

BRADSHAW FIELD TRAINING AREA

ENVIRONMENTAL ASSESSMENT REPORT AND RECOMMENDATIONS

BY THE

**ENVIRONMENT PROTECTION DIVISION
DEPARTMENT OF LANDS, PLANNING AND ENVIRONMENT**

JULY 1998

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ABBREVIATIONS AND GLOSSARY

AAPA	Aboriginal Areas Protection Authority
BFTA	Bradshaw Field Training Area
DLPE	NT Department of Lands, Planning and Environment
DPIF	NT Department of Primary Industry and Fisheries
DTW	NT Department of Transport and Works
EA	Environment Australia
EAC	Environmental Advisory Committee
ECC	Environmental Certificate of Compliance
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPD	Environment Protection Division
EMP	Environmental Management Plan
GIS	Geographic Information System
HEIA	High Explosive Impact Area
LCA	Local Controlling Authority
NOI	Notice of Intent
POL	Petrol, oil and lubricant facility
PWCNT	Parks and Wildlife Commission of the Northern Territory
RSB	Range Siting Board
RSO	Range Standing Orders
SOP	Standing Operating Procedure
TFMA	Training Force Maintenance Area
THS	Territory Health Service

EXECUTIVE SUMMARY

This report assesses the environmental impact of a proposal by the Department of Defence to develop Bradshaw Station into a field training area capable of supporting formation level manoeuvres and field live firing. The report reviews the draft Environmental Impact Statement (draft EIS), comments on the draft EIS by members of the public, community groups and government bodies and the proponent's responses to these comments in the Supplement to the draft EIS.

Environmental impact assessment is the process of defining those elements of the environment which may be affected by a proposed development, and to determine the significance, risks and consequences of the potential impacts of the proposal at a local and regional level. Recommendations arising from the assessment address methods to mitigate these impacts.

Major Issues

The major environmental issues identified with the development and operation of the Bradshaw Field Training Area (BFTA) are:

- Environmental Management;
- Soil Conservation;
- Vegetation Management (including weed management);
- Fauna Management (including management of feral species);
- Fire Management;
- Maintenance of Water Quality; and
- Heritage, Archaeological and Sacred Site Issues.

Conclusion

It is considered that the environmental issues associated with the proposed Bradshaw Field Training Area have been adequately identified. Some of these issues have been resolved through the assessment process, while others will be addressed through monitoring and management actions outlined in the Environmental Management Plan (EMP) and through additional surveys.

At the conclusion of the assessment process, the EMP will become a stand-alone practical working document to guide the long term environmental management of BFTA. The EMP will be refined over time in light of information from monitoring programs and further research, operational experience, the auditing program and advice from the Environmental Advisory Committee (EAC).

Defence has undertaken to incorporate all relevant parts of the EMP into Range Standing Orders (RSO) and Standing Operating Procedures to formalise the responsibilities of all personnel involved in military training activities on BFTA. Formalising EMP actions as RSO adds to the authority of the EMP and provides a level of certainty that undertakings will be implemented.

It should be noted that the BFTA draft EIS is the first Northern Territory EIS to include a draft EMP. This innovation has for the first time afforded the opportunity for public comment in the development of an EMP.

The major on-going environmental impact from the proposal is expected to be impacts to vegetation and soils from the detonation of high explosives within the three High Explosive Impact Areas (HEIA) and from vehicle manoeuvres. Sections 4.4.3 and 4.5.3 discuss the potential impacts to soil and vegetation and outlines the measures to be taken by the proponent to mitigate these impacts.

Short term impacts such as increased turbidity and sedimentation in rainfall runoff are expected as a result of infrastructure development, particularly the establishment of a formed gravel road network. The *Environmental Guidelines for Construction Activities* will be used in the environmental management of infrastructure development.

The outcome of this assessment is that the environmental issues raised have been satisfactorily addressed, and that the proposal may proceed in an environmentally acceptable manner provided the undertakings and commitments detailed in the EMP, as modified by recommendations in this report, are implemented.

SUMMARY OF RECOMMENDATIONS

It is acknowledged that during implementation of the proposal outlined in the EIS, flexibility is necessary and desirable to allow for minor and non-substantial changes to the design and specifications which have been examined as part of this assessment.

Recommendation 1

The proponent shall ensure that the proposal is implemented in accordance with the environmental commitments and safeguards identified in the Bradshaw Field Training Area draft Environmental Impact Statement (including the *Environmental Guidelines for Construction Activities* and the *Environmental Management Plan*) as modified in the Supplement to the draft EIS and as recommended in this assessment report.

Environmental Management

Recommendation 2

The Terms of Reference for the Environmental Advisory Committee for BFTA shall be expanded to include "Provision of advice on the development of additional infrastructure"(additional to that detailed in 3.2 of the draft EIS).

Recommendation 3

The proponent shall include a summary table of all environmental commitments arising from the EIS, as modified in this assessment report, in the final EMP to be prepared at the conclusion of the EIA process.

Recommendation 4

Any excavation deeper than one metre (1m) on land units 2a to 2i shall be preceded by appropriate testing for the presence of potential acid sulphate soil and soil acid neutralising capacity. Soils shall be tested in accordance with the methods adopted by the NSW Acid Sulphate Soils Management Advisory Committee. If potential acid sulphate soils are detected, the proponent shall consult with the Environment Protection Division of DLPE in the preparation of an acid sulphate soil management plan before proceeding with excavation or construction.

Recommendation 5

Construction of the proposed landing craft hard shall be preceded by appropriate testing for the presence of potential acid sulphate soil and soil acid neutralising capacity. Soils shall be tested in accordance with the methods adopted by the NSW Acid Sulphate Soils Management Advisory Committee. If potential acid sulphate soils are detected, the proponent shall consult with the Environment Protection Division of DLPE in the preparation of an acid sulphate soil management plan before proceeding with excavation or construction.

Recommendation 6

In consultation with DLPE, the proponent shall conduct infill surveys of soils to provide a sound basis on which trafficability can be modelled and monitoring programs implemented.

Vegetation

Recommendation 7

No detonation of high explosives or manoeuvres shall occur in the proposed Yambarran HEIA until additional surveys have been conducted in consultation with PWCNT to identify fire sensitive sandstone habitats and delineate appropriate management zones.

Recommendation 8

No detonation of high explosives or manoeuvres shall occur in the proposed Yambarran HEIA until additional surveys have been conducted in consultation with PWCNT to delineate appropriate management zones for the preservation of conservation values.

Recommendation 9

The proponent shall undertake the following additional fauna surveys in consultation with PWCNT:

- 1) The northern half of the Koolendong Valley;
- 2) The Yambarran Plateau;
- 3) On the Gouldian Finch in the vicinity of Mt Thymanan; and
- 4) On the Angalarri Grunter at the headwaters of the Angalarri River including the proposed Wombungi HEIA.

Recommendation 10

All activities likely to result in disturbance to nesting birds and damage to trees (i.e. detonation of high explosives, off road transit, intentional late dry season burning etc) shall be excluded from the nominated 50 km² area south-east from Mt Thymanan to the Ikymbon River until the presence or absence of breeding Gouldian Finches is confirmed and an appropriate management plan is implemented if required.

Recommendation 11

Should the species identified in the draft EIS as *Lymnodynastes tasmaniensis* be confirmed to be of conservation significance, the proponent shall consult with PWCNT regarding an appropriate management plan.

1. INTRODUCTION AND BACKGROUND

This report assesses the environmental impact of the Department of Defence's (Defence) proposed Bradshaw Field Training Area (BFTA) in accordance with the requirements of the Administrative Procedures of the *Environmental Assessment Act* 1982.

The report reviews the draft Environmental Impact Statement (draft EIS), comments on the draft EIS by members of the public, community groups and government bodies and the proponent's responses to these comments in the Supplement to the draft EIS. The report also relies on information, comments and advice provided by Northern Territory Government agencies and previous studies undertaken in the region.

The Guidelines for the BFTA draft EIS included a requirement for the preparation of a draft Environmental Management Plan (EMP). This innovation has for the first time afforded the opportunity for public comment in the development of an EMP. On completion of the environmental impact assessment process, the EMP will become a stand alone working document used by Defence to assist the long term sustainability of operations in the BFTA and the ongoing protection of environmentally sensitive areas.

Environmental Guidelines for Construction Activities have also been prepared in a separate process to this assessment. When finalised, these Guidelines will be used by Defence and its contractors in the environmental management of construction activities at BFTA.

The draft EIS and Supplement together constitute the final EIS. The "final EIS" will be referred to throughout the document as "the EIS" unless distinction between the two documents is required.

1.1 Environmental Impact Assessment Process

Environmental impact assessment is the process of defining those elements of the environment which may be affected by a proposed development and determining the significance, risks and consequences of the potential impacts of the proposal at a local and regional level.

The EIS describes the existing environment, the proposed infrastructure and the operational activities. It also evaluates potential environmental impacts and proposes measures to mitigate these potential impacts.

This report assesses the adequacy of the EIS and the undertakings and environmental safeguards proposed to overcome or mitigate the potential environmental impacts. Additional safeguards are recommended in this report where appropriate.

The contents of this report form the basis of advice to the Northern Territory Minister for Lands, Planning and the Environment on the environmental issues associated with the proposed BFTA.

1.2 Environmental Impact Assessment History

Defence lodged a Notice of Intent (NOI) on 9 October 1996, to establish a manoeuvre and field live firing training area at Bradshaw Station, a cattle station near Timber Creek within the Victoria River Region of the Northern Territory (Figure 1). The NOI was lodged with both the NT Department of Lands, Planning and Environment and the Commonwealth Environment Protection Agency (now Environment Australia).

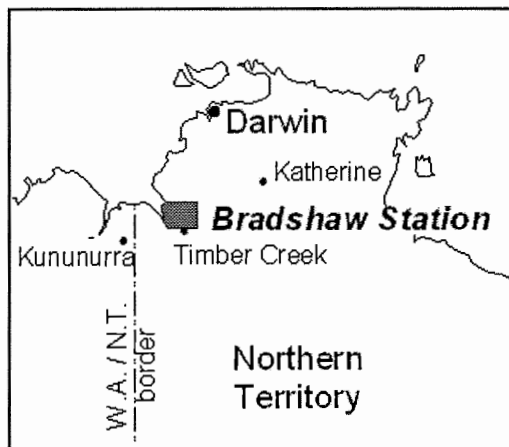


Figure 1: Location of Bradshaw Station

On 21 November 1996, in accordance with the NT *Environmental Assessment Act* 1984, the NT Minister for Lands, Planning and Environment determined that an EIS and EMP be prepared for the proposal. The proposal is also subject to the Commonwealth's *Environment Protection (Impact of Proposals) Act* 1974, and it was further determined that a joint assessment between the Commonwealth and the NT was appropriate, with the Territory undertaking to lead the assessment process.

The draft Guidelines for the Environmental Impact Statement were available for public comment from 13 February 1997 to 7 March 1997 and final

Guidelines were issued on 1 April 1997.

In accordance with Northern Territory and Commonwealth legislation, the draft EIS was available for public review from 17 November 1997 to 17 December 1997. Six submissions, including the Northern Territory and Commonwealth Governments' submissions, were received and forwarded to the proponent. A list of respondents to the draft EIS is at Appendix 1 and a summary of issues raised in the submissions is at Appendix 2.

The Supplement was received on 27 May, 1998 and distributed to NT Government Advisory bodies for review and final comment. The draft EIS and Supplement were prepared by the Department of Defence's consultants, Connell Wagner Pty Ltd.

Under the joint assessment arrangements, the Northern Territory and Commonwealth agreed to consult on Assessment Report recommendations and to endeavour to make them complementary, including where they relate to requirements for monitoring or auditing of the proposal. It is proposed that on completion of the assessment, a Memorandum of Understanding between the NT and Commonwealth be established regarding environmental management at BFTA.

The contents of this report form the basis of advice to the Northern Territory Minister for Lands, Planning and the Environment on the environmental issues associated with the project.

Copies of the Northern Territory's Environmental Assessment Report and the Commonwealth's Environmental Assessment Report will be provided to the Commonwealth Minister for the Environment, who then considers the assessment and advises the Commonwealth Minister for Defence of any recommendations and conditions with respect to the project.

1.3 Major Issues

The major environmental issues identified with the development and operation of BFTA are:

- Environmental management;
- Soil Conservation;
- Vegetation management (including weed management);
- Fauna management (including management of feral species);
- Fire management;
- Maintenance of water quality; and
- Heritage, archaeological and sacred site issues.

2. THE PROPOSAL

The 1st Brigade of the Australian Army is being relocated to Darwin. Existing training areas in northern Australia cannot support the Brigade's training requirements. Defence has therefore purchased the pastoral lease for Bradshaw Station and proposes to develop the property into a field training facility which will permit it to exercise armoured, artillery, engineer, infantry and aviation elements in a range of combat activities including reconnaissance, manoeuvre and field live firing from sub-unit to formation level, joint exercises with other Australian forces, combined exercises with foreign forces and delivery of aerial ordnance in support of ground exercises.

Defence aims to develop the necessary infrastructure and environmental management procedures to ensure the long term sustainable use of Bradshaw Station as a field training area while also affording ongoing protection to environmentally sensitive areas.

The proposal involves two distinct phases:

- i) the short term development of infrastructure; and
- ii) ongoing operational activities.

These are described below.

2.1 Infrastructure

Proposed infrastructure for the training area (Figure 2) includes:

- All weather access to the property via a bridge over the Victoria River and roadworks to the top of the escarpment. The bridge has been separately assessed and is not considered further in this report.
- An internal road network comprising some 300 km of unsealed primary and secondary roads.
- A Training Force Maintenance Area (TFMA) comprising storage hardstands and austere working accommodation (workshops and hardstands).
- A Range Control Facility including a communications room, offices, briefing room, accommodation and support facilities.

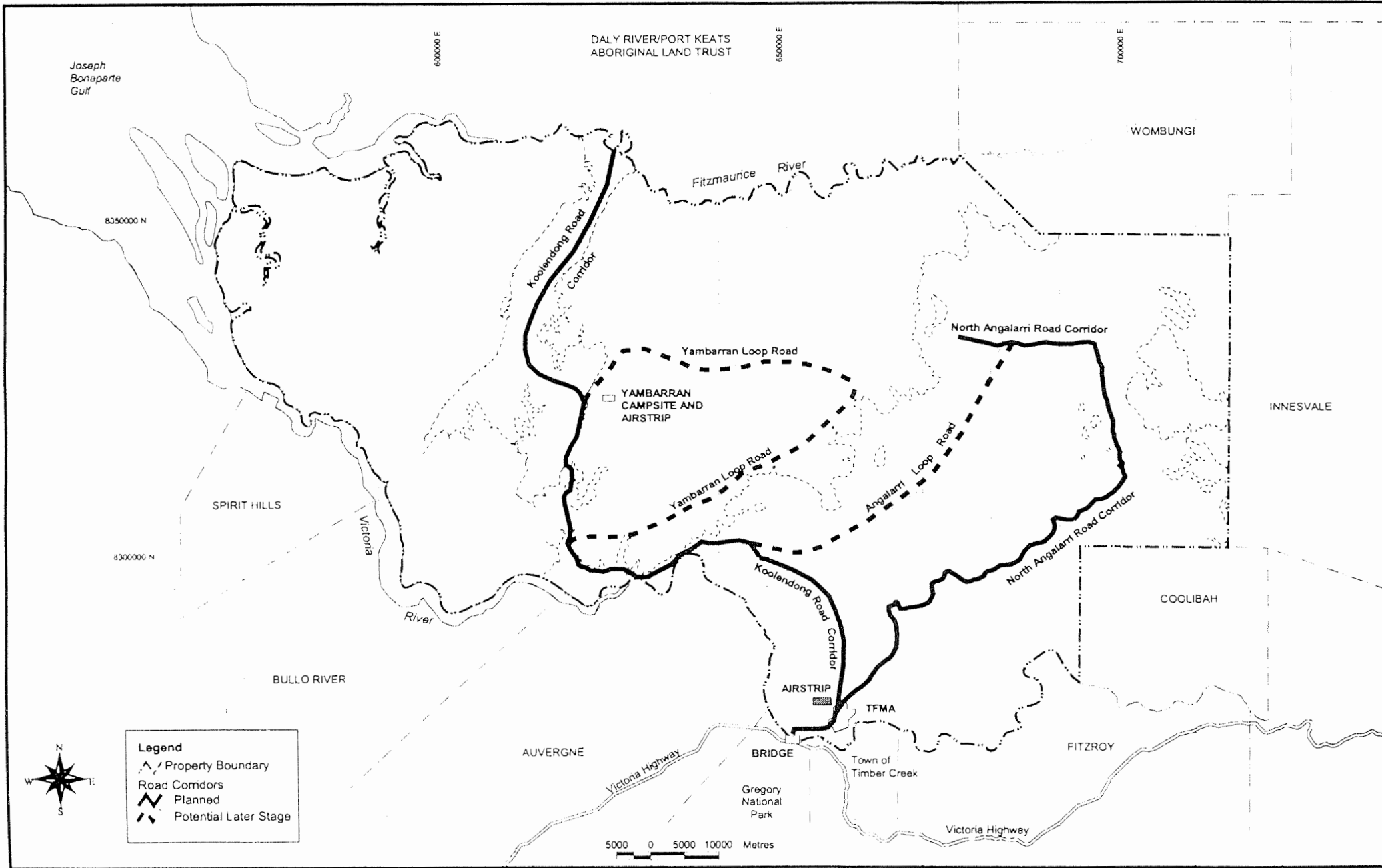


FIGURE 2:
PRELIMINARY INFRASTRUCTURE PLAN

- Two 500 person Scale A Camps which include austere accommodation, mess and ablution facilities. One camp would be constructed as part of the TFMA and the other on the Yambarran Plateau.
- Two airstrips 1550 m long and 24 m wide with adjoining parking areas 300 m by 250 m. One airstrip (sealed) would be located adjacent to the TFMA and the other (unsealed) strip would be located adjacent to the camp on the Yambarran Plateau.
- A "landing craft hard" to allow medium and heavy landing craft access to BFTA. The landing craft hard comprises a concrete landing point leading to a concrete loading and off-loading point and would be constructed on the banks of the Victoria or Angalarri Rivers.
- Engineering Services including a vehicle washdown facility at the TFMA, sanitation and effluent disposal, electrical power, drainage and water supply.
- Caretaker facilities comprising a standard 3-4 bedroom house plus office, storage and maintenance facilities. One residence is initially planned with a further two under consideration.
- A petrol, oil and lubricant (POL) facility for the storage and handling of diesel, petrol, kerosene, oils and lubricants.
- Explosive storage facilities for the short term storage of ammunition.
- Boundary fencing and warning signs.

2.2 Operational Activities.

Training Area Users

BFTA would principally be used for training ground forces such as 1st Brigade. However BFTA would also be available for training by other Australian Army organisations as well as other military users including the Royal Australian Navy, the Royal Australian Air Force and foreign forces.

Range Development and Use

Range development would include:

- **Field firing areas** - areas in which live firing of weapons and manoeuvre can be practiced under simulated battle conditions;
- **Three high explosive impact areas (HEIA)** - areas for live firing of all nature of ammunition, including high explosives and white phosphorous. Detonation and firing of high explosive at BFTA will be restricted to the nominated HEIA;
- **Two manoeuvre areas** - These areas permit land force combat and combat support elements the freedom to manoeuvre and deploy off-road, on foot, in wheeled or tracked vehicles or by aircraft, and practice offensive and defensive operations; and
- **Nine training sectors** - sectors established within the training areas to assist with the control of training. Ideally the sectors will also facilitate the administration and environmental management of BFTA.

Frequency and Description of Training

The majority of training would be undertaken in the dry season and would range from simple reconnaissance to formation level training. This could include use of a range of vehicles such as tanks, light armoured vehicles, armoured personnel carriers, artillery, heavy trucks and 4WDs and a range of weapons such as small arms, grenades, howitzers, mortars, 66mm light armoured weapons, 84mm medium armoured weapons, 105 mm main armament, machine guns, 25mm cannon and aircraft mounted high explosive warhead weapons.

The broad categories of training proposed to be undertaken within BFTA include armoured training, mechanised infantry training, artillery training, combined arms training, engineer training, army aviation training and RAAF training.

Transport

Training on BFTA will require the transport of personnel, armoured vehicles, supplies and munitions from Darwin or interstate. The designated route to BFTA in the majority of training scenarios would be from Darwin to BFTA via Katherine along the Stuart and Victoria Highways.

3. REGIONAL SETTING

Bradshaw Station is located near Timber Creek within the Victoria River Region of the Northern Territory, approximately 600km by road southwest of Darwin. Situated at the southwestern extremity of the Top End, the region is subject to the summer monsoon or wet season from October to April, the dry season from May to September and periods of transition in between. Topographical features of the area include the sandstone escarpments of the Pinkerton and Yambarran Ranges, rising some 200 - 300 metres above the plains of the Victoria River.

The principal Aboriginal people traditionally associated with the region belong to the Jaminjung language community. Bradshaw was widely used as a major footpath communication link between Victoria River and the Daly River area north of the Fitzmaurice River. Diverse habitats in the area provide abundant resource exploitation opportunities.

Geological features provide shelter and resources for the production of art. Rock shelters throughout the escarpment of the Pinkerton Range contain significant galleries of prehistoric and protohistoric art. Numerous archaeological and other sites which are sacred or otherwise significant to Aboriginal tradition occur on the station.

European exploration of the Victoria River Region began with Captain J.C. Wickham's expedition in 1839. A small group lead by Lieutenant John Stokes surveyed the lower reaches of the Victoria River by boat. Further expeditions to the region were lead by Augustus Gregory in 1855 and Alexander Forrest in 1879. The botanical name for the region's famous boab trees is *Adansonia gregorii* after Gregory.

Wave Hill and Victoria River Downs stations were stocked with cattle in 1883 and Bradshaw Station was taken up by Captain Joe Bradshaw in 1894. A police station was established in Timber Creek in 1898 and the town now has a permanent population of about 300 while the population of the Victoria River Region is approximately 3000. The economy of the region is based on beef cattle and tourism. Areas of conservation significance in the region include Gregory National Park, Keep River National Park and the Daly River/Port Keats Aboriginal Land Trust.

Bradshaw Station (Figure 3) is a pastoral lease of some 8,700 km² and is bounded to the north by the Fitzmaurice River and Wombungi Station, to the west by the Joseph Bonaparte Gulf, to the south by the Victoria River and to the east by Coolibah and Innesvale Stations. The property is approximately 150 km east to west and 70 km north to south. It consists of six major physiographic regions: hills and plain to the east (Eastern Hills), a large open plain (Angalarri Plain), a central plateau (Yambarran Plateau), a narrow valley (Koolendong Valley), dissected hills to the west (Western Hills), and a littoral zone which borders the ocean.

The property has been in continuous operation as a cattle station for over 100 years and carried some 13 000 head of cattle at the time of its purchase by Defence in 1996. Bradshaw Station has been gradually destocked under a three year lease back agreement with the former owner. Localised areas of weed infestation and soil erosion occur on the property and feral animals are present.

Existing infrastructure is limited to that required to operate a cattle station including 4WD tracks, some fenced paddocks and cattle yards, water bores, dams, the homestead and several dirt airstrips in varying states of repair. Access to Bradshaw Station is either via barge across the Victoria River, four-wheel drive access at low tide across the Victoria River at Bradshaw Crossing, four-wheel drive track from the northeast through Wombungi Station, or by air. The tidal influence of the Victoria River extends to the junction with Timber Creek just upstream of Bradshaw Crossing.

4. ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Introduction

The information provided in the final EIS has been assessed, then used, along with submissions from advisory bodies and public comment on the draft EIS, to determine the adequacy of the information provided by the proponent and the accuracy and acceptability of predicted impacts and safeguards.

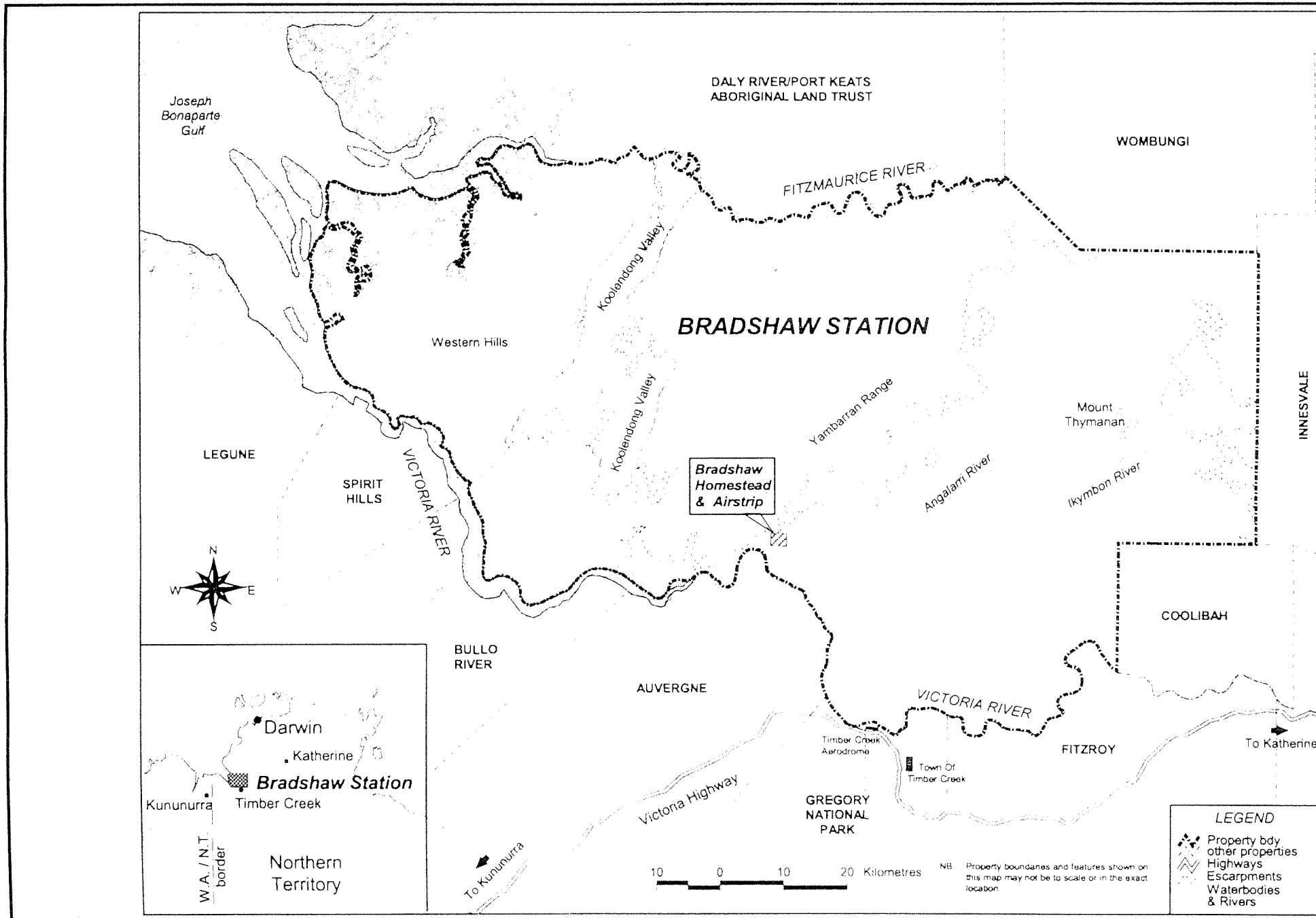
It is acknowledged that during implementation of the proposal outlined in the EIS, flexibility is necessary and desirable to allow for minor and non-substantial changes to the design and specifications which have been examined as part of this assessment.

It is important for interpretation purposes that the recommendations (in **bold**) are not considered in isolation, as the text identifies concerns, suggestions and undertakings associated with the project.

Subject to decisions which permit the project to proceed, the primary recommendation of this assessment is:

Recommendation 1

The proponent shall ensure that the proposal is implemented in accordance with the environmental commitments and safeguards identified in the Bradshaw Field Training Area draft Environmental Impact Statement (including the *Environmental Guidelines for Construction Activities* and the *Environmental Management Plan*) as modified in the Supplement to the draft EIS and as recommended in this assessment report.



4.2 Issues Raised in Submissions

Issues raised in the six submissions to the draft EIS include;

- EIS Process
- Information Management
- Environmental Management
- Proposal
- Climate
- Geology, Landforms and Soils
- Vegetation
- Fauna
- Fire
- Water Resources
- Visual Quality
- Wilderness and Wild Rivers
- Noise and Vibration
- Air Quality
- Problem Insects and Pathogens
- Heritage and Sacred Sites
- Social and Economic Factors
- Public Access, Health and Safety
- Transport
- Waste Management
- Explosives and Hazardous Materials Management
- Cumulative Environmental Impacts
- Consultation

Appendix 2 of this Report summarises the issues raised by each respondent. The Supplement to the draft EIS contains the proponent's responses to these issues. The major issues (see Section 1.3) are discussed below. The other issues have been dealt with satisfactorily in the Supplement and do not require further discussion.

4.3 Environmental Management

The establishment of a field training area on Bradshaw Station involves two distinct phases;

- i) Infrastructure development; and
- ii) Ongoing operations and property management.

Both of the above phases have the potential for significant impacts on the environment. Environmental management during the infrastructure development phase of the proposal is addressed by the *Environmental Guidelines for Construction Activities*. A draft of these Guidelines was included in Volume 2A of the draft EIS and the final version will be used the managing the environmental impacts of the first phase. Occasional reference is made to the *Environmental Guidelines for Construction Activities*, however they are beyond the scope of this Environmental Assessment Report and will not be considered in detail.

While the environmental effects from infrastructure development are likely to be limited in scale and short term, the potential impacts of field live firing and manoeuvre over an indefinite time period are considerable. It is conceivable that poor management of a field training area at Bradshaw Station over a lengthy period could result in extensive land degradation such that manoeuvres would no longer be possible and important environmental, cultural and heritage values were lost.

To provide for the long term environmentally sustainable operation of a field training area at Bradshaw Station, ongoing operations and property management will be governed by:

- Environmental Management Plan

It was determined early in the environmental assessment process that an Environmental Management Plan (EMP) would be developed in conjunction with the Environment Impact Statement. The final EMP will provide the framework for the effective long term management and sustainable use of Bradshaw Station as a field training area while also affording ongoing protection to environmentally sensitive areas. The draft EMP comprises 15 Sub-Plans such as the *Soils and Erosion Sub-Plan*, the *Vegetation Management Sub-Plan* and the *Fauna Management Sub-Plan*. The EMP will be updated over time in light of information from monitoring programs, operational experience, further surveys, auditing programs and advice from the Environmental Advisory Committee.

- Geographic Information System

The Geographic Information System (GIS) is an essential component of the system of environmental management proposed for BFTA. Resource attribute data such as climate, terrain, soils, erosion, vegetation, fauna, weeds, feral animals, water quality, fire, sacred sites, and archaeological places and objects has been gathered from sources such as baseline surveys and information held by government agencies. This data has been entered into the GIS and will be accessed as layers to plan monitoring programs, decide on rotation, rest or rehabilitation programs and modify training regimes as required.

The GIS will be used to plan training exercises and in the preparation of Environmental Certificates of Compliance. Information on the GIS will be updated over time in light of information from monitoring programs, operational experience and further surveys.

- Environmental Certificates of Compliance

Environmental Certificates of Compliance (ECC) review the proposed training activity against the environmental and management constraints of the training area and detail specific environmental procedures, practices and restrictions associated with a training activity. A training activity will not proceed without an ECC.

- Range Standing Orders

Range Standing Orders (RSO) provide direction to Defence personnel regarding permitted and prohibited actions associated with the training area and the restrictions and management requirements governing these activities. RSO are used to reinforce the requirements of the EMP and derive their authority from the *Defence Act* and Military Law. All service personnel training in Australia are subject to the provisions of Military Law.

- Standing Operating Procedures

Standing Operating Procedures (SOP) are the mechanism by which RSO are implemented.

- Environmental Advisory Committee

The Environmental Advisory Committee (EAC) is an advisory body to the Defence providing the strategic direction for the management of BFTA. Implicit in its responsibilities is the fulfilment of auditing responsibilities and the facilitation of consultation with neighbouring land managers and authorities. The EAC will include representatives from Defence, DLPE, PWCNT and the Timber Creek Community Government Council. The Terms of Reference and membership of EAC have yet to be finalised.

Recommendation 2

The Terms of Reference for the Environmental Advisory Committee for BFTA shall be expanded to include "Provision of advice on the development of additional infrastructure"(additional to that detailed in 3.2 of the draft EIS).

- Environmental Monitoring

Defence has undertaken to introduce a program of environmental monitoring to ensure that the objectives of the EMP are met. Each of the Draft EMP Sub-Plans specifies monitoring tasks. Monitoring reports will be submitted to the EAC and monitoring results will be recorded on the GIS and used to modify the EMP as appropriate.

- Audits

Defence will conduct a compliance audit of the EMP within three years of EMP approval and five yearly thereafter to ensure that environmental requirements are being met. Additional audits may be arranged for major training activities. Audit results would be reported to the Defence Local Controlling Authority and the EAC.

4.3.1 Adequacy of Proposed Environmental Management Structure

Comments on the draft EIS included the criticism that the draft EMP did not provide enough detail on proposed monitoring programs. Defence has responded by stating that the draft EMP is a strategic plan providing monitoring principles without detailing specific programs.

It should be noted that the BFTA draft EIS is the first Northern Territory EIS to include a draft EMP. This innovation has for the first time afforded the opportunity for public comment in the development of an EMP. The EMP will be refined over time in light of information from monitoring programs, operational experience, the auditing program and advice from the EAC.

Specific monitoring programs will be developed in consultation with relevant government agencies such as DLPE, DPIF, PWCNT, THS and AAPA. Appropriate monitoring programs and methodologies will be developed for soils, vegetation, fauna, weeds, feral animals, fire, biting insects, sacred sites and archaeological places and objects.

At the conclusion of the assessment process, the EMP will become a stand-alone practical working document to guide the long term environmental management of BFTA. Defence has undertaken to incorporate all relevant parts of the EMP into Range Standing Orders and Standing Operating Procedures to formalise the responsibilities of all personnel involved in military training activities on BFTA. Formalising EMP actions as RSO adds to the authority of the EMP and provides a level of certainty that undertakings will be implemented.

Not all the environmental commitments made in the BFTA EIS appear in the draft EMP. A table summarising all commitments from the EIS is at Appendix 3. The implementation of Recommendation 1 above will be aided by the inclusion of the table of commitments in the stand-alone EMP that the proponent will prepare at the conclusion of the EIA process.

Recommendation 3

The proponent shall include a summary table of all environmental commitments arising from the EIS, as modified in this assessment report, in the final EMP to be prepared at the conclusion of the EIA process.

The system of environmental management proposed for BFTA is both comprehensive and complex. Diligence over time will be required in the application of the EMP and in the continual updating of the GIS system as the results of monitoring, research and additional surveys become available.

In light of Defence's stated commitment to the long-term sustainability of Bradshaw Station as a field training area while affording on-going protection to sensitive areas, the proposed system of environmental management is adequate and acceptable.

4.4 Soil Conservation

4.4.1 Issues

- The operation of Bradshaw Station as a cattle property since 1894 has resulted in extensive soil erosion in some areas.
- The development of Bradshaw as a field training area has the potential to result in further soil erosion through the construction of roads, quarries and borrow pits and through training activities such as manoeuvre by tracked vehicles and the use of high explosives.
- Inundation during the wet season will limit or exclude access to parts of Bradshaw Station due to reduced trafficability.

4.4.2 Adequacy of Description of Existing Environment

Land units and soils within Bradshaw Station are described in two studies by CSIRO (*Soil Properties and Land Unit Mapping*, November 1997 and *Physical Properties of Selected Soils from Bradshaw Station, Victoria River, NT*, November 1997). Soil erosion was investigated by ERA Environmental Services (*Bradshaw Field Training Area Soil Erosion Survey*, October 1997).

Soils are classified into 35 groups on the basis of properties such as colour, texture, depth and gravel content. Potential soil constraints are identified as water erosion, wind erosion risk, pulverability, trafficability, ease of excavation, dam site construction suitability, regenerative capacity and acid sulphate soil risk.

Thirty land units are described on the basis of terrain, soils, vegetation community and fauna habitat attributes and mapped in a GIS format. The potential risk of occurrence of the above soil constraints within each land unit was ranked from very low to very high.

Areas of existing erosion requiring rehabilitation were identified as well as areas of erosion potential. ERA Environmental Services (1997) estimates that approximately 5800 hectares of the Angalarri, Lalngang and Mount Thymanan sectors currently require rehabilitation.

The land unit and soil surveys and the soil erosion investigation undertaken for the EIS are adequate for an assessment of impacts. However, as discussed below, further surveys targeting individual training sectors will be required to better establish trafficability characteristics and implement monitoring programs. The proponent has undertaken to consult with DLPE to establish soil monitoring programs and to confirm methodologies for soils and erosion monitoring.

4.4.3 Evaluation of Potential Impacts and Safeguards

Existing Erosion

The removal of stock from Bradshaw and a program of feral animal control will decrease grazing pressure and should result in an increase in vegetation. These measures, in conjunction with the introduction of a fire regime which maintains vegetative cover at the onset of the wet season would be expected to mitigate existing erosion over time. In addition, the proponent has undertaken to rehabilitate severely eroded areas and to progressively close and rehabilitate the majority of existing property tracks.

The combination of the above measures is considered sufficient to address existing erosion. Should soil monitoring programs indicate that areas affected by erosion are not decreasing over time, additional measures will be required.

Infrastructure Development

The construction of approximately 300km of internal roads, two airstrips and associated borrow pits and quarries has the potential to create or exacerbate existing erosion if not properly managed. It should be noted that the continued use of existing tracks or off-road transit to training locations by tracked and wheeled vehicles poses a far more serious threat of erosion than the use of properly formed and maintained roads.

The proponent has undertaken to ensure that the development and rehabilitation of roads, borrow pits and quarries will be carried out in accordance with the NT Department of Transport and Work's *Roadworks Master Specification* and the Conservation Commission of the NT's *Guidelines for Effective Rehabilitation of Borrow Pits in the Top End*. In addition, where possible, roads will be sited on ridges, along contours or on the flats with minimal cut and fill.

Further actions and tasks to prevent soil erosion during the construction phase are specified in the *Soils and Erosion Sub-Plan* in the *Environmental Guidelines for Construction Activities*. With reference to trafficability, the Sub-Plan prohibits movement of vehicles across waterlogged soils during this phase.

Acid Sulphate Soils

The draft EIS identified soils associated with the Carpentaria land system (1a, 1c) as being potential acid sulphate soils. These land units (tidal flats and swamps fringing estuarine flats) are not a high priority for military use. Should use of these areas be proposed in the future, the proponent has undertaken to test for potential acid sulphate soils and implement appropriate measures to avoid or minimise the release of acid in consultation with DLPE.

CSIRO has advised Environment Australia that there is a high risk of potential acid sulphate soils occurring in the Angalarri land system, mostly at depth but nearer the surface in land units 2c and 2d. In addition, all land units 2a to 2i have some risk of potential acid sulphate soils at depth (i.e. under the fluvial/alluvial surficial sediments) with the proximity of potential acid sulphate soils to the surface being closest for units 2c, 2e and 2i.

The proponent's soils consultant has advised that soils surveyed on the estuarine, deltaic and gently sloping coastal plains did not display any of the visible or pH properties of acid sulphate soils within 1.5m of the surface. However, the consultant also stated that it is possible that potential acid sulphate soil conditions occur at greater depths.

The excavation of potential acid sulphate soils may result in the formation of sulphuric acid, which in turn may result in impacts such as watertable acidification, mobilisation of toxic elements from soil, fish kills and other damage to marine and freshwater ecosystems. The visual impacts of sulphuric acid are more significant in freshwater environments than marine environments due to the lower buffering potential of freshwater.

Recommendation 4

Any excavation deeper than one metre (1m) on land units 2a to 2i should be preceded by appropriate testing for the presence of potential acid sulphate soil and soil acid neutralising capacity. Soils should be tested in accordance with the methods adopted by the NSW Acid Sulphate Soils Management Advisory Committee. If potential acid sulphate soils are detected, the proponent should consult with the Environment Protection Division of DLPE in the preparation of an acid sulphate soil management plan before proceeding with excavation or construction.

Recommendation 5

Construction of the proposed landing craft hard should be preceded by appropriate testing for the presence of potential acid sulphate soil and soil acid neutralising capacity. Soils should be tested in accordance with the methods adopted by the NSW Acid Sulphate Soils Management Advisory Committee. If potential acid sulphate soils are detected, the proponent should consult with the Environment Protection Division of DLPE in the preparation of an acid sulphate soil management plan before proceeding with excavation or construction.

Operational Activities

Training activities of most significance to soil conservation include those involving the firing of high explosive ammunition and ordnance, and those involving manoeuvre of tracked vehicles.

High Explosive

High explosive may be used in live firing exercises involving air to ground bombing and missile firing, armoured training and artillery training, and will be confined to the three High Explosive Impact Areas (HEIA). Detonation of high explosives will result in the destruction of vegetation and the formation of craters, leading to a potential erosion risk. The proponent has undertaken to assess the requirement for refilling and stabilisation of craters at the completion of training exercises and to assess ground cover depletion by military activity and impose commensurate rest periods for the re-establishment of vegetative cover.

Impacts on escarpment and significant features by high explosives would result in unacceptable alterations to the natural landscape. The proponent has undertaken not to target significant landscape features such as mesas and permanent watercourses. The use of Range Danger Area Safety Traces for live firing exercises will assist protection of sensitive sites and areas within each of the three HEIA.

Vehicle Manoeuvres

Soils in extensive parts of the Angalarri, Lalngang and Koolendong sectors will tend to pulverise and form dust when trafficked in a dry state or form deep ruts if trafficked when wet.

The use of properly constructed and maintained primary and secondary gravel roads for transit to exercise areas will reduce pressure on soils prone to pulverisation. The proponent has also undertaken to assess each training sector prior to training activities to determine soil capability and ability to sustain training. Damage caused by training activities will be progressively rehabilitated as required.

The proponent has indicated that some training may occur on Bradshaw during the wet season. To avoid formation of ruts and bogging of vehicles, strict conditions will need to be placed on vehicle movements. As the recovery of bogged heavy vehicles from water-logged soils has only very limited training benefit, travel across these soils should be discouraged. Indicators of trafficability recorded on the GIS, including topography, soils and native vegetation will be used in the planning process to identify areas capable of being used for wet season training.

Further surveys targeting individual training sectors will be required to better establish soil trafficability characteristics and performance.

Recommendation 6

In consultation with DLPE, the proponent shall conduct infill surveys of soils to provide a sound basis on which trafficability can be modelled and monitoring programs implemented.

Monitoring

Conservation of soils is essential to the long term sustainable use of Bradshaw as a field training area. A monitoring program that will identify both long term changes and areas requiring immediate attention is required to provide data for effective environmental management.

The proponent has undertaken to consult with DLPE to establish soil monitoring programs and to confirm methodologies for soils and erosion monitoring. Monitoring programs would include the use of satellite imagery, photopoints and linear techniques and will be linked to other monitoring programs where relevant, such as water quality.

Monitoring reports will be made available to the EAC and program outcomes will be incorporated in the GIS database.

4.5 Vegetation Management

4.5.1 Issues

- Bradshaw Station contains plant species and habitats of conservation significance.
- Four Ecologically Sensitive Habitats within Bradshaw Station will require specialised management strategies. They are sandstone habitats, monsoon forests, riparian habitats and coastal habitats.
- Weed Management - The baseline survey identified 14 weed species on Bradshaw Station.

4.5.2 Adequacy of Description of Existing Environment

A baseline vegetation survey of 151 sites was conducted in June 1997. Data collected by PWCNT in 1993 and by the Australian Army in 1995 were also included in the EIS to improve accuracy and increase the collective knowledge of vegetation in the area.

Approximately 950 species have been identified for Bradshaw Station. Within the Victoria-Bonaparte Bioregion, there are 39 species currently listed by the NT Herbarium as rare or threatened. Eleven of these rare or threatened species have been identified on Bradshaw Station. Two habitats of conservation significance were identified. These are *Xerochloa* grassland and *Melaleuca minutifolia* low woodland.

Coastal habitats were not surveyed. The proponent has indicated that these areas are not a high priority for military use and that prior to use of these areas in the future, surveys will be undertaken in consultation with PWCNT.

The vegetation baseline surveys and the vegetation data presented in the draft EIS are adequate to allow assessment of the proposal and there is no requirement for further broadscale community based vegetation mapping.

However, PWCNT has advised that further specific surveys in the northern half of the Koolendong Valley, the Yambarran Plateau and the Mt Thymanan area are required. The proponent has undertaken to consult with DLPE and PWCNT on the need for, priorities and scope of additional surveys, including surveys during the wet season transitional periods.

4.5.3 Evaluation of Potential Impacts and Safeguards

Habitats of Conservation Significance

Xerochloa grassland and *Melaleuca minutifolia* low woodland occur almost exclusively in the Victoria-Bonaparte Bioregion and are not currently protected in the reserve system of the NT. The potential impacts of live firing and manoeuvres include destructive wildfires, the introduction of weed species and the long term degradation of these habitats.

The proponent has undertaken to minimise disturbance from military activities and to implement burning regimes which promote the maintenance of the habitat structure.

The *Xerochloa* grassland at Mosquito Flat and the adjacent rocky hills have been identified as a core fauna habitat. As discussed in 4.6 below, specific management strategies will be adopted for core fauna habitats including the use of management zones, restrictions on disturbance, active management of feral animals, weeds and fire and monitoring of species richness and abundance. Military activity in the *Xerochloa* grassland will be restricted to transit along the formed road network with no off-road manoeuvres.

Melaleuca minutifolia occurs in large areas of the Angalarri Plain including the Ikymbon and Mt Thymanan training sectors. The distribution of *M. minutifolia* low woodland has been recorded on the GIS and will be a factor in the preparation of Environmental Certificates of Compliance for training exercises.

Management options identified by the proponent for the protection of *M. minutifolia* include avoidance, rotation, rest, use of fire or activation of management zones during training.

Defence has agreed to fund research by PWCNT on "Monitoring Impacts of Military Use and Destocking on Clay Grasslands and Woodlands in the BFTA". The study will, among other things, clarify the biodiversity values and biogeographic context of these clay systems, including the *M. minutifolia* and *Xerochloa* communities. The project will monitor the impacts of the transition from pastoral to military use on biodiversity. Outcomes from this study will also assist in the sustainable management of the *M. minutifolia* low woodland and *Xerochloa* grasslands.

Information from monitoring programs will be added to the GIS database and used to refine the EMP. Defence has undertaken to make monitoring reports available to the EAC.

The proposed safeguards for the protection of *Xerochloa* grasslands and *M. minutifolia* low woodland, in conjunction with the establishment of a monitoring program, are adequate.

Species of Conservation Significance

Three rare plant species were recorded during the June 1997 baseline survey and a further eight species recorded in previous surveys are of conservation significance in the Victoria-Bonaparte Bioregion. The NT Herbarium lists 39 plant species within the Victoria-Bonaparte Bioregion as rare or threatened and it is likely that a significant number of these species are present on Bradshaw Station as each of the broad vegetation types of the Bioregion occur on the property.

The most significant potential impacts to species of conservation significance are from vegetation clearance during the construction phase and from firing of weapons and vehicle manoeuvres during exercises.

The 1997 baseline survey found that no significant limitations on infrastructure development are expected as a result of vegetation. The known locations of species of conservation significance have been recorded on the GIS and these records will be available during construction and operations. The *Flora and Fauna Sub-Plan* of the draft *Environmental Guidelines for Construction Activities* requires the mapping of known rare or endangered flora and surveys throughout the construction phase to ensure construction activities are not impacting on any rare or threatened species.

The preparation of Environmental Certificates of Compliance (ECC) prior to military exercises will identify known species of conservation significance and specify protection measures for sites which fall within the training sector. In addition, training areas will be "rested" before irreversible damage is sustained, recovery will be monitored, fire management will reduce the intensity and extent of wildfires, and training areas will be used only in the dry season.

Species of conservation significance occurring within ecologically sensitive habitats will also be afforded the protection of specific management regimes as discussed below.

The proposed safeguards for the protection of species of conservation significance are adequate.

Ecologically Sensitive Habitats

Four habitats within Bradshaw Station have been characterised as having little resilience to disturbance. These ecologically sensitive habitats will require specialised management strategies. They are sandstone habitats, monsoon forests, riparian habitats and coastal habitats.

Sandstone Habitats

Sandstone areas occur in the Western Hills, Yambarran, Koolendong and Mount Thymanan Sectors. Vegetation communities associated with sandstone areas may include fire sensitive species such as *Grevillea*, *Acacia*, *Hibbertia*, *Boronia*, *Jacksonia* and *Hibiscus*. Fire sensitive species reproduce only by seed and are unable to resprout after fire. If fire occurs too frequently, plants may be killed before they are mature enough to produce seed and the local survival of species may be threatened.

Fire sensitive habitats are likely to be confined to areas sheltered from fire such as areas with a low fuel load or within rock crevices. These areas will require active fire management and a fire free interval of at least five years. The proponent has identified fire management options as:

- delineation of appropriate management zones on the GIS;
- restriction of training to activities that do not pose a significant risk of fire;
- rotation of training areas; and
- a controlled burning program that establishes an appropriate fire frequency, including patchwork, rotation and resting.

Military activities with the potential to start fires include live firing, the use of explosives and movement of tracked vehicles. Live firing will occur only within HEIA and the three nominated HEIA occupy portions of the Ikymbon, Angalarri, Yambarran and Mt Thymanan training sectors.

The proponent has undertaken to conduct additional vegetation surveys within sandstone areas where high fire risk training activities are proposed in order to identify fire sensitive sandstone habitats.

Recommendation 7

No detonation of high explosives or manoeuvres shall occur in the proposed Yambarran HEIA until additional surveys have been conducted in consultation with PWCNT to identify fire sensitive sandstone habitats and delineate appropriate management zones.

PWCNT has emphasised the high conservation values of the Yambarran Plateau, particularly the dissected sandstone gullies and gorges. A significant portion of the proposed HEIA on the Yambarran Plateau comprises sandstone gullies and gorges. These areas will generally be inaccessible to tracked and wheeled vehicles, however the detonation of high explosives has the potential to significantly diminish conservation values.

PWCNT has advised that further specific surveys in the northern half of the Koolendong Valley, the Yambarran Plateau and the Mt Thymanan area are required. The proponent has undertaken to consult with DLPE and PWCNT on the need for, priorities and scope of additional surveys.

Recommendation 8

That no detonation of high explosives or manoeuvres occur in the proposed Yambarran HEIA until additional surveys have been conducted in consultation with PWCNT to delineate appropriate management zones for the preservation of conservation values.

Monsoon Forests

Monsoon forests occupy about 330ha (<.05%) of Bradshaw Station and are highly sensitive to fire and disturbance.

Military training will be excluded from these areas by delineation of management zones. The risk of fire will be minimised by back burning from the margins of monsoon forests early in the dry season and active feral animal and weed control programs will be initiated.

Riparian Habitats

These are areas sensitive to disturbance because of their sandy soils and flooding during the wet season. Removal of vegetation may result in erosion, a consequent reduction in water quality and siltation with adverse impacts on aquatic flora and fauna. Riparian areas are important wildlife movement corridors and are also susceptible to weed invasion.

To safeguard riparian habitats, the proponent has undertaken to delineate management zones along large watercourses such as the Victoria, Angalarri, Ikymbon and Fitzmaurice Rivers, except at crossing points, where vehicle and human activities will be specifically controlled. Existing environmental degradation within these areas will be actively managed to minimise further damage, including earthworks to prevent further loss of soil, treatment to prevent further spread of weeds and revegetation using appropriate native species.

Coastal Habitats

These habitats are sensitive to field firing and vehicle manoeuvres.

Coastal habitats were not surveyed for vegetation as they are not a high priority for military training. Any future training would be limited to activities that do not pose a significant impact such as dismounted training. Should use of these areas be proposed in future, vegetation surveys will be undertaken as required in consultation with PWCNT.

Recommendation 9

The proponent shall undertake the following additional fauna surveys in consultation with PWCNT:

- 1) The northern half of the Koolendong Valley;**
- 2) The Yambarran Plateau;**
- 3) On the Gouldian Finch in the vicinity of Mt Thymanan; and**
- 4) On the Angalarri Grunter at the headwaters of the Angalarri River, including the proposed Wombungi HEIA.**

The proponent has also undertaken to consult further with PWCNT on the need for additional surveys during and either side of the wet season and for additional aquatic fauna surveys.

4.6.3 Evaluation of Potential Impacts and Safeguards

Construction

Potential impacts to fauna from construction are negligible. No threatened fauna species are likely to be dependent on habitats where infrastructure is proposed.

Operations

Core Fauna Habitats

The baseline survey identified three core fauna habitats containing a high species diversity representative of Bradshaw Station. These are:

- rocky habitats, such as rocky slopes and gullies with monsoon forest;
- streams and riparian habitats associated with rocky hills; and
- grassland with swamps.

The proponent has undertaken to avoid training (except transit on formed roads) within core fauna habitats. Management strategies for core fauna habitats include the use of management zones, restrictions on disturbance, active management of feral animals, weeds and fire and monitoring of species richness and abundance. The size of management zones for different core fauna habitats will be determined in consultation with relevant Government agencies.

Managing core fauna habitats as proposed and allowing other habitats to recover following training exercises will minimise potential impacts on fauna.

Species of Conservation Significance

Several species of conservation significance occur on Bradshaw Station. The potential impact from military operations on two of these species, the Gouldian Finch (*Erythrura gouldiae*) and the Angalarri Grunter (*Scortum neilli*) may be significant.

The proposed safeguards for the protection of environmentally sensitive habitats are satisfactory.

Weeds

Fourteen weed species were identified during the baseline survey. DPIF advised that Castor Oil Plant (*Ricinus communis*) should also be included in management considerations which Defence has undertaken to do.

Bradshaw Station was formerly stocked with 13,000 head of cattle. The removal of the cattle and consequent reduction in grazing pressure may lead to the proliferation of some weed species. Construction and operation of BFTA also has the potential to introduce new weed species and to spread existing infestations of weeds both through vehicle movements and soil disturbance.

In order to minimise the movement of weed seed in and out of Bradshaw, the proponent has undertaken to establish a vehicle wash facility at the TFMA. Off road vehicles will be washed at this facility prior to leaving Bradshaw and vehicles from Darwin will be washed at Robertson Barracks prior to departure. The spread of weeds within Bradshaw will be minimised by avoiding known areas of weed infestation as recorded on the GIS.

Weed management will focus on areas of high priority for military training, isolated outbreaks, along waterways and disturbed areas, and weeds of serious threat to conservation such as *Parkinsonia*. Management will include chemical, physical and fire treatments and control of feral animals. The proponent will also pursue a cooperative approach to weed management involving nearby landowners and relevant Government agencies.

Other Vegetation Issues

Military training will result in damage to vegetation. Manoeuvres by tracked vehicles will pulverise ground cover and live firing will result in the severance and shredding of trees and shrubs. Training will also increase the risk of fire.

These impacts are unavoidable given that the proposal is for the establishment of a training area for manoeuvre and field live firing. Measures to mitigate the impact of training on vegetation include the specific management regimes proposed for habitats of conservation significance, species of conservation significance and ecologically sensitive habitats as described above.

The proponent has undertaken to rotate training areas, allowing areas to be rested and vegetation to recover. Wildfire risk in the three HEIA will be minimised by conducting early dry season controlled burns.

The proponent has undertaken to develop monitoring programs in consultation with relevant government agencies. In addition to monitoring parameters such as changes to species composition, abundance and cover within various vegetation units under a range of military activities, the proponent will monitor the natural recovery of selected degraded sites versus active rehabilitation. The results of monitoring will be used to modify practices as required to maintain habitats.

The measures outlined above to mitigate impacts of military training on vegetation are sufficient to prevent the occurrence of irreversible damage in the short term. Whether the measures are sufficient to prevent long term degradation of Bradshaw Station will become apparent with the results of vegetation monitoring programs. The proponent has undertaken to make monitoring reports, along with other reports associated with the management of BFTA, available to the EAC.

4.6 Fauna

4.6.1 Issues

- Animal species of conservation significance are present at Bradshaw Station.
- Three core habitats containing high species diversity have been identified.
- Several feral animal species are present.

4.6.2 Adequacy of Description of Existing Environment

A baseline fauna survey of Bradshaw Station was conducted between June and August 1997. The areas surveyed were the Angalarri Plain, Koolendong Valley, Victoria River frontage including Mosquito Flat and the Yambarran Plateau. These areas were selected on the basis of being priority areas for military training.

Sixty-two sampling sites were established in representative vegetation and soil habitats, physical terrains, areas of relatively high and low cattle grazing pressure, and areas where military activity is likely to be concentrated. 310 vertebrate species were recorded, comprising 24 species of fish, 19 frogs, 56 reptiles, 171 birds and 40 mammals (11 species of bat, 6 feral species and 23 other mammal species).

Several species of conservation significance occur on Bradshaw Station, including the Gouldian Finch, the Angalarri Grunter, the Kimberly Crested Shrike-tit, the Purple-crowned Fairy-wren, the Dingo, the Ghost Bat, the Exquisite Rainbow Fish, Copland's Rock Frog, the Star Finch, the Grey Falcon, the Northern Quoll and the Pygmy Long-eared Bat.

Military operations may have significant impacts on two of these species, the Gouldian Finch and the Angalarri Grunter (see 4.6.3 below).

Areas not surveyed were the coastal flats, Western Hills, Little Fitzmaurice River frontage, northern regions of the Yambarran Plateau and hills to the north-east of the Angalarri Plain as these are not a priority for military training. Major habitats not included in the baseline survey were sandstone escarpment, brackish waters in the upper reaches of tidal streams and marine and coastal habitats. These habitats are not suitable for military training.

The fauna survey adequately establishes a baseline on which to base military training, property management and to enable an assessment of likely impacts. However, PWCNT has advised that the following additional fauna surveys will be required:

- Northern half of the Koolendong Valley;
- Yambarran Plateau;
- On the Gouldian Finch in the vicinity of Mt Thymanan; and
- On the Angalarri Grunter at the headwaters of the Angalarri River.

Gouldian Finch

The Gouldian Finch has previously been recorded within the proposed Angalarri HEIA in the Mt Thymanan area. There is a possibility that military training may disturb nesting and destroy nesting trees. The proponent has undertaken to restrict training activities in a 50 km² area extending south-east from Mt Thymanan to the Ikymbon River. This area is calculated to include previously recorded breeding areas and other suitable breeding areas.

Recommendation 10

All activities likely to result in disturbance to nesting birds and damage to trees (i.e. detonation of high explosives, off road transit, intentional late dry season burning etc) shall be excluded from the nominated 50 km² area south-east from Mt Thymanan to the Ikymbon River until the presence or absence of breeding Gouldian Finches is confirmed and an appropriate management plan is implemented if required.

Recommendation 10 above refers to a further survey in consultation with PWCNT to confirm the presence or absence of breeding Gouldian Finches in the area. Should the presence of breeding Gouldian Finches be confirmed the proponent has undertaken to consult with PWCNT on an appropriate management plan.

Angalarri Grunter

The Angalarri Grunter was previously recorded with nine specimens taken from a single location on the headwaters of the Angalarri River in 1981 and two specimens from the East Baines River immediately South of Bradshaw Station. On this basis the species appears to be rare in a restricted range.

Both the proposed Angalarri and Wombungi HEIA include sections of the headwaters of the Angalarri River. There is a potential for the detonation of high explosives and tracked vehicle manoeuvres to degrade the habitat of the Angalarri Grunter. This should be avoided given the restricted range of this species.

PWCNT has indicated the need for a further survey (see Recommendation 10 above) to determine the presence or absence of the Angalarri Grunter. Defence has undertaken in the interim to apply management strategies for riparian habitats (see *Ecologically Sensitive Habitats* above).

This approach is adequate for the protection of the Angalarri Grunter until surveys confirm its presence and distribution.

Spotted Grass Frog

The draft EIS identified a species of frog as the Spotted Grass Frog (*Lymnodynastes tasmaniensis*). There is some doubt as to the accuracy of this identification and specimens are currently being checked by genetic matching.

Recommendation 11

Should the species identified in the draft EIS as *Lymnodynastes tasmaniensis* be confirmed to be of conservation significance, the proponent shall consult with PWCNT regarding an appropriate management plan.

Feral Animal Species

The baseline survey indicated the presence of six feral species, namely cats, horses, donkeys, pigs, wild cattle and buffalo. A potential impact of destocking Bradshaw Station is an increase in available feed and a resultant increase in grazing feral animal populations.

The proponent has undertaken to incorporate feral animal control programs within the broader control program for the Victoria River Region as coordinated by the NT Government and to also initiate localised programs on Bradshaw Station.

Adequacy of Proposed Safeguards

The measures outlined above to mitigate impacts to fauna resulting from the development of the Bradshaw Field Training Area are adequate to prevent irreversible impacts in the short term.

In the longer term, fauna monitoring program results and information from surveys and audits will provide feedback on impacts and emerging trends. This information will be used to update the GIS and refine the EMP.

4.7 Fire

4.7.1 Issues

- Destocking is expected to lead to an increase in annual fuel loads.
- Military operations will increase the risk of accidental fires.
- Bradshaw Station contains fire sensitive habitats requiring management.

4.7.2 Adequacy of Description of Existing Environment

The EIS adequately describes the fire history of Bradshaw Station and identifies fire risks and management options.

4.7.3 Evaluation of Potential Impacts and Safeguards

The removal of 13,000 head of cattle from Bradshaw Station between 1996 and 1999 will result in an increase in fuel loads and the potential for more severe wildfires. Proposed military activities such as live firing, the use of explosives and tracked vehicle manoeuvres will increase the risk of accidental fire.

The combination of an increased fuel load and an increased risk of accidental fire heightens the potential risk to life and infrastructure, neighbouring properties and fire sensitive habitats. The proponent has undertaken to implement an active fire management program with prescribed burning to be undertaken early in the dry season. Late dry season fires will be avoided where possible because of their destructive nature and because removal of vegetation will make soils susceptible to erosion during the wet season.

The proponent's proposal to conduct prescribed burning on the eastern and north-eastern boundaries, within HEIA, and around campsites and key infrastructure is appropriate for the protection of life and property.

Monsoon forests will be managed by back burning from the margins early in the dry season to reduce fuel loads. Sandstone habitats containing obligate seeding species will be managed to provide a fire free interval of at least five years through the delineation of appropriate management zones on the GIS, restriction of training to activities that do not pose a significant risk of fire and a controlled burning program that establishes an appropriate fire frequency, including patchwork, rotation and resting.

For grassland communities such as Mosquito Flat, early dry season burns will be undertaken for protection from late season fires with occasional late dry season hot fires to suppress the density of woody vegetation.

Defence has agreed to fund research by the Bushfires Council into the monitoring and assessment of fire regimes and their effects on habitat for long term management of BFTA.

The proposed fire management regime provides adequate safeguards against potential long term negative impacts.

4.8 Water Quality

4.8.1 Issues

- Water usage.
- Water Pollution.
- Water Quality monitoring.

4.8.2 Adequacy of Description of Existing Environment

The EIS adequately describes existing surface and ground water resources and usage at Bradshaw Station. However, no baseline macroinvertebrate surveys were conducted for the EIS to enable monitoring of the impacts of military activities on river health. The proponent has undertaken to consult further with DLPE on the priorities and scope of baseline surveys, including aquatic monitoring sites and locations.

4.8.3 Evaluation of Potential Impacts and Safeguards

Water Usage

Water supplies for construction will be sourced from turkey nest dams and production water bores where possible. If water for construction is required from Barramundi Waterhole and/or Mussel Hole Yard, a safe water withdrawal level to ensure the habitat is maintained will be determined in conjunction with DLPE. Water extraction for construction will be carried out in accordance with the *Water Quality Sub-Plan* of the *Environmental Guidelines for Construction Activities*.

Groundwater usage associated with normal operation of BFTA is estimated to be less than half the volume required for 13,000 head of cattle.

Water Pollution

Infrastructure construction will involve vegetation clearance and earthworks. The risk of increased turbidity and sedimentation in waterways from eroded soil will be minimised by undertaking construction in the dry season and through implementation of the *Soils and Erosion Sub-Plan* of the *Environmental Guidelines for Construction Activities*.

Precautions and remediation actions for the storage and handling of fuels, oils, other chemicals and wastes during construction are detailed in the *Water Quality Sub-Plan*, the *Petrol, Oil and Lubricants Sub-Plan*, and the *Incident and Event Management Sub-Plan* of the *Environmental Guidelines for Construction Activities*.

As discussed above under **4.4 Soil Conservation**, military training activities such as the firing of high explosive ammunition and ordnance and the manoeuvre of tracked vehicles may lead to an increase in soil erosion with a resulting increase in turbidity and sedimentation of waterways.

The proponent will mitigate this potential impact by limiting the majority of training to the dry season, rotating and rehabilitating training areas following exercises, the use of formed gravel roads for vehicle movements not directly involved in training exercises and by minimising vehicle and human disturbance in riparian areas through the establishment of management zones.

As noted above in **4.7 Fire**, late dry season fires will be avoided where possible because of their destructive nature and because removal of vegetation will leave soils susceptible to erosion in the wet season.

Water Quality Monitoring

Defence has undertaken to develop a water quality monitoring program for surface and ground water in consultation with DLPE. Water quality and macroinvertebrates will be monitored at appropriate intervals and/or after any training activity occurring in the vicinity of the monitoring site. Monitoring tasks are listed in the *Water Resources Sub-Plan* of the Draft EMP.

The proposed measures to mitigate impacts to water quality are adequate. The water quality monitoring program should detect changes to water quality over time and provide the basis for changes to land management and training operations if required.

4.9 Heritage, Archaeological and Sacred Sites

4.9.1 Issues

- Numerous sacred sites are present on Bradshaw Station
- Numerous archaeological sites are present on Bradshaw Station
- Numerous historic places are present on Bradshaw Station

4.9.2 Adequacy of Description of Existing Environment

Sacred Sites

The Aboriginal Areas Protection Authority (AAPA) has undertaken survey work and consultation with Aboriginal custodians to identify sites of Aboriginal cultural significance (sacred sites). AAPA has issued an Authority Certificate for Bradshaw Station (except the Western Hills Sector) in accordance with Section 22 of the *Northern Territory Aboriginal Sacred Sites Act*.

AAPA is the statutory body established to administer the *Northern Territory Aboriginal Sacred Sites Act* and is responsible for the legal protection of Aboriginal sacred sites and surveys to determine the constraints (if any) imposed on the development by the existence of sacred sites.

The identification of sacred sites undertaken for the EIS is adequate.

Archaeological Sites

An archaeological survey of Bradshaw Station was conducted by Heritage Surveys during October 1996 (Stage 1) and July/August 1997 (Stage 2).

Comments on the draft EIS included criticism of the archaeological survey methods, particularly the use of landforms as a method of stratifying samples, the data collection methods and the small sample sizes in some areas. The resulting sensitivity model was also criticised as problematic with a recommendation that it be repeated in a more systematic manner.

The Supplement noted that purposive sampling is more appropriate at Bradshaw Station than random sampling given its large size and the small proportion of area which can be accessed by vehicle. The effectiveness of a site distribution model based on landsystems has been demonstrated to be appropriate by several previous studies in the region. The recovery rates for data collection by vehicle and by foot are compared and found to be statistically virtually identical.

Defence has also undertaken to conduct additional archaeological surveys in consultation with DLPE. It is not appropriate that future surveys be carried out with uniform intensity across Bradshaw Station. It is considered more effective to concentrate survey work in areas known to be rich in archaeological resources based on the sensitivity model.

The archaeological site identification undertaken for the EIS and the proposed sensitivity model are adequate.

Heritage Sites

43 European historic places have been recorded within the Boundaries of Bradshaw Station to date. Most of these are documented in *The Boab Belt* (Lewis, 1996). An additional 11 historic sites were recorded during an archaeological survey of the property undertaken by Territory Archaeological Services Pty Ltd (trading as Heritage Surveys).

Comments on the draft EIS criticised heritage surveys for not including an assessment of national estate values along with an assessment of heritage values under NT legislation. This requirement was not specified in the guidelines for the preparation of the draft EIS. Defence has indicated its intention to protect all cultural heritage on Bradshaw Station, whether recorded or not, as part of its management regime.

The identification of heritage sites undertaken for the EIS is adequate.

4.9.3 Evaluation of Potential Impacts and Safeguards

Sacred Sites

Potential impacts to sacred sites from indiscriminate field live firing, manoeuvres and vandalism are significant. Defence will adopt three management approaches to protect sacred sites within BFTA. These are:

- Conditional use of the majority of sites involving no significant disturbance or modification of the physical features of the site. This would not permit the detonation of ordnance on the site or ordnance damage to the site. Sacred sites located within HEIA will not be targeted for field firing.
- Protection measures, including restricted access, signage, and protective fencing for vulnerable sites of special significance.
- Physical avoidance for mythologically dangerous sites.

Sacred site information will be recorded on the GIS and used in the preparation of ECC prior to each training exercise. Personnel will receive induction briefings emphasising the penalties for disturbance or damage to archaeological sites, sacred sites and historic sites. Defence has undertaken to comply with AAPA Authority Certificate conditions.

Safeguards proposed by Defence to mitigate impacts to sacred sites are adequate.

Archaeological Sites

Potential impacts to archaeological sites include damage or destruction from construction activities, vandalism, engineering activities, field live firing and manoeuvres.

Archaeological surveys undertaken for the draft EIS targeted areas proposed for the development of infrastructure such as the TFMA and Yambarran Camp. No archaeological sites were found in these areas. Defence has undertaken to construct roads along existing vehicle tracks where possible and to conduct further surveys prior to finalisation of road corridors to identify any further sites.

In order to mitigate against potential impacts from vandalism, engineering activities, live firing and manoeuvres, Defence has undertaken to:

- brief personnel on the environmental, cultural and social values of Bradshaw Station and the penalties for disturbance or damage to archaeological, sacred and historic sites;
- conduct engineering exercises only in areas of low archaeological sensitivity; and
- identify management zones where training activities are restricted.

A program of site monitoring will be initiated to determine the effectiveness of the above measures.

The use of high explosives in HEIA will potentially have the greatest impact to archaeological material. Any archaeological material in the path of high explosives is likely to be partially or completely destroyed. Defence has undertaken to commission further archaeological studies in areas of high to moderate sensitivity within HEIA. Management strategies for sites within HEIA will include:

- definition of heritage management zones;
- archaeological salvage excavations where appropriate; and
- detailed recording and/or salvage collection of open sites where appropriate.

The proposed safeguards to mitigate impacts to archaeological sites are adequate.

Heritage Sites

Potential impacts to heritage sites include damage or destruction from construction activities, vandalism, engineering activities, field live firing and manoeuvres.

The majority of the infrastructure proposed for BFTA will not impact on heritage sites, however a substantial number of sites are located in a 1000m corridor to either side of the proposed Koolendong Road centreline. Once the final centreline for the road is identified, Defence has undertaken to conduct further assessment of heritage sites.

To mitigate potential impacts from operations, Defence will establish heritage precincts where live firing, earthworks and manoeuvres are prohibited. Firebreaks will also be established and maintained where appropriate and, as previously mentioned, personnel will be briefed on the environmental, cultural and social values of Bradshaw Station and the penalties for disturbance or damage to archaeological, sacred and historic sites.

The measures proposed to mitigate potential impacts to heritage sites are adequate.

5. CONCLUSION

It is considered that the environmental issues associated with the proposed Bradshaw Field Training Area have been adequately identified. Some of these issues have been resolved through the assessment process, while others will be addressed through monitoring and management actions outlined in the Environmental Management Plan (EMP) and through additional surveys.

At the conclusion of the assessment process, the EMP will become a stand-alone practical working document to guide the long term environmental management of BFTA. The EMP will be refined over time in light of information from monitoring programs and further research, operational experience, the auditing program and advice from the Environmental Advisory Committee (EAC).

Defence has undertaken to incorporate all relevant parts of the EMP into Range Standing Orders (RSO) and Standing Operating Procedures to formalise the responsibilities of all personnel involved in military training activities on BFTA. Formalising EMP actions as RSO adds to the authority of the EMP and provides a level of certainty that undertakings will be implemented.

It should be noted that the BFTA draft EIS is the first Northern Territory EIS to include a draft EMP. This innovation has for the first time afforded the opportunity for public comment in the development of an EMP.

The major on-going environmental impact from the proposal is expected to be impacts to vegetation and soils from the detonation of high explosives within the three High Explosive Impact Areas (HEIA) and from vehicle manoeuvres. Sections 4.4.3 and 4.5.3 discuss the potential impacts to soil and vegetation and outlines the measures to be taken by the proponent to mitigate these impacts.

Short term impacts such as increased turbidity and sedimentation in rainfall runoff are expected as a result of infrastructure development, particularly the establishment of a formed gravel road network. The *Environmental Guidelines for Construction Activities* will be used in the environmental management of infrastructure development.

The outcome of this assessment is that the environmental issues raised have been satisfactorily addressed, and that the proposal may proceed in an environmentally acceptable manner provided the undertakings and commitments detailed in the EMP, as modified by recommendations in this report, are implemented.

REFERENCES

Conservation Commission of the Northern Territory *Guidelines for Effective Rehabilitation of Borrow Pits in the Top End* Technical Report No 13.

Lewis, D. (1996). *The Boab Belt; A Survey of Historic Sites in the North-Central Victoria River District*. Volume 1: Sites 1-46. Report prepared for the Australian National Trust (NT).

NSW Acid Sulphate Soils Management Advisory Committee (1997) *Acid Sulfate Soils Analytical Methods*

NT Department of Transport and Works *Roadworks Master Specification*

APPENDIX 1

LIST OF RESPONDENTS TO THE DRAFT EIS

LIST OF RESPONDENTS TO THE DRAFT EIS

Submission	Name	Organisation	Territory/State
1.	Gary Brooker	Private Submission	NSW
2.	Environment Australia	Federal Government	ACT
3.	Bob Alford	National Trust of Australia (NT)	NT
4.	Norman Fry	Northern Land Council	NT
5.	Dept. Lands, Planning & Environment	Northern Territory Government	NT
6.	Julie McGuinness	The Wilderness Society Inc	ACT

APPENDIX 2

SUMMARY OF ISSUES RAISED IN SUBMISSIONS

SUMMARY OF ISSUES RAISED IN SUBMISSIONS

ISSUE	1*	2	3	4	5	6
EIS Process				✓		✓
Information Management					✓	
Environmental Management		✓	✓	✓	✓	✓
Proposal	✓	✓		✓	✓	✓
Climate					✓	
Geology, Landform and Soils		✓		✓	✓	
Vegetation		✓		✓	✓	
Fauna		✓		✓	✓	✓
Fire				✓	✓	
Water Resources		✓		✓	✓	✓
Visual Quality					✓	
Wilderness and Wild Rivers		✓				✓
Noise and Vibration					✓	
Air Quality					✓	
Problem Insects and Pathogens					✓	
Heritage and Sacred Sites		✓	✓	✓	✓	
Social and Economic Factors				✓	✓	
Public Access, Health and Safety		✓		✓	✓	
Transport				✓	✓	
Waste Management				✓	✓	
Explosives and Hazardous Materials Management			✓	✓	✓	
Cumulative Environmental Impacts		✓			✓	
Consultation				✓		✓

* Respondent number (refer to Appendix 1)

APPENDIX 3

ENVIRONMENTAL COMMITMENTS AND SAFEGUARDS

Environmental Commitments and Safeguards

- The sub plans referred to in Appendix 3 refer to the sub plans contained in the EMP. Each listed sub plan includes safeguards and commitments relevant to the heading in bold in the table.
- Some undertakings are relevant to more than one issue and may be repeated.
- Letters in brackets in the second column refer to pages in Appendix A of the Supplement to the draft EIS.
- The following table is based on a table of undertakings prepared by the Department of Defence.

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
PROPOSAL	
Waste Management Sub-plan	21-26
BFTA Security Sub-plan	21-35
Environmental Guidelines for Construction Activity	VOL2A (3-25)
Development of the road network on BFTA would involve: * Progressive closure and rehabilitation of the majority of property tracks; * Construction of new formed gravel asset roads to service the training and management requirements of the Brigade; * Upgrade of some key property tracks to asset standard	3-2
[Camps] Siting and servicing such camps would comply with relevant legislation in respect to environmental issues and occupational health and safety	3-3
The airfields would be constructed to meet RAAF standards for sustained operation of MRT aircraft	3-4
[Landing Craft Hard] A suitable site would be selected by Defence with the siting criteria to include: * Bank profile and stability; * Landward access; * Tidal access; * Environmental considerations (such as flora, fauna, heritage and sacred sites); * Operational requirements	3-4
[Vehicle Wash Facility] There are currently no NT Government standards or guidelines for the design and construction of vehicle wash points. As a minimum, the facility would be capable of, and designed to provide: * High pressure hose application to single vehicles; * Constructed hard stand drainage system to capture grey water runoff; * Appropriate interceptor traps; * Sullage capture and pumpout; * Reuse of grey water in washdown; * Capture/containment of undesirable materials; * Disposal of waste	3-5
Storage of short-term ammunition of BFTA in accordance with Defence ammunition field storage standards as contained in the Australian Service Supply Manual <i>Technical Management of Ammunition Storage</i>	3-7
The design and construction of the facilities being provided on BFTA would conform to relevant legislation, standards and guidelines as appropriate (10 dot points)	3-8

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Roads and borrow pits, as with all proposed infrastructure, would be designed and constructed in accordance with relevant legislation, standards and guidelines as appropriate, including the <i>DTW Roadworks Master Specification</i>	(3-17)
Construction contractors would be required to obtain all relevant licenses under NT legislation	(3-18)
The final selection of the route [access from Yambarran camp to Koolendong] would be based on environmental considerations (such as geology, terrain, soils, drainage, waterlogging, vegetation, sacred sites, archaeological places and objects) and engineering requirements	(3-27)
Final siting [of road corridors] would consider environmental and engineering factors identified during the baseline environmental studies and preparation of the Draft EIS	(3-32)
ENVIRONMENTAL AND RANGE MANAGEMENT	
Information Management Sub-plan	21-1
Implementation of RSO would be the responsibility of the Defence Range Control Officer	3-20
Liaison with Government and stakeholders would be facilitated through the establishment of an Environmental Advisory Committee (EAC)	3-20
The EAC would meet twice a year	3-20
Management zones will be established by Defence to delineate areas of conservation significance (such as those identified in the EIS) and for areas that will be sensitive to military training activity and susceptible to environmental degradation	20-3
Defence will conduct a compliance audit within three years of EMP approval and five yearly thereafter to ensure that environmental requirements are being met	20-4 (3-9)
In terms of management of BFTA, the GIS would be utilised by Defence environmental and range control staff to store and manipulate data directly related to on-ground use of the training areas as the basis for decision making	(3-2)
The monitoring requirements would also be placed on the GIS	(3-2)
The GIS would be used to plan training exercises on BFTA	(3-2)
Specific monitoring programs will be established on the basis of the following guidelines: common reference sites, linkage to sites, continuity of monitoring methodology, establishment of performance indicators including ecological thresholds, modification of practices as required to maintain habitats	(3-4)
Monitoring programs would adopt a combination of methods as appropriate: permanent, control treatment and disturbed sites, satellite imagery and photo points, point source, site, plots, and linear methods to suit need, and use of GIS	(3-6)
Defence will consult with relevant government agencies such as DLPE, DPIF, PWCNT, THS and AAPA to establish monitoring programs and confirm appropriate methodologies	(3-6)
The monitoring programs would be linked to relevant additional surveys and the proposed PWCNT research proposals	(3-6)
Monitoring reports, along with other reports associated with the management of BFTA would be made available to EAC and submitted to EAC by the Defence Environmental Officer as required	(3-6)
Audits would be reported to the Defence Controlling Authority and the EAC for corrective action as required	(3-9)

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
The need for additional surveys will be determined in consultation with relevant government agencies (following a number of considerations)	(3-11)
The conduct of additional surveys would incorporate the use of the following methodologies as appropriate: permanent, control, treatment and disturbed sites, satellite imagery and photo points, point source, site, plots, and linear methods to suit need, and the GIS	(3-12)
Defence will consult with relevant government agencies such as DLPE, DPIF, PWCNT, THS and AAPA to establish the need for, priorities and scope of additional surveys, as well as to confirm appropriate methodologies based on previous survey results and monitoring requirements	(3-12)
The establishment of any additional surveys would be linked to results from previous surveys and the proposed PWCNT research proposals	(3-12)
Defence will provide funding for the operation of EAC, including the cost of preparing an annual report on the activities of EAC to the Local Controlling Authority	(3-12)
Defence will provide a proposed Environmental Activities Plan and an annual Training Forecast six to eight weeks prior to scheduled EAC meetings	(3-13)
The NLC and AAPA will be consulted further on this [request to include an Aboriginal representative on EAC] matter	(3-13)
Defence will consult with EA on the provision of a position on EAC for an EA representative	(3-13)
Any future changes to the proposed level of training within these sectors (Training Sectors) would be subject to additional field surveys, where considered necessary and where extrapolation of current knowledge about representative habitats is considered inadequate, to ensure the level of training is appropriate and sustainable	(3-15)
A confirmatory RSB will be convened at the completion of the EIS process	(3-15)
A similar RSB process would be adopted for the identification and siting of future additional infrastructure as required	(3-16)
The process used to identify, site and assess additional infrastructure requirements would be similar to the process followed for the identification and siting of initial infrastructure, as follows (eight parameters)	(3-17)
In all cases, planning would be in accordance with the approved EMP, with guidance as required from EAC and the Heritage and Environment Section of the Defence Estate Organisation. Liaison with external agencies, whether government or private sector, would be undertaken as required	(3-18)
... training exercises would be planned to avoid or minimise vegetation disturbance, particularly sensitive habitats and habitats of conservation significance. In addition, disturbed areas would be monitored and rested when appropriate to enable vegetation to recover before further disturbance occurs	(3-19)
All proposed activities will be examined in accordance with the EMP, which includes reference to Defence guidelines and relevant legislation	(3-19)
CLIMATE	
Personnel Safety Sub-plan	21-33
Induction for BFTA users would include education on climatic conditions within BFTA and personal protection measures	4-4
Monitoring of climatic conditions (temperature, humidity, rainfall and wind patterns) would be undertaken in strategic locations	4-4

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Climatic conditions will also be factored into baseline soil studies to assist in environmental management of BFTA	4-4
GEOLOGY, LANDFORM AND SOILS	
Soils and Erosion Sub-plan	21-3 (D)
Vegetation Management Sub-plan	21-6
Fauna Management Sub-plan	21-9
Water Resources Sub-plan	21-14
Waste Management Sub-plan	21-26
Environmental Guidelines for Construction Activities	VOL2A (J)
The development and rehabilitation of quarries and borrow pits would be in accordance with DTW <i>Roadworks Master Specification</i> and CCNT <i>Guidelines for Effective Rehabilitation of Borrow Pits in the Top End</i>	5-15
Road construction would be in accordance with DTW <i>Roadworks Master Specification</i>	5-15
Where possible roads would be sited in ridges, along contours or on flats with minimal cut and fill	5-15
Non-targeting of significant landscape features such as mesas and permanent watercourses should ensure that modifications to natural landscape features are minimised	5-15
The requirement of refilling and stabilisation of craters would be assessed at the completion of a training exercise	5-15
Strict conditions would be placed on wet season training, particularly on vehicle movements	(3-20)
Defence will consult with DLPE to establish soil monitoring programs and confirm methodologies for soils and erosion monitoring programs. The monitoring programs will be linked with other monitoring programs where relevant, such as water quality and macroinvertebrate monitoring programs and the proposed research proposals	(3-21)
[Coastal areas] However, should use of these areas be proposed in the future, potential acid sulphate soils would be identified and appropriate measures to avoid or minimise the release of acids would be implemented in consultation with DLPE and in accordance with land reclamation guidelines for coastal areas currently being drafted by DLPE	(3-22)
VEGETATION	
Soils and Erosion Sub-plan	21-3
Vegetation Management Sub-plan	21-6 (E)
Fauna Management Sub-plan	21-9
Fire Management Sub-plan	21-11
Water Resources Sub-plan	21-15
Waste Management Sub-plan	(H)
Environmental Guidelines for Construction Activities	VOL2A (J)

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
<p>The following guidelines would be followed for final siting of infrastructure to reduce impact on vegetation:</p> <ul style="list-style-type: none"> * Careful consideration would be given to avoid the streamlines (when considering access to the camp and airstrip east of Koolendong Valley); * Sighting of the Yambarran Loop Road should avoid potential damage to the pockets of monsoon forest in the deeply dissected gorges in the headwaters of Lobby Creek and the southern tributaries of the Little Fitzmaurice River; * The riparian habitats along the streamlines (Little Fitzmaurice River) are considered sensitive and where they cannot be avoided, careful attention to road siting and design will be important; * Construction of primary access roads through woodland and open woodland should be undertaken with minimum of clearing; * Trees felled during road construction should be pushed to the centre of cleared area and burnt rather than being pushed to the edge of the clearing 	6-6
Defence will consult with DLPE and PWCNT to establish the need for, priorities and scope of additional vegetation surveys based on the above advice. The need for wet season shoulder and wet season surveys will also be discussed... [comparison of floristic cover between wet and dry]. Discussion would also confirm appropriate methodologies based on previous survey results and monitoring requirements	(3-23)
The establishment of these additional surveys would be linked with other surveys where appropriate and the proposed PWCNT research proposals	(3-23)
[Coastal habitats] Training in these areas, if proposed in the future, would be limited to those activities that do not pose significant impact on these habitats (eg dismounted training). Should use of these areas be proposed in the future, vegetation surveys would be undertaken as required in consultation with PWCNT	6-9 (3-24)
Weed management and monitoring will be undertaken in consultation with DPIF and adjoining landowners... Focus on areas of high priority for military training, isolated outbreaks, areas strategically important for preventing further spread...	(3-26)
Monitoring will be undertaken to ensure early selection of weed outbreaks. New information will be recorded on the GIS	(3-26)
[Castor Oil Plant] would be included in management and monitoring strategies	(3-26)
[Vehicle wash facility] Any weed seed would be captured, contained and disposed of at a designated solid waste landfill site	(3-26)
FAUNA	
Soils and Erosion Sub-plan	21-3
Vegetation Management Sub-plan	21-6
Fauna Management Sub-plan	21-9 (E)
Fire Management Sub-plan	21-11
Water Resources Sub-plan	21-14
BFTA Security Sub-plan	21-35
Environmental Guidelines for Construction Activities	VOL2A (J)
Should the Western Hills Sector be proposed for more intensive training than currently identified, the need for additional field surveys would be discussed with PWCNT	(3-29)
Defence will consult with DLPE and PWCNT to establish monitoring programs for natural waterholes and core fauna habitats	(3-30)

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Core fauna habitats and associated management zones within BFTA will be delineated on the GIS for planning and management requirements	(3-30)
... training activities, except transit, would be excluded from core fauna habitats and specific management strategies would be adopted to protect these habitats, including the use of management zones, active management of feral animals, weeds and fire, and monitoring of species richness and abundance	(3-30)
The need for and scope of further survey to confirm the presence or absence of the Angalarri Grunter, and the need for specific management strategies, will be discussed with PWCNT. In the interim, the management strategies for riparian habitats would be adopted	(3-31)
[Angalarri Grunter] In the interim, the management strategies for riparian habitats would be adopted, including the delineation of appropriate management zones within which vehicle and human disturbances would be minimised	(3-31)
These management zones would be recorded on the GIS and used in the training exercise planning and approval process	(3-31)
[Mount Thymanan Sector] Until further field surveys confirm the presence or absence of the Gouldian Finch in this general area, restricted training activities would be undertaken	7-10 (3-31)
To provide coverage of previously recorded breeding areas and other suitable breeding habitat and watering points, an area of some 50 sq km extending SE from Mount Thymanan to the Ikymbon River would be recorded on the GIS and used in the training exercise planning and approval process	7-10 (3-31)
The need for and scope of a survey for the Gouldian Finch will be discussed with PWCNT. Should the presence of breeding GF be confirmed, advice would be sought from PWCNT and the GF Recovery Team on an appropriate plan to protect this species and its habitat	(3-31)
Fauna sampling sites established in the baseline studies would be used as the basis for future monitoring programs to assist in assessing the effect of training activities and environmental management programs	7-11
Defence will consult with PWCNT and DLPE to establish the need for, priorities and scope of additional specific fauna surveys, including the need for wet season surveys and aquatic habitat surveys. The undertaking of additional surveys, where appropriate, would be linked with other surveys and the proposed PWCNT research proposals	(3-32)
Defence will provide assistance to EA to ensure that the recommendations for the Action Plan [for Australian Bats] are implemented as far as practicable within BFTA	(3-33)
Defence will provide assistance to EA to ensure that the recommendations of the Action Plan [for Nabarlek] are implemented as far as practicable within BFTA	(3-34)
[Coastal areas] should these areas be proposed in the future, the need for fauna surveys would be discussed with PWCNT to ensure appropriate protection and management of fauna species of conservation significance, such as marine turtles and dugongs	(3-34)
Defence would not be undertaking a dingo control program on BFTA unless otherwise advised by PWCNT and unless as part of a regional program	(3-36)
FIRE REGIME	
Vegetation Management Sub-plan	21-6
Fire Management Sub-plan	21-11
Petroleum, Oil and Lubricants Sub-plan	21-29

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Incidents Sub-plan	21-31
Personnel Safety Sub-plan	21-33
Environmental Guidelines for Construction Activities	VOL2A
A proactive fire management regime would be implemented on BFTA to achieve the following objectives: * To reduce the intensity and extent of wildfires; * To ensure the protection of personnel and equipment; * To minimise the risk of fire spreading to adjoining properties; * To minimise the risk of fire spreading from adjoining properties; * To promote and maintain biological diversity through protection of fire-sensitive habitats and species	8-2
More specific fire management practices would be developed in consultation with PWCNT through the proposed research proposal under consideration by Defence	(3-37)
The scope of additional surveys, appropriate survey methodologies to target fire sensitive sandstone habitats and appropriate management strategies for these habitats, would be determined in consultation with PWCNT	(3-39)
Fire management plans for BFTA would be developed in consultation with PWCNT and neighbours to ensure that fire control practices are consistent with regional fire management objectives	(3-39)
WATER RESOURCES	
Soils and Erosion Sub-plan	21-3
Vegetation Management Sub-plan	21-6
Fauna Management Sub-plan	21-9
Water Resources Sub-plan	21-15 (C)
Waste Management Sub-plan	21-27
Petroleum, Oil and Lubricants Sub-plan	21-29
Incidents Sub-plan	21-31
Environmental Guidelines for Construction Activities	VOL2A (J)
UXO would be confined to designated HEIA and would be recovered in most cases	9-6
Defence will consult with DLPE and PWCNT to establish monitoring programs for natural waterholes and core fauna habitats	(3-30)
The development of appropriate monitoring programs in relation to surface and groundwater management would be undertaken in consultation with DLPE	(3-40)
Monitoring methods would comprise a combination of qualitative methods (such as visual inspection) and quantitative methods (such as macroinvertebrate sampling and water quality testing)	(3-40)
Defence will consult further with DLPE on the priorities and scope of baseline surveys, including aquatic monitoring site numbers and locations	(3-41)
[Construction - dams, bores and waterholes] Defence will establish sustainable water levels in consultation with relevant government agencies	(3-41)
[Barramundi waterhole] Further investigation is proposed in consultation with DLPE to determine a safe water withdrawal level to ensure the habitat is maintained	(3-41)

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
In the event that additional surface water extraction to that proposed in the Draft EIS is required through the damming of a waterway within BFTA, this would be undertaken in accordance with the relevant provisions of the <i>Water Act</i> and any other relevant legislation	(3-42)
Springs and associated management zones will be recorded on the GIS for use in the planning and approval process for training exercises	(3-43)
Appropriate management and monitoring programs to minimise ecological change at these [Barramundi and Mussel Hole Yard waterholes] locations would be confirmed in consultation with DLPE and PWCNT should alternative water sources not be found	(3-43)
VISUAL QUALITY	
Soils and Erosion Sub-plan	21-3
Vegetation Management Sub-plan	21-6
Fauna Management Sub-plan	21-9
Fire Management Sub-plan	21-11
Dust, Noise and Vibration Management Sub-plan	21-17
Environmental Guidelines for Construction Activities	VOL2A
The construction camp would be sited so as not to be visible from the Victoria Highway or Victoria River, which represents the closest public viewing points, and borrow pits and quarries would be rehabilitated to ensure no long term visual scars on the landscape	10-1
Infrastructure proposed to be developed to support Defence use of the property would consist of low rise buildings and structures associated with the TFMA and camps, roads, airstrips, water bores and storage tanks and dams	10-1
Non-targeting of significant landscape features such as mesas and permanent watercourses, and resting and rehabilitation of training areas, should ensure that modifications to natural landscape features are minimised	10-1
WILDERNESS AND WILD RIVERS	
Information Management Sub-plan	21-1 (3-52)
Soils and Erosion Sub-plan	21-3 (3-52)
Vegetation Management Sub-plan	21-6 (3-52)
Fauna Management Sub-plan	21-9 (3-52)
Fire Management Sub-plan	21-11 (3-52)
Water Resources Sub-plan	21-14 (3-52)
Waste Management Sub-plan	21-26 (3-52)
Petroleum, Oil and Lubricants Sub-plan	21-29 (3-52)
Incidents Sub-plan	21-31
BFTA Security Sub-plan	21-35
Environmental Guidelines for Construction Activities	VOL2A
[Management of sensitive areas] This would be facilitated through the implementation of the EMP	11-2

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
<p>The following guidelines would be followed for final siting of infrastructure to reduce impact on vegetation:</p> <ul style="list-style-type: none"> * Careful consideration would be given to avoid the streamlines (when considering access to the camp and airstrip east of Koolendong Valley); * Siting of the Yambarran Loop Road to avoid potential damage to the pockets of monsoon forest in the deeply dissected gorges in the headwaters of Lobby Creek and the southern tributaries of the Little Fitzmaurice River); * The riparian habitats along the streamlines (Little Fitzmaurice River) are considered sensitive and where they cannot be avoided, careful attention to road siting and design will be important; * Construction of primary access roads through woodland and open woodland should be undertaken with minimum of clearing; * Trees felled during road construction should be pushed to the centre of cleared area and burnt rather than being pushed to the edge of the clearing 	6-6
Defence will liaise with EA to refine the assessment of current NWI ratings for Bradshaw Station for inclusion in the GIS	(3-46)
The principles for management of wild rivers contained in the Draft <i>Conservation Guidelines for the Management of Wild River Values</i> would be adopted on BFTA	11-4 (3-49)
[Grazing] Natural recovery will be allowed to occur, however, for areas where severe degradation has occurred, remedial action will be undertaken	(3-49)
[Clearing] Management zones will be established along large watercourses, including the Defence side of Victoria River and Fitzmaurice River, with exception of landing craft hard and the Victoria River bridge, no development and minimal vehicle and human disturbance (except crossing points) would be undertaken within these zones	(3-49)
[Irrigation] Irrigation will not be undertaken, except for domestic landscape areas around camps, the Range Control facility and the TFMA	(3-50)
[Flow regulation] Any requirement for diversion or dam construction will comply where relevant with legislation such as the <i>Water Act</i>	(3-50)
[River management] Defence will not undertake river management works	(3-50)
[Roads and tracks] Will be constructed and aligned to minimise impacts. Road surfaces constructed as causeways	(3-50)
[Water based and associated recreation] Military operations on BFTA will not impede a continuation of these activities on the Victoria and Fitzmaurice Rivers	(3-51)
[Introduced plants and animal species] Will, with Defence management, be reduced	(3-51)
[Fisheries and aquaculture] Such activities will not be undertaken by Defence, with the exception perhaps of some minor recreational fishing by staff working, as opposed to training, in the area	(3-51)
[Timber production and harvesting] Defence will not undertake this activity	(3-51)
[Cultural heritage/biodiversity] Defence will, as a policy, support externally funded and reasonable research	(3-51)
NOISE AND VIBRATION	
Dust, Noise and Vibration Management Sub-plan	21-17
Social and Community Sub-plan	21-24
Environmental Guidelines for Construction Activities	VOL2A

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Aerial ordnance delivery resulting in heavy ground impact and detonation of high explosives would be the major source of noise and ground vibration. This would be confined to the designated HEIA which are a considerable distance from inhabited areas surrounding BFTA	12-1
Vehicles associated with transport of troops and equipment into and out of BFTA would be restricted to the Stuart and Victoria Highways	12-2
An Incident Log Book would be established at BFTA	12-2
AIR QUALITY	
Soils and Erosion Sub-plan	21-3
Vegetation Management Sub-plan	21-6
Fire Management Sub-plan	21-11
Dust, Noise and Vibration Management Sub-plan	21-17
Incidents Sub-plan	21-31
Environmental Guidelines for Construction Activities	VOL2A
PROBLEM INSECTS AND PATHOGENS	
Soils and Erosion Sub-plan	(E)
Fauna Management Sub-plan	21-9
Water Resources Sub-plan	21-14
Waste Management Sub-plan	
Personnel Safety Sub-plan	21-26
Environmental Guidelines for Construction Activity	VOL2A (J)
The design, construction of the facilities being provided on BFTA would conform to relevant legislation, standards and guidelines as appropriate (10 dot points listed)	3-8
The development and rehabilitation of quarries and borrow pits would be in accordance with <i>DTA Roadworks Master Specification</i> and <i>CCNT Guidelines for Effective Rehabilitation of Borrow Pits in the Top End</i>	5-15
Road construction would be in accordance with <i>DTW Roadworks Master Specification</i>	5-15
THS guidelines for the diagnosing, testing and treating of communicable diseases would be followed	(3-53)
In relation to importation of exotic insects, proper inspection and treatment of equipment from overseas (as required by quarantine laws) or from Queensland would be undertaken	(3-53)
All sanitation facilities would be designed, sited and constructed in accordance with the <i>Code of Practice for Small On-Site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent</i>	(3-81)
HERITAGE	
Aboriginal Heritage Sub-plan	(F)
European Heritage Sub-plan	(G)
Incidents Sub-plan	21-31

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
BFTA Security Sub-plan	21-35
Environmental Guidelines for Construction Activity	VOL2A (J)
In order to mitigate against any possible impacts to archaeological resources during construction of the North Angalarri Road, the following procedures would be adopted: * The preliminary centreline of the proposed North Angalarri Road would be reviewed to avoid identified sites (eg shift 200 m to the south of its current position in the immediate vicinity of Crocodile Yard 9 - Hawk hunting hides and shift 150 m to either of the east or west in the immediate vicinity of Mount Thymanan 1 - artefact scatter); * The proposed road corridor south of Ikymbon River would be surveyed on foot after it has been pegged by surveyors in order to ensure that no further hawk hunting hides occur along this corridor	15-5
Koolendong Road: * As far as possible, the road centreline would be placed along previously existing vehicle tracks; * Further assessment would need to be carried out when alignment is finished	15-5 15-6
[Engineering exercises requiring the construction of earthworks] If it is necessary to carry out these exercises in areas of moderate to high sensitivity, archaeological surveys would need to be conducted	15-7
Defence will consult with the HCB of DLPE to prioritise and establish the additional archaeological survey requirements	(3-59)
Any future change of status of one or more heritage places would be accommodated within the EMP	(3-61)
Defence is prepared to further review the issue of cultural heritage on Bradshaw Station and potential estate values	(3-62)
Defence is prepared to further review the issue of cultural landscape on Bradshaw Station and potential estate values	(3-61)
[Gorges and scarps] No training would be undertaken in these areas before an archaeological survey has been carried out and appropriate heritage management zones delineated to protect sites or significance	(3-62)
Induction briefings to personnel would emphasise the penalties for disturbance or damage to archaeological sites, sacred sites and historical sites under relevant legislation	(3-62)
Induction and training on BFTA would also include education on sites [sacred sites and Aboriginal places and objects]	(3-63)
Defence will consult with DLPE to establish appropriate monitoring programs for archaeological places and objects	(3-64)
Following receipt of information [indigenous and historic sites - Darryl Lewis] Defence will seek advice from DLPE on the need for an assessment of these sites and their significance and appropriate management strategies	(3-64)
Additional DLPE data will be recorded on the GIS for use in the planning and approval process for training exercises	(3-66)
As more data is collected through future archaeological surveys, the data would be recast in terms of the land unit information to refine the predictive model for site distribution	(3-70)
Methods for delineating management zones would be confirmed in consultation with DLPE and AAPA and would be suitable for day and night operations	(3-70)

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
[Heritage management zones] Would be recorded on the GIS for use in the planning and approval process for training exercises	(3-71)
Any future variations to current HEIA boundaries or establishment or new HEIA would be sited taking into consideration relevant legislation and scientific knowledge available at the time... and may include the need for additional heritage surveys	(3-71)
Defence will liaise with the HAC on appropriate specific monitoring and management programs for these three places [Koolendong Boab Trees, Old Bradshaw Homestead Precinct, Bradshaw's Packhorse Cutting]	(3-71)
[Sacred site custodian requirements] Defence will consult with AAPA on the most appropriate mechanism for consultation	(3-73)
[Aboriginal groups other than Jaminjung] Would be included in further consultation regarding appropriate management and monitoring programs for sacred sites on Bradshaw Station	(3-73)
Defence will consult with the HCB of DLPE to prioritise and establish the additional archaeological survey requirements	(3-74)
SOCIAL AND ECONOMIC FACTORS	
Social and Community Sub-plan	21-24 (H)
Defence will ensure the provision of the <i>Native Title Act 1993</i> are fulfilled and complied with in respect of the conversion of the title to freehold and in respect of its proposed development plans for BFTA	(3-76)
The NLC and AAPA will be consulted further on this matter [Aboriginal representative on EAC]	(3-13)
[Riverine operations] While these [landing craft logistics at land craft hard] riverine operations should not impact on the river users, Defence would consult with the relevant local authorities prior to undertaking such training	(3-77)
Aboriginal custodians of sacred sites would be identified through AAPA and consulted to establish an access agreement for sacred site management and visitation	(3-78)
Defence will continue to consult with the wider community, particularly Aboriginal custodians of sacred sites on BFTA. EAC will also provide a mechanism for consultation and information dissemination with the inclusion of a position for the Timber Creek Community Government Council	(3-86)
PUBLIC HEALTH AND SAFETY	
Water Resources Sub-plan	21-14
Dust, Noise and Vibration Sub-plan	21-17
Social and Community Sub-plan	21-24 (H)
Waste Management Sub-plan	21-26
Petroleum, Oil and Lubricants Sub-plan	21-29
Incidents Sub-plan	21-31
Personnel Safety Sub-plan	(I)
BFTA Security Sub-plan	21-35
Environmental Guidelines for Construction Activity	VOL2A

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Check fencing between natural features would be established to maximise control over the public and animals	3-6
Defence would consider all requests for access to BFTA on a case by case basis	3-19
Field firing activity with weapons firing ammunition which do not have the potential to leave UXO would be undertaken throughout BFTA	16-5
Range Danger Area Safety Traces would be used for field firing exercises to ensure the safety of Defence personnel within BFTA, no impact of firing beyond Defence property boundaries, and protection of sensitive sites and areas	16-5
Field live firing of high explosive ammunition would occur within the proposed HEIA contained within BFTA to enable management of UXO	16-5
Procedures for the recording, marking and disposal or rendering safe (where possible) for any UXO would be implemented through RSO at the completion of field firing exercises	16-5
There would be no impacts from field live firing beyond the boundaries of the property	16-5
Civilian access to BFTA would be restricted and check fencing and signage warning of the dangers of entering the property would be erected	16-5
In summary, standard Defence convoy procedures would be used which provide for control of vehicle speeds and separation distance between convoy vehicles	16-5
The transport of dangerous goods would conform to the requirements of the <i>Dangerous Goods Act 1981</i> and relevant Australian Standards to minimise any risk to public health and safety	16-5
In accordance with Defence policy, measures adopted for UXO would follow Defence Instruction (General) LOG 10-2 Management of Land Affected by Unexploded Ordnance (UXO) to reduce the hazard of UXO to Defence personnel and the public during operation of BFTA and to minimise constraints imposed by UXO on future use of the area in the event of disposal of BFTA by Defence	18-2
TRANSPORT SYSTEMS	
Dust, Noise and Vibration Sub-plan	21-17
Waste Management Sub-plan	21-26
Petroleum, Oil and Lubricants Sub-plan	21-29
Incidents Sub-plan	21-31
Personnel Safety Sub-plan	21-33
Environmental Guidelines for Construction Activity	VOL2A
Defence road movement to and from BFTA would follow standard road convoy procedures	3-18
The transport of dangerous goods would conform to the requirements of the <i>Dangerous Goods Act 1981</i> and relevant Australian Standards to minimise any risk to public health and safety	16-5
During operation of BFTA vehicle numbers relating to training activities would be monitored and recorded. This data would be assessed for any significant increase in traffic flow along the Victoria and Stuart Highways and any impediment this causes to other road users. In the event that Defence vehicles are causing significant impact, hours and numbers of vehicle movements would be reduced to an appropriate level	17-4

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Management of airspace over BFTA would be achieved by: * The provision of alternate routing arrangements for Instrument Flight Rules aircraft; * The activation of portions of BFTA airspace only when required for field firing; * The provision of adequate notification on airspace activity through NOTAM and voice communication	17-4
Range Control would be responsible for coordination of BFTA airspace with civil and military airspace managers	17-4
Fuels, oils and lubricants stored and handled within BFTA would consist of bulk fuels (tanks and bladders) and packaged fuels (drums)	18-2
Fuels, oils and lubricants would be transported into the area by tankers or in drums, with bulk fuels being stored in concrete bunded areas to contain any spills	18-2
Facilities would be provided for storing waste oils at the TFMA, camps and airfields, with the material being removed by contractors for recycling	18-2
Bulk vehicle refuelling operations would be undertaken within proposed POL facility (concrete bunded area), and drainage through interceptor traps	18-2
Vehicle maintenance would be undertaken on hardstand areas within TFMA	18-2
Hazardous waste would be collected and disposed of at approved sites by contractors	18-2
To minimise disruption to traffic and pavement damage, transport of tracked vehicles to BFTA would be by road train with possible short distance convoys near Darwin and Timber Creek for driver training	(3-79)
Defence will undertake further discussions with DTW on convoy procedures as part of ongoing consultation with DTW and the NT Police. This will be undertaken by Joint Movement Control Organisation (JMCO) - Darwin	(3-80)
[Airspace] The published charts would indicate a number of layered restricted airspace blocks that could be activated only during periods of field firing activity	(3-81)
Advance notification on airspace activity through Notice to Airmen and Mariners (NOTAM) and voice communications would be undertaken	(3-81)
Restrictions to airspace use over BFTA would be infrequent and limited to specific airspace blocks	(3-81)
WASTE AND UXO MANAGEMENT	
Water Resources Sub-plan	21-14
Waste Management Sub-plan	21-27 (H)
Petroleum, Oil and Lubricants Management Sub-plan	21-29 (I)
Incidents Sub-plan	21-31 (I)
BFTA Security Sub-plan	21-35
Environmental Guidelines for Construction Activity	VOL2A (J)
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Hazardous waste would be collected and disposed of at approved sites by contractors	18-2
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All sanitation facilities would be designed, sited and constructed in accordance with the <i>Code of Practice for Small On-Site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent</i> produced by THS	(3-81)
The suggested use of an inventory of inputs and outputs is acknowledged and would be considered in the formulation of specific monitoring programs	(3-82)
[Closure] Defence Instruction (General) LOG 10-2 would be fulfilled, including the conduct of UXO surveys to determine the nature and extent of contamination and the extent of hazard reduction programs (if any) required, by Defence prior to disposal of BFTA	(3-82)
If (in the future) Defence is considering closing BFTA as a training area, Defence would consult with the NT Government over the process required for closure and disposal, including such issues as UXO	(3-82)
CUMULATIVE ENVIRONMENTAL IMPACTS	
Information Management Sub-plan	21-1
Soils and Erosion Sub-plan	21-3
Vegetation Management Sub-plan	21-6
Fauna Management Sub-plan	21-9
Fire Management Sub-plan	21-11
Water Resources Sub-plan	21-15
Waste Management Sub-plan	21-26
Incidents Sub-plan	21-31

UNDERTAKING	PAGE REFERENCE: DRAFT EIS AND (SUPPLEMENT)
Defence will establish monitoring programs in consultation with relevant government agencies to ensure that appropriate monitoring methods and performance indicators are adopted. May include establishment of ecological thresholds (where appropriate) or other indicators of change (both quantitative and qualitative)	(3-83)