

CANBERRA DIVISION

NOMINATION OF THE

WOOMERA ROCKET RANGE

SOUTH AUSTRALIA

FOR AN AWARD AS A

NATIONAL ENGINEERING LANDMARK



Engineering Heritage Panel
June, 1999

1 June 1999

The Commemorative Plaque Sub-Committee of
The National Committee on Engineering Heritage
The Institution of Engineers, Australia
Engineering House
11 National Circuit
BARTON ACT 2600



NOMINATION FOR NATIONAL ENGINEERING LANDMARK AWARD

The nomination is primarily based on the Department of Defence book:

Fire across the Desert

Woomera and the Anglo-Australian Joint Project
1946-1980

Peter Morton

Introduction

"In 1946 the Chifley government joined in equal partnership with the British government of Clement Attlee, created a guided weapons experimental range and a sprawling research and development facility near the Adelaide suburb of Salisbury. This was the beginning of one of the most colourful, costly and secretive episodes in post-war Australian history - the Anglo-Australian Joint Project.

Woomera and the Long Range Weapons Establishment were built in the shadow of German V-weapons, the deepening Cold War, discord with the United States, and the fearful certainty that warfare was about to be transformed by the advent of the nuclear armed ballistic missile. At Woomera this anxious time saw the development and testing of many and various guided weapons and the Jindivik target aircraft. It also saw the instrumentation and growth of the biggest land range in the western world - a range which in its heyday reached right across the continent to the north-western coast. By this time the desert town of Woomera had expanded into a bustling, high spirited community of six thousand. To Woomera there also came large liquid-fuelled research rockets like the Black Knight and in the late 1950s, vast facilities were constructed on the edge of Lake Hart for the testing of Britain's independent nuclear deterrent, Blue Streak.

Late in the 1960s Woomera played host to many bold space enterprises: the international consortium ELDO and its large three-stage satellite launcher rocket, EUROPA I; the British Black Arrow and Australia's one and only home-built satellite WRESAT. For a few years Australia had the opportunity and the resources to become an international space power but, for several reasons ... the chance was lost and the launcher facilities at Woomera were demolished. The joint project cost the partners several billion dollars in current terms, employed thousands at the Weapons Research Establishment and was responsible for developing much high technical expertise, especially in electronics and optics."⁽¹⁾

Name of Work

The Woomera Rocket Range.

(Note that although the Anglo-Australia Joint Project included both Woomera and the Weapons Research Establishment (WRE) at Salisbury, this nomination focuses on the Rocket Range.)

Location

Woomera Village is situated 10 kms off the Stuart Highway 500 kms north of Adelaide, South Australia. The centre line of the Woomera Rocket Range which was 320 kms wide, commences near the village (rangehead) and proceeds north-west (306 degrees True) for about 1850 kms to Talgarno on the Western Australian coast between Port Hedland and Broome - see Attachment A. Had additional distance been required, (it was not) the range could have been extended to a total of 3200 kms into the Indian Ocean. It could be extended to 4800 kms if the firing line was swung to 299 degrees True, passing over Broome and Christmas Island.

Owner

The Department of Defence, Commonwealth of Australia.

Agreement to Nomination

See the Defence Corporate Support letter at Attachment B.

Access to Site

There is free public access to Woomera Village. Tours of Range facilities in the general area of the village can be arranged through the village administration staff and are conditional upon range activities.

Future Care and Maintenance

Under current arrangements future care and maintenance of Woomera Village is assured. Maintenance of range facilities is minimal, those considered to have future or ongoing use are being cared for, while those for which no future use is seen are being allowed to decay to "graceful ruins". Many of the facilities have been destroyed by approved Defence activities.

Name of Sponsor

The Engineering Heritage Panel, Canberra Division in conjunction with the National Committee on Space Engineering and in liaison with the Engineering Heritage Panel of the South Australia Division of the Institution of Engineers, Australia.

Years of Construction

1947 to 1975.

Period of Operation

1947 to present, peak of activity occurred in the early 1970s.

Engineering Heritage Significance

Technical/Scientific Value: "The "Joint Project", as it was called, comprised the largest and most expensive single R&D-cum-engineering activity ever conducted here in peacetime. This was public science and technology on the Leviathanic scale." "The urgency of the Cold War Weapons work, and the advanced nature of space work, meant Salisbury was a forcing house for related technologies too, especially in fine mechanics, advanced optics, telemetry and rocket fuel chemistry. Australian electronics benefited most. The laboratories were pioneers in computer technology in the mid-50s, they were planning to build a computer, LEDAC, only a year or two after the first programmable machine in the world, at Manchester University. ... they led the world ... for a few years in a special area, that of the automatic processing of doppler and telemetry records. ... some of the first development work on xerography, dry paper copying, was done at Salisbury; there too were developed many techniques of complex optics, including the so-called "fish eye" lens and camera." (1) All these scientific and technical advances were tested or related to the activities at the Woomera Rocket Range. Over 13,500 separate trials were conducted on the Range. These included rockets ranging from the primitive RTV1 to the mighty Europa, more than 500 assorted upper atmosphere flights, six satellites of which two achieved orbit, 90 high altitude parachute drops, six ejector seat trials and 3500 bomb drops.

Historical Value: The Woomera Rocket Range is a symbol of the historic agreement between Britain and Australia in the light of the post World War II international situation and the deepening of the Cold War.

Social Value: The social value of the Woomera Rocket Range includes:

- the creation of thousands of jobs for Australian and British people;
- gave rise to "the desert town of Woomera ... a bustling high-spirited community of six thousand";
- many British personnel who came to work at the Range and at Salisbury stayed and settled in Australia;
- many "New Australians" were gainfully employed on the range (much to the stress of those responsible for security).

Landscape Value: The landscape in the rangehead area is flat generally featureless desert where the Woomera village and the remnants of the launch and monitoring facilities stand out starkly. In particular, the remains of the massive launch facilities at Lake Hart provided a vivid reminder of the hey days of the range's operations.

Rarity: There is only one Woomera Rocket Range which was (and may be still) "at one stage the biggest land rocket range in the western world." (1)

Representativeness: The village and remaining facilities of the range faithfully represent the great days of the range that was considered "the finest space-research station of its type in the world." (3)

Contribution to Nation or Region: In the epilogue of **Fire across the Desert** author Peter Morton discusses the direct and indirect benefits to Australia of the Woomera range. Bearing in mind the times of the inception of the Joint Project - the immediate post World War II period and the commencement of the Cold War - the direct benefits to Australia were:

- significant foreign investment creating thousands of jobs for an extended period;
- international perceptions of Australia as a technologically advanced nation capable of defending itself with advanced weapons, thereby deterring potential aggressors;
- local perceptions of Australia being involved in and contributing to advanced technological research and development fostering a sense of nation pride and well being and security in times of international tension;
- being seen to be a partner in Commonwealth defence, the so-called third global force;
- training in the United Kingdom of Australian scientists, engineers and technicians in advanced technological disciplines;
- access to experimental data arising from programs conducted at Woomera.

Indirect benefits were:

- "a flow of scientific and technical brainpower and people talented in other directions into South Australia, some settled permanently and enriched the community"; it could be said that the Woomera Rocket Range and Salisbury were to South Australia what the Snowy Mountains Scheme was to New South Wales and Victoria (the Snowy Mountains Scheme cost \$1 billion and involved 100,000 people, the Anglo Australia Joint Project cost \$2.5 billion and involved many thousand of people);
- the establishment of firms and businesses in South Australia to service the rocket range's needs, some of these companies stayed on after the cessation of the project;
- the stimulation and in some cases financing of infrastructure development in the outback of South Australia and Western Australia;
- the surveying of vast areas of the outback and the provision of roads where previously none had existed;
- the acceleration of the formation of a competent Defence scientific community;
- it helped Australia come of age as a scientifically and technologically developed nation;
- it gave Australia credence as a contributor to military weapons development thereby gaining access to the Technical Cooperation Program as part of the Non-Atomic Military Research and Development;
- it gained Australia {through WRESAT) entrance to the exclusive "space club".

Contribution to Engineering: See "Technical/Scientific Value" above.

Persons Associated with Work:

Politicians

J B Chifley, Prime Minister of Australia
R G Menzies, Prime Minister of Australia
Clement Attlee, Prime Minister of Britain
Harold Macmillan, Prime Minister of Britain

Scientists and
Engineers

Sir Henry Tizard, eminent military scientific adviser
Sir Alwyn Crow
Major A I Wyne-Williams, Evetts's consultant engineer
Gilbert Poole construction engineer
Major A I Wyne-Williams
Alan Bouch

Military Personnel

Major General Leslie Beavis
Lieutenant General John Evetts
Squadron Leader H V Shearn
Group Captain G A Pither

Integrity: Some of the facilities of the range have been dismantled or demolished. However there are sufficient features remaining to provide visitors with an understanding of the nature of the range when it was operating.

Authenticity: Being purpose built and therefore unique, the Woomera Rocket Range is authentic in all respects.

Statement of Significance

The Woomera Rocket Range is a symbol of the post-World War II era and the deepening of the East/West Cold War. The massive scientific research and development and engineering of the guided weapon programme launched by Britain and Australia in the shadow of German V-weapons, underwent its proving phase at the range. This was the largest and most expensive scientific and engineering activity ever conducted in Australia in peacetime. In cost and manpower it was comparable to the Snowy Mountains Scheme which was under construction during the same period.

The urgency of the Cold War and the advanced nature of space technology meant that work carried out in Britain and at Salisbury and tested at the range, was at and extending the leading edge of technology especially in fine mechanics, advanced optics, telemetry and rocket fuel chemistry. Australian electronics benefited extensively from the pioneering of computer technology in the mid-50s and for a period led the world in automatic processing of doppler and telemetry records. At Salisbury some of the first development in xerography took place together with techniques of complex optics including the "fish eye" lens and camera.

The Woomera Rocket Range and WRE generated a flow of scientific and technical brainpower and talented people into South Australia, some of whom settled permanently and enriched the community. The project provided thousands of jobs for more than 30 years and brought businesses to the state and Australia. It stimulated the infrastructure development of outback South Australia and Western Australia and accelerated the formation of a competent Defence scientific community. Through its involvement at Woomera and Salisbury, Australia came of age as a scientifically and technologically

developed nation and gained entry to the Technology Cooperation Program and the exclusive "space club".

Proposed Information Plaque Text

WOOMERA ROCKET RANGE

ESTABLISHED UNDER THE ANGLO-AUSTRALIAN JOINT PROJECT FOLLOWING THE SECOND WORLD WAR, THIS RANGE AND THE ASSOCIATED WEAPONS RESEARCH ESTABLISHMENT AT SALISBURY, WERE THE LARGEST AND MOST EXPENSIVE SCIENTIFIC AND ENGINEERING ACTIVITY EVER CONDUCTED IN AUSTRALIA IN PEACETIME. THE EQUIPMENT USED AND TESTED HERE WAS AT THE FOREFRONT OF TECHNOLOGY ESPECIALLY IN FINE MECHANICS, ADVANCED OPTICS, TELEMETRY AND ROCKET FUEL CHEMISTRY. WHILE PARTICIPATING IN PROGRAMS CONDUCTED HERE, AUSTRALIA WAS IN THE FOREFRONT OF SCIENTIFICALLY AND TECHNOLOGICALLY ADVANCED NATIONS. THE SUCCESSFUL LAUNCH OF THE WRESAT SATELLITE FROM WOOMERA IN 1967 GAINED AUSTRALIA INTERNATIONAL RECOGNITION AND MEMBERSHIP OF THE EXCLUSIVE "SPACE CLUB".(100 words)

**DEDICATED BY
THE INSTITUTION OF ENGINEERS, AUSTRALIA 1999**

Proposed Location of the Plaque

At the entrance to Woomera Village.

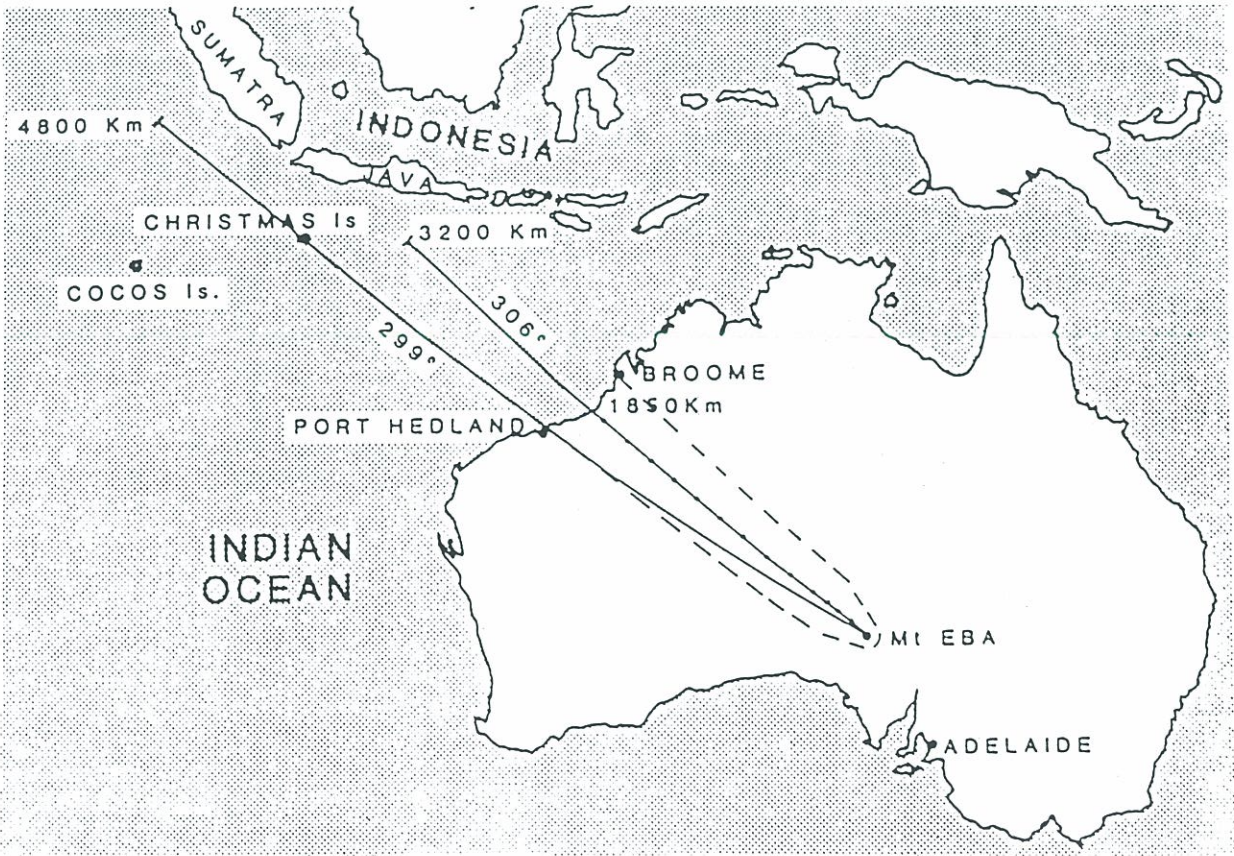
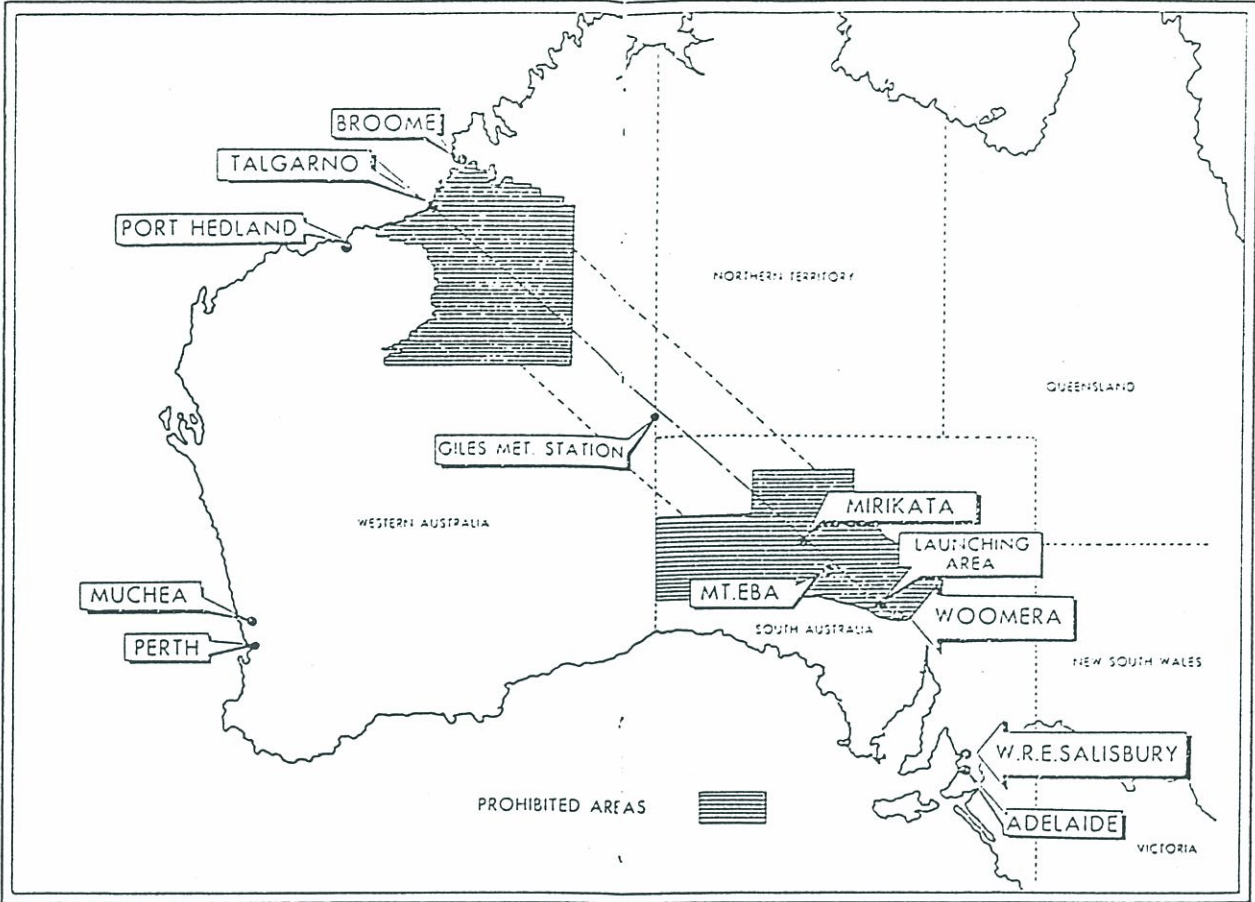


**Robert Breen
Nomination Coordinator,
Canberra Division Engineering Heritage Panel**

- Attachment:**
- A. Maps showing the location of the Woomera Rocket Range.
 - B. Owner's letter of consent to nomination (to be supplied).

- References:**
- 1. Morton, P., **Fire Across the Desert**, AGPS, Canberra, 1989
 - 2. Morton, P., **Engaging the Leviathan**, published online 25 June 1997.
 - 3. Southall, I., **Woomera**, Angus and Robertson, Melbourne, 1962
 - 4. James, M.L., **Into Space from Australia - the Early Days**, Proceedings of the Fifth National Conference on Engineering Heritage 1990, Perth, 3-5 December 1990

MAPS SHOWING THE LOCATION OF THE WOOMERA ROCKET RANGE





DEFENCE CORPORATE SUPPORT
Defence Support Centre Woomera

PO Box 157, Woomera SA 5720

A13/1/3
J van Homelen
(08) 86743200

07 May 1999

Mr Robert Breen
Nomination Coordinator
The Institute of Engineers Australia
PO Box E66
Kingston ACT 2064

Dear Mr Breen

**Nomination of the Woomera Rocket Range
for a National Engineering Landmark Award**

I refer to your letter of 30 March 1999 regarding a nomination for the Engineering Landmark Award.

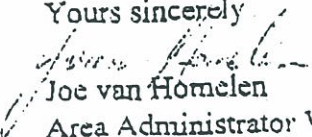
I can advise that approval to nominate the Woomera Rocket Range is given and that should it be successful to provide assistance for a suitable structure for the plaque. An appropriate site at the entrance to the Woomera Village has been earmarked for the display to ensure visibility and accessibility.

My staff examined the draft nomination and I attach an annotated copy.

I apologise for not being able to expand on some of your particular questions but they were difficult to answer due to lack of available data at Woomera.

If further clarification or information is required please do not hesitate to call me.

Yours sincerely


Joe van Homelen

Area Administrator Woomera