BP were taken less than 5cm

[2] Munsell colour charts assist with standardisation in recording soil and rock colours.

apart vertically. This is highly suggestive of a mixed deposit. Further, Curtis et al (2015a, page 208) themselves question the reliability of the OSL date of 53,000 +/- 6,000, suggesting that if calibrated using the minimum age model the result would be in the vicinity of 31,000 BP, similar to the radio carbon results. The authors nevertheless state again that an initial occupation date of ~50,000 calBP "may be starting to be supported by the growing evidence from the project" by pointing to YIN11-028 ^{14}C dating as being "49,000 calBP". I have checked the relevant reports for YIN11-028 and comment further below as to the unreliability of this suggested date of 49,000 calBP with regard to human occupation.

30. It is to be noted that the salvage team observed the entrance to a goanna burrow on the surface of the deposit (Curtis et al 2015a:185-6). The creation of this burrow would have caused a corridor of disturbance in the deposit, mixing cultural materials from different levels. It is to be further noted that the shelter deposit would have been attractive to this form of burrowing for the entirety of human occupation of the Pilbara.

31. For these reasons I consider the date of 53,000 years for initial occupation of TRYINPAD 13-03, based on OSL, to be highly speculative. At most the site might be considered to be up to ~31,000 years old, as suggested by Curtis et al (2015a), but given the very sparse nature of the archaeology in the site it should be regarded as being a negligible data point in the overall suite of information from the Solomon Hub.

32. **YIN11-028** has occupation dates showing a sample from unit 3 as being 40,935 +/- 1,945 BP (Coutant 2018b, Table 5), with a median calibrated date of 45,662 calBP. This site was a moderately large rock shelter which over a multi-stage investigation yielded 670 stone artefacts (27 recorded in the May 2012 site identification report (Rowland and Timms, 2012a) and 643 recorded in the June 2014 salvage report (Curtis et al, 2014a)) and a range of dates of occupation.

33. I have reviewed the salvage report for YIN11-028 (Curtis et al 2014a, pages 175 and 179) which confirms that occupation dates were reported as being 40,935 years BP. When the dates are calibrated, the median calibrated age for the earliest dated occupation at YIN11-028 is 45,662 years calBP (Curtis et al 2014a: 179), with the oldest date in the calibrated range being 49,146 calBP (Curtis et al 2014a, page 175). The figure of 49,146 calBP is at one extreme end of the 95.4% probability range and is therefore unlikely to be the actual date of this charcoal sample.

34. Even taking the median date of 45,662 calBP at face value, I share the concerns expressed by Allen and O'Connell (2014:87-88) (as cited by Veth and Bird in connection with the date of YIN09-002) as to the unreliability of associating diffuse detrital charcoal with cultural materials as a method of dating human occupation (I elaborate on this in Annexure 3). The process of collecting enough charcoal to provide ^{14}C dates for YIN11-028 is described at page 177-178 of Curtis et al 2014a. It describes charcoal as being so fine and sparse as requiring a particularly special adaptation of the sorting process. In normal circumstances, excavated deposit would be passed through sieves, the finest regularly used on site would be ~2.5-3mm aperture. At this site, authors noted charcoal fragments were so fine they modified their charcoal collection technique by not sieving the first bucket of each spit and removed charcoal from this un-sieved sample with tweezers while wearing gloves. While this attempt to retrieve charcoal shows admirable diligence, the origin of such fine fragments is highly questionable and the finer the fragments, the more easily they can be moved overtime. Consequently, I have a low level of confidence that the stone artefacts excavated from the lower levels of YIN11-028 are of the age stated in the report.

35. The authors of the report note their confidence in the stratigraphic integrity of the site (Curtis et al 2014a:179) but in my opinion, based on my training and experience such high integrity is not wholly demonstrated by the documents provided, particularly with regard to stone artefacts in the lower levels of the deposit. The basal dates claimed by the authors for this site rely on the association of stone artefacts

with detrital charcoal samples retrieved from the same level. While such associative dating is a common practice in Australian archaeology (Allen and O'Connell 2014), it does not produce a date that can be relied upon with high confidence, particularly in relatively shallow deposits and in environments in which detrital charcoal is common and widespread.

36. Giving further cause to question the stratigraphic integrity of the lower parts of this deposit was an OSL result of 88,000 +/- 11,000 years (Curtis et al 2014a, page 176, Table 20). As the authors note, if this date "is accurate then there is an argument for the vertical migration of artefacts within the deposit" (page 176). While the authors discount this date with little further consideration (page 178), its presence in association with artefacts shows vertical movement of cultural material through the deposit or, conversely, the movement of older material upwards and this could easily include fine detrital charcoal. This observation adds additional doubt to the reliability of associations between stone artefacts and diffuse charcoal in higher levels.

37. The most secure date for this site is from a hearth feature dated to ~20,000 years ago. For the reasons I have discussed above, in my opinion, relying on this site as supporting an occupation date of 47,000 years as Veth and Bird do is highly speculative.

38. **YIN09-002** is a large shelter ~14m x 9m in plan area. It was subject to a multi-stage investigation which included excavation of a 1m x 1m test pit followed by an additional 1.55m^2 of salvage area. The salvage work is reported in Coutant 2018a and Coutant 2018b. The deposit was shallow, around 0.4m deep. Between test pitting (19 artefacts Coutant 2018a:18) and salvage (124 artefacts Coutant 2018a:22, 32, 38, 52) a total of 143 artefacts were recovered from the site. Of these, 128 were recovered from the excavated sample areas (19 from the test pit, 107 from salvage units and 2 additional artefacts from re-opening the test pit) for an overall average of ~50/m^2. The remaining 15 artefacts were recovered from a salvage collection of surface artefacts. A later addendum dating report (Coutant 2018b) records only 97 artefacts coming from the salvage units (Coutant 2018b: 3 Table 4) and the reason for this discrepancy of 10 artefacts is unclear from the documents provided to me. The oldest date supplied for the shelter is 43,500-41,850 calBP. This date was obtained from charcoal collected from an in situ feature interpreted as a hearth. In as much as photographs are a useful guide it appears, from reviewing the photographs in the salvage reports, reasonable to me that this feature is discrete and discernable within the deposit and exhibits what appears to be rubification (red colouring of the sediment due to high temperatures) of the underlying strata. An additional date from the feature yielded a broadly similar calibrated date, and I conclude this is a reliable date for occupation at this site.

39. **YIN08-031** is a small shelter ~7m x 5m in floor area. The site has been reported in Rowland and Timms, 2012a; Rowland and Timms, 2012b; Chisholm et al 2014; Howard and Chisholm, 2016; Howard and Coutant, 2016. It was subject to a multi-stage investigation comprising a 1m x 1m test pit followed by an additional 1m x 1m salvage pit. The deposit was shallow at ~0.5-0.6m, and the artefact assemblage was sparse. Seven artefacts were recovered from both phases of excavation (3.5/m^2) and one 'manuport'[3] was found on the surface of the shelter. While the salvage component of the project noted 'good stratigraphy' I note that all of the dated samples were from detrital charcoal and the authors of the salvage report postulate bushfires as a reason for charcoal throughout. The oldest date for charcoal in association with artefacts

[3] A manuport is an object, usually stone, that shows no modification but is in a location where the only plausible explanation for its presence is human transport. For example, a river cobble in a rockshelter in a high escarpment, with no cobbles or pebbles in the local geology.

was 34,895-34,134 calBP (Howard and Chisholm 2016:7). A second occupation event is postulated to have occurred 12,420-12,030 calBP (Howard and Chisholm 2016:1). In my opinion there is insufficient cultural material in this deposit to draw any clear conclusions regarding occupation and/or abandonment. With a total of seven artefacts, no in situ cultural features and widespread charcoal (which probably has an environmental origin), this site offers little opportunity to present meaningful interpretation beyond the obvious statement that it was occupied at least once during antiquity.

Conclusion

40. In conclusion, in my view, there is no strong evidence that sites in the SHP demonstrate occupation at ~47,000 years ago or earlier. There is only one site in the table relied upon by Veth and Bird with a date that can be confidently attributed to greater than 40,000 years, that being YIN09-002 as described above with a date of 43,500-41,850 calBP (median ~42,675). The remainder of the sites for which very old dates are claimed are, in my view, compromised with regard to bioturbation and/or dates on diffuse detrital charcoal, or OSL as opposed to dates on features.

41. I note that site HD07-3A-PAD13 which I describe below, is a site in the Hope Downs area with a date of approximately 47,000 (47.1± 4.8kya) claimed (Law and Cropper 2018). It might be reasonable to infer that occupation at such an age near the SHP coupled with a suite of older dates means it probable the older age can be attributed to the SHP. Nonetheless, as I describe below, I consider the basal date for HD07-3A-PAD13 of ~47,000 to be unreliable due to stratigraphic irregularities, but there are other sites in the Hope Downs area that have basal dates of ~42,500, which is also the oldest reliable date from the SHP. I conclude based on current evidence that it is reasonable to claim occupation of the SHP began around 42,500 years ago, which is consistent with reliable results from the broader Hamersley Plateau, and not as old as evidence from Boodie Cave in the coastal Pilbara.

National significance

Overview

42. Further to my comment at paragraph 2, I am viewing the assessment of significance from a Western 'scientific' lens. I acknowledge that Yindjibarndi people will have their own views on the significance of all of the sites in their traditional country and that, in all likelihood, this will differ from a strictly scientific/archaeological perspective. I respect the depth of their traditional knowledge and their own way of viewing their own country.

43. At paragraph 33, Veth and Bird state it is not possible to assess the heritage values of sites in the Solomon Hub against federal legislation, based on "the level of information for site content" in reviewed reports. Nonetheless at paragraph 45 they conclude that 5 rock shelter sites are of national significance "by virtue of their great age and repeated occupation through time". These sites are: TRYINPAD13-03, YIN11-028, YIN09-002, YIN10-111, YIN10-014. These two criteria of 'great age' and 'repeated occupation' would appear then, by Veth and Bird, to be the main criteria on which to base such an assessment. Veth and Bird specifically exclude assessment of Solomon Hub sites against the nine currently recognised criteria for assessment of heritage places to the National Heritage List.[4] I consider that in order to make an assessment

[4] The National Heritage Criteria for a place are any or all of the following: (a) the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history; (b) the place has

of national significance of Pilbara sites it is necessary to have regard to the criteria which I have listed in Table 1 below, which are structured to assist in considering the contribution or potential contribution a site may make in answering research questions.

44. The Solomon Hub is located within the Hamersley Ranges which is in an area where geological conditions are conducive to the creation of numerous weathered caverns and overhangs in gullies and at the edges of escarpments and mesas. The widespread Banded Iron Formation and Marra Mamba Formation contain weaknesses in places where the actions of wind and water have created voids which humans have exploited for shelter. The ranges of the entire Hamersley Plateau are replete with these weathered caverns and they number in the thousands.

45. The assessment of significance is a crucial process in archaeological heritage management. As stated by Dunnell "no concept in cultural resource management has proved more vexing than that of the significance (in a legal and regulatory sense) of archaeological resources" (Dunnell 1984). Significance is normally assessed by reference to multiple criteria which vary by jurisdiction and purpose. I also note that there is a literature around assessing significance (for a very small selection see Glassow 1977, Sullivan and Bowdler 1984, Smith 1996, Sullivan 2004, Brown 2008).

46. Assessment of scientific value or significance is based on either:

    a) the extent to which an area, place or object contributes to or answers timely and relevant research questions. It also depends on the importance of the data or information that can be recovered, its quality and the degree to which it may be able to address or contribute information on how traditional Aboriginal people lived in the past; or

    b) in the case of sites that have yet to be fully investigated, their potential to do so.

47. The assessment of the object or place must also take into account its representativeness (especially in terms of its potential value as an educational place) and/or its rarity.

48. All Aboriginal archaeological places will possess some degree of scientific value in as much as they contribute to an understanding of the spatial distribution of evidence of the past activities of Aboriginal people. In the case of flaked stone artefact scatters, larger sites or those with more complex assemblages (in terms of the nature and variety of stone and artefact types present) are more likely to be able to address questions about past economy and technology, giving them greater significance than smaller less complex sites. Sites with stratified and potentially *in situ* sub-surface deposits such as those found within rock shelters could address questions about the sequence and timing of past Aboriginal activity and will be more

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outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history; (c) the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history; (d) the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments; (e) the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group; (f) the place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period; (g) the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; (h) the place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history; (i) the place has outstanding heritage value to the nation because of the place's importance as part of Indigenous tradition.

significant than disturbed or deflated sites. Groups or complexes of sites that can be related to each other spatially or through time are generally of higher value than single sites.

49. As a region, the Pilbara is a nationally important part of Australia economically and culturally. The geological structures which give rise to its current economic prominence also resulted in the creation, by weathering, of thousands of caverns and overhangs that were used by Aboriginal people for shelter. Mitigating the impact of mining iron ore in the Pilbara has led to it being the most intensively studied landscape with regard to archaeology in the country and a number of sites have, in their time, been instrumental in demonstrating great antiquity of Aboriginal occupation.

50. There are a number of very broad time periods in Australian prehistory that offer different perspectives on human life:

a) ~65,000-24,000 years ago. This period may address questions of human migration to Australia (antiquity, route, rapidity of colonisation) and modes of living subsequently, as well as interactions with and effect on megafauna. This period is part of the Pleistocene period (which is 2.6m to 10,000 years ago).

b) ~24,000-18,000 years ago. The period of the Last Glacial Maximum (LGM). Australia experienced cooler conditions and was consequently hyper-arid and many areas became unsuitable for permanent occupation. Aboriginal occupation appears to have been rearranged with retreat to more reliable resource zones. Sites which show 'LGM' occupation are of interest in answering questions on Aboriginal life in this period.

c) ~18,000-10,000. The terminal Pleistocene, with temperatures warming and sea levels rising by the later part of this period. People re-colonised marginal areas.

d) ~10,000-~6,000 years ago. Early Holocene period, during which Aboriginal people lived within an environment we largely recognise today.

e) ~6,000-present. Current sea level 'still stand' around 6,000 years ago, and establishment of today's recognisable weather patterns/environments. In later part of this period there was a pivot to cereals as a staple in many regions. Grinding seed becomes more widespread and intensive (Hiscock and Sterelny 2023).

51. Age and repeated occupation are important criteria to consider but others would also be considered, especially in the context of attributing national significance. The Pilbara, in particular, has a focus of interest in both antiquity of occupation of the region (and continent) and also occupation during the LGM. Sites that display evidence of occupation during the LGM are well regarded in terms of their ability to inform us of that period of time, although the Pilbara is by no means the only region which yields LGM dates. Sites with dates from this period have been found continent wide, with notable examples from Central Australia (Smith 2006), the Willandra Lakes in south west NSW (Bowler et al 2012), south coast NSW (Lampert 1971), The Blue Mountains west of Sydney (Stockton and Holland 1974) and Madjebeebe in the Northern territory (Hayes et al 2022), to name a few.

52. Below I have set out a table of attributes which, based on my training, study and experience, are useful when considering site significance. These were attributes I considered when assessing the significance of Pilbara sites over the period 2008-2013 when I worked full time on Pilbara projects.

Table 1: Significance indicators

Attribute	Description
Integrity	The extent to which a site has undergone post deposit modification or disturbance. Where a site has been affected by either natural or cultural post-depositional processes this may reduce its ability to answer specific research questions, particularly with regard to dating.
Complexity	An assessment of the number of components of a site. A more complex site may have a greater number of artefacts, artefact types, organic cultural materials, raw materials or other cultural features.
Rarity	A rare site is one which is uncommon *in comparison* to other known sites This is assessed both on a local and regional scale. It is either a rare site type or one or more of its characteristics are uncommon and such unusual features may have the potential to answer specific research questions.
Representativeness	A representative site is one which is typical or represents a good example of a site type or class that can be common or rare at either a local and/or regional scale. Note, assessment against this criteria strives to find 'good examples', so this value is normally assessed with reference to other values, especially integrity.
Dating Importance	The contribution of a site to understanding modes of occupation through time, including antiquity of occupation. An assessment of the ability of a site and its components to be placed in temporal context, and to answer questions which relate to change or continuity of human occupation through time. Sites which can be directly dated have the highest temporal analysis potential. Surface scatters of artefacts generally have low temporal analysis potential whereas rock shelters with accumulated deposit are more likely to have stratigraphy and greater potential.
Technological Analysis Importance	This is the ability of a site to contribute to understanding of how and why artefacts were made, used, maintained and discarded. In the Pilbara this attribute applies most frequently to sites with stone artefacts, however it also applies to other types of artefacts such as wooden or shell implements. Technological analysis potential generally increases with assemblage size although less common artefacts in small numbers can also have a higher potential. The presence of knapping floors increases the potential significance of stone artefact scatters through their ability to undergo refitting analysis which can reconstruct knapping behaviour. Where stratified archaeological deposits are suspected a site may have increased potential due to the possibility of placing artefacts in temporal context and for examining technology through time.
Spatial Analysis Importance	An examination of the distribution of artefacts and sites. It can be undertaken on both on an inter- and intra-site scale. A site with high spatial analysis potential may be one which can answer questions about the use of specific landscapes and features as well as delineate behaviour events and the movement of people. Sites with a perceived high degree of spatial patterning (e.g. an artefact scatter with distinct clusters of artefacts or knapping floors or multi-chambered rock shelter) may have a higher potential for spatial analysis.
Microscopic Analysis Importance	The ability or potential of a site to contribute important information using microscopic analyses. Microscopic data include residues, use wear, paints, plant remains, micro-debitage and micro-morphological evidence from sediments. The integrity of a site may impact on this microscopic potential significance as weathering or erosion can destroy microscopic evidence. Artefacts and sites with high microscopic analysis potential may include subsurface artefacts (for residue and use wear analysis), sediments from stratified archaeological deposits, painted rock art and stone artefacts perceived to be of exotic raw material (for geochemical or petrographic analysis)
Economic Analysis	The ability of a site to inform on subsistence strategies such as hunting, fishing or collecting other foodstuffs or materials.
Other	Observed or recorded attributes that do not fit those outlined above

53. Beyond dates, there are other characteristics that are evaluated in determining significance. These might include those listed at Table 1 above. Importantly, to be considered to be of national significance a site or place should hold its particular values at such an exceptional level that sees it as a place which re-defines or informs at a national level (Australian Heritage Council 2009). For example, if we considered a

hypothetical Pilbara rockshelter (which is a small shallow shelter with very few artefacts but has an occupation date of 40,000 years and is an important datapoint for Pilbara archaeology) it is *insufficient* to argue that:

a. understanding Pilbara archaeology is nationally important,

b. because the site is important to Pilbara archaeology, and understanding Pilbara archaeology is important to the nation,

therefore the rockshelter is nationally significant.

54. While sites of such antiquity are comparatively rare nationwide, the information from such a site does not change our understanding of human occupation of the Pilbara (there are a number of sites this age or older), nor is it a key reference point in our understanding the deep past of the continent (there are scant cultural remains to analyse).

55. To contextualise the assessment of national significance attributed by Veth and Bird to selected sites in the Solomon Hub area, I present summary information on a selection of Pilbara region key sites, some of which would be considered to have, or had, national significance. I then compare the characteristics of these key sites to the five sites considered by Veth and Bird to have national significance. I have collated this information in Table 2 below.

Pilbara region key sites

Djadjiling Rockshelter

56. This site is located 75km northwest of Newman on the Hamersley Plateau. It is an east facing large, albeit long and narrow, shelter (17m long x 4.5m deep) with a distinct sediment trap of fallen large blocks. A salvage excavation 4.5m^2 in area was excavated at the southern extent of the floor. Excavation extended to ~2m in depth, although the lowest occupation recorded was at ~1.7m below surface. A total assemblage of 1,315 artefacts was recovered (~292/m^2), with 664 (50.5%) coming from layers dated to 41,576-39,189 calBP (95.4% confidence level). This particular date is significant as it was collected from an insitu hearth feature. Information is presented which gives confidence in the stratigraphic integrity of the site, including the presence of distinct layers, multiple hearths, and six conjoins[5] of flaked stone artefacts in the assemblage associated with this date (Law et al 2010; Law and Cropper 2018). Occupation appears to have occurred through the LGM. No organic artefacts were reported for the site, nor faunal remains assemblage.

57. Based on my training, study and experience, I have formed the opinion that Djadijiling Rockshelter, while regionally important is not itself of national significance. It is undoubtedly of great antiquity, but while it was for a time the oldest known site in the Pilbara it is no longer. It has a moderate artefact assemblage compared to other nearby sites and does not exhibit an organic artefact assemblage. As a consequence, in my opinion, it is not as informative other sites which have similar antiquity.

[5] Conjoins are flaked artefacts whose surfaces can be fitted neatly together, akin to a completing a jigsaw puzzle. As well as offering insights into decision making by the person flaking the stone they are an indicator of an assemblage that is not highly disturbed.

HS-A1 Rockshelter

58. This site is a moderately large east facing rock shelter located on the Hamersley Plateau. It was subject to two phases of excavation which yielded 1,430 stone artefacts from 4m^2 of excavation in total (358/m^2). Compared to other shelters with density of artefacts, the depth of the deposit was shallow, with a maximum of 0.82m. The oldest date published for the shelter is 40,670 ± 939 calBP, on detrital charcoal which detracts from reliability. The oldest combustion feature ('hearth') was dated to 28,200 ± 188 calBP (Cropper 2018). Occupation appears to have occurred through the LGM. No organic artefacts were reported for the site, nor faunal remains assemblage.

59. Based on my training, study and experience, I have formed the opinion that HS-A1 Rockshelter is not of national significance. The oldest dates for the site are in my view uncertain although the most reliable feature dated means it is still a very old site. It has a moderate artefact assemblage compared to other nearby sites and does not exhibit an organic artefact assemblage. As a consequence, in my opinion, it is not as informative as other sites which have similar antiquity.

Jundaru (HN-A9) Rockshelter (Malea shelter)

60. This site is a small west facing rockshelter in a gully in close proximity to a number of other occupied shelters. It was investigated in two phases, once by McDonald Hales and Associates (MHA) in 1994 (Edwards et al 2001) and subsequently by Australian Cultural Heritage Management Pty Ltd (ACHM). The earlier phase comprised 2m^2 of surface area, yielding thousands of artefacts (estimated 30,000 – Edwards and Murphy 2003), which were only partly analysed, a significant bone assemblage and a basal date of ~24,000 cal BP. The subsequent salvage undertaken excavated an additional 5m^2, retrieving 26,181 stone artefacts and thousands of faunal remains. Taking the 30,000 artefact estimate by Edwards and Murphy, and adding the total assemblage excavated by ACHM, the average artefact density across the floor of the site is ~8000/m^2. The oldest date for the site is from detrital charcoal, although the next oldest date is from a charcoal sample selected from within an artefact concentration (~33,250 calBP). Notably, a significant roof fall event occurred at ~18,660 calBP, which would have assisted in preserving lower material from later contamination and disturbance (Cropper 2018 in Law and Cropper 2018).

61. Based on my training, study and experience, I have formed the opinion that Jundaru is of national significance. While the site is not as old as others in the vicinity and the region, the stone artefact assemblage is outstanding for its density and ability to offer a large sample for comparative analysis from a range of time periods. There is no other Hamersley Plateau rockshelter able to demonstrate such a large number of stone artefacts from deep antiquity. The presence of cultural organic material adds to its importance, and as a consequence of these factors combined it offers insight into the pre-LGM period that no other site in the Pilbara can currently provide.

HD07-3A-PAD13

62. This site is a small rockshelter located in a shallow gully. It has a modest floor area and at the time of excavation had a low roof. A total of 5m^2 was excavated, with depth reaching ~2m. The excavation yielded 1,718 artefacts. There were no hearth features recorded and charcoal was sparse so the dating of this site relies mainly on OSL. Artefacts were found distributed throughout the deposit although heavily concentrated in the top 0.5m. Although purported to be of great age, at ~47.1 ka, the site has stratigraphic issues that suggest its age estimate is not entirely reliable. Notable among these is the dismissal of a date of 63.1 ka ± 8.4ka in association with artefacts (and in fact 26cm above artefacts), such dismissal being on the basis of simply being too old to fit within accepted models. There is no strong evidence presented as to why a date of ~47,000 in association with artefacts is any more reliable than a date of ~63,000, one could argue

they are equally unreliable. (Cropper 2018 in Law and Cropper 2018). Occupation appears to have occurred through the LGM. No organic artefacts were reported for the site, nor faunal remains assemblage.

63. Based on my training, study and experience, I have formed the opinion that HD07-3A-PAD13 Rockshelter is not of national significance. The oldest dates for the site are in my view uncertain. It has a moderate artefact assemblage compared to other nearby sites and does not exhibit an organic artefact assemblage. As a consequence, in my opinion, it is not as informative other sites which have similar antiquity.

Juukan 2

64. This site was a large rockshelter made infamous by its legally permitted destruction despite showing deep antiquity and an unparalleled artefact assemblage. The main shelter at the site was 10m wide and 10m deep and exhibited a large blocky roof fall sediment trap. It was subject to test and salvage excavation, with a total of 15m^2 opened, although some of these squares were not completed to bedrock. The deposits were ~1.6m deep. Salvage yielded an artefact assemblage of 7,309 flaked artefacts (487/m^2) and six grinding implements, a bone assemblage from food remains and other organic remains including paperbark and a fragment of human hair belt. A bone point (a piece of bone shaped into a needle like artefact) was also found. The date of earliest occupation was determined to be 42,862-42,170calBP, with cultural material found throughout the sequence albeit in varying densities representing variation in intensity of occupation (Slack et al 2024). The site is a large shelter with a rich and diverse cultural assemblage, including multiple deposit features that are able to be reliably dated. Its place in the national discourse over (dis)respect of Aboriginal heritage places adds a layer of significance to the site.

65. Based on my training, study and experience, I have formed the opinion that Juukan 2 is of national significance. It has a well dated and reliable sequence and a large assemblage of artefacts which allows analysis of technological change through time. It has an impressive organic assemblage which includes manufactured organic artefacts which are delicate and rare and its faunal assemblage allows investigation of local economy. Regardless of the issues surrounding its destruction, I consider it would have national significance.

Boodie Cave

66. This site is located on Barrow Island which is ~60km off the Pilbara coast near Onslow and Dampier. The rock shelter has a floor area of 3,000m^2, of which 10m^2 was excavated. The deposit was up to ~1.8m deep allowing for a well dated sequence. The assemblage of stone artefacts is substantial, and while density will vary across the shelter floor, it is likely the site contains in the vicinity of a million stone artefacts (personal calculation from published data). In addition to the stone assemblage, there was a rich assemblage of shell – both food refuse and modified artefacts, notably baler shell, as old as 46.2-42.6ka being made into "knives, adzes, chisels and polished edge scrapers". The site has a rich bone assemblage reflecting hunting of both land and sea animals. Within this assemblage bone beads were found. Boodie Cave is not the oldest site in Australia, but its initial occupation is firmly dated to at or near 50,000 years BP, it has a very large, deep deposit with a very rich and varied assemblage. While currently in a very different environment to most Pilbara rockshelters, for all but the last ~7,000 years Barrow Island was part of the mainland before rising seas isolated it, and it was abandoned by Aboriginal people. (Veth et al 2017; Hook et al 2024).

67. Based on my training, study and experience, I have formed the opinion that Boodie Cave is of national significance due to its exceptionally large and well-preserved deposit, which demonstrates both great antiquity and evidence of human adaptation to sea level rise. It has a dense artefact assemblage, both stone and organic, with faunal remains tracking the transition from a land-based economy to one based

more on marine resources. While the excavation of the site has been extensive (10m^2) there is an immense deposit remaining in the cave for future research.

Watura Jurnti Rockshelter

68. Watura Jurnti is located ~165km east of Port Hedland in the northern Pilbara on mining leases on Yarrie Station. The site was first recorded in 1991 as Shay Gap 4B, and subsequently subject to several phases of re-recording and assessment. The site was subject to extensive salvage in the application of an abundance of caution after test excavation indicated considerable antiquity in association with cultural material in conjunction with an assessment that the use of explosive ~500m away may destabilise the shelter and render it unsafe for entry (pers obs). The salvage excavation was undertaken in three phases. Phase 1 was 12m^2 in plan area, excavated to ~400mm. Phase 2 was a 2m x 2m area excavated within the initial 12m^2 footprint to reach bedrock. Phase 3 was a 1m x 1.5m area excavated when it was apparent that the phase 2 excavation discovered a step in the bedrock base, with insufficient room to determine its depth. Between test and salvage excavation 731 stone artefacts were recovered, with additional material including organic artefacts in the upper deposits (eg, string, animal bone), sheets of paperbark (dated to ~28,000BP) and several hearth features throughout the deposit. The deposit was 2.3m deep at its deepest point, although the archaeological material ceased approximately 1.4m below surface. The oldest date from the shelter indicating the approximate initial occupation was a hearth dated to 42430–44660 calBP (Wk33745). The distribution of artefacts displayed a pattern interpreted as intermittent occupation, interspersed with lengthy hiatus, until the late Holocene (Marsh et al 2018).

69. Based on my training, study and experience, I have formed the opinion that Watura Jurnti is not of national significance. While the site is of regional importance it does not inform us of the antiquity of human occupation of the continent, and it has a very modest artefact assemblage, from which only a small proportion can be attributed to the pre LGM period.

Bankangarra (Yamararra Ganyjingarringunha Rockshelter 2 – YG-02)

70. YG-02 is a north facing long shallow shelter 18.5m wide and 7.5m deep. A 2m^2 'test pit' was excavated in 2023 with 1m2 being taken to 1.6m depth and the other to 0.4m depth, neither reaching bedrock. 596 flaked stone artefacts were recovered (298/m^2) in an essentially continuous sequence, with the earliest in deposits dated to 45,000-30,000 years ago. Organic remains include fragments of baler shell showing contact with coastal peoples either directly or through trade. The site is the subject of ongoing excavation, the results of which I do not have access to (Veth and Bird 2024). I am therefore unable to determine, at this point, whether YG-02 is of national significance.

Conclusion

71. Of these eight very important sites, I consider there are three which could be considered of national significance. These are Jundaru, Juukan 2 and Boodie Cave. The latter two sites are both large and have exceptional archaeological deposits in terms of artefact density, dateable material and organic artefact assemblages, along with evidence of economic activity in the form of food remains. Boodie Cave provides the earliest firm date for human occupation of the region at ~50,000 years and has a massive archaeological deposit from which further dates may be obtained after the refinement of techniques. Juukan 2, while much smaller, also provides a rich and varied assemblage from >40,000 years ago through the more recent past. Notably it now has a place in the national psyche by virtue of the issues surrounding its destruction and consequent debate on the preservation of Aboriginal heritage places (or lack thereof), but even without this notoriety, I would still consider it to be of national significance. Jundaru Cave is a smaller site, but has an

exceptionally large artefact assemblage, with a large assemblage from Pleistocene levels in the deposit. Large samples of Pleistocene age stone artefacts from single sites are rare.

72. The remainder of the key sites described are regionally important but do not, in my opinion, reach the threshold to each be considered to be of national significance although some of them may once have. They do not, in of themselves, provide barrier breaking evidence for human occupation of the country, or even the region. Nor do they provide assemblages of artefacts that, in of themselves, significantly change or redefine our understanding of human occupation and use of the landscape in the way a site of national significance may be expected to.

73. Following the summary of this reference collection of important regional sites, I examine the features of the five sites in the Solomon Hub suggested by Veth and Bird at paragraph 45 to be of national significance. Having reviewed those five sites, I do not consider that any of them would be of national significance.

Sites within the SHP

TRYINPAD13-03

Curtis et al 2013b; Curtis et al, 2015a

74. My concerns with the dating of this rockshelter are noted above. All of the ^{14}C results are on detrital charcoal, there being no hearths in the shelter. Further, the assemblage of artefacts totals 22 with no other organic or faunal remains or artefacts. This site cannot be accepted as being in excess of 50,000 years old, and in any case has very sparse archaeological evidence for any occupation. What value the site has for the purposes of archaeology have been realised. Given the sparse archaeology and the highly equivocal nature of the dates I consider this site to have *low* archaeological significance. The site is a moderate sized rock shelter with some evidence of human occupation, which in the Pilbara region are exceedingly numerous.

75. The nature and duration of the occupation for this site is not clear given the issues I have discussed concerning the dating, which may have an impact on the appropriate conclusions drawn from this data. Nonetheless, even taking the comments in the salvage report at face value, the site demonstrates "low intensity and brief occupation episodes at this site" (Curtis et al, 2015a:208). Based on these comments, in my opinion, this site is not an example of significance being demonstrated by "repeated occupation through time" (as raised by Veth and Bird at paragraph 45).

YIN11-028

Rowland and Timms, 2012a; Curtis *et al* 2014a

76. My assessment of the dating of YIN11-028 is provided above. This site was a moderately large rock shelter (17m x 7.8m) which over a multi-stage investigation yielded 670 stone artefacts. The assemblage contains very little bone or other organic cultural assemblage. The most secure date for this site is from a hearth feature dated to ~20,000 years ago, and for these reasons interpreting the site as significantly older is highly speculative. The artefact assemblage from the site is moderately large, and does provide the basis for a useful analysis. Even allowing for fragmentation there remains sufficient specimens to perform relevant comparisons and statistical analyses. Regardless, there are numerous sites in the Pilbara region firmly dated to the time period, and given it is stratigraphically questionable attribution of national heritage significance cannot be sustained.

77. The evidence of the nature and duration of occupation appears to be inconclusive or unclear. Taking the report at face value, the authors of the salvage report note that the low to medium level of polish on basal

grindstones and basal grindstone fragments is evidence that although it is extremely likely grinding occurred at this heritage place, it was not extensive, and again implies that this rockshelter was "perhaps a place of repeated, temporary occupation" (Curtis et al, 2014a:163). Sporadic temporary occupation without any further important features does not, in my opinion, qualify as a site of national significance given the uncertainty of the basal dates.

YIN09-002

Rowland and Timms, 2012a; Rowland and Timms, 2012b; Coutant, 2018a; Coutant, 2018b

78. My comments on the dating of YIN09-002 are provided above. The site is a moderately large shelter ~14m x 9m in plan area subject to a multi-stage investigation of 2.55m^2 in total. The deposit was shallow, around 0.4m deep, and a total of 143 artefacts were recovered (Coutant 2018a). Artefacts were found relatively consistently throughout the deposit, albeit through sparse artefact numbers and there were no other assemblages of faunal remains or organic artefacts. The presence of identifiable hearth features indicates a degree of stratigraphic integrity.

79. This site provides a regionally important data point, but it is not the oldest site in the Pilbara, and the total artefact assemblage is small and as a consequence it cannot be a reference site for assemblage comparison in the same way that, for example, Juukan 2 is able to be. The absence of any organic artefact assemblage or faunal food remains similarly detract from the significance of the site.

80. The evidence of the nature and duration of occupation is that the site did not experience any significant phases of intensive use. Taking the report at face value, the authors of the salvage report note that the site was likely only used as a short term rest location as the artefact assemblage does not evidence intensive use or long term visitation events, particularly during the earlier stages of its occupation (Coutant, 2018a:52).

81. For these reasons I do not consider YIN09-002 to be of national significance.

YIN10-111

Rowland and Timms, 2012a; Rowland and Timms, 2012b; Curtis et al, 2013a; Curtis *et al*, 2015a

82. This site is a small shelter with a floor area of ~7m x 7.5m in plan area. It was excavated to ~1.6m, initially through excavation of a 1m x 1m test pit and subsequently through excavation of an additional 1.7m^2. A total of 152 artefacts (~56/m^2) were recorded across the three excavation units (Curtis et al 2013a, Volume 4:5,9,15). An additional 9 artefacts were recovered from the surface of the shelter. Notes on the stage 2 excavation record root penetration and termite activity throughout the deposit. The deposit was homogenous in composition and no hearth remains were recorded in any of the pits. OSL results were interpreted to indicate an initial occupation of ~35,000 calBP. While OSL results from Pit 2 are in order, other stratigraphic problems with the site (bioturbation, inverted ^{14}C dates, uncharred wood fragments at depth) suggest a low level of confidence can be placed on associations with cultural material and the age of sediment deposit. Consequently, in my opinion, an age of ~35,000 for initial occupation for this site is unreliable.

83. The site is small, with a deposit of uncertain integrity, the oldest dates even if considered reliable do not approach the oldest dates in the SHP and there is no organic artefact assemblage or faunal food remains. As a consequence, I consider this site is not of national significance.

YIN10-014

Curtis *et al*, 2014b

84. This site is a moderate sized shelter with a floor area of ~5.3 x 13.6m. It was excavated in two phases with a plan area of 2m^2 excavated and 35 artefacts recovered (18/m^2). The deposit was only ~0.6mn deep and there were no firmly identifiable features, with the oldest median date for the site being ~35,155 BP on detrital charcoal. Therefore, in my opinion, the date is unreliable based on the nature of the dated sample, and shallow deposit.

85. The evidence of the nature and duration of occupation appears to be inconclusive or unclear. Taking the report at face value, the authors of the heritage information submission form note that while the earliest date retrieved was 35,155 ± 461, the early Holocene date of 10,423 ± 28 years BP retrieved indicates "a period of abandonment within the rockshelter of around 18,000 years" but further questions are raised as to whether this reflects a genuine period of abandonment (Curtis et al, 2014b).

86. The site has a very shallow deposit of uncertain integrity, the oldest dates even if considered reliable do not approach the oldest dates in the SHP and there is no organic artefact assemblage or faunal food remains. As a consequence, I consider this site is not of national significance.

Table 2: Significance comparison

Site	Oldest date (median)	No. Stone Artefacts	Artefacts/m²	Depth of deposit (m)	Integrity	Complexity	Rarity	Representativeness	Dating Importance	Technological Analysis Importance	Spatial Analysis Importance	Microscopic Analysis Importance	Economic Analysis	National Significance
Djadjiling Rockshelter	~40,350	1315	292	2	High	Moderate	High	High	Moderate First use +40kya and LGM evidence	High	Moderate	Low - Moderate	Low-Moderate	No
HS-A1 Rockshelter.	~40,670	1430	358	0.8	Moderate-High	Moderate	Moderate	High	Moderate Earliest date debateable, first reliable date ~28kya	High	Moderate	Low - Moderate	Low-Moderate	No
Jundaru (HN-A9) Rockshelter (Malea shelter)	~35,980	26,181[6]	5236	1.7	High	High	High	High	High. Has a large Pleistocene artefact assemblage (rare) and LGM evidence	High	Moderate	High	High	Yes

[6] These figures based on 5m² excavated by ACHM, and does not include the assemblage excavated by McDonald Hales and Associates (MHA) in 1994. Edwards and Murphy (2003) report that they estimate the 2m² excavated by MHA yielded ~30000-40000 artefacts based on 4577 analysed from a 0.5m x 0.5m quadrat (18,308/m²).

Site	Oldest date (median)	No. Stone Artefacts	Artefacts/m²	Depth of deposit (m)	Integrity	Complexity	Rarity	Representativeness	Dating Importance	Technological Analysis Importance	Spatial Analysis Importance	Microscopic Analysis Importance	Economic Analysis	National Significance
HD07-3A-PAD13	~47,100	1718	344	2	Moderate	Moderate	Moderate	Moderate	Low Only minor charcoal, so only OSL dates, evidence of artefact and/or deposit movement – **dates unreliable**	Moderate	Moderate	Low-Moderate	Low-Moderate	No
Juukan 2	~42,490	7309	487	1.6	High	High	High	High	High	High	High	High	High	Yes
Boodie Cave	~46,650	6,002	600	1.8	High	High	High	High	High Oldest reliable date for occupation in the Pilbara region, LGM occupation	High	High	High	High	Yes
Watura Jurnti Rockshelter	~43,550	730	61	2.3m	Moderate	High	High	High	Moderate Extends known +40k dates to the Yandi local area, and the spread of regional	Moderate	Moderate	Moderate-High	Moderate	No

Site	Oldest date (median)	No. Stone Artefacts	Artefacts/m²	Depth of deposit (m)	Integrity	Complexity	Rarity	Representativeness	Dating Importance	Technological Analysis Importance	Spatial Analysis Importance	Microscopic Analysis Importance	Economic Analysis	National Significance
									dates, but is within known regional range. Has LGM evidence					
Yamararra Ganyjingarringunha Rockshelter 2 YG-02 (Bankangarra)	~42,490	596**[7]	298	1.6	High	High	High	High	Potentially High Dating a work in progress. High resolution OSL sampling may provide additional confidence.	High	High	High	High	Indeterminate
TRYINPAD13-03	~53,000	22	11	0.9m	Uncertain	Low	Moderate	High	Low-Moderate Old date, but very uncertain	Low	Low	Low	Low	No

[7] Rockshelter YG-02 (Bankangarra) is a work in progress, these figures based on information in Veth and Bird 2024.

Site	Oldest date (median)	No. Stone Artefacts	Artefacts/m²	Depth of deposit (m)	Integrity	Complexity	Rarity	Representativeness	Dating Importance	Technological Analysis Importance	Spatial Analysis Importance	Microscopic Analysis Importance	Economic Analysis	National Significance
									stratigraphy in conjunction with very sparse archaeology. Unreliable.					
YIN11-028	~45,660	643	216	1.2m	Moderate	Moderate	High	High	Moderate Dates throughout sequence inverted or unreliable. Oldest reliable date is ~20k BP which is LGM	Moderate	Moderate	Low	Low	No
YIN10-111	~35,000	152	56	1.6m	Moderate	Low	Moderate	Moderate	Moderate Stratigraphic issues (modern wood) and oldest date on OSL	Low-Moderate	Moderate	Low	Low	No
YIN10-014	~35,000	35	18	0.6m	Moderate	Low	Moderate	High	Low. Dates only on detrital charcoal, no	Low	Low	Low	Low	No

Site	Oldest date (median)	No. Stone Artefacts	Artefacts/m²	Depth of deposit (m)	Integrity	Complexity	Rarity	Representativeness	Dating Importance	Technological Analysis Importance	Spatial Analysis Importance	Microscopic Analysis Importance	Economic Analysis	National Significance
									LGM evidence					
YIN09-002	~42,670	143	58	0.4m	Moderate. Extant hearths, but deposit is very shallow	Moderate	Moderate	High	High A date +40k from a distinct feature	Moderate	Moderate	Low	Low	No

Bangkangarra and the archaeological richness of sites in the SHP

Overview

87. The description of the archaeology of YG-02 is fascinating and I look forward to reading further about the results of excavation at the site. Veth and Bird describe the preliminary results from a place that is likely to become regarded as a signature site for the region. It is a large shelter located less than 1km to reliable water, and is outside the active mining lease footprint.

88. It is clear the site has special qualities, and the fact it is the only shelter of its type and richness yet investigated at the locality, noting the potential of YG-01 described by Veth and Bird, underlines the general consistency of the remainder of the Solomon Hub archaeological sites with the broader Pilbara region.

89. Veth and Bird's conclusion at paragraph 149 that "there is consistent evidence that the area of the SHP *would* have contained equally archaeologically rich sites" as YG-02 "some of which *have* been destroyed" is, in my opinion:

    a. highly speculative with regard to the direct application of results from elsewhere in the Hamersley Plateau to the SHP, and

    b. is not supported from evidence within the SHP itself.

90. At paragraph 28, Veth and Bird acknowledge the volume of descriptive reports which represent "a significant effort to mitigate the loss of cultural materials". At paragraph 89(iv), they go on to observe "there generally appears to have been a systematic and high number of archaeological surveys to locate archaeological sites and places in the SHP and repeated efforts to salvage physical objects". I agree with this characterisation made by Veth and Bird at paragraphs 28 and 89(iv) of the body of archaeological work.

91. YG-02 is large, visible and has a floor with surface archaeology. From the large number of sites investigated in the SHP there are none that compare to YG-02 for an overall combination of depth of deposit, stratigraphic integrity, artefact density, artefact diversity and age.

92. In support of an assertion at paragraph 149 that the SHP *would* have contained sites equally rich as YG-02, some of which have been destroyed, Veth and Bird supply their Figure 7 and note 11 sites excavated in the SHP with dates in the Pleistocene and Early Holocene (>5,000 BP). Seven of these sites have been destroyed and 4 are subject to heritage restriction zones.

93. In the above section, notably in Table 2, I have previously provided my assessment of the significance of YIN11-028, TRYINPAD13-03, YIN10-014, YIN09-002, YIN10-111in comparison to key Pilbara sites, including YG-02. I consider YG-02 rates highly across a range of indicators of scientific importance / potential. While each of these sites contributes to the overall knowledge of the SHP area, none of these sites are individually comparable to the results being obtained from YG-02. I note that the sites YIN10-014 and YIN10-111 are both subject to heritage restriction zones, as shown on 'Agreed Map 1 Enlargement 3'.

94. The additional sites included in Veth and Bird's Figure 7 are: TRYINRS12-01, YIN08-31, TRYINRS13-11, TRYINSC13-02, YIN10-120 and YIN10-012. I discuss these below.

TRYINRS12-01

Curtis et al 2015b

95. This is a large, twin chambered rockshelter 17m x 7m in floor area. Numerous artefacts were noted on the surface of the shelter when first recorded. 340 artefacts were eventually collected from the surface. The deposit is ~1.2 - 1.3m deep, considerably shallower than YG-02. 1,290 artefacts were recovered from the excavation of a 2.25m^2

footprint (573/m^2), and found throughout the deposit to the base. A hearth found at ~20cm depth was dated to 23,870-23,212cal BP (Curtis *et al*, 2015b: 282) although other much younger dates were obtained from deeper in the soil profile,showing the site does not have good stratigraphic integrity. The deposit contained organic remains such as animal bone and paperbark. It has been avoided, remains extant within the SHP and is protected by a heritage restriction zone, as shown on "Agreed Map 1, Enlargement 5".

YIN08-031

Rowland and Timms, 2012a; Rowland and Timms, 2012b; Chisholm et al 2014; Howard and Chisholm, 2016; Howard and Coutant, 2016

96. This site is a small shelter ~7m x 5m in floor area. It was subject to a multi-stage investigation comprising a 1m x 1m test pit followed by an additional 1m x 1m salvage pit. The deposit was shallow at ~0.5-0.6m, and the artefact assemblage was sparse. Seven artefacts were recovered from both phases of excavation (3.5/m^2) and one manuport was found on the surface of the shelter.. While the salvage component of the project noted 'good stratigraphy' I note that all of the dated samples were from detrital charcoal and the authors of the salvage report postulate bushfires as a reason for charcoal throughout. The oldest date for charcoal in association with artefacts was 34,895-34,134 calBP (Howard and Chisholm 2016:7). A second occupation event is postulated to have occurred 12,420-12,030 calBP (Howard and Chisholm 2016:1). In my opinion there is insufficient cultural material in this deposit to draw any clear conclusions regarding occupation and/or abandonment. With a total of seven artefacts, no in situ cultural features and widespread charcoal (which probably has an environmental origin), this site offers little opportunity to present meaningful interpretation beyond the obvious statement that it was occupied at least once during antiquity. It has been avoided, remains extant within the SHP and is protected by a heritage restriction zone, as shown on "Agreed Map 1, Enlargement 5".

TRYINRS13-11

Curtis et al, 2013a; Curtis et al, 2015a

97. This site is a small shelter 6m x 6m in area subject to a multi-stage investigation. A total of 1.7m^2 was excavated recovering 98 stone artefacts (58/m^2) but no additional organic material. No cultural features such as hearths were found and the oldest dates on detrital charcoal were ~12,500 BP. This site has limited potential to inform us of Aboriginal life beyond what is already understood about the site.

TRYINSC13-02

Curtis et al, 2013a; Curtis et al 2015a

98. This site is a 'site complex' which consists of three related and adjoining rockshelters, one of which contained rock engravings which Yindjibarndi elders considered to be culturally significant.

TRYINSC13-02 RS1

99. A moderate sized twin chambered shelter ~8m x 10.5m in floor area exhibiting prolific roof fall and animal disturbance. The site had a multi-stage investigation which comprised a 1m x 1m test pit followed by surface collection of artefacts. The test pit was less than ~1m deep and yielded 288 stone artefacts (Curtis et al 2015:57). No cultural features were noted, no dates were older than ~1,000 years and all were on detrital charcoal.

TRYINSC13-02 RS2

100. A moderate sized shelter ~7.5m x 6.5 m in plan area exhibiting prolific roof fall and animal disturbance. The site had a multi-stage investigation which comprised a 1m x 1m test pit followed by surface collection of artefacts. A Total of 69 artefacts were retrieved with the majority coming from spits 2 and 3 (Curtis et al 2015:59). No cultural

features or organic material was reported and all dates were obtained from detrital charcoal. The oldest median date was ~1,450 calBP. An additional 21 artefacts were collected from the surface of the shelter.

TRYINSC13-02 RS3

101. This site is a moderate sized rockshelter 14m x 6m in plan area. The site was noted to have prolific roof fall on the surface as well as animal disturbance. Of note was the occurrence of 3 pecked engravings on boulders on the shelter floor.

102. The site was investigated through 5 excavation units of varying sizes for a total of 4m^2 area (scaled off floor plan). A total of 36 artefacts were recovered from the excavations (Curtis et al 2015:61), and despite excavation extensions occurring to investigate potential heath features only two were found. The oldest of these features was ~16,900, and there were inversions in the other dates from the deposit. The attribution of a Pleistocene date for this site is problematic, given the variation of surrounding dates, and the small artefact assemblage gives additional cause for caution. The consultants were equivocal stating '…determining whether this date [Pleistocene date] is part of the initial occupation sequence is difficult…' (Curtis et al 2015a: 105).

YIN10-120

Golden et al, 2013; Curtis et al 2015a

103. This site is a moderate sized shelter 8.5m x 5m in area, initially recorded with 14 surface artefacts including 3 grindstones. A scarred tree is located just outside the shelter. The site was subject to a multi-stage investigation that completed a total of 7.25m of excavation areas yielding 1,410 artefacts (188/m^2) (Golden et al, 2013:202). The deposit was ~1m deep and 14 charcoal samples were dated, some from 'features' and some from detrital charcoal. These dates showed significant inversions / inconsistency, and the oldest median date was ~ 10,000 years calBP.

YIN10-012

Curtis et al, 2014b; Golden et al, 2015

104. This is a moderate sized shelter ~6m x 8m in plan area. The original test excavation was 2m x 1m in area to a depth of ~1.4m. Bioturbation agents were noted throughout the deposit. A total of 157 artefacts were found in the test pits (79/m^2), concentrated in the top half of the deposit. A date of ~14,000BP was returned from a hearth ~45-65cm below the surface. No organic artefacts or faunal remains were noted.

Conclusion

105. From the analysis presented above, I conclude that there is no consistent evidence "that the area of the SHP *would* have contained equally archaeologically rich sites" as YG-02 "some of which *have* been destroyed". Of the seven sites identified by Veth and Bird that have been destroyed (as represented in Figure 7), none are sites of similar significance or archaeological richness to YG-02.

Survey and site identification methodology used

106. At paragraphs 83-88, Veth and Bird summarise survey and identification methodology used by Terra Rosa. They provide no strong criticisms for most of the processes, and I agree that it follows a relatively standard format.

107. At paragraph 88, Veth and Bird note objections to the use of a technique called 'probing' as a method of determining archaeological potential. Noting my earlier comments on the importance of depth of archaeological deposit, attempting to estimate the depth of deposit in a rockshelter is an important, but not sole, criterion for establishing such potential. While there are non-invasive methods (such as ground-penetrating radar) to determine soil depth over bedrock these methods are not practical or accessible for application in large numbers during field surveys where they may be needed haphazardly. The simplest method to try to estimate the minimum depth of deposit in

a shelter is through the use of a thin spike or probe, which is inserted into the ground. This is a standard and widespread method. I note its use by consultants other than Terra Rosa in the Solomon Project Area at a number of rockshelters, including by Gavin Jackson in 2022 for the Yindjibarndi Ngurra Aboriginal Corporation and Juluwarlu Group Aboriginal Corporation (Ryan et al, 2022).

108. At paragraph 88, Veth and Bird cite Terra Rosa in describing that probing is not a reliable predictor of depth of deposit with a subsequent criticism that reliance on probing results may mean that some sites were not test pitted. It is important to note that application of the probing technique is not designed to predict the depth of an archaeological deposit, especially in the generally-gravelly conditions encountered in the Pilbara. The technique is applied to estimate the minimum depth of deposit that might be encountered and is used in conjunction with other criteria to make an assessment of the deposit's archaeological potential.

109. The flow chart provided by Veth and Bird (Figure 5), which was taken from Howard and Coutant 2016, demonstrates that a multi-faceted process was applied to determining archaeological potential. This chart clearly shows Terra Rosa archaeologists were considering potential deposit depth, proximity to other places or objects, obvious human occupation on the surface (stone artefacts on the shelter floor, dripline or talus slope, rock walls or cairns inside the shelter, and/or rock art) as criteria indicating potential to be a site within the meaning of s 5 of the *Aboriginal Heritage Act 1972* (WA). Based on my training, study and experience, this approach is a standard and widespread method of collating information to inform a strategic approach to identifying sites in any given project area in the Pilbara.

110. At paragraph 88, Veth and Bird present the opinion that a reliance on probing deposits as a determinant of potential means it is likely that important places have not been test pitted. I consider that the criteria (as identified in Figure 5 of the Veth and Bird report) used in assessing potential in the SHP are standard and widespread in the Pilbara. Veth and Bird conclude that the overall result of applying the system used by Terra Rosa is that the recovery of datable rockshelter deposits in the SHP is likely to be underrepresented. I understand their use of the phrase "datable rockshelter deposits" to mean a deposit with sufficient intact stratigraphy that it preserves at least one datable feature, such as a hearth. Given the range of criteria applied to the assessment of deposits in the SHP, I disagree with their conclusion for the reasons I have expressed.

Publication of results

111. At paragraph 31 Veth and Bird offer a statement to the effect they were unable to locate publicly published conference proceedings, monographs or volumes from the extensive salvage work conducted at the SHP over a decade. Observations regarding a lack of publications are also made at paragraphs 66 and 96-100. Specifically, at paragraph 96(b), Veth and Bird observe that further reports or publications should be produced on the contents of these sites for the use of other heritage professionals and the wider public. I disagree with a criticism based on a lack of publication.

112. In Western Australia there is no standard condition of consent that mandates publication of results. To the extent it is relevant, while publication of significant results is an ideal outcome, it is comparatively rare in the Australian commercial heritage management context to publish the results of a commercial compliance project. Compliance conditions do not dictate the necessity for publication. In 32 years of undertaking archaeological projects in Australia with First Nations groups I have never undertaken a compliance project that mandates publication of results in a peer reviewed and publicly accessible location (eg, a journal paper, book chapter or monograph). Indeed, at times cultural sensitivity and commercial in confidence considerations from developers and/or First Nations groups can make publication of results difficult. In fact, the commercial terms of engagement can prevent or hinder further publication. In my experience most journals require a statement of cooperation between authors and the First Nations groups with whom they are working. Further, as part of the materials I have been briefed with I have noted restrictions on the relevant heritage consultants. For instance, reports for YIN10-111 note that Yindjibarndi Traditional Owners requested that information regarding the site be kept confidential as it contained culturally sensitive material (Curtis et al, 2015a; Curtis et al, 2015b).

113. Preparation of publication quality manuscripts from commercial projects is time consuming in terms of conversion of commercial data to publishable results and attendant First Nations community consultation is similarly time consuming, with no guarantee of approval to publish. These are rarely tasks that consultant archaeologists are paid to do.

114. The above considerations apply in the current context of mining operations and the steps required to achieve compliance with the relevant legal framework and are to be contrasted to the position of academic exercises which have as their purpose the publication of a paper for wider dissemination and public education. That is not to say consultant archaeologists do not publish, there are notable examples of those who do have an impressive publication record stemming from commercial projects, but overall they are in the minority. As one example I examined authorship of the articles published in the premier archaeological journal for Australian content, *Australian Archaeology,* for the period 2014-2024 (current year of issues presently incomplete). Over that time there were 284 articles published in total (excluding book reviews, obituaries, notices and other minutiae). Of these, 16 (5.5%) were by authors claiming primary affiliation with a consulting company and the balance had affiliations with universities. I acknowledge there are many other avenues for scholarly publication where consultants have published papers, but in my opinion the calculation performed for *Australian Archaeology* is a fair proportional representation generally across the industry. If there is criticism to be made of for non-publication of results, it is to be made at the level of legislation and regulation which does not mandate publication of results, and not of consultants who are not remunerated to do so.

115. In noting the ideal of publication, at paragraphs 97-100 Veth and Bird cite sections of codes of ethics from the Australian Archaeological Association (AAA), the Australian Association of Consulting Archaeologists Inc (AACAI), the Society for American Archaeology (SAA) and the European Association of Archeologists (EAA). The entries for the SAA and EAA are irrelevant. There are few Australian archaeologists who are members of either of the SAA or EAA – a person cannot be held to a code of ethics espoused by an organization they do not belong to.

116. The passage referred to from the Code of Ethics of the AACAI is:

> *2.1 A member will take a responsible attitude to the archaeological resource base and to the best of her/his understanding ensure that this, as well as information derived from it, are used wisely and in the best interests of the public (https://www.aacai.com.au/about-aacai/code-of-ethics)*

117. This clause is opaque in meaning and is included in a subsection of clauses under a sub heading of DUTY TO THE PUBLIC. None of these clauses mandate publication of results, just that information 'should be used wisely'.

118. The Code of Ethics for the AAA is the most specific relevant Australian example, stating:

> *4.4.2 Members will disseminate the results of their work as widely as possible using plain language where appropriate https://australian archaeological association. com.au/governance/code-of-ethics/*

119. Even this entry does not mandate publication, but reverts to 'as widely as possible', which in the case of many commercial projects may only be to the Aboriginal community and the client.

120. It remains an avenue that could be pursued by any interested archaeologist who wishes to investigate and further publish studies of the Pilbara region on these matters to make application to the government department for permission to review relevant reports which remain in the 'grey literature'.

Conclusion

121. While I sense Veth and Bird's frustration with a lack of publication of results from particular sites in the SHP, their implied criticism is unwarranted. Based on my training, study and experience in the industry, the publication of results from commercial compliance projects is not a consistent occurrence due to factors that I have described

above. It is unreasonable to suggest that non-publication of results in this instance is a failure to comply with ethical considerations.

Doug Williams

30 August 2024

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Annexure 1: Federal Court Expert Evidence Practice Note

FEDERAL COURT OF AUSTRALIA

EXPERT EVIDENCE PRACTICE NOTE (GPN-EXPT)

General Practice Note

1. INTRODUCTION

1.1 This practice note, including the *Harmonised Expert Witness Code of Conduct* ("**Code**") (see **Annexure A**) and the *Concurrent Expert Evidence Guidelines* ("**Concurrent Evidence Guidelines**") (see **Annexure B**), applies to any proceeding involving the use of expert evidence and must be read together with:

(a) the Central Practice Note (CPN-1), which sets out the fundamental principles concerning the National Court Framework ("**NCF**") of the Federal Court and key principles of case management procedure;

(b) the Federal Court of Australia Act 1976 (Cth) ("**Federal Court Act**");

(c) the *Evidence Act 1995* (Cth) ("**Evidence Act**"), including Part 3.3 of the Evidence Act;

(d) Part 23 of the *Federal Court Rules 2011* (Cth) ("**Federal Court Rules**"); and

(e) where applicable, the Survey Evidence Practice Note (GPN-SURV).

1.2 This practice note takes effect from the date it is issued and, to the extent practicable, applies to proceedings whether filed before, or after, the date of issuing.

2. APPROACH TO EXPERT EVIDENCE

2.1 An expert witness may be retained to give opinion evidence in the proceeding, or, in certain circumstances, to express an opinion that may be relied upon in alternative dispute resolution procedures such as mediation or a conference of experts. In some circumstances an expert may be appointed as an independent adviser to the Court.

2.2 The purpose of the use of expert evidence in proceedings, often in relation to complex subject matter, is for the Court to receive the benefit of the objective and impartial assessment of an issue from a witness with specialised knowledge (based on training, study or experience - see generally s 79 of the Evidence Act).

2.3 However, the use or admissibility of expert evidence remains subject to the overriding requirements that:

(a) to be admissible in a proceeding, any such evidence must be relevant (s 56 of the Evidence Act); and

(b) even if relevant, any such evidence, may be refused to be admitted by the Court if its probative value is outweighed by other considerations such as the evidence being

unfairly prejudicial, misleading or will result in an undue waste of time (s 135 of the Evidence Act).

2.4 An expert witness' opinion evidence may have little or no value unless the assumptions adopted by the expert (ie. the facts or grounds relied upon) and his or her reasoning are expressly stated in any written report or oral evidence given.

2.5 The Court will ensure that, in the interests of justice, parties are given a reasonable opportunity to adduce and test relevant expert opinion evidence. However, the Court expects parties and any legal representatives acting on their behalf, when dealing with expert witnesses and expert evidence, to at all times comply with their duties associated with the overarching purpose in the Federal Court Act (see ss 37M and 37N).

3. INTERACTION WITH EXPERT WITNESSES

3.1 Parties and their legal representatives should never view an expert witness retained (or partly retained) by them as that party's advocate or "hired gun". Equally, they should never attempt to pressure or influence an expert into conforming his or her views with the party's interests.

3.2 A party or legal representative should be cautious not to have inappropriate communications when retaining or instructing an independent expert, or assisting an independent expert in the preparation of his or her evidence. However, it is important to note that there is no principle of law or practice and there is nothing in this practice note that obliges a party to embark on the costly task of engaging a "consulting expert" in order to avoid "contamination" of the expert who will give evidence. Indeed the Court would generally discourage such costly duplication.

3.3 Any witness retained by a party for the purpose of preparing a report or giving evidence in a proceeding as to an opinion held by the witness that is wholly or substantially based in the specialised knowledge of the witness[1] should, at the earliest opportunity, be provided with:

(a) a copy of this practice note, including the Code (see Annexure A); and

(b) all relevant information (whether helpful or harmful to that party's case) so as to enable the expert to prepare a report of a truly independent nature.

3.4 Any questions or assumptions provided to an expert should be provided in an unbiased manner and in such a way that the expert is not confined to addressing selective, irrelevant or immaterial issues.

[1] Such a witness includes a "Court expert" as defined in r 23.01 of the Federal Court Rules. For the definition of "expert", "expert evidence" and "expert report" see the Dictionary, in Schedule 1 of the Federal Court Rules.

4. ROLE AND DUTIES OF THE EXPERT WITNESS

4.1 The role of the expert witness is to provide relevant and impartial evidence in his or her area of expertise. An expert should never mislead the Court or become an advocate for the cause of the party that has retained the expert.

4.2 It should be emphasised that there is nothing inherently wrong with experts disagreeing or failing to reach the same conclusion. The Court will, with the assistance of the evidence of the experts, reach its own conclusion.

4.3 However, experts should willingly be prepared to change their opinion or make concessions when it is necessary or appropriate to do so, even if doing so would be contrary to any previously held or expressed view of that expert.

Harmonised Expert Witness Code of Conduct

4.4 Every expert witness giving evidence in this Court must read the *Harmonised Expert Witness Code of Conduct* (attached in Annexure A) and agree to be bound by it.

4.5 The Code is not intended to address all aspects of an expert witness' duties, but is intended to facilitate the admission of opinion evidence, and to assist experts to understand in general terms what the Court expects of them. Additionally, it is expected that compliance with the Code will assist individual expert witnesses to avoid criticism (rightly or wrongly) that they lack objectivity or are partisan.

5. CONTENTS OF AN EXPERT'S REPORT AND RELATED MATERIAL

5.1 The contents of an expert's report must conform with the requirements set out in the Code (including clauses 3 to 5 of the Code).

5.2 In addition, the contents of such a report must also comply with r 23.13 of the Federal Court Rules. Given that the requirements of that rule significantly overlap with the requirements in the Code, an expert, unless otherwise directed by the Court, will be taken to have complied with the requirements of r 23.13 if that expert has complied with the requirements in the Code and has complied with the additional following requirements. The expert shall:

(a) acknowledge in the report that:

(i) the expert has read and complied with this practice note and agrees to be bound by it; and

(ii) the expert's opinions are based wholly or substantially on specialised knowledge arising from the expert's training, study or experience;

(b) identify in the report the questions that the expert was asked to address;

(c) sign the report and attach or exhibit to it copies of:

(i) documents that record any instructions given to the expert; and

(ii) documents and other materials that the expert has been instructed to consider.

5.3 Where an expert's report refers to photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter, these must be provided to the other parties at the same time as the expert's report.

6. CASE MANAGEMENT CONSIDERATIONS

6.1 Parties intending to rely on expert evidence at trial are expected to consider between them and inform the Court at the earliest opportunity of their views on the following:

(a) whether a party should adduce evidence from more than one expert in any single discipline;

(b) whether a common expert is appropriate for all or any part of the evidence;

(c) the nature and extent of expert reports, including any in reply;

(d) the identity of each expert witness that a party intends to call, their area(s) of expertise and availability during the proposed hearing;

(e) the issues that it is proposed each expert will address;

(f) the arrangements for a conference of experts to prepare a joint-report (see Part 7 of this practice note);

(g) whether the evidence is to be given concurrently and, if so, how (see Part 8 of this practice note); and

(h) whether any of the evidence in chief can be given orally.

6.2 It will often be desirable, before any expert is retained, for the parties to attempt to agree on the question or questions proposed to be the subject of expert evidence as well as the relevant facts and assumptions. The Court may make orders to that effect where it considers it appropriate to do so.

7. CONFERENCE OF EXPERTS AND JOINT-REPORT

7.1 Parties, their legal representatives and experts should be familiar with aspects of the Code relating to conferences of experts and joint-reports (see clauses 6 and 7 of the Code attached in Annexure A).

7.2 In order to facilitate the proper understanding of issues arising in expert evidence and to manage expert evidence in accordance with the overarching purpose, the Court may require experts who are to give evidence or who have produced reports to meet for the purpose of identifying and addressing the issues not agreed between them with a view to reaching agreement where this is possible ("**conference of experts**"). In an appropriate case, the Court may appoint a registrar of the Court or some other suitably qualified person ("**Conference Facilitator**") to act as a facilitator at the conference of experts.

7.3 It is expected that where expert evidence may be relied on in any proceeding, at the earliest opportunity, parties will discuss and then inform the Court whether a conference of experts and/or a joint-report by the experts may be desirable to assist with or simplify the giving of expert evidence in the proceeding. The parties should discuss the necessary arrangements for any conference and/or joint-report. The arrangements discussed between the parties should address:

(a) who should prepare any joint-report;

(b) whether a list of issues is needed to assist the experts in the conference and, if so, whether the Court, the parties o r the experts should assist in preparing such a list;

(c) **t**he agenda for the conference of experts; and

(d) arrangements for the provision, to the parties and the Court, of any joint-report or any other report as to the outcomes of the conference ("**conference report**").

Conference of Experts

7.4 The purpose of the conference of experts is for the experts to have a comprehensive discussion of issues relating to their field of expertise, with a view to identifying matters and issues in a proceeding about which the experts agree, partly agree or disagree and why. For this reason the conference is attended only by the experts and any Conference Facilitator. Unless the Court orders otherwise, the parties' lawyers will not attend the conference but will be provided with a copy of any conference report.

7.5 The Court may order that a conference of experts occur in a variety of circumstances, depending on the views of the judge and the parties and the needs of the case, including:

(a) while a case is in mediation. When this occurs the Court may also order that the outcome of the conference or any document disclosing or summarising the experts' opinions be confidential to the parties while the mediation is occurring;

(b) before the experts have reached a final opinion on a relevant question or the facts involved in a case. When this occurs the Court may order that the parties exchange draft expert reports and that a conference report be prepared for the use of the experts in finalising their reports;

(c) after the experts' reports have been provided to the Court but before the hearing of the experts' evidence. When this occurs the Court may also order that a conference report be prepared (jointly or otherwise) to ensure the efficient hearing of the experts' evidence.

7.6 Subject to any other order or direction of the Court, the parties and their lawyers must not involve themselves in the conference of experts process. In particular, they must not seek to encourage an expert not to agree with another expert or otherwise seek to influence the outcome of the conference of experts. The experts should raise any queries they may have in relation to the process with the Conference Facilitator (if one has been appointed) or in

accordance with a protocol agreed between the lawyers prior to the conference of experts taking place (if no Conference Facilitator has been appointed).

7.7 Any list of issues prepared for the consideration of the experts as part of the conference of experts process should be prepared using non-tendentious language.

7.8 The timing and location of the conference of experts will be decided by the judge or a registrar who will take into account the location and availability of the experts and the Court's case management timetable. The conference may take place at the Court and will usually be conducted in-person. However, if not considered a hindrance to the process, the conference may also be conducted with the assistance of visual or audio technology (such as via the internet, video link and/or by telephone).

7.9 Experts should prepare for a conference of experts by ensuring that they are familiar with all of the material upon which they base their opinions. Where expert reports in draft or final form have been exchanged prior to the conference, experts should attend the conference familiar with the reports of the other experts. Prior to the conference, experts should also consider where they believe the differences of opinion lie between them and what processes and discussions may assist to identify and refine those areas of difference.

Joint-report

7.10 At the conclusion of the conference of experts, unless the Court considers it unnecessary to do so, it is expected that the experts will have narrowed the issues in respect of which they agree, partly agree or disagree in a joint-report. The joint-report should be clear, plain and concise and should summarise the views of the experts on the identified issues, including a succinct explanation for any differences of opinion, and otherwise be structured in the manner requested by the judge or registrar.

7.11 In some cases (and most particularly in some native title cases), depending on the nature, volume and complexity of the expert evidence a judge may direct a registrar to draft part, or all, of a conference report. If so, the registrar will usually provide the draft conference report to the relevant experts and seek their confirmation that the conference report accurately reflects the opinions of the experts expressed at the conference. Once that confirmation has been received the registrar will finalise the conference report and provide it to the intended recipient(s).

8. CONCURRENT EXPERT EVIDENCE

8.1 The Court may determine that it is appropriate, depending on the nature of the expert evidence and the proceeding generally, for experts to give some or all of their evidence concurrently at the final (or other) hearing.

8.2 Parties should familiarise themselves with the *Concurrent Expert Evidence Guidelines* (attached in Annexure B). The Concurrent Evidence Guidelines are not intended to be exhaustive but indicate the circumstances when the Court might consider it appropriate for

concurrent expert evidence to take place, outline how that process may be undertaken, and assist experts to understand in general terms what the Court expects of them.

8.3 If an order is made for concurrent expert evidence to be given at a hearing, any expert to give such evidence should be provided with the Concurrent Evidence Guidelines well in advance of the hearing and should be familiar with those guidelines before giving evidence.

9. FURTHER PRACTICE INFORMATION AND RESOURCES

9.1 Further information regarding Expert Evidence and Expert Witnesses is available on the Court's website.

9.2 Further information to assist litigants, including a range of helpful guides, is also available on the Court's website. This information may be particularly helpful for litigants who are representing themselves.

J L B ALLSOP
Chief Justice
25 October 2016

Annexure A

HARMONISED EXPERT WITNESS CODE OF CONDUCT[2]

APPLICATION OF CODE

1. This Code of Conduct applies to any expert witness engaged or appointed:

   (a) to provide an expert's report for use as evidence in proceedings or proposed proceedings; or

   (b) to give opinion evidence in proceedings or proposed proceedings.

GENERAL DUTIES TO THE COURT

2. An expert witness is not an advocate for a party and has a paramount duty, overriding any duty to the party to the proceedings or other person retaining the expert witness, to assist the Court impartially on matters relevant to the area of expertise of the witness.

CONTENT OF REPORT

3. Every report prepared by an expert witness for use in Court shall clearly state the opinion or opinions of the expert and shall state, specify or provide:

   (a) the name and address of the expert;

   (b) an acknowledgment that the expert has read this code and agrees to be bound by it;

   (c) the qualifications of the expert to prepare the report;

   (d) the assumptions and material facts on which each opinion expressed in the report is based [a letter of instructions may be annexed];

   (e) the reasons for and any literature or other materials utilised in support of such opinion;

   (f) (if applicable) that a particular question, issue or matter falls outside the expert's field of expertise;

   (g) any examinations, tests or other investigations on which the expert has relied, identifying the person who carried them out and that person's qualifications;

   (h) the extent to which any opinion which the expert has expressed involves the acceptance of another person's opinion, the identification of that other person and the opinion expressed by that other person;

   (i) a declaration that the expert has made all the inquiries which the expert believes are desirable and appropriate (save for any matters identified explicitly in the report), and that no matters of significance which the expert regards as relevant have, to the knowledge of the expert, been withheld from the Court;

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[2] Approved by the Council of Chief Justices' Rules Harmonisation Committee

(j) any qualifications on an opinion expressed in the report without which the report is or may be incomplete or inaccurate;

(k) whether any opinion expressed in the report is not a concluded opinion because of insufficient research or insufficient data or for any other reason; and

(l) where the report is lengthy or complex, a brief summary of the report at the beginning of the report.

SUPPLEMENTARY REPORT FOLLOWING CHANGE OF OPINION

4. Where an expert witness has provided to a party (or that party's legal representative) a report for use in Court, and the expert thereafter changes his or her opinion on a material matter, the expert shall forthwith provide to the party (or that party's legal representative) a supplementary report which shall state, specify or provide the information referred to in paragraphs (a), (d), (e), (g), (h), (i), (j), (k) and (l) of clause 3 of this code and, if applicable, paragraph (f) of that clause.

5. In any subsequent report (whether prepared in accordance with clause 4 or not) the expert may refer to material contained in the earlier report without repeating it.

DUTY TO COMPLY WITH THE COURT'S DIRECTIONS

6. If directed to do so by the Court, an expert witness shall:

(a) confer with any other expert witness;

(b) provide the Court with a joint-report specifying (as the case requires) matters agreed and matters not agreed and the reasons for the experts not agreeing; and

(c) abide in a timely way by any direction of the Court.

CONFERENCE OF EXPERTS

7. Each expert witness shall:

(a) exercise his or her independent judgment in relation to every conference in which the expert participates pursuant to a direction of the Court and in relation to each report thereafter provided, and shall not act on any instruction or request to withhold or avoid agreement; and

(b) endeavour to reach agreement with the other expert witness (or witnesses) on any issue in dispute between them, or failing agreement, endeavour to identify and clarify the basis of disagreement on the issues which are in dispute.

ANNEXURE B

CONCURRENT EXPERT EVIDENCE GUIDELINES

APPLICATION OF THE COURT'S GUIDELINES

1. The Court's Concurrent Expert Evidence Guidelines ("**Concurrent Evidence Guidelines**") are intended to inform parties, practitioners and experts of the Court's general approach to concurrent expert evidence, the circumstances in which the Court might consider expert witnesses giving evidence concurrently and, if so, the procedures by which their evidence may be taken.

OBJECTIVES OF CONCURRENT EXPERT EVIDENCE TECHNIQUE

2. The use of concurrent evidence for the giving of expert evidence at hearings as a case management technique[3] will be utilised by the Court in appropriate circumstances (see r 23.15 of the *Federal Court Rules 2011* (Cth)). Not all cases will suit the process. For instance, in some patent cases, where the entire case revolves around conflicts within fields of expertise, concurrent evidence may not assist a judge. However, patent cases should not be excluded from concurrent expert evidence processes.

3. In many cases the use of concurrent expert evidence is a technique that can reduce the partisan or confrontational nature of conventional hearing processes and minimises the risk that experts become "opposing experts" rather than independent experts assisting the Court. It can elicit more precise and accurate expert evidence with greater input and assistance from the experts themselves.

4. When properly and flexibly applied, with efficiency and discipline during the hearing process, the technique may also allow the experts to more effectively focus on the critical points of disagreement between them, identify or resolve those issues more quickly, and narrow the issues in dispute. This can also allow for the key evidence to be given at the same time (rather than being spread across many days of hearing); permit the judge to assess an expert more readily, whilst allowing each party a genuine opportunity to put and test expert evidence. This can reduce the chance of the experts, lawyers and the judge misunderstanding the opinions being expressed by the experts.

5. It is essential that such a process has the full cooperation and support of all of the individuals involved, including the experts and counsel involved in the questioning process. Without that cooperation and support the process may fail in its objectives and even hinder the case management process.

[3] Also known as the "hot tub" or as "expert panels".

CASE MANAGEMENT

6. Parties should expect that, the Court will give careful consideration to whether concurrent evidence is appropriate in circumstances where there is more than one expert witness having the same expertise who is to give evidence on the same or related topics. Whether experts should give evidence concurrently is a matter for the Court, and will depend on the circumstances of each individual case, including the character of the proceeding, the nature of the expert evidence, and the views of the parties.

7. Although this consideration may take place at any time, including the commencement of the hearing, if not raised earlier, parties should raise the issue of concurrent evidence at the first appropriate case management hearing, and no later than any pre-trial case management hearing, so that orders can be made in advance, if necessary. To that end, prior to the hearing at which expert evidence may be given concurrently, parties and their lawyers should confer and give general consideration as to:

   (a) the agenda;

   (b) the order and manner in which questions will be asked; and

   (c) whether cross-examination will take place within the context of the concurrent evidence or after its conclusion.

8. At the same time, and before any hearing date is fixed, the identity of all experts proposed to be called and their areas of expertise is to be notified to the Court by all parties.

9. The lack of any concurrent evidence orders does not mean that the Court will not consider using concurrent evidence without prior notice to the parties, if appropriate.

CONFERENCE OF EXPERTS & JOINT-REPORT OR LIST OF ISSUES

10. The process of giving concurrent evidence at hearings may be assisted by the preparation of a joint-report or list of issues prepared as part of a conference of experts.

11. Parties should expect that, where concurrent evidence is appropriate, the Court may make orders requiring a conference of experts to take place or for documents such as a joint-report to be prepared to facilitate the concurrent expert evidence process at a hearing (see Part 7 of the Expert Evidence Practice Note).

PROCEDURE AT HEARING

12. Concurrent expert evidence may be taken at any convenient time during the hearing, although it will often occur at the conclusion of both parties' lay evidence.

13. At the hearing itself, the way in which concurrent expert evidence is taken must be applied flexibly and having regard to the characteristics of the case and the nature of the evidence to be given.

14. Without intending to be prescriptive of the procedure, parties should expect that, when evidence is given by experts in concurrent session:

(a) the judge will explain to the experts the procedure that will be followed and that the nature of the process may be different to their previous experiences of giving expert evidence;

(b) the experts will be grouped and called to give evidence together in their respective fields of expertise;

(c) the experts will take the oath or affirmation together, as appropriate;

(d) the experts will sit together with convenient access to their materials for their ease of reference, either in the witness box or in some other location in the courtroom, including (if necessary) at the bar table;

(e) each expert may be given the opportunity to provide a summary overview of their current opinions and explain what they consider to be the principal issues of disagreement between the experts, as they see them, in their own words;

(f) the judge will guide the process by which evidence is given, including, where appropriate:

(i) using any joint-report or list of issues as a guide for all the experts to be asked questions by the judge and counsel, about each issue on an issue-by-issue basis;

(ii) ensuring that each expert is given an adequate opportunity to deal with each issue and the exposition given by other experts including, where considered appropriate, each expert asking questions of other experts or supplementing the evidence given by other experts;

(iii) inviting legal representatives to identify the topics upon which they will cross-examine;

(iv) ensuring that legal representatives have an adequate opportunity to ask all experts questions about each issue. Legal representatives may also seek responses or contributions from one or more experts in response to the evidence given by a different expert; and

(v) allowing the experts an opportunity to summarise their views at the end of the process where opinions may have been changed or clarifications are needed.

15. The fact that the experts may have been provided with a list of issues for consideration does not confine the scope of any cross-examination of any expert. The process of cross-examination remains subject to the overall control of the judge.

16. The concurrent session should allow for a sensible and orderly series of exchanges between expert and expert, and between expert and lawyer. Where appropriate, the judge may allow for more traditional cross-examination to be pursued by a legal representative on a particular issue exclusively with one expert. Where that occurs, other experts may be asked to comment on the evidence given.

17. Where any issue involves only one expert, the party wishing to ask questions about that issue should let the judge know in advance so that consideration can be given to whether

arrangements should be made for that issue to be dealt with after the completion of the concurrent session. Otherwise, as far as practicable, questions (including in the form of cross-examination) will usually be dealt with in the concurrent session.

18. Throughout the concurrent evidence process the judge will ensure that the process is fair and effective (for the parties and the experts), balanced (including not permitting one expert to overwhelm or overshadow any other expert), and does not become a protracted or inefficient process.

Annexure 2: Curriculum vitae of Douglas Williams

DOUG WILLIAMS

Curriculum Vitae

Qualifications	▪ Bachelor of Arts (Honours), Australian National University. ▪ Graduate Diploma in Cultural Heritage Management (Applied Science), University of Canberra ▪ M.ICOMOS ▪ Certificate III in Event Management, NSW TAFE
Pen Profile	Professional archaeologist and heritage manager since 1992. Have completed large-scale complex archaeological projects in New South Wales, ACT, Western Australia, Victoria and South Australia. Senior Project Archaeologist at Aboriginal Affairs Victoria (1998-2000), Executive Officer for the Willandra Lakes Region World Heritage Area from 2000-2004 (NSW National Parks & Wildlife Service). Has numerous conferences papers including at the Australian Archaeological Association, World Archaeological Congress and Asia-Pacific World Heritage Managers workshops. Appointment to ACT Heritage Council in 2023 (Archaeology specialist), builds on prior membership from 2014 to 2020. Received the 2012 *Laila Haglund Award for Excellence in Consulting Archaeology* and the 2013 *Waikato University Award* for best use of radiocarbon dating. Possesses outstanding fieldwork skills in archaeological survey, field recording, artefact identification/analysis, all scales of excavation and associated documentation, and GIS based field recording. Accredited drone pilot for <2.5kg drones.
Expertise	**2013-2020 and November 2022-Present: Principal, Access Archaeology.** Cultural Heritage Management consultant (mainly Aboriginal Heritage). Research, development and implementation of field survey strategies, GIS field recording, test excavation, salvage excavation, report preparation, significance assessment and development of management strategies. Liaison with Aboriginal communities and developers from the public and private sectors. • July 2023 Archaeological Site Recording workshop – delivered to Mithaka Rangers, Queensland • June 2023 and 2024 Teaching Assistant, ARCS2060 (University of Queensland Archaeology Field School, Macleay Valley, NSW) • AAA Conference 2023. Session Convenor. *Change and Resilience in South West Queensland* • AAA Conference 2021. Session Convenor: *When the Rivers (Don't) Flow: The Impact of Changing Flows on Culture and Heritage* • AAA Conference 2019. Session Convenor *A River is More Than an Amenity, It is a Treasure: People and Rivers on the Direst Inhabited Continent on Earth.* **April 2021-November 2022: Principal Archaeologist, Austral Archaeology Pty Ltd.** Primary duties as per for Access Archaeology (above) **2020-2021: Principal Archaeologist, Jacobs Australia** Primary duties as per for Access Archaeology (above) **2008-2013: Director, Ironbark Heritage & Environment Pty Ltd** Primary duties as per Access Archaeology (above), but in addition: • Management of numerous professional staff across five Australian states; • Major, complex heritage studies for resource developments (mainly Pilbara WA); • Development of client and stakeholder relationships nationwide. • AWARD: AACAI 'Laila Haglund Prize for Excellence in Consulting Archaeology'. 2012 AAA Conference, Wollongong, NSW. • AWARD: Waikato University Award for best use of radiocarbon dating. 2013 AAA Conference, Coffs Harbour, NSW **2004 – 2008: Director, Archaeo Analysis Pty Ltd** Primary duties as per for Access Archaeology (above). **2000-2004: Executive Officer, Willandra Lakes Region World Heritage Area (WHA) – NSW NPWS** Implementation of the Plan of Management for the WHA and WHA Individual Property Plans. Close liaison with Traditional Owners, property owners, land management agencies, Commonwealth and State heritage management and protection agencies. Coordinated the activities of 3 separate committees of management and also reported to Environment Australia and the UNESCO World Heritage Organisation. • June 2003. Presenting Participant at World Archaeological Congress 5 (Washington DC, USA). • November 2002. World Heritage Committee Meeting and World Heritage Indigenous Forum, Cairns. Support to Indigenous working party. **2003: Sessional Lecturer Sunraysia Institute of TAFE** 'Cultural Resource Management' Unit as part of TAFE Diploma of Natural Resource Management course. Preparation and delivery of lectures, preparation of course structure, organization of field trips and assessment of student work.

	1998-2000: Senior Project Archaeologist, Aboriginal Affairs Victoria Designed and implemented the statewide Key Aboriginal Places Program. Managed preparation of management plans, implemented management works, wrote funding bids to the Minister for Aboriginal Affairs and oversaw the expenditure of Victoria's annual budget for capital works on Aboriginal heritage sites. Designed and delivered site recording training to regionally based Aboriginal Heritage Officers. **1993-1998: Director, Williams Barber Archaeological Services Pty Ltd** Primary duties as per Access Archaeology (above) • 1996-1997 Tutoring of Indigenous students at University of Canberra
Professional Boards and Positions	**2023-present, 2014-2020, ACT Heritage Council – Expert for Archaeology**. Advise ACT Minister for the Environment on issues, policies and procedures pertaining to the protection of archaeological heritage in the ACT, also through 2023-24 contribute to ACT Heritage Council reestablishment and restructure. **2019-23: State Representative, Australian Archaeological Association**. 2019 NSW Representative, 2020-23 ACT Representative. **2021-24: Australia ICOMOS Indigenous Heritage Reference Group** – Committee Member **2021-24: ICOMOS International Committee on Archaeological Heritage Management**. **2019-21: Kosciuszko Wild Horse Scientific Advisory Panel – Expert For Cultural Heritage Management** Appointed by the NSW Minister for Energy and Environment: Provide scientific/technical advice informing the preparation of the draft wild horse plan of management (two extensions to appointment).
Publications	**Williams, D**., M.Quinn, J.Silcock, K.Westaway, J.Gorringe and M.C.Westaway. In Prep. 'World's largest quarry created by a non-agricultural society, Mithaka Country Central Australia'. Submitted to *Nature* June 2024. Sent for review June 2024. **Williams, D**. M.Sullivan, P.Hughes and A.Grinbergs. In prep. 'Out in the open: a complex of stratified artefact clusters in the Pilbara demonstrating a history of occupation to beyond the LGM' submitted to *Archaeology in Oceania*. **Williams, D**., S.Gorringe, J.Gorringe, T.Hough, S.Blinco and M.C.Westaway. In Prep. 'Meanings in Wul-ung-ara and Dai-oorlu-Doori: The Brown collection of hatchets and grindstones from Durrie Station, channel country, far south west Queensland'. Submitted to *Australian Archaeology* March 2024 (accepted, revisions in prep). Westaway, M.C., Lowe, K.M., Martin, M., **Williams, D.**, Andrews, I, Gorringe, J., and Cane S. In Prep. 'A Mithaka stone arrangement, south-western Queensland and possible links to the Central Desert'. Submitted to *Ethnoarchaeology* May 2024. Kerkhove, R., J.Silcock, **D.Williams** et al. 2024. 'Fish traps, seed-grinding and food stores: reconstructing complex Mithaka Indigenous economic and water management technologies', in C. Smith, K. Pollard, A. Kumar Kanungo, S. May, S. Varela Lopez, and J. Watkins (eds) *The Oxford Handbook of Global Indigenous Archaeologies*. Oxford: Oxford University Press. doi.org/10.1093/oxfordhb/9780197607695.013.60 Lowe, K., **D.Williams,** N.Wright, S.Gorringe, J.Gorringe, I.Andrews, M.C.Ustunkaya, B.Gorringe, and M.C. Westaway 2023. 'Ula Thirra: A Case Study in the Geomagnetic Detection of Combustion Features in Channel Country of far south-western Queensland'. *Archaeological and Anthropological Sciences*. doi.org/10.1007/s12520-023-01722-7. **Williams, D.**, M.Westaway and I.Andrews. 2022. 'Coomathulla Monuments: Sandstone Quarries of the Mithaka', In Westaway, M, M.Mapar, T.Hough, S.Gorringe and G.Ginn (Eds). 2022. *Kirrenderri, Heart of Channel Country*. University of Queensland Anthopology Museum, Brisbane. Pp48-51. Westaway, M., **D.Williams,** and J.Kelly. 'Mungo Ancestral Remains reburial proposal disrespects the Elders' original vision'. *The Conversation* (Arts + Culture) published online on 04/08/2021. Adams,S. M.Westaway, D. McGahan, **D.Williams**, *Et Al*. 2021. 'Isotopic analyses of prehistoric human remains from the Flinders Group, Queensland, Australia, support an association between burial practices and status'. *Archaeological and Anthropological Sciences*. (2021) 13:121. doi.org/10.1007/s12520-021-01376-3 Westaway, M.C., **D.Williams**, *Et Al. 2021*. 'Hidden in Plain Sight: Systematic fieldwork in Mithaka Country, Southwest Queensland, reveals an extensive archaeological landscape'. *Antiquity,* 95(382), 1043-1060 doi.org/10.15184/aqy.2021.31. Westaway, M., W.Clark, **D.Williams** & G.Quayle. 2021. 'Reburying World Heritage human remains would close window on Barkindji past'. *Nature* 589,19. *DOI: https://doi.org/10.1038/d41586-020-03645-y* Adams, S., Collard, M. **Williams, D**., Et Al. 2020. 'A community bioarchaeology project in the Flinders Islands Group, Australia'. *Archaeologies: Journal of the World Archaeological Congress.* Published online 17/11/2020. https://doi.org/10.1007/s11759-020-09411-w. Marsh, M., P.Hiscock, **D. Williams**, *Et Al*, 2018. 'Watura Jurnti – a 42 to 45,000 year-long occupation sequence from the north-eastern Pilbara'. *Archaeology in Oceania.* DOI: 10.1002/arco.5152.

	Westaway, MC., **Williams, D.G**., *Et Al.* 2016. 'The Death of Kakutcha: A Case of Perimortem weapon trauma in an Aboriginal man from north west New South Wales, Australia'. *Antiquity 90 353 (2016): 1318–1333.* doi:10.15184/aqy.2016.173. Miller, G., Magee, J., Smith, M., Baynes, A., Lehman, S.,Spooner, N., Fogel, M., Webb, S., Johnston, H., **Williams, D**., *Et Al.* 2016. 'Direct evidence of human predation on extinct Australian megafauna between 53.9 and 47.5 ka'. *Nature Communications 7:10196 doi:10.1038/ncomms10496(2016).*
Conference Papers & Presentations	**D.Williams.** 2024. *Backyard Dunny: The Archaeology of a sanitation feature at a 19th Century Selectors homestead.* Paper presented to Backyard Archaeology Symposium, Canberra Museum and Art Gallery, May 2024. **Williams, D.,** R.Wood. M.Quinn, F.Webster and M.Westaway. 2023. *Learning From the Great Teacher: Stone material Extraction and Implement manufacture at Nurrenderri, South West Queensland.* Paper presented to 2023 Australian Archaeological Association Conference, Gold Coast, Queensland **Williams, D.** 2022. *The Mines of Mithaka: Hunter Gatherer Mining for Trade and Local Use in Channel Country, Far South West Queensland.* Paper presented to the Harlan IV Symposium, TropAg International Conference, Brisbane. **Williams, D.,** M.Westaway and Mithaka Aboriginal Corporation. 2022. *The Lost Mines of Mithaka: Hunter Gatherer Mining for Trade and Local Use in Channel Country, Far South West Queensland*. Paper presented to the World Archaeological Congress, Prague, 7 July 2022. Gorringe, J., T.Gorringe, **D.Williams**, M.Westaway and I.Andrews. *Alice in wonderland: Cultural Mapping of the Duncan-Kemp archive on Mithaka Country, Far South West Queensland, Australia*. Paper presented to the World Archaeological Congress, Prague, 7 July 2022. **Pappin, G.,** J.Kelly, M.Young, M.Brettschneider, **D.Williams** and M.Westaway. 2022. *Cultural Erasure and the Willandra Lakes Ancestral Remains.* Paper presented to the World Archaeological Congress, Prague, 7 July 2022. **Williams, D.,** G.Pappin, J.Kelly and M.Westaway. 2022. *The Vermillion Accord and the Willandra Lakes World Heritage Area Human Remains Collection: A Tragedy in Three Acts.* Paper presented to the World Archaeological Congress, Prague, 5 July 2022. **Williams, D.** 2022. *The Scale of sandstone Mining and grindstone production in Mithaka Country: An Overview of Research on Sandstone Quarries in Channel Country*. Paper presented to Kirrenderri Heart of Channel Country Symposium, University of Queensland, 4 June 2022. **Williams, D**. Westaway, M., Joshua Gorringe. 2021. *Scales of Investigation and Scales of Production: Researching Grindstone Production in Channel Country, South West Queensland.* Paper presented to 2021 ARCAS Conference, Online Conference. **Williams, D**. Westaway, M., Mithaka Aboriginal Corporation. 2019 *Aboriginal Occupation of Channel Country, Far South West Queensland.* Paper presented to 2019 Australian Archaeological Association Conference, Gold Coast, Queensland. Westaway, M., **Williams, D**., Mithaka Aboriginal Corporation.2019. *Investigating the Record of Food Production and Villages in Channel Country, Western Queensland.* Paper presented to 2019 Australian Archaeological Association Conference, Gold Coast, Queensland. **Williams, D**., M.Westaway, K.Lowe and Mithaka Aboriginal Corporation. *A Satellite Imagery/GIS Survey for Aboriginal Archaeological places in Channel Country, SW Queensland*. Presented to 2018 Australian Archaeological Association Conference, Auckland, NZ. **Williams, D**. and C.Carter and Mithaka Aboriginal Corporation. *I would love to be an archaeologist: Participatory Archaeological Tourism as a mechanism for undertaking archaeological research and community capacity building*. Presented to 2018 Australian Archaeological Association Conference, Auckland, NZ Marsh, M., and **Williams, D**. *Waturna Jurnti: Sampling and Excavation Strategies for a Pleistocene Archaeological Deposit in a Rock Shelter.* Presented to the 2013 Archaeological Association Conference, Coffs Harbour NSW **AWARD: WAIKATO UNIVERSITY AWARD FOR BEST USE OF RADIOCARBON DATING.** **Williams, D**., Sullivan, M., and Hughes, P. *Out in the Open: Excavation of Artefact Scatters in The Pilbara.* Presented to the 2012 Archaeological Association Conference, Wollongong NSW. **AWARD: 'LAILA HAGLUND AWARD FOR EXCELLENCE IN CONSULTING ARCHAEOLOGY'.** McKay, A., Sullivan, M., Hughes, P., and **Williams, D**. *Issues of archaeological significance assessment in the eastern Pilbara: some preliminary thoughts.* Presented to the 2009 Archaeological Association Conference, Flinders University, SA. **Williams, D**. *Rich Pastures: The Archaeology at Headquarters Joint Operations Command, Dairy Station Creek, Between Bungendore and Queanbeyan NSW.* Presented to the 2009 ACT Historical Archaeology Workshop, University of Canberra. **Williams, D**. *Sharing the Willandra.* Presented to the Fifth World Archaeological Congress, Washington DC, June 2003, AND to the Crow Canyon Archaeological Centre, June 2003.

	Williams, D. *Repatriation, Reconciliation and Research – An Indigenous Narrative from Lake Mungo*. Co-presented to the Fifth World Archaeological Congress, Washington DC, June 2003. Johnston, H., Webb, S., and **Williams, D**. *Three Pleistocene Burials From Lake Garnpung, Willandra Lakes WHA*. Australian Archaeological Association Conference, Jindabyne NSW, 2002 ***Williams, D***. *Involvement of the Paakantji, Mutthi Mutthi and Ngiyampaa Tribal Groups in the Management of the Willandra Lakes Region World Heritage Area: Management Structure and Current Issues*. Presented to the Australian World Heritage Managers Workshop, Leura NSW, March 2002.
Courses & Training	▪ CASA Drone Operation Course ▪ Asbestos Awareness ▪ Construction Industry White Card ▪ Risk Management Processes (RIIRS3301A) ▪ Information Communication (RIICOM301A) ▪ Onsite Supervision in the Workplace (RIIBEF402A) ▪ Leadership in the Workplace (BSBMGT401A) ▪ Senior First Aid (HTLFA311A) ▪ Certificate III in Tourism and Events (Eurobodalla Adult Ed).
Memberships	▪ Australia ICOMOS – Full International member ▪ Australian Archaeological Association ▪ Canberra Archaeological Society ▪ Life Member, ANU Australian Football Club
Community Contributions	▪ 2023-present – Chair, ANU Griffins Future Group. ▪ 1989-1991 ANU Sports Union Board of Management (Peter McCullough Achievement Award for contribution to university sport). ▪ ANU Australian Football Club Executive (various positions) 1989-1998, 2022-24 (Assistant Senior Coach). ▪ Foundation President, Broulee-Moruya Australian Football Club, 2014-2016, 2019. General committee 2017-2018. ▪ Board of Management, Sapphire Coast Australian Football League, 2016-2017 ▪ President 'Granite Town' music festival 2016, general committee 2014, 2015, 2017.

Annexure 3: Dating measures

Overview

1. There are two main techniques of dating used in Australia – Radiocarbon dating (^{14}C dating) and Optically Stimulated Luminescence dating (OSL). ^{14}C is an 'unstable' isotope and dating with it measures its decay, which has a known 'half life'. OSL dating dates the last time grains of sand saw sunlight. The technique of *thermoluminescence* is also used in Australia, but is less widely applied than ^{14}C or OSL, and I do not consider it further in my comments.

2. Dating can be applied in two main ways – direct dating or dating by association. Direct dating is where a technique is applied to a particular 'dateable' object or feature. Dating charcoal extracted from the remains of a fireplace provides a direct date for that feature, just as dating a bone or shell dates the death of that animal. Dating by association is where a date for a sample is taken to be a reasonable proxy for a cultural object in close proximity – a stone artefact for example. Worldwide, stone artefacts are the most widespread and resilient indicators of human occupation, but because they are inorganic there exists no reliable method of dating the creation of a single specimen *directly*. They are dated by being in close association with dateable material, such as charcoal in the case of ^{14}C or the sand in which they are found in the case of OSL. ^{14}C can be used to apply direct dating to organic cultural features or associative dating through proximity of dated samples to other cultural objects. In an archaeological context, OSL is mainly used in the context of associative dating.

3. When undertaking dating by association, it is crucial to be confident that the cultural object being dated (for example, a stone artefact) is actually from the same period as the deposition of the dateable material. A site where this is demonstrable, or highly likely, is said to have good '*integrity*'. Sites such as rock shelters in the Pilbara are dynamic environments, even though they appear to be stable and some have held sediment deposit for tens of thousands of years. Biological activity, mainly through burrowing or underground dwelling animals, move soil and gravels up and down through the soil profile. Tree root intrusion can also move items horizontally and vertically. In terms of physical properties acted upon by nature, stone artefacts are no different to gravels, and can be (and are) moved by these activities. Investigation of an archaeological site should be undertaken very carefully in order to conclude, as far as possible, that cultural features like stone artefacts were actually dropped in or very close to the location in which they are found or whether they had been moved there subsequently. The term *in situ* is used to describe cultural material that has not been moved or otherwise disturbed.

4. The depth of archaeological deposit can be a factor in the integrity of an archaeological deposit. The depth of a deposit can be affected by a number of variables including natural sedimentation rate, morphology of the shelter and its ability to retain sediment, and the intensity of site use by people. Deep deposits have two important advantages over shallow deposits. Firstly, by and large, they allow vertical separation of cultural samples including samples for dating, which has higher potential for identifying different phases of human use. It may be easier to see distinct or discrete occupation events in a deep deposit than in a shallow deposit when multiple events may be conflated together. Secondly, and although by no means absolute, a deeper deposit may be less prone to ongoing high energy disturbance than a shallow one. In my experience, Pilbara rockshelter deposits, even though some may be very old, are generally more shallow and have accumulated more slowly than shelters in other parts of the country.

Radiocarbon dating

Allen and O'Connell 2014

5. ^{14}C is created in the upper atmosphere as a result of interaction of cosmic rays and nitrogen (^{14}N). It is disseminated through the atmosphere and taken up by every living thing, and while an organism is alive it ingests and/or absorbs ^{14}C in equilibrium with environmental conditions. When an organism dies it ceases to ingest ^{14}C, and the element in the organism's remains begins to decay. The half life of ^{14}C is 5,730 years, so by measuring the amount of the

isotope present in the organic remains being dated we can estimate the time at which it died. The most common materials dated in Australian archaeology are charcoal, bone and shell as these materials, particularly charcoal, are robust and survive well for thousands of years if in protected and/or environmentally stable locations.

6. Levels of ^{14}C fluctuate through time and environmental conditions and to account for this variation ^{14}C dating results must be calibrated to arrive at 'calendar' years. Uncalibrated dates are usually accompanied by the postscript BP (Before Present), with the 'present' being taken as the year 1950 CE. Once calibrated, dates in Australia are usually presented as 'calBP', although the Christian calendar postcripts 'BC' and 'AD' are also used. Information used to calibrate ^{14}C dates is constantly being revised and improved, which means dates become constantly more reliable, error margins (the date range) are reduced and previous results can be reviewed and updated using revised calibrations.

7. ^{14}C dates are presented in a range rather than a single date, with a range representing a statistical probability. This may be in the form of '±' (eg 5,200 ± 98 calBP), or as a date range (eg 5,102-5,298 calBP), and the confidence level in that range should be provided as a percentage – usually at 2 standard deviations, or ~95% confidence level.

8. Because ^{14}C dates the decay of the isotope, the older the sample is, the less there is to measure. Currently, the limit of ^{14}C is ~55,000 years (Allen and O'Connell, 2014).

9. I present below two schematics to illustrate issues of site integrity with regard to dating using ^{14}C.

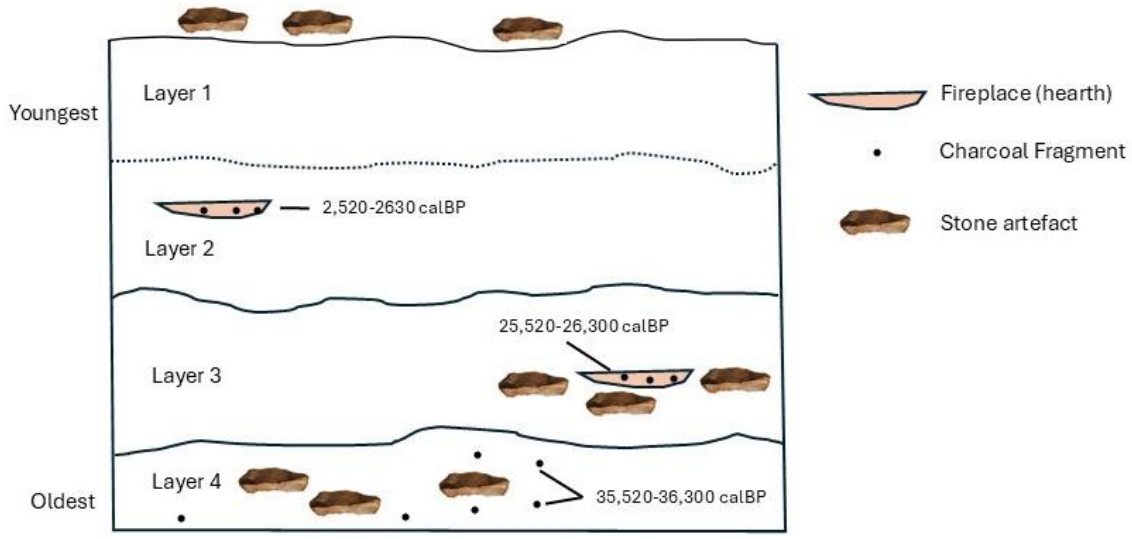

Figure 1: Schematic of cross section of an archaeological deposit

10. Figure 1 shows a hypothetical archaeological deposit. There are two fireplaces (normally termed hearths), one dated to 2,520-2630 calBP, the other dated to 25,520-26,300 calBP. The dates are on charcoal fragments taken from within the feature. This is direct dating of an archaeological feature. Because they are a clear cultural feature that cannot move and remain identifiable it is reasonable to infer they date human visitation to the site. In layer 3, the hearth is closely associated with stone artefacts. If no disturbance has occurred to the hearth, then it is reasonable to infer the nearby artefacts are probably *in situ* and so by association are of the same age. In layer 4 a ^{14}C date of 35,520-36,300 calBP has been determined for charcoal found in the soil but not part of an identifiable cultural feature. At many Australian archaeological sites this associative dating is how the oldest dates for sites are determined, but great care must be taken to ensure both the artefacts and the charcoal samples are from the same time period. Without strong evidence that the deepest artefacts were dropped right there when that level was the

surface we could only say that the firm date for human occupation is 25,520-26,300 calBP, and that anything older is speculative.

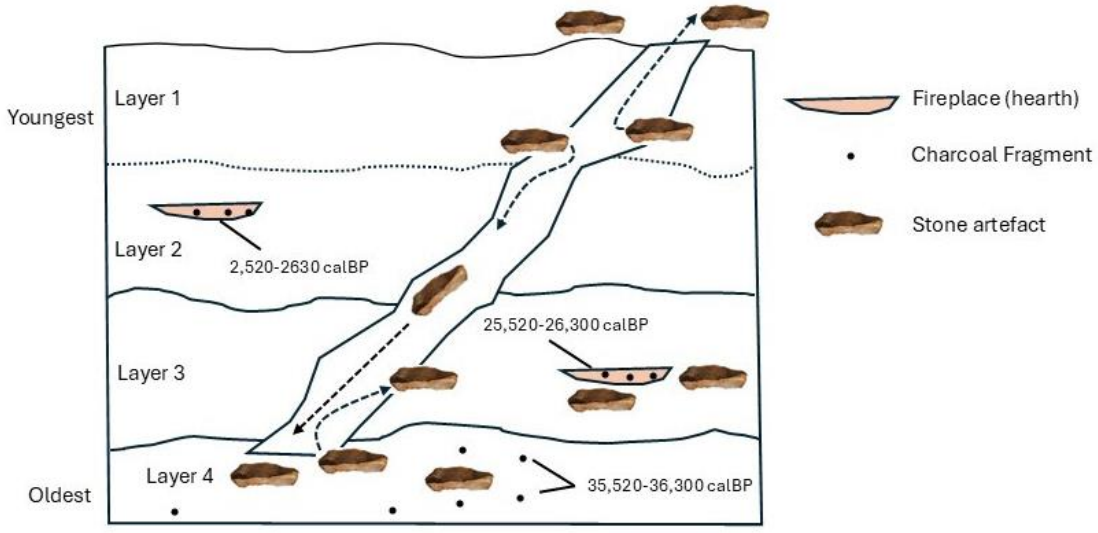

Figure 2: Schematic of a cross section of an archaeological deposit – example of potential artefact movement

11. Figure 2 shows the same hypothetical archaeological site, but in this instance a burrowing animal (say, a goanna) has burrowed through the deposit. Stone artefacts in the upper layers have been dislodged from the roof of the burrow and have slid or been pushed downwards by animal movement and gravity, while others on the floor of the burrow have been scratched upwards when the burrow was dug. If the deposit is very similar colour and texture all the way through (as many Pilbara rockshelter deposits are) and the burrow collapses (as they all do eventually), the movement of artefacts between levels may be difficult to discern. This process may have occurred many times over the time period of human occupation. This is just one example of how artefacts might move in a deposit. Stockton (1973) demonstrated that 'scuffage and treadage' could displace artefacts quite quickly – up to 10cm below where they were first dropped. Pilbara rock shelter deposits tend to accumulate very slowly – a 10cm variation in vertical location could mean 10,000 years of occupation. Richardson (1992) has demonstrated in excess of 50cm of vertical movement of artefacts in deposits at Kenniff Cave in Queensland with no obvious vector. This process may also cause organic material to move within a deposit.

12. Australia has evolved to have, in most regions, a landscape prone to fire and a flora resistant to it. Environmental charcoal is a common component of the organic matter in the landscape. The Pilbara region is an area of weather extremes where charcoal can be swept up in strong winds and re-deposited, or washed around the landscape carried by runoff. This normally occurs as small pieces of charcoal, and in older deposits, such charcoal can be broken and or disintegrate into very small pieces. This is known as 'detrital charcoal'. As indicated above, many early Australian dates have been determined using detrital charcoal, in fact 'almost half' the available ^{14}C data in the country is based on detrital charcoal samples (Allen and O'Connell 2014: 87-8). This approach has been criticised by Allen and O'Connell (2014:88), who admonish "Radiocarbon determinations from detrital charcoal should not be assumed to be automatically associated with the human behaviour being dated". I agree with this conclusion.

OSL dating

Allen and O'Connell 2014

13. The OSL technique dates the last time sand grains were exposed to sunlight. Energy is stored in particular grains, notably quartz and feldspar, not all grains of sand are suitable. The stored energy is dispersed when a grain is

'bleached' by sunlight. If the grain of sand is sheltered from sunlight, the energy accumulates at a known rate. If the grain of sand can be collected and kept from the sun, its energy can be measured if subjected to a light simulating sunlight hitting the earth's surface. The most common OSL technique is 'single grain analysis'. In this method 100 grains are selected from a field sample and subject to individual measurement. Patterns in the results are then interpreted to provide a date as x 'ka' (x thousands of years ago).

14. While error margins for OSL are regularly greater than ^{14}C there are two main benefits to the OSL technique. The first is that the date received is not reliant on the presence of organic material. This has resulted in sites and/or layers that were previously undatable to be able to be dated. Secondly, the substance (energy build up) being dated is accumulating as opposed to decaying. This means that OSL is able to return dates older than the current ^{14}C barrier of ~50,000 years.

15. Signals from 100 sand grains are measured to control for the movement of soils over time by a variety of agents, collectively termed 'bioturbation'. While these include macro level disturbance such as that described above, it also includes smaller agents such as ants, spiders, termites, worms and others that can move small particles and/or created voids that allow water and gravity to also create movement. Where soils have been relatively stable samples will regularly return some individual results that are exceedingly old, and some that are very young, but there is normally a group of results that cluster at a particular date somewhere in the middle of those two extremes. This provides an OSL range. In this way, OSL provides a 'best estimate' of the age of the soil in which cultural material is found.

16. The collection of OSL samples is done via the insertion of a hollow tube into the deposit being dated (Figure 3) – normally at night under red lamps to avoid any sunlight light contamination, although more recently dusk and/or out of direct light conditions have been deemed acceptable (pers obs). The samples are bound up and only opened in the laboratory under red light similar to working in a photographic dark room. The usual size of an OSL tube is ~50mm-80mm in diameter and ~200-250mm long. These tubes are hammered into the side of an excavation and then carefully removed, capturing a core of soil within it. Such a large sample of soil is necessary in environments where the requisite crystals are rare, but need not be so large where they are more common.

Figure 3: OSL Tubes (x3 – 1 large, 2 small) inserted into wall of excavation, awaiting extraction. (Morney Plains 1 quarry, far south west Queensland. Photograph by D.Williams 2021.

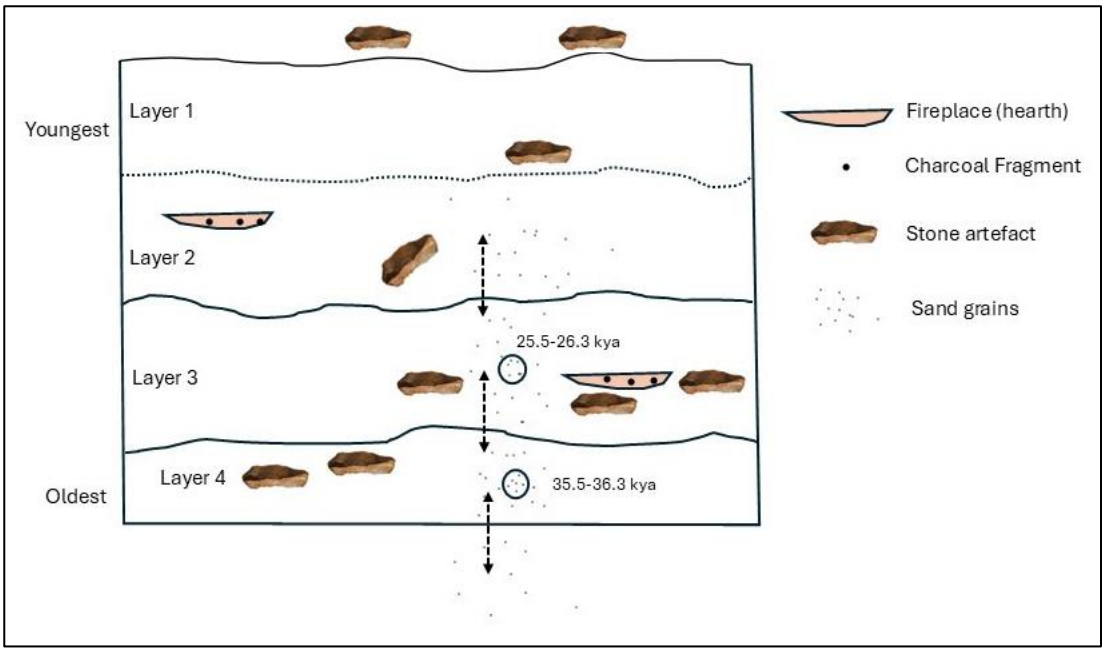

Figure 4: Schematic of archaeological deposit cross section indicating OSL tubes collecting sand grains.

17. The issues of site integrity with regard to artefact provenance described for ^{14}C dating are similar for the application of OSL, with regard to the actual relationship between cultural objects and the soil in which they are found (Figure 4 above).

Annexure 4: Letters of instruction

A&O SHEARMAN

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29 May 2024

Dear Mr Williams

WAD 37 of 2022 - Yindjibarndi Ngurra Aboriginal Corporation RNTBC (ICN 8721) v The State of Western Australia
Engagement as Expert

1. INTRODUCTION

1.1 We act for Fortescue Ltd and its wholly-owned subsidiaries as listed in Annexure A to this letter (collectively, the **FMG Entities**) in relation to a native title compensation claim commenced by Yindjibarndi Ngurra Aboriginal Corporation RNTBC (ICN 8721) (the **Applicant**) in the Federal Court of Australia (WAD 37 of 2022) (the **Proceedings**).

1.2 You are engaged by A&O Shearman to provide your services to act as an independent expert archaeologist in the Proceedings. This letter sets out the terms of the appointment, an explanation of your obligations, and instructions on how to maintain legal professional privilege.

1.3 As this matter proceeds, we will provide you with instructions in relation to the nature and scope of your engagement, and in particular the matters you are requested to address in your capacity as an independent expert.

2. TERMS OF APPOINTMENT

2.1 The terms applicable to this engagement are set out in this Part 2, 'Terms of Appointment'.

2.2 The work that is required to be performed pursuant to this engagement must be undertaken personally by you.

Duties of Skill and Care

2.3 This engagement carries with it a duty to exercise reasonable skill and care in carrying out instructions. In carrying out these instructions, you must comply with any relevant professional codes of practice.

Overriding Duty to the Court

2.4 As you would be aware, an expert witness appointed to prepare and give evidence has a duty to exercise reasonable skill and care in carrying out his instructions and should comply with any relevant professional code of practice. Your overriding duty as an expert is to the court. Your primary function is to assist the court and, in this capacity, you must provide his unbiased opinion as an independent witness in relation to those matters which are within your area of expertise.

Conflict of Interest

2.5 We have informed you of the parties involved in the Proceedings, which are set out in Annexure B to this letter.

2.6 You have confirmed that you have no actual or potential conflict of interest in being engaged by the FMG Entities in these Proceedings, whether financial, personal or professional. By signing a copy of this letter, you agree that:

(a) you are not aware of any circumstance that constitutes a conflict of interest;

(b) you will not enter into any agreement or take any instructions from any other party involved with or in any way related to the Proceedings, without our and the FMG Entities' prior written approval; and

(c) you will formally notify us in writing immediately upon becoming aware of any potential future agreements, positions, responsibilities, engagements or other interests that you are proposing to enter that may conflict with your obligations under this agreement.

Other Terms of Your Appointment

2.7 The terms of your appointment include the following:

(a) you will preserve the confidentiality of all information supplied to us or by the FMG Entities (including information supplied before the date of this letter);

(b) you are representing that you have the relevant qualifications and experience to provide the expert services and expert report/s in relation to this matter;

(c) you will be and will remain available for the duration of this engagement;

(d) you will use reasonable skill and care when carrying out your instructions;

(e) you will assist us in identifying the issues which need to be addressed;

(f) you will deal with all other matters promptly and, where appropriate, within any time limits agreed by us, the FMG Entities or set by the Court;

(g) if directed by the Court, you will participate in a discussion with the expert for the opposing party to identify and discuss the expert issues in the proceedings; and where possible, reach agreed opinions on those issues;

(h) if directed by the Court, you will give evidence in court concurrently with any other expert dealing with the same subject matter in the Proceedings;

(i) you will make yourself available for conferences and other meetings; and

(j) in carrying out instructions, you will implement a system for preserving evidence, such that a third-party expert could undertake a similar exercise at a later stage if required.

2.8 If and when further parties become involved in this matter, we will inform you in order that you can consider any potential conflict in light of the terms of your engagement.

3. EXPERT REPORTS

3.1 Any expert reports prepared must comply with the procedural rules applicable before the Federal Court of Australia (including Expert Evidence Practice Note (GPN-EXPT) (**Practice Note**) and the Harmonised Expert Witness Code of Conduct (**the Code**)). We enclose for your reference the Practice Note, along with the Code (see Annexure C **Tab 1**). By returning a signed copy of this letter you agree to familiarise yourself with the Practice Note and the Code and abide by them during the course of this engagement.

3.2 The content of your report should comply with the requirements in section 3 of the Code and the additional following requirements set out in section 5.2 of the Practice Note:

> *The expert shall:*
>
> *(a) acknowledge in the report that:*
>
> *(i) the expert has read and complied with this practice note and agrees to be bound by it; and*
>
> *(ii) the expert's opinions are based wholly or substantially on specialised knowledge arising from the expert's training, study or experience;*
>
> *(b) identify in the report the questions that the expert was asked to address;*
>
> *(c) sign the report and attach or exhibit to it copies of:*
>
> *(i) documents that record any instructions given to the expert; and*
>
> *(ii) documents and other materials that the expert has been instructed to consider.*
>
> *Where an expert's report refers to photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter, these must be provided to the other parties at the same time as the expert's report.*

3.3 Please let us know immediately if, at any time after you finalise your expert reports, you change your views. It is also important for you to let us know promptly if you need to update your expert reports after they have been served (for example because new evidence has come to light), so we can consider whether a supplementary report should be served.

4. YOUR FEES

4.1 Your fees and reimbursement of any expenses will be set out in separate terms.

5. CONFIDENTIALITY

5.1 We and the FMG Entities intend on providing documents and information regarding the Proceedings to you pursuant to this engagement. We and the FMG Entities will provide these documents and this information to you directly.

5.2 All documents and information that we or the FMG Entities provide to you pursuant to this engagement are deemed confidential. You cannot use the documents or information other than for the purposes of this engagement. This confidentiality is for the FMG Entities' benefit and will therefore apply to written opinions, preparatory documents and facts referred to therein.

5.3 You also hereby acknowledge and accept that either the FMG Entities or A&O Shearman may share work product with third parties with an interest in the matter at their sole discretion, as well as any other experts or advisers retained by the FMG Entities.

5.4 You should not disclose our instructions to anyone without our written consent, unless ordered to do so by the Courts. In light of this confidentiality, you should not, except with our or the FMG Entities' prior written permission, refer to this engagement or publish any article or statement on issues relating to matters that could be traced back to the FMG Entities or this engagement, or to information which is confidential pursuant to this agreement.

5.5 These confidentiality obligations do not apply to information that:

(a) is or becomes publicly available other than as a result of disclosure by you;

(b) we agree was available to you on a non-confidential basis prior to disclosure; or

(c) is required to be disclosed by you by any applicable law or order of any judicial or regulatory body (in which case, to the extent the law permits, you shall immediately notify us prior to disclosure).

6. LEGAL PROFESSIONAL PRIVILEGE

6.1 Legal professional privilege will apply to all oral and written communications between any of us, the FMG Entities and you, prepared for the dominant purpose of us providing legal advice to the FMG Entities or for use in legal proceedings and anticipated legal proceedings.

6.2 Legal professional privilege may be lost where there is conduct inconsistent with maintaining legal professional privilege, such as (but not limited to) not keeping the advice confidential or partially disclosing a privileged communication to a third party.

6.3 In order to minimise the risk that legal professional privilege will be waived, we require the current engagement to be performed in the following manner:

(a) all documents to be provided to you for consideration will be provided by us or on our instructions;

(b) where possible, you will communicate directly with us and direct contact with the FMG Entities will be limited;

(c) any discussions or meetings with the FMG Entities should be attended by a legal adviser of our firm;

(d) you should clearly mark draft reports/opinions with "Draft" and should not sign them;

(e) you should prepare draft reports/opinions only with the intention of communicating them to us, and should not prepare draft reports with the intention only of using them as working documents exclusively for your own internal purposes;

(f) you should only prepare internal working documents to the extent strictly necessary for the purpose of carrying out this engagement; and

(g) your report (and any other written communications) should be addressed to us and marked 'Confidential and Legally Privileged'.

7. GENERAL

7.1 Any variation to this agreement shall be set out in a separate letter of engagement which shall form part of this agreement.

7.2 At any time during the term of this agreement, either party may terminate this agreement for whatever reason upon expiry of 30 days' notice to be given in writing.

7.3 A&O Shearman and its affiliated undertakings (together, the A&O Shearman grouping) maintain a database containing CV details and feedback on our professional contacts in order to develop and improve services to clients, and a know-how database. The information in these databases is not traded with any undertaking outside the A&O Shearman grouping.

7.4 In accepting this engagement, you will be consenting to us storing your CV details and feedback and copying any document or communication from you (or your organisation) in connection with this matter on to these databases. In this regard, please let us know if any of your contact details set out above are incorrect. The A&O Shearman grouping will comply with relevant data protection laws and regulations and will ensure that the databases are secure and, where appropriate, that confidentiality is maintained.

7.5 The terms of this letter override any terms and conditions proposed by you whether before or after the date of this letter, unless specifically agreed by the A&O Shearman grouping. In particular, neither we nor our clients agree to indemnifying you or excluding any of your liability unless we do so expressly after the indemnity or exclusion is specifically drawn to our attention.

8. DOCUMENTS ENCLOSED WITH LETTER

8.1 A list of the documents enclosed with this letter contained at Annexure C.

8.2 To provide you with context regarding the Proceedings and the kind of matters that you may be asked to provide evidence of, we have enclosed the following documents:

(a) at **Tab 2**, the Applicant's further amended points of claim, which sets out the basis of the Applicant's case in the Proceedings. We draw your attention to paragraph [34A] of that document, where the Applicant asserts that:

(i) FMG has applied for approval to excavate or destroy sites of significance to the Yindjibarndi people pursuant to s 16 and s 18 of the *Aboriginal Heritage Act 1972* (WA) (**AH Act**); and

(ii) FMG has destroyed "*numerous significant and important Yindjibarndi sites*";

(b) at **Tab 3**, the Applicant's letter of engagement to Professor Peter Veth and Dr Caroline Bird to act as independent expert archaeologists and prepare an expert report for the Applicant in the Proceedings. This letter is provided for your context only, so that you can understand the

potential scope of the expert report to be provide by Professor Veth and Dr Bird. You should not draw an inferences or make any assumptions of any matters of fact from matters set out in that letter. We will provide you with the expert report in due course when it is served on us; and

(c) at **Tabs 4-62**, copies of the following documents in relation to each of the FMG Entities' applications under s 18 of the AH Act relevant to the Proceedings:

(i) the s 18 application itself, but without copies of the enclosed supporting archaeological or ethnographic surveys;

(ii) the ministerial consent issued in respect of the application under s 18(3) of the AH Act; and

(iii) any compliance reports where required under the terms of the ministerial consent.

8.3 As noted this material is provided for your context only. In due course, and once we have received the expert report from Professor Veth and Dr Bird, we will provide you with formal instructions and supporting material for the preparation of your expert report.

9. CONTACTS

9.1 Mark van Brakel is the partner at Allen & Overy with the overall responsibility for this case. His contact details are:

Mark van Brakel

Telephone: +61 (08) 6315 5970

Email: mark.vanbrakel@aoshearman.com

10. ACCEPTANCE OF ENGAGEMENT

10.1 We would be grateful if you would sign and return the enclosed copy of this letter to confirm your agreement to its terms.

We look forward to working with you.

Yours faithfully

Mark van Brakel
Partner

Encl.

Mr Douglas Williams agrees to be engaged by the FMG Entities, in accordance with the terms set out in this letter.

04 June 2024

.....	.....
Signature	Date

ANNEXURE A

FMG ENTITIES

1. Fortescue Ltd (ACN 002 594 872)
2. FMG Pilbara Pty Ltd (ACN 106 943 828)
3. The Pilbara Infrastructure Pty Ltd (ACN 103 096 340)
4. Pilbara Energy (Generation) Pty Ltd (ACN 631 303 305)
5. Pilbara Energy Company Pty Ltd (ACN 624 732 878)
6. Pilbara Gas Pipeline Pty Ltd (ACN 163 526 207)

ANNEXURE B

PARTIES TO WAD 37 OF 2022

Applicant

1. Yindjibarndi Ngurra Aboriginal Corporation RNTBC

Respondents

2. The State of Western Australia
3. FMG Pilbara Pty Ltd (ACN 106 943 828)
4. The Pilbara Infrastructure Pty Ltd (ACN 103 096 340)
5. Pilbara Energy (Generation) Pty Ltd (ACN 631 303 305)
6. Pilbara Energy Company Pty Ltd (ACN 624 732 878)
7. Pilbara Gas Pipeline Pty Ltd (ACN 163 526 207)
8. Yamatji Marlpa Aboriginal Corporation

ANNEXURE C

INDEX OF DOCUMENTS ENCLOSED WITH THIS BRIEF

No.	Document	Date
1.	Expert Evidence Practice Note (GPN-EXPT)	
Applicant's Materials		
2.	Applicant's further amended points of claim	4 July 2023
3.	Applicant's letter of engagement to Professor Veth and Dr Bird	21 February 2024
s 18 Materials		
4.	Firetail Priority Mining Area: s 18 application	17 March 2011
5.	Firetail Priority Mining Area: Ministerial consent	30 June 2011
6.	Firetail Priority Mining Area: Compliance reports	25 June 2012 – 21 December 2018
7.	Firetail Priority Infrastructure Area: s 18 application	17 March 2011
8.	Firetail Priority Infrastructure Area: Ministerial consent	27 January 2012
9.	Firetail Priority Mining Area: Compliance reports	6 June 2013
10.	Firetail, Conveyors & Trinity TSF: s 18 application	9 September 2011
11.	Firetail, Conveyors & Trinity TSF: Ministerial consent	27 January 2012
12.	Firetail, Conveyors & Trinity TSF: Compliance reports	5 June 2013 – 19 May 2020
13.	Firetail Central, West Rail Loop: s 18 application	7 October 2011
14.	Firetail Central, West Rail Loop: Ministerial consent	27 January 2012
15.	Firetail Central, West Rail Loop: Compliance reports	11 February 2013 – 21 May 2020
16.	Firetail West & Trinity: s 18 application	21 October 2011
17.	Firetail West & Trinity: Ministerial consent	7 February 2012

18.	Firetail West & Trinity: Compliance reports	11 February 2013 – 8 April 2014
19.	Conveyors & Infrastructure Phase 2: s 18 application	9 December 2011
20.	Conveyors & Infrastructure Phase 2: Ministerial consent	2 April 2012
21.	Conveyors & Infrastructure Phase 2: Compliance reports	28 March 2013
22.	Phase 7: s 18 application	24 February 2012
23.	Phase 7: Ministerial consent	24 April 2012
24.	Phase 7: Compliance reports	22 April 2013 – 8 May 2014
25.	Phase 8: s 18 application	27 April 2012
26.	Phase 8: Ministerial consent	25 July 2012
27.	Phase 8: Compliance reports	5 September 2014
28.	Phase 9: s 18 application	23 July 2012
29.	Phase 9: Ministerial consent	22 October 2012
30.	Phase 9: Compliance reports	13 November 2013
31.	Phase 10: s 18 application	14 March 2013
32.	Phase 10: Ministerial consent	28 June 2013
33.	Phase 11: s 18 application	13 March 2013
34.	Phase 11: Ministerial consent	23 August 2013
35.	Phase 12: s 18 application	15 May 2013
36.	Phase 12: Ministerial consent	22 August 2013
37.	Phase 13: s 18 application	15 May 2013
38.	Phase 13: Ministerial consent	23 August 2013
39.	Phase 14: s 18 application	19 May 2013
40.	Phase 14: Ministerial consent	1 October 2013

41.	Phase 15: s 18 application	19 September 2013
42.	Phase 15: Ministerial consent	18 December 2013
43.	Phase 16: s 18 application	12 December 2013
44.	Phase 16: Ministerial consent	1 April 2014
45.	Phase 17: s 18 application	11 March 2014
46.	Phase 17: Ministerial consent	4 July 2014
47.	Phase 18: s 18 application	17 September 2014
48.	Phase 18: Ministerial consent	26 March 2015
49.	Phase 19: s 18 application	14 July 2015
50.	Phase 19: Ministerial consent	27 November 2015
51.	Phase 20: s 18 application	21 July 2016
52.	Phase 20: Ministerial consent	3 November 2016
53.	Phase 21: s 18 application	21 October 2016
54.	Phase 21: 1 February 2017	1 February 2017
55.	Phase 22: s 18 application	21 October 2016
56.	Phase 22: Ministerial consent	1 February 2017
57.	Phase 23: s 18 application	12 December 2017
58.	Phase 23: Ministerial consent	14 January 2019
59.	Phase 24: s 18 application	17 September 2019
60.	Phase 24: Ministerial consent	26 May 2020
61.	Phase 25: s 18 application	10 December 2019
62.	Phase 25: Ministerial consent	26 May 2020

A&O SHEARMAN

STRICTLY PRIVATE & CONFIDENTIAL

Mr Douglas Williams
Access Archaeology

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Our ref 0096539-0000106 SYO1: 2004250470.1

27 August 2024

Dear Mr Williams

WAD 37 of 2022 - Yindjibarndi Ngurra Aboriginal Corporation RNTBC (ICN 8721) v the State of Western Australia & Ors
Instructions to Expert

1. INTRODUCTION

1.1 Thank you for agreeing to act as an independent expert in the above proceedings on behalf of the FMG Respondents, detailed in Annexure 1 to this letter.

1.2 The purpose of this letter is to confirm the instructions that we previously communicated to you orally.

1.3 The materials that we have provided to you are listed in Annexure 2.

2. INSTRUCTIONS

2.1 We refer to the expert archaeological report of Professor Peter Veth and Dr Caroline Bird (**Veth and Bird Report**) filed by YNAC on 10 June 2024 in support of its claim.

2.2 Based on your expertise and training as an archaeologist, please:

(a) consider the Veth and Bird Report and supporting materials; and

(b) prepare a report which sets out your views on the methodology used, analysis, and conclusions reached, in the Veth and Bird Report, including the reasons why you agree or disagree with the methodology used, analysis, and conclusions reached, in the Veth and Bird Report.

3. TIMING

3.1 Pursuant to the orders of the Court, the FMG Respondents are required to file their responsive expert reports with the Court on or before 30 August 2024.

Yours sincerely

Allen Overy Shearman Sterling

Mark van Brakel
Partner

Annexure 1 – FMG Respondents

1. FMG Pilbara Pty Ltd (ACN 106 943 828)
2. The Pilbara Infrastructure Pty Ltd (ACN 103 096 340)
3. Pilbara Energy (Generation) Pty Ltd (ACN 631 303 305)
4. Pilbara Energy Company Pty Ltd (ACN 624 732 878)
5. Pilbara Gas Pipeline Pty Ltd (ACN 163 526 207)

Annexure 2 – Materials provided to expert

No.	Document	Date
1.	Expert Evidence Practice Note (GPN-EXPT)	
Applicant's Materials		
2.	Applicant's further amended points of claim	4 July 2023
3.	Applicant's letter of engagement to Professor Veth and Dr Bird	21 February 2024
4.	Expert report of Professor Veth and Dr Bird	10 June 2024
Heritage materials		
Referenced by Veth and Bird		
5.	All reports identified in Table 1 of the Veth and Bird Report.	
Other heritage reports		
6.	2018.07.xx - Salvage report (addendum) [FMG.018.001.0653]	
7.	2009.07.xx - Site avoidance survey [B.05.012]	
8.	2011.10.07 - PA site identification [FMG.058.003.0001]	
9.	2011.10.20 - s 16 supporting report [FMG.002.001.3331]	
10.	2011.10.21 - s 16 Application [FMG.002.001.3335]	
11.	2011.11.11 - s 16 supporting report [FMG.002.001.3321]	
12.	2012.01.20 - s 16 permit 503 [B.02.004]	
13.	2012.05.25 - Site identification report [B.05.041]	
14.	2012.05.xx - Ethno survey [B.05.039]	
15.	2012.06.07 - Letter from Registrar of Sites [FMG.002.001.0998]	
16.	2012.06.15 - Alpha Archaeology excavation report [B.05.042]	
17.	2012.06.18 - Letter from FMG [FMG.002.001.0999]	
18.	2012.07.xx - ArchaeAus peer review [FMG.061.017.4008]	

19.	2012.10.11 - Site identification report (1 of 4) [FMG.058.004.0003]
20.	2012.10.11 - Site identification report (2 of 4) [FMG.058.004.0004]
21.	2012.10.11 - Site identification report (3 of 4) [FMG.058.004.0005]
22.	2012.10.11 - Site identification report (4 of 4) [FMG.058.004.0006]
23.	2012.10.23 - s 16 application [FMG.002.001.3292]
24.	2012.10.xx - s 16 research plan [FMG.002.001.3289]
25.	2013.01.18 - s 16 permit [B.02.008]
26.	2013.01.21 - s 16 permit granted [B.02.008]
27.	2013.04.14 - TRYINPAD13-03 HISF [FMG.002.001.2951]
28.	2013.09.19 - Phase 15 s 18 notice [B.03.015.01]
29.	2013.12.12 - s 18 application (Phase 18) [B.03.016.01]
30.	2013.12.18 - Ministerial Consent [B.03.015.02]
31.	2013.12.xx - s 16 investigation results (1 of 3) [B.05.061 p 1-122]
32.	2013.12.xx - s 16 investigation results (2 of 3) [B.05.061 p 123-280]
33.	2013.12.xx - s 16 investigation results (3 of 3) [B.05.061 p 281-326]
34.	2014.02.xx - Excavation report (Vol 2) [FMG.002.001.2090]
35.	2014.04.01 - Ministerial consent [B.03.016.02]
36.	2014.07.xx - Site identification report [FMG.058.003.0020]
37.	2014.09.10 - Phase 18 s 18 notice [B.03.018.01]
38.	2015.03.26 - Ministerial Consent [B.03.018.07]
39.	2015.05.xx - Salvage report [FMG.058.005.0016]
40.	2015.09.xx - Salvage report [FMG.002.001.0689]
41.	2015.11.xx - Excavation report [FMG.058.005.0023]

42.	2015.11.xx - Salvage report [FMG.002.001.2100]	
43.	2016.02.xx - Addendum salvage report [FMG.058.005.0002]	
44.	2016.10.26 - Phase 21 s 18 notice [B.03.021.01]	
45.	2016.11.01 - L to FMG [FMG.002.001.0053]	
46.	2017.02.01 - Ministerial Consent [B.03.021.02]	
47.	2017.11.xx - PA salvage [FMG.058.003.0063]	
48.	2018.02.xx - Survey Report [FMG.018.001.0684]	
49.	2018.04.xx - Salvage report [FMG.083.001.0001]	
Section 18 of the Aboriginal Heritage Act Materials		
50.	Firetail Priority Mining Area: s 18 application [B.03.001.01]	17 March 2011
51.	Firetail Priority Mining Area: Ministerial consent [B.03.001.04]	30 June 2011
52.	Firetail Priority Mining Area: Compliance reports [B.03.001.10]	25 June 2012 – 21 December 2018
53.	Firetail Priority Infrastructure Area: s 18 application [B.03.002.01]	17 March 2011
54.	Firetail Priority Infrastructure Area: Ministerial consent [B.03.002.02]	27 January 2012
55.	Firetail Priority Mining Area: Compliance reports [B.03.002.03]	6 June 2013
56.	Firetail, Conveyors & Trinity TSF: s 18 application [B.03.003.01]	9 September 2011
57.	Firetail, Conveyors & Trinity TSF: Ministerial consent [B.03.003.02]	27 January 2012
58.	Firetail, Conveyors & Trinity TSF: Compliance reports [B.03.003.03]	5 June 2013 – 19 May 2020
59.	Firetail Central, West Rail Loop: s 18 application [B.03.004.01]	7 October 2011
60.	Firetail Central, West Rail Loop: Ministerial consent [B.03.004.02]	27 January 2012
61.	Firetail Central, West Rail Loop: Compliance reports [B.03.004.03]	11 February 2013 – 21 May 2020

62.	Firetail West & Trinity: s 18 application [B.03.005.01]	21 October 2011
63.	Firetail West & Trinity: Ministerial consent [B.03.005.02]	7 February 2012
64.	Firetail West & Trinity: Compliance reports [B.03.005.05]	11 February 2013 – 8 April 2014
65.	Conveyors & Infrastructure Phase 2: s 18 application [B.03.006.01]	9 December 2011
66.	Conveyors & Infrastructure Phase 2: Ministerial consent [B.03.006.02]	2 April 2012
67.	Conveyors & Infrastructure Phase 2: Compliance reports [B.03.006.04]	28 March 2013
68.	Phase 7: s 18 application [B.03.007.01]	24 February 2012
69.	Phase 7: Ministerial consent [B.03.007.02]	24 April 2012
70.	Phase 7: Compliance reports [B.03.007.03]	22 April 2013 – 8 May 2014
71.	Phase 8: s 18 application [B.03.008.01]	27 April 2012
72.	Phase 8: Ministerial consent [B.03.008.02]	25 July 2012
73.	Phase 8: Compliance reports [B.03.008.03]	5 September 2014
74.	Phase 9: s 18 application [B.03.009.01]	23 July 2012
75.	Phase 9: Ministerial consent [B.03.009.04]	22 October 2012
76.	Phase 9: Compliance reports [B.03.009.05]	13 November 2013
77.	Phase 10: s 18 application [B.03.010.01]	14 March 2013
78.	Phase 10: Ministerial consent [B.03.010.03]	28 June 2013
79.	Phase 11: s 18 application [B.03.011.01]	13 March 2013
80.	Phase 11: Ministerial consent [B.03.011.03]	23 August 2013
81.	Phase 12: s 18 application [B.03.012.01]	15 May 2013
82.	Phase 12: Ministerial consent [B.03.012.02]	22 August 2013
83.	Phase 13: s 18 application [B.03.013.01]	15 May 2013

84.	Phase 13: Ministerial consent [B.03.013.02]	23 August 2013
85.	Phase 14: s 18 application [B.03.014.01]	19 May 2013
86.	Phase 14: Ministerial consent [B.03.014.02]	1 October 2013
87.	Phase 15: s 18 application [B.03.015.01]	19 September 2013
88.	Phase 15: Ministerial consent [B.03.015.02]	18 December 2013
89.	Phase 16: s 18 application [B.03.016.01]	12 December 2013
90.	Phase 16: Ministerial consent [B.03.016.02]	1 April 2014
91.	Phase 17: s 18 application [B.03.017.01]	11 March 2014
92.	Phase 17: Ministerial consent [B.03.017.02]	4 July 2014
93.	Phase 18: s 18 application [B.03.018.01]	17 September 2014
94.	Phase 18: Ministerial consent [B.03.018.07]	26 March 2015
95.	Phase 19: s 18 application [B.03.019.01]	14 July 2015
96.	Phase 19: Ministerial consent [B.03.019.02]	27 November 2015
97.	Phase 20: s 18 application [B.03.020.01]	21 July 2016
98.	Phase 20: Ministerial consent [B.03.020.02]	3 November 2016
99.	Phase 21: s 18 application [B.03.021.01]	21 October 2016
100.	Phase 21: Ministerial consent [B.03.021.02]	1 February 2017
101.	Phase 22: s 18 application [B.03.022.01]	21 October 2016
102.	Phase 22: Ministerial consent [B.03.022.02]	1 February 2017
103.	Phase 23: s 18 application [B.03.023.01]	12 December 2017
104.	Phase 23: Ministerial consent [B.03.023.05]	14 January 2019
105.	Phase 24: s 18 application [B.03.024.01]	17 September 2019
106.	Phase 24: Ministerial consent [B.03.024.05]	26 May 2020

107.	Phase 25: s 18 application [B.03.025.01]	10 December 2019
108.	Phase 25: Ministerial consent [B.03.025.06]	26 May 2020
Maps and heritage database		
109.	E.02.001 - First Affidavit of Sean Costello	30 June 2023
110.	Statement of Agreed Facts (Maps)	2 February 2024
111.	Bundle of Agreed Maps: Map 1 - Enlargements 1-14 and Heritage overview map, Maps 2(a)-(g), Map 3 - Regional Overview Map, Map 4 - Warrie Exhibit A Map, Maps 5(a)-(e), Map 6 - Tenement Overview, Key Infrastructure and Key Mine Areas	
112.	WAD37_2022_Bdy_asat_20230123	
113.	FMG Heritage Database: B.06.001 - FMG_Archaeological_Heritage_Places.csv, B.06.002 - FMG_Deemed_NOT_Arch_Site.csv, B.06.003 - FMG_Deemed_NOT_Ethno_Site.csv, B.06.004 - FMG_Ethnographic_Heritage_Places.csv, B.06.005 - FMG_Heritage_Place_Buffers.csv, B.06.006 - FMG_Heritage_Restriction_Zones.csv, B.06.007 - FMG_Salvaged_Heritage_Places.csv, B.06.008 - FMG_Salvaged_Heritage_Restriction_Zones.csv	
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115.	Bird, C. and J. Rhoads. 2015. Rock shelters as indicators of mobility patterns in the inland Pilbara. *Archaeology in Oceania*, 50: 37–46	
116.	Bird, C. and J. Rhoads. 2020. *Crafting Country: Aboriginal Archaeology in the Eastern Chichester Range, North-West Australia.* Tom Austen Brown Studies in Australasian Archaeology. Sydney University Press, Sydney (extract – Chapters 1 and 5) pp. 1-54; 169-227	
117.	Bradshaw, C.J. A., Norman, K., Ulm, S.G., Williams, A.N., Clarkson, C., Chadoeuf, J., Lin, S.C., Jacobs, Z., Roberts, R.G., Bird, M.I., Weyrich, L.S., Haberle, S.G., O'Connor, S., Llamas, B., Cohen, T.J., Friedrich, T., Veth, P., Leavesley, M., and F. Saltré 2021 Stochastic models support rapid early peopling of Late Pleistocene Sahul. *Nature Communications*, 12(1): 2440–2422	
118.	Cadd, H. et al. 2021. A continental perspective on the timing of environmental change during the last glacial stage in Australia. *Quaternary Research*, 102: 5–23	
119.	Clarkson, C., Norman, K., O'Connor, S., Balme, J., Veth, P. and C. Shipton. 2022. Australia's First People: Oldest sites and early culture. In McNiven, I. and B. David (eds) *The Oxford Handbook of the Archaeology of Indigenous Australia and New Guinea.* Oxford University Press: (extract – Chapter 9) pp. 241-272	

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121.	Curtis, B., Pietsch, T. and Olley, J. 2014. A relative date for Pilbara petroglyphs. Paper presented at the Australian Archaeological Association and the Australian Society for Historical Archaeology joint conference, Cairns 2014. In S. Ulm, G. Mate and J. Jerbic (eds) 2014. *Culture, Climate, Change: Archaeology in the Tropics: Conference Handbook.* Cairns, QLD: AAA Inc. and ASHA Inc., p.81
122.	Ditchfield, K. and W. Reynen 2022. Extracting New Information from Old Stones: An Analysis of Three Quarries in the Semi-Arid Pilbara Region, Northwest Australia. *Australian Archaeology*,88(3), :282-298 DOI: 10.1080/03122417.2022.209852
123.	Ditchfield, K., Huntley, J., Ward, I., Webb, J., Doelman, T. and R. Kurpiel 2023. Sourcing stone and ochre artefacts: a review of why it matters in Australia (and beyond). In C. A. Speer, G. Barrientos and R. Parish (eds), *Current studies in lithic sourcing and identification:* 52-67.
124.	Dortch, J., Balme, J., McDonald, J., Morse, K., O'Connor, S. and P. Veth. 2019. Settling the West: 50,000 years in a changing land. *Journal of the Royal Society of Western Australia*, 102: 30–44
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