The Canning Stock Route: Desert stock route to outback tourism

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The 1700-kilometre long Canning Stock Route (CSR) crosses a remote part of Western Australia. It was surveyed and constructed in the period 1906-1910 to provide access to southern markets for the Kimberley region and used sporadically until 1959. Since the 1970s the CSR has become popular for recreational four-wheel drives. Several wells and graves have been ‘restored’, the route adapted for vehicular use, and inevitably, there are limited instances of vandalism. There has been no systematic archaeological work on the stock route despite its nomination to the Register of the National Estate. This paper provides a preliminary record of the wells, graves, and more recent material culture of the route. While it questions the well-intentioned private restoration work on the CSR it recognises the need to upgrade facilities in a remote but increasingly popular part of rural Australia. The lack of management of this important archaeological site is considered as a case study of what is evident in many other parts of Australia. The question is asked whether heritage professionals are doing enough to promote historical archaeology, site documentation, management and presentation.

Many north Australian stock routes cross vast tracts of inhospitable country. Since the 1960s, when road trains began to shift stock, the majority have been bituminised to allow for swift, efficient transportation of cattle. Only a few stock routes remain undeveloped and remote from towns and wayside stores. The Canning Stock Route (the ‘CSR’ to contemporary users) in Central Western Australia was probably the most challenging of all Australian stock routes (Fig. 1).

During the CSR’s operational period, there was the township of Hall’s Creek at its northern extremity; Billiluna cattle station, 177 kilometres south; and then virtually nothing until Wiluna 1594 kilometres away. That isolation has changed very little, even today. Hall’s Creek and Wiluna have modest facilities typical of many rural towns. Billiluna is an Aboriginal-owned cattle property and a township in its own right. A remote fuel drop exists at Well 23, a mere 891 kilometres south of Billiluna.

The Canning Stock Route crosses about 1200 kilometres of sand dunes. It skirts salt lakes and clay pans, passes through clumps of stately desert oaks (Allocasuarina decaisnea), winds past weathered sandstone ranges and through extensive spinifex (Triodia spp.) desert. In the process, it crosses important Aboriginal cultural landscapes which were aggressively defended on more than one occasion. Whereas once it was a poorly identified track linking a series of watering places, it is now a well-worn, but rough, single-vehicle-width track.

After winding its way from the semi-desert around Billiluna the CSR skirts the rugged Kuningarra Ranges (Breaden Hills) heading south to tackle several hundred kilometres of parallel dunes the highest of which, between wells 41 and 42, is 16.9 metres high (Gard 1995:389). Occasionally the dunes give way to areas of stately desert oaks (Allocasuarina decaisnea) and salt lakes. Durba Hills is now a popular campsite. Its shady setting alongside permanent water is a dramatic change from the nearby desert. Generally, however, the southern section of the CSR is less of a torture for humans and vehicles than the northern section. It retains its spinifex and sparse tree cover, but the sand dunes are lower and more stable.

The historical archaeological record of the CSR is diverse and now shows considerable impact from contemporary use. To date there has been neither systematic assessment nor documentation of the CSR. Listing on the Register of the National Estate has presented formidable challenges for the Australian Heritage Commission. Not only does the CSR cross various Aboriginal traditional lands but it cuts through at least one Aboriginal stone quarry and through several delicate, and poorly researched, desert ecosystems. It has recently become a popular recreation area. Among all that its raison d’être - a stock route - has been submerged in the web of listing processes. Heritage listing looks set to remain in the “too hard” basket for a while yet. Listing, at least at the national level, has remained unresolved since it was first nominated in 1990. The Western Australian Heritage Council has yet to list the CSR at the State level.

During a two-week overland trip in 1996, I had the opportunity to undertake limited documentation of some of the historical archaeological resources and to consider the implications of high levels of tourism activity on this fragile, linear heritage site of obvious National importance. This paper discusses some of those findings, considers future research needs, and discusses the implications of tourism on this and similar unmanaged culturally significant places. As such, only limited historical resources have been consulted. The paper is intended as a commentary outlining key issues which are of concern both to Australian historical archaeology and to cultural heritage management. It does not purport to be a definitive work. That requires further in-depth research which is beyond the scope of this paper.

Since the late 1970s, the CSR has become a popular four-wheel drive recreational route. Impact on cultural heritage values has been significant. Some route modifications have been made, some access tracks ‘improved’, selected wells have been

Fig. 1: Location Map. Not to scale.
‘restored’, and at least one extra watering point developed (Georgia Bore). One might argue that the CSR has become Australia’s longest playground for outback tourism. With around 1000 vehicles driving the route each year between May and August it certainly comes close to that claim. But even that activity has interesting contemporary archaeological implications. Not least is the manner in which the terrain is tackled by heavily laden vehicles and the abandoned equipment and vehicles which dot the landscape.

Although most traffic now travels south to north, the CSR was actually constructed to bring cattle in the opposite direction. The original survey and construction was also undertaken from south to north: Well 1 is just north of Wiluna. One can, justifiably, argue about which end is the ‘start’ of the Canning Stock Route. In this paper the north to south direction has been used. The reasons are twofold. First, it was the route followed by drovers. Secondly, it was the path we travelled after joining the CSR at Billiluna.

HISTORICAL OUTLINE

The development of the Kimberley cattle industry dates from the 1880s. Concurrently, the southern Western Australian gold fields around Coolgardie and Kalgoorlie were booming. Meat was in short supply. Cattlemen argued for an overland route through country where cattle ticks could not survive. It was heralded by several challenging overland treks by settlers and stock. Notable among them was the MacDonald family’s trek from Goulburn NSW to Fossil Downs near Fitzroy Crossing. Their travels took three years to complete. This substantially dwarfed, for example, the Jardine brothers who took just over five months to take cattle 2600 kilometres from Rockhampton, Queensland to Somerset, Cape York (Byerley 1867:74).

Inland Western Australia attracted the attention of several explorers in the nineteenth century. Peter Warburton’s team explored an area from Alice Springs to the Oakover River in Western Australia in 1873. Their efforts took eight months. During that time they discovered Joanna Springs and crossed near what was, later, Well 47 on the CSR. John Forrest’s 1874 expedition, led him from Geraldton northeast from a point near what is now Wiluna to Weld Springs (later designated as Well 9) and thence to the Western Australian border with South Australia. Forrest later became Premier of Western Australia and a member of the first Federal Parliament. Ernest Giles passed just north of Well 15 during his 1876 return trip from Perth to Adelaide (Giles 1889). Lawrence Wells led the Calvert Expedition of 1896. Despite his extensive experience in Central Australia, the expedition ended in the deaths of two expeditioners due to an incorrect placement of the Joanna Well on Warburton’s maps. In the same year, David Carnegie set out to attempt a crossing of Western Australia from south to north. His journey led him through the Breaden Hills and Mt Ernest near Wells 48 and 49.

In 1906, Alfred Canning, an accomplished Government Surveyor, was commissioned to find a suitable stock route. The group included cameleers, well builders, and support personnel. Heading north during May 1906 (Fig. 2) they initially followed John Forrest’s 1874 track to Weld Springs. It was not until October 1906 that Canning and his team finally reached Halls Creek. After remaining there until February 1907 they set out for the return trip. Two months later, at Well 40, several of the party were involved in a skirmish with local Aboriginal people. Both Michael Tobin, a well-borer, and his Aboriginal attacker died. Tobin is buried about 300 metres from the well.

In selecting suitable well sites, Canning’s party was motivated by a need to find: potable water at shallow depth; distances between wells of about 25 to 30 kilometres and areas free of poison bush (Gastrolobium grandiflorum).

His success was partially attributable to the efforts of his Aboriginal guides. They, however, were subjected to harsh treatment from Canning. At a subsequent Royal Commission it was claimed, and proven, that Canning kept his Aboriginal guides
shackled to prevent them running away. Canning successfully defended his approach pointing out that the survival of his entire party depended upon the guides locating water. Without them, his team was doomed. His defence was accepted.

In March 1908, Canning set out to construct the wells. The party of 30 men were supplied with over 100 tonnes of food and equipment, 70 camels, and 250 goats (Fig. 3). In the first construction period of 14 months, 31 wells were sunk. The team was back in Wiluna by April 1910, having completed a further 20 wells.

Tom Cole was one of the first to take stock along the CSR in 1911. An earlier attempt, in that same year, by Christopher Shoesmith, James Thompson, Fred Terone and ‘Chinaman’ ended disastrously when they were killed, near Well 37, apparently by Aboriginal people, a few months before Cole’s journey (Gard 1995:35).

By 1926, the CSR was falling into disrepair. Two years later the Western Australian government agreed to recondition the wells. William Snell, a landowner and skilled bushman was given the task. Several new wells were built, others were cleaned, had troughs replaced, or had repairs undertaken to the fences and well covers. Snell pulled out after Well 35. His efforts caused a burst of controversy. Canning, then working in private practice and aged 68 years, was asked to complete the refurbishment (Gard 1995:93). Canning and Snell had disagreed as to just which wells needed to be re-sited and which simply cleaned and repaired.

The last cattle drive down the CSR from Billiluna was in 1959. It was under the direction of Mal Brown. By that time the route had been used for 35 teams, of which 29 were from Billiluna Station. Brown had taken 11 of these mobs (Deckert 1994: map). Gard (1995:86) writes that only 8 mobs were shifted down the CSR between 1911 and 1931 and that a further 20 were shifted in the period 1932 and 1959.

The CSR was neglected for several years. In 1963 a National Mapping Service survey party, comprising Russell Wenholz, Dave Chudleigh and Noel Keally took just under five weeks to travel the CSR. In 1977, the first commercial tour completed the drive. In 1983, a Beach Buggy and a Citroen 2CV became the first two-wheel drives to complete the entire route. In subsequent years it has been walked, tackled by camel (again) and ridden by trail bike riders.

ARCHAEOLOGICAL EVIDENCE

The CSR was once a string of wells extending across remote desert landscapes. The wells ranged from purpose built structures to adapted ‘native wells’ and a few natural springs. The ‘track’ was a standard stock route: a five-mile wide (eight-kilometre) surveyed corridor linking watering points and stock transit yards at Hall’s Creek and Wiluna.

For ease of description the historical archaeological evidence is considered as four elements:
1. the original route;
2. the wells, including shafts and covers, hand windlasses and buckets, whip poles, troughs and fencing;
3. other material culture, including graves, forts, ‘native wells’ etc.;
4. the modern route, including detours, dune crossings, abandoned equipment and reconstructed wells.

THE ORIGINAL ROUTE

The CSR was defined by Canning as an eight-kilometre wide corridor. The prospects of finding evidence of use, either by Canning, Snell or the droving teams are low. Given that drovers only used the track 35 times in 48 years evidence is, in any case, likely to be inconspicuous. Most of the linking track between the wells appears to have been hidden beneath encroaching spinifex, blowing sand, and the contemporary four-wheel drive track.
With its more recent adaptation for four-wheel drive vehicles, the situation has changed dramatically. A clearly defined single-width track now links the wells. In some sections in the north, particularly between Wells 42 and 48 and north of Well 51, the contemporary track lies outside the original, surveyed corridor. For the most part, however, the CSR twists and winds within the original surveyed ‘track’.

Hailing said that, the question of significance is immediately called to question. Is a stock route which was so broadly defined, and used so rarely, really of heritage significance? What makes the CSR significant, from an archaeological perspective, are the initial surveying and construction feats and its purpose. Its length and remoteness, the personal and racial conflicts, the challenges of moving cattle through harsh terrain, and the tenacity of those who have re-established the CSR are significant too in a broader, social sense. The adaptive re-use of the CSR is also notable from a technical perspective because of the development of some innovative route ‘designs’.

WELLS

The wells determined the route for droving livestock. Canning’s original wells were numbered sequentially from south to north. Subsequent expeditions adapted or added additional watering points. It has been claimed that Canning built each well in identical style with only the depth of each varying (Deckert 1994) (Fig. 4). The archaeological evidence tends to confirm this, although there are some morphological variations in the equipment used (see below).

Each well shaft measured 2 metres by 1.2 metres (6 feet by 4 feet) in area. The depths varied from 2.55 metres (8 feet 6 inches) at Well 11 to 31.85 metres (104 feet 6 inches) at Well 5. Locally cut timbers were used to shore-up the walls of wells located in unstable areas. At most wells some timbering is still evident although much of it has succumbed to termite damage.

A mix of nostalgia, and an understandable desire to improve the wells for use by contemporary travellers, has resulted in several wells being ‘upgraded’. The decision to use modern materials does not appear to have been taken lightly. The 1983 reconstruction of Well 26 was managed by Harry Gough, whose concern was to use materials which were both durable and safe. While the original plans were perused at length, adaptation was considered appropriate (Gard 1995:174). From an archaeological perspective, such a decision is cause for concern.

Well 6, Pierre Springs, was reconditioned in 1991 by the Geraldton Four Wheel Drive Club. Instead of cutting down and using local timbers to reline the well they decided to use a rubber lining which is 1.2 metres in diameter and comes in lengths of 2.4 metres (Gard 1995:231). Their efforts have been applauded by many travellers for whom a reliable supply of freshwater is not simply desirable but crucial. The timber whip pole has been replaced with a metal one. Notwithstanding the valuable contribution of this work with regard to traveller safety there may have been an unfortunate loss of archaeological information at the time of the reconstruction.

In 1986, the Australian Army fitted Well 33 with a windmill. It continuously pumps water onto the adjacent ground. The modifications were made after 11 Aboriginal people died of thirst in the Great Sandy Desert (Gard 1995:338). The intention to provide better access to water in the future was unquestionably appropriate but badly planned. As the Gard notes the original well has been flooded by surplus water from the windmill (Gard 1995:339).

This need to balance contemporary needs with heritage value is not peculiar to the Canning Stock Route. It is an international dilemma. In terms of heritage management, it would have been useful if archaeological research had preceded the adaptation of all these wells. Their modification, without prior documentation, has clearly resulted in the loss of some historic archaeological data. However, one could argue the modifications will be regarded as examples of technological innovation and evolution in future. In a practical sense, the wellbeing of travellers has appropriately reigned uppermost.

A comprehensive inventory of each well would be an invaluable aid in both archaeological documentation and heritage significance assessment of the CSR and as a prelude to further maintenance work. That task is one which would take a significant amount of time and resources and was beyond the purpose of this exploratory visit.

Shafts and covers

Wells were originally equipped with two sheet metal doors riveted to light angle iron. They hinged from their outer edges and flush-fitted in the middle. These served a variety of purposes including the reduction of evaporation, safety and the elimination of the risk of wildlife falling in and polluting the water. The doors folded back flush to the ground on metal strap hinges. In most cases they were strengthened by two diagonal braces to which the sheeting was also riveted. Others were cross-braced with two parallel cross-braces and an intermediate cross-brace. The restoration at Well 6, however, used box steel tube with

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Fig. 4: Schematic cross-section of typical well site (not to scale).
two parallel cross braces as the frame.

Hand windlasses and buckets

Each well was initially equipped with a hand windlass comprising two 50 mm angle iron legs and an auxiliary supporting leg at right angles to the main supports (Fig. 5). Each set of legs stands 1220 mm above ground level. The 'neck' was about 400 mm long. Bolts secured the legs together and the legs onto their timber supports. Width at the base was 1280 mm.

A timber winding drum approximately 2 metres (6 feet) long was used to retain the wire cable. Winding handles were usually fitted at each end. These were generally of circular cross section although both an hexagonal winder and a circular section handle were noted at Well 4B. This well was constructed in 1929 by William Snell. Each windlass was attached, by rope, to a sheetmetal bucket with a wrought iron handle (Fig. 6). Contrary to popular belief these were not identical although they were similar in size and form (Table 1).

Uniformity of bucket size is found only among those buckets which have been manufactured for the restoration work on wells 26 and 46. One of the buckets used at well 46 had been left over from the 1983 restoration of well 26 (Gard 1995:402). The difference in size of these replacement buckets and those at well 6 is probably attributable to the fact they were produced by a different group of enthusiasts (Gard 1995:231). The original buckets show a diversity of size, and thus capacity, which suggests that they were either produced in the field, were the result of replacement on a needs basis or were, possibly, produced by a number of different suppliers.

Whip poles

The windlass system allows for haulage of relatively small quantities of water at a time. Larger quantities were required to water mobs of thirsty cattle. Whip poles are thus an integral part of each well. They comprise a stout post about 200 mm thick of which some three metres or so is above ground. The posts are set at an angle to position the upper end of the pole over the shaft. A cast-iron haulage wheel is secured at that point (Fig. 7). Drovers ran a wire rope over this wheel and under a smaller
Table 1: Comparative table of extant buckets at Wells 4 to 46,* showing dimensions and approximate capacity.

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<th>Well No</th>
<th>Bucket</th>
<th>int diam (mm)</th>
<th>length (mm)</th>
<th>Basal Indent (mm)</th>
<th>Approx water depth (mm)</th>
<th>Capacity (litres)</th>
<th>Capacity (gals)</th>
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<td>560</td>
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* Wells 1 to 4A were not visited as the road was closed due to flooding. Wells 42 and 47 were not visited due to time constraints. Some measurements could not be included due to artefact deterioration (see note 'n/a' in table above). Maximum water depth was measured as the distance between the bottom of the holes made for the bucket handles and the base of the bucket.

guide wheel bolted to a vertical post extending approximately 500mm above ground and positioned several metres from the shaft. The ropes could then be secured to haulage animals at that end. A 200-litre canvas bucket was dropped down the well, filled with water and hauled to a position where the adjacent trough could be filled (Deckert 1994).

Most original whip poles appear to have been constructed from a single length of timber. Obviously, this would have been the strongest arrangement. Well 10 is an exception. At some stage, an extension was spliced onto the base section. Whether this was because of termite damage, breakage, or simply to extend the length of the available materials is conjectural. Although timber was used initially, the recent reconstruction of Well 6 incorporated a metal pole because of its more durable nature (Gard 1995:231).

Further research is required to determine structural elements of the whip-poles and the modifications necessary during field construction. While there are obvious engineering principles applicable, it is evident that some local variations were implemented in the field. Archaeological investigation into the sub-surface method of adequately securing the poles would be of interest.

Troughs

The troughs were all 13 metres (30 feet) long and of similar form. The sections were joined on site. The pre-formed sheetmetal sections were transported to the sites by a team of camels (Fig. 3). Most troughs have long since succumbed to natural deterioration. A funnel-like chute was fitted at the end of the trough to direct flow from the buckets of water as they were hauled to the surface and poured into the troughs. It is worth bearing in mind that expeditious filling of the troughs would have been essential. A thirsty mob of cattle would have been difficult to control once they had smelled water.

Fencing

Timber post stumps and decaying fence rails over the troughs are identifiable at several locations. These fences were primarily to protect the troughs from damage as stock were watered.

OTHER MATERIAL CULTURE

A diversity of archaeological material, some recent and some pre-dating Canning’s journeying remains along the CSR. Vandalism, fire and weathering are gradually affecting many
Fig. 7: Detail of haulage wheel on whip pole.

Fig. 8: Grave of Christopher Shoesmith and James Thompson at Well 37.

Fig. 9: The remains of John Forrest's 'fort' at Weld Springs.
elements of the CSR’s material history. Some are discussed below as indicators of that diversity.

Graves

The history of the three identifiable burials at Well 37 has been extensively documented by the Gards (1995:352). George Shoesmith, James Thomson and an Aboriginal man called ‘Chinaman’ died at the well in April, 1911 while droving stock. They were apparently attacked by local Aboriginal people. Precisely what did occur is not clear from the written record (Gard 1995:371). Their shallow graves were discovered some months later. The two Europeans were, according to one account, reburied in a single marked grave (Gard 1995:362).

However, Wally Dowling, a drover, recalled, in 1949, that Shoesmith was buried northeast of the well and ‘at the foot of wattle northeast is a community grave Thomson, a yellow fellow and five niggers [sic]’ (Gard 1995:371). Shoesmith and Thomson were buried in a single grave marked ‘with a piece of tin from the Well. It simply read “S & T”, R.I.P. This plaque was found in 1967 and was handed to ... the Walkaway Museum near Geraldton Western Australia. Chinaman’s grave is unmarked’ (Gard 1995:365). Following recent restoration of the graves at Well 37, that of Shoesmith and Thomson is marked with a single post and rail fence and a rudimentary timber cross (Fig. 8).

John McIernon was killed during an attack on a prospecting party south of Well 37 in 1922. He was buried near the well a few days later. There is some dispute over the actual gravesite (Gard 1995:376-377). The identified site is marked with post and rail fencing with a semicircular metal drum top identifying it as McIernon’s grave.

At Well 40 is the grave of Michael Tobin, a member of Canning’s 1907 expedition. He too was speared by an Aboriginal man who was reputedly killed after spearing Tobin. The grave was restored in 1987 and incorporates ‘a marble cross which was supplied by the Mines and Water Supply Department in Perth and erected by the well [re]construction team’ (Gard 1995:383).

Jack Smith died of injuries a few days after falling from his horse near Well 49 in May 1939. His grave has also been restored and incorporates a small plaque inscribed ‘Jack Smith Died May 23rd 1939 R.I.P.’. The plaque was ‘cut out’ by a workmate soon after Smith’s death (Gard 1995:421).

Forts

In 1874, the explorer John Forrest and his party encountered opposition from local Aboriginal people at Weld Springs. He constructed ‘a stone hut, ten feet by nine feet and seven feet high, thatched with boughs .... It will make us safe by night. Being a very fair hut it will be a great source of defence’ (Forrest 1874 quoted in Gard 1995:238-239). A heap of stone now marks the site of this modest fortification (Fig. 9). It stands about one metre high with the interior still discernible.

The site has considerable significance not only as an early contact site but for its association with John Forrest, who was subsequently knighted and went on to become a Premier of Western Australia. The site also has the potential for archaeological studies to reveal more of the structure itself. Furthermore, it has become an important feature for modern travellers of the CSR.

‘Native wells’

Many of the CSR wells were originally ‘native wells’ and waterholes. The latter are generally natural features such as the now silted Windich Springs, ‘Water’ 38 Wajapuni, and the scenic Durba Springs. ‘Native wells’ were generally shallow, funnel shaped excavations into which water would seep. Typically they were several metres deep. The water was trapped in a shallow, often angled depression into which sunlight rarely filtered thus reducing the risk of loss of water from evaporation (personal observation, Central Desert 1963). After use, the base was sometimes backfilled with soil, again as a means of reducing evaporation.

Canning changed that. His team dug 6 feet by 4 feet vertical shafts with timber shoring where necessary. This size and shape is consistent with small mine shafts of the time. It is noteworthy that rectangular mine shafts were generally favoured by Australians and Americans while circular shafts were more popular in other countries (Lewis 1941:167). Clearly, Canning and his successors chose to follow mining conventions and adopted those practices in well sinking. Rectangular shafts would, after all, have been easier to timber (M. Moore, pers. comm.).

THE MODERN ROUTE

The influx of four-wheel drive vehicles along the CSR is leaving its own unique footprint on the landscape. While refuse and environmental devastation is minimal - most travellers seem to observe the recommended practice of removing inorganic refuse and burying organic material - there are the inevitable exceptions. Notable among these recent impacts is the modification to the vehicle track.

Detours

Various detours have been implemented to provide travellers with optimum opportunity to visit all the wells with minimal backtracking. In some cases, short cuts have been made. In addition realignments in some sections have been introduced to more accurately follow the original route (Gard 1995:349) or to avoid extensive, bone-jarring drives to locations of limited scenic value or historical significance. It is an example of travellers’ commitment to the environment that there are few detours close to the main route. For the most part the only detours are where two vehicles, or convoys, have passed each other. A few metres of tyre tracks and associated broken bushes are the only evidence of casual ‘off-roading’.

Dune crossings

The high dunes in the northern section with their steep approaches, soft sand and complex creasting need to be tackled with innovative techniques. In hot conditions the desert sand loosens. Traction is challenged and it is easier to bog a vehicle. To diminish this problem traffic on the CSR has developed at least five different approach ‘designs’ (Figs 10-14). Low, firm dunes may be approached straight-ahead (Type 1). No extended run-up is necessary (Fig. 10). A slight modification is evident in the ‘Type 2’ approach (Fig. 11). The initial approach is parallel to the dune to be crossed. Shortly before the actual crossing the road makes an outward hook away from the ridge to be crossed. It then swings back in time to provide for a direct approach to the dune which, at this stage, is reminiscent of a ‘Type 1’ crossing.

At times it is necessary for vehicles to cross two merging dunes in rapid succession. Sometimes a straight approach is appropriate. Frequently, however, it is better to offset the two ‘Type 3’ crossings have been developed to make best use of the terrain and provide optimal run-up opportunities (Fig. 12). A straight ascent over the first dune is followed by a gentle curve to provide for a direct crossover of the second dune. Reasonably firm terrain is essential for this approach to be effective for the intermediate curve may slow the transiting vehicle.

Complexity is evident in conditions such as the ‘Type 4’ crossing (Fig. 13). In this example two locations may have been selected to cross the same dune. It is an unusual technique with one particular example documented near Durba Springs. An approach is made either directly or by taking a right-angled curve to approach the dune at ninety degrees near the dune base. Other
options include two parallel extensions from the main track which might be used. One is close to, and parallel with, the dune while the other is further away. Soon after the road swings sharply to the right and approaches the dune at right angles. Once over the crest the road swings back to rejoin the main vehicle track.

Unquestionably, the most complex system is the 'Type 5' crossing used to traverse larger double dunes (Fig. 14). While the approach from either end is relatively direct a range of options can be taken depending upon the driver. Once the first crossing has been completed it is possible to take a sharp turn and approach the next dune relatively directly. Various choices are offered the driver, however, in respect of the approaches. In the example illustrated here a driver heading south may continue past the start of the second crossing, follow the southernmost loop and thus gain a useful additional run-up distance in approaching this crossing.

For the north travelling vehicle, the options are numerous. After crossing the first dune, a driver might elect to continue west and turn directly north at the T-junction to take the second crossing from the westernmost approach. Alternatively, a left turn at the T-junction would bring the driver back in a looped curve to a point parallel with the first dune. Passing the original crossover the road leads directly north along a more eastern route. If a longer run up is necessary the vehicle can be reversed into the southern 'tail' before the approach is tackled. The choice would depend not only on a 'spur-of-the-moment' decision but on the vehicle's weight and, thus, its ability to cross dunes with ease. Existing weather conditions can also affect a vehicle's performance: hot conditions loosen the sand making dry bogging more likely.

These techniques may, at first, appear of limited archaeological value. In reality, the contrary is true. They provide dramatic examples of contemporary adaptive ingenuity, and the changes made to best meet the demands of modern transport in a desert environment. They demonstrate issues which are appropriately the subject of historical archaeology. Their relatively recent age is no reason to preclude them from the archaeological record.
Abandoned equipment

A variety of vehicles and equipment has been used in recent years to cross the CSR. In most cases the results have been successful. A few blown tyres and the occasional mechanical repair site attest that success has often been at a price. Some travellers have been far less successful. Several abandoned vehicles litter the track. One is burnt out as result of a spinifex build-up around the exhaust. The resultant fire destroyed the vehicle. Many guide books carry warnings of fire risk with the build up of spinifex seed beneath the chassis and the rapidity with which a vehicle can be come a burnt wreck (Gard 1995:10).

Among the more noteworthy items remaining along the CSR is Murray Rankine's trolley. Rankine and two colleagues were forced to abandon their 1974 efforts to walk the CSR when his trolley proved unsuitable in the soft sand. The remains of the trolley lie 19 km north of Well 15 (Gard 1995:264). Two years later Rankine returned and completed the walk with associate Rex Shaw.

CONCLUSION

This brief survey has sought to identify the broad issues and diversity of historical archaeology of the CSR. Recording the archaeology of the CSR is challenging for it is both physically and logistically demanding. Further archaeological investigation is certainly justified. A series of carefully planned and focused studies should be completed with relative simplicity. Lengthy periods of fieldwork would require significant resources in the way of food, water and fuel. What might be a matter of a few days' fieldwork in closely settled areas would require careful planning and involve three or four vehicles. Even fieldwork, such as completing an inventory of each well site, would necessitate carrying sufficient supplies for about a month.

The wells, their related infrastructure, and the graves, are the key archaeological elements. Further archaeological study could best be linked with the planned upgrading of other wells. Indeed, it should be a requirement that archaeological investigation precede such work.

Public safety is a major issue for the land managers - the Western Australian Government. As water supplies are crucial for human survival, well upgrades are both desirable and necessary, as is trying to encourage travellers to stick to safer routes to minimise vehicle accidents. The trade-off is that if the track is 'upgraded' for modern travellers, then greater use will be made of the route, and probably with greater impacts.

Any upgrading of the wells and the track involves modification to the cultural environment and a consequent loss of the historical archaeological record. The greatest need is for archaeological documentation and development of a soundly based management plan. As in many places within Australia, there are disparate interests in respect to traditional Aboriginal use, contemporary use, and heritage conservation. Resolution of these diverse interests is essential if the CSR is to maintain its justifiable significance as an icon of Australian resourcefulness and tenacity.

In general, the Canning Stock Route has fared reasonably well; perhaps by default rather than by design. The user groups have implemented a praiseworthy degree of self-regulation, although to some extent heritage professionals have failed to educate the public in respect of what constitutes 'appropriate site behaviour'. Sound management of nationally significant heritage features such as the CSR does not rely on preventing development or use and it certainly does not condone putting people's lives at risk. On the contrary there is the need to allow safe 'present day use' while preserving original features and enduring heritage values by means of an appropriate management strategy. It is not a difficult challenge but it does require participation and commitment from all stakeholders.

Nominations of heritage places necessarily require thorough assessment. That takes time. Time is something high-use heritage areas can ill afford and nine years is an extensive period to have a nomination pending. In cases where there is a demonstrable case to support claims of significance, any delay must be of considerable concern. Sometimes wanton vandalism destroys archaeological evidence and adversely affects heritage value. Sometimes, well-intentioned restoration of a place can adversely affect its integrity. Criticism should not be directed against such individuals. Rather, it is a fault of a system which fails to link sound management with education and technical advice. It is not a situation limited to this one Western Australian site but is encountered throughout Australia and many other countries. Well-developed policies are essential, but they do not preclude education of the wider community and pro-active listing action by under-sourced heritage agencies.

Each time wells are upgraded, archaeological evidence is obliterated. In this regard, the CSR reflects what is occurring in many other locations. It is quite wrong to suggest the public should be refused access to this magnificent area resplendent, not only in its diverse flora and fauna, but also in its rich Aboriginal and historical material culture. A sound management strategy is desperately needed. Ideally, it should consider all elements of cultural and natural heritage. Assessment of the CSR's historical archaeology should not be further delayed, for it is on these elements that there is most pressure as the CSR switches from cattle droving to outback tourism.

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