

# Stone walls near Jindabyne NSW: European fences, not Aboriginal stone arrangements

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*Two sets of stone walls located at Mill Creek and Ironpot Creek near Jindabyne NSW and a pair of parallel lines of stones near Ironpot Creek are believed by some to have been built by Aborigines for spiritual or astronomical purposes. However the structure of both sets of walls is typical of European dry stone walls elsewhere in Australia, and similar to other examples on a nearby property 35 km away. Furthermore, both sets of walls were charted and valued by surveyors as fence improvements on survey plans in the 1880s and 1890s. This paper compares these structures to other examples of European walls and Aboriginal stone arrangements, concluding that they are dry stone walls built in the late nineteenth century as boundary fences on steep rocky slopes. Either Aborigines, or Chinese miners returning from the Kiandra gold rush may have been employed to build them. Explanations invoking Aboriginal spiritual or astronomical uses are improbable and unnecessary. The double row of stones near Ironpot Creek is most likely to be a lockspit marking a reserved road between cadastral portions.*

## INTRODUCTION

Dry stone walls are one of the less common forms of rural fences in Australia (Pickard 2010a:110-116). They were usually erected in rocky areas where rock outcrops prevented digging post holes, and where the geology produces ideal stones. For example: basalt in the Western Districts of Victoria (Corangamite Dry Stone Walls Conservation Project 1995; Holdsworth *et al.* 2009; Vines 1990); the Illawarra (Abraham 1991); Lismore district of New South Wales and northern Tasmania (Tassell 1988:19-20); limestone on the western Eyre Peninsula of South Australia; and sandstone in the mid-north and Flinders Ranges of South Australia. Walls were also erected in the sugar cane fields of coastal Queensland, but as in other areas, many have been demolished.

Although there are large areas of basalt and granite with few trees on the Monaro Plains of southern NSW, dry stone walls are relatively uncommon except locally. One wall was recorded in 1874 from *Ironmungy Run* approx. 35 km south-east of Jindabyne (Figure 1) ('Our special reporter' 1874:6). Subsequently, many others were built as fences along portion boundaries within the area of the original *Ironmungy Run*. A relatively intact wall surviving on the northern boundary of the present property, *Kinross*, is typical of many. Most were demolished to reduce rabbit harbour during rabbit plagues in the twentieth century (Brian Seears, *Booroola*, pers. comm. 14 December 2012).

Local European oral history suggests that many of these walls were built by Chinese miners at the end of the Kiandra gold rush in the late nineteenth century. For example, Dennis Sellars (Cooma-Monaro Historical Society, pers. comm. 14 December 2012) recalls his grandfather describing seeing Chinese labourers building walls within *Bungarby Run*. The European origin of these walls is either documented or obvious from their structure, location or use. Interpreting some short lengths of isolated, low or collapsed derelict walls may be problematic, especially if they apparently do not join with

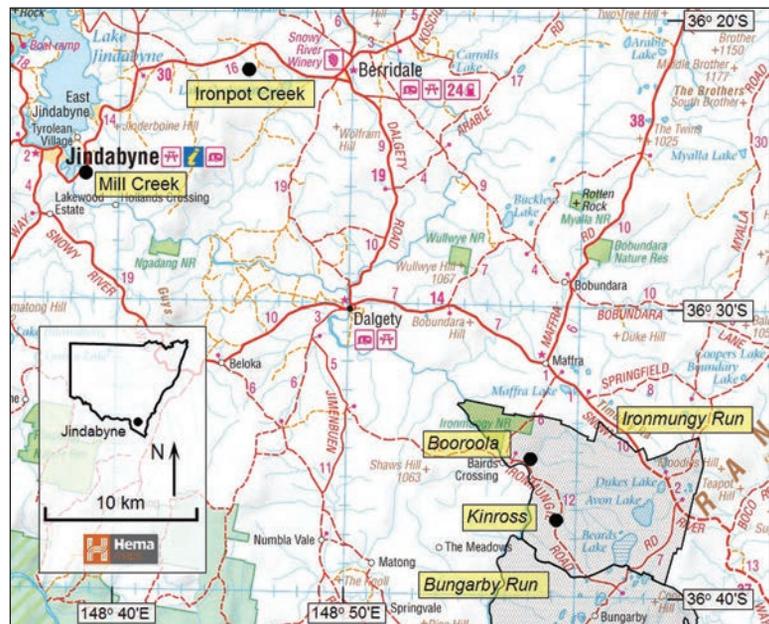


Figure 1: Map of Jindabyne region in south-eastern NSW showing locations of walls at Mill Creek and Ironpot Creek and other locations referred to in text. Ironmungy and Bungarby Runs are stippled. (Hema Maps 2006 used with permission).

existing fences. These walls may need other explanations, including being natural linear outcrops, or having been built by Aborigines for practical, ceremonial or other reasons. This is the case with two separate sets of walls, at Mill Creek and Ironpot Creek (Figure 1).

In late 2011, *Sydney Morning Herald* reporter, Debbie Smith, interviewed Angel John Gallard, a Ngarigo man and long-time resident and local historian of Jindabyne, about these walls that he had found decades earlier. Smith's (2011) article includes a video interview of Gallard at the walls. Gallard accepted local oral history that some walls were built by Aborigines (video: 00 min 49 s – 01 min 21 s), and concluded that the Jindabyne walls were either spiritual, celebrating a Rainbow Serpent dreaming site, or a form of astronomical alignment.

In this paper I address the question of who built the walls near Jindabyne, when and why, by locating and mapping the walls with a hand-held GPS onto survey plans and the

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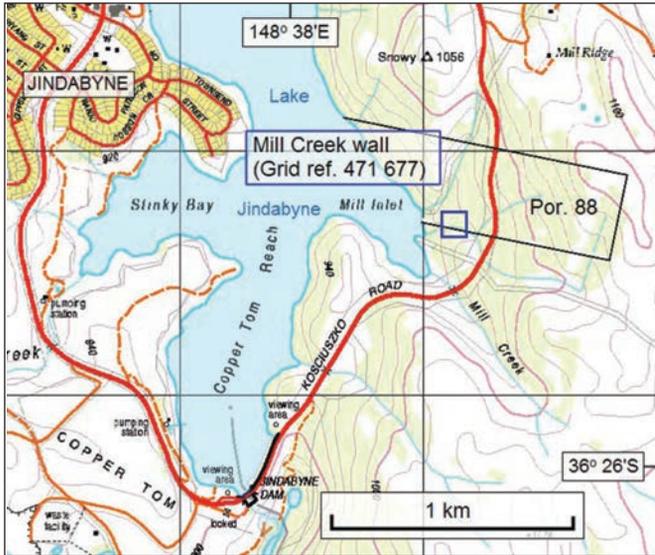


Figure 2: Location of Mill Creek wall. Blue square shows the 100 m grid location provided by Angel John Gallard. Note boundary of Portion 88, Parish of Jinderboine running into the water of Lake Jindabyne. (Jindabyne 8625-3S 1:25,000 topo map 2nd edn. Land and Property Information – Department of Finance and Services 2002).

### Mill Creek wall: location, terrain and structure

The Mill Creek wall occurs in five distinct sections over a total distance of 780 m, running from the present water-level of Lake Jindabyne to just below the crest of the ridge to the east (Figure 2). Although somewhat variable, the wall is oriented close to magnetic east-west (angular mean 91.5°) and is located along the southern boundary of Portion 88, Parish of Jinderboine, County of Wallace (NSW Land Titles Office) (Figure 3, lower). Mill Creek is named after a flour mill operated by William Jardine and powered by a water wheel driven by flow diverted from the Snowy River at a low weir. His flour mill was located at the junction of Mill Creek and the Snowy River, but was flooded on completion of Jindabyne Dam across the river in 1967.

Smith (2011:21) reported that Gallard described the wall as:

... made from large stones that runs down a steep slope, exactly east-west, into Lake Jindabyne ...

The history of the large, Lake Jindabyne granite stone wall is unclear. But Gallard says the more than 100 metre-long structure was described by an early settler – a Boer War veteran who explored the Snowy Mountains on horseback – as one of several walls built by Aborigines in the local area.

This fits with his own finds of many Aboriginal stone artefacts close to the site, and a circular stone arrangement on the crest of the ridge where the wall begins.

He believes it has a spiritual purpose, as a Rainbow Serpent dreaming site. But, on the longest day of the year [22 December 2011], he will also seek out any clues of an astronomical intent.

The original total length of wall is now impossible to confirm as the lowest section (Section 1) continues into Lake Jindabyne, but some 215 m survive today above the lake (Table 1).

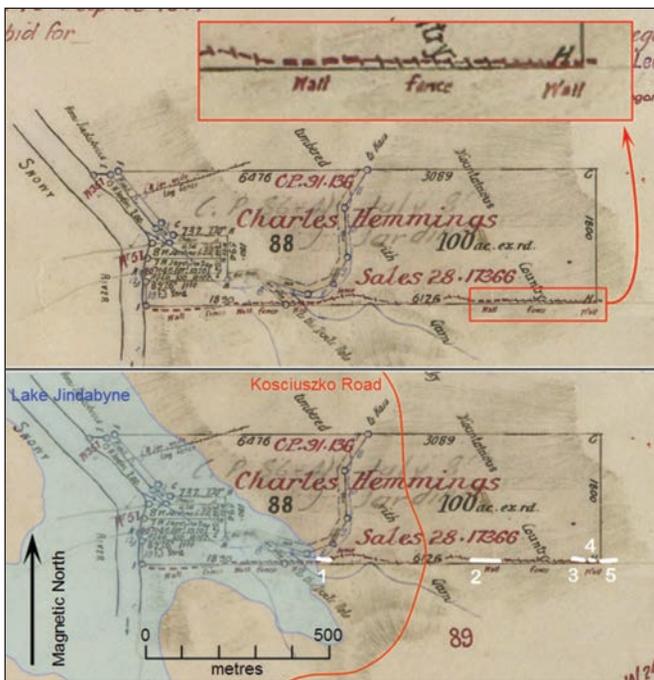


Figure 3: Detail of Surveyor G. Pennefather's 1882 plan of Portion 8, Parish of Jinderboine, County of Wallace (Plan 2480.1604). Upper: showing location of log fence in the north-west corner, and 1886 annotations (red ink) of "Wall" and "fence" along the southern boundary. Enlarged inset from south-east corner shows how fence sections were marked with a crossed line, and walls with thicker dashed lines. Lower: GPSed location of five sections of wall (numbered white dashes) plotted on a georeferenced plan of Portion 88. Kosciuszko Road (red) and top water-level of Lake Jindabyne (blue tint) are also shown. (Land and Property Information – Department of Finance and Services 2002).

Table 1. Summary of lengths of wall and gaps (or fences) measured in January 2013, and sketched by Surveyor Pennefather in August 1886.

Section of wall <sup>1</sup>	Orientation (° magnetic) <sup>2</sup>	Measured Jan 2013 (m)		Pennefather plan (m) <sup>3</sup>	
		Wall	Gap	Wall	Fence
1	92.0	45 <sup>4</sup>		199	
2	91.5	79	400 <sup>5</sup>	59	108
3	93.0	32	200 <sup>5</sup>	92	173
4	91.0	15	13	119	550
5	90.0	44	19	54	259
<b>Total</b>	<b>91.5</b> (angular mean)	<b>212</b>	<b>632</b>	<b>523</b>	<b>1090</b>
<b>TOTAL</b>		<b>844</b>		<b>1613</b>	

Notes:

- Sections numbered in 2013 and running uphill (Figure 3) do not match the sections of wall sketched by Pennefather.
- Measured with prismatic compass.
- Scaled off enlarged copy of Pennefather's plan of Portion 88, Parish of Jinderboine (2480.1604).
- Wall is truncated as it runs into Lake Jindabyne.
- Calculated between GPS waypoints. Other distances measured with 30 m tape.

cadastral GIS provided by Land and Property Information NSW, assessing evidence on the survey plans, and comparing their structure with European dry stone walls elsewhere in the region.



Figure 4: The granite wall at Mill Creek.

Section 1 (45 m) runs up a steep bouldery slope from the lake, ending on a small bench with few outcropping boulders (Figure 4). There is a long gap (400 m) to the lower end of Section 2 (79 m) uphill of the Kosciuszko Road. The gap has some steeper bouldery slopes, but is generally free of outcrops. Section 2 ends against a prominent cluster of tors below a flat bench. The 200 m gap to the bottom of Section 3 is a mix of flat, outcrop-free slope and some steeper sections with numerous boulders. Section 3 (32 m) runs up a bouldery slope, ending against a large outcrop. A short gap (13 m) leads to Section 4 (15 m), which also ends against an outcrop. Section 5 (44 m) starts 19 m above Section 4, and ends on some small outcrops below the crest of the ridge. Surprisingly, this section runs beyond the boundary of Portion 88. This may be due to an error in rectifying the plan, or because the builders may have missed the boundary corner marker.

The gaps generally coincide with gentler slopes or areas where there are few or no surface granite boulders, but some short slopes within the gaps are steeper and have numerous boulders. The 400 m gap between Sections 1 and 2 runs up variable surfaces: benches, steep rocky slopes, lower angle and rock-free slopes, and a small creek. The 200 m gap between Sections 2 and 3 is similarly variable. There is little apparent difference between the rocky section within

the gaps, and most of the length of Sections 2 or 3, yet there are no walls. There are no remains of any other fences in any of the gaps.

The walls are quite low, generally <1 m except close to large boulders (Figure 4). At the tops of Sections 3, 4 and 5, the wall peters out against outcrops of varying size. The generally rounded boulders used give the walls a very irregular appearance compared with the well-made basalt walls of the Western Districts of Victoria, and those at Ironpot Creek (described below). However, the structure is similar: a double row of boulders with basal width varying from 0.8 to 1.2 m. Side batters are irregular, and there is relatively little plugging, few throughstones and no distinct coping, except for a very short length of Section 5 that is capped with flat rocks (see Vines 1990:37 for definitions of wall terms).

Although the basic structure of the wall is that of a European dry stone wall, the most unusual feature is a series of cut poles and forks resting against the wall, especially in Sections 2, 3 and 4. Some are regularly spaced approximately 4–5 m apart, and at least one fork still has a cut pole resting in its crutch (Figure 5). These poles and forks differ from random tree and branch falls, which are generally crooked, often have branches attached, and have broken ends with no evidence of being cut with an axe. The cut poles and forks are the remains of dog-legs (Pickard 2013) which supported a log above the low wall, thus increasing its effectiveness as a fence. It is not possible to determine when the dog-legs and forks were added to the wall. They could have been incorporated during construction, or subsequently as cheap repairs. Although dog-legs were a common feature of early log and brush fences, this is apparently the first record of their use with dry stone walls, making this a very rare form of composite wall.

A dislodged stump close to the gap between Sections 2 and 3 has several stems approximately



Figure 5: Dog-legs and forks used to increase the height of the Mill Creek wall.

100 mm diameter cut close to the ground. This style of cutting, adjacent to fences, is identical to that seen on many other stumps seen elsewhere in Australia that are definitely known to have been cut for fencing. Poles from the Mill Creek stump were probably used in log fences across the gap, or as dog-legs and the upper poles they originally supported.

William Jardine held two small freehold portions (7 and 8, Parish of Jinderboine, County of Wallace) (NSW Land Titles Office) on the Snowy River where he had his flour mill (Figure 3, upper). He selected the 100 acres of Portion 88, out of the *East Jindabyne Run*, as an Additional Conditional Purchase (ACP 81.116) on 17 February 1881, but forfeited this on 31 December 1885. Within a few months, his youngest son, James Jardine, took up the block as a Conditional Purchase (CP 86.41) on 8 July 1886, but on 24 September 1890 this also was forfeited for non-residence. Subsequent changes in tenure and ownership are not relevant to the origins of the wall, and are not pursued further.

Surveyor G. Pennefather surveyed Portion 88 in July 1882, valuing a short log fence in the north-west corner at £1, but recording no boundary fences (5 July 1882) (Figure 3 upper). A few days later, he also surveyed Portion 89, adjoining Portion 88 to the south. His plan (10 July 1882) does not show any form of fence along the common boundary with Portion 88. Although his survey book, including Portion 88, seems to have been lost, his field book for Portion 89 survives but lacks any additional information (Field book O2297, Land and Property Information NSW). Four years later, on 27 August 1886, most likely in relation to James Jardine's CP 86.41, he inspected the block again annotating his 1882 plan "Wall" and "fence" running along or close to the southern boundary of the portion (Figure 3 upper and inset).

Close inspection of Pennefather's annotations (Figure 3 upper) show that he recorded five sections of wall, separated by fences along the southern boundary (total length 8016 links, 80.16 chains, 1.0 miles, 1.6 km). He valued 11 chains (221 m) of wall, and 27½ chains (553 m) of log fencing at half value, i.e. along a boundary. If this log fence were on the southern boundary, this leaves 41½ chains (835 m) unaccounted for, even though he showed the entire boundary either fenced or walled.

Pennefather sketched five sections of walls separated by fences, but the lengths match neither the various sections nor gaps measured by GPS and 30 m tape in 2013 (Table 1), nor the lengths of walls and fences he valued (Table 2). The discrepancies are not small, e.g. the total length of wall sketched on his plan is 523 m, but he valued only 11 chains (221 m). Similarly, his plan shows a total of 1090 m of fence, but he valued only 27½ chains (553 m). The simplest explanation is that Pennefather sketched the boundary walls and fences symbolically. Rather than walking the full 1 mile uphill length of the boundary himself, he may have relied on an inaccurate verbal description from James Jardine. These discrepancies are worrying, but they do not invalidate the fact that Pennefather valued and recorded a series of walls on the boundary of Portion 88. As he did not record the walls during his 1882 survey, they were most likely built between July 1882 and August 1886.

Surveyor Thos. H. Bell visited the south-eastern corner of Portion 88 during his survey of Portion 103 to the east in March 1884, but he plotted no fences on any of the boundaries of Portion 88 (12 March 1884) (NSW Land Titles Office). If he was following the Surveyor General's instructions about noting improvements (NSW Surveyor General's Office 1872, folio 56), then this further constrains the date of erection of the stone wall to between March 1884 and Pennefather's inspection of Portion 88 in August 1886.

**Table 2. Surveyor G. Pennefather's valuation of improvements on Portion 88, Parish of Jinderboine on 27 August 1886.**

Improvement	Value (£ s d)	Value (£ mile <sup>-1</sup> ) <sup>1</sup>
13 chains log fencing	1 6 0	8 0 0
Stockyard	0 10 0	
14 chains log fencing	6 2 6	35 0 0
27½ chains log fencing	6 0 4 (half value) <sup>2</sup>	29 4 0
11 chains stone wall	5 10 0 (half value)	80 0 0
<b>TOTAL</b>	<b>19 8 10</b>	

1. Calculated from Pennefather's valuations on Plan 2480.1604, allowing full value for boundary fences.
2. Half value was assigned to boundary fences.

### Ironpot Creek wall: location, terrain and structure

Smith (2011:21) reported that Gallard was:

also excited by an even more extraordinary set of three larger, stone walls in another area of remote bushland in the district.

A feat of engineering, they plummet down extremely steep inclines, yet have been built from thousands of rocks, some of them massive, with smaller stones carefully wedged between them.

There is about a 50-metre gap between the first 42-metre long wall and the second one, which is slightly offset from the first and ends on the edge of a cliff that plunges to a stream below. The third wall then climbs up the opposite side of the gorge.

Gallard's location falls in the south-western corner of Portion 131, Parish of Coolamatong, County of Wallace (NSW Land Titles Office), in the valley of what is now known as Ironpot Creek, but was originally called Kara Creek (Figures 6 and 7). The site is on both sides of a steep gorge approximately 30 m deep where Ironpot Creek cuts through steeply dipping outcrops of hard, jointed metasediments such

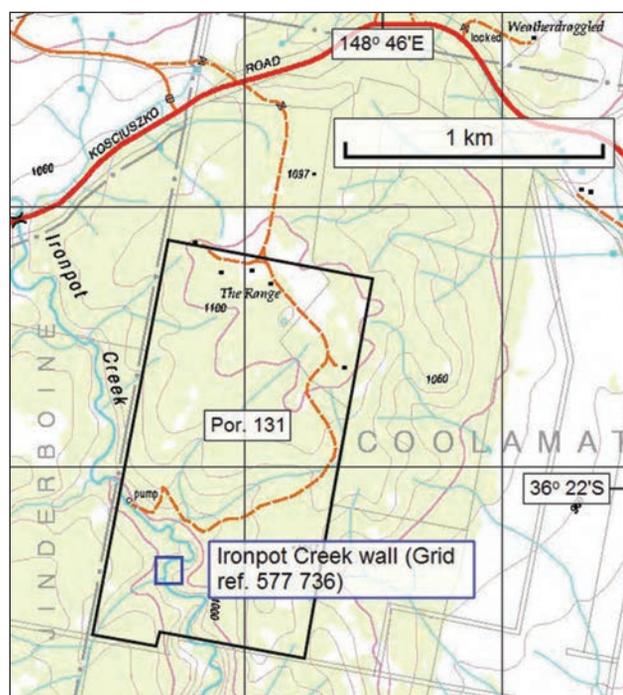


Figure 6: Location of Ironpot Creek wall in south-west corner of Portion 131, Parish of Coolamatong. Blue square shows the 100 m grid square location provided by Angel John Gallard. (Source: Cootralantra 8325-2N 1:25,000 topo map 2nd edn. Land and Property Information – Department of Finance and Services 2002).



of Section 2 is built on a slope of approximately 30° using more irregular rocks than the higher sections. Section 3 is the lowest, but is still made using a double row of stones with sloping batters and throughstones.

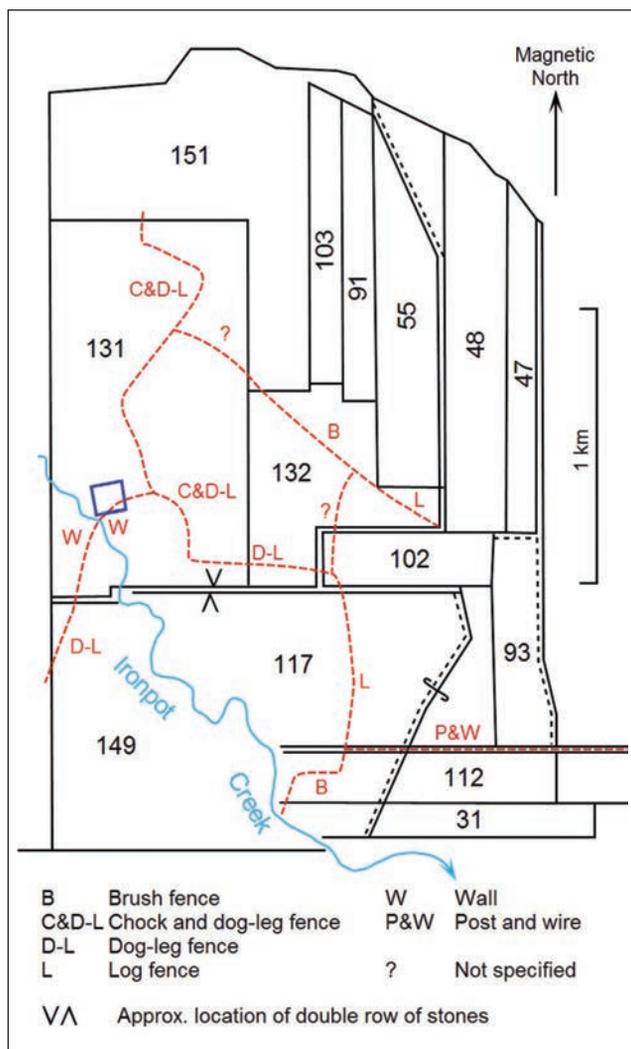


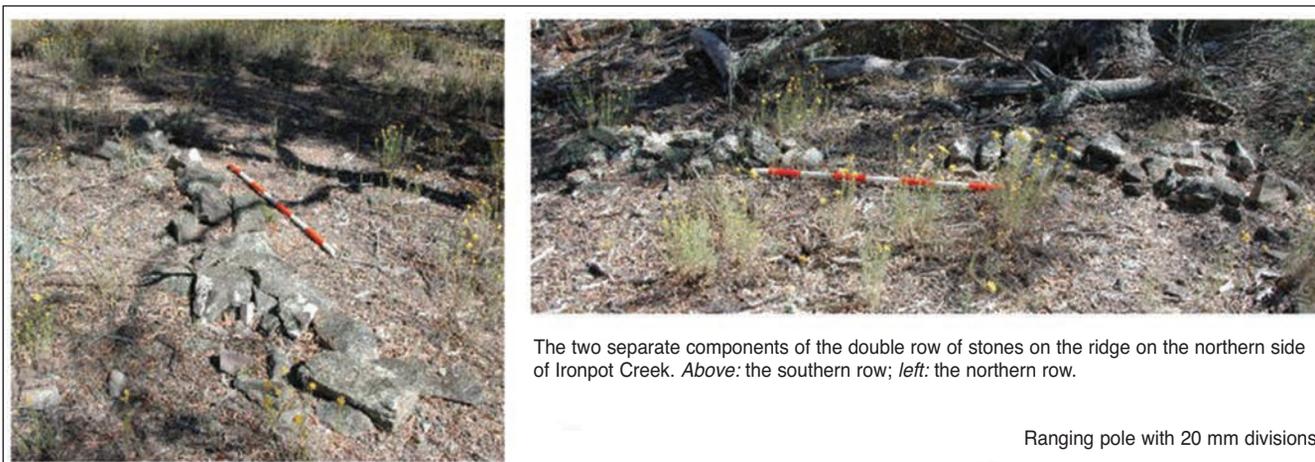
Figure 9: Index map of historic portions in Parish of Coolamatong, County of Wallace near Ironpot Creek. Blue square shows 100 m grid location provided by Angel John Gallard in the south-west corner of Portion 131. Fences (dashed red lines) are compiled from portion and run plans (1886–1908), with structures shown by letters. Note approximate location of double row of stones on reserved road between Portions 131 and 117. A strip of Crown land along both sides of Ironpot Creek south of Portion 131 is omitted for clarity.

The walls are located near the western edge of *Coolamatong Run* which had a series of owners from the 1870s to the 1890s. Plans of several portions provide information on the walls in Portion 131, Parish of Coolamatong, and nearby fences (Figure 9). William Robert Hepburn held *Coolamatong Run* and applied for a Conditional Lease (CL) over a block (later to be surveyed as Portion 131) that he selected from the Resumed Area of his run. CL 90.296 was approved on 9 October 1890, adding to extensive freehold and leased land he held to the east and south. Presumably he was following the course of many other Monaro squatters at this time, and protecting as much of his run as he could (Hancock 1972: 89-106). Although Portion 131 is relatively poor quality land and has remained largely uncleared, it provided Hepburn with a buffer against his western neighbour.

In October 1889 Surveyor G. Pennefather surveyed a number of portions to the south of what would later become Portion 131. These included Portion 117, and a road that he reserved along the northern boundary of Portion 117 (Plan W3814.1604; 24 October 1889). Subsequently, Surveyor Alfred Ebsworth surveyed Portion 131 for Hepburn's CL 90.296 in June 1891, and annotations on his plan (W4148.1604; 29 June 1891) show a stone wall running across Kara Creek [Ironpot Creek] from near the south-west corner of Portion 131, linking up with a chock and dog-leg fence (Figure 7). Ebsworth valued both, but he omitted any estimates of lengths. The walls are not shown on the *Coolamatong Run* plan of October 1886 (NSW Dept. of Lands, plan 10142501), and as surveyors were instructed to record all improvements, it is logical to conclude that they were built between then and Ebsworth's survey in 1891.

#### Ironpot Creek east-west double row of stones

Smith (2011:21) reported that Gallard also found: '... two sets of small stone lines nearby on the top of the ridge, lying east-west, which mimic the layout of the bigger walls.' These two rows of angular slabby stones are low, only one or two rocks high, and quite short (<5 m long) and separated by approximately 20 m (Figure 10). While parallel, they are offset by approximately 20 m. They do not "mimic" the other walls, other than having a magnetic east-west orientation in common with those at Mill Creek. Plotting them with a GPS places them on the northern and southern sides of the reserved road between Portions 131 and 117 (NSW Land Titles Office) (Figure 9). At the time of Pennefather's survey of Portion 117 in 1889, reserved roads were to be marked with pegs and lockspits (narrow linear trenches) (Marshall 2002:53), but because of the extremely rocky ground, he may have chosen the unauthorised but more permanent expedient of lines of stones.



The two separate components of the double row of stones on the ridge on the northern side of Ironpot Creek. Above: the southern row; left: the northern row.

Ranging pole with 20 mm divisions.

Figure 10: Double row of stones on northern side of Ironpot Creek.

## AN ABORIGINAL ORIGIN?

### Aboriginal stone structures and arrangements

Aborigines across Australia built a range of stone arrangements for utilitarian, spiritual and astronomical purposes. The most common practical use was extensive eel and fish traps with low walls in both rivers and along the coast (Bandler 2007; Lane 2009; McNiven and Russell 2005: 185), or as hut bases. These walls have irregular shapes, and are generally less than 1 m high. None run down steep hills or into gorges.

Aboriginal stone arrangements with no apparent practical use are recorded from virtually all across Australia. They occur in a wide range of forms, including circles, walkways, isolated standing stones in Arnhem Land (Gunn *et al.* 2012), and irregular linear arrangements (Lane 2009, Hamacher *et al.* 2012, O'Connor *et al.* 2009). Most are considered ceremonial, and this is Gallard's preferred interpretation of the Mill Creek wall – as a Rainbow Serpent. If this is the case, then the nearby stone circle he found at the top of the wall could be the head of the Rainbow Serpent as it climbs out of the Snowy River valley. At least one stone arrangement in the Western Districts of Victoria, previously considered ceremonial, has been re-interpreted as an astronomical arrangement (Norris 2010). Hamacher *et al.* (2012:6) carefully analysed orientations of Aboriginal linear stone arrangements widely located across eastern NSW, finding that 'Aboriginal people deliberately aligned these arrangements to the approximate cardinal directions'. Gallard's proposed visit on the summer solstice (22 December 2011) (Smith 2011) would have been to see if the walls could have been an Aboriginal astronomical alignment for sunrise or sunset. However, given that the Mill Creek wall is oriented east-west, this is the incorrect solar event to check, as the sun only rises exactly due east and sets exactly due west at the equinoxes (20 March 2011 and 23 September 2011).

While Native Americans built a variety of stone walls and structures to assist hunting (Pendleton and Thomas 1983), there are no records of Australian Aborigines using stone walls in this manner. Carnegie (1898:27) found brush fences near Mt Quinn (north-east of Kalgoorlie, Western Australia) 'which the natives had set up for catching wallabies. The fences run out in long wings, which meet in a point where a hole is dug.' Aborigines in the Pilbara region of Western Australia walled up niches and cavities in caves to provide habitat for small game, such as possums and rats, which were later caught when the walls were pulled down (Bindon and Lofgren 1982). Any explanation of either of the Jindabyne walls as hunting walls is not credible. The gaps at Mill Creek coincide with slopes with few granite boulders or outcrops. There appears no other consistent feature about their location, and the variable length of the gaps (up to 400 m) suggests that they would be very inefficient for concentrating game. It is highly unlikely that much game traverses the steep slopes at Ironpot Creek, and the location of the walls above the gorge is inconsistent with any use for directing game.

Regardless of Aboriginal people's use of stone arrangements, none of the known examples approximates the height and/or characteristic structure of dry stone walls erected by Europeans.

### Evidence of an Aboriginal origin

Gallard's primary starting point for his belief in an Aboriginal origin appears to be the apparent lack of any current or remembered European purpose for the walls, and the absence of any link to current or old fences. In his interview with Smith (2011) he questioned

... why such an enormous amount of effort would have been put into building structures with no apparent function on a dangerously steep site [Ironpot Creek]. 'It's not a fence. It has to have a spiritual or astronomical purpose.'

It is unclear which of the walls (Mill Creek or Ironpot Creek) Gallard is referring to in his interview (Smith 2011, video: 00 min 49 s):

The old chap that gave us some illumination on that was a fella called Jack Broady, and he told an old bloke by the name of Berry McGuffick who was a neighbour of mine about it, and Berry related the story to me, and I could see a comparison between the two walls, and the fact that Broady had said that the other wall had been made by Aboriginal people, and that there were other walls in the area that had been made by Aboriginal people also.

Presumably Jack Broady was the Boer War veteran who described the Mill Creek walls 'as one of several walls built by Aborigines in the local area' (Smith 2011:21). However, his use of 'built' is ambiguous, with two possible meanings. Did he mean that Aborigines conceived, planned and erected the wall for their own purposes? Or that Aborigines were employed by European settlers to erect the walls as fences? The former is unlikely, as the coincidence of a Rainbow Serpent arrangement having an identical structure to European dry stone walls, and running along a surveyed portion boundary is improbable. Although most walls used as fences were built by immigrant Europeans with prior experience of walling (Vines 1995), stony rises at the Victorian Lake Condah Mission were 'enclosed with a substantial stone wall, erected by the natives, and which is 4ft. 6in. high, 3ft. wide at the bottom, and about 4½ miles long'. (Board for the Protection of the Aborigines in the Colony of Victoria 1891:7) Most likely, 'the natives' were superintended by an experienced European waller until they learned the skills.

In the case of the Jindabyne walls, there is no documentary evidence corroborating Broady's assertion that Aborigines built these or other walls in the area. Equally, there is none supporting the dominant local oral history that Chinese miners returning from the Kiandra gold rush were the main source of labour. Smith (2011) quoted members of the Snowy River Historical Society 'that Chinese men after the gold rush constructed many stone fences in the district'. Gallard uses the presence of Aboriginal artefacts near the Mill Creek wall to support his argument. However, as Pendleton and Thomas (1983:31) say, 'While it may be tempting to assume, *a priori*, that any cultural debris found near the [Fort Sage drift fence] walls has a functional association with those walls, such an assumption would be spurious'. In other words, proximity in space does not necessarily mean proximity in time. An extreme example would be linking the artefacts at Mill Creek with the construction of nearby Jindabyne Dam in 1967.

### Rainbow Serpent dreaming

As far as I can determine, there is no early ethnographic record of a Rainbow Serpent tradition among the Ngarigo of south-eastern NSW. However, there are examples of such traditions being kept alive within Aboriginal communities, despite being unknown and unrecorded by Europeans, or even deliberately withheld from them.

### Astronomical alignment

The Mill Creek wall is oriented to 91.5° magnetic, close to magnetic east-west, but for most of its length, the location is far from ideal for an astronomical alignment to observe the

rising or setting of the sun on the summer solstice or the equinoxes. There is certainly a distant view to the west across the Snowy River, but the crest of the ridge above the wall has far better views to both east and west. The length of the wall also begs the question of why build five sections of wall over almost 800 m down (or up) the slope when a single short length across the top of the ridge would have sufficed for both sunrise and sunset observations? The irregular alignments of the Ironpot Creek walls and the restricted view of the sky from both sides of the gorge preclude any reasonable explanation as Aboriginal astronomical alignments.

## WHO MADE THE JINDABYNE STONE WALLS?

The structures of both the Mill Creek and Ironpot Creek walls are typical of European dry stone walls found elsewhere in Australia, as well as walls erected in 1874 and later on *Ironmungy Run*. Although somewhat variable, they have characteristic sloping lateral batters, are sometimes capped with coping stones, and have variable numbers of throughstones. The ends of several sections are carefully constructed in the same way as European walls.

The combination of the Mill Creek wall's location on the boundary of Portion 88, its basic structure and the fact that Surveyor Pennefather plotted and valued it as a fence in 1886 is overwhelming evidence of a European origin for the wall. The discrepancies between the lengths sketched and valued by Pennefather, and those remaining today are worrying, but irrelevant to interpreting the walls as European fences. I conclude that the Mill Creek wall is a boundary fence built between surveys in March 1884 and August 1886. James Jardine probably built the wall when he held Portion 88 as a Conditional Purchase, but whether he used Aboriginal or Chinese labour is unknown.

Gallard's location of the walls at the gorge of Ironpot Creek falls close to the stone wall recorded in June 1891 by Surveyor Alfred Ebsworth. Like the Mill Creek wall, the structure is typical of European dry stone walls. Although separated by the gorge, the three sections of wall follow an irregular but generally north-east – south-west path, originally linking to log fences at both ends. Thus I conclude that the wall discovered by Gallard at Ironpot Creek is a European fence built as part of the original, rather meandering western boundary fence of *Coolamatong Run*. Log fences followed ridges where possible, and the walls were built where the boundary crossed the gorge of Ironpot Creek with walls at the least difficult site.

The final stone arrangements to be considered are those near Ironpot Creek, described by Gallard as 'two sets of small stone lines nearby on the top of the ridge [above Ironpot Creek], lying east-west, which mimic the layout of the bigger walls' (Smith 2011). Given their location and orientation, the simplest explanation for the double row are lockspits marking the reserved road between Portions 117 and 131, and probably placed by Surveyor Pennefather in October 1889. Although the rules for surveyors required trenched lockspits at the time of his survey, lines of rocks were permitted a few years later.

## CONCLUSION: EXPENSIVE BUT RATIONAL EUROPEAN FENCES IN DIFFICULT TERRAIN

The final question is why build the walls where they are? Annotations on run plans show that log fences were the norm in this area in the nineteenth century, and if not burnt in a bushfire, the various forms would have been effective for at least 15 years. Although an apparently obvious choice for fences in rocky ground, dry stone walls are the most expensive form of fence, and were only used when absolutely necessary. Post-and-wire fences were rapidly adopted in Australia after

the mid-1850s and their costs fell until about the 1880s, when they stabilised (Pickard 2010b). While fencing was economically beneficial, wire fences were initially rejected by many land-holders ('Jumbuck' 1868:7). Erecting a five-wire fence around a one-square mile block required 20 miles (32 km) of wire, and if this were 8 gauge (4.2 mm), it would weigh approximately 3.4 t, all of which had to be imported to Australia before being transported to the property. Before it was fashioned into a fence, labour was required to cut and transport posts, dig post holes and erect posts, bore holes, and reeve and strain the wire. For many landholders, paying labour and rations to erect log fences or even walls was a better proposition, as the funds came from operating accounts rather than requiring additional capital. And, if Chinese or Aboriginal labour was used, so much the better, as they were invariably paid less than Europeans.

Log or chock-and-log fences, with or without added dog-legs, required no post holes and were ideal for rocky ground, such as the granite slopes and phyllite ridges at Mill Creek and Ironpot Creek respectively. The walls discussed in this paper were only built in short lengths on rough and rocky ground on steep slopes where log fences would have been impracticable. At Mill Creek, dog-legs supporting rails were used to increase the effective height of low sections of wall. The many kilometres of chock and dog-leg and other log fences originally mapped in the area have not survived. Bushfires, termites, and perhaps deliberate removal have all taken their toll. Only the walls survive in mute isolation as monuments to these early attempts by Europeans to occupy and manage a difficult environment.

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