LEGISLATIVE COUNCIL
Question Without Notice

Tuesday, 11 February 2020

C010. Hon Robin Chapple to the Minister for Environment

I refer Question Without Notice 1266 and 1545 asked by Hon Robin Chapple MLC in the Legislative Council on 29th October 2019 and 4th December 2019, respectively, and ask:

1. Has the minister concluded the investigation into what has caused the change in pH at the site known as the big goanna petroglyph on Murujuga?
2. If no to (1), why not?
3. If yes to (1), what were the findings of that investigation and will the Minister table the findings?
4. If yes to (1), who was responsible for the dramatic change in pH of the test site and why?
5. Will any action be taken against the perpetrator?

Answer

1-5 The Department of Water and Environmental Regulation has prepared a report into the change in pH at the big goanna petroglyph on Murujuga, which includes the findings of the investigation. I table the report [no. #].

Hon Stephen Dawson MLC
MINISTER FOR ENVIRONMENT;
DISABILITY SERVICES; ELECTORAL AFFAIRS

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Investigation into the cause of the change in acidity at Site 4 (the Big Goanna petroglyph) on Murujuga

Department of Water and Environmental Regulation
February 2020

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Contents

1 Introduction

Yara Pilbara conducts annual rock art monitoring at seven sites (Figure 1) on Murujuga in accordance with its *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval (EPBC 2008/4546) for the Technical Ammonium Nitrate Production Facility (TANPF).

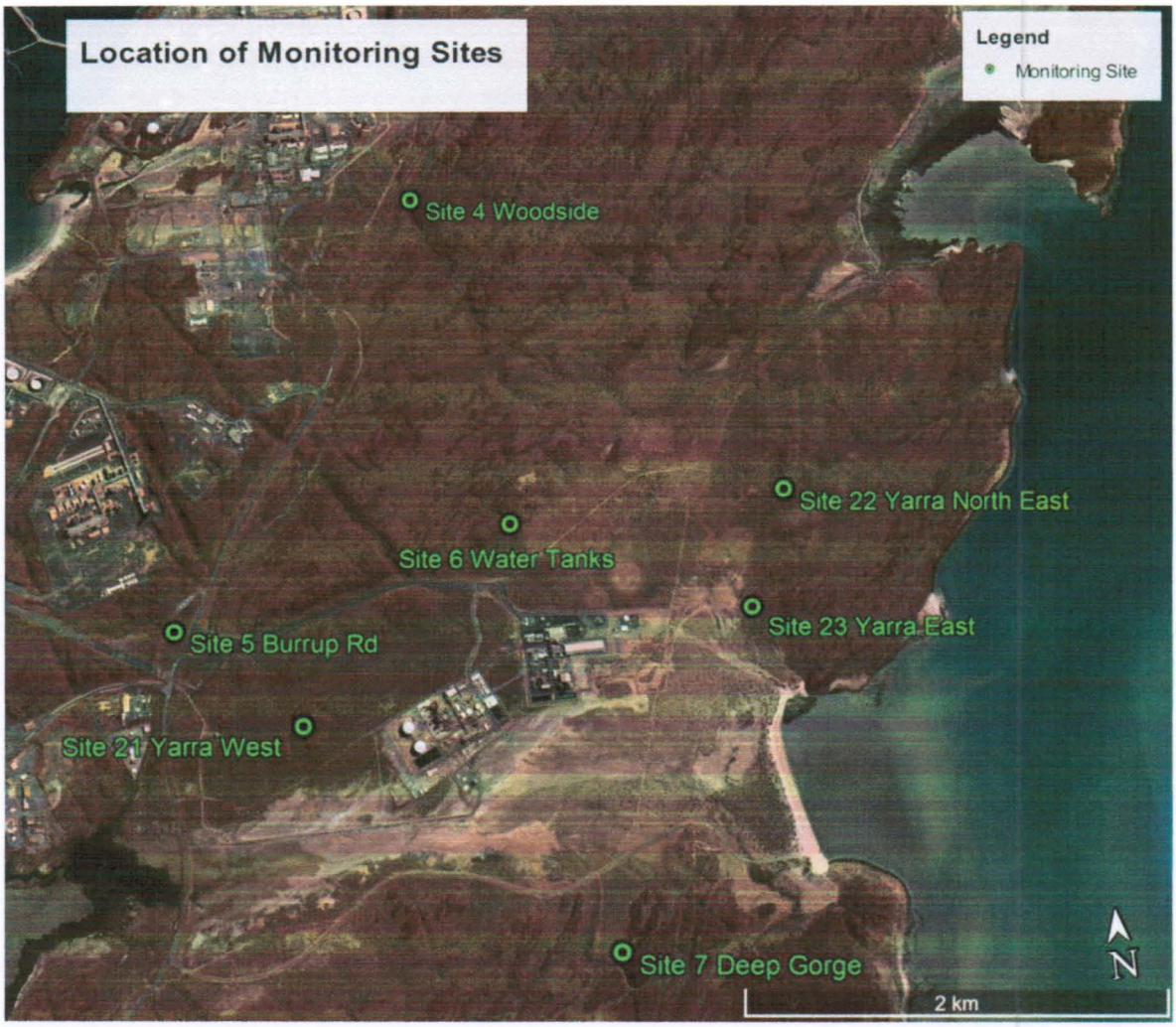

Figure 1: Location of monitoring sites on Murujuga

Sites 4, 5, 6 and 7 were monitored between 2004 and 2016, and sites 21, 22 and 23 between 2014 and 2016, as part of the annual colour contrast and spectral mineralogy monitoring program (CSIRO 2017).

The monitoring undertaken by Yara Pilbara includes measures of pH and chloride ions on rock surfaces.

The 2019 monitoring was undertaken over the period 18 to 23 August 2019.

This investigation is based on the preliminary results from the 2019 monitoring documented in a letter report from CBG Solutions to Yara Pilbara. The Department of Water and Environmental Regulation (DWER) understands that further work and analysis will be undertaken by CBG Solutions but this has not yet been completed. DWER has not undertaken a technical review of the final report and associated data as these are not available at this time.

DWER has been advised that Yara Pilbara has provided the then Commonwealth Department of the Environment and Energy with the preliminary results from the 2019 monitoring. DWER also understands the 2019 monitoring will be reported on in Yara Pilbara's 2020 Annual Compliance Report for the Technical Ammonium Nitrate Plant required under EPBC 2008/4546.

2 Results

The preliminary results from the 2019 monitoring indicate that at the six monitoring sites located around the TANPF, pH was slightly more acidic than reported in 2017 and 2018 (CBG Solutions 2019). The potential cause is unknown, however, laboratory analysis of samples and further examination of the data, including a review of meteorological information for the area, will be undertaken.

At Site 4 (also known as the Big Goanna petroglyph):

- a pH level in the region of 7 was recorded, which is higher than recorded at the other sites monitored and higher than recorded at this site in 2017 and 2018; and
- chloride concentrations were uniform across the rock surface.

Measurements taken from a rock surface near Site 4 and in the 'Climbing Men' Gully, approximately 200 metres from Site 4, were within the expected range and indicative of acidification (CBG Solutions 2019).

3 Conclusions

The results from Site 4 are considered to be consistent with the rock having been washed or rinsed with a solution, possibly local tap water (CBG Solutions 2019). This resulted in higher pH levels and the consistency of chloride readings across the rock surface.

It is noted that Site 4 is located just off Burrup Road and is easily accessible. If rinsing had occurred, it would be difficult to attribute to a specific party or determine the reason for rinsing the rock.

4 Discussion

The Murujuga Rock Art Strategy was published in February 2019. The strategy establishes the framework for the long-term management and monitoring of environmental quality to protect the rock art on Murujuga from the impacts of anthropogenic emissions, consistent with the State Government's responsibilities under the *Environmental Protection Act 1986*.

The strategy sets out the development and implementation of the Murujuga Rock Art Monitoring Program that will determine whether the rock art on Murujuga is being subjected to accelerated change; specifically whether anthropogenic emissions are accelerating the natural weathering of the rock art. DWER, in partnership with the Murujuga Aboriginal Corporation, is overseeing the development and implementation of the monitoring program. This will be done in close consultation with a team of national and international experts.

It is expected that the findings of the Murujuga Rock Art Monitoring Program will address the limitations of past studies to deliver a scientifically rigorous approach to monitoring and analysis. Independent peer review processes will be in place to provide assurance that the best scientific information is available to guide management actions.

The request for the Murujuga Rock Art Monitoring Program was advertised on Tenders WA on 27 March 2019 and closed on 5 June 2019. It is anticipated that the contract will be awarded in the next few weeks.

The Department has commissioned a study on the cumulative impacts of air emissions from existing and proposed future industries, shipping, and aggregated sources within the Murujuga airshed. This study will include an assessment of annual air pollutant emission loads from these sources and cumulative air quality modelling to predict air pollutant ground level concentrations, which will be assessed against applicable air quality criteria. The cumulative air quality modelling will also be used to provide information on the deposition of acid gases, ammonium nitrate and urea dust on Murujuga.

Glossary

pH	A number expressing the acidity or alkalinity of a solution on a logarithmic scale, on which 7 is neutral, lower values (< 7) are more acidic and higher values (> 7) more alkaline.

References

CBG Solutions (2019). Rock art monitoring 2019: Preliminary results. Letter report to Yara Pilbara.

CSIRO (2017). *Burrup Peninsula Aboriginal Petroglyphs: Colour Change and Spectral Mineralogy 2004-2016*. Report EP161761.