



**RAAF BASE WILLIAMTOWN REDEVELOPMENT
STAGE 1 AND
FACILITIES FOR THE AIRBORNE EARLY WARNING &
CONTROL AIRCRAFT**

WILLIAMTOWN, NSW

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

**DEPARTMENT OF DEFENCE
CANBERRA, ACT
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TABLE OF CONTENTS

	Page
INTRODUCTION	1
OBJECTIVE	1
BACKGROUND	2
Location	2
History of the Development of RAAF Base Williamtown	2
Role of RAAF Base Williamtown	3
GOVERNING CONSIDERATIONS	5
Master Planning Considerations	5
Civil Aviation Use of the Airfield	6
Defence Policy	6
THE REQUIREMENTS	7
No 2 Squadron AEW&C Facilities	8
AEW&C Support Centre	10
Aircraft Refuelling	11
Aircraft Pavements	13
Airfield Lighting	14
Ordnance Loading Complex	15
Student and Transit Accommodation	16
Sewage Treatment Works	18
Power Reticulation	19
Other Engineering Services	21
DESIGN CONSIDERATIONS	22
Design Standards	22
Design Philosophy	23
Philosophy Adopted for the Design of the Fire Protection System	23
Philosophy Adopted for Energy Management and Lighting	24
Philosophy Adopted for Precautions against Legionella	25

Design Features	25
Acoustics	26
ECONOMIC, ENVIRONMENTAL AND SOCIAL IMPACTS	26
Cost of Works	26
Construction Workforce	26
Timings	27
Environmental Implications	27
Heritage Implications	27
Establishment Population	27
CONSULTATION WITH EXTERNAL AUTHORITIES	28
DELIVERY MECHANISM	29
OTHER RELATED DEFENCE WORKS	29
FUTURE WORKS AT RAAF BASE WILLIAMTOWN	30

ANNEXES

- A. RAAF BASE WILLIAMTOWN LOCATION PLAN
- B. RAAF BASE WILLIAMTOWN EXISTING BASE LAYOUT
- C. CONCEPT SKETCH PLANS FOR STAGE 1 REDEVELOPMENT AND AEW&C WORKS
 - C-1. Proposed Works
 - C-2. No 2 Squadron Headquarters Concept
 - C-3. AEW&C Aircraft Maintenance Facility Concept
 - C-4. AEW&C Support Centre Concept
 - C-5. Proposed Pavement Works
 - C-6. Student Accommodation Concept
 - C-7. Central Emergency Power Station Concept

INTRODUCTION

1. In April 1999 the Government announced that the Airborne Early Warning and Control (AEW&C) aircraft fleet would be home based at RAAF Base Williamtown in New South Wales, with a detachment operating from a Forward Operating Base at RAAF Base Tindal in the Northern Territory. No 2 Squadron was reformed in January 2000 to operate the new capability. The Headquarters No 2 Squadron is presently being raised in Canberra to assist in the acquisition effort, and will redeploy to RAAF Base Williamtown in January 2004 to prepare for operation of the new fleet.

2. In December 2000 a contract was signed with the Boeing Company for the supply and associated support of four AEW&C aircraft under the \$3.4b Defence Acquisition Project Air 5077 (referred to as Project Wedgetail), using the Boeing 737-700 aircraft as the platform. The contract included the option for the purchase of up to an additional three aircraft at a later date. Current planning is to have the first two aircraft on location at RAAF Base Williamtown in 2006, and in-service capability established by 2007.

3. Redevelopment of facilities is also intended at RAAF Base Williamtown, to take into account the requirement to redress present infrastructure and accommodation inadequacies, and to enhance the overall effectiveness of a base that is a key Defence asset. To put into place the underlying infrastructure required for the AEW&C arrival, Base redevelopment will commence to coincide with the AEW&C delivery requirements.

OBJECTIVE

4. The objective of this proposal is to provide a range of new and redeveloped facilities and infrastructure necessary to support the introduction into service of the Airborne Early Warning and Control (AEW&C) capability to be based at RAAF Base Williamtown, NSW. Works include office, training and domestic accommodation; industrial facilities for aircraft maintenance; aircraft pavements; explosive ordnance loading facilities; and upgrade of engineering services.

BACKGROUND

Location

5. RAAF Base Williamtown is located within the Port Stephens Shire, approximately 20 kilometres north of Newcastle and approximately 16 kilometres by road to the east of Raymond Terrace. Medowie, some nine kilometres north of the Base is a developing town, and many married quarters associated with the Base are located there. Medowie Road runs along the eastern perimeter of the Base and is linked to the Nelson Bay and Cabbage Tree Roads that provide the major access to the Base. The Base lies in the Tomago Sandbed area that constitutes a major augmentation to the water supply catchment for Newcastle. The Base occupies an area of approximately 800 hectares, not including its associated properties. A Base Location Plan is provided at Annex A. The Existing Base Layout is shown at Annex B.

History of the Development of RAAF Base Williamtown

6. RAAF Base Williamtown was established as a base for fighter aircraft, commencing operations on 15 February 1941. After World War II Williamtown became the home base for the RAAF's Tactical Fighter Force in Australia. A consideration at that time was the air defence of the Newcastle - Sydney - Wollongong area. In the post-war years, the fighter squadrons were gradually re-equipped with a variety of jet fighter aircraft and by 1960 were operating the Australian built Avon Sabre aircraft. Some improvements took place in that period, including reconstruction of the main runway and taxiway in the late 1950s.

7. When the RAAF introduced the Mirage fighter aircraft in the mid-1960s, some major works were undertaken on the Base but many World War II structures, including aircraft hangars, continued to be used. Also in the mid-1960s, No 1 Control & Reporting Unit was moved from Sydney to Williamtown, where it re-formed as No 3 Control & Reporting Unit. Facilities to enable No 3 Control & Reporting Unit to undertake its operational and training roles were developed progressively at Duckhole Hill, 2 km north of the Base, into the 1970s. Unit infrastructure was based on the limited function of providing air defence control and monitoring in the Sydney/Newcastle area.

8. In October 1981 the Government announced the decision to purchase F/A-18 aircraft to replace the RAAF's Mirage fighter aircraft. Major redevelopment of the Base was required to accommodate those aircraft and to provide for technical and other support facilities for their operation. The works for the F/A-18 introduction were the subject of the PWC's Third Report of 1983 and an Environmental Impact Statement. Many base support activities were housed in permanent buildings by converting redundant Mirage support facilities for new uses, with most wooden structures dating from the war years able to be demolished.

9. In 1989, the role of the No 2 Operational Conversion Unit was changed with the Unit being split and No 76 (Fighter) Squadron formed to assume some of its roles. No 2 Operational Conversion Unit remained the F/A-18 fighter conversion unit, whereas No 76 Squadron took over the role of a 'lead-in' fighter squadron where pilots would gain operational experience on Macchi aircraft before moving on to fighter or strike squadrons. No 76 Squadron occupied some temporary facilities before new headquarters facilities were provided. The Squadron has recently completed the replacement of its Macchi aircraft with the British Aerospace Hawk 127.

10. The Force Structure Review of the early 1990s saw the raising of No 302 Air Base Wing from the former Base Squadron Williamtown. The PWC's Seventh Report of 1992 'Defence Logistics Redevelopment Project - Air Force Aspects' reported on the works associated with additional supply responsibilities placed on No 302 Air Base Wing. In 2000 the Eastern Region Operations Centre (EASTROC) was commissioned at RAAF Base Williamtown. This facility was the subject of the PWC's Fourth Report of 1998 'Development of the Eastern Region Operations Centre at RAAF Base Williamtown, NSW'.

Role of RAAF Base Williamtown

11. RAAF Base Williamtown is currently the home of the Air Combat Group incorporating two operational squadrons and one training squadron of F/A-18 aircraft, a Flight of Forward Air Control aircraft and one squadron of Hawk 127 trainer aircraft. The Base is also the home of the Surveillance and Control Group incorporating an operational Control and Reporting Unit and the Eastern Region Operations Centre. RAAF Base

Williamtown is also the home of the Australian Defence Force Warfare Centre, as well as a variety of other units. The Base contains one of Defence's major airfields and is manned by about 2500 Service and civilian personnel.

12. The units currently based at Williamtown are listed below:

- **Headquarters Australian Theatre (Located in Sydney)**

Australian Defence Force Warfare Centre

- **Headquarters Air Command (Located at RAAF Base Glenbrook)**

Headquarters Air Combat Group

- No 81 Wing, incorporating:

Headquarters No 81 Wing

No 3 Squadron (F/A18 Hornet)

No 77 Squadron (F/A18 Hornet)

- No 82 Wing (Headquarters located at RAAF Base Amberley)

Forward Air Control Development Unit

- No 78 Wing, incorporating:

Headquarters No 78 Wing

No 2 Operational Conversion Unit (F/A18 Hornet)

No 76 Squadron (Hawk 127)

No 78 Wing Field Training Flight

Headquarters Surveillance and Control Group

- No 41 Wing, incorporating:

Headquarters No 41 Wing

No 3 Control and Reporting Unit

Surveillance and Control Training Unit

- No 44 Wing, incorporating:

Headquarters No 44 Wing

Air Traffic Control Flight Williamtown

Combat Support Group (Headquarters located at RAAF Base Amberley)

- No 381 Expeditionary Combat Support Squadron

- Combat Support Unit Williamtown
- No 2 Air Transportable Health Squadron
- No 26 (City of Newcastle) Squadron
- **Defence Materiel Organisation**
 - Tactical Fighter Systems Program Office
 - Ground Telecommunications Equipment Systems Program Office

GOVERNING CONSIDERATIONS

Master Planning Considerations

13. The current Master Plan provides a structure that geographically groups facilities and supporting infrastructure into four main areas:

- The operational airfield area, comprising the runway and associated aircraft movement surfaces and parking aprons, and the flying squadron headquarters, flightline and maintenance facilities.
- The main Base area, located in the north-east corner of the Base and incorporating support facilities and functional areas including, administration, accommodation and operational support.
- The operational support facilities, located to the north of the runway and to the west of the main Base area, including explosive ordnance preparation and storage facilities, Air Traffic Control, fire services and the engine run-up facility.
- The Duckhole Hill precinct, located to the north-west of the Runway 12 threshold and incorporating control and reporting radar and communication facilities.

14. The proposed works conform to the current Zone and Master Plans for the development of facilities, effective May 2002.

Civil Aviation Use of the Airfield

15. Williamtown has been used as a civil airport on a regular basis since the early post-war period. The civil apron and terminal area are located near the southern end of the runway, with access from Williamtown Drive. In 1973 the Government authorised construction of a new terminal building and the apron pavements were upgraded to cater for expanded services. In 1993 the Federal Government sold the facilities to the Newcastle City and Port Stephens Shire Councils who formed the corporation, Newcastle Airport Ltd, to operate the facility on their behalf. In 2000 Newcastle Airport Ltd undertook an apron extension and completed further terminal upgrade works and construction of additional car parking spaces. Newcastle Airport Ltd remains responsible for the development and management of civil aviation facilities at Williamtown.

16. Boundaries of the civil area have been rationalised to clearly delineate the 23 hectare lease area. The runways, aircraft navigation aids and rescue and fire fighting services remain under the control of the RAAF. Siting approval for any new civilian aviation facilities requires Defence concurrence.

17. In 2000 British Aerospace completed its construction of a hangar and workshops adjacent the civil aviation area, on property leased to Newcastle Airport Ltd, for the assembly of the RAAF Hawk 127 aircraft. This facility continues to be operated by British Aerospace to provide through-life support for that aircraft.

Defence Policy

18. *Australia's Strategic Policy 1997* described the future direction of the Australian Defence planning into the 21st Century. It foreshadowed the requirement to further develop the ability for surveillance of Australia's air and maritime approaches, and to command those approaches. Part of the required capability was bedded in the foreshadowed acquisition of an AEW&C capability. As a component of the knowledge edge, it was accorded the highest priority in force structure development.

19. The Defence White Paper, *Defence 2000 – Our Future Defence Force*, confirmed the requirement. Its initiatives included the acquisition of an AEW&C system to form the cornerstone of Australia's air and maritime surveillance, and early warning and detection

capability. The White Paper identifies the AEW&C system as a strategically important capability:

“8.46 ... we will proceed now to acquire four Airborne Early Warning and Control (AEW&C) aircraft, with the possibility of acquiring a further three aircraft later in the decade. The AEW&C will make a major contribution to many aspects of air combat capability, significantly multiplying the combat power of the upgraded F/A-18 fleet. They will improve command and control, improve capacity for air defence of surface ships, and enhance our strike capability....” (Defence 2000 – Our Future Defence Force)

20. The first of the AEW&C aircraft are due to arrive at RAAF Base Williamtown in 2006, with an operational capability achieved by 2007. To prepare for arrival of the aircraft, No 2 Squadron will move from Canberra to RAAF Base Williamtown in January 2004.

21. As observed in the Defence Reform Program, it is intended that RAAF Base Williamtown will be retained. This being the case, there is the requirement that retained assets continue to be fully utilised, and this proposal will promote increased effective use of RAAF Base Williamtown.

THE REQUIREMENTS

22. The RAAF Base Williamtown Redevelopment Stage 1 and AEW&C Project is intended to provide facilities and infrastructure services in support of the AEW&C capability and to establish the basis for subsequent redevelopment.

23. Many of the facilities on the Base require re-siting. Some are located in high noise zones and others are positioned in functionally inefficient locations. Many of the facilities and engineering services are near the end of their economic life and require either replacement or substantial upgrade.

24. The proposed redevelopment at RAAF Base Williamtown provides many advantages in addressing the facilities and infrastructure deficiencies in a consolidated and planned

approach over the upgrade or replacement of individual facilities on an ad hoc basis. Redevelopment provides economies of scale and efficiencies, as well as the opportunity to rationalise Base facilities and infrastructure in accordance with the endorsed Master Plan.

25. The introduction of the AEW&C capability to RAAF Base Williamtown will see an increase in Base working population of approximately 350 personnel, however, existing facilities on the base are already fully utilised. Aircraft apron areas are also fully utilised and insufficient capacity exists for home base parking of the AEW&C aircraft. Accordingly, the proposal is focused on providing facilities and infrastructure to support the establishment and use of the AEW&C capability.

26. The specific requirements for each element of the RAAF Base Williamtown Redevelopment Stage 1 and AEW&C Project are discussed below, and are presented at Annex C.

NO 2 SQUADRON AEW&C FACILITIES

Function

27. No 2 Squadron will operate the Boeing 737 AEW&C aircraft from RAAF Base Williamtown. It will undertake peacetime training to meet its operational role of providing a command and control function, and to act as the cornerstone of Australia's air surveillance, early warning and detection capability.

Need

28. No 2 Squadron was reformed in January 2000 and the Headquarters is presently based in Canberra assisting the AEW&C acquisition. It plans to redeploy to RAAF Base Williamtown in January 2004 with the Squadron fully assembled at Williamtown by the time of delivery of the first aircraft in 2006. As the AEW&C aircraft acquisition presents a new capability for the ADF, a complete range of facilities are required, including:

- Squadron Headquarters,
- Hangar and associated facilities to accommodate two AEW&C aircraft, and
- Aircraft apron area to accommodate four AEW&C aircraft.

Options

29. **Option 1 – Refurbish Existing Facilities.** The facilities at RAAF Base Williamtown are already fully utilised by existing resident units and supporting activities. There are no suitable surplus facilities or aircraft parking aprons that can be utilised to meet the No 2 Squadron requirements.

30. **Option 2 – New Facilities.** The AEW&C system requires purpose built facilities to ensure the efficient and effective operation of the capability. There is sufficient reserved real estate available at RAAF Base Williamtown for the construction of such facilities.

31. **Preferred Option.** Option 2 is recommended. The construction of new facilities will provide a purpose designed solution to address the operational requirements of No 2 Squadron.

Proposal

32. The following new facilities are proposed for No 2 Squadron:

- Office accommodation;
- Training accommodation;
- Aircraft maintenance facilities, incorporating space for operational maintenance and deeper maintenance;
- Aircraft parking apron and associated taxiways for four AEW&C aircraft; and
- Security measures and engineering services.

33. It is intended to site the buildings to enhance the functional relationship within the AEW&C precinct as shown at Annex C-1. Indicative layouts of key buildings are enclosed at Annexes C-2 and C-3.

AEW&C SUPPORT CENTRE

Function

34. The AEW&C Support Centre will house the training simulators and personnel required to support the AEW&C aircraft. The facility will accommodate service, civilian and contractor personnel involved in providing instruction and the maintenance of the AEW&C capability. The AEW&C Support Centre will:

- Reduce the training load placed on the aircraft, thereby extending aircraft fatigue life, reducing operating costs and improving system availability;
- Provide a site to evaluate and enhance the capabilities and support the growth of the AEW&C System in response to changing battlespace environments and technology environments over its Life-Of-Type;
- Provide effective training for AEW&C Flight Crews and Mission Crews in their conduct of the full range of AEW&C operations; and
- Support the project objectives of establishing an in-country capability to design, test and evaluate major AEW&C system upgrades.

Need

35. The AEW&C Support Centre is an integral part of the AEW&C system. As there is no facility that currently addresses this requirement, a new Support Centre is required.

Options

36. **Option 1 – Refurbish Existing Facilities.** The facilities at RAAF Base Williamtown are already fully utilised by existing resident units and supporting activities. There are no suitable surplus facilities that can be utilised to meet the AEW&C Support Centre requirements.

37. **Option 2 – New Facilities.** The AEW&C system is a new capability for the ADF. With the capability comes the requirement for purpose built facilities to ensure the efficient and effective operation of the capability. There is sufficient reserved real estate available at RAAF Base Williamtown for the construction of such facilities.

38. **Preferred Option.** Option 2 is recommended. The construction of new facilities will provide a purpose designed solution to address the operational requirements of the AEW&C system, with the requirement to be met by Boeing through an integrated equipment turnkey contract.

Proposal

39. The new facility proposed for the AEW&C Support Centre will provide office and training accommodation, and provide for:

- An operational flight trainer and mission simulator, and
- A facility for hardware and software development.

40. It is intended to site the building to enhance the functional relationship within the AEW&C precinct. The indicative layout of the AEW&C Support Centre is enclosed at Annex C-4.

AIRCRAFT REFUELLING

Function

41. Fuel farm infrastructure provides for receipt of jet fuel from external contract tankers, fuel quality control, bulk storage, and dispensing of fuel for aircraft.

Need

42. There are currently two fuel farms on the Base, being Fuel Farms 3 and 3A. Fuel Farm 3 is the primary storage facility providing offloading and dispensing infrastructure for Base operations. Additional storage is provided at Fuel Farm 3A, which is connected to Fuel Farm 3 via an above ground pipeline.

43. The fuel farm equipment varies from 13 to 20 years old. Much of the fuel farm infrastructure is in poor condition thereby giving rise to potential health, safety and environmental problems. Neither fuel farm is in the preferred master plan location.

Options

44. **Option 1 – Do Nothing.** The option to continue use of the existing facilities may give rise to environmental, health and safety risks. The fuel farms are inappropriately sited and will restrict further redevelopment works in the master planned domestic precinct. This option is not recommended.

45. **Option 2 – Upgrade Existing Facilities.** Upgrading the existing facilities will minimise the potential for health, safety and environmental risks, however, it does not address the Master Planning issues.

46. **Option 3 - Replace Existing Facilities.** Building new fuel farms in the Master Plan locations will release the existing sites for future Base redevelopment and will permit health, safety and environmental issues to be addressed. This option is the best solution, but is also the most expensive.

47. **Preferred Option.** A combination of Options 2 and 3 is recommended as this represents the best value for available funding. Fuel Farm 3A is to be replaced with a new facility in a master planned location. A limited refurbishment of Fuel Farm 3 is proposed to confirm compliance with regulatory requirements.

Proposal

48. Two fuel farms are proposed to be retained on RAAF Base Williamtown. This project will address health, safety and environmental concerns, and commence the staged relocation of these facilities to more appropriate sites to better service the aircraft fleet and comply with the Base Master Plan.

49. Fuel Farm 3 will be refurbished. Fuel Farm 3A will be decommissioned and demolished. The site will be remediated to permit commencement of the relocation of the Base domestic precinct, as designated in the Master Plan. This fuel farm will be replaced by a new facility to be constructed on a site adjacent to the proposed AEW&C precinct as shown at Annex C-1. It is intended that this fuel farm will be connected to the AEW&C apron via an underground hydrant refuelling system to promote more efficient aircraft refuelling operations.

AIRCRAFT PAVEMENTS

Function

50. Aircraft pavements comprise the runway, taxiways and associated aprons and hardstands required to support aircraft operations from RAAF Base Williamtown.

Need

51. The majority of taxiways at RAAF Base Williamtown have been constructed to support fighter aircraft operations and larger aircraft are restricted to operating on the runway and on some taxiways. With the introduction of the Boeing 737 AEW&C aircraft, there will be a requirement to provide shoulders on a number of the taxiways to ensure this aircraft can operate with minimal risk of damage to engines caused by foreign object ingestion.

52. The runway is of sufficient strength to support 747 aircraft operations, however, the runway surface is now 12 years old and the taxiway surfaces are approximately 15 years old. In the absence of abnormal load-related damage, asphalt pavements are typically resurfaced after approximately 15 years to combat the effects of ageing.

Options

53. **Option 1 – Do Nothing.** Under this option, the surface bitumen will embrittle and erode more rapidly. This will lead to cracking and loss of aggregate from the pavement surface. Surface rutting will become more pronounced. The runway and taxiways will deteriorate rapidly and maintenance requirements will become more frequent and less effective. Foreign object damage to aircraft is likely to increase.

54. **Option 2 - Overlay the Runway and Provide Shoulders to Selected Taxiways.** Overlaying the runway and taxiways will rectify the problems of ageing. Adding shoulders to specific taxiways will permit efficient and safe AEW&C aircraft movement on the airfield.

55. **Preferred Option.** Option 2 is recommended as the pavement has reached the time when an overlay is necessary. The addition of shoulders to selected taxiways will

ensure safe and efficient airfield operations. It is proposed that the overlay and taxiway widening is undertaken now.

Proposal

56. It is proposed that the runway and servicing taxiways are overlaid and specific taxiways widened to meet the requirements of AEW&C aircraft operations, as shown at Annex C-5. Given the time frame of the proposed AEW&C aircraft taxiway and apron works and the pavement overlay, it is considered appropriate that all the pavement works be undertaken concurrently.

AIRFIELD LIGHTING

Function

57. Airfield lighting systems are provided to assist aircraft pilots to maintain the correct alignment on final approach or take-off in inclement weather or at night. Airfield lighting also assists safe aircraft movement on runways and taxiways around an airfield.

Need

58. The runway, approach and taxiway lighting systems at the Base and their control systems are more than 30 years old and are considered to have reached the end of their economic life. The light fittings are ageing and are presenting increasing difficulties for acquisition and maintenance.

59. The primary cable system was installed in the 1960s. It is not expected to survive operation with modern lighting systems which are to be installed to comply with current standards.

Options

60. Given the requirement to meet International and National standards and the obsolete nature of the existing equipment, there is no option other than to replace the current deficient system.

Proposal

61. The opportunity exists to upgrade the airfield lighting system concurrent with the runway and taxiway upgrade works.

ORDNANCE LOADING COMPLEX

Function

62. Operational training involves the delivery of live and practice ordnance onto a target. Military airfields have designated points located by application of prescribed standards, where explosive ordnance loading and unloading activities occur. Explosive Ordnance Aprons are designated areas where bulk ordnance is loaded or unloaded from transport aircraft, and Ordnance Loading Aprons are designated areas where mission specific ordnance is loaded onto or unloaded from fighter/strike aircraft.

Need

63. RAAF Base Williamtown has no suitable Explosive Ordnance Aprons or Ordnance Loading Aprons. Existing aprons were built to standards applicable at the time, but which have since been superceded. Ordnance is currently loaded/unloaded from transport aircraft at several other locations, such as the ends of the runway or on various taxiways. This procedure inhibits the use of the runway and taxiways by other military and civilian aircraft while ordnance loading operations are taking place.

64. To meet the operational training needs at RAAF Base Williamtown a designated ordnance loading complex is needed.

Options

65. During preparation of the Master Plan, such issues as explosive ordnance safety distances, proximity to other storage and preparation areas, and operational requirements were considered when determining the most appropriate location for this facility. A governing consideration was the requirement to allow concurrent civil aircraft use of the main runway and minimise disruption of the parallel taxiway during ordnance loading operations.

66. In order to avoid disruption to operations, an ordnance apron constructed to current standards is required. Additionally, a minimum of three loading aprons is required to meet various training requirements at the Base. The Master Plan identifies a site to the north-west of the runway as a suitable area.

67. **Preferred Option.** The recommended option is to provide one Explosive Ordnance Apron and three Ordnance Loading Aprons on the master planned site and reserve space for subsequent expansion.

Proposal

68. The proposed complex, as depicted on the plan at Annex C-1, would incorporate:

- three dispersed Ordnance Loading Aprons, sized to accommodate fighter/strike aircraft;
- one Explosive Ordnance Apron, sized to accommodate C130 aircraft;
- provision for the possible future construction of aircraft shelters on each aircraft apron;
- earth traverses and gun misfire barriers;
- aircraft access taxiways inter-linking the aprons and linking the complex to the main aircraft pavements; and
- associated vehicle access roadways and engineering services.

STUDENT AND TRANSIT ACCOMMODATION

Function

69. RAAF Base Williamtown hosts various Defence activities through most of the year. A significant demand is placed on student/transit accommodation for Defence personnel, who may be located at the Base for extended periods attending courses or may be short term transit personnel.

Need

70. All accommodation buildings on the Base are located within high aircraft noise zones and none meet current Defence accommodation standards.

71. RAAF Base Williamtown is responsible for conducting a large number of courses each year which generally require the course students to 'live-in' for the duration of the course. The duration of these courses range from one week to several months. About 50 bedspaces are required to meet this student load and the transiting personnel requirement.

Options

72. **Option 1 – Refurbishment of Existing Accommodation.** This option involves the refurbishment of the existing older accommodation blocks. The difficulty in accommodating current standards into these buildings, coupled with the noise issues does not make this a viable option. This option is not recommended.

73. **Option 2 – Utilise Off-Base Accommodation.** This option would involve use of rented accommodation in the civilian community. This option would involve significant transport support and is inappropriate for contingency purposes. This option is not recommended for most demands, though it will always remain a creditable option for unforeseen surge needs.

74. **Option 3 – Construct new Student/Transit Accommodation.** Option 3 provides for construction of student/transit accommodation in the northern domestic area, to provide for about 50 bedspaces. The area is in a suitable noise zone and is in accordance with the endorsed Master Plan.

75. **Preferred Option.** Option 3 is recommended. New construction will provide a cost effective solution that will meet the needs of the Base. This will also permit commencement of the planned new Base domestic precinct, thus addressing noise issues associated with the current location of existing accommodation.

Proposal

76. The proposed facilities to meet the higher use student/transit accommodation requirements for the Base comprise the retention of the existing residential accommodation

area, and the construction of about 50 additional bedspaces. Each new student room will require sufficient amenity to be suitable for extended student use. The indicative facility layout is described at Annex C-6.

SEWAGE TREATMENT WORKS

Function

77. The sewerage system serves the fundamental functions of removal and safe treatment of waste products.

Need

78. The RAAF Base Williamtown sewerage reticulation network is connected to a treatment plant located in the southern sector of the Base, adjacent to the civil aviation terminal. The existing treatment plant structures, mechanical and electrical equipment are ageing and will require increased maintenance as they approach the end of their design life.

Options

79. **Option 1 – On-site Treatment.** This option proposes the on-site treatment of sewage and discharge of treated effluent to the Hunter River or ocean. This option involves the construction of a highly technical treatment facility with resultant high capital and through life costs. The option carries high environmental risk related to possible discharge of untreated effluent, and resultant potential contamination of the Tomago Aquifer.

80. **Option 2 - Transfer to Hunter Water Corporation Treatment Facilities.** This option proposes collection of sewage from the Base and transfer of this via a sewage main to the Hunter Water Corporation treatment facility at Raymond Terrace. This option, developed in consultation with the Hunter Water Corporation, will require replacement of the existing plant with a smaller sewage pump station, thus removing the environmental hazards associated with location of a treatment plant adjacent to domestic airport facilities.

81. **Preferred Option.** Option 2 is recommended. This option provides the most economical solution to the treatment of waste from the Base, and carries the least

environmental risk. It has the added benefit of removing the requirement of the Commonwealth to manage a sewage treatment facility; a non-core function for Defence.

Proposal

82. The proposed method of sewage treatment for RAAF Base Williamtown is transfer of raw sewage to the Hunter Water Corporation treatment facility at Raymond Terrace for treatment and disposal. This proposal involves headworks and the construction of a pump station and rising main.

POWER RETICULATION

Function

83. The purpose of the Base electrical reticulation and emergency power system is to provide a reliable source of electrical power. Mains power is normally supplied from more than one source to provide diversity and improve reliability. Power is distributed to Base facilities via ring mains, which provide further flexibility by having two supply cables available at key operational facilities.

84. Essential facilities are provided with local emergency generator sets that start automatically when mains power fails. Some critical facilities also have uninterrupted power supplies to ensure that there is no disruption while the local generator set is starting. The generators in the central emergency power station then take over from the local sets, handling all essential loads. Switching arrangements ensure the disconnection of all non-essential loads until mains power is restored.

Need

85. The electrical power system at RAAF Base Williamtown comprises:

- two incoming feeders connected to a single Intake Switching Station from which power is distributed via a network of substations and underground high and low voltage cabling, and
- a Central Emergency Power Station and local emergency generator sets.

86. The existing reticulation system has the deficiencies outlined below:

- Only one of the incoming feeders has sufficient capacity to supply the present total Base load. The second feeder has significantly less capacity than the present total Base load and could only supply the Base during periods of extremely low demand. Furthermore, both feeders are inadequate for the proposed future upgrades for the Base. If the primary incoming feeder fails, or is undergoing maintenance, the operational power demand of the Base cannot be met.
- There is insufficient emergency power to meet essential Base operational requirements.
- The power supply to the Base can be disrupted by failure of the single Intake Switching Station.

87. A reliable electrical supply and distribution system providing mains and emergency power is required. Diversity of power sources is an essential feature of a reliable system.

Options

88. **Option 1 – Supply from a New Zone Sub-Station.** A new Zone Sub-Station would be constructed on or near the Base and supply would be provided by two new underground full capacity incoming feeders. One feeder would connect to the Intake Sub-Station and the second would connect to a new Central Emergency Power House. This option presents the opportunity for Defence to gain efficiencies through the purchase of supply at 33KV, rather than the more expensive 11kV currently provided.

89. **Option 2 – Supply from the Existing Williamtown Zone Sub-Station.** A new full capacity feeder would be installed to provide electrical supply to the Base, and will become the primary electrical supply. The existing primary feeder will become the alternative supply feeder, but this will remain incapable of supplying the entire Base load without support from on-site generators.

90. **Preferred Option.** Option 1 is recommended. This option provides two full capacity incoming feeders to the Base, thus providing full redundancy for Base power supply. It also provides the opportunity for Defence to purchase supply at a more economical rate.

Proposal

91. The proposed works include the provision of:
- a new Central Emergency Power Station (shown at Annex C-7) and demolition of the old station,
 - new and upgraded substations to support the proposed new works, and
 - extension of existing ring mains to supply the proposed new facilities.

OTHER ENGINEERING SERVICES

Function

92. The engineering services necessary for the operation of the RAAF Base Williamtown include electrical, water supply, sewerage, stormwater drainage, communications, earthworks and landscaping.

Need

93. The existing engineering services are ageing. Most of the elements are approaching the end of their useful life, though with some limited upgrading and local upgrading required in connection to the proposed facilities, are satisfactory in the short to medium term.

Water Supply

94. The Base is served by a network of water mains, providing water for domestic consumption and fire-fighting. Reticulation pipework breakages have been excessive, leading to high maintenance costs, disruptions to operations, reduced fire fighting capacity, possible water damage to facilities, and the cost of lost water through pipe joint leakages. The project proposes to address these deficiencies during redevelopment effort, and extend the coverage of the water reticulation system to serve the new facilities. Further upgrading of Base water reticulation is proposed for a subsequent redevelopment project.

95. Construction of the AEW&C aprons and hangars will impact on the water supply to the domestic terminal building. It is recommended that the domestic terminal be provided

with a new water supply from a separate connection that could be independent from the RAAF Base Williamtown water supply system, if required, and metered separately.

Stormwater

96. The topography of RAAF Base Williamtown is generally flat with stormwater draining via networks of open drains and stormwater pipes. In most storm events, flooding and ponding occurs at low-lying zones within the Base. The Base is situated over the Tomago Sand Beds and is prone to high water table effects during significant storm events. Due to the low-lying nature of the surrounding area, runoff from the Base can cause downstream flooding and has been an issue of contention in the past.

97. Upgraded and new stormwater infrastructure is required to ensure appropriate runoff quality, mitigate the impact of new development on flood levels within the Base boundary and adjoining properties, and ensure the works do not increase the attractiveness of the area to birds. A stormwater study is currently underway to inform this requirement.

Communications

98. The combined factors of deterioration due to age and demand for communications for new facilities means that the Base communications infrastructure has little or no spare capacity. The project proposes to provide existing and new Base facilities with reliable trunk communications infrastructure that can effectively support telecommunications, fire, security, power monitoring and control and energy management communications.

DESIGN CONSIDERATIONS

Design Standards

99. The standards for planning Australian Defence Force airfields are based on the Australian Defence Force publication 'Joint Services Works and Administration Aerodrome Design Criteria'. As RAAF Base Williamtown is subject to regular civil aviation use, International standards and recommended practices for civil aircraft also apply. These include:

- Convention on International Civil Aviation, Volume 1, Annex 14; and

- Australian Rules and Practices for Aerodromes.

100. The design of new facilities will also conform to the relevant sections of the Building Code of Australia (BCA), Australian Standards, State Regulations and Defence specifications.

Design Philosophy

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

- the provision of cost effective and utilitarian facilities of energy efficient design suitable for the climate conditions, and of a style compatible with the newer facilities at RAAF Base Williamtown;
- adoption where possible of conventional construction techniques and materials, in particular those commonly used by the construction industry in the Newcastle area;
- an awareness during design that changing technology in military simulation, command and control and surveillance systems will require that a flexible configuration exists; and
- utilisation of durable materials that combine long life with minimum maintenance.

Philosophy Adopted for the Design of the Fire Protection System

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

- 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 levels of fire protection specified are above BCA requirements and have been determined by a risk assessment and risk management approach to fire protection.

- Defence will require certification from a suitably qualified certifier, that the design and construction meet the requirements of the BCA, the Defence Manual of Fire Protection Engineering, relevant Codes and Standards and any additional State and Defence requirements.
- Any recommended departures from BCA requirements in relation to the project will be technically assessed by Defence specialist fire protection staff before approval.
- 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 maintained.

Philosophy Adopted for Energy Management and Lighting

103. A key design focus is improved energy management to ensure ecologically sustainable development and reduction of greenhouse gas emissions. 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, with energy efficiency being a key objective. Concept designs will 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.

104. 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. The air-conditioned areas will be controlled by the building management system and include time switches where appropriate to reduce running costs.

Philosophy Adopted for Precautions against Legionella

105. As air cooled air-conditioning systems are proposed, no specific precautions against the Legionella Bacillus are considered necessary.

Design Features

106. The design, structure, servicing and siting of buildings is to ensure that future expansion is possible. Each sub-element of the facility should have the capacity for future expansion. This is of particular importance in sizing and terminating in-ground services. New mechanical plant should have spare capacity, be modular and have a multiple control approach, to ensure flexibility.

107. Maximum flexibility is required for most internal office accommodation facilities. Except where the need for security or noise reduction dictates otherwise, minimum use is to be made of structural internal walls or columns. In general terms, internal walls in office areas are to be of demountable partition or workstation type to facilitate economical rearrangement. Building services are to be compatible with this requirement.

108. This project will require:

- The maximum use of existing infrastructure to minimise capital facilities costs;
- The adoption of conventional construction techniques and materials, commonly used by the construction industry in regional Australia, with due regard given to climatic conditions in the Newcastle area;
- The utilisation of readily available and durable materials that combine long life with minimum maintenance;
- Sympathy with the existing buildings and precinct; and
- Landscaping and the preservation of the visual environment.

109. The building works and services will be fully fitted out, with all communications, light fittings, partitions, floor treatments and furniture. Facilities will incorporate building management systems, metering and other provisions to measure and monitor energy use and to allow regular energy audits.

Acoustics

110. RAAF Base Williamtown is inherently noisy, particularly around the airfield operational areas. In these areas, sound attenuation provided through construction techniques and materials will generally be supplemented by personal aural protection. Sound attenuation is especially important in classrooms and domestic accommodation, and specific levels, as specified within Australian Standards, will be met.

111. Vibration isolation of mechanical plant and equipment is an associated and essential design consideration and the designers and construction contractors will be required to limit vibration levels to comply with the recommended vibration levels as set out in Australian Standards.

ECONOMIC, ENVIRONMENTAL AND SOCIAL IMPACTS

Cost of Works

112. The budget for this project is \$149m. This includes management, design, construction costs, furniture, fittings and equipment together with appropriate allowances for contingency and escalation (but excludes any Goods and Services Tax liability). Of the total cost, about \$19m will be works contracted directly to Boeing, to deliver the AEW&C Support Centre. On-costs likely to be incurred because of the regional location have been factored into the estimates, as have allowances for the particular geology of the region, since these matters will affect drainage works, foundations, in ground services and civil works.

Construction Workforce

113. Over the envisaged construction period of some four years, an average of about 200 personnel will be directly employed on construction activities. In addition, it is anticipated that construction will generate further job opportunities off-site from the prefabrication of components, and the manufacture and distribution of materials.

Timings

114. Subject to Parliamentary approval, the works are planned to be committed in the later half 2002, with construction commencing in 2003. Project completion is planned for late 2006.

Environmental Implications

115. The Commonwealth is committed to improved energy management to ensure ecologically sustainable development and the reduction of greenhouse gas emissions. In compliance with this commitment, energy efficiency is to be a key objective in the design, development and delivery of Defence facilities projects.

116. Under the *Environmental Protection and Biodiversity Conservation Act 1999*, a Defence internal Environmental Certificate of Compliance will be prepared in accordance with Defence Environmental Management Policy. Further environmental studies are in train, with a view to developing appropriate management regimes, and referral action if necessary.

117. RAAF Base Williamtown is managed in accordance with the current Environmental Management Plan. Contractors will be required to produce Environmental Management Procedures for Construction Activities as a contractual obligation, and these procedures will be audited as an element of project management.

Heritage Implications

118. A Cultural and Heritage Assessment was carried out for the base in April 1998. Based on this study, there have been no heritage issues identified. Further investigations are underway to ensure currency of this assessment.

Establishment Population

119. RAAF Base Williamtown population totals about 2500 fulltime personnel. It is expected that the establishment of the AEW&C capability at the Base will result in a net increase in permanent Base population of about 350 personnel. Additionally, there will be

a small increase in the number of Australian Defence Force students and short term visitors associated with the AEW&C capability.

CONSULTATION WITH EXTERNAL AUTHORITIES

120. The following authorities and organisations may be consulted during the development of the project:

- Federal and State Government Representatives for the area,
- Australian Greenhouse Office,
- Australian Heritage Commission,
- Environment Australia,
- NSW Premier's Department,
- NSW Department of Land and Water Conservation,
- NSW Department of State and Regional Development,
- Planning NSW,
- Newcastle City Council,
- Port Stephens Shire Council,
- Defence Housing Authority,
- Australian Gas Light Company Ltd,
- Energy Australia,
- Hunter Water Corporation,
- Newcastle Airport Ltd,
- Williamtown Community Liaison Committee, and
- Grahamstown Storage Reservoir Emergency Management Committee.

DELIVERY MECHANISM

121. The project will be delivered mostly using the Managing Contractor form. This provides the benefit of a large construction firm managing design and construction, while promoting access for local small to medium enterprises through sub-contracting design and construction trade packages. Additionally, since there will be a significant number of individual works being executed over a large area, the Managing Contractor form will permit a high degree of coordination while RAAF Base Williamtown will continue to operate.

122. Selected work elements will be constructed separate from, and leading, the Managing Contractor contract. These include the Headquarters No 2 Squadron and provision of engineering services to the new AEW&C precinct, delivered as a Head Contract for completion by January 2004, to coincide with relocation of the Headquarters. The AEW&C Support Centre will be delivered as a turn-key project by Boeing, under the acquisition contract, in order to integrate with specific early project materiel deliverables.

OTHER RELATED DEFENCE WORKS

123. Facilities at RAAF Base Tindal may be required later for the AEW&C capability. The requirement is yet to be confirmed and will be referred separately.

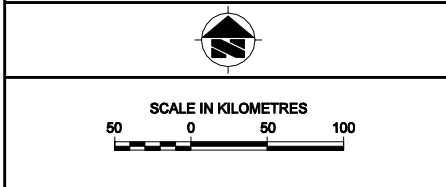
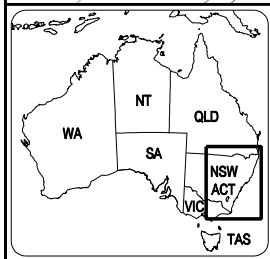
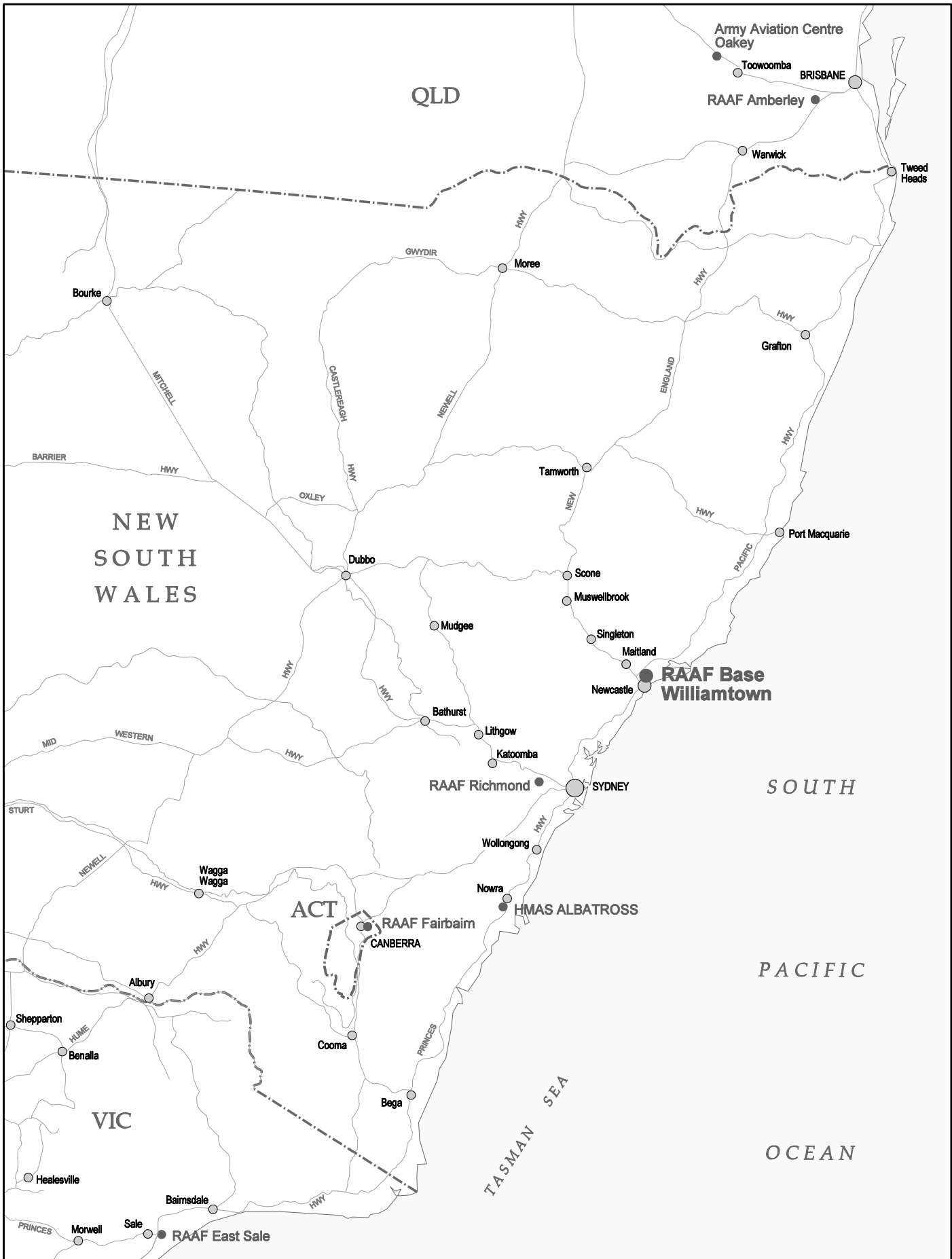
124. The \$18m Eastern Regions Operations Centre project was completed in 2000. Medium works completed recently, or in train, include the following:

- Interim Tactical Fighter Systems Program Office interim facilities, \$2m.
- Duckhole Hill Radar Project, \$1m.
- Lead In Fighter Project - Extension to Hangar, \$1m.
- Defence Information Systems Group Working Accommodation Project, \$1.4m.
- Weapon Training Simulation System facility, \$1m.

FUTURE WORKS AT RAAF BASE WILLIAMTOWN

125. Further redevelopment at RAAF Base Williamtown is envisaged. The nature of works proposed is intended to further redress infrastructure and building inadequacies, and finalise the implementation of the Master Plan. These works may include the following:

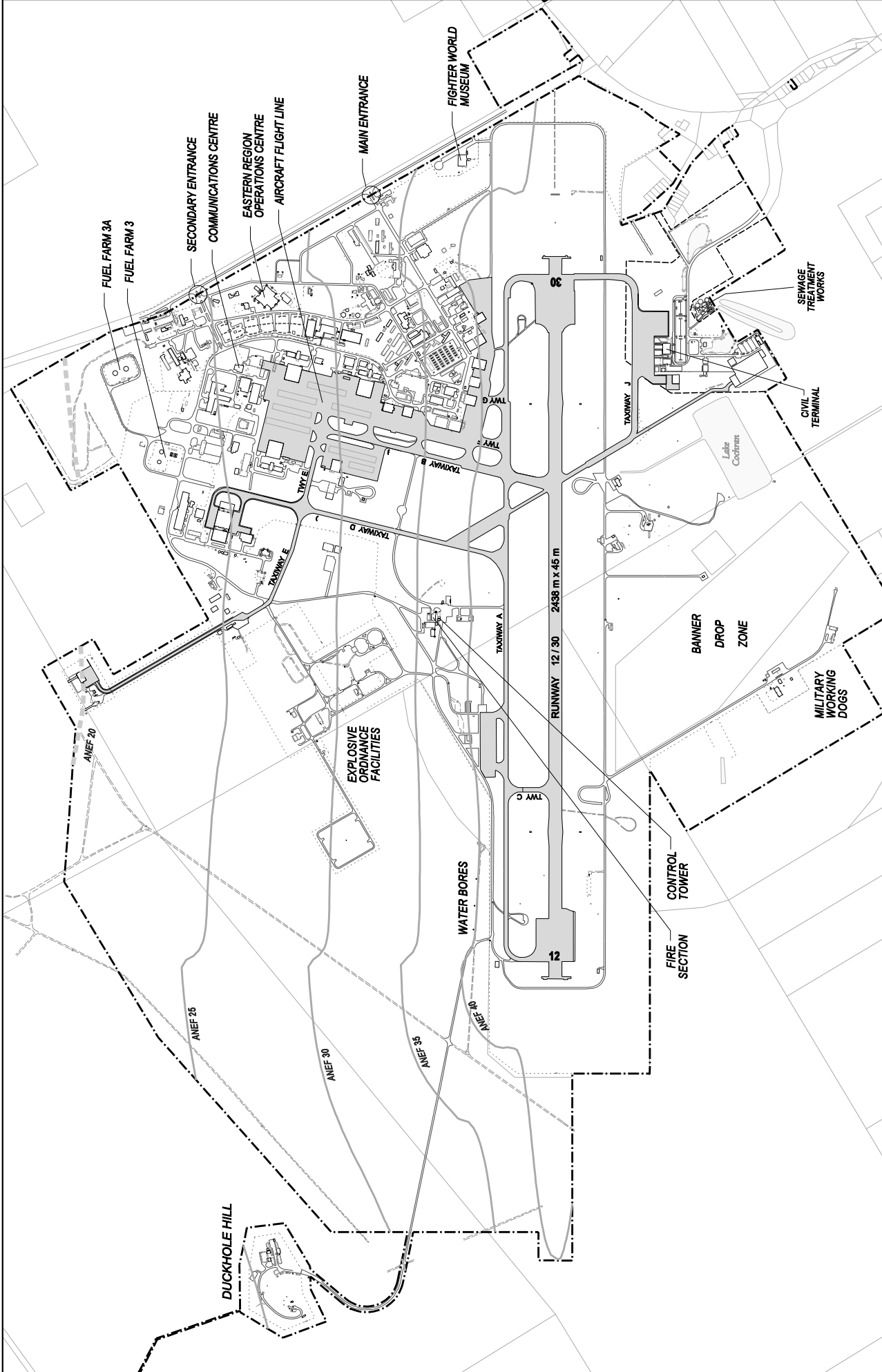
- Relocate/replace domestic and working accommodation to a quieter noise area.
- Replace the air movements facility.
- Extend and upgrade aircraft pavements.
- Replace the child care facility.
- Provide an aircraft wash facility.
- Provide permanent Tactical Fighter Systems Program Office facilities.
- Extend existing Ground Telecommunications Equipment Systems Program Office facilities.
- Enhance Base security infrastructure.




**RAAF BASE WILLIAMTOWN
STAGE 1 REDEVELOPMENT AND AEW&C PROJECT**

LOCATION PLAN

Annex A



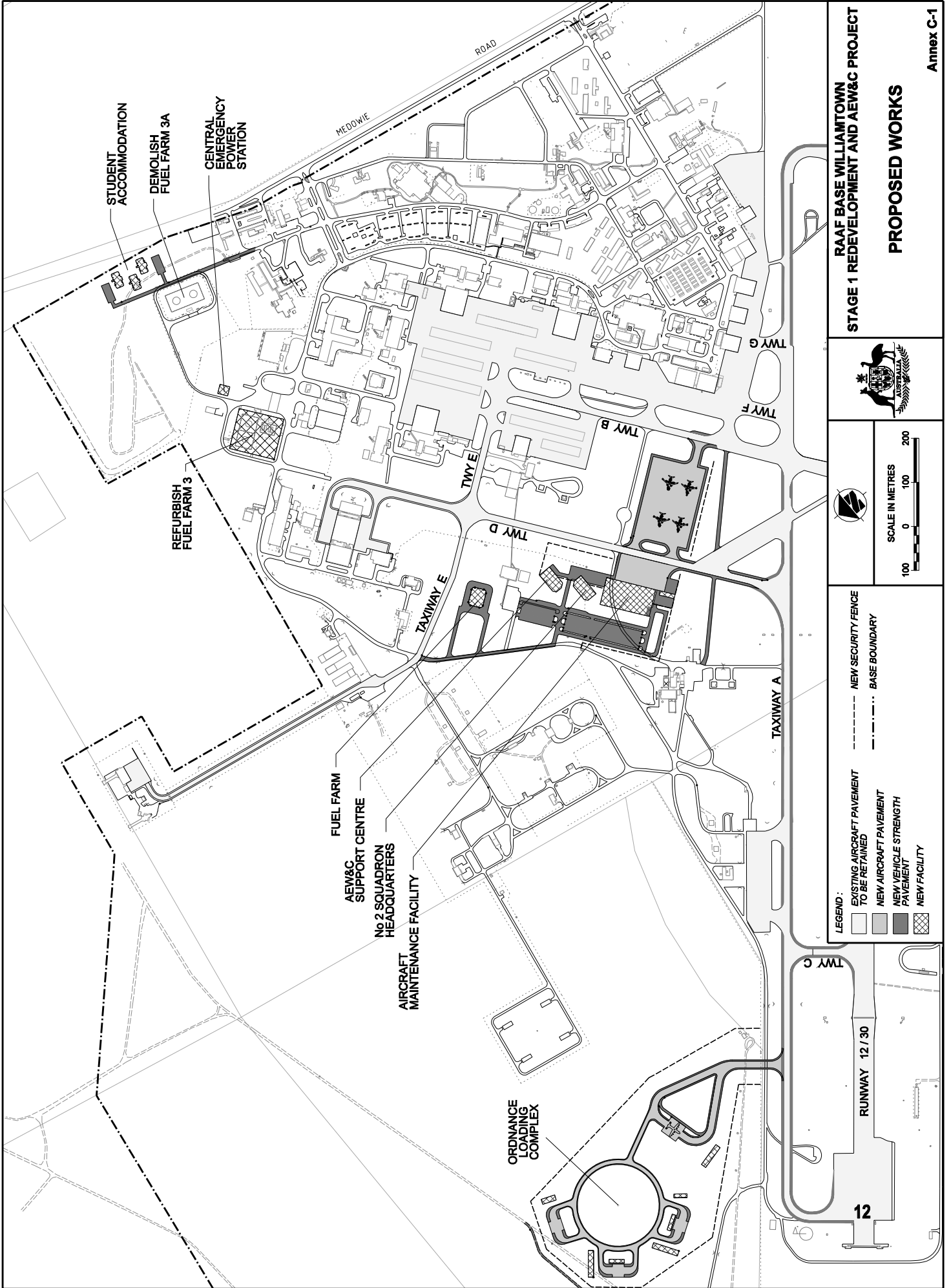
**RAAF BASE WILLIAMTOWN
STAGE 1 REDEVELOPMENT AND AEW&C PROJECT
EXISTING BASE LAYOUT**

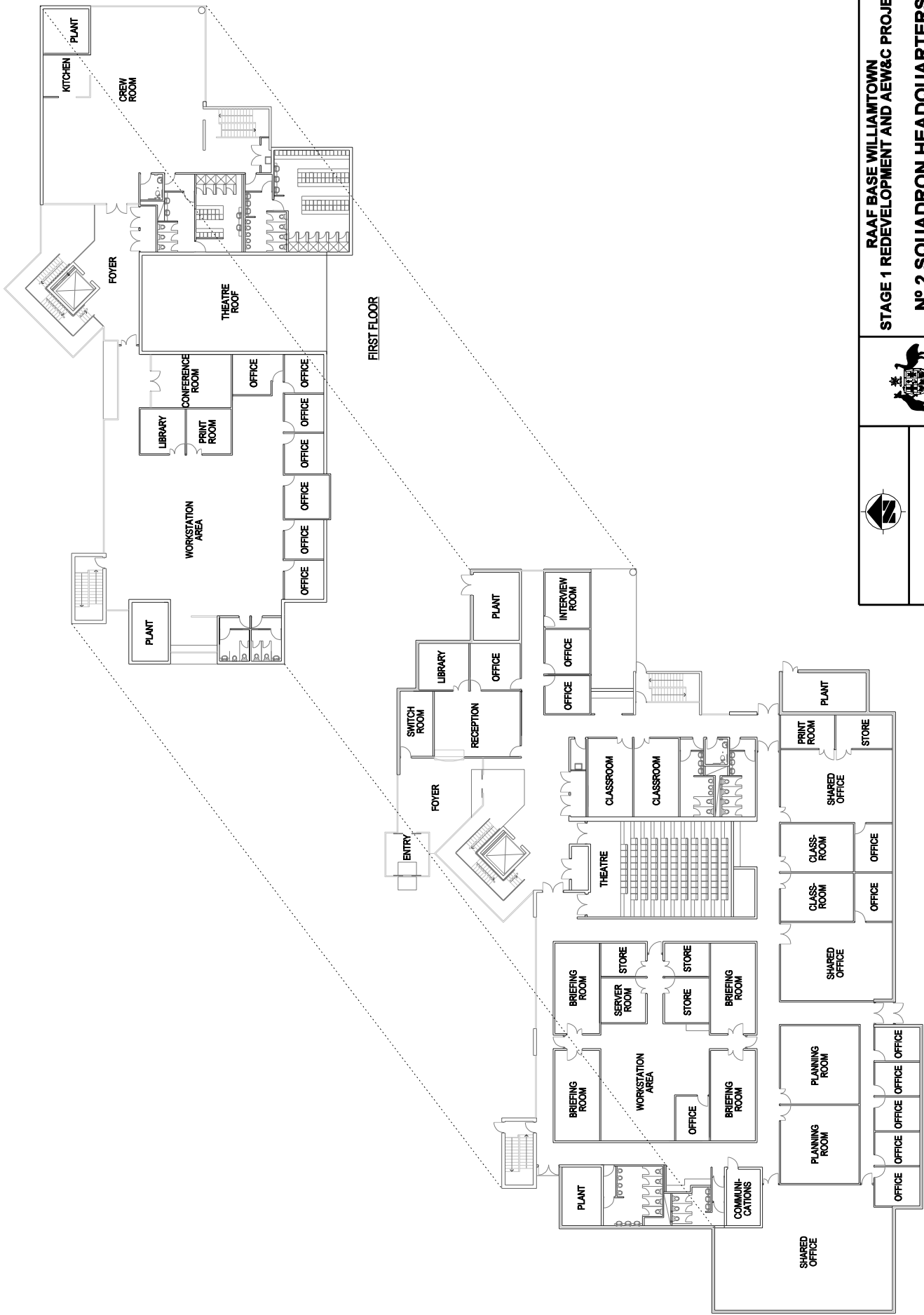



SCALE IN METRES



Annex B





SCALE IN METRES
 2 0 2 4 6 8



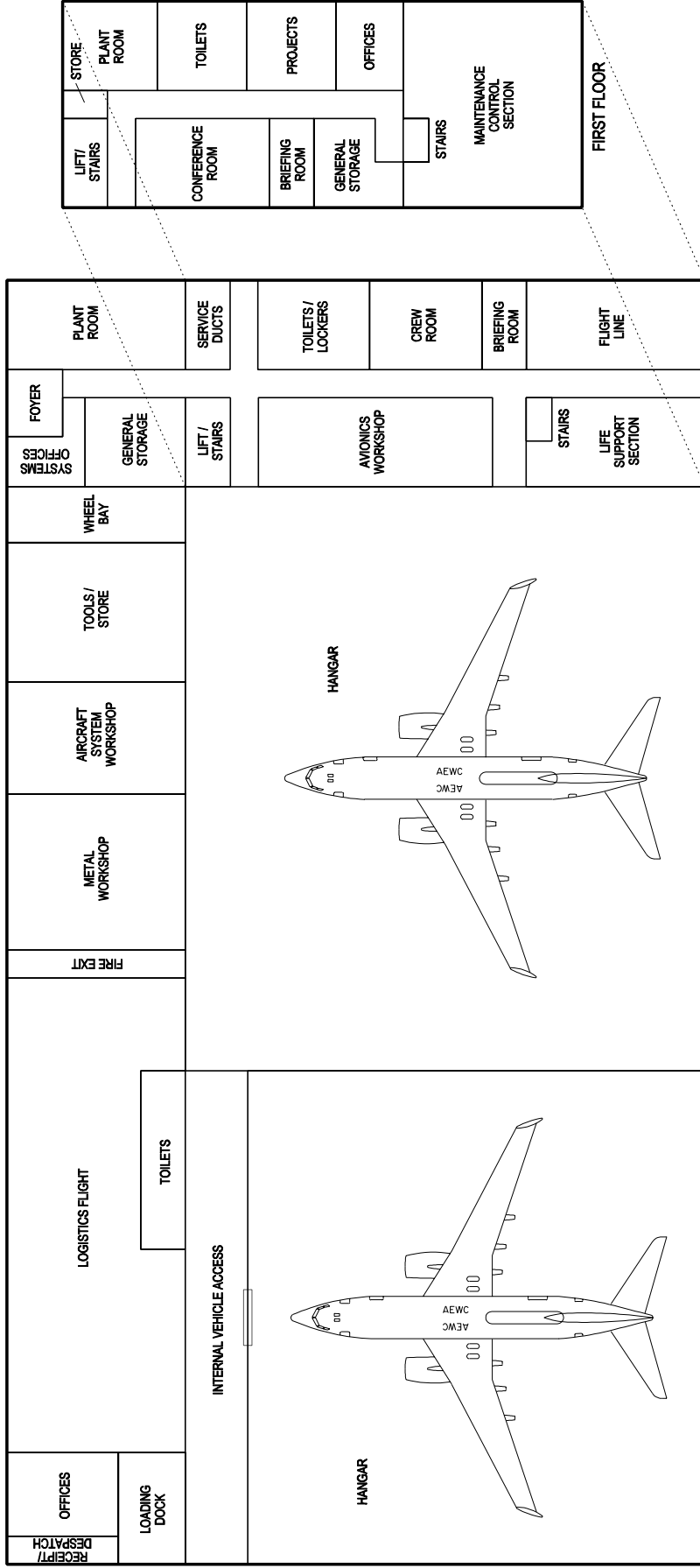
RAAF BASE WILLIAMTOWN
 STAGE 1 REDEVELOPMENT AND AEW&C PROJECT
 N° 2 SQUADRON HEADQUARTERS
 CONCEPT

GROUND FLOOR

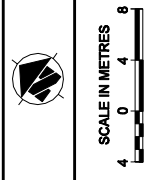
FIRST FLOOR

Annex C-2

LANDSIDE

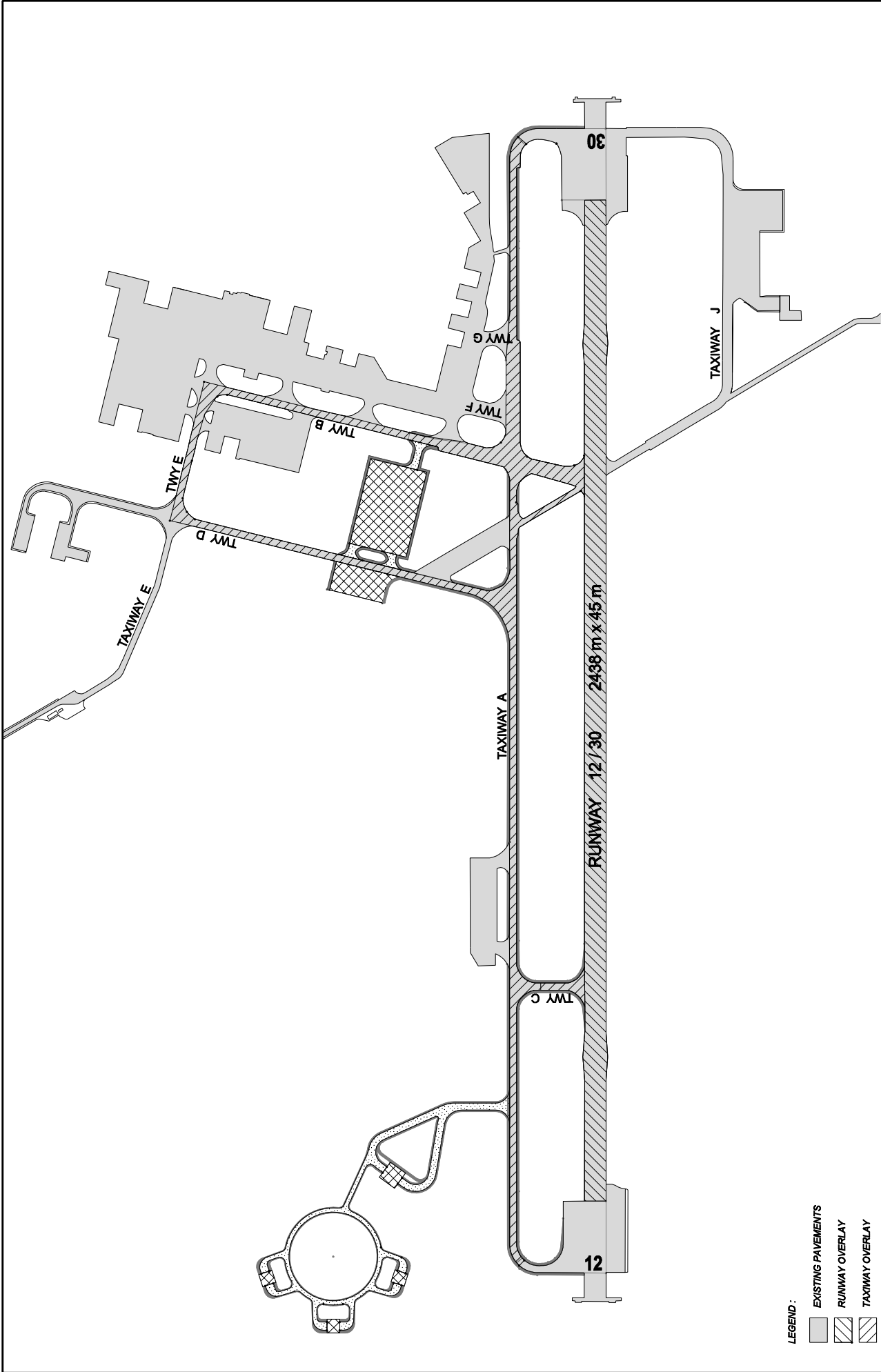


AIRSIDE



RAAF BASE WILLIAMTOWN
 STAGE 1 REDEVELOPMENT AND AEW&C PROJECT

**AEW&C HANGAR AND
 MAINTENANCE CONCEPT**

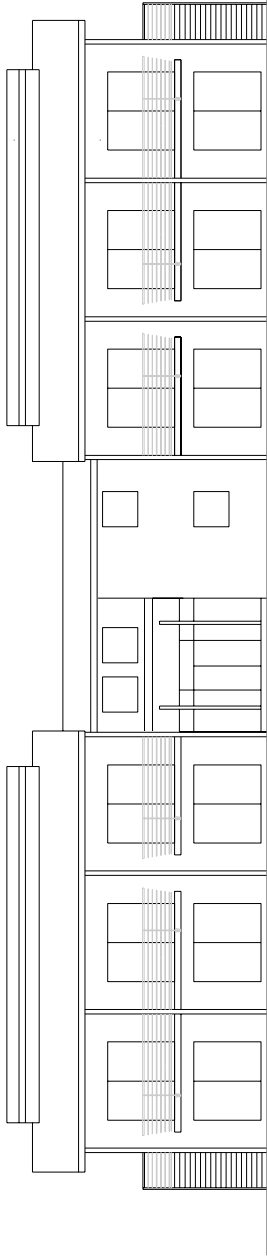


LEGEND :

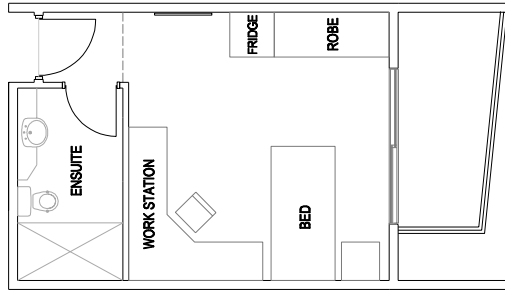
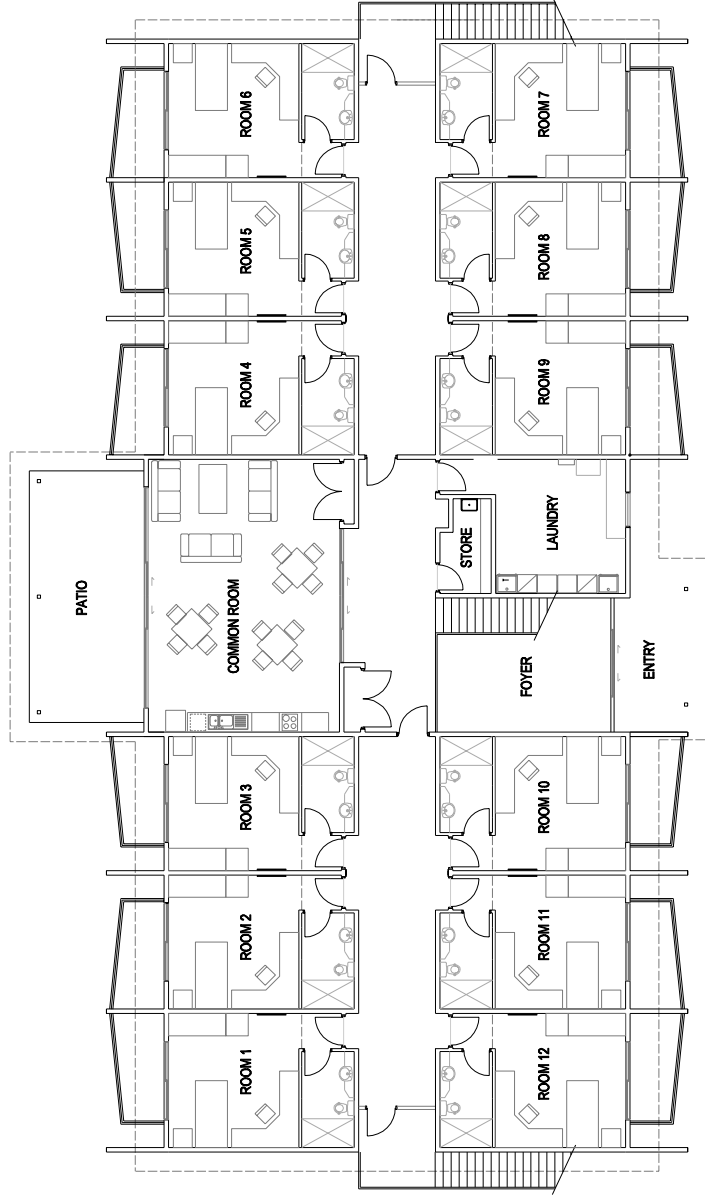
- EXISTING PAVEMENTS
- RUNWAY OVERLAY
- TAXIWAY OVERLAY
- NEW APRON (CONCRETE)
- NEW TAXIWAYS
- SHOULDERS



**RAAF BASE WILLIAMTOWN
STAGE 1 REDEVELOPMENT AND AEW&C PROJECT
PROPOSED PAVEMENT WORKS**



ELEVATION



TYPICAL ROOM PLAN

SCALE IN METRES



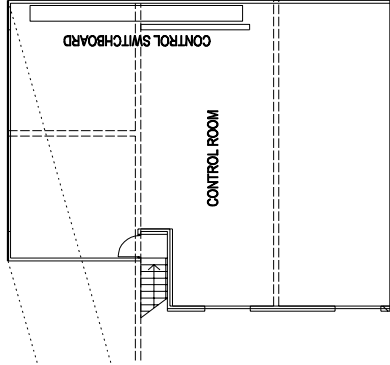
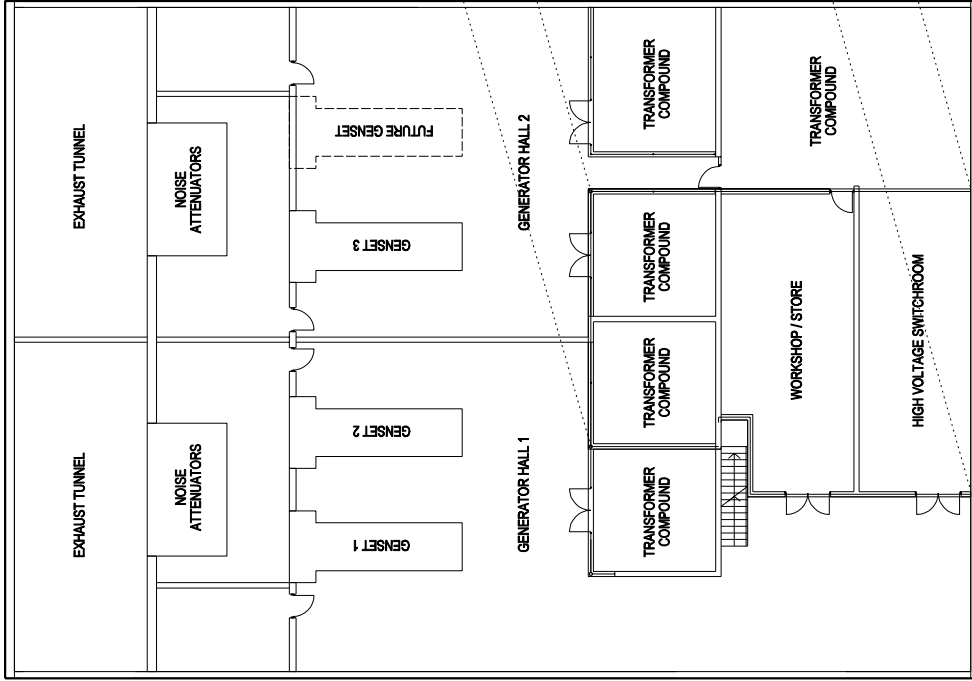
SCALE IN METRES



RAAF BASE WILLIAMTOWN
STAGE 1 REDEVELOPMENT AND AEW&C PROJECT

STUDENT ACCOMMODATION
CONCEPT





MEZZANINE PLAN



SCALE IN METRES



RAAF BASE WILLIAMTOWN
STAGE 1 REDEVELOPMENT AND AEW&C PROJECT



**CENTRAL
EMERGENCY POWER STATION
CONCEPT**