



Australian Government

Department of Defence

Defence Support Group

RAAF BASE TINDAL

**AIRBORNE EARLY WARNING AND CONTROL AIRCRAFT
FACILITIES**

Katherine, Northern Territory

STATEMENT OF EVIDENCE

TO THE

PARLIAMENTARY STANDING COMMITTEE

ON PUBLIC WORKS

**Department of Defence
Canberra, ACT
June 2007**

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PART A - IDENTIFICATION OF THE NEED

PROJECT OBJECTIVES

1. This statement of evidence to the Parliamentary Standing Committee on Public Works presents a proposal to provide facilities at RAAF Base Tindal Northern Territory to support Airborne Early Warning and Control (AEW&C) aircraft operations from the base.

HISTORICAL BACKGROUND

2. RAAF Base Tindal is part of a chain of airfields stretching across northern Australia from Learmonth in Western Australia to Townsville in northern Queensland. It is the home base for No 75 Squadron, a tactical fighter squadron equipped with F/A-18 Hornets. Tindal is also a staging base for exercises conducted in the area. In conjunction with Delamere Air Weapons Range, located some 150 kilometres to the south-west, it is used extensively to exercise deployed Australian and selected overseas air forces. Annex A illustrates the location of RAAF Base Tindal.

3. The base is a former World War II airfield which was reconstructed as a non-garrisoned base during the 1960s. In 1984 the Government decided to establish the base as a manned, operational military airfield. The first stage of its development, providing for the permanent basing of a tactical fighter squadron, was endorsed by the Parliamentary Standing Committee on Public Works in its Twelfth Report of 1984. No 75 Squadron, with supporting elements, was operational at the base in 1988.

4. Subsequent stages of development were additional aircraft pavements and support facilities (Tenth Report of 1988), aircraft shelters and associated facilities (Ninth Report of 1991), maritime patrol and other operational facilities (Third Report of 1996), and perimeter security fence (Seventh Report of 2003).

5. A plan of the current base layout is at Annex B. The plan also identifies the intended location of the AEW&C facilities proposed in this submission.

6. In December 2000 the Cabinet approved the acquisition of AEW&C aircraft. The approval included funds for facilities at RAAF Bases Williamstown, Tindal and Edinburgh. The aircraft will be operated by No 2 Squadron and home based at RAAF Base Williamstown in New South Wales. The aircraft will also operate from RAAF Base Tindal.

7. The future requirement for AEW&C facilities at RAAF Base Tindal was foreshadowed during the Committee's hearing into AEW&C requirements at RAAF Base Williamtown in August 2002.

8. The first AEW&C aircraft are scheduled for delivery in March 2009 with initial operational capability planned for mid 2010.

THE NEED FOR THE WORK

9. The objective of the project is to provide facilities at RAAF Base Tindal that will enable the AEW&C aircraft to use Tindal as a Forward Operating Base for exercise, training and contingency purposes. Operations of up to 900 flying hours per year are envisaged, involving short term deployments of up to 120 personnel.

10. Many of the facilities required to support AEW&C operations already exist at RAAF Base Tindal. However, there is a need for specific facilities to ensure safe and effective operations. The proposed works include aircraft parking aprons, taxiway access to the parking aprons, and dedicated command and control, administrative and logistic support.

DESCRIPTION OF THE PROPOSAL

11. The additional facilities required at RAAF Base Tindal to support the AEW&C aircraft are as follows:

- a. **Taxiways and Aprons.** The Concept of Operations envisages up to three AEW&C aircraft at RAAF Base Tindal at any one time. Separation of the aircraft parking locations is required by Defence Explosive Ordnance clearance requirements to meet the safety distances imposed by the ordnance the aircraft could be carrying, and for passive defence reasons. A drive-through capability is required at each of the parking locations to maximise operating flexibility
- b. **Shelters.** One of the parking aprons requires an enclosed shelter so that maintenance can be carried out in bad weather, and under secure conditions. An open shelter is required at one other parking location to minimise the adverse effects of extreme temperatures, while the third, less used apron will not be covered.

- c. **Technical Support Facilities.** A facility accommodating the functions involved in managing the readiness, dispatch and receipt of aircraft undertaking operational missions is crucial to the success of those missions. The functions involved are:
- (i) flight line and crew activities, maintenance management, communications, life support equipment storage and issue, and flight line maintenance;
 - (ii) associated workshop and logistics stores;
 - (iii) shelters for ground support equipment and storage for flammable and hazardous goods; and
 - (iv) a small ordnance pre load storage facility.
- d. **Hydrant Refuelling.** Given the fuel load of the AEW&C (Boeing 737) aircraft, refuelling by hydrant at each aircraft parking apron is assessed to be more effective and cost effective than refuelling by tanker. Accordingly, a reticulated hydrant system should be provided to each AEW&C apron.

OPTIONS, AND REASONS FOR ADOPTING THE PROPOSED COURSE OF ACTION

12. The majority of the infrastructure at RAAF Base Tindal is mainly suitable only for the purposes for which it was designed, that is, for fighter and strike aircraft operations and transit use by larger aircraft. The main runway and primary taxiways are suitable for AEW&C aircraft use. Similarly, base messing facilities, general logistic support, fuel storage, weapons storage and preparation facilities are available to meet AEW&C requirements.

13. Existing aircraft dispersal facilities and shelters are designed specifically for the F/A-18 aircraft operated by No 75 Squadron or similar aircraft. Other general purpose aircraft aprons have been constructed, but are used by maritime and transport aircraft and would not be available, nor are they suitable for, AEW&C deployments.

14. Other technical support, operations facilities and domestic accommodation that is available has been provided for visiting units which use the base for exercise purposes. In addition, as for the F/A-18's, passive defence considerations require dispersal of the AEW&C

aircraft, which makes extension of existing facilities such as aprons and support facilities impractical.

15. In recognition of these factors, the 1996 RAAF Base Tindal Master Plan anticipated a future AEW&C capability at the base, and made provision for an AEW&C precinct, with dispersed parking for up to four AEW&C aircraft. The proposed siting of the precinct has since been confirmed as the most appropriate, and the location and layout of taxiways, aircraft parking locations and supporting facilities proposed in this submission are consistent with that Plan.

ENVIRONMENTAL IMPACT ASSESSMENTS

16. The Environmental Impact Statement prepared for the initial development dealt with issues such as social impact, the management of aircraft noise, the preservation of fauna and flora, waste management and land use. A subsequent Environmental Management Plan identified measures necessary to minimise any adverse effects of these impacts. There are Aboriginal archaeological and anthropological sites on RAAF Base Tindal which have been recognised and are protected under the Environmental Management Plan.

17. An Environmental Assessment Report has been completed for this project and a determination has been made that referral under the *Environmental Protection and Biodiversity Conservation Act 1999* is not required.

HERITAGE CONSIDERATIONS

18. An Aboriginal Areas Protection Authority Certificate is being prepared, and although no issues were identified, this certificate will provide the framework for consultation with indigenous representatives and the Northern Territory Government should any issues arise during construction.

CONSULTATION

19. The following external authorities have been, or will be consulted about the project:

- The Federal Member for Lingiari;
- NT Department of Business, Economic and Regional Development;
- The Katherine Town Council;

- The Northern Land Council;
- The Aboriginal Areas Protection Authority; and
- The Department of Conservation and Land Management (Australian Greenhouse Office).

20. Industry briefs were held at Darwin and Katherine on 27 and 28 March 2007 to advise contractors and other interested parties on potential opportunities resulting from this and other Northern Territory Defence projects.

REVENUE

21. There is no revenue to be derived from the project.

PART B - TECHNICAL INFORMATION

LOCATION

22. RAAF Base Tindal is located approximately 330 kilometres by road south of Darwin and 15 kilometres south of Katherine. The location is shown at Annex A.

PROJECT SCOPE

23. **Taxiways, Aprons and Shelters.** The proposed works will provide a configuration of taxiways with three dispersed, drive-through aircraft parking aprons, one with an enclosed shelter and one with an open shelter. Pavement design will be based on a Boeing 737 AEW&C aircraft at Maximum All Up Mass. A plan of the proposed layout is at Annex C, a plan of the aircraft precinct is at Annex D-1 and sketches of the proposed enclosed shelter are at Annex D-2.

24. The RAAF Base Tindal Master Plan 1996 provides for the future addition of a fourth aircraft parking location if required.

25. **Technical Support Facilities.** The proposed Technical support facility will be an earth covered building to accommodate the key flight line functions. Workshop and stores facilities will be linked to the main building. Earth covering is primarily a passive defence consideration, and is consistent with the design approach taken for other operations and technical support facilities at RAAF Base Tindal.

26. The ordnance pre load facility will be located adjacent to the aircraft parking locations, having regard to Explosive Ordnance safety distances.

27. The layout plan at Annex C shows the location of the technical support facilities, and a sketch of the proposed design is at Annex D-3.

28. **Hydrant Refuelling.** Tindal has two fuel storage farms, Fuel Farm 1 being the closest to the AEW&C precinct. Four of its fourteen tanks will be utilised for AEW&C refuelling. Adequate fuel storage exists at RAAF Base Tindal and there is no requirement to supplement the overall fuel storage capacity.

29. The proposal is to provide an underground stainless steel pipe from Fuel Farm 1 to the AEW&C precinct, supplying a hydrant point at each of the aircraft parking locations for

refuelling. Two pumps will be installed, capable of supplying demand for one aircraft at a time. Automated delivery controls will also be installed at the fuel farm.

30. **Operations Facility.** In May 2006 the PWC agreed to the Operations facility being constructed as an expedited medium work ahead of the main project at an estimated cost of \$4.95m, in order to meet procurement contract requirements for the installation of mission control equipment. The \$4.95m is additional to this project which will provide permanent services and fitout to the Operations facility. A sketch of this facility is at Annex D-4.

SITE SELECTION

31. Strategic planning identified the need for AEW&C operations to be conducted from RAAF Base Tindal and the 1996 Master Plan reserved areas to cater for the facilities that would be necessary to support such operations. The proposed works are located in accordance with the Master Plan, and all sites have been confirmed through formal Site Selection Board processes.

SITE DESCRIPTION

32. The RAAF Base Tindal encompasses an area of some 10,400 hectares bounded by the Stuart Highway along its eastern side and rural properties on the west.

33. It has a single runway, 2742 metres long and 45 metres wide, in a generally NW-SE orientation. It has a main parallel taxiway and a second taxiway system (Taxiways R and S), both designed for use as emergency runways linking to the ends of the main runway to form a triangle. Aircraft dispersal bays and ordnance loading aprons are located to the east of the runway, accessed from Taxiways R and S, and the proposed AEW&C dispersal aprons and support facilities have been planned with primary access from Taxiway S.

34. The siting and design of the facilities has to take into account a 180 metre clearance from the 75 Squadron dispersal bays to the south, a microwave link from the control tower to the airfield surveillance radar, and the transitional surface requirement related to the possible use of Taxiway S as an emergency runway. Planning for the facilities is able to accommodate these limitations, and Defence site selection procedures have confirmed the siting proposed.

ZONING AND APPROVALS

35. The land is Commonwealth owned and Defence controlled. As such, there are no requirements to seek planning approvals. However, Defence will comply with all national, territory and municipal planning, compliance and commissioning requirements.

LAND ACQUISITION

36. There are no requirements to acquire any land associated with this project.

APPLICABLE CODES AND STANDARDS

37. Each of the building components has, to varying degrees, elements of civil, structural, mechanical, electrical, hydraulic, fire protection and communications services. These will all comply with the relevant Australian, Northern Territory and Defence codes and standards, including:

- a. Building Code of Australia;
- a. Defence Manual of Fire Protection Engineering;
- b. Defence Security Manual; and
- c. Northern Territory Building Act and Regulations 1993.

38. Design of the facilities will provide Defence with working environments which conform to all relevant Commonwealth, Defence and Northern Territory Occupational Health and Safety (OH&S) legislation. Particular measures will be necessary to achieve OH&S standards for fall arrest systems for personnel safety in the aircraft shelters. These will be required to integrate with the shelter structures so that they operate along the aircraft centreline as well as over the wings and tailplane, but remain clear of aircraft movements.

PLANNING AND DESIGN CONCEPTS

39. **Taxiways and Aprons.** Taxiways and Aprons will be designed for the dimensions and Maximum All Up Mass of the Boeing 737 aircraft.

40. Geometric design will be based on Defence publication ADFP602 (Joint Services Works and Administration Aerodrome Design Criteria, 1992) and CASA publication Manual of Standards Part 139 (Aerodromes (MOS Part 139), Version 1.2, September 2004). It will

also take into account the requirement for aircraft to drive through each of the parking locations under their own power.

41. Taxiways are to be asphalt surfaced, flexible pavements, and parking areas are to be concrete. Designed service lives are to be 20 years for flexible, and 40 years for concrete pavements, based on design traffic frequency of 200 operations annually.

42. **Technical Support Facilities.** The principal technical support facility is to be earth covered, primarily for passive defence reasons. The building form will be cast in-situ with concrete walls and roof slab, drawing on experiences gained in the construction of concrete arch forms used in earlier earth covered facilities. Concrete will be designed for the in-ground environment in accordance with AS3600.

43. The associated workshop and logistics store will be of concrete block construction with steel roofing. They will be well ventilated by the use of low level fixed louvres and roof mounted wind driven extraction vents and kept insect resistant by the use of insect screens inside the louvres.

44. **Shelters.** Aircraft Shelters will be steel framed and clad buildings comprising large span trusses across the buildings with 'portalised' columns. End trusses will support door structures on the enclosed shelter, but the doors will support their own self weight on rollers. Side walls on the enclosed shelter will have fixed louvre ventilation for the lower section to improve internal working conditions. Walls on the open shelter will be sheeted down to a height of 4 metres from the ground to improve weather protection. The design of both shelters will integrate a personnel fall arrest system for maintenance personnel safety.

45. A small concrete block facility will be provided adjacent to each shelter to provide an acoustic shelter for personnel, toilets and communications connections.

46. **Fuel Supply.** Fuel supply planning for the AEW&C aircraft requires the use of four of the fourteen tanks at Fuel Farm 1. Modifications will include replacement of pipe work to the tanks which will supply the hydrant line, automation of tank valve selection, construction of a new pump house and installation of two pumps and associated filtering equipment. There will be automated control of supply tank selection and changeover, hydrant pump selection, pump starting and stopping, pressure and flow. Pump design will be on the basis of both pumps being used to deliver design point pressure and flow to one hydrant point at a time.

47. Fuel reticulation will be via an underground 150mm diameter stainless steel pipe, and one hydrant point will be installed at each aircraft parking location. Design features will include emergency stops at the hydrant points and inside the acoustic shelters. Designated hazardous zones will be permanently marked on pavements. In the enclosed shelter, the door control system will be connected to the fuel supply system to ensure that refuelling cannot take place unless doors are in the fully open position.

48. **Mechanical.** Air conditioning is to be provided to the Technical Support Facility and the acoustic enclosures. Design will be based on the requirement that the air conditioning system will be:

- a. Reliable, and easy to maintain and repair;
- b. Of optimum capacity and adjustable to suit various load conditions;
- d. Energy efficient and incorporating sustainable design features; and
- e. Optimised for minimum practical life cycle cost.

49. System programs will be adjustable for 24 hour occupancy during exercises, 12 hour occupancy during normal activities and low level operation when the facilities are unoccupied. Natural ventilation is planned for the workshop and logistics store areas.

50. Toilet and shower rooms, plant rooms, and switch rooms will generally be mechanically ventilated.

51. **Electrical.** The power supply to RAAF Base Tindal is assessed as being sufficient to meet the additional demand required for AEW&C operations. The 11kV ring main will be extended to a location adjacent the AEW&C precinct and a new 750kVA substation installed to supply the precinct. Low voltage distribution circuits supplying the AEW&C facilities will be connected to the base's power control and monitoring system to facilitate load shedding in the event of mains failure. Connection boxes at each facility will allow connection of local emergency generators.

52. Taxiway and apron lighting will be designed in accordance with the relevant Defence and CASA standards, and in accordance with Aerodrome Reference Code 3C for B737 aircraft.

53. The communications room in the Operations Facility will provide linkages to all other AEW&C facilities. Two cables will be provided to this room, one from the Base Communications centre, and one from No 75 Squadron. This will provide a redundant path for Defence Restricted Network and Defence Secret Network traffic to all of the AEW&C precinct, and Top Secret communications to the Operations Facility.

54. A building management system for all new facilities will be incorporated into the existing base wide system.

ACOUSTICS

55. The AEW&C facilities are being constructed in an inherently noisy zone due to the proximity of aircraft operations both on the runway and within the AEW&C precinct. The earth covering of the operations and technical support facilities will help reduce noise to acceptable levels, and the small shelters adjacent the aircraft parking locations will incorporate noise reduction measures.

WATER AND ENERGY CONSERVATION MEASURES

56. Defence became a participant in the Greenhouse Challenge Program with the signing of an agreement with the Australian Greenhouse Office on 14 March 2001 and the concurrent implementation of the Defence Energy Efficiency Program. The Government has set specific energy-efficiency targets that require a reduction in greenhouse gas emissions resulting from Defence facilities operations. Defence is working towards the achievement of these emission levels.

57. All buildings included in this project will be designed, constructed, operated and maintained to ensure that they use energy efficiently. To achieve this, as a minimum, the buildings will comply with:

- a. Part I2 and Section J of Volume One of the Building Code of Australia (BCA);
- b. Part 3.12 of Volume Two of the BCA;
- c. the Energy Efficiency in Government Operations (EEGO) policy; and
- d. Defence Green Building Requirements.

As applicable to the classification of each building.

58. All buildings will comply with the relevant energy efficiency provisions in the BCA, except where there are energy efficiency requirements imposed by Defence Green Building Requirements - Part 1 that are of a higher standard. In this instance, there are no Defence energy efficiency requirements of a higher standard than the BCA.

59. The Defence commitment to the implementation of Ecologically Sustainable Development principles is integral to project delivery and to subsequent monitoring of facilities performance. To achieve this:

- a. An overall Ecologically Sustainable Development performance target will be determined and subject to review at various milestones in the delivery cycle;
- b. Integrated design principles and practices will be applied to the project. This will require the close and early involvement of not only the project architects, but ecologically sustainable development, energy, engineering and landscape consultants, and building and maintenance contractors; and
- c. Appropriate contract clauses will bind external stakeholders to Defence's Ecologically Sustainable Development objectives, Key Performance Indicators, and targets.

60. 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 to achieve energy efficiencies.

61. Concept designs are to include an analysis of energy delivery and consumption systems, incorporating an estimate of any additional energy consumption and costs that are expected to result from the implementation of the concepts. Facilities will incorporate building management systems, metering and other provisions to measure energy use and to allow regular energy audits.

62. 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 types. External lighting is to be designed to minimise glare and colour distortion. Where

appropriate, time switches are to be installed at air conditioner controls to reduce running costs when premises are unoccupied.

MASTER PLANNING AND FUTURE DEVELOPMENT

63. The Master Plan was prepared in 1996 and includes a Master Plan Report, a zone plan, an area master plan, a facilities master plan, an infrastructure master plan, a development strategy and an assessment of environmental factors. It includes separate elements dealing with traffic planning and landscaping. Within this Master Plan an area for a future AEW&C capability was reserved.

64. The facilities proposed in this submission are located in accordance with this Master Plan. The siting of each work element has been re-examined and confirmed as part of the design development process. The sites determined are indicated on the plan at Annex B and C.

65. Planning is now well advanced for a separate project, the Stage 5 redevelopment of RAAF Base Tindal. The project is being developed on a similar time line to the AEW&C project and is potentially made up of 12 elements, predominantly in two categories:

- a. Upgrading of No 75 Squadron facilities, designed to improve the squadron's maintenance capability, to improve operational effectiveness, and to improve the working environment for squadron personnel; and
- b. Upgrading of No 322 Combat Support Squadron facilities, designed to improve the squadron's capacity to provide the levels of support required by units based at Tindal, those deployed there during exercises, and those transiting the base, and improve the working environment for squadron personnel.

66. The works proposed in Stage 5 are a mixture of refurbishments, upgrades, additions and new facilities. Only one element of these works, the augmentation of the Central Emergency Power Station, has a direct impact on No 2 Squadron's capacity to operate its new facilities, but this will not be a critical impact in the short term. The RAAF Base Tindal Redevelopment Stage 5 Project will be the subject of a separate submission to the PWC.

67. There is also a requirement for contingency accommodation to support No 2 Squadron operations. This is being examined as a part of an overall review of accommodation requirements at RAAF Base Tindal.

PROVISION FOR PEOPLE WITH DISABILITIES

68. Facilities for people with disabilities will be provided in accordance with relevant Australian standards and design codes.

CHILD CARE PROVISIONS

69. A child care centre exists at RAAF Base Tindal and is adequate for current requirements. AEW&C operations will not impact on this facility.

HERITAGE ISSUES

70. There are no heritage issues associated with this project.

FIRE PROTECTION AND SECURITY

71. All construction and fire protection requirements will, as a minimum, be in accordance with the provisions of the BCA, the Defence Manual of Fire Protection Engineering and all other applicable Codes and Standards. The Manual of Fire Protection Engineering details Defence fire protection policy for asset protection and building function protection. The levels of fire protection specified are above BCA requirements and have been determined by a risk assessment and risk management approach to fire protection.

72. Defence will require certification from a suitably qualified and accredited building surveyor, that the design and construction meet the requirements of the BCA, the Manual of Fire Protection Engineering, relevant Codes and Standards and any additional State, Local Government and Defence requirements.

73. The Northern Territory's Fire and Rescue Service will be invited to comment on the project, visit the site and offer comment throughout the construction phase to ensure that the Brigade's operational requirements are met.

74. Any recommended departures from BCA requirements in relation to the project will be technically assessed by Defence specialist fire protection staff and where warranted by the scope of the departure, a suitably qualified and experienced fire engineer. Agreed departures,

ensuring an equivalent or higher level of protection than BCA requirements, will require written approval from the appropriate Defence delegate.

75. Successful tenderers will be required to produce a Quality Assurance Plan to clearly show how BCA, Australian Standards and any additional Defence requirements in relation to fire protection/fire safety will be met and the required standards for construction and installation maintained.

76. The Fire Indicator Panel will be connected to the 24 hour manned fire station.

77. The Emergency Warning and Intercommunication System main panel will be located adjacent the Fire Indicator Panel and will be linked to provide automatic initiation of warnings in the event of a fire alarm.

78. Security requirements, both physical and electronic, will be designed and installed taking cognisance of the Defence Security Manual and the Construction Security Reference Manual, and in close liaison with the Defence Security Authority and other external agencies as may be required. When constructed, all electronic security will be integrated into the existing base security system. Inspection, Certification and Accreditation processes will be undertaken in accordance with the provisions of the Defence Security Manual.

OCCUPATIONAL HEALTH AND SAFETY

79. The facilities to be provided will comply with the Department of Defence Occupational Health and Safety policy, the Occupational Health and Safety (Commonwealth Employment) Act 1991, Occupational Health and Safety (Commonwealth Employment) (National Standards) Regulations and the Defence Occupational Health and Safety Manual. The Northern Territory Codes of Practice will be complied with.

LANDSCAPING

80. A Landscape Master Plan has been developed for the base and landscaping will be undertaken within the project in accordance with those guidelines. Key design criteria are that plantings are mainly native species, conforming to what exists in the locality and are water and maintenance efficient. Mitigation strategies identified in the Environmental Analysis Report in relation to landscape disturbance during construction will be followed.

IMPACT ON THE LOCAL COMMUNITY

81. Over the planned construction period of 20 months, an average of some 90 personnel are expected to be directly employed on construction activities. Additional employment will be generated through off-site prefabrication and supply activities associated with the project. It is anticipated that local building contractors and subcontractors will participate in the construction works and that other businesses in Katherine will benefit through the provision of support services during the construction period.

82. Given the intermittent way in which the facilities will be used on completion and the inherently military nature of that use, it is not expected that the project will generate any significant ongoing employment opportunities.

83. The project is likely to generate additional traffic in the industrial areas of Katherine and on the highway between Katherine and Tindal during the construction period, however it is not expected that there would be any other significant impacts on the Katherine community either during or after the construction period.

PROJECT COSTS

84. The estimated cost of the project is \$64.2m in out turn prices (plus GST), based on completion by December 2009. This includes preliminaries, construction and fitout costs, professional fees, furniture and fittings, information technology equipment, and project contingencies.

85. The mature Net Personnel and Operating Costs associated with this project are estimated to be \$1.16m per annum.

PROJECT DELIVERY SYSTEM

86. The project will be delivered by Head Contractors or Managing Contractor, depending on industry conditions at the time of delivery. The appropriate packaging and timing will be determined following a detailed assessment of industry workloads and resource constraints over the timeframe concerned. The extent to which the works might be integrated with elements of Tindal Redevelopment Stage 5 will be considered, as well as the impact of other major Defence developments programmed for Robertson Barracks and RAAF Base Darwin.

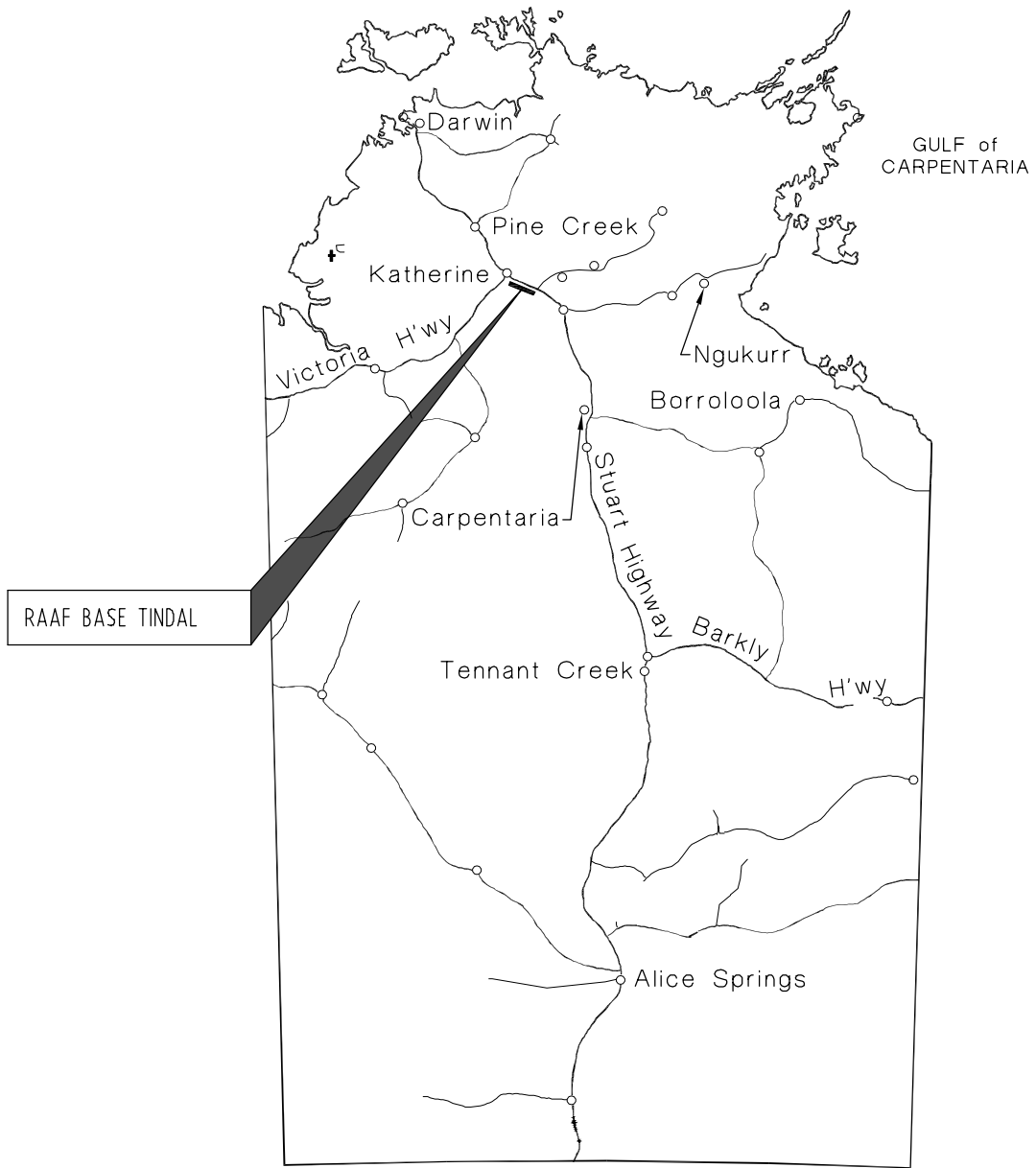
CONSTRUCTION TIMEFRAME

87. Subject to Parliamentary approval, construction is programmed to commence in May 2008. On this basis, completion is expected by December 2009 to assist in achievement of Initial Operational Capability.

ANNEXES

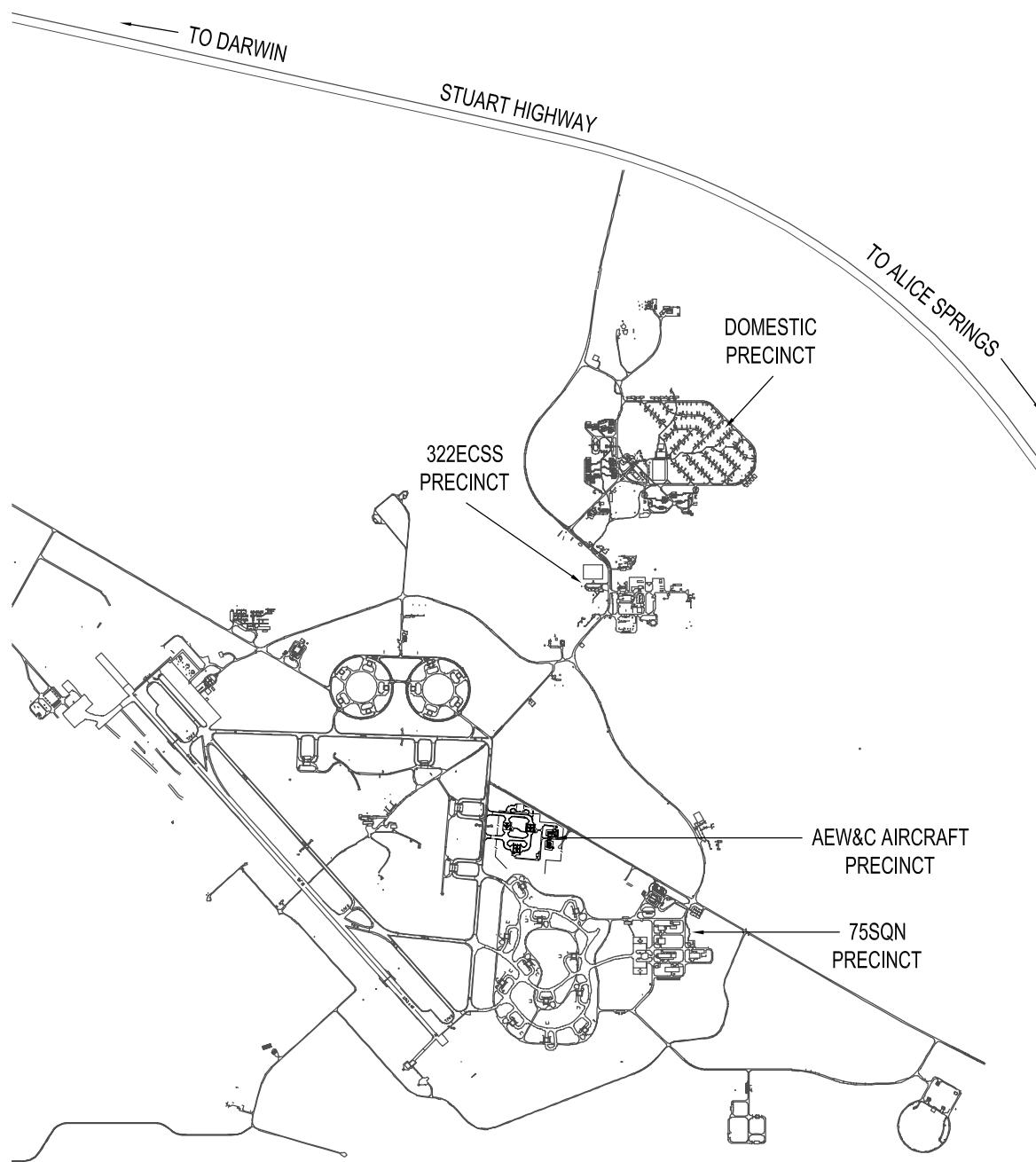
- A.** Location Plan
- B.** Base Layout Plan
- C.** Site Plan for AEW&C Facilities
- D.** Concept Sketch Plans
 - D-1 AEW&C Aircraft Precinct Plan
 - D-2 Enclosed Shelter
 - D-3 Technical Facility
 - D-4 Operations Facility

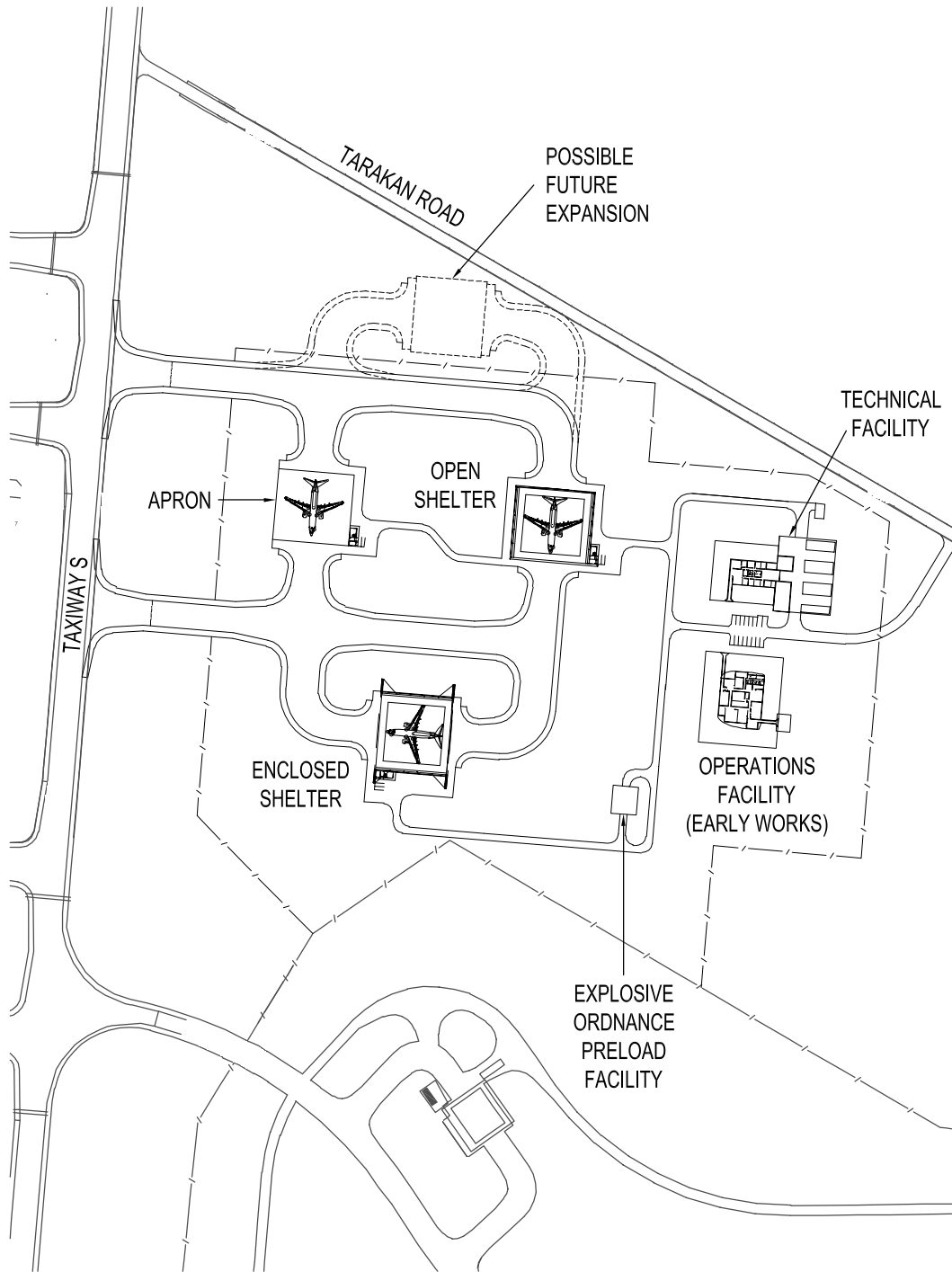
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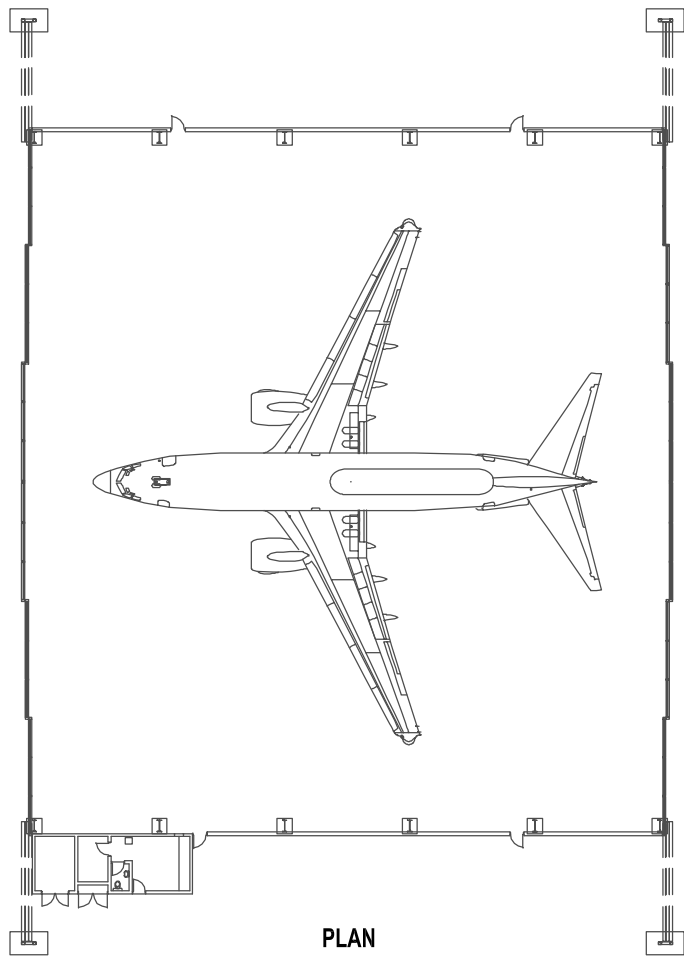


LOCALITY MAP
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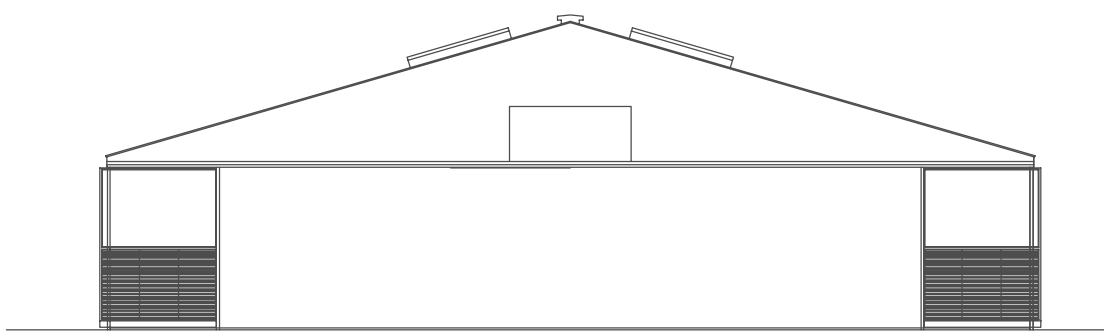






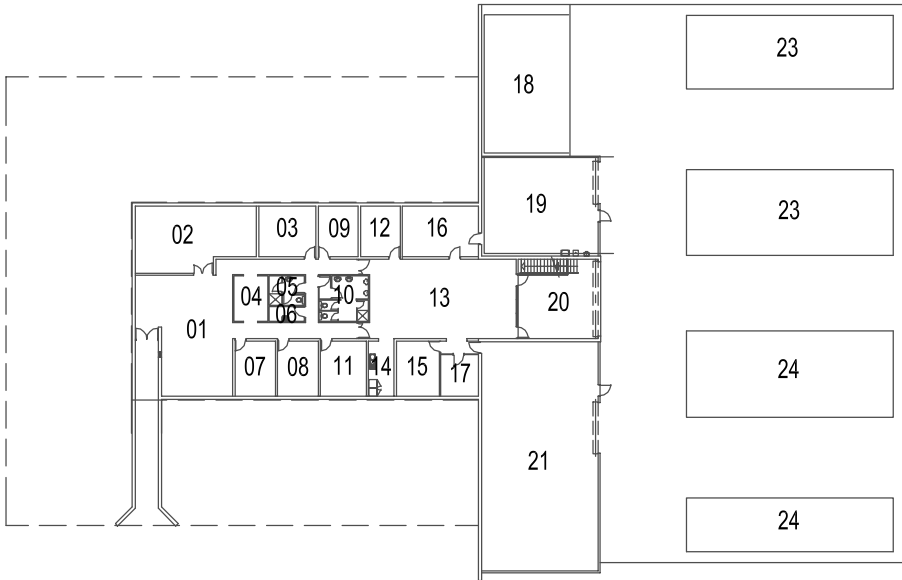


PLAN

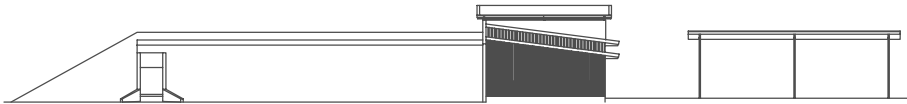


ELEVATION

LEGEND			
ROOM No.	ROOM NAME	ROOM No.	ROOM NAME
01	FLIGHT LINE	13	CREW ROOM
02	ALS/ISSUES/STORE	14	BREW AREA
03	BUNK ROOM	15	LOGISTICS OFFICE
04	RESOURCE AREA	16	MAINTENANCE NCOs OFFICE
05	FEMALE ABLUTION	17	LOGISTICS BLH STORE
06	CLEANER	18	GSE SHELTER
07	FLAMO OFFICE	19	MAINTENANCE WORKSHOP
08	SMM OFFICE	20	UNDERCROFT (PLANT ROOM OVER)
09	COMMS ROOM	21	LOGISTICS MAIN STORE
10	MALE ABLUTION	22	POL STORE
11	MSC ROOM	23	GSE SHELTER
12	CRYPTO EQUIP ROOM	24	LOGISTICS SHELTER

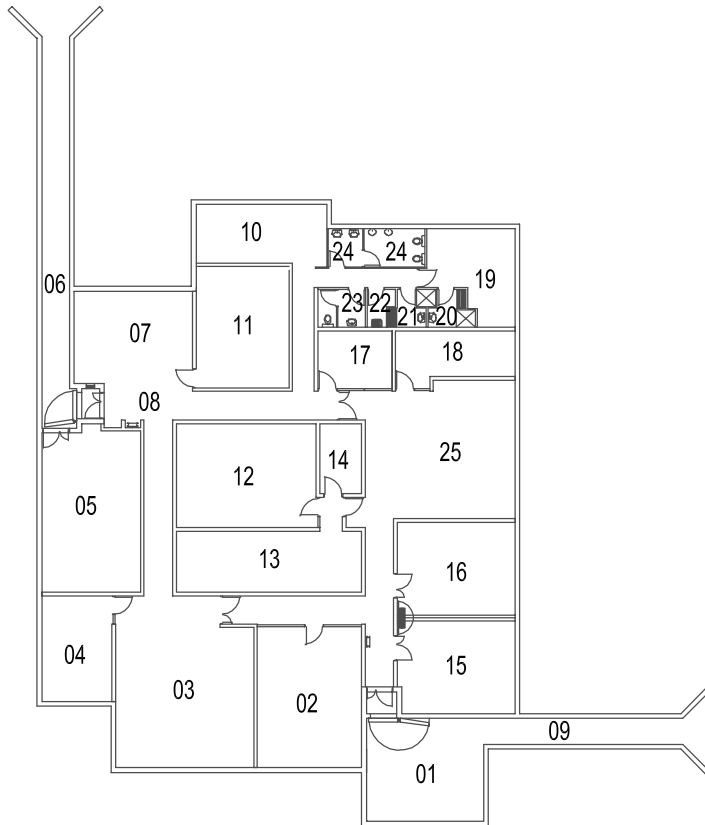


PLAN

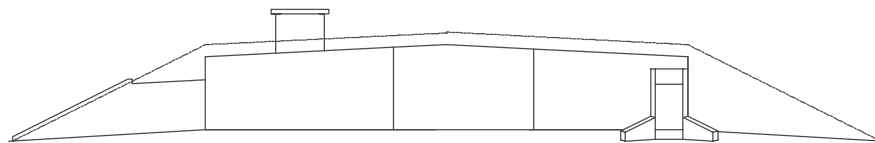


ELEVATION

LEGEND					
ROOM No.	ROOM NAME	ROOM No.	ROOM NAME	ROOM No.	ROOM NAME
01	PLANT AREA	10	KITCHENETTE	19	SLEEPING AREA
02	MSS BRIEFING ROOM 1	11	SERVER ROOM	20	SHOWER 1
03	GENERAL SHARED ROOM	12	MSS BRIEFING ROOM 2	21	SHOWER 2
04	FLIGHT COMMANDER SHARED OFFICE	13	INTEL SHARED	22	CLEANER
05	PLANT ROOM	14	SERVER ROOM	23	FEMALE ABLUTION
06	ENTRY TUNNEL	15	MISSION PLANNING ROOM 2	24	MALE ABLUTION
07	OPERATIONS DESK	16	MISSION PLANNING ROOM 1	25	MSS WORKSTATION AREA
08	LOBBY	17	DET CDR OFFICE		
09	EXIT TUNNEL	18	NLOGLO OFFICE		



PLAN



ELEVATION

SCOPE OF WORKS

1. FLOOR FINISHES
2. SUSPENDED CEILINGS
3. PAINTING
4. WET AREAS
5. A/C TO ALL AREAS EXCEPT TS CORE
6. POWER AND LIGHTING TO MOST AREAS
7. FF&E