

## **Quantification of the amount of rock art lost at Dampier**

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The only published estimate of the amount of rock art destroyed on Murujuga ('Burrup Peninsula', Dampier Archipelago, Western Australia) is that 20 % to 25 % of that island's rock art has been either destroyed or removed from its site context between 1963 and 2002, i.e. since the commencement of industrial development (Bednarik 2002: 30). This estimate has been vehemently disputed by Western Australian state government agencies, most especially the Department of Industry and Resources. That office has argued that my estimate is grossly inaccurate, and that only 2 % of the Murujuga rock art had been lost to development as of January 2004 (cf. Bednarik 2006: 55–6). On the other hand, that same office agrees that 38 % of the total land area of Murujuga has been substantially cleared of all rock art, so its claim was essentially that 38 % of the land contained only 2 % of the rock art.

More recently, on 16 August 2005, a series of eleven questions directly relating to the quantity of rock art and number of rock art sites lost on Murujuga was asked by Hon. Giz Watson in the Legislative Council of Western

Australia (see Appendix A below). The answers were given by the State Minister for Fisheries, Hon. Jon Ford, representing the Minister for Indigenous Affairs (Hansard pages 3917c–3918a/1). His answers, also in Appendix A, show that in the government's estimate, there should have been approximately 3690 rock art sites on Murujuga prior to the 1960s (in the order of 41 % of an estimated total of 9000 archaeological sites). The quantity of rock art destroyed between 1963 and 1972 is unknown to the Minister, as is the overall quantity of rock art. The Minister also quoted some numbers of destroyed, relocated and 'preserved' sites and petroglyph motifs, which suggest that more rock art was destroyed than preserved, but the cited figures are obviously inconsistent. The percentages would suggest that there were in total 67 000 petroglyphs, which is not only at odds with the prevailing opinion that their number well exceeds one million, but by suggesting such a low total the Minister contradicted his own government's view at the time that the damage is not as extensive as I had proposed in 2002.

Since then, government agencies have conducted more detailed research, the results of which are contained in a letter from the Minister for State Development to the Minister for Heritage, dated 21 March 2005, Ref. No. M28751. This letter is featured in the draft *Agenda of the Heritage Council*, dated 10 February 2006 (see Appendix B below). From this document we can glean the following, more comprehensive information.

After 1972, 469 rock art sites have been destroyed or their contents removed and dumped in 'temporary' storage areas as a result purely of the operations of Woodside Offshore Petroleum around 1980 and, after 2002, the operations of Burrup Fertilisers and related infrastructure. This represents 12.7 % of a possible total of perhaps 3690 sites on Murujuga. The Minister also states that the effects of the pre-1972 development (by Hamersley Iron and Dampier Salt) would have been greater, i.e. because the areas affected were in general rockier and contained higher concentrations of petroglyphs. Therefore, the Minister suggests, the total number of sites destroyed since 1963 is likely to be in the order of 900, or 25 % of the total number existing in 1963.

First, it is self-evident that this estimate of 25 % coincides with mine of 2002. A considerable quantity of rock art was either destroyed or relocated between early 2002 and the present, although no reliable figures are available. This destruction occurred primarily in the vicinity of King Bay, but was not limited to that area. Therefore I agree entirely that, as of early 2006, the total of destroyed rock art on Murujuga is in the vicinity of 25 %.

Second, I wish to reiterate the point that the figures referring to destroyed rock art provided in Appendix A refer purely to declared damage occasioned by Woodside, and to damage occasioned after early 2002. They exclude extensive damage that occurred elsewhere after 1972, caused by Hamersley Iron/Rio Tinto, by the Dampier Port Authority and by other parties, and of course they exclude all pre-1972 losses.

Third, the only effect on rock art considered here is

that occasioned by direct physical impact by industry. What is not considered are the impacts of the massive industrial emissions, especially nitrogen oxides, and of tourism.

Fourth, only the destruction of petroglyphs is discussed here. It needs to be appreciated that the Dampier Rock Art Precinct, a term I coined in March 2004 when nominating the monument to the National Heritage List, also comprises Australia's largest concentration of stone arrangements (megalithic and other stone structures), numbering many thousands. They, too, have been relentlessly destroyed since 1963, and the portion of them lost on Murujuga is also roughly one quarter.

Fifth, while the state government has no reliable quantified information for the decade from 1963 to 1972, I do, having studied Dampier rock art and its gradual destruction for most of the period from 1967 to 1970 (Bednarik 2006: 26–32). During these years, I recorded 572 petroglyph sites on Murujuga alone, some of which comprised far more than 10 000 motifs. It is important to appreciate that, in recording these sites, I separated 'sites' in accordance with the standard introduced only a few years previously by the Centro Camuno di Studi Preistorici in Italy. In this convention, a 'site' defines a concentration of rock art that is separated from any other rock art by a minimum of 50 m free of any rock art (Bednarik 2002: 30). All other, subsequent investigators exercised either no such rigour, calling a site whatever they perceived to be so, or used a lower standard of 25 m free of rock art (Vinnicombe 2002: 14). In practice, the number of sites one registers increases exponentially as one decreases the distance between 'sites'. Therefore, the effect of applying the minimum distance of 25 m rather than 50 m would be a roughly five-fold increase in the number of sites counted. Thus my total of 572 sites recorded would translate into roughly 2900 sites, had I used the 25-m standard. Since I estimate to have recorded 80–90 % of the rock art sites on Murujuga, my figures are very similar to those provided by both the Minister for Fisheries and the Minister for State Development, i.e. there appear to have been between 3200 to 4000 sites prior to the 1960s, using the 25-m standard. Of these, in the order of 900 have been destroyed. Again, the state government and I are in complete agreement now, following a period of government denial.

To me this development is interesting because it follows, or coincides with, similar developments concerning other aspects of the Dampier rock art. For instance, in May 2002 I presented detailed quantified data on the industrial emissions at Dampier, in discussing their effects on the rock art. The figures I then offered were strenuously denied by several government spokespersons. Yet almost at the same time as Fred Riebeling MLA questioned my data, on 28 June 2003, the scientific team of the principal industrial proponent, Methanex Pty Ltd, released its own report, which agreed strongly with my figures, even exceeding them in some cases (Bednarik 2006). Moreover, the government's own consultants, Sinclair Knight Merz, produced their report shortly thereafter, also agreeing substantially with my preceding paper and warning the government about the dangers of increasing emissions at Dampier.

To cap it off, on 26 March 2003, we obliged Woodside to admit that they had always lied about their emissions of nitrogen oxides, which were in fact twice as high as what they had been reporting to the National Pollutant Inventory for as long as it had existed.

Now that the Minister has conceded that 469 rock art sites have been destroyed after 1972, and a similar number before that time, it may be timely to reconsider the obvious fact that I am the only eye witness of the full scale of destruction up to 1972. I have written numerous letters about this subject between 1968 and 1970, and I have published details of the destruction as it occurred. I will shortly provide a full account of these events, but in the meantime I draw readers' attention to the details of my research at Dampier from 1967 to 2005 (Bednarik 2006).

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## REFERENCES

- BEDNARIK, R. G. 2002. The survival of the Murujuga (Burrup) petroglyphs. *Rock Art Research* 19: 29–40.
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RAR 23-772

## APPENDIX A

*Legislative Council – Questions on Notice, Tuesday, 16 August 2005, Hansard page 3917c - 3918a /1*

2092. Hon Giz Watson to the Minister for Fisheries representing the Minister for Indigenous Affairs; Hon Jon Ford replied:

(1) Has there ever been any quantitative assessment or recording of the number of rock art sites on the Burrup Peninsula?

Yes.

(2) Has there ever been any quantitative assessment or recording of the amount of petroglyphs on the Burrup Peninsula?

Yes.

(3) If yes to (1), and/or (2), by whom and when?

The assessments and recordings have been collected from the work of professional consultants conducting heritage surveys for proponents and other parties over the last 20 years.

(4) When were rock art sites or individual petroglyphs on the Burrup Peninsula first recorded with the Department and by whom?

The earliest rock art entry on the register for the Burrup is King Bay 1 recorded on the 1 March 1972 by Mr Warwick Dix, the first Registrar appointed under the *Aboriginal Heritage Act 1972* (AHA).

(5) What is the Department's numerical and percentage estimate of the individual Gidley Granophyre petroglyphs on the Burrup Peninsula?

No data is available to isolate rock art by rock type.

(6) What is the Department's numerical and percentage estimate of the individual rock art sites on the Burrup?

There are 2067 sites on the Register for the area between Pond Zero at Dampier Salt and north to Legendre Island but not including the islands of the greater Dampier Archipelago. The estimated total for Aboriginal sites (based on transect surveys measured site density of 56 sites per square kilometre) is 9000. In well-recorded areas rock art sites comprise 41 per cent of the sites. Therefore it can be estimated that the Burrup Peninsula will contain a total of 3690 rock art sites.

(7) By what methodology have these numerical and percentage estimates been established?

Analysis of the statutory register database (AHMS) output to an Excel spreadsheet using simple count functions and by query interrogation of a geographical information system (GIS) to derive areas in square kilometres.

(8) How many petroglyphs, by number and percentage, have been destroyed or relocated on the Burrup Peninsula since civil and industrial activity commenced?

Civil and industrial activity commenced before the AHA. Mining and pastoral activity also impacts heritage values and has done so since early settlement. The Department of Indigenous Affairs (DIA) has no data prior to 1972. Destroyed 4776 (7.2 %), relocated 1682 (2.5 %), preserved 3327 (5.0 %).

(9) How many sites, by number and percentage, have been destroyed or relocated on the Burrup Peninsula since civil and industrial activity commenced?

Civil and industrial activity commenced before the AHA. Mining and pastoral activity also impacts heritage values and has done so since early settlement. The DIA has no data prior to 1972. Destroyed 350 sites (4 %), relocated 119 sites (1 %), preserved 238 sites (3 %).

(10) In relation to both sites and petroglyphs has there ever been a quantitative assessment or recording of their numbers in the Dampier Archipelago?

Yes.

(11) If so, by whom and when?

The DIA, in June 2005.

## APPENDIX B

*Letter from the WA Minister for State Development to the WA Minister for Heritage, 21 March 2005, Ref. No. M28751:*

It is impossible to accurately identify what percentage of petroglyphs (rock art) or sites that [sic] may have been destroyed or relocated on the Burrup as no inventory has ever been undertaken.

A site may not contain petroglyphs or it may contain a large number, but all site [sic] contain archaeological matter. Reports to the Federal Minister for Heritage indicate there may be millions of petroglyphs on the Burrup emanating from many periods. The Department of Indigenous Affairs (DIA) has no data on material, sites or rock art destroyed or moved prior to the establishment of the Aboriginal Heritage Act 1972 (AHA). A common comment from the government in the media is that there are 2000 sites on the Burrup.

In response to parliamentary questions (Legislative Council Tuesday, 16 August 2005) the government has advised that the following data applies [the data listed above are then repeated].

The DIA has estimated that there are 9000 sites on the Burrup and has further stated that in well-recorded areas, rock art sites (petroglyphs) comprise 41 per cent of the sites. Therefore it can be estimated that the Burrup Peninsula will contain a total of 3690 sites containing rock art (petroglyphs). This quantitative assessment and recording of these figures was compiled by the Department of Indigenous Affairs in June 2005.

It can therefore [sic] be extrapolated that if the Burrup does contain 3690 rock art sites, that as [sic] 469 sites have been moved or relocated since 1972 that this equates to the loss or movement of 12.7% of all estimated sites on the Burrup since 1972. This in essence represents only the material impacted upon by the development of Woodside Offshore Petroleum (1980), Burrup Fertilizer [sic], infrastructure corridors and port facilities associated with these developments.

Civil and industrial activity had commenced well before the introduction of the *Aboriginal Heritage Act 1972*. In 1964 Min-

ister for Education and Native Welfare announced that the outlet ports for the iron ore industry were to be located at Port Hedland and King Bay on the Burrup. (Searches indicate that no mention was made in relation to the heritage values of the Dampier area). In 1966 Township of Dampier and the Port at Parker Point was established on the Burrup by Hamersley Iron. In 1970 Hamersley Iron established a second port on East Intercourse Island.

During this period the Dampier Salt works were developed on the Burrup and Mistaken Island with their first shipment of salt from Mistaken Island taking place in 1972. The International Federation of Rock Art Organisations suggests that a large amount of artefacts and rock art was lost during this period. No records of material destroyed, or exported exist, with the exception of a newspaper article from 1972, which reports the export of an engraving of a turtle to Japan. The use of satellite imagery would suggest that the footprints of the pre-1972 developments are larger than the post-1972 developments and overlay rocky outcrops in coastal areas (areas considered to be prolific in heritage material).

If as the DIA suggests that there is [sic] a fairly even distribution of sites across the Burrup and that these are of a density of 56 sites per sq km of which 41 % are sites that contain rock art then it can be reasonably extrapolated that the number of sites destroyed (there was no relocation) prior to the introduction of the *Aboriginal Heritage Act 1972* would be double the 469 sites lost post-1972, giving rise to a figure of possibly 900 or 25 % rock art sites lost. It also could be further extrapolated that the number of petroglyphs destroyed, moved or lost could therefore exceed 10 000 items. The above evaluations are based on data proffered by the DIA, this data may substantially inaccurate.