Introduction and background to the project conceptualization

Over the past two decades, Indigenous Australian archaeology has experienced an important shift in the way the discipline is approached and practiced. Today, both research and cultural heritage management projects involve much greater involvement of, and control by, the Indigenous communities whose very heritage is at the centre of any such studies. As noted in the rationale for the ‘Archaeology in the Indigenous Community’ session at the 2003 Australian Archaeological Association Annual Conference,

Issues related to control of heritage and conflicting views of the past have long had currency in academic debate and non-academic practice, but the actual results of Indigenous community-driven research and its meaning and impact in the Indigenous community are not as commonly discussed. (Richards and Dugay-Grist 2003).

The purpose of this paper is therefore to present an overview of the conceptualization, results and repercussions of archaeological investigations by the authors into open hearth sites in northern Queensland (QLD).

Throughout the 1990s, Wanamara community members had been informally requesting that the Environmental Protection Authority (EPA) — the government agency responsible for administering heritage legislation in Queensland at that time — send someone out to document the archaeological sites in their traditional country near Richmond in northwest Queensland. Unfortunately, despite strong interest on behalf of EPA Northern Regions officers, staffing and other logistical constraints meant that these requests could not be widely accommodated, although wherever possible staff visited community members at Richmond and maintained a strong dialogue with them in relation to heritage issues. Early in 2001, one of the authors (LW) arrived in Townsville to take up a temporary lectureship in archaeology at James Cook University. Upon her arrival, Wallis expressed the desire to develop a locally-based research project and started investigating possible options. EPA staff put Wallis in touch with Helen Smith and John Keyes of the Woolgar Valley Aboriginal Corporation (WVAC), and these parties commenced discussions about potential projects in Wanamara country. Given the limited archaeological research undertaken in the area (excepting occasional surveys in advance of development), there seemed to be countless
possibilities and Helen Smith suggested a number of projects whose results would be of particular community interest and value (the reasons for the community interest are expanded upon later in this paper). One such project involved an excavation and dating program of hearth sites, as a follow-up to a previous cultural heritage survey undertaken by Crothers in 1997. While Crothers (1997) had originally documented the presence of many hundreds of hearths around Richmond, her findings were met with little interest amongst the local non-Indigenous community who, as discussed in more detail below, seemed unwilling to recognize their significance. In the months following the initial discussion between Wallis and WVAC representatives, the parties developed a grant proposal for the hearth dating project which was submitted to AIATSIS in January 2002, with funding being awarded later that year.

The study area

As shown in Figure 1, the study area is centered on the small town of Richmond in inland northwest Queensland, approximately halfway between Mount Isa and Townsville adjacent to the Flinders River. William Landsborough was one of the first Europeans to pass through this area during his 1861 attempt to find the lost explorers Burke and Wills. Following his reports of rich grazing country, the Richmond township (under the name Richmond Downs) was established during the 1860s (Palmer 1903:127). As a town Richmond didn’t prosper until the late 1880s when gold was discovered on the Woolgar field about 110 km to the north (Denaro et al. 2001). The sinking of numerous bores into the underlying Great Artesian Basin and the arrival of a rail link in the early 1900s served to further open up the country for pastoral use, although it never really prospered. Today Richmond boasts only a few hundred residents, with the primary commercial activities being cattle and sheep grazing.

Although there are some ethnohistorical and ethnographic accounts of north Queensland Aboriginal groups (e.g. Beddoe 1878; Bennett 1927; Palmer 1884), there are very few that relate specifically to the Richmond area; the most relevant text is probably Wright’s (1988) ‘baseline’ ethnographic study for the Leichhardt-Gilbert region. The lack of information must in some part be attributed to a combination of murder and disease which resulted in the decimation of the local Aboriginal population (Gray 1913; Loos 1982; Morwood 1990; Reynolds 1978). Wright (1988:8) argued that within just a couple of decades of European arrival the local population had been halved. While there is some contradiction amongst the available sources as to exactly which tribal group occupied which area, sufficient sources exist to indicate the Wanamara and/or Yirandhali lived around Richmond (Breen 1981; Horton 1994; MacGillivray 1886; Palmer 1884, 1903; Roth 1897; Tindale 1974).

Climatically, this area lies within the semi-arid tropical region, characterised by a short wet season and a long cool, dry season (Slatyer 1964). Average rainfall is 400-600 mm/year, most of which occurs between December and March; droughts are common. Temperatures are high almost all year round, averaging above 30ºC during summer and 17ºC in winter. Evaporation is also very high, typically exceeding 2000 mm/year. The main watercourse is the Flinders River, which drains northwest into the Gulf of Carpentaria near Normanton and is supported by a vast network of smaller, less permanent streams, creeks and drainage lines. River flow is typically intermittent owing to the strongly seasonal rainfall pattern, which regularly causes summer flooding. In contrast, during winter water flow is minimal (often sub-surface) and will sometimes cease entirely.

The area is categorized by Perry (1964:16) as a broad belt of gently flat to undulating plains of low relief, primarily between 180 and 200 m above sea level. As Vine (1970) notes, a long history of sedimentation since the Permian has been the main determinant of the local geology. This sedimentation primarily took place in shallow marine seas which stretched across the region until the Cretaceous period. Indeed, the area is well-known today to palaeontologists and amateur fossil hunters for its exposed fossil-bearing strata. At depth the Richmond plains are underlain by sandstones, which comprise the Great Artesian aquifer; in turn these are underlain by pre-Cambrian metamorphic rocks (Perry 1964:19). Above the sandstones lie shales and siltstones, and, in the Flinders River area, Allaru Mudstone.
include watercourses, although some other common species are eucalypts, which are typically found along S. eugenioides, A. leucotricha, A. elymoides, and A. squarrosa (Bull Mitchell). Consequently, Stanton and Morgan (1977) have dubbed the area the Mitchell Grass Downs (MGD) biogeographic zone. Despite the dominance of the Mitchell grasses, the local species composition can vary substantially within a short time, and other grasses to be found on the Downs include Aristida latifolia (Feather-top Grass), Iseilema spp. (Flinders Grass), Dicanthium spp. (Queensland Bluegrass), Themeda triandra (Kangaroo Grass), Triodia michellii and T. pungens (spinifex), Eragrostis spp., Panicum spp. and Cenchrus ciliaris (introduced Buffel Grass). The most prominent trees in the MGD are eucalypts, which are typically found along watercourses, although some other common species include Atalaya hemiglauca (Whitewood), Lysiphyllum spp. (Bauhinia), Grevillea and Hakea. Also scattered across the region are numerous small shrubs, which are also often concentrated around watercourses, in low-lying areas and/or heavily disturbed/overgrazed patches. These shrubs typically include Acacia farnesiana (Prickly Mimosa), Aerva javanica (introduced Snow Bush), Crotalaria spp. (rattlepods), Sesbania cannabina (Pea Bush) and Salsola koli (Roly Poly). Acacia nilotica (Prickly Acacia) and Parkinsonia aculeata (Parkinsonia) are two introduced, highly noxious shrubs that have also become extremely well established in some areas of the plains, causing serious weed control issues.

The lands around Richmond support a variety of animals, including the ubiquitous Red and Eastern Grey Kangaroos (Macropus rufus and M. giganteus). A number of smaller creatures are also present, including lizards (Varanidae, Agamidae and Scincidae families), snakes (Boidae family), dingo (Canis familiaris), wallabies (Petrogale sp. and Macropus sp.), possums (Trichosurus sp.), bandicoots (Isoodon sp.), rats (Muridae family), sugar-gliders (Petauridae family) and flying foxes (Pteropus sp.). A great many bird species are also present, and these include emus (Dromaius novaehollandiae), bustards (Otidae family), herons (Ardeidae family), kites (Accipitridae family), wedge-tailed eagles (Aquila audax), doves (Columbidae family) and ducks (Anatidae family). Some of the major waterholes also support a range of freshwater fish species, yabbies (Parastacidae family) and mussel shells (Velestinio sp.). Almost all of these animals would have been exploited as food sources by local Aboriginal groups (Wright 1988). Introduced species include cattle and sheep, with rabbits, cats and pigs all representing a problematic feral population. Cattle in particular have had a negative impact on archaeological sites in the area, as a result of trampling and by causing increased erosion.

**Previous archaeological research in the region**

Archaeological sites in the broad region were first described, albeit not in great detail, in the early 1900s by observers such as Chisholm (1901, 1903), Gray (1913), and then later by Davidson (1936) and Gresser (1962, 1964). Despite this early awareness, contemporary archaeologists have been slow to investigate the region, and sustained research-based projects in the MGD have been minimal.

Some of the earliest research in inland northern Queensland was undertaken by Morwood (1984; Morwood and Godwin 1982) who recorded the presence of numerous sites in the region (primarily rock art/occupation sites, along with some axe grinding grooves, hearths and open artefact scatters). These initial surveys were followed by more detailed investigations, including a number of excavations in the area immediately north of Hughenden (Morwood 1990, 1992). Excavations at the Mickey Springs 34 site revealed occupation dated to about 10,000 BP (9,920±250 bp), with three other shelters in the area (Mickey Springs 33 and 31, and Quippenburra Cave) dating variably to the mid- to late Holocene. A date of 15,270±210 BP from the Cuckadoo Shelter in the Selwyn Ranges somewhat further afield, also provided further evidence for the occupation of upland areas in the inland northwest since at least the terminal Pleistocene (Davidson et al. 1989, 1993). Based on his results Morwood suggested a number of changes in Aboriginal occupation in the region during the mid- to late Holocene, including more regular use of sites, a broader range of activities (including the introduction of seed-grinding technology), a shift in rock art styles and an increase in local population and productivity.

In contrast to the research situation, a great many cultural heritage management-related surveys have recently been undertaken in the MGD (e.g. Bird 1997, 1998, 1999, 2000; Crothers 1997; Davidson and Fife 1994; Davidson et al. 1991; Spencer 1994). Most of these surveys have had strong community involvement, enabling development of appropriate field skills and greater awareness of broader archaeological issues and techniques, as well as providing desperately needed employment opportunities for community members. Prior to the increase in such surveys, Border and Rowland (1990) assessed the archaeological resources of the region. At the time of their study, only 102 Aboriginal sites were known in the MGD, at a density...
of one site per 2,574 sq km — a figure they considered highly unlikely to accurately reflect the regional archaeological record and more likely to be a reflection of the limited work undertaken (Border and Rowland 1990:47). Approximately half of the known sites were open artefact scatters, with the remainder including small numbers of painting and engraving sites, burials, stone circles and arrangements, scarred trees, fish traps, grinding grooves, hearths, quarries and shell middens. Border and Rowland (1990:90) hypothesized that in the past Aboriginal people maintained a semi-sedentary existence in large base camps along the major waterholes, with the period of greatest mobility occurring during winter. The extensive exchange networks documented by researchers such as Roth (1897) as occurring in the west of the region were argued to probably have spanned the entire MGD. Most recently, using the existing data from the EPA Indigenous sites database and unpublished consultancy reports, Ridges (2003) undertook spatial analyses of archaeological sites from an area in northwest central Queensland focused around Mount Isa and Cloncurry. His results demonstrated that several levels of variation can be identified in the region, thereby providing new insight into the complexity of the regional archaeological record.

Despite the local complexity noted by Ridges (2003), regional overviews (e.g. Border 1992) suggest the following broad-scale patterns of site types and distribution:

- the majority of sites comprise low density scatters;
- silcrete is the dominant raw material used for artefact manufacture, followed by chert, with evidence of the minor use of basalt, quartz and quartzite;
- assemblages are dominated by unretouched flakes and cores, with few formal tools;
- most sites are situated either on elevated ridges or creek terraces near major watercourses;
- and, scatters are regularly associated with hearth structures, which are typically present as deflated areas of burnt mudstone (which appear reddish in colour).

Ethnographic descriptions of hearth use

There are numerous descriptions of Aboriginal cooking methods in the literature which explain the process which could have served to create a typical hearth feature such as has been commonly recorded in association with artefact scatters throughout the MGD. For example, Palmer (1884:285) describes Aboriginal cooking methods from an area immediately to the west of Richmond:

> They roast all their food, or bake it in the ashes, making hollows in the ground and heating stones therein, in which the game is placed and covered completely with hot ashes. For fish and small game leaves are frequently places on the stones, and also over the game before covering it with the ashes. Stones are carried often from the bed of a creek or river some distance to use for heating the ovens, and if no stones are available, ant beds are broken up in small square pieces and made to answer.

Roth (1897:104.5) also provides a similar description of the use of heat-retainer hearths throughout northwest central Queensland:

> A pretty large fire is made and a number of bigghish-sized stones rendered as hot as possible; at the same time a hole is dug alongside and some of these hot stones put in to line it. The 'meat', whatever it is, is now put in and covered with another layer of hot stones followed by a 'hide' of some sort, and a final covering of mud, the whole constituting a kind of primitive bake-house.

And finally Lumholtz (1889:319-20) describes a similar cooking process from central Queensland:

> First a hole is made in the ground about a foot deep, and in it a great fire is built. Over the fire a few stones about twice the size of a man's fist are placed. When the stones have become red-hot, they are laid aside and the rest of the fire is cleared away. Then a number of the stones are put down into the hole, and over them are laid fresh green leaves...Upon these the meat is placed, and is covered with leaves and with the rest of the hot stones; the dug-out earth is then spread over the whole, which has the appearance of an ant-hill.

Interestingly, during a recent survey for a proposed gas pipeline route, Phillip Hughes observed Aboriginal members of the survey team using similar cooking techniques as those described above to prepare their meals (Kinhill Engineers 1996).

Previous studies of Aboriginal hearth sites

Open hearth sites are not restricted to the MGD, being relatively common throughout the whole of arid and semi-arid eastern Australia at least. However, despite their abundance and obvious dating potential, with a few limited exceptions the investigation of these sites has been afforded little attention. Fanning and Holdaway (2001:101) have suggested the reason for this might be the unfounded belief that such sites are of lesser quality than rock shelters (the latter with their deep sedimentary deposits or spectacular art panels). However, the sheer quantities of hearths, often in locations that simply do not contain more prestigious site types, provides a valuable opportunity to explore local and regional histories of Aboriginal use of the wider Australian landscape.

While the inherent nature of hearths suggests such features of any great antiquity would be unlikely to be
found in the archaeological record, there are some notable Pleistocene-aged exceptions such as from Willandra Lakes (Allen 1998; Bowler et al. 1970; Barbetti and Allen 1972; Barbetti and Polach 1973), the Strzelecki Desert (Hughes and Lampert 1980; Smith et al. 1991) and the Lower Cooper Creek region (Veth et al. 1990). Nevertheless, recent investigations of hearths have demonstrated these types of sites are more typically Holocene in age. Robins (1996) excavated a small number of hearths in the semi-arid Currawinya Lakes region of southwest Queensland, all of which were radiocarbon dated to within the last 1500 years. Likewise, in the most comprehensive Australian hearth investigation program to date, Holdaway and colleagues (Fanning and Holdaway 2001; Holdaway et al. 1998, 2002; Reeves 1997) excavated 72 such sites in the Sturt National Park region of northwestern NSW. Of these, 28 produced sufficient charcoal to obtain radiocarbon dates, all of which proved to be less than 1700 years old, with an apparent cessation of hearth construction of 200-400 years between 800 and 1100 years BP.

Closer to the Richmond study area, during the 1980s Morwood (1984) undertook a survey of a proposed dam site on the upper Flinders River resulting in the recording of numerous campsites which were in some cases associated with hearths. A small test excavation of one of the hearths was conducted, but although Morwood (1984:29) reported a charcoal sample had been submitted for dating, we have found no subsequent report of the result and attempts to obtain this information from Morwood directly have been unsuccessful. In other surveys carried out in the MGD southeast of Mount Isa, hearths have also been reported (ArchaeAus 1997; Kinhill Engineers 1996). As there was some uncertainty—outside of the archaeological and Indigenous community—about their status, a number of these features were excavated by Shawcross and Hughes (1997), which confirmed ‘beyond reasonable doubt’ that they were indeed Aboriginal in origin. Dating of one of the features produced an uncalibrated radiocarbon age of 860±150 BP (Wk-5799; Shawcross and Hughes 1997:13), which as far as we have been able to ascertain represents the first such dated site in the wider Richmond region.

Richmond hearths

In the first report specific to the Richmond area, Spencer (1994) recorded at least 40 hearths along the margins of the Flinders River near the town hospital. The structures were described as being relatively uniform in appearance, comprising of large piles of ‘fist-sized’ heat retainer stones that typically had a red discoloration, often with charcoal apparently weathering from the structure (see Figure 2). Although none were excavated, their surface characteristics left Spencer (1994:55) with few doubts that they had been ‘made and used by Aboriginal people’ in a manner consistent with the ethnographic sources.

Following Spencer, Crothers (1997) undertook a further hearth documentation survey with members of the Wanamara community, funded by the Central Queensland Aboriginal Land Council (CQLC). The survey team sampled a number of areas along creeks within 20 km of Richmond, recording 243 hearths at a density of approximately 30 sites/linear km. On a less positive note, a great percentage of the hearths were in a poor state of preservation as a result of cattle damage, erosion and weathering.

Both Spencer (1994) and Crothers (1997) considered the hearths as possessing significant research potential, particularly in terms of their ability to produce a chronology for Aboriginal occupation of the region, and called for their preservation as sites of Aboriginal significance. Indeed, during the current project, Aboriginal team members regularly stated that they hold these sites in high regard (as they had done so on many occasions in the past). While not necessarily as visually impressive as a rock art panel, for example, these sites have significance to the Wanamara and Yirandhali people as physical evidence of their ancestors’ occupation of this country, and they retain a strong desire to protect and conserve such sites: ‘It puts a lump in your throat to see all these details in one little rock that tells you about our people’ (Helen Smith pers. com.).

Despite the earlier reports’ recommendations and Aboriginal significance assessments, immediately prior to commencement of the current hearth investigation program in August 2002, the Richmond Shire Council commenced construction of a dam behind the Richmond hospital along the Flinders River where many hearths were present; we had intended excavating a sample of these for our project. Under the Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987 all items of the Queensland Estate (including Aboriginal sites) are protected from destruction, damage, defacement, excavation, exposure, concealment or interference (section 56) and theoretically, the Integrated Planning Act 1997 could have triggered a heritage assessment prior to the dam development.
However, discussions with the EPA revealed that the Council had planned the dam to be of such a size and capacity (and as recreational rather than commercial) that meant it did not trigger the assessment process and also did not require the Council to confer with the EPA Cultural Heritage Branch for approval (Andrew Border pers. com.). Hence, no cultural heritage survey was undertaken as part of the approval process, no permits for excavation or destruction were issued (even though these were required regardless of the size or nature of the dam) and no materials were salvaged prior to construction commencing. Informal questioning of various parties revealed that the extent of Aboriginal consultation had apparently comprised a solitary and very brief on-site visit between Council representatives, CQLC representatives and Helen Smith during the early planning stages during which the general impact area was pointed out and informal verbal approval given upon the understanding that the hearths would not be disturbed.

Unfortunately, as the dam building progressed it became clear to us that, despite earlier assurances, numerous hearths and associated artefact scatters were within the construction zone and no attempts had been made to fence the sites off to prevent their disturbance. The response to our advising the Council that Aboriginal sites were being destroyed without permission was to place stakes in the middle of two hearths that had already been run over by bulldozers and their associated scatters destroyed (Figure 3). Despite our obvious concern we were met with general disbelief about the nature of the sites; local town residents provided various explanations of the hearth origins including that they were Afghan campsites, Chinese campsites, or areas where the tar was boiled up by Europeans for road construction; no-one was seriously prepared to entertain the possibility that they were sites of Aboriginal significance, or at least no-one was prepared to publicly acknowledge this.

Helen Smith and the other members of the WVAC were strongly aware that radiocarbon dating could provide conclusive evidence of the Aboriginal origins of the widespread features, which had been one of their motivating factors in proposing this particular research project. Subsequently, the research team carried on with the planned hearth investigations in nearby areas, and in a conciliatory gesture the Council granted permission for us to include the two hearths remaining in the development area within the research program.

Aims and methodology

While Crothers (1997:27) had advocated the need to conduct additional surveys in the wider region (particularly on adjacent pastoral properties) as part of future hearth studies, time and property access constraints did not permit such an approach during the 2002 project. Instead, it was decided to structure our investigations in order to accommodate Crothers’ other primary recommendation, which was the pursuance of an excavation and dating program. Hence, at its broadest level the project was designed to investigate in greater detail the nature of the hearth structures. In order to achieve this, the following more specific aims were formulated:

• to record in detail the surface expression of a sample of hearths;
• to examine in greater detail the nature of surface artefact scatters associated with the hearths;
• to assess construction methods and sub-surface nature of a sample of hearths;
• and, to assess the chronology of hearth construction.

Initially, a short reconnaissance fieldtrip was undertaken by the authors accompanied by Rosharni Smith, who had also been involved in the earlier recording program. This involved visiting the four survey areas of Crothers (1997) to develop a familiarity with the sites and landscape and thereby determine an appropriate sampling and excavation technique. Selection of individual hearths for detailed recording and excavation was on a targeted, rather than random basis (although it was recognised that this might introduce an element of bias into the study). Those selected for excavation (with the exceptions of the aforementioned two in the dam development area) met the following general criteria:

• surficially they appeared reasonably compact, rather than highly dispersed and appeared to have suffered minimal surface damage or disturbance caused by anthropogenic activities, stock trampling or erosion;
• where possible they had charcoal fragments or darkly stained sediment present (either on the surface or immediately underlying heat retainer stones);
• occasionally freshwater mussel shell fragments were also present on the surface;
• and, in some cases they were associated with extensive stone artefact scatters.

Detailed recording and excavation was carried out by teams of archaeologists, students from James Cook and...
The Australian National Universities and Aboriginal community members; for the latter the investigations provided a valuable training exercise in basic recording and excavation techniques for which cultural heritage surveys rarely provided the opportunity. Following selection of a hearth for excavation, a GPS reading and surface photographs were taken, after which a general site plan was drawn using tape and compass from an arbitrary baseline. This general plan included the location of all artefacts in the immediate vicinity (up to a 30 m radius from the hearth, although the recording area was ultimately dictated by the local morphology). In most cases the associated stone artefact assemblages were not subject to further investigation; however, a sample (n=108) of artefacts in the immediate vicinity of some of the hospital hearths was collected for more detailed analysis.

A string-line grid was superimposed over the hearth and a detailed plan was produced by plotting it onto grid paper (see Figure 5 for plans of all excavated hearths). The surface area of each hearth was calculated by using the average diameter of the centrally located heat retainers. This assumed that heat retainers located beyond the central core may have displaced through taphonomic agents such as cattle, erosion and water movement. It was also noted that the sub-surface hearth expression may be larger or smaller than that which is exposed on the surface. Hence, calculated values for the surface area of hearths given in Table 1 should be considered an approximation only. Within the excavation quad all individual heat-retaining stones with a greatest dimension measuring >50 mm were carefully removed, weighed and measured, and put aside so they could be replaced in their original positions following the completion of the excavation. In some cases all surface heat retainers (i.e. including those in non-excavation quadrats) were recorded in this manner. All heat-retaining stones recovered during excavation were recorded in the same manner.

At most sites deposit removal was completed as a single unit, since no cultural materials other than charcoal were recovered and it was quickly established that these were single-use features (although the initial excavation of RH01 was conducted using three spits). Typically, excavation squares measured only 0.5 x 0.5 m, since this proved adequate for revealing the sub-surface structure of the hearth and generated sufficient material for dating. Sediment samples weighing approximately 100 g were collected during excavation at each hearth from the surface, sub-surface charcoal rich/darkly stained areas, and red-stained areas of sterile gravels. Descriptions of sediment colours were obtained through reference to a Munsell Soil Colour Chart and pH values were determined through a colorimetric test. Charcoal

Table 1. Summary of salient information about investigated hearths.

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>Hearth dimensions</th>
<th>Number of surface heat retainers recorded</th>
<th>Surface heat retainers</th>
</tr>
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<tbody>
<tr>
<td>RH01</td>
<td>Twenty Mile Reserve</td>
<td>1.35, 1.43</td>
<td>24</td>
<td>472, 109</td>
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<td>RH02</td>
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<td>1.65, 2.14</td>
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<td>15</td>
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</tr>
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<td>507, 106</td>
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<td>495, 128</td>
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<td>9</td>
<td>412, 97</td>
</tr>
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<td>26</td>
<td>491, 107</td>
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<td>17</td>
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<td>Richmond town - hospital</td>
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<td>12</td>
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<td>Richmond town - hospital</td>
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<td>Richmond town - hospital</td>
<td>- , -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
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<td>Richmond town - dam</td>
<td>1.40, 1.54</td>
<td>40</td>
<td>397, 118</td>
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</table>
samples for dating were also collected during excavation and their exact locations and depths recorded. Samples intended for dating were not directly handled at any stage and were stored in plastic containers with external cardboard labels. The volume and weight of all other excavated material was recorded and sieved through a 7 mm mesh and retained material sorted directly from the sieve. A 3 mm mesh was also used during the initial (RH01) excavation; however, the gravelly nature of the substrate and lack of informative cultural material recovered dictated that this practice be abandoned. Subsequently, all charcoal from the 7 mm sieve was bagged and labeled for transportation back to the laboratory.

After a culturally sterile gravel unit had been reached, stratigraphic sections were drawn and photographed. A layer of clean, dry sand was placed in the bottom of the excavation pit which was then backfilled using the remaining sieve residue and any sub-surface heat retainers. Finally, surface heat retainers were replaced on the surface, approximating their original positions.

**Results and discussion**

**Excavations**

Following the initial reconnaissance, it was decided to focus on small clusters of hearths in three areas; (1) Twenty Mile Reserve, located approximately 20 km east of Richmond, where six hearths were excavated; (2), the airport, located 5 km northwest of Richmond, where five hearths were excavated; and (3) behind the hospital and caravan park in town, where eight hearths were excavated, including the two in the dam construction area (Figures 4a and 4b). Table 1 provides a summary of the salient information relating to each hearth; more complete details of the excavation results are presented in Wallis (2003).

Excavation revealed that the sub-surface structure of all hearths was quite uniform and stratigraphic sections for most of the excavated hearths are shown in Figure 6. Each hearth generally comprised three stratigraphic layers overlying sterile mudstone: Layer 1 was typically a thin surface layer of weathered mudstone and sediment containing heat retainers but no charcoal; this was underlain by a dark sedimentary unit (Layer 2), also containing numerous heat retainers, and sometimes containing abundant quantities of well preserved charcoal (although in some cases the charcoal was extremely fragmented and poorly preserved); beneath this was Layer 3, a thin unit (sometimes absent) of red stained, highly fragmented mudstone. Depth from surface to bedrock varied between just a few centimeters to approximately 40 cm. This variation in hearth depth is interpreted largely as a function of post-depositional transformation processes; where there has been minimal post-European soil erosion the hearths are more intact and retain greater depth and integrity; where there has been substantial topsoil loss the hearths tend to be deflated and therefore have greater horizontal spread and less depth. Figure 7 shows the south face stratigraphic section of excavation Square A2, RH01 after excavation.

On the basis of the excavations, ethnographic descriptions of hearth construction and use, and previous studies of existing hearths in the region, each hearth is interpreted as representing a single-use feature, with no evidence to indicate cleaning out or re-use of the hearths, such as has been reported elsewhere (e.g. Shelley Greer pers. com.; Shawcross and Hughes 1997:14).

**Dating**

*In situ* charcoal was collected from 16 of the 19 excavated hearths, although in the majority of cases only sufficient quantities for AMS dating were collected. Owing to funding constraints it has not been possible to date all of the collected samples, but the uncalibrated and calibrated radiocarbon dates obtained thus far for seven of the hearths are provided in Table 2. One of the hearths in the dam development area, RH19 was dated using AMS, although insufficient charcoal for dating was retrieved from the adjacent dam hearth, RH20. As
However, a much more extensive dating program is interesting to see whether the hearths with minimal patterning in the dates, although if using the highest probability ages there appears to be an increase in hearth construction around 600 to 700 years ago. It does not appear as though one area sequentially replaces another, but rather appears to be a regional phenomenon. However, a much more extensive dating program is required to test this theory. It should also be pointed out that, with the exception of RH19, the samples dated thus far have all been macroscopic pieces of charcoal suitable for conventional dating. The remaining undated samples all comprise microscopic particles of charcoal that will require use of the AMS technique; funding is currently being sought to undertake this. It will be interesting to see whether the hearths with minimal charcoal preservation are any older than the others, or whether their poor charcoal preservation is due to factors other than their greater antiquity.

Associated scatter and detailed stone artefact analysis

Table 3 provides a summary of the surface materials recorded in the immediate vicinity of each hearth/cluster of hearths during the drawing up of general site plans. As is evident, general recording of the artefact scatters associated with the Richmond hearths indicates they fit

Table 2. Radiocarbon dates from Richmond hearths. Dates have been calibrated using the Calib Rev 4.4.2 calibration program (Southern Hemisphere calibration).

<table>
<thead>
<tr>
<th>Site Code</th>
<th>Laboratory Number</th>
<th>Material</th>
<th>Delta C13 per mil (assumed)</th>
<th>Conventional C14 age (uncalibrated) bp</th>
<th>Calibrated age range (2 sigma)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RH01 / A2</td>
<td>ANU-11898</td>
<td>charcoal</td>
<td>-24.0±2.0</td>
<td>240±60</td>
<td>1511 - 1955 AD</td>
</tr>
<tr>
<td>RH04 / A2</td>
<td>ANU-11909</td>
<td>charcoal</td>
<td>-24.0±2.0</td>
<td>430±80</td>
<td>1407 - 1649 AD</td>
</tr>
<tr>
<td>RH10 / A1</td>
<td>ANU-11899</td>
<td>charcoal</td>
<td>-24.0±2.0</td>
<td>330±60</td>
<td>1457 - 1798 AD</td>
</tr>
<tr>
<td>RH13 / B1</td>
<td>ANU-11908</td>
<td>charcoal</td>
<td>-24.0±2.0</td>
<td>630±70</td>
<td>1286 - 1441 AD</td>
</tr>
<tr>
<td>RH18 / B2</td>
<td>ANU-11907</td>
<td>charcoal</td>
<td>-24.0±2.0</td>
<td>870±60</td>
<td>1046 - 1289 AD</td>
</tr>
<tr>
<td>RH19</td>
<td>Wk-11711</td>
<td>charcoal</td>
<td>-24.1±2.0</td>
<td>650±54</td>
<td>1288 - 1419 AD</td>
</tr>
</tbody>
</table>
with the observed patterns for such sites recorded elsewhere in the MG: they are dominated by locally available silcrete and chert, with small numbers of artefacts manufactured in quartz, silcrete and basalt. In addition, a single fragment from a portable sandstone grinding platform was also recorded near hearth RH02 at Twenty Mile Reserve. Such artefacts are typical for the region, although one of the authors (HS) advises that in the past they were often removed from sites by pastoralists as collector items which may help explain their general paucity on the investigated sites (see also Crothers 1997). Freshwater mussel shell fragments were also a common occurrence around hearths, but no such fragments were obtained from any of the excavations themselves and it is a matter of conjecture whether or not these items (and also the stone artefacts) are directly associated with the hearths, although it is highly likely they are. Direct dating of samples of the freshwater mussel shell fragments could shed light on this issue. The large quantities of flaked glass, glass fragments and pieces of metal recorded near the Richmond town hearths might appear to indicate contact period sites; however these areas reportedly used to serve as an informal rubbish tip/dumping ground, and almost certainly these items relate to this function rather than Aboriginal occupation in the contact period.

In addition to the general recordings of associated surface materials, all surface stone from around the cluster of hearths numbered RH12–RH18 was collected to allow further detailed analysis to be undertaken in the laboratory (by Sophie Collins, a PhD candidate at the ANU). While full results are available in her unpublished report (Collins 2003), an overview of her findings is included herein. Of all the collected stone pieces, Collins determined that only 108 were definitely artefactual (Table 4). A further 26 pieces were classified as ‘shatter’, a type that may have been produced through the process of deliberate artefact manufacture, but that may also have been produced through other processes such as through heat fracturing. As outlined in Table 4, 63% of the artefacts were categorized as unretouched flakes. There were approximately equal proportions of cores and retouched flakes which represented the next most common artefact type; flaked pieces made up the remainder of the assemblage. Seven different types of stone were present, dominated by silcrete which comprised more than 75% of the assemblage (Table 5). Chert was the second most common raw material, with small numbers of quartz, mudstone, fine grained siliceous and quartzite artefacts. Both chert and silcrete are available in small nodules on terraces in the local area, while most of the other raw materials are generally not available locally and must be transported in. The amounts of artefact retouch and core reduction in the assemblage provide an indication of the degree to which the knappers attempted to preserve the available raw materials. Flake to core ratios, decortification levels and ‘retouched versus unretouched flake ratios’ suggest minimal re-use and rejuvenation of stone edges. All evidence suggests an expedient technology, with the area only used on a short-term basis.

**Discussion and conclusions**

The investigations allowed us to develop a better understanding of the surface expression, sub-surface nature and construction techniques associated with the hearths around Richmond. These sites appear to be single use, bowl-shaped depressions filled with locally available mudstone of a limited size and weight range which served as the ‘heat retaining’ source; the depth of each pit appears to be a function of the degree of topsoil
Table 4. Number and proportion of artefact classes from the RH12-RH18 surface collection.

<table>
<thead>
<tr>
<th>Artefact type</th>
<th>Number of artefacts</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>15</td>
<td>13.9</td>
</tr>
<tr>
<td>Unretouched flake</td>
<td>68</td>
<td>63.0</td>
</tr>
<tr>
<td>Retouched flake</td>
<td>16</td>
<td>14.8</td>
</tr>
<tr>
<td>Flaked piece</td>
<td>9</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>108</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 5. Number and proportion of artefact classes from the RH12-RH18 surface collection.

<table>
<thead>
<tr>
<th>Raw material</th>
<th>Number of artefacts</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silexite</td>
<td>82</td>
<td>76.0</td>
</tr>
<tr>
<td>Chert</td>
<td>14</td>
<td>13.0</td>
</tr>
<tr>
<td>Quartz</td>
<td>5</td>
<td>4.6</td>
</tr>
<tr>
<td>Mudstone</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Fine grained siliceous</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Quartzite</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>108</strong></td>
<td>~ 100</td>
</tr>
</tbody>
</table>

**Key**
- Grass tuft
- Stone
- String line
- Excavation square
- Glass fragment
- Stone artefact
- Freshwater mussel
- Metal
- Wooden stake
- Plastic

Key to plan drawings of excavated hearths.

Figure 5a. Detailed plan of RH01.
Figure 5b. Detailed plan of RH02.
Figure 5c. Detailed plan of RH03.
Figure 5d. Detailed plan of RH04.
Figure 5e. Detailed plan of RH05.
Figure 5f. Detailed plan of RH06.
loss rather than suggestive of different construction techniques or purpose. Overall, excavation has revealed that the sites were formed in a manner consistent with accounts provided in ethnohistorical sources. The radiocarbon ages obtained for seven of the hearths represent the first published dates of hearths in the MGD and provide irrefutable evidence of hearth construction during the late Holocene period, prior to and possibly into the early period of European contact. The stone artefact analysis conducted on the hospital assemblage has demonstrated the presence of an artefact technology that is highly expedient with little retouch or rejuvenation of stone, dominated by the use of locally available raw materials, similar to that reported for other sites in the MGD. The relatively low density of associated scatters suggests that these sites were not used repeatedly, but more likely on an irregular, short-term basis as people passed through the area.

It is not known how many sites in total were destroyed during the Richmond dam development project and proposals by the EPA to prosecute the Council under the Cultural Records Act were not realised. The destruction of hearths during development is apparently not an isolated incident, as we observed a number of other hearths in the Richmond vicinity that had been severely disturbed apparently during power-line maintenance work (Figure 8). While ‘developers’ might argue that the great numbers of such sites (cf. Crothers 1997) diminishes their scientific significance or negates the need for their conservation, until additional research has been undertaken, questions regarding spatial and temporal differences in hearth use across the MGD landscape and the relationship with the surrounding region remain unanswered. The large numbers of hearths allow for detailed investigations of land use patterns in the past, an opportunity not afforded when only a few such sites remain. Furthermore, the fact that there are many known hearth sites across the landscape...
does not in any way diminish their significance to Aboriginal people. While developmental impacts in this sparsely populated region are not intense, continued unchecked destruction of these features without prior investigation will have a cumulative negative impact on the significance of the resource. Given the range of radiocarbon dates obtained in this project it seems highly probable that other hearths in the region will be older still. It is also likely that different parts of the landscape were utilised at different times, dependant on a wide range of factors (cf. Holdaway et al. 1998, 2002). The only way to investigate this, and thereby develop a detailed understanding of Aboriginal use of the landscape at the local level is to accumulate adequate data to reveal any patterning present.

In the interim, the hearth dates suggest that c. 1,000 BP can be considered a minimal age for Aboriginal occupation of the northeastern part of the MGD region, although it gives no indication of when the area might first have been used. A mid-Holocene date for a cache of tula adzes located near Boulia in the southwestern part of the MGD provides evidence that Aboriginal use...
Figure 6g. West face, southern half, Square A2, RH07.

Figure 6h. South face, northeast quadrat, Square A1, RH08.

Figure 6i. West face, northeast quadrat, Square A1, RH09.

Figure 6j. West face, northwest quadrat, Square A1, RH10.

Figure 6k. East face, southeast quadrat, Square A1, RH12.

Figure 6l. East face, northeast quadrat, Square B1, RH13.

Figure 6m. West face, northwest quadrat, Square A1, RH14.

Figure 6n. East face, southwest quadrat, Square B2, RH18.
of the wider area is indeed older (Hiscock 1988). Furthermore, it is increasingly evident from dates obtained at sites such as Cuckadoo 1 (Selwyn Ranges), Mickey Springs (North Queensland Highlands) and MP103 (Gregory Ranges) that people were occupying the surrounding upland areas by 15,000 years ago (Davidson et al. 1989, 1993; Morwood 1990; Wallis 2003). Furthermore, the spread of radiocarbon determinations presented here indicates a significant increase in intensities or regional land use during the last millennium. Nevertheless, the MGD represents a very different biogeographic zone to the uplands, and thus a different set of challenges; it remains to be demonstrated whether they were also exploiting the low-lying MGD during the same time period they were making use of the uplands.

Addressing these sorts of issues will require further research-oriented archaeological projects in the region, especially since developmentally driven heritage survey research designs and budgets are rarely able to accommodate the necessary excavation and radiocarbon dating to produce answers. And the question can be asked as to whether Traditional Owners will want to actively pursue such issues, or whether their needs have been met. Certainly in this instance, the members of the WVAC feel that the project has served its intended purpose and been a great success, with the hoped-for dates that could substantiate their claims regarding the Aboriginal origins of the hearths being obtained. Local non-Indigenous community members are now slowly coming to accept this fact, and that the sites are of Aboriginal significance regardless of their physical appearance or age. It remains to be seen whether this new awareness will lead to improved consultation processes between developers and Aboriginal stakeholders, although coupled with the new statutory requirements of the Aboriginal Cultural Heritage Act 2003, it should.

Furthermore, like all of us who choose to work in this discipline, the Aboriginal members of the team became intrigued by the new questions that were raised in the course of the project and are keen to pursue answers to them as the opportunity arises. Continued discussions and work during 2003 and 2004 led to a second grant proposal between the archaeologist and Aboriginal community to pursue further surveys and excavations elsewhere in the MGD being submitted to AIATSIS in 2004; we have recently been advised that our grant submission had been successful and this collaborative research initiative will continue into 2005. Also of importance, perhaps more so in the longer term, the
community members who participated in the fieldwork received training in a new array of archaeological field techniques and developed a better understanding of research and management issues; these skills will further their ability to fully engage with and exert greater control over future CHM projects in the region. Nevertheless, the sobering fact remains that while the Aboriginal authors of this paper believe the dam development was ultimately a good thing for the town of Richmond, they are also acutely aware that the Aboriginal community paid the price, losing a few more small pieces of the canvas that is their heritage. It is hoped that community driven archaeological research in the future will provide more positive outcomes that contribute to a strengthening of individual and community identity in inland northwestern Queensland.

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Notes

1. This article is a revised version of a paper originally presented at the Australian Archaeological Association Annual Conference held at Jindabyne in December 2003.

2. This Act was repealed in April 2004 and replaced by the Aboriginal Cultural Heritage Act 2003, which is being administered by the Department of Natural Resources, Mines and Energy.

References


Fanning, P. and S. Holdaway. 2001. Temporal limits to the
Gresser, P.J. 1962. New distributional records of stone
Gray, L. 1913. Life on the Flinders River (1868-70).


Spencer, T. 1994. A documentation of archaeological sites on the 1:250 000 sheets for Richmond, Julia Creek, Camooweal and some adjoining areas. Unpublished report to the Queensland Museum, Brisbane.