



**NATIONAL TOWERS PROGRAM
STAGE 1**

ADELAIDE, CANBERRA, MELBOURNE, ROCKHAMPTON

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

**AIRSERVICES AUSTRALIA
CANBERRA ACT
December 2006**

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TABLE OF CONTENTS

INTRODUCTION	1
IDENTIFICATION OF THE NEED	1
PROJECT OBJECTIVES	1
HISTORICAL BACKGROUND	1
NEED FOR THE WORK	2
DESCRIPTION OF THE PROPOSAL	2
OPTIONS CONSIDERED	4
REASONS FOR ADOPTING THE PROPOSED COURSE	5
ENVIRONMENTAL IMPACT ASSESSMENT	5
HERITAGE CONSIDERATIONS	5
CONSULTATION	5
REVENUE	6
TECHNICAL INFORMATION	6
PROJECT LOCATION	6
PROJECT SCOPE	6
SITE SELECTION	7
SITE DESCRIPTION	9
ZONING AND APPROVALS	9
LAND ACQUISITION	9
APPLICABLE CODES AND STANDARDS	10
PLANNING AND DESIGN CONCEPTS	10
ACOUSTICS	11
ENERGY CONSERVATION MEASURES	11
MASTER PLANNING AND SITE PLANNING CONSIDERATIONS	11
PROVISIONS FOR THE DISABLED	11
HERITAGE ISSUES	12
CHILD-CARE PROVISIONS	12
FIRE PROTECTION AND SECURITY MEASURES	12
LANDSCAPING	13

CONSULTATION WITH AUTHORITIES	13
IMPACT ON LOCAL COMMUNITY	13
PROJECT COST	13
PROJECT DELIVERY SYSTEM	13
ASSOCIATED PLANS/DRAWINGS	14

INTRODUCTION

1. Airservices Australia (Airservices) was established by the Commonwealth Parliament on 6 July 1995 to provide a range of cost effective operational services to the Australian aviation industry. These include air traffic control, aeronautical information services, airport rescue and fire fighting and navigation and communication services. Airservices is required under Section 9 of the *Air Services Act* (Commonwealth) 1995 to act in the following manner: '*Airservices Australia must regard the safety of air navigation as the most important consideration*'. It is also required to ensure, as far as practicable, that the environment is protected from the effects of aircraft operations.

IDENTIFICATION OF THE NEED

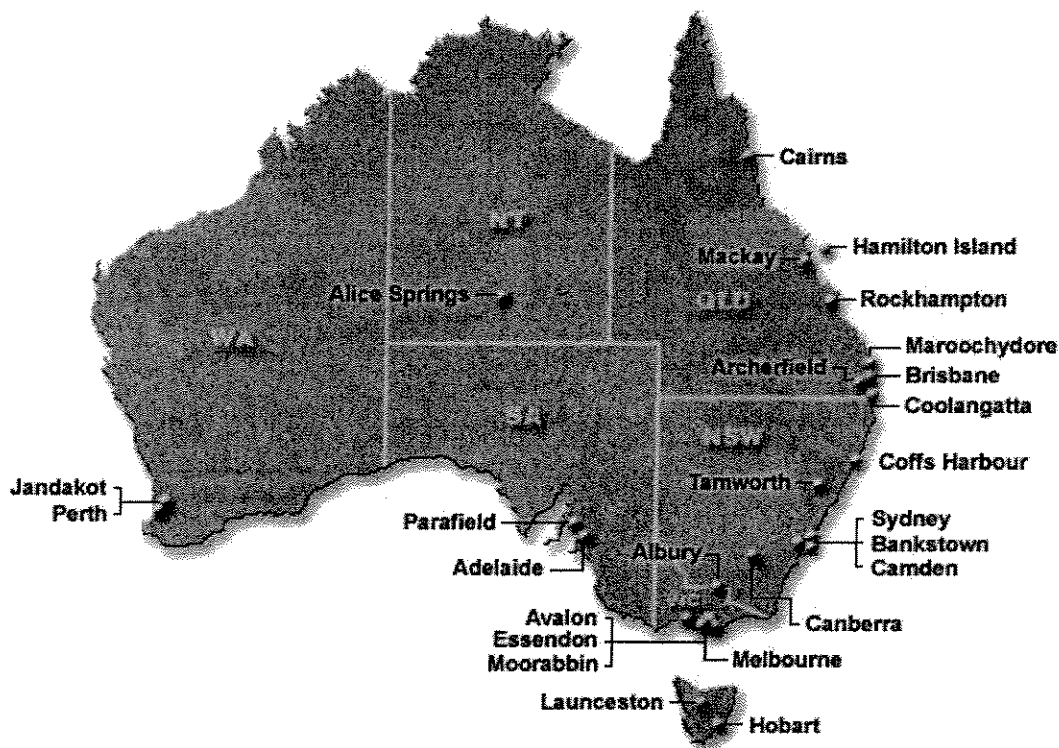
PROJECT OBJECTIVES

2. The Airservices' National Towers Program (NTP) will rebuild or refurbish existing Airservices' Air Traffic Control (ATC) towers.
3. The objective of Stage 1 of the NTP is to replace the existing control towers at:
 - a. Adelaide Airport;
 - b. Canberra Airport;
 - c. Melbourne Airport; and
 - d. Rockhampton Airport.

HISTORICAL BACKGROUND

Background

4. Airservices operates 26 control towers throughout Australia as shown at Figure 1 below.



5. Airservices' ATC towers range in age from ten years old to around fifty years old (Launceston and Rockhampton) with an average age in excess of 30 years. A number of towers in the inventory have exceeded their original design lives of either 25 or 40 years.

6. As the tower infrastructure ages, it becomes more problematic to cost effectively maintain or upgrade the facilities. This, in part, has led to the need for a replacement and refurbishment program for existing towers.

7. Similarly, the current technology used for the provision of air traffic services is in need of upgrading and replacement. Many of the existing towers have no provision to cater for changes necessary for the addition of this new technology. Any attempt to do so may go beyond acceptable risk.

Cabinet and Government

8. This project is aimed at maintaining the air traffic control assets at a standard that is in accordance with the Airservices Act (1995), good practices and sound financial management.

Parliamentary Standing Committee on Public Works

9. No similar projects are understood to have been referred to the Committee in the recent past.

Australian National Audit Office

10. An ANAO Report titled Air Traffic Data Collection was published in 2001. This report has no direct relevance to the New Tower Program.

NEED FOR THE WORK

Justification

11. Condition of the Towers. Airservices has undertaken a number of surveys of all the towers in the inventory which included structural assessments, maintenance risk assessments and an overall assessment of the state of the tower infrastructure. These surveys have been major contributors to both the determination of the need for, and prioritisation of work to be undertaken in the NTP Program. The most urgent needs are proposed to be dealt with under Stage 1 of the NTP Program.

12. The criteria driving the need for the proposed work are:

- a. Maintainability. The age of the existing towers is increasing the cost of operation and maintenance beyond an economic level.
- b. Standards. The existing towers do not conform to current standards of amenity and workplace design and where appropriate to requirements of the BCA or appropriate OH&S standards.
- c. Technology Upgrades. Some of the existing control towers lack both infrastructure and design flexibility to support the communications equipment and displays which are required for the current and future generations of air traffic control systems.

DESCRIPTION OF THE PROPOSAL

13. The Stage 1 of the National Towers Program will involve replacement of the existing control towers at:

- a. Adelaide Airport;
- b. Canberra Airport;
- c. Melbourne Airport; and
- d. Rockhampton Airport.

14. Each tower replacement, involves the construction of a new tower complex and the potential demolition of the existing tower complex. A generic tower complex includes:

- a. The Control Tower consisting of:
 - i. The cabin – the control room at the top of the tower from where the air traffic control function is performed.
 - ii. Amenities – a break-out space where light meals can be prepared and eaten, and toilets.
 - iii. Stand down area – the high stress nature of air traffic control means that regular breaks are taken to maintain “on-task” concentration, yet controllers must be immediately available if needed.
 - iv. An Auxiliary Area for training and facilitation of major equipment change over.
 - v. Supervisors Office Area – depending on the availability of space in the tower.
 - vi. Equipment Area – an area housing communications equipment and possibly computer equipment supporting the cabin.
 - vii. Building Services Area – an area housing those building services components required to be in close proximity to the cabin and equipment rooms.
- b. The Supporting Facilities consisting of:
 - i. Equipment Room(s) – depending on the design of the towers, the equipment rooms may be located in the support facility rather than in the tower.
 - ii. Building Services Plant Room(s) – the components of the building services which can be remote from the tower such as chillers, cooling towers and associated pumps.
 - iii. Generator Room and Uninterruptible Power Supply (UPS) Room – a standby generator and UPS is needed to meet the reliability of power supply to air traffic control equipment and communications.
 - iv. Workshops – depending on the functions performed by the particular Airservices facility there may be a requirement for a full base repair workshop.
 - v. Training Room(s) – there is a high and ongoing requirement for training of air traffic controllers which requires dedicated training facilities.
 - vi. Offices – the supervising and administrative staff offices may be located in the supporting facilities.

OPTIONS CONSIDERED

Siting Options

15. The Civil Aviation Safety Authority (CASA) regulations specify the criteria to be used for the determination of the siting of a control tower. Studies have commenced to identify the preferred location for the replacement towers to meet the CASA Criteria.

Scoping Options

16. The new towers will all require:

- a. A cabin suitable to meet visibility requirements, house facilities, systems and staff necessary for the provision of tower air traffic services at that location;
- b. An adjacent amenities area consisting of a break-out space and toilets;
- c. Lift and stair access to the operating levels;
- d. Equipment and building services facilities to support the operation of the tower; and
- e. The ability to maintain or replace the equipment in the tower without adversely impacting on the tower operations.

17. The scoping options that apply to each tower include:

- a. The amount of equipment (both communications and building services equipment) that needs to be in the tower compared to the equipment which can be on the ground;
- b. The number and location of offices and administrative functions to support the tower operations;
- c. The number and location of training facilities to support the tower operations; and
- d. The number and location of logistic support facilities (workshops etc) to support the tower operations.

Refurbishment Option

18. Refurbishments were considered however, Airservices' analysis of options predicts replacement of the selected towers as the lowest risk option (particularly operational risk).

Budget Options

19. The design and construction of civilian ATC towers is an infrequent requirement in the Australian context. The most recent projects of this type were completed in 1995 in a very different compliance environment than that which exists today in relation to Workplace Reform, Building Code of Australia (BCA), Occupational Health & Safety (OH&S), Environmentally Sustainable Development (ESD). As a result, it is expected that the towers delivered by the NTP will have a number of key differences to those which were delivered previously. Given the probable 40 year design life, allowance will be made for the building to maintain a contemporary standard of amenity and the flexibility to maintain and upgrade ATC equipment, plant and building components.

20. Finalising the budget for the work requires a high level of design development to establish the design/cost options in areas such as:

- a. Foundation design of the structures,
- b. Material selection for the tower for strength, durability and whole of life cost impacts;
- c. Cost trade-offs between the building services equipment required in the tower and the equipment required on the ground; and
- d. Sizing of the cabin to suit the requirements of the air traffic control functions including the supporting technology at the specific airport.

REASONS FOR ADOPTING THE PROPOSED COURSE

21. The proposed course of action is the result of an analysis of the Airservices' Control Tower inventory. The works required on all the Control Towers have been prioritised into staged work packages.

22. This process has resulted in the priority of works for Stage 1 of the National Towers Program being:

- a. Adelaide;
- b. Canberra;
- c. Melbourne; and
- d. Rockhampton.

ENVIRONMENTAL IMPACT ASSESSMENT

23. An Environmental Screening undertaken for this Stage of the Program by Airservices' Corporate Environment Group has concluded that there are no significant or potentially significant impacts on the natural environment and therefore a referral to the Minister for Environment and Heritage will not be required on natural environmental grounds.

24. There may be some environmental impact associated with construction work. This will be mitigated by appropriate construction and environmental management plans.

HERITAGE CONSIDERATIONS

25. The towers in the Stage 1 works are not listed on the Commonwealth Heritage List, the Register of the National Estate or similar State registers. The lease arrangements for the existing towers may vary from airport to airport. In the event that the lease requires Airservices to demolish an existing tower:

- a. The work will not take place until after the replacement tower has become operational and the old tower declared surplus to requirements which is expected to be in the order of twelve months after completion of the new tower; and
- b. Any demolitions work will be preceded by an assessment and report by a qualified heritage consultant regarding the heritage value of the tower.

CONSULTATION

26. The Airports Act 1996 requires that works valued over \$10m be the subject of a Major Development Plan. The draft Major Development Plan is to be made available to the public for a consultation period of 90 days after which a summary of the public comments received together with the draft Plan are submitted to the Minister for Transport and Regional

Services for approval. The Minister for Transport and Regional Services will forward the draft Plan and comments to the Minister for Environment and Heritage for advice.

27. Airservices is also required under the Air Services Act to consult, as appropriate, with government, commercial, industrial, customer and other relevant bodies and organisations (including the International Civil Aviation Organisation (ICAO) and bodies representing the aviation industry).

REVENUE

28. Airservices charges airlines and aircraft operators for the use of its services and this revenue funds its capital expenditure requirements. Both the capital expenditure and prices are subject to extensive consultation with these customers and with other affected stakeholders (eg. airport owners). The prices for these services are regulated by the Australian Competition and Consumer Commission (ACCC) under the Prices Surveillance sections of the Trade Practices Act 1974. Under this regulatory arrangement, the ACCC also consult with Airservices' customers and stakeholders to assess whether Airservices' capital expenditure is at an optimal level (ie. fit-for-purpose with no excess) and will only allow prices that reflect this level of expenditure.

29. Given the uncertainty regarding the expected cost of constructing these new towers, the impact of this project on the current prices and revenues has not been determined. Future pricing arrangements will be the subject of consultation and negotiation with customers, stakeholders and the ACCC over the next 2-3 years.

TECHNICAL INFORMATION

PROJECT LOCATION

30. The location of the new towers will be at the existing Adelaide, Canberra, Melbourne and Rockhampton Airports. (Refer to attached drawings)

PROJECT SCOPE

31. The scope of works for the replacement towers in Stage 1 is:

- a. Design and construct ATC Towers at specified sites at Adelaide, Canberra, Melbourne and Rockhampton Airports with necessary support buildings.
- b. Design and construction includes:
 - i. All earth works for the building and also for roads, carparks and services;
 - ii. Control Tower and Support Building(s);
 - iii. All services - Electrical (mains and emergency power), mechanical, hydraulic, water, stormwater, sanitary plumbing, security, fire detection and protection;
 - iv. Floor ducts, risers, cable trays, cable entry pipes and pits for all services and in addition for Airservices Australia's installation of air traffic control systems and equipment;

- v. Connection from the Control Tower site to Airservices Australia's and/or Public Utility communications providers for both Voice and Data communications;
 - vi. Provision and installation of a Telephone System;
 - vii. Data Network;
 - viii. Lightning protection;
 - ix. Electromagnetic protection;
 - x. Supply and installation of suitable cabling/optic fibre to defined interfaces for supply and installation of air traffic control systems and equipment;
 - xi. Space and support structures for communications aerials, including microwave dishes; and
- c. All Project and Construction management activities.

Service Infrastructure

32. The availability of service infrastructure was considered as part of the siting studies. The availability of utility services will be confirmed and detailed capacity assessments and services provision will be undertaken during the design development phase of the project.

SITE SELECTION

33. Siting studies to identify the preferred sites for the replacement towers have been undertaken and are summarised below.

a. Adelaide Airport Siting Options.

Key findings from the study are summarised in the following tabulation.

Criteria	Site 1	Site 2	Site 3	Site 4
Tower Height (m)	25.8	27.4	23.6	27.2
Minimum controllers eye height (m)	21.8	23.4	19.6	23.2
Penetration of Obstacle Limitation Surface (OLS)	No	No	No	No
Penetration of terminal area radar sensitive zone	No	No	Yes (significant)	Yes (significant)
Penetration of Doppler Visual Omni Range (DVOR) protection area	Yes (minor)	Yes (significant)	No	No
4 Seconds response time	Yes, except to current Runway 05 threshold	Yes, except to current Runway 23 threshold	Yes, except to future extended Runway 12 threshold	Yes, except to future extended Runway 12 threshold
Impact from light sources	Possible (minor) from new terminal apron flood lighting	Possible from Tapleys Hill Road lighting	No	No
Sun glare	No (main views are south)	No (main views are south)	Yes (main views are north)	Yes (main views are north)
Utility services available	Yes	Yes	Not immediately available. Supply from Morphett Road near Site 4 (possible that external services, particularly	Yes (possible upgrade of external supply required)

Criteria	Site 1	Site 2	Site 3	Site 4
			electricity may require upgrading.)	
Landside road access	Yes (existing terminal road system)	Yes (existing Airservices Australia compound)	Yes	Yes
Parking	Available	Yes (existing Airservices Australia compound)	Easily provided within lease	Easily provided within lease

b. Canberra Airport Siting Options.

Key findings from the study are summarised in the following tabulation.

Criteria	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7
Approximate Tower Height (m)	91	70	127	49	104	39	27
Approximate Minimum controllers eye height (m)	88	67	124	46	101	36	24
Penetration of OLS	Significant	Significant	Significant	Yes (approx 11m)	Significant	Yes (approx 2m)	Yes (approx 3m)
Penetration of terminal area radar sensitive zone	-	-	-	-	-	-	-
Penetration of DVOR protection area	-	-	-	-	-	-	-
4 Seconds response time	Yes	Yes	Yes	Yes	Yes	No	No
Impact from light sources	-	-	-	-	-	-	-
Sun glare	Yes (main views are north)	No (main views are south)	No (main views are south)	No (main views are south)	No (main views are south)	No (main views are south)	No (main views are south)
Utility services available	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Landside road access	Yes (existing terminal road system)	Yes (existing Meteorology compound)	Yes (existing Meteorology compound)	Yes (existing Meteorology compound)	Yes (existing Guard House compound)	Yes (existing Control Tower)	Yes
Parking	Available	Yes (existing Meteorology compound)	Yes (existing Meteorology compound)	Yes (existing Meteorology compound)	Yes (existing Guard House compound)	Yes (existing Control Tower)	Yes

c. Melbourne Airport Siting Options.

Airservices has conducted a preliminary siting survey and this is in the process of being confirmed via external specialist consultant.

d. Rockhampton Airport Siting Options.

Key findings from the study are summarised in the following tabulation.

Criteria	Site 1	Site 2	Site 3	Site 4	Site 5
Controllers eye height (m)	30.4	37.2	56.4	32.0	33.7
Penetration of OLS	Yes	No	Yes	No	No
4 Seconds response time	No to current Runway 04 and 33 thresholds	All except extended Runway 15 scenarios	All scenarios	All except Runway 33 plus 600m	All except Runway 33 extension scenarios

Criteria	Site 1	Site 2	Site 3	Site 4	Site 5
	plus most extension scenarios				
Apron high mast lighting	Some sight lines affected	Some sight lines affected	Some sight lines affected	No effect	No effect
Utility services available	Yes	Yes	Yes	Some (but would require augmenting/upgrading)	Some (but would require augmenting/upgrading)
Landside road access	Yes	Yes	Yes	Long distance road access (road would need upgrading)	Long distance road access (road would need upgrading)
Parking	Modify / expand existing	Easily provided within lease	Easily provided within lease	Easily provided within lease	Easily provided within lease
View to circuits (west of airport)	Good	Good	Good	Circuits behind (west) of tower	Circuits behind (west) of tower
Site flooding	OK	OK	OK	Site fill required	Site fill required

SITE DESCRIPTION

34. The preferred site locations are:
- Adelaide - Site 1 (see attached drawings);
 - Canberra - Site 4 (see attached drawings);
 - Melbourne – approximately 100m south of the current tower and to be confirmed by specialist external consultant (see attached drawings); and
 - Rockhampton – Site 2 to be confirmed by specialist external consultant (see attached drawings).
35. The site locations are generally flat with good visibility of the airport and the airport approaches. The towers will vary in height from approximately 26m to 49m.

ZONING AND APPROVALS

36. The Airports Act 1996 requires Commonwealth leased airports involved in this stage of the project (Adelaide, Canberra and Melbourne) with works valued over \$10m be the subject of Major Development Plans which are to be submitted to the Minister for Transport and Regional Services for approval.
37. The control tower sites should conform with CASA regulatory criteria while recognising constraints such as economic limitations and operational height restrictions. The facility should also be considered within the overall CASA approved airport master plan.

LAND ACQUISITION

38. The land required for new control towers at Canberra, Adelaide and Rockhampton will be leased from the airport owner. The proposed sites require confirmation that the sites remain available, then CASA agreement, prior to commencing leasing negotiations.

APPLICABLE CODES AND STANDARDS

39. Where appropriate, the design of new facilities will conform to the relevant sections of:

- The Building Code of Australia, and
- Relevant current Australian Standards and Codes.

40. The Building Code of Australia has provisions for the exclusion of certain types of facilities such as Control Towers. Nevertheless the Control Towers will be designed to comply with the intent of the BCA where possible.

PLANNING AND DESIGN CONCEPTS

Design Philosophy

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

- a. The design of the Towers is to maximize the ability of the cabin to support the conduct of all the functions required to be performed;
- b. Design Life of 40 years;
- c. Consideration and implementation of best available and appropriate OH&S design features;
- d. Consideration and implementation of best available workplace design and amenity;
- e. Consideration and implementation of a concept for adapting to changing technology;
- f. Consideration and implementation of concepts for the long term maintenance and upgrade of plant and major building components;
- g. Durability and Maintainability shall be considered in terms of low life cycle costing.
- h. Take account of principals of environmentally sustainable design without establishing a mandatory Greenstar or ABGR rating.

Design Options

42. Design options which are expected to be explored include:

- a. The tailoring of the generic requirements for site specific needs;
- b. The form of the tower support structure;
- c. The distribution of building services between the tower and the support facilities;
- d. Improved ability to maintain and replace tower equipment without major disruption to tower operations;
- e. Energy conservation measures; and

- f. The provision of access and egress to the tower.

ACOUSTICS

43. The Tower and Support facilities will include appropriate levels of acoustic treatment consistent with the provision of a suitable working environment on an operational airfield.

ENERGY CONSERVATION MEASURES

44. The Control Tower component of each complex is a relatively small energy consumer and does not provide significant opportunities to introduce energy conservation measures for the following reasons:

- a. The control tower facility provides support to the work performed in the cabin;
- b. The ATC equipment must be maintained in a 24/7 controlled environment to reach the required reliability for the safety of aircraft;
- c. Night time operations are conducted in a low-light environment;
- d. There is limited ability to introduce energy saving features such as reduced area of glass and/or low-e glass due to the impact on the visibility from the cabin;
- e. Alternative fuel to diesel will be investigated for emergency generators; and
- f. Rainwater recycling will be used, if possible, for maintenance of landscaping.

45. The Support Facilities and where appropriate those rooms in the tower that do not directly impact on the Air Traffic Control function will be designed with conventional energy saving measures such as:

- a. Natural and/or mixed mode ventilation where appropriate;
- b. High efficiency lighting systems; and
- c. Movement detector controls for lighting where appropriate.

MASTER PLANNING AND SITE PLANNING CONSIDERATIONS

46. Approved Airport Masterplans in accordance with the Airports Act are in place for Commonwealth leased airports involved in this stage of the project (Adelaide, Canberra and Melbourne). As Rockhampton is locally owned (by Rockhampton City Council) the Airports Act does not apply and hence local and State Government requirements will prevail.

47. Typically Approved Airport Masterplans will specify an assessment of, among other things, "future needs for services and facilities relating to the airport" and the airport-lessee company's assessment of the environmental issues associated with implementing the plan. Prior to the project being started the airport will undertake a major development plan if the project is a major development as defined in the Act eg a new runway or a new building over \$10 million.

PROVISIONS FOR THE DISABLED

48. Disabled access will be provided to all levels of the Control Tower. It is envisaged that access to the cabin level will be designed so as not to obstruct visibility from within the cabin.

HERITAGE ISSUES

49. The new Tower facilities will be constructed on substantially greenfield sites within each airport. The sites will be assessed for heritage significance prior to final agreement on siting.

50. A Heritage Assessment and if necessary Heritage Plan will be developed for the old towers prior to the initiation of any demolition work.

CHILD-CARE PROVISIONS

51. It is expected that there will be no impact on staffing levels at the tower locations and as a result staff will continue to utilise their existing child care arrangements as currently no on-site facilities are available.

52. A number of initiatives are under consideration by Airservices to assist employees better balance their employment and family responsibilities including the establishment of Child Care facilities at our major centres in Brisbane and Melbourne, and allowing employees to salary sacrifice child care payments where employees are able to get placement within other Commonwealth agencies' child care facilities.

53. Airservices also currently provides support for employees with school-aged children by subsidising the cost of approved school holiday care.

FIRE PROTECTION AND SECURITY MEASURES

Fire Protection

54. Airservices' Rescue and Firefighting Service are responsible for all aspects of fire safety within Airservices. In recognition that Control Towers are special facilities that are not appropriately addressed by the BCA the Rescue and Firefighting Service have established a Fire Service Policy for Control Towers which will be adhered to in the design of the control towers.

55. Generally, the control towers will be designed with fire isolated stairs however, the ability to evacuate from the cabin to the fire stairs is an issue that needs to be resolved in the design of the operational levels of the facility.

56. Aspirated smoke detection systems will be investigated for use to provide early warning of fire and to allow for early evacuation of the operational levels of the towers.

Security

57. Airservices' Security Section is responsible for all aspects of security within Airservices. The Aviation Security Act 2004 provides a framework for security of the control tower facilities.

58. The ability to provide security lighting to the control tower facilities may be restricted, however, the ability to locate the complex inside a fenced compound will enhance security including for staff working shiftwork.

59. Access control will be provided into the control towers. A layered security approach will be part of the security design to provide security in-depth to the control tower operational levels.

LANDSCAPING

60. The scope of the project includes landscaping to provide attractive and maintainable surrounds that do not interfere with the operations of the airports.
61. Landscaping is designed to be low maintenance and low water use.

CONSULTATION WITH AUTHORITIES

62. The Authorities consulted for this project will include:
- a. Airport Owners,
 - b. CASA,
 - c. Department of Transport and Regional Services,
 - d. Department of Environment and Heritage,
 - e. Relevant Energy Supply Authorities in each Tower location,
 - f. Relevant Planning Authorities in each Tower location, and
 - g. Relevant Local Government Authorities in each Tower location.

IMPACT ON LOCAL COMMUNITY

63. There is little or no anticipated community impact from Stage 1 of the NTP Program. Heritage and Environmental matters will be addressed as described above. Any minor traffic impacts that result from the relocation of the control towers will be taken into account in the design development.

PROJECT COST

64. Airservices has allocated an outturn budget of \$94,500,000 to Stage 1. It is acknowledged that this allocation will require active management and may result in impacts on scope.

Timing

65. Pending Parliamentary approval, current planning is for a contractor to be appointed by late 2007, then approximately six months in design followed by a 16 month construction period.

Construction Workforce

66. It is predicted that workforce numbers will vary over the period of the project, but the expectation from industry is:
- a. Design Phase, some 50 people; and
 - b. Construction Phase (including 'off-site' workforce), some 175 people.

PROJECT DELIVERY SYSTEM

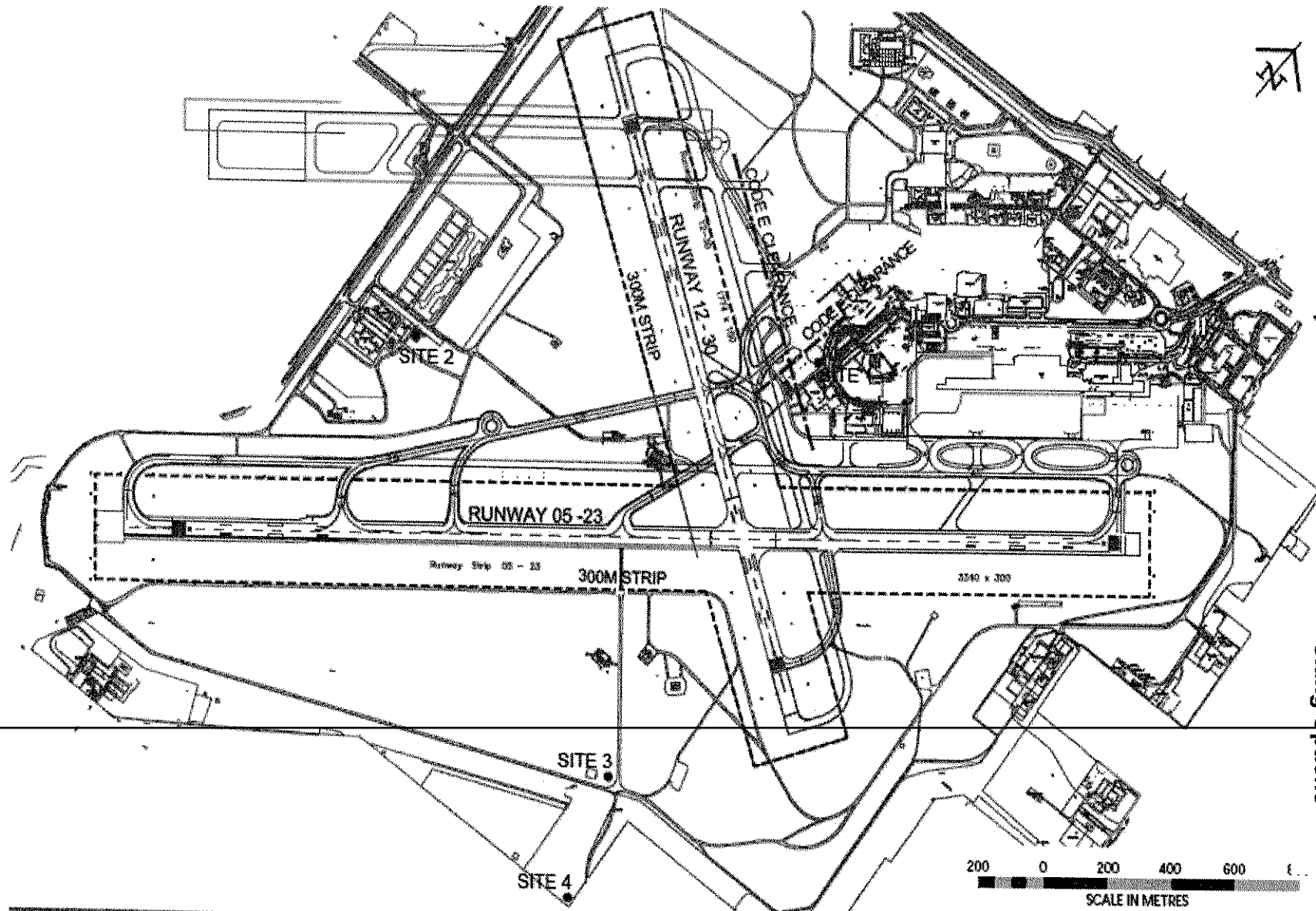
67. The Stage 1 Towers will be delivered using a design and construct project delivery system.

ASSOCIATED PLANS/DRAWINGS

68. The following drawings are included with the evidence:

- a. Plan 1 - Adelaide Airport – Siting Options;
- b. Plan 2 – Canberra Airport – Siting Options;
- c. Plan 3 – Melbourne Airport – Current Tower Location;
- d. Plan 4 – Rockhampton Airport – Siting Options; and
- e. Schematic 5 – Conceptual Layout of Control Tower and Support Facilities.

Plan 1 - Adelaide Airport
Siting Options

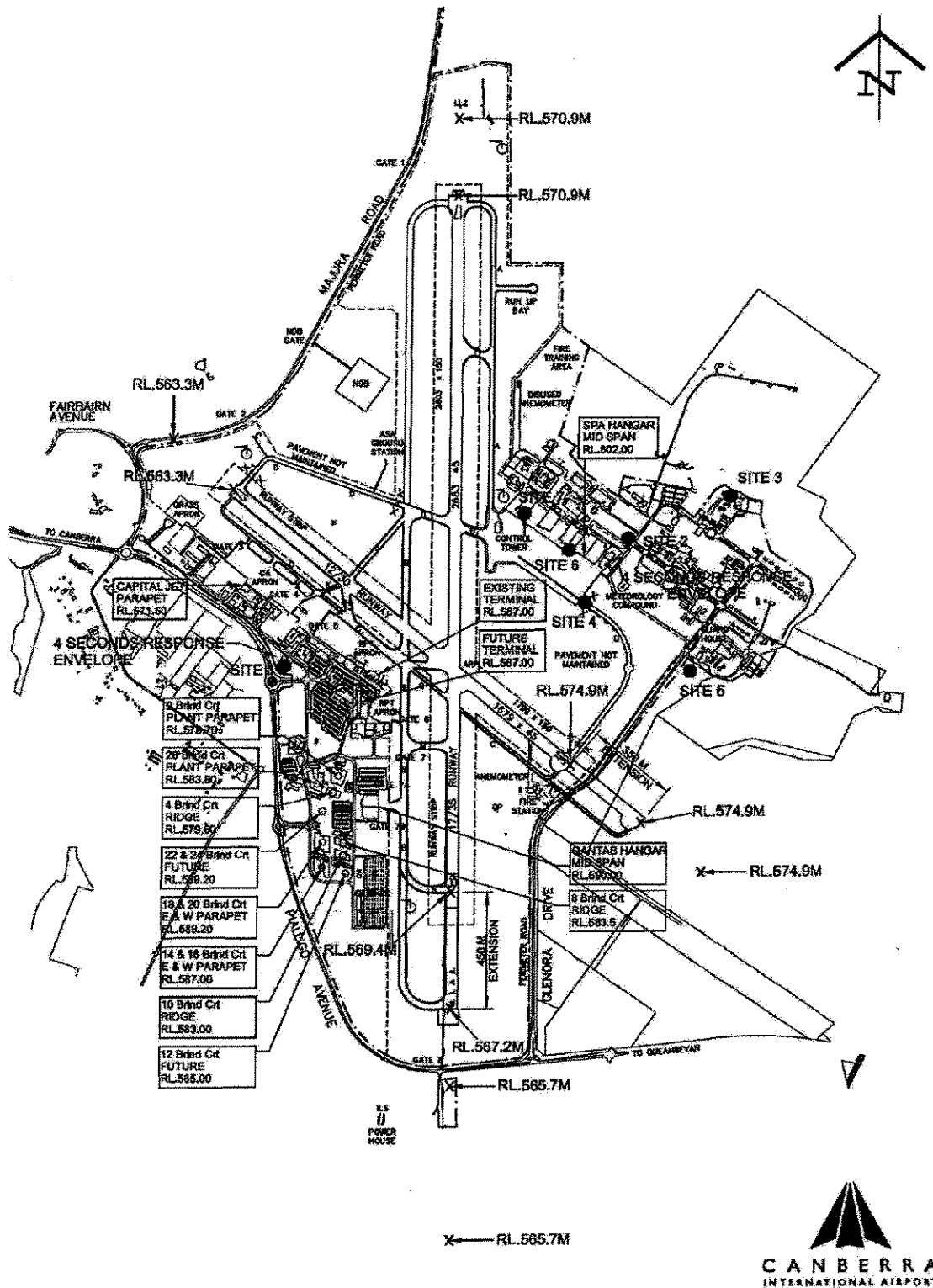


AIRBIZ REPORT

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Plan 2 – Canberra Airport Siting Options

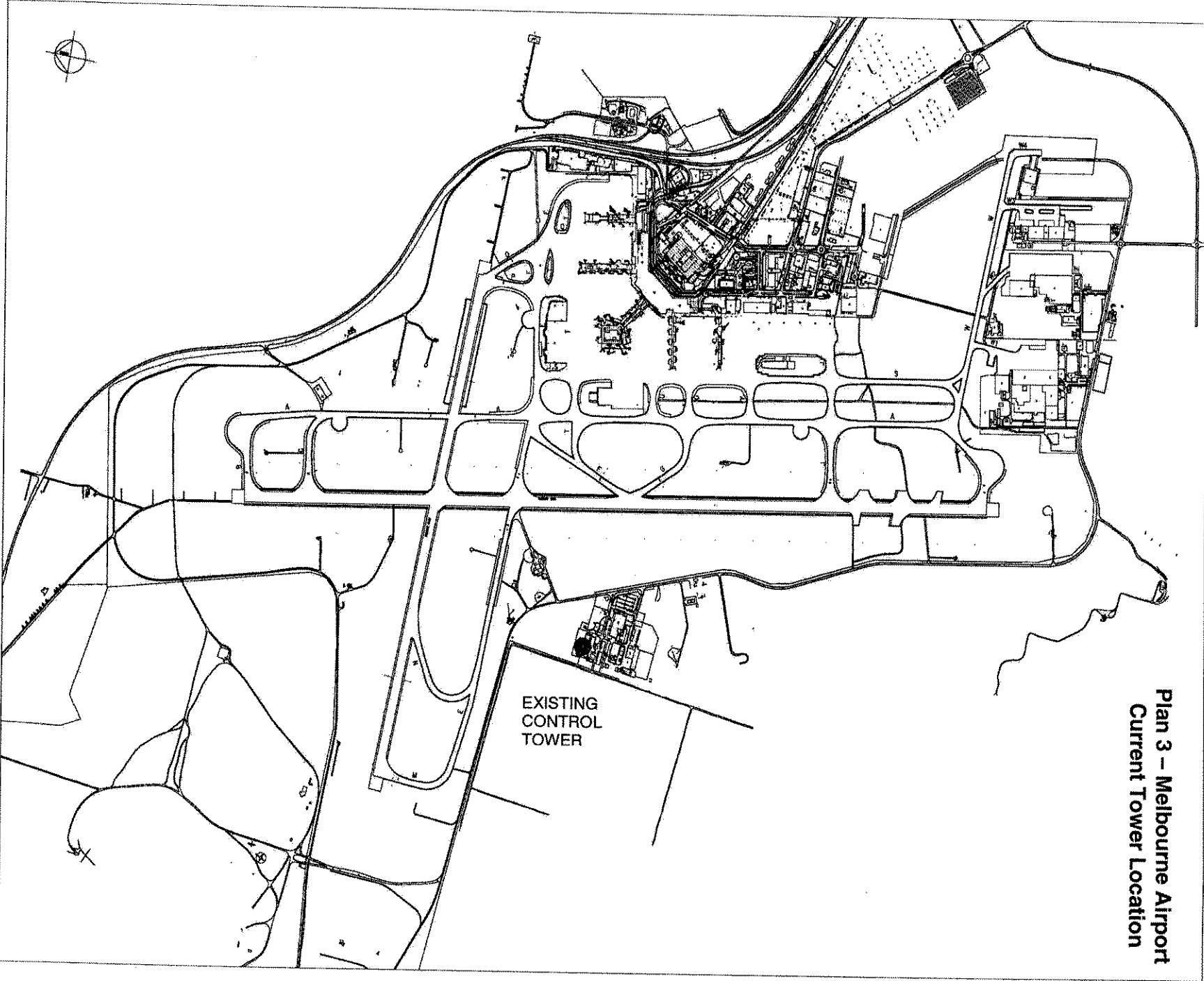


CANBERRA INTERNATIONAL AIRPORT
CONTROL TOWER SITING

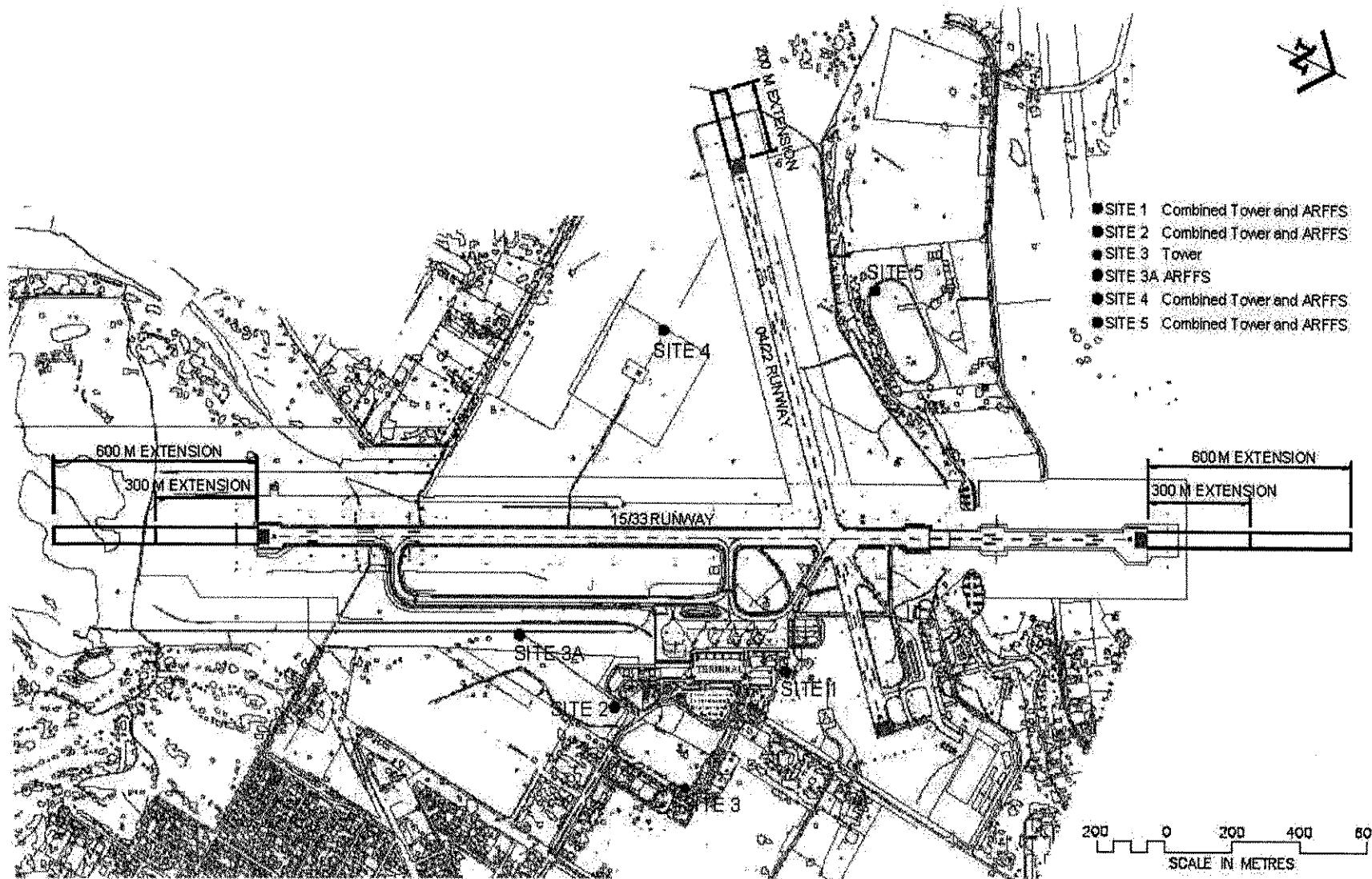
Figure 2.10
POSSIBLE CONTROL TOWER SITES



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**Plan 3 - Melbourne Airport
Current Tower Location**



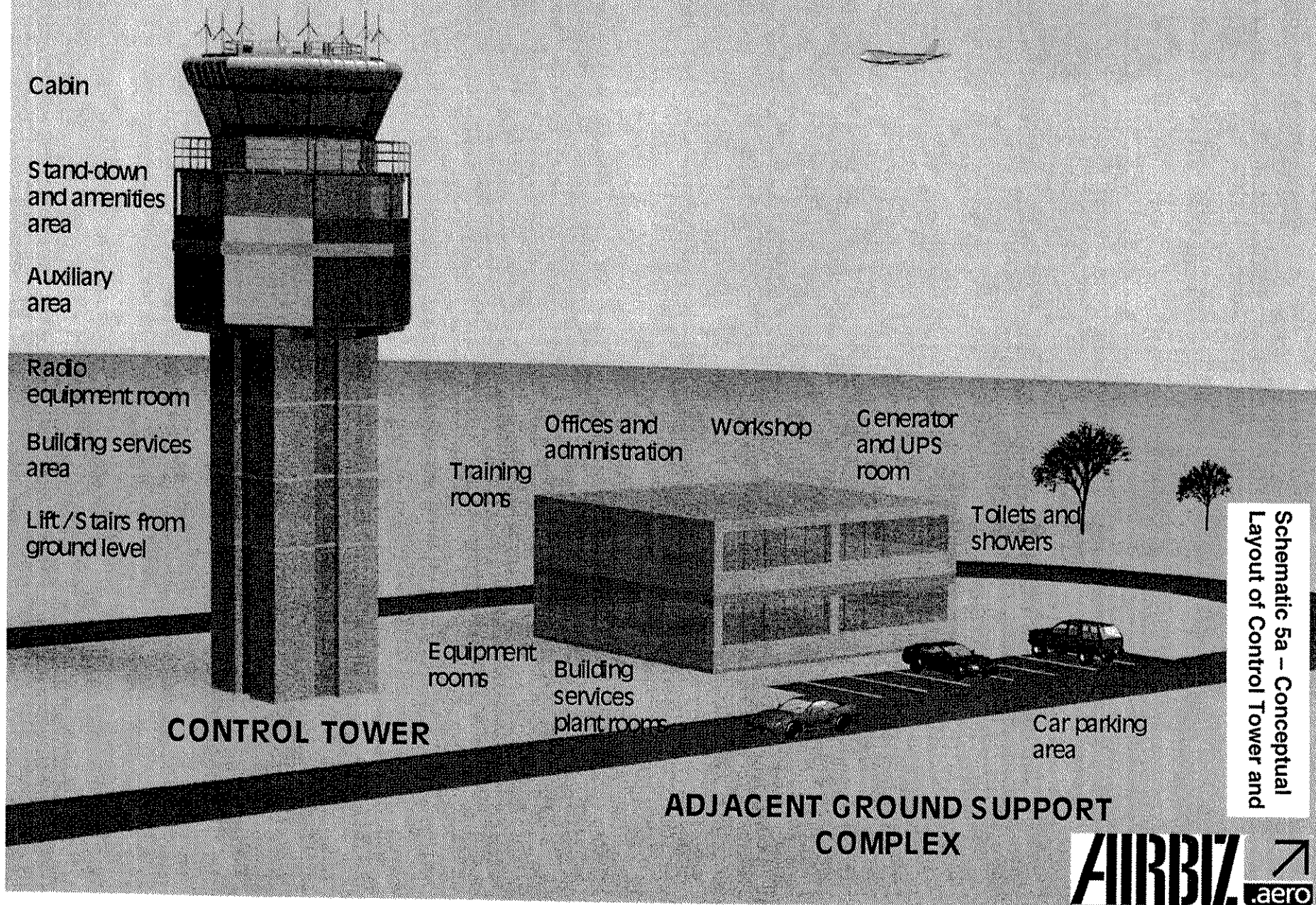
- SITE 1 Combined Tower and ARFFS
- SITE 2 Combined Tower and ARFFS
- SITE 3 Tower
- SITE 3A ARFFS
- SITE 4 Combined Tower and ARFFS
- SITE 5 Combined Tower and ARFFS

Plan 4 – Rockhampton Airport
 Siting Options

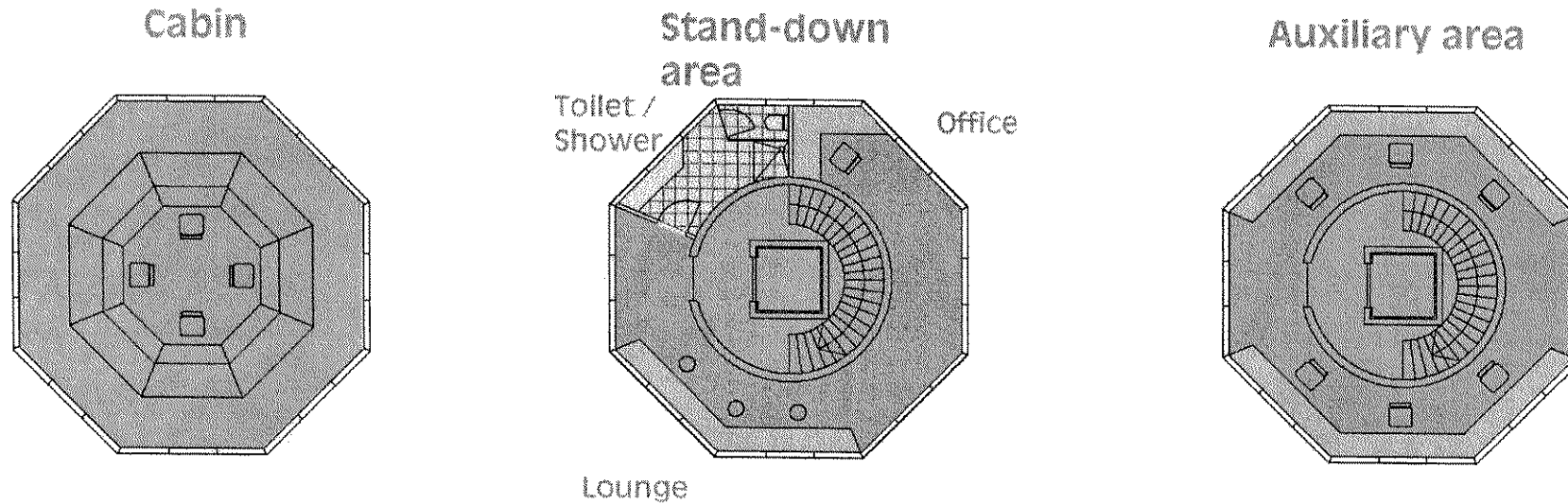




AIR TRAFFIC CONTROL COMPLEX



SCHEMATIC LAYOUT OF AIR TRAFFIC CONTROL TOWER



Schematic 5b – Conceptual
Layout of Control Tower and