



**UPGRADE PATROL BOAT FACILITIES
DARWIN NAVAL BASE
NORTHERN TERRITORY**

**STATEMENT OF EVIDENCE
TO THE
PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS**

**DEPARTMENT OF DEFENCE
CANBERRA ACT
May 2005**

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INTRODUCTION

1. Project SEA 1444 – Replacement Patrol Boat replaces the current ageing 15 FREMANTLE Class Patrol Boat with 12 ARMIDALE Class Patrol Boats. The project was first announced in the Defence White Paper 2000.
2. The ARMIDALE Class Patrol Boat capability will be homeported in both Darwin and Cairns with 8 boats homeported in Darwin and 4 boats homeported in Cairns. The project to provide facilities for the new patrol boats will be in two parts. This project deals with the facilities for the patrol boats at Darwin Naval Base.

IDENTIFICATION OF THE NEED

PROJECT OBJECTIVES

3. The objective of this proposal is to provide facilities at Darwin Naval Base to enable the ARMIDALE Class Patrol Boats to operate effectively and in conjunction with this to provide more suitable facilities for the Darwin Naval Base Port Services Organisation.

HISTORICAL BACKGROUND

Background

4. The Royal Australian Navy currently operates 15 FREMANTLE Class Patrol Boats which have exceeded their designed life by in excess of six years. The boats will be phased out of service commencing in April 2005. The FREMANTLE Class Patrol Boats are currently homeported in Darwin and Cairns with 10 boats in Darwin and 5 boats in Cairns.

Cabinet and Government

5. In October 2002 the Government approved the acquisition of a replacement patrol boat capability. The project was identified as Project SEA 1444.
6. On 29 August 03 the Minister announced that DMS/Austal were the preferred tenderers to develop this capability. A contract to supply 12 ARMIDALE Class Patrol Boats, each with a 15 year support package was signed in December 2003. In September 2004, the Government announced that 2 extra ARMIDALE Class Patrol Boats would be purchased.

Parliamentary Standing Committee on Public Works

7. In July 2004 the Public Works Committee approved the development of the wharf and engineering services component of the infrastructure required for the ARMIDALE Class Patrol Boats (ACPB) at Darwin Naval Base at a cost of \$5.53m.

Australian National Audit Office

8. ANAO undertook a performance audit of the ARMIDALE Class Patrol Boats project titled The Armidale Class Patrol Boat Project: Project Management (ANAO Audit Report No 29 2004-05) which was tabled in Parliament in February 2005. The report included three recommendations, the first two of which related specifically to the Defence Material Organisation (DMO). The third recommendation stated “The ANAO recommends that Defence ensure that complementary Defence Corporate Services and Infrastructure Group facilities projects are well programmed, prioritised, and co-ordinated, to deliver capability in a timely fashion to support the requirements of the capability being delivered by the DMO.”

ARMIDALE Patrol Boat Capability

9. The ARMIDALE Class Patrol Boat project will provide a contractor supported patrol boat capability that is crewed and operated by Navy.
10. The impact of this approach is improved availability of the patrol boat capability and improved performance of the boats.
11. To maximise the operational availability of the capability, eighteen crews will use a crew rotation system to provide the manning for twelve boats. In the case of Darwin, twelve crews will be based in Darwin and will rotate through the eight hulls homeported at Darwin Naval Base. The first ARMIDALE Class Patrol Boat is expected to be delivered, in Darwin in May 2005.

NEED FOR THE WORK

Justification

12. The ARMIDALE Class Patrol Boat is a larger vessel than the FREMANTLE class patrol boat which necessitates extensions of the existing infrastructure to accommodate the new patrol boat. The existing wharf facilities provide the capability to berth up to ten FREMANTLE Class Patrol Boats. Noting that fewer ARMIDALE Class Patrol Boats will be required, the proposed facilities will provide the capability to berth seven new patrol boats with the ability to berth an additional two boats in an emergency.
13. In addition, a Standby Crew facility will be constructed to enable the crews awaiting the return of a boat to plan and prepare for their forthcoming mission so as to minimise the handover time between crews and maximise the operational availability of the boats. This facility does not exist at present because the patrol boats are manned by permanent crews who undertake planning and preparation from their patrol boat.
14. The Port Services Organisation is responsible for the management of the Darwin Naval Base harbour and for the safe operation of vessels within and approaching the harbour. The current facilities for the Port Services Organisation are unsuitable for the functions as they provide a limited ability to observe the harbour. In addition the equipment used by the Port Services Organisation to undertake their role, which includes fenders, seaboats, ropes and hoses are stored in the open or in unsuitable facilities which leaves them susceptible to damage and deterioration.
15. The facilities for the Port Services Organisation and the Standby Crew have similar siting requirements. In order to achieve some cost efficiencies the two facilities are proposed to be combined into a single building.

DESCRIPTION OF THE PROPOSAL

16. The new facilities will be located at HMAS Coonawarra and within the Darwin Naval Base.
17. The proposal is to undertake the works in two stages.
18. The works already approved by the Public Works Committee and which is under construction includes:

- a. Wharf Extension. The existing southern wharf will be extended to a total length of 197.8m. The extension will be 52m x10m wide. The extended wharf will provide:
 - (1) Three alongside berths for ARMIDALE Class Patrol Boats.
 - (2) Stairs and platforms at each berth for safe access and egress from the wharf to the patrol boat.
 - (3) Service connections for each berth to provide up to seven patrol boats with the ability to connect to shore services whilst berthed.
- b. Modifications to the service connections on the existing northern wharf to allow two additional patrol boats to berth in an emergency.

19. The works which remains to be approved include:

- a. Syncrolift Extension. The synchrolift is a vertical ship lift used to lift current Darwin based RAN vessels out of the water. The project will extend the synchrolift 12m to enable the new patrol boats to be lifted from the water when necessary. The project will also construct associated lead-in dolphins to aid manoeuvring of the patrol boats onto the synchrolift.
- b. Land Berths. The project will extend three existing land berths to provide the necessary space for storage of the patrol boats on the hardstand without detracting from the ability to store other vessels.
- c. Support Cradles. The cradles used to support the patrol boats whilst on the hardstand need to be modified to suit the different hull size and shape.
- d. Fuel Tank. The project will construct an additional 250kL fuel tank to increase the capacity of the fuel holdings at Darwin Naval Base to the quantity necessary for new patrol boat operations.
- e. Standby Crew Facility. The project will provide a facility to provide working accommodation for two standby patrol boat crews. The standby crews will occupy the facilities whilst in the preparation for operations phase of the crew rotation cycle.
- f. Port Services Organisation facility. The project will provide a facility for the Darwin Naval Base Port Services Organisation to control the movements of vessels in and around Darwin Naval Base.

OPTIONS CONSIDERED

20. There is no intention to relocate Darwin Naval Base within the life of the ARMIDALE Class Patrol Boats. The existing infrastructure at Darwin Naval Base provides the most economic basis for siting the facilities for the new patrol boats.

21. The project involves the extension of existing facilities at Darwin Naval Base and therefore provides no realistic alternative siting options. However, a number of technical options have been explored which resulted in more economical design solutions.

22. Alternate siting options were considered for the location of the new buildings. The investigation considered options for the two buildings separately and combined. The location of the Port Services Organisation building is dictated by the need for visibility of the harbour and the approaches to the harbour. The location of the Standby Crew facility is dictated by the need for proximity to the wharf for efficient transfer of command and by the need for security of the facility.

REASONS FOR ADOPTING THE PROPOSED COURSE

23. The proposed facility has been sited to minimize cost and to enable the continuation of Royal Australian Navy patrol boat operations with minimum disruption.

24. The most cost effective option for the buildings was considered to be the combined facility located so as to maximise the proximity to the harbour and the observation available to the Port Services Organization of the harbour and its approaches. The combined option provides savings in common areas and in building infrastructure such as lifts, common entry, amenities and in the provision of trunk service connections to the building. This option also provides the ability for rapid handover between crews to maximise the operational availability of the ARMIDALE Class Patrol Boats.

ENVIRONMENTAL IMPACT ASSESSMENT

25. An Environmental Review has been undertaken to review the potential impacts associated with the proposed works and to screen these impacts for significance under the Environmental Protection and Biodiversity Conservation Act. The review considered a range of issues and concluded that there is no requirement for referral of the project under the Environmental Protection and Biodiversity Conservation Act but that two issues were deemed to present an environmental risk. These issues were:

- a. Potential impacts to marine biota from the construction and operation of the new wharf; and
- b. Potential impacts to marine mammals from underwater noise and vibration during construction activities.

26. Both of these issues were assessed in greater detail to improve the confidence of the conclusions. The report concluded that while some impacts may occur, they are not deemed to be significant. The two potential issues relate primarily to the construction of the wharf extension and the synchrolift extension. Non-significant impacts that may occur, and associated mitigation measures, will be addressed further through an Environmental Control Plan specific to the construction activities and will be carried forward into contractual conditions for the building contractor/s. This approach has been implemented effectively for the wharf extension works.

CONSULTATION

27. Consultation has commenced and will continue throughout the delivery, operation and maintenance of the facility. The following stakeholders have been involved in consideration of the proposed project to date:

- Federal and State Government representatives for the area;
- Commonwealth Department of Environment and Heritage;
- Northern Territory Government - Office of Territory Development;
- Northern Territory Department of Business, Industry and Resource Development
- Department of Infrastructure, Planning and Environment
- Northern Territory Department of Employment, Education and Training;
- Darwin City Council;
- Darwin Port Authority;
- Northern Territory Chamber of Commerce; and
- Defence Housing Authority;

TECHNICAL INFORMATION

PROJECT LOCATION

28. HMAS Coonawarra (Darwin Naval Base) is located within Larrakeyah Barracks, approximately 2.0 km west of the Darwin CBD.

29. It is the port facility for the Navy's Minor War Vessels undertaking patrol and amphibious exercises in the North / North West of Australia, while also providing facilities for logistic support to visiting Major Fleet Units.

PROJECT SCOPE

Wharf Extension

30. The Wharf Extension consists of bents of tubular steel piles connected by fabricated steel headstocks supporting a composite reinforced/prestressed concrete deck. The structure is designed for a 50 year service life and will be provided with corrosion protection through a cathodic protection system up to approximately mean sea level and a corrosive protection paint system above that level. Two additional access stair/platforms will be provided for access/egress to/from the patrol boats. These access ways will be identical to the existing access stair/platforms and the wharf.

31. The syncrolift modifications will comprise an extension of the existing facility by one 11.6m bay. The deck extension will consist of a reinforced concrete deck supported on tubular steel piles. The deck will support two additional winches which will be required to lift the longer syncrolift platform. The longer platform will allow the longer patrol boat to be adequately supported during the lifting operation. To assist the patrol boats to manoeuvre onto the syncrolift platform, the existing lead-in dolphins will be extended. The lead-in dolphins will be connected to the syncrolift by walkways and appropriately designed platforms will be provided on the dolphins and the syncrolift to allow safe working by sailors during the operation.

32. The hardstand berths where the ARMIDALE Class Patrol Boats are accommodated out of the water will be extended by 4m so as not to restrict access to the hardstand for other vessels. The cradles which support the patrol boats out of the water will be modified where possible or constructed new to support the new patrol boats which have a wider beam and a different hull shape to the previous patrol boats.

33. An additional 250kL clean fuel tank will be added to the existing Darwin Naval Base fuel supply system. This tank will be located adjacent to the existing fuel supply tanks and will be steel construction and fully bunded. The tank and its associated services will be designed for safe operation by appropriately qualified Royal Australian Navy personnel.

34. The combined Port Services Organisation and Standby Crew facility will be located on reclaimed land in a position to provide visibility into the harbour and over the approaches to the harbour. The building will be designed to withstand damage from cyclonic winds and associated debris. The siting of the building and the design of the ground floor will take into account the potential impact of storm surge associated with a cyclone.

Service Infrastructure

35. The wharf extension will include the provision of shore services connections for the patrol boats. These services will include:

- a. Power. The ARMIDALE Class Patrol Boats operate off 50HZ power (the Fremantle Class patrol boats used 60HZ power). Sufficient shore connections will be provided for seven patrol boats.

- b. Communications. The wharf extensions will include provision for phone and data connections to the patrol boats.
- c. Fuel. The wharf extension will provide connections for fuelling and de-fuelling the patrol boats.
- d. Water. Connections will be provided for both potable water and seawater for cooling. Both potable and seawater fire hydrants will be provided on the wharf extension.
- e. Waste. Connections will be provided for waste and bilge to be pumped from the patrol boat to appropriate treatment systems.
- f. Compressed Air. Compressed air will be provided for the use of pneumatic tools.

36. Some minor changes will be made to the service connections on the northern wharf to provide flexibility for the use of this wharf by other vessels. Minor changes will also be made to the service connections on the land-berths.

37. The extension of the syncrolift includes the installation of two additional winches. Modifications will be required to the control systems and switchboard to provide the additional power required for these motors. An existing emergency generator is available in the event of loss of mains power during operation of the syncrolift. This generator will be upgraded to handle the additional loads associated with the syncrolift extension.

38. The services infrastructure to the combined Port Services Organisation and Standby Crew building will include trunk connections to power, water, stormwater and sewerage systems. Communications connections to the building will include voice and data with the latter including restricted and secret connectivity.

SITE SELECTION

39. The site selection process for the facilities has taken into account the requirement that the project is intended to extend existing Darwin Naval Base infrastructure. A Site Selection Board has considered alternate siting for all the project elements that are not tied to existing facilities and has approved the sites currently shown.

40. Consideration was given to leasing facilities for the Standby Crew facilities. This option may be appropriate for an interim solution to enable the crew rotation system to be established and to allow for a delay in completion of the facilities but is not considered to be a suitable long-term solution as this would have a direct and deleterious impact upon capability and would reduce the economies able to be achieved by combining the Port Services Organisation with the Standby Crew facility.

SITE DESCRIPTION

41. The site for the wharf and syncrolift is within the existing Darwin Naval Base harbour. The harbour has been artificially created with a seawall to provide protection for berthed vessels. The harbour depth varies with the tides but the seabed level is typically -9.0m and the top of the seawall is about +5.0m (both levels are Australian Height Datum).

42. The site for the Standby Crew and Port Services Facility is located on reclaimed land adjacent to the South Wharf. The site is relatively level with a cliff face to the north, and a lower section of land adjacent to the sea wall, extending from the breakwater to the west, for the extent of the reclaimed section of land. This area is approximately 1.0m below the central site level, and is covered with a grove of low trees.

43. A single storey building accommodating Defence Maritime Services, is sited adjacent the boat ramp. A Petroleum Products store and an open area for the storage of fenders, is also sited within this area.

44. Two Magnetic Sound Range containers are located on the lower section of site south west of the proposed ARMIDALE Class Patrol Boat Crew Support and Port Services Facility.

ZONING AND APPROVALS

45. The site is zoned as “Community Purposes” under the Darwin Town Plan 1990. The objectives and policies for this zone are:

- a. “Objective: To accommodate primarily community services and facilities whether they be publicly or privately owned or operated including facilities for civic and government administration.
- b. Policy: Development should provide sufficient off-street parking areas for employees, visitors and service vehicles. Design should incorporate landscaping to enhance the visual appearance of the development. The development of residential accommodation should only be in association with and ancillary to the primary use of the land. Advertising should be limited to that necessary to identify the use of the land and be sited so as to minimise the impact on the locality.”

46. An office building would normally require consent from the Development Consent Authority, Department of Infrastructure, Planning and Environment. The Department of Defence is not bound by these planning controls. The relevant development provisions for an Office are:

- a. Height Limitation – 7.0m
- b. Provision of Carparking – 2.5 carparking spaces / 100m² of net floor area

47. The Port Services Organisation requires the ability to view the harbour and its approaches and as a result the operations room area of the building has a height of 8.0m.

LAND ACQUISITION

48. There will be no requirement to acquire additional land. The Darwin Naval Base is located on Commonwealth Land and the proposed work will be carried out entirely within the Darwin Naval Base.

APPLICABLE CODES AND STANDARDS

49. Where appropriate, the design of new facilities would conform to the relevant sections of:

- Building Code of Australia,
- Relevant current Australian Standards and Codes;
- *Occupational Health and Safety Act, 1991* (Commonwealth);
- Environmental Protection Act and Regulations;
- Workplace Health and Safety Act and Regulations;
- Defence Infrastructure Manual including:
 - Manual of Fire Protection Engineering,
 - Defence Security Manual,

- Defence Facilities Communications Cabling Standard;
- The Navy Specification for provision of shore based services; and
- A range of specific Defence Security and Communications Standards.

PLANNING AND DESIGN CONCEPTS

Design Philosophy

50. The general philosophy to be adopted with the design of the proposed facilities shall incorporate the following considerations:

- a. the provision of cost effective and utilitarian facilities of energy efficient design suitable for the climate conditions and in harmony with the local environment;
- b. adoption where possible of conventional construction techniques and materials, in particular those commonly used by the construction industry in the Darwin area;
- c. utilisation of durable materials that combine long life with minimum maintenance to ensure minimisation of whole of life costs;
- d. provide environmentally sustainable services to the facility and the site; and
- e. where appropriate provide an equivalent design philosophy for the extensions to that which applied to the original works.

Design Features

51. The marine facilities will consist of tubular steel piles supporting steel and concrete superstructures. Submersible elements of the facility will be provided with corrosion protection through either cathodic protection or corrosion preventing paint systems. In some cases moulded fibre glass will be used to provide slip resistance and to minimize corrosion.

52. The proposed building would be limited to two stories with an internal observation room and deck for harbour control. The buildings would use a reinforced blockwork façade, reinforced concrete floors and steel columns, with steel trusses supporting metal deck roofs. The number of internal load bearing walls and columns would be minimised for maximum internal layout flexibility. The building will be designed to withstand cyclonic effects.

53. Designs would incorporate the general features outlined below:

- a. Internal fitouts would be typical of modern commercial offices, using carpet on floors, suspended ceiling tiles and internal walls lined with painted plasterboard and interspersed with floor to ceiling glazed panels. Storage areas would incorporate epoxy surfacing on the floors.
- b. The principals of ecologically sustainable development (ESD) will be incorporated to the extent that is consistent with the function and purpose of the facilities.
- c. Working accommodation areas may be air-conditioned using ceiling mounted registers and ducting within ceiling spaces with provision for operable windows. Interior lighting would typically be low glare fluorescent fittings flush mounted in the ceiling providing adequate lighting on work surfaces.
- d. A number of areas will be available to provide flexibility in the use of the spaces. These include shared use areas, a conference room and a multi purpose meals room. Suitable acoustic treatment is required through the facilities.

- e. Engineering services would be designed to normal commercial standards. Fire alarm systems would be incorporated into the facility security system.

Design Options

54. Concept designs were developed for the facility to explore design issues and to refine the project budget. Issues that were examined in the development of the options included:

- a. Security;
- b. Interrelationships of spaces;
- c. Flexibility for future change;
- d. Environmentally sustainable design and whole of life cost impacts of the facility;
- e. Provision of high quality working environments; and
- f. Provision of engineering services.

Certification

55. Prior to acceptance of the facility, Defence will require certifications that the facility complies fully with Defence requirements and with the applicable codes and standards.

Philosophy Adopted for the Design of the Fire Protection System

56. The following philosophy has been adopted in respect of the design of the fire protection systems:

- a. All construction and fire protection requirements will, as a minimum, be in accordance with the provisions of the Building Code of Australia, the Defence Manual of Fire Protection Engineering and all other applicable Codes and Standards. The levels of fire protection specified are above the Building Code of Australia requirements and have been determined by a risk assessment and risk management approach to fire protection.
- b. Defence will require certification from a suitably qualified certifier, that the design and construction meet the requirements of the Building Code of Australia, Defence Manual of Fire Protection Engineering, relevant Codes and Standards and any additional Territory and Defence requirements.
- c. Any recommended departures from Building Code of Australia requirements in relation to the project will be technically assessed by Defence specialist fire protection staff. Agreed departures (ensuring an equivalent or higher level of protection than Building Code of Australia requirements) will require written approval at Director General level.

Philosophy Adopted for Energy Management and Lighting

57. The design of all power supply, electrical and mechanical equipment will include an assessment of energy use applying life cycle costing techniques and power demand analysis. Facilities may incorporate building management systems, metering and other provisions to measure energy use and to allow regular energy audits.

58. To reduce energy consumption and consequential greenhouse gas emissions, lighting is to be controlled, where possible, by photoelectric switches in conjunction with time switch schedules. This is to include provision of personal sensor controlled lighting to intermittently occupied areas. Lamps are to be high efficiency fluorescent, compact fluorescent or discharge type. External lighting is to be designed to minimise glare and colour distortion. Where appropriate, time switches are to be installed at airconditioner controls to reduce running costs when premises are unoccupied. Solar hot water systems are to be used where practical and cost effective. Consideration will be given to the control and or monitoring of building services through a central energy management system which links individual building control systems.

Philosophy Adopted for Precautions against Legionella

59. As air cooled airconditioning systems are proposed, no specific precautions against the legionella bacillus are considered necessary. Potable water would be below the temperature range where legionella can breed to levels affecting health. Opportunities to provide alternative systems will be considered in conjunction with an appropriate legionella prevention strategy.

PROJECT COST

60. The outturn cost of the project is \$19.17M (escalated to February 2006).

Timing

61. The works already approved will be complete by October 2005.

62. Subject to Parliamentary approval, the construction is planned to commence in early 2006 with completion in late 2006.

63. The first ARMIDALE Class Patrol Boat will arrive in April 2005 and the second is due in November 2005. The wharf works will be complete to enable the vessels to berth at Darwin Naval Base.

Construction Workforce

64. The current construction work has involved approximately 20 workers on site and an additional 20 workers involved with off-site material preparation.

65. The new works will require approximately 30 workers during the construction phase with additional effort associated with off-site prefabrication and material preparation activity to support the project.

Establishment Population

66. The new facility will accommodate approximately 60 Defence personnel who are currently based in the Darwin area.

PROJECT DELIVERY SYSTEM

67. The approved works have been delivered under a head contract delivery.

68. Subject to Government approval, Defence proposes to procure the remainder of the works under two separate contracts.

- a. A head contract will be used to deliver the infrastructure works (synchrolift and land berths). These works have been fully designed and documented to provide certainty of the scope and cost associated with that component of the works.
- b. A design and construct contract is proposed for the building works. The building works have been designed to concept stage because there is a higher degree of familiarity with the nature and function of the building. This documentation provides a solid basis for a design and construct construction contract.