



ONESKY EQUIPMENT ROOMS MELBOURNE AND BRISBANE

SUBMISSION 1.0

STATEMENT OF EVIDENCE
TO THE
PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS

AIRSERVICES AUSTRALIA
CANBERRA, ACT
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1. Project Title

OneSKY Equipment Rooms – Brisbane and Melbourne

2. Background

Airservices Australia (Airservices) is a Government-owned organisation responsible under *the Air Services Act 1995* (the Act) for the provision of air traffic management, air navigation support (communications infrastructure, radar and navigation aids) and aviation rescue firefighting (ARFF) services to the aviation industry. We endeavour to achieve this while balancing cost, efficiency, noise and aircraft environmental emissions. Our core business is the provision of air traffic control and flight decision support information and facilities for safe and efficient air traffic flow. In providing these services, the Act requires Airservices to regard the safety of air navigation as the most important consideration.

Airservices is responsible for the airspace stretching in latitude from two degrees to 90 degrees south; and in longitude from 75 degrees to 163 degrees east. This is an area of 19,995,070 square nautical miles (51,786,992 square km) - or some 11 percent of the world's total airspace. Airservices has jurisdiction for some of the busiest air routes in the world and manages air traffic operations for over 90 million passengers on more than four million flights every year.

Airservices revenue is derived from provision of services for air traffic control (ATC) and ARFF services. This revenue funds our operating expenses and our investment in capital works and other projects on behalf of the Australian Government and the aviation industry. We return a dividend to government each year.

We liaise directly with our airline customers to negotiate our Long Term Pricing Agreement (LTPA) which is endorsed by the Australian Competition and Consumer Commission (ACCC) and monitored by industry stakeholders through a Pricing Consultative Committee (PCC).

Capital expenditure is in alignment with the LTPA. The capital expenditure program remains balanced between rebuilding and maintaining core capabilities and the introduction of new services and initiatives to support forecast growth in the aviation industry.

The safety, efficiency, and overall performance of the Australian aviation industry is under-pinned by the nation's air traffic management system – a system which ensures a seamless flow of air traffic between Australia's airports and sequences traffic across our international boundaries.

2.1 Context

Aviation is of national strategic importance to Australia. A safe, secure and efficient civil aviation industry underpins a range of business, trade and tourism activities that contribute significantly to our economic prosperity.

Forecasts for aviation traffic growth indicate passenger numbers in our region will double by 2030. This growth, along with extra-long haul airline operations, new military aircraft capabilities, the increasing use of remotely-piloted aircraft, and the limitations of legacy infrastructure, presents a significant capability challenge for Australia in the medium term. New infrastructure projects such as new runways and terminals at existing airports, new airports to serve major cities, new aircraft fleets, and new technology in aircraft and ground systems are being rapidly introduced.

Military aviation is a key component of our national security and both civil and military aviation are critical enablers to advancing Australia's global and regional interests. Airservices current air traffic management system, The Australian Advanced Air Traffic System (TAAATS), has been operational since the late 1990s and is approaching end of life. Defence's air traffic management system, the Australian Defence Air Traffic System (ADATS), is also at end of life.

2.2 OneSKY Australia Program

Airservices and the Department of Defence (Defence) have partnered to develop the OneSKY Australia Program, the joint solution that will deliver the modernisation of air traffic management in Australia and take advantage of an opportunity for air traffic management alignment.

The threshold benefit of having a single harmonised Civil-Military Air Traffic Management System (CMATS) is the cost savings of purchasing one system rather than a separate civil and a separate military system. On acquisition alone, in buying one system, the combined savings for both Airservices and Defence is in the order of several hundred million dollars. There are also service delivery benefits of the new system.

Airservices is acting as lead agency for the procurement and implementation of the system to create a single project environment a clear decision-making structure.

Australian airspace is currently divided into a Northern Flight Information Region (FIR), controlled from Brisbane and a Southern FIR, controlled from Melbourne (Figure 1). This division of the flight regions is reflective of 1990s technology capability. Under the OneSKY program, Australian airspace becomes a single FIR which provides further ATC capability with flexibility and resilience.



Figure 1: Australia Airspace

Airservices and Defence are each responsible for readying their relevant infrastructure to accept the OneSKY joint acquisition over the next few years. For Airservices, this will include a number of construction projects which are at varying stages of planning and development. In 2015, the following projects will be brought to the Parliamentary Standing Committee on Public Works (PWC):

- OneSKY Equipment Rooms Project (Brisbane and Melbourne);
- Melbourne and Brisbane Air Traffic Services Centre (ATSC) Extensions; and
- Perth Air Traffic Services Centre (ATSC) Refurbishment.

3. Need for the Works

3.1 Project Description

Specialised equipment rooms to house the new OneSKY technical equipment and the future airways system operated by Airservices in Brisbane and Melbourne are proposed. These facilities must meet stringent reliability and security requirements in order to adequately support air traffic control in more than 11 percent of the world's airspace, 24 hours a day, and seven days a week. The equipment rooms will comply with the requirements of 'Protected' status as stated in the Australian Government physical security management guidelines¹ and have a 25 year lifespan.

The rooms will be located in Airservices Melbourne and Brisbane air traffic services compounds, which are adjacent to the Melbourne and Brisbane airport precincts. The current equipment rooms are located on the ground floors of the existing Melbourne and Brisbane air traffic service centres, directly below the ATC operations rooms, and are not sufficient for future requirements.

Through market research, considering the specialised nature of these types of facilities coupled with the requirement to achieve a highly reliable facility over and above the standard, we propose to use a specialised and experienced contractor to construct the two new equipment rooms in Brisbane and Melbourne.

These rooms will be built to meet international standards including the American National Standards Institute / Telecommunications Industry Association Telecommunications Infrastructure Standard for Data Centres - ANSI/TIA-942:2005 which covers the building standards for telecommunication infrastructure of data centres.

3.2 Identified Need

Airservices implemented the current TAAATS system in 1998. This implementation included the construction of two new operational centres in Brisbane (1995) and Melbourne (1996) which incorporated equipment rooms to house TAAATS and were designed to meet the Reliability, Maintainability and Availability (RMA) requirements to support safe and reliable air traffic management in Australia.

To achieve the identified objectives of the OneSKY acquisition, new equipment room facilities are required to house the OneSKY computer and communications equipment at Airservices operational centres in Melbourne and Brisbane. The need for the new equipment rooms is generated by both the condition and capacity of the current facilities, and the requirement to operate both the existing TAAATS and the OneSKY system in parallel over a four year period.

The existing equipment rooms are nearing the end of their design life. Construction technology, architectural design and security technology has evolved significantly since 1998 and this project intends to utilise the latest data centre design and technology to house the OneSKY equipment for the next 25 years.

The existing equipment rooms do not have sufficient power, cooling and floor space and availability to accommodate both OneSKY and TAAATS. The equipment room facility must have an availability of 99.9997% (for Mechanical/Electrical Systems) calculated annually. In other words, operational reliability will be built to mean time between outages at 200,000 hours (8333 days) and a mean time to repair of 40 minutes. In addition the current equipment rooms do not have the required floor load rating to accommodate the OneSKY equipment.

The transition to OneSKY is planned to take place between 2018 and 2021 as a staged transition of operational service delivery while maintaining safety and service continuity for Australian aviation. The

¹ Australian Government physical security management guidelines Version 1.5, amended April 2015

existing TAAATS and CMATS will be run in parallel to test and develop the OneSKY functionality prior to commencing the change-over to CMATS. There will be clear separation between the two systems as the OneSKY system will require the contractor to work continually to develop and test the system without disruption to existing operations and operational equipment.

Completion of the OneSKY Equipment Rooms Project is scheduled for late 2016 to allow for the testing and compliance of the OneSKY equipment before the start of the OneSKY rollout in 2018.

3.3 Options considered to fulfil the Identified Need

The project has considered three options:

3.3.1 Refurbishment of Existing Facilities

The option to refurbish the existing equipment rooms was considered a high risk option due to:

- the high risk of interruption to the existing air traffic management services caused by refurbishment works such as excessive dust, noise, building vibration, disruption to power and cooling services and the risk involved in moving operational TAAATS computer servers and equipment to make space for OneSKY equipment; and
- the complexity involved in refurbishing existing equipment rooms to meet the latest industry data centre standards for equipment room design, efficiency, power, cooling and security requirements.

3.3.2 Outsourcing the Equipment Rooms to a Third Party

The option to outsource to a data centre provider was discounted due to:

- the risk of interruption if the data centres were located outside Airservices facilities. The air traffic management system incorporates in its design a complex, multiple back-up and degraded mode provision of service. Achieving diversified cable paths from an external data centre is difficult to establish and further complicated as it would require multiple telecommunications providers;
- bandwidth provision and time of delivery of messages and data - the Air Traffic Management System relies on real time data being displayed to the controllers, and any delay in telecommunications would adversely impact on efficiency of the system. Locating a data centre offsite at some distance from the controllers' consoles introduces the risk of delayed transmission of critical data to the consoles; and
- the provision of Air Traffic Management and operation and maintenance of specialised hardware and software being a core Airservices function and the requirement for frequent interaction between operational and technical specialists.

3.3.3 Construction of New Equipment Rooms

Airservices has chosen to construct new equipment rooms as this provides the lowest risk and is least disruptive to air traffic service delivery and safety.

Construction of new equipment rooms presents a much lower risk than refurbishment of existing facilities or outsourcing of the equipment rooms and will ensure the continuous delivery of air traffic management services.

3.4 Related Works

Extensive preparation for the transition to a new air traffic management system will take place over the coming years. Two related projects for construction and refurbishment of facilities will be made to the PWC during 2015:

- Airservices is planning the refurbishment of the Perth Air Traffic Control Service Centre which will also incorporate a refurbished equipment room to house OneSKY systems. (Submitted to PWC June 2015); and
- The construction of new air traffic services centres is planned for Melbourne and Brisbane which will provide operational rooms from which services are delivered. The design of the new OneSKY equipment rooms will take into account the location of the air traffic services centres to allow for the integration of data, voice, power and cooling between facilities. (Will be submitted to PWC in late 2015).

3.5 Heritage considerations

The proposed equipment rooms are sited within existing Airservices compounds on airports and no heritage considerations are anticipated. No areas of Aboriginal cultural significance were identified during the study of the site or during the site investigation.

3.6 Environmental impact assessments

Airservices on-ground developments and operations that occur on federally-leased airports are required to comply with the *Airports Act 1996*. The Airports Act sets out the environmental direction and targets for activities that include: reducing energy and water consumption, reducing waste generation, minimising land contamination, conservation of heritage and biodiversity, ensuring good air quality, and ecologically sustainable design of buildings.

The contractor for the OneSKY equipment rooms will be required to demonstrate compliance with the above environmental, legal and policy requirements and also prepare environmental assessment reports that describe environmental hazards and values that occur on site and within vicinity of the selected construction site.

3.7 Impact on local community

The proposed development is not expected to have any impacts on the local community or general public as construction and siting are located within the current Airservices compounds.

3.8 Stakeholder Consultation

Extensive consultation has been undertaken with both Melbourne Airport and Brisbane Airport on the location, size and visual aspect of the new facilities. All federally-leased airports are required to submit a Major Development Plan for major airport developments on the airport site. A draft version of the Major Development Plan must undergo public consultation before being submitted to the Minister for Infrastructure and Regional Development for a decision. This process will be undertaken concurrently with the PWC process.

Airservices charges airlines and aircraft operators for the use of its services and this revenue funds its operating and capital expenditure requirements. Both the capital expenditure and prices are subject to extensive consultation with these customers and with other affected stakeholders (airport owners). The prices for these services are regulated by the ACCC under the Prices Surveillance sections of the *Competition and Consumer Act 2010*. Under this regulatory arrangement, the ACCC also consult with Airservices customers and stakeholders to assess whether Airservices capital expenditure is at an appropriate level (i.e. fit-for-purpose with no excess).

4. Purpose of Works

4.1 Project Objective

The main objective of the OneSKY Equipment Rooms Project is to build new equipment rooms within Airservices Melbourne and Brisbane compounds, to house the computer and communications equipment systems for a new national air traffic management system to be delivered by the OneSKY Program starting in 2016.

These facilities must meet stringent reliability and security requirements in order to adequately support air traffic control in more than 11 percent of the world's airspace, 24 hours a day, and seven days a week.

4.2 Site Selection

Airservices has long term leases covering the sites in Melbourne and Brisbane.

The sites identified for the proposed equipment rooms are located near existing air traffic service centres, and within existing, secured Airservices compounds. The locations facilitate 24 hour, seven day access by certified technical staff who will be required to maintain the facilities once commissioned.

Airservices has sought advice from the potential equipment room providers on suitable sites within Airservices existing compounds. The location of the Airservices compounds are shown below.



Figure 2: Airservices Compound - Melbourne Airport

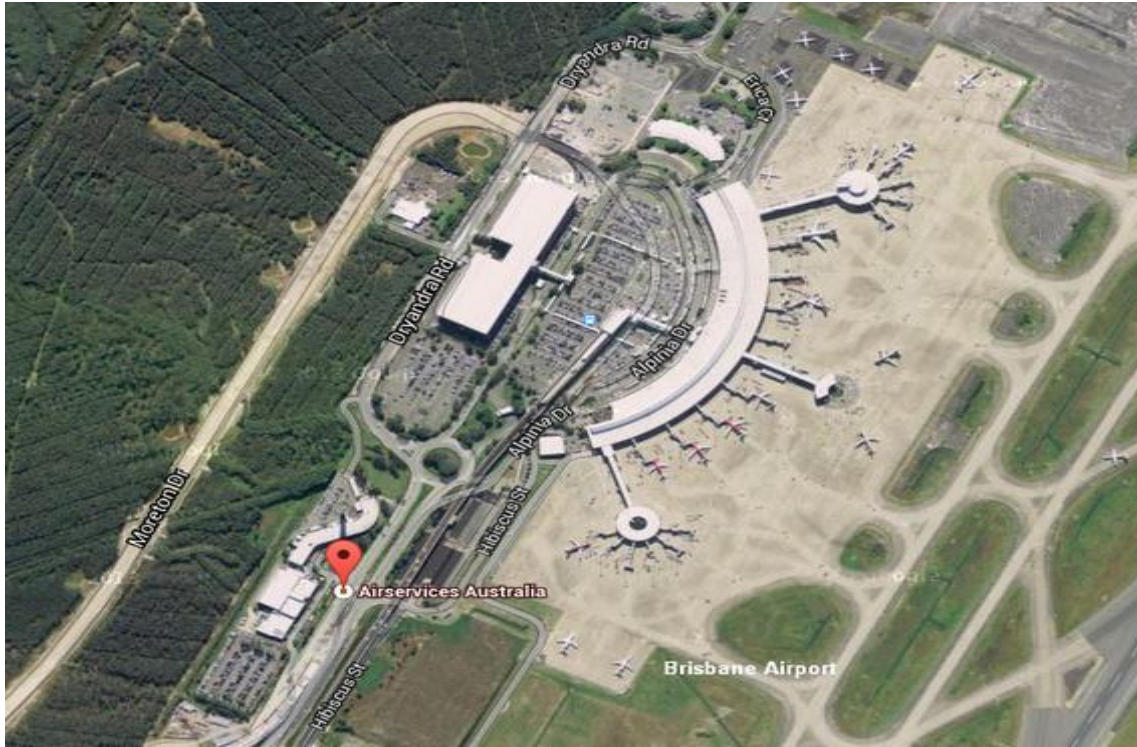


Figure 3: Airservices Compound - Brisbane Airport

4.3 Project scope

The scope of the OneSKY Equipment Rooms project is to design and construct fit-for-purpose equipment rooms in Melbourne and Brisbane. This will include site preparation, demolition, construction works, commissioning and fit out.

The rooms are designed to house 94 medium density specialty IT equipment racks and 45 high density specialty IT equipment racks (for essential air traffic management equipment as specific and developed by the OneSKY project), voice recording equipment, a joint development and testing facility, rooms for voice recorders and voice replays, and communications equipment. A minimum floor loading of 1224 kg/m² is required.

The rooms will be built in accordance with Australian Legislation, Airservices specific requirements, and to a minimum of a Tier 3 ANSI/TIA-942:2005.

Equipment rooms will be constructed at appropriate distances from the existing air traffic service centre facilities at both sites to maximise operational effectiveness and efficiency and to allow for the integration of data, voice, power and cooling between facilities.

4.3.1 Zoning and local approvals

The locations of the proposed equipment rooms are within an area of land leased by Airservices from Melbourne and Brisbane Airports. The sites are located in accordance with the relevant approved Airport Master Plans for both airports. Airservices will work closely with Melbourne and Brisbane Airports in relation to the required zoning and development planning procedures.

The proposed works do not require acquisition of additional land or involve land disposal aspects.

4.3.2 Applicable Codes and Standards

The design of the new facilities will conform to the relevant sections of the Building Code of Australia (BCA) and relevant current Australian Standards and Codes.

4.3.3 Reliability and availability

The equipment room facility must have an availability of 99.9997% (for Mechanical/Electrical Systems) calculated annually. In other words, operational reliability will be built to mean time between outages at 200,000 hours (8333 days) and a mean time to repair of 40 minutes.

4.3.4 Planning and design concepts

The proposed project incorporates the following considerations:

- design life of 25 years;
- requirements to comply with Tier 3 ANSI/TIA-942:2005;
- consideration and implementation of best available and appropriate Work Health and Safety design features;
- consideration and implementation of best available and appropriate workplace design and amenity;
- consideration and implementation of concepts for the long term maintenance and upgrade of plant and major building components;
- durability and maintainability in terms of low life cycle costing; and
- environmentally sustainable design.

4.3.5 Electrical services

Electrical services will include all switchboards, lighting and Emergency Warning Instruction System (EWIS) to the requirements of the BCA, applicable Australian standards and requirements of local authorities.

4.3.6 Fire protection and security measures

The equipment rooms are required to align with the Australian Government Protective Security Policy Framework (PSPF) and the Australian Government Information Security Manuals (ISM) security standards. Information that details the equipment room design is classified as 'Protected' as per Australian Government Information Security Guidelines.

The equipment rooms will be formally assessed and certified under the PSPF as 'zone 3' - suitable for the storage of systems and infrastructure classified up to and including the level of 'Protected'.

The equipment rooms will include a fire detection system comprising a continuous air sampling and particle counting system (VESDA – Very Early Smoke Detection Apparatus) that has a range up to that of conventional smoke detectors to enable it to function as the primary detection system. The rooms will also incorporate a clean agent fire suppression system to fully flood the equipment room and under floor area so as not to damage the equipment and allow operation to continue, preventing outages.

4.3.7 Acoustics

The facilities will include an appropriate level of acoustic treatment consistent with the provision of a suitable working environment on an operational airport.

All construction equipment shall be fitted with noise suppressors, acoustic linings or shields and tools and silencers shall be kept in optimum working condition at all times.

4.3.8 Landscaping

Minimal landscaping will be required as the facilities will be sited within and adjacent to existing Airservices infrastructure. Any required landscaping will be designed to be low maintenance and low water use.

4.3.9 Water and energy conservation measures

The equipment rooms are designed and operated to achieve a National Australian Built Environment Rating System (NABERS) Whole Facility Data Centre Rating of 5 stars. This will provide the ability to measure and compare the energy efficiency of data centres. It also takes into account the energy

efficiency of IT equipment and infrastructure services.

4.3.10 Provisions for people with disabilities

The proposed project will comply with required provisions for disabled access detailed in the *Disability Discrimination Act 1992*. Provision for people with disabilities (including disabled toilets and wheelchair ramps to the main entrance) will be provided.

4.3.11 Childcare provisions

The facility is deemed a security restricted area. As such no child care provision has been included in the project.

4.3.12 Work, Health and Safety Measures

The proposed facilities will comply with Airservices internal work health and safety policies and procedures as well as the *Work Health and Safety Act 2011*.

In accordance with the *Building and Construction Industry Improvement Act 2005*, building contractors will be required to hold full occupational health and safety accreditation from the Office of the Federal Safety Commissioner under the Australian Government Building and Construction Occupational Health and Safety Accreditation Scheme. The construction site will be within a restricted area of the airports and will therefore be appropriately secured to prevent unauthorised access during the construction period. No special or unusual public safety risks have been identified.

5. Cost Effectiveness and Public Value

5.1 Project Budget

The overall budget of the proposed works is estimated to be \$35.4 million, exclusive of Goods and Services Tax. The project budget incorporates all construction costs, management and design costs, furniture and fittings, equipment and a risk and contingency provision.

In July 2014, the project sought construction quotations for the equipment rooms by conducting a Request for Tender through AUSTENDER. The responses received have been used to prepare the following project costs:

The cost for each equipment room is estimated at:

- Melbourne \$16.8 million
- Brisbane \$18.6 million

A detailed breakdown of the cost of the main elements is provided in the confidential cost estimate (Submission 1.1) submitted separately.

5.2 Details of project delivery system

The project will be delivered using a design and construct project delivery model. In addition to the main design and construct contract, Airservices will engage independent consultants to review the contractor's designs and progress of the works. Airservices will maintain an involvement in the project in project management, engineering, safety assurance and environmental management to meet its statutory and regulatory obligations. Interconnection and structured cabling will be installed by Airservices specialist contractors in preparation for transition to OneSKY. This will require voice circuits and data feeds to be duplicated in the existing TAAATS system as well as being available to OneSKY to ensure that transition is seamless.

5.3 Construction program / project schedule

Subject to Parliamentary approval, the construction works are intended to commence in late 2015, with all major works expected for practical completion and commissioning between September 2016 and November 2016.

5.4 Revenue

No revenue will be derived from the proposed equipment rooms.

5.5 Public Value

The proposed works contribute to aviation safety in Australia before, during and after the transition to the CMATS solution for air traffic management. The work will establish fit for purpose facilities to house the national air traffic management system for the next 25 years.

6. Acronyms

Acronym	Description
ACCC	Australian Competition and Consumer Commission
ADATS	Australian Defence Air Traffic System
ANSI/TIA	American National Standards Institute / Telecommunications Industry Association Telecommunications Infrastructure Standard for Data Centres
ATC	Air Traffic Control
ATSC	Air Traffic Services Centre
BCA	Building Code of Australia
BSA	Building Standard of Australia
CMATS	Civil and Military Air Traffic System
FIR	Flight Information Region
ISM	Australian Government Information Security Manuals
LTPA	Long Term Pricing Agreement
NABERS	National Australian Built Environment Rating System
PCC	Pricing Consultative Committee
PSPF	Australian Government Protective Security Policy Framework
PWC	Parliamentary Standing Committee on Public Works
RAAF	Royal Australia Air Force
RMA	Reliability, Maintainability and Availability
TAAATS	Australian Advanced Air Traffic System
VESDA	Very Early Smoke Detection Apparatus