



## MINISTER FOR ENVIRONMENT; WATER

Your Ref: Petition 169  
Our Ref: 42-18141

# PUBLIC

Hon Brian Ellis MLC  
Chair  
Standing Committee on Environment and Public Affairs  
Parliament House  
PERTH WA 6000

Dear Mr Ellis *Brian*

I refer to your letter dated 12 November 2012 seeking comment on Petition No 139 – Burrup Peninsula and Islands of the Dampier Archipelago.

The Department of Environment and Conservation (DEC) and the Environmental Protection Authority (EPA) have provided advice to me in response to the terms of the petition and the submission from the principal petitioner.

In late 2002, the then State Government gave a commitment to fund and undertake a study into the effect of industrial emissions on the rock art of the Burrup Peninsula. The Government appointed consultants to undertake the various studies and in addition, consulted with members of Aboriginal groups regarding locations for monitoring. The Burrup Rock Art Monitoring Management Committee was established in 2002 to ensure the continued protection of rock art on the Burrup Peninsula.

The Government at the time entered into the *Burrup and Maitland Industrial Estates Agreement Implementation Deed* with three Aboriginal groups in January 2003. The Agreement enabled the State Government to compulsorily acquire native title rights and interests in the area of the Burrup Peninsula and certain parcels of land near Karratha.

On 16 January 2003, under the *Burrup and Maitland Industrial Estates Agreement Additional Deed*, the State of Western Australia committed to organise and fund a minimum four-year study into the effects of industrial emissions on rock art within and in the vicinity of that part of the industrial estate which is on the Burrup Peninsula. A copy of the Deed is at Attachment 1.

Tenders for six rock art monitoring studies on the Burrup Peninsula were let for a four-year scientific rock art monitoring program, including:

- two studies covering the monitoring of ambient concentrations of air pollutants and microclimate and deposition – to be undertaken by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Atmospheric Research; and

- two further programs featuring artificial fumigation of rock surfaces and fieldwork on rock surface colour changes – to be undertaken by CSIRO Manufacturing and Infrastructure Technology.

Copies of Ministerial media statements dated 16 July 2003 and 21 January 2004 in relation to the study are at Attachment 2.

The researchers involved in the study were required to provide six-monthly and annual reports to the Burrup Rock Art Monitoring Management Committee. Following completion of the studies and peer assessment, the Committee was to produce a final report for Government and the community, including recommendations for the ongoing preservation and conservation of the rock art.

The Committee provided its final report in April 2009 to the Government (Attachment 3).

The Committee's recommendations can be summarised as follows:

- monitoring of the colour contrast and spectral mineralogy of rock art be continued on an annual basis for ten years and be reviewed after five years;
- ambient air quality and rock microbiology monitoring be suspended and only recommenced, if warranted, by a major increase in emissions or if evidence becomes available to require further monitoring;
- a small technical working group be established to consider the monitoring results and make them available to the public on an annual basis; and
- no environmental management measures specifically to protect the rock art from air pollution are necessary at this time. If monitoring suggests the possibility of impacts of air pollutants on rock art, the technical working group will report to Government so that appropriate action may be taken.

With the release of its final report, the Committee was dissolved.

Given DEC's role in environmental monitoring of emissions from industry on the Burrup Peninsula, responsibility for coordinating the rock art monitoring program was transferred from the Department of State Development to DEC in May 2010.

In September 2010, the Government approved an extension of the rock art monitoring program until 2015, with extension beyond this time subject to an ongoing funding commitment from industry. Funding for the rock art monitoring program has been secured until 2015 from the Burrup industries.

The Burrup Rock Art Technical Working Group was also established at that time to review the annual monitoring report and recommend, where appropriate, any management and mitigation strategies based on the findings. Associate Professor Frank Murray from Murdoch University was appointed as the independent Chair of the Working Group.

The Working Group comprises representatives from DEC, the Department of Indigenous Affairs, the Western Australian Museum, Burrup industry and an independent expert.

CSIRO has been monitoring the surface colour and mineralogy of the rock art annually for the Government since 2004. In 2011, CSIRO was contracted for a further two years to continue the field monitoring it has undertaken since the rock art monitoring program commenced. This includes a series of spectral mineralogy and colour contrast tests on a representative sample of rock art across the Burrup Peninsula. CSIRO prepares a comprehensive annual report on the findings of the tests, which is released to the public.

The purpose of the report is to measure and report on whether there has been any change in colour or mineralogy in rock art since monitoring began in 2004. Seven rock art sites are monitored at different distances from industrial sources of emissions. These sites range from sites adjacent to industry to remote islands in the Dampier Archipelago.

CSIRO's latest report of tests undertaken in August and September 2011 shows that the results are consistent with previous reports and show no trend or change in colour, or mineralogy, of rock art at any tested site on the Burrup Peninsula. A copy of the report is at Attachment 4.

The report states that the comparison of the colour and spectral data collected and processed for both the northern (control sites) and southern sites, shows no consistent trend in an increasing or decreasing direction. For the last eight years, no observed colour contrast change was detected.

A variance in the data at some sample spots continues to suggest that measurements are influenced by surface roughness, which affects placement of the measuring equipment and the lack of surface colour uniformity.

To supplement the annual rock art monitoring studies, CSIRO conducted an additional series of 'extreme weathering' tests in 2007 relating to fumigation and dust deposition impacts on the rock art.

The Friends of Australian Rock Art (FARA) has recently reviewed the findings from all of CSIRO's previous studies. FARA has expressed concern about the extreme weathering testing conducted by CSIRO. FARA's concern is that the tests were conducted on iron ore stone, rather than actual weathered rock surfaces from the Burrup.

At its meeting in July 2012, the Working Group agreed that the extreme conditions testing should be undertaken on weathered rock from the region. The Burrup industries have agreed to fund these tests and, in order to maintain scientific continuity, CSIRO is likely to be contracted to undertake the tests.

The testing will provide an indication of the level of resilience of rock art substrates to extreme exposures to substances emitted from industry on the Burrup. It will also be an indicator of the symptoms of physical, mineralogical or colour changes in weathered rock surfaces in response to these exposures.

CSIRO will provide a report on its findings to the Working Group for review and evaluation, prior to the report being released to the public.

In October 2012, DEC and the Chair of the Technical Working Group met separately with representatives from FARA to inform them of the additional tests that are planned. FARA expressed concern in relation to an apparent lack of statistical analysis in all reports to date and also requested a greater involvement with the Working Group.

It was agreed that FARA will be provided the opportunity to review and provide feedback on the reports submitted to the Working Group, prior to their public release. DEC and the Working Group undertook to liaise with CSIRO to investigate issues associated with improving replication to enable rigorous statistical analysis. FARA was also provided an opportunity to comment on the scope of works for the planned 'extreme exposure' tests. FARA's comments on that document have resulted in amendments to the scope of works.

In addition, in September 2011, I requested that DEC initiate an air quality management strategy for the Burrup Peninsula and seek industry funds for the development of that strategy.

DEC will consult the key Burrup stakeholders, including FARA, in developing the strategy. A comprehensive integrated ambient air quality monitoring network is expected to be one outcome from the strategy. A monitoring network will assist in identifying any existing air quality issues, including those that could potentially affect the rock art, in the Burrup Peninsula area. It will also assist air quality modelling in predicting any future air quality impacts for the Burrup Peninsula.

The petition contends that the EPA has not had regard to the cumulative impacts of air emissions when assessing proposals on the Burrup Peninsula.

CSIRO's study between 2004 and 2008 assessed the potential for industrial air emissions to damage rock art located on the Burrup Peninsula. Part of the study involved fumigating rock samples in a laboratory with nitrogen dioxide, ammonia, sulphur dioxide and benzene at concentrations around ten times the predicted future industrial annual average Ground Level Concentrations (GLCs), together with toluene and xylene at concentrations around 10 times the predicted future industrial weekly and 24 hour average GLCs respectively. The study found that there were no changes to the rock surface colour from pollutant concentrations likely to be experienced at the rock art locations. In view of the above, any substantial developments on the Burrup Peninsula are assessed with regard to the CSIRO study.

The EPA's report and recommendations No. 1379 on the Burrup Nitrates Pty Ltd (now Yara Pilbara Holdings Ltd) Technical Ammonium Nitrate Production Facility, Burrup Peninsula was released in January 2011, and includes an assessment of the predicted cumulative impacts.

In undertaking its assessment, the EPA considered information provided in the Pluto Liquefied Natural Gas (LNG) Development Cumulative Air Quality Study. The cumulative air quality modelling undertaken for the Pluto LNG Development included an assessment of emissions from existing and proposed development including the Woodside LNG plant, Hamersley Power Station, and the Burrup Fertilisers Pty Ltd Ammonia Plant.

The highest measured annual average nitrogen dioxide GLC in 2007/08 on the Burrup was 2.8 parts per billion (ppb) and the modelling undertaken for the Pluto LNG Development predicted a highest cumulative annual average GLC of less than 5 ppb on the Burrup. The CSIRO study used a nitrogen dioxide concentration of 50 ppb. Therefore, the CSIRO study used nitrogen dioxide concentrations that are more than ten times the highest predicted annual average GLC for the Burrup.

When appropriately analysed and interpreted, the results from the various studies indicate that air emissions from the proposed nitrate facility in combination with air emissions from existing industries on the Burrup Peninsula are unlikely to have a significant impact on rock art.

The EPA has advised me that it will continue to have regard to the cumulative impact of air emissions when assessing any further significant development proposals on the Burrup Peninsula.

I trust this information is of assistance to the Committee.

Yours sincerely



**HON BILL MARMION MLA  
MINISTER FOR ENVIRONMENT; WATER**

Att. 6 DEC 2012