

Chapter 1

Introduction

Referral and terms of reference

1.1 On 30 November 2016, the Senate referred the following matter for inquiry and report by 21 March 2017:

The Commonwealth's responsibility under the *Environment Protection and Biodiversity Conservation Act 1999* to protect the globally significant and National Heritage listed Aboriginal rock art of the Burrup Peninsula in Western Australia, with particular reference to:

- (a) the total industrial pollution load from existing industrial activities and port zone on the Burrup Peninsula in Western Australia, and its existing impacts on Aboriginal rock art;
- (b) the projected additional pollution load from the Yara Pilbara Fertilisers Pty Ltd ammonium nitrate plant, including the likely impacts on the Aboriginal rock art, human health and the environment;
- (c) the accuracy and adequacy of reports used by the Western Australian and Commonwealth governments when setting the relevant technical, environmental and cultural conditions regulating the construction and operation of the Yara Pilbara Fertilisers Pty Ltd ammonium nitrate plant in an area of highly significant Aboriginal rock art;
- (d) the rigour and adequacy of the monitoring, analysis, compliance and enforcement performed by the Western Australian and Commonwealth government agencies in carrying out their legislated responsibilities in overseeing industries on the Burrup Peninsula;
- (e) the projected level of fugitive gas and nitric acid leaks from the Yara Pilbara fertiliser and ammonium nitrate plants, their effects on human health, likely effects on rock art and the general environment, and the adequacy of the company responses;
- (f) the failure by Yara Pilbara Fertilisers Pty Ltd, the Western Australian Government or the Federal Government to include risk analysis of establishing an ammonium nitrate plant in close proximity to the rock art, a gas hub and major port and in a cyclone surge zone;
- (g) the adequacy of the Yara Pilbara plans to protect the communities of Dampier and Karratha and the rock art sites from the consequences of any explosion caused by 'sympathetic detonation' or other factors, including the ability to douse the nitrate stores with sufficient water to prevent a spontaneous explosion; and

(h) any related matters.¹

1.2 The Senate granted a number of extensions of time to report.² On 14 February 2018, the Senate granted a final extension of time to report by 21 March 2018.³

Conduct of the inquiry

1.3 In accordance with its usual practice, the committee advertised the inquiry on its website and wrote to relevant individuals and organisations inviting submissions. The date for receipt of submissions was 23 January 2016. The committee received 17 submissions, which are listed at Appendix 1.

1.4 The committee held three public hearings in:

- Canberra on 17 February 2017;
- Perth on 20 April 2017; and
- Canberra on 17 November 2017.

1.5 The list of witnesses who participated in public hearings is at Appendix 2.

1.6 The public submissions, additional information received and *Hansard* transcript are available on the committee's website at: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/BurruPeninusa.

Acknowledgment

1.7 The committee would like to thank the organisations and individuals who provided evidence to the inquiry.

1 *Journals of the Senate*, No. 22, 30 November 2016, pp. 709–710.

2 *Journals of the Senate*, No. 31, 20 March 2017, p. 1054; *Journals of the Senate*, No. 40, 10 May 2017, p. 1326; *Journals of the Senate*, No. 45, 19 June 2017, p. 1472; *Journals of the Senate*, No. 65, 17 October 2017, p. 2084; *Journals of the Senate*, No. 72, 27 November 2017, p. 2283; *Journals of the Senate*, No. 78, 6 December 2017, p. 2483; *Journals of the Senate*, No. 81, 6 February 2018, p. 2586.

3 *Journals of the Senate*, No. 86, 14 February 2018, p. 2717.

Structure of the report

1.8 This report comprises seven chapters, as follows:

- Chapter 1 — contains an introduction to the Aboriginal rock art of the Burrup Peninsula, and Yara Pilbara and its operations on the Burrup Peninsula;
- Chapter 2 — provides an overview of the environmental and heritage protection legislation which applies to industrial development on the Burrup Peninsula;
- Chapter 3 — canvasses concerns raised by submitters in relation to the impact of existing and future industrial development on the Aboriginal rock art, human health and the environment;
- Chapter 4 — explores concerns raised in relation to monitoring programs and subsequent reports utilised by industry and regulators;
- Chapter 5 — canvasses issues raised in relation to the compliance, monitoring and management of Yara Pilbara's facilities on the Burrup Peninsula;
- Chapter 6 — explores the evidence that beyond industrial development, the rock art of the Burrup Peninsula faces threats from vandalism and unrestricted access to the area. This chapter also examines the additional protections which could be afforded to the rock art through education programs, enforcement activity, and World Heritage listing; and
- Chapter 7 — provides a committee view.

The Burrup Peninsula

1.9 The Dampier Archipelago (including the Burrup Peninsula) located on the Indian Ocean coast of the west Pilbara region in north Western Australia is comprised of 42 islands, islets and rocks that range from less than 2ha to 3,290ha in size. It covers an area of approximately 4,000 km².⁴

1.10 The Burrup Peninsula (which measures 27km long by 5km wide) was formerly Dampier Island—the largest in this island chain. Prior to industrial development and the building of road and rail infrastructure between Karratha and Dampier, it was separated from the mainland by tidal mudflats.⁵

4 Australian Heritage Database listing for Burrup Peninsula, Islands of the Dampier Archipelago and Dampier Coast, Final Assessment Report, 2006, p. 13, <http://www.environment.gov.au/system/files/pages/5b14f51b-b7e1-432f-8049-1e653713607d/files/dampier-archipelago.pdf> (accessed 9 January 2017).

5 Australian Heritage Database listing for Burrup Peninsula, Islands of the Dampier Archipelago and Dampier Coast, Final Assessment Report, 2006, p. 13, <http://www.environment.gov.au/system/files/pages/5b14f51b-b7e1-432f-8049-1e653713607d/files/dampier-archipelago.pdf> (accessed 9 January 2017).

1.11 On 3 July 2007, the then Minister for the Environment and Water Resources, the Hon Malcolm Turnbull, listed the Dampier Archipelago (including the Burrup Peninsula) as a National Heritage Place under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).⁶

1.12 The majority of the Dampier Archipelago (including the Burrup Peninsula) National Heritage Place is within Murujuga National Park and the Dampier Archipelago island reserves, managed by the Western Australian Government's Department of Biodiversity, Conservation and Attractions.⁷

Rock art of the Burrup Peninsula

1.13 The Burrup Peninsula is known for its cultural and archaeological significance, as it is the densest known concentration of rock engravings anywhere in the world. It contains Australia's largest collection of Aboriginal rock art (also known as petroglyphs) with more than one million images in an area of 36,857 hectares.⁸ The Dampier Archipelago also contains a number of dreaming sites, ceremonial sites, and other archaeological sites including shell middens, quarries, standing stones, and burials.⁹

1.14 The Dampier Archipelago, called Murujuga by the five Indigenous custodian groups: the Ngarluma, the Mardudhunera, the Yaburara, the Yindjibarndi and the Wong-Goo-Tt-Oo, is described as 'the most culturally significant place on earth and, with more than one million petroglyphs and over 40,000 years of occupation, it is of the critical importance to local Aboriginal people'. Further:

Murujuga is a place of worship and understanding. It is where our stories began. It is our bible, but it is also our law book. Our law is written through the petroglyphs and the munda—or the stone.¹⁰

1.15 In 2011, the Australian Heritage Council reported to the Minister for Sustainability, Environment, Water, Population and Communities on its assessment of the Outstanding Universal Values of the Dampier Archipelago site and any threats to that site. In its statement of potential Outstanding Universal Values, the Australian

6 Department of the Environment and Energy, *Submission 8*, p. 1.

7 Department of the Environment and Energy, *Submission 8*, p. 1.

8 Australian Heritage Council, [*The Potential Outstanding Universal Value of the Dampier Archipelago Site and Threats to that Site*](#), 2011, (accessed 17 January 2017).

9 Australian Heritage Database listing for Burrup Peninsula, Islands of the Dampier Archipelago and Dampier Coast, Final Assessment Report, 2006, p. 16, <http://www.environment.gov.au/system/files/pages/5b14f51b-b7e1-432f-8049-1e653713607d/files/dampier-archipelago.pdf> (accessed 9 January 2017).

10 Ms Raelene Cooper, Murujuga Aboriginal Corporation, *Committee Hansard*, 20 April 2017, p. 1.

Heritage Council stated that the 'Dampier Archipelago bears a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living'.¹¹

1.16 The Australian Heritage Council also stated that the Dampier Archipelago represents a masterpiece of human creative genius:

The density and diversity of the rock engravings on the Dampier Archipelago represents a masterpiece of human creative genius. The place is home to one of the most exciting and significant collections of rock engravings in the world.¹²

1.17 Dr Ken Mulvaney, heritage expert, stated that the Dampier Archipelago rock art collection 'represents the longest continual production of rock art in the world; as such it comprises one of the densest and stylistically diverse collection of petroglyphs'.¹³ Dr Mulvaney also informed the committee that the collection contains:

...some of the earliest depictions of the human face in rock art that exists anywhere in the world, but we also have changes in the way humans are reflecting their presence in a landscape and their cultural richness. All that was produced up until Europeans arrived in the area in 1860s. There is nowhere else in the world that has a continual sequence of rock art. That is why this place is of world significance.¹⁴

1.18 In addition to the earliest known image of a human face, the rock art collection also contains images of extinct mega-fauna, Tasmanian tigers, hunting traditions, and mathematical representations and geometrical forms.¹⁵

1.19 The images are believed to reflect the change in the environmental conditions of the area over 45,000 years. Dr Mulvaney explained that prior to the sea level rise, the islands of the Dampier Archipelago were hills in a vast coastal plain, and the rock art from that era reflects terrestrial fauna. However, 'following the sea level rise, into the period known as the Holocene, you start getting marine fauna in the art, in particular animals like turtles and fish'.¹⁶

11 Australian Heritage Council, [*The Potential Outstanding Universal Value of the Dampier Archipelago Site and Threats to that Site*](#), 2011, p. 5 (accessed 17 January 2017).

12 Australian Heritage Council, *The Potential Outstanding Universal Value of the Dampier Archipelago Site and Threats to that Site*, 2011 p. 4 (access 17 January 2017).

13 Dr Ken Mulvaney, *Submission 10*, p. 1.

14 Dr Ken Mulvaney, *Committee Hansard*, 17 February 2017, p. 5.

15 Professor John Black, *Submission 13*, p. 1.

16 Dr Ken Mulvaney, *Committee Hansard*, 17 February 2017, p. 5.

Industrial development on the Burrup Peninsula

1.20 Development on the Burrup Peninsula first centred around whaling and pearling activities. This was followed by pastoral development. Over the last 40 years, industrial development has occurred with industries including Yara Pilbara's liquid ammonia plant and technical ammonia.

1.21 In January 2000, the Western Australian Government gave notification of its intention to acquire land for the construction of heavy industrial estates on the Burrup Peninsula and adjacent Maitland area.

1.22 In 2003, the Western Australian Government entered into the Burrup and Maitland Industrial Estates Agreement Implementation Deed (the Burrup Agreement) with the three native title claimant groups on the Burrup Peninsula: the Wong-Goo-Tt-Oo, Ngarluma Yindjibarndi and the Yaburara Mardudhunera peoples. This agreement allowed the Western Australian Government to compulsorily acquire native title rights and interests in the area of the Burrup Peninsula, and some areas of land near Karratha. The agreement allowed for industrial development across the southern area of the Burrup Peninsula, created a conservation estate (which later became the Murujuga National Park) and ensured the protection of Aboriginal heritage.¹⁷

Yara Pilbara

1.23 The following section provides an overview of the companies engaged in managing the liquid ammonia plant, and the technical ammonium nitrate (TAN) plant on the Burrup Peninsula. The Yara group of companies is headed by Yara International ASA. It is the world's largest producer of ammonia, nitrates and NPKs (Nitrogen, Phosphorous, Potassium).¹⁸

1.24 The liquid ammonia plant on the Burrup Peninsula is owned, operated and managed by Yara Pilbara Fertilisers (YPF), a wholly owned subsidiary of Yara Pilbara Holdings Pty Ltd (YPH). YPH is in turn, a wholly owned subsidiary of Yara Australia Pty Ltd.¹⁹

1.25 Yara is a 55 per cent joint venture partner with Orica Limited (Orica) in Yara Pilbara Nitrates (YPN), which is currently engaged in commissioning a TAN production facility (TANPF) located adjacent to the liquid ammonia plant. The TANPF is due to become operational in 2017 with Yara maintaining operational

17 Department of Water and Environmental Regulation, *Draft Burrup Rock Art Strategy*, 2017, p. 4.

18 Yara Pilbara, *Submission 9*, p. 3.

19 Yara Pilbara, *Submission 9*, p. 4.

control of the plant. Orica is responsible for marketing the TAN produced by the facility, through a separate incorporated joint venture.²⁰

1.26 For the purposes of this report, both the TANPF and the liquid ammonia plant will be referred to as being operated by Yara Pilbara.

Liquid ammonia plant

1.27 In 2001, Burrup Fertilisers proposed the construction of an export orientated liquid ammonia plant in the Dampier region.²¹ The plant commenced production in April 2006.

1.28 The liquid ammonia plant is located within a 72 hectare leased area of the Burrup Strategic Industrial Area. Natural gas, the feedstock required for producing ammonia, is piped through a pipeline and metering station from the Dampier Bunbury Natural Gas Pipeline. The plant's minimum production guarantee is 2,200 tonnes of anhydrous ammonia per day, however production between 2,500 and 2,600 tonnes per day can be achieved.²²

TANPF

1.29 The TANPF is located 13 kilometres north-west of Karratha and is adjacent to the Yara Pilbara liquid ammonia plant on a site of approximately 35 hectares. The plant is in the commissioning phase and is not yet operational.²³ When operational the plant will have a production capacity of 350,000 tonnes per annum or 915 tonnes per day of technical ammonium nitrate.²⁴

1.30 The TANPF is comprised of three major processing units:

- nitric acid plant—converts ammonia into nitric acid with the ammonia piped from the liquid ammonia plant;
- ammonium nitrate solution plant—converts ammonia and nitric acid into an ammonium nitrate solution; and

20 Yara Pilbara, *Submission 9*, p. 4.

21 Burrup Fertilisers Pty Ltd was acquired by Yara Pilbara Holdings in 2012. For more information, Yara International, '2012: Strengthening position in Asia and Oceania', (accessed 16 January 2017).

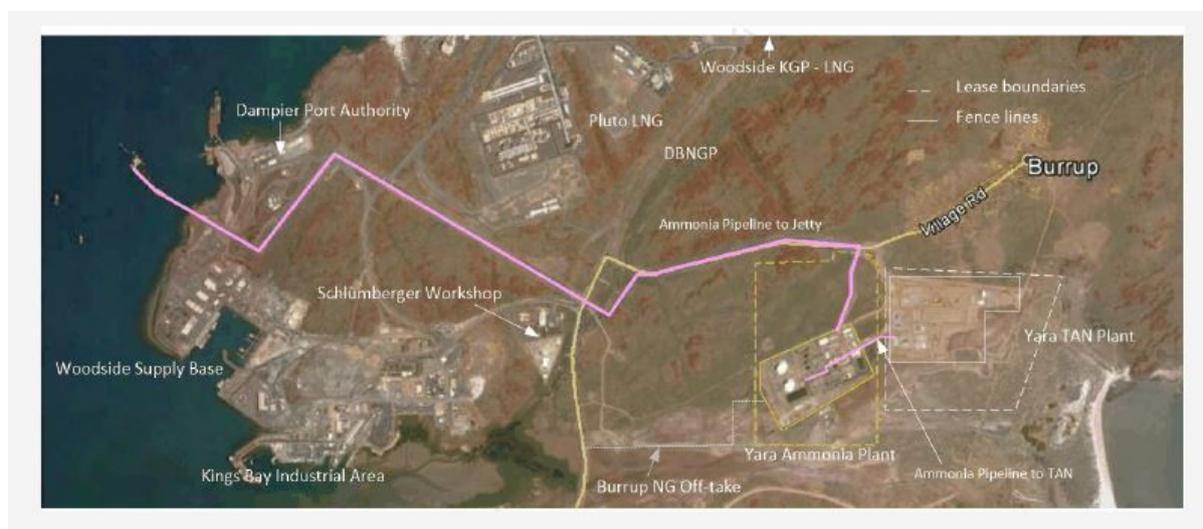
22 Yara Pilbara, *Submission 9*, pp. 4–5.

23 The plant cannot commence operations until the Department of the Environment and Energy has approved Yara Pilbara Nitrates' Operation Environment Management Plan. See Department of the Environment and Energy, *Submission 8*, p. 3.

24 Yara Pilbara, *Submission 9*, p. 5.

- technical ammonium nitrate plant—converts the ammonium nitrate solution into the final product of technical ammonium prills. The plant also has storage, loading and transport facilities.²⁵

Figure 1: Location of the ammonia plant and technical ammonium nitrate plant instruction within the Burrup industrial area



Source: Yara Pilbara, Submission, p. 6.

Other industrial development

1.31 The port of Dampier is located on the Burrup Peninsula. It was developed in the early 1960s as the deep water port to serve the Pilbara region's expanding resource industry. It is now one of the busiest ports in the world: 5,170 ships entered the port in 2014–15. The Dampier Port Authority controls the port through which gas, iron ore, salt and fertiliser are shipped.

1.32 Resources industries and associated infrastructure have expanded in the region including Woodside's LNG processing plant; Rio Tinto's iron ore leases and railhead; and the Holcrim Quarry. Dampier Salt has been exporting salt since 1972.²⁶

25 Yara Pilbara Nitrates, *TAN Plant MS870 Compliance Assessment Report 2016*, p. 5.

26 Australian Heritage Council, *The Potential Outstanding Universal Value of the Dampier Archipelago Site and Threats to that Site*, 2011, p. 13, <https://www.environment.gov.au/system/files/pages/5b14f51b-b7e1-432f-8049-1e653713607d/files/outstanding-universal-values-may2012.pdf>, (accessed 17 January 2017).