SYDNEY (KINGSFORD SMITH) AIRPORT TOWER REFURBISHMENT PROJECT

SUBMISSION 1.0
(PUBLIC)

STATEMENT OF EVIDENCE
TO THE
PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS

AIRSERVICES AUSTRALIA
CANBERRA ACT
NOVEMBER 2020

Sydney (Kingsford Smith) Airport Tower Refurbishment Project
Submission 1.0

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EXECUTIVE SUMMARY

The control tower at Sydney (Kingsford Smith) Airport was constructed between 1993 and 1995 (commissioned in 1996) with a design life of 40 years. Although the tower has been sustained through regular maintenance, the mechanical and electrical systems are approaching end of life. Airservices Australia (Airservices) is undertaking a national program to replace the current tower technology system air traffic controllers use to track and communicate with aircraft with an Integrated Tower Automation Suite (INTAS), and the capacity and availability of the current electrical and mechanical services in the tower would not support the transition to INTAS.

Airservices is seeking approval to undertake the Sydney (Kingsford Smith) Airport Tower Refurbishment Project to address these issues. The electrical and mechanical systems will be fully replaced with upgraded systems, and the safe transition to these new systems will be achieved through the construction of a Building Services Centre next to the tower base building. The new building will provide a secure facility to house the electrical and mechanical services as well as back-up generators with their associated fuel supply systems.

Other facilities and structures will be refurbished to ensure the tower can continue providing Air Traffic Control Aerodrome services for another 15 years without any further major infrastructure works.

The overall cost of the Sydney (Kingsford Smith) Airport Tower Refurbishment Project is estimated at $24.6 million (exclusive of GST) and includes the following components:

- construction of a new Building Services Centre building
- upgrade and/or replacement of mechanical and electrical building services
- general infrastructure refurbishment activities
- rectification of potential work health and safety (WHS) issues (such as fire protection, lift and cladding)
- decommissioning, make good and disposal of superfluous equipment, systems and services.

The tower was included in the Commonwealth Heritage List in 2016. This classification requires Airservices to maintain the heritage value of the tower, which adds complexity to the building structure refurbishment works.

Other environmental issues associated with the works include potential adverse impacts from soil and water contamination, particularly from existing contaminants such as Per- and Poly-fluoroalkyl Substances (PFAS). These issues will be managed through the implementation of a Construction Environmental Management Plan (CEMP).

1. Project Title

1.1 Airservices Australia, Sydney (Kingsford Smith) Airport Tower Refurbishment Project.

2. Airservices Australia

2.1 Airservices is a Government-owned organisation established under the *Air Services Act 1995* for the provision of air traffic management, air navigation support (communications infrastructure, radar and navigation aids) and Aviation Rescue Fire Fighting Services (ARFFS) to the aviation industry.

2.2 Airservices derives its revenue from the provision of Air Traffic Control (ATC) services and ARFFS, which fund its operating expenses and investment in capital works.

2.3 Airservices operates commercially on a fee-for-service basis and generally receives no appropriations from the Government. However, in 2020 Airservices has received Commonwealth assistance following the unprecedented impact of COVID-19 on the aviation industry.

3. Context

3.1 The existing control tower at Sydney Airport was constructed between 1993 and 1995 with a design life of 40 years. Since commissioning, the tower has been sustained through regular maintenance. The tower now requires mechanical, structural and electrical upgrades, rectification of WHS issues, and other general refurbishment works to replace infrastructure that has reached end of life.

3.2 In 2012 Airservices commenced a national program to progressively upgrade from the current Eurocat tower technology system to the Integrated Tower Automation Suite (INTAS).[1] INTAS consists of automation software that presents flight plan data, surveillance pictures, status of airfield navigation aids and lighting, and communications interface to the air traffic controllers on a number of touch-screens.

3.3 INTAS has already been installed in eight of Airservices towers, however the current electrical and mechanical services in the Sydney Tower will not support the required increase in capacity and must be upgraded to accommodate the INTAS technology.

3.4 INTAS will also provide the required interfaces for integration with the future Civil Military Air Traffic Management System (CMATS) air traffic management functions.[2] INTAS will be

[1] The INTAS technology does not form part of this public works submission.
[2] CMATS is the future air traffic management system procured under the OneSKY Australia Program. The Sydney (Kingsford Smith) Tower Refurbishment Project is not part of this program.

commissioned in Sydney Tower in September 2022, and will interface with the CMATS system when it is commissioned in the Sydney Terminal Control Unit in September 2024.

3.5 In 2016, the tower was included on the Commonwealth Heritage List. This classification requires Airservices to maintain the heritage values of the tower, which adds complexity to the required building refurbishment works and will be managed through a heritage management plan as outlined in Section 4.9.

4. Need for works

4.1 Project Description

4.1.1 Sydney Airport is Australia's busiest airport and critical to the efficient functioning of the country's entire aviation network. The tower building is a Level A criticality operational building that operates 24/7 throughout the year. Continued safe air traffic operations at Sydney Airport are of the highest importance, and take precedence over all aspects of the tower refurbishment project.

4.1.2 The proposed Sydney (Kingsford Smith) Airport Tower Refurbishment project will enable Airservices to undertake an in-situ transition from the current generation technology to new INTAS technology. The tower must remain fully operational to provide ongoing day-to-day air traffic control services while the tower systems are transitioned to INTAS. Extensive refurbishment and upgrades to the tower's building systems and associated infrastructure are required in order to ensure a service life for a further period of 15 years, as well as supporting the transition to INTAS technology.

4.1.3 Although the contractual requirements stipulate a 15 year life extension, it is expected that the majority of the refurbished and upgraded infrastructure will last 20 years. As the tower is heritage listed, the maintenance of the tower will be a continuing responsibility for Airservices or the airport authority beyond this period.

4.2 Identified Need

4.2.1 The tower was constructed between 1993 and 1995 (commissioned in 1996) and is currently 25 years into its 40-year design life. The tower houses the following:

- air traffic control positions (consoles) in the cabin
- staff accommodation facilities (such as offices, training and conference rooms)
- supporting amenities for air traffic controllers
- plant and equipment rooms.

4.2.2 Approximately 42 controllers operate on rosters to manage air traffic 24/7 in the Sydney area. The tower is designed to ensure optimal WHS (with break out rooms and other

amenities) and operational safety (with sufficient security, space, lighting, airflow, temperature and noise control). These amenities require a general refurbishment that also addresses emerging human factors implications for air traffic controllers (such as a room for resting after a curfew shift prior to driving home).

4.2.3 GHD conducted engineering assessments on the tower infrastructure in August 2018, and on the tower fabric in 2019 (to assess coatings and corrosion). These assessments identified that the building electrical and mechanical services systems are nearing end of life, and that some components of the facility do not meet current building codes and standards, WHS standards, or environmentally sustainable design requirements. The engineering assessments also identified that the existing building infrastructure has insufficient capacity to support the implementation of INTAS technology.

4.3 Options Considered to Fulfil the Identified Need

4.3.1 The following options were considered by Airservices to rectify deficiencies in capacity, functionality and compliance of the tower:

- Option 1 – maintenance of the existing facility (that is, do nothing)
- Option 2 – tower life extension to enable in-situ transition to INTAS
- Option 3 – construction of a new tower
- Option 4 – construction of a prefabricated cabin.

4.3.2 The detailed assessment of each option considered:

- building design life and state of existing services and infrastructure
- requirement to operate the Eurocat and INTAS systems in parallel during transition
- impact on the safety and continuity of 24/7 air traffic control operations during building works
- physical space requirements of the tower base building and cabin over the full life of the new system, including provision for additional air traffic control positions (consoles)
- a need to upgrade building services in the existing facility (mechanical, electrical, fire suppression, security and telecommunications) that are approaching their end of life
- program timeline for infrastructure and building works
- total project cost and value for money.

4.4 Option 1 – Maintenance of the existing facility - Do Nothing (Not recommended)

4.4.1 This option was examined but was not considered viable as Airservices nationwide upgrade to INTAS is a prerequisite for the introduction of the Civil Military Air Traffic Management System (CMATS).

4.5 Option 2 – Tower life extension to enable in-situ transition to INTAS (Preferred option)

4.5.1 The preferred option will extend the life of the tower and enable an in-situ transition to INTAS. This option offers a shorter transition period, lower cost, and minimises financial and service disruption risks compared with construction of a new tower. This option will also meet the time constraints of the CMATS transition.

4.5.2 The in-situ transition requires an additional building (the new Building Services Centre) to de-risk the technical transition. The new building also allows for the relocation of generators, uninterruptible power supplies, and chillers from the control tower building.

4.5.3 The detailed analysis of the requirement for the new Building Services Centre considered:

- spatial constraints of the existing plant footprint, which is insufficient to house required building services without impacting the building layout and heritage
- changes in the electrical configuration while maintaining operational services
- separation of plant and the operational facility to reduce the risk of fire to the operational facility
- transition planning and associated risk mitigation
- lessons learned from the Cairns, Brisbane and Perth tower life extension projects, specifically around electrical and mechanical transition planning
- optimising the vacated plant footprint within the existing building to repurpose for improved tower amenity, stand down and administration space.

4.5.4 Some of the key lessons learned from the Cairns, Brisbane and Perth tower life extensions are as follows:

- Stakeholder Engagement - establish effective communications with external stakeholders early. The Project communications plan is complete and early discussions with stakeholders have commenced.
- Permit Approval Delays - ensure all permits are approved before commencing the implementation phase of the project. The Project schedule includes timeframes for approval and early discussions have commenced with Sydney Airport Corporation Limited (SACL).

- On-site works coordinator - by allocating an on-site coordinator, all information flowed through the correct channels ensuring speedy resolution of any queries and issues. This also ensured that the cutover and transition activities were completed in line with scope of works. The Project budget includes funding for a site manager to fulfil this role.

4.5.5 Overall, this option delivers the following benefits:

- provides a facility life extension for a further 15 years
- ensures reliability, availability and maintainability of mechanical and electrical infrastructure
- provides infrastructure capacity to facilitate the implementation of future systems (INTAS)
- rectifies non-conformances with building codes and standards
- modernises the standard of accommodation and amenities for staff to meet current legislative and efficiency standards
- minimises heritage implications.

4.5.6 In summary, this option demonstrates greater value for money and is preferred due to:

- lower total project cost
- lower risk of service disruption arising from the building services transition (the new Building Services Centre will allow parallel operations of two systems during transition)
- lower risk of project timeframes not being met (lower complexity and fewer dependencies).

4.6 Option 3 – Construction of a new tower (Not recommended)

4.6.1 Airservices considered the option of constructing a new tower. This option was discounted due to the complexities associated with the impact on air traffic control operations during construction, the heritage implications, the requirement for regulatory approval of a new tower location, the comparatively higher cost, and insufficient construction time to meet the constraints of the Civil Military Air Traffic Management System (CMATS) transition.

4.7 Option 4 – Prefabricated cabin added to the tower (Not recommended)

4.7.1 GHD was engaged to assess the feasibility of adding a prefabricated cabin on top of the existing tower. GHD advised that adding another level to the tower was not feasible, due to heritage impacts, technical complexity, structural changes, cost, and operational impact, including the need to relocate tower staff and services for a period of at least six months.

4.8 Environmental impact assessments

4.8.1 Airservices on-ground developments and operations on federally leased airports are required to comply with the *Airports Act 1996* (Airports Act), *Airports (Environment Protection) Regulations 1997* and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The legislation sets out the environmental direction and targets for activities including: reducing energy and water consumption, reducing waste generation, preventing land contamination, conservation of heritage and biodiversity, ensuring good air quality, and environmentally sustainable design principles of buildings.

4.8.2 The project has not met the triggers under the Airports Act that would require the development of a Major Development Plan (MDP).

4.8.3 The main environmental issues associated with this project include:

- existing soil impacts, particularly from existing contaminants such as PFAS and asbestos
- protection of tower heritage values and inclusion on the Commonwealth Heritage List
- vegetation removal to allow for the installation of a new security fence.

4.8.4 In 2019 Airservices completed an initial high level environmental impact screening to determine whether the proposed works are likely to have an adverse environmental impact. The outcome of this screening assessment resulted in the requirement for a detailed Environmental Impact Assessment.

4.8.5 To meet Sydney Airport Corporation Limited's (SACL's) planning approval requirements, Airservices engaged an Environmental Specialist to draft a Review of Environmental Factors, which applies the same environmental assessment methodologies and fulfils the requirement for an Environmental Impact Assessment. The Review of Environmental Factors identifies the environmental impacts of the proposed development and the measures to be implemented to avoid or mitigate these impacts. The draft Review of Environmental Factors application will be submitted to SACL, prior to submission of the project development application in 2020.

4.8.6 SACL will consider the requirements of the EPBC Act, the Airports Act, the *Airports (Environment Protection) Regulations 1997*, and the SACL *Airport Environment Strategy 2019 – 2024* before approving the development application. The outcome of the Review of Environmental Factors will determine whether a referral to the Department of Agriculture, Water and the Environment is required under the EPBC Act.

4.8.7 An Environmental Site Assessment (ESA) is required to assess the level of contamination in the soil within the existing compound. This is due to the potential for low level PFAS

contamination, as well as other potential contaminants such as asbestos fragments and hydrocarbons from the former underground fuel storage system.

4.8.8 Airservices has undertaken a Limited ESA in accordance with the National Environmental Protection Council (NEPC) National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) and PFAS National Environmental Management Plan (NEMP) (HEPA 2018). This investigation involves sampling of soil for potential contaminants from six borehole locations within the Sydney tower compound.

4.8.9 The findings of the Limited ESA confirmed the presence of low level PFAS contamination and asbestos containing materials in soil. Remedial/removal works will be required prior to construction to address asbestos containing materials identified on the soil surface and in shallow fill.

4.8.10 The Construction Environmental Management Plan will include an Asbestos Management Plan and unexpected finds procedure to manage any remaining asbestos containing materials encountered during construction activities. Any material requiring offsite disposal will require further waste classification sampling during the construction phase of the project in accordance with NSW EPA Waste Classification Guidelines and the PFAS NEMP. As the project works will be wholly conducted within the Sydney tower compound, there are no anticipated potential impacts on the wider community.

4.8.11 The Construction Environment Management Plan will be prepared and implemented by the contractor, to address and control potential environmental impacts during construction identified in the Review of Environmental Factors and Environmental Site Assessment. The Construction Environmental Management Plan will be submitted to SACL for approval and will cover a range of environmental controls for issues including (but not limited to):

- dust emissions
- noise and vibration control during construction activities
- air quality preservation
- site contamination and hazardous materials management (asbestos and PFAS)
- soil, erosion and sediment control
- fauna and flora management
- cultural heritage site management
- waste management
- hours of construction (during business hours and curfew).

4.8.12 In accordance with the Construction Environmental Management Plan, the contractor will be required to demonstrate compliance with all applicable environmental legislative requirements and demonstrate that all environmental risks of the construction project are identified and managed accordingly.

4.9 Heritage and geographical considerations

4.9.1 As the control tower building is included in the Commonwealth Heritage List, the project will comply with all applicable legislation in the management of the tower heritage values, including the EPBC Act and the Airports Act.

4.9.2 In accordance with EPBC Act and regulations, a Heritage Management Plan for the tower was put out for public comment and provided to SACL for review. This plan has been reviewed by the Department of Agriculture, Water and the Environment (Heritage Section) and endorsed by the Australian Heritage Council. Airservices has engaged a heritage specialist to complete a Heritage Impact Statement as part of the Review of Environmental Factors submission to SACL. If the Heritage Impact Statement identifies that the project could have a significant impact or adverse effect on known heritage values, then referral to Government under the EPBC Act may be required.

4.9.3 In accordance with the Heritage Management Plan, the conservation objectives for the tower include:

- maintaining the external presentation of the control tower, including the following structural elements (see **Figure 1**):
    - cable-stayed concrete shaft
    - steel-framed external lift which is attached to the shaft by fly braces
    - spiral staircase
    - amenities and equipment level, which cantilevers from the top of the shaft and is carried on a steel platform
    - circular control cabin, with canted windows
- maintaining the internal components that distinguish the tower, specifically the column that supports the cabin roof and peripheral console concept
- views of the tower from the public realm, including General Holmes Drive and within the airport complex.

4.9.4 The scope of the refurbishment activities, as well as the construction of the new Building Services Centre, will be in accordance with the Heritage Management Plan to ensure the heritage values of the tower are not adversely impacted.

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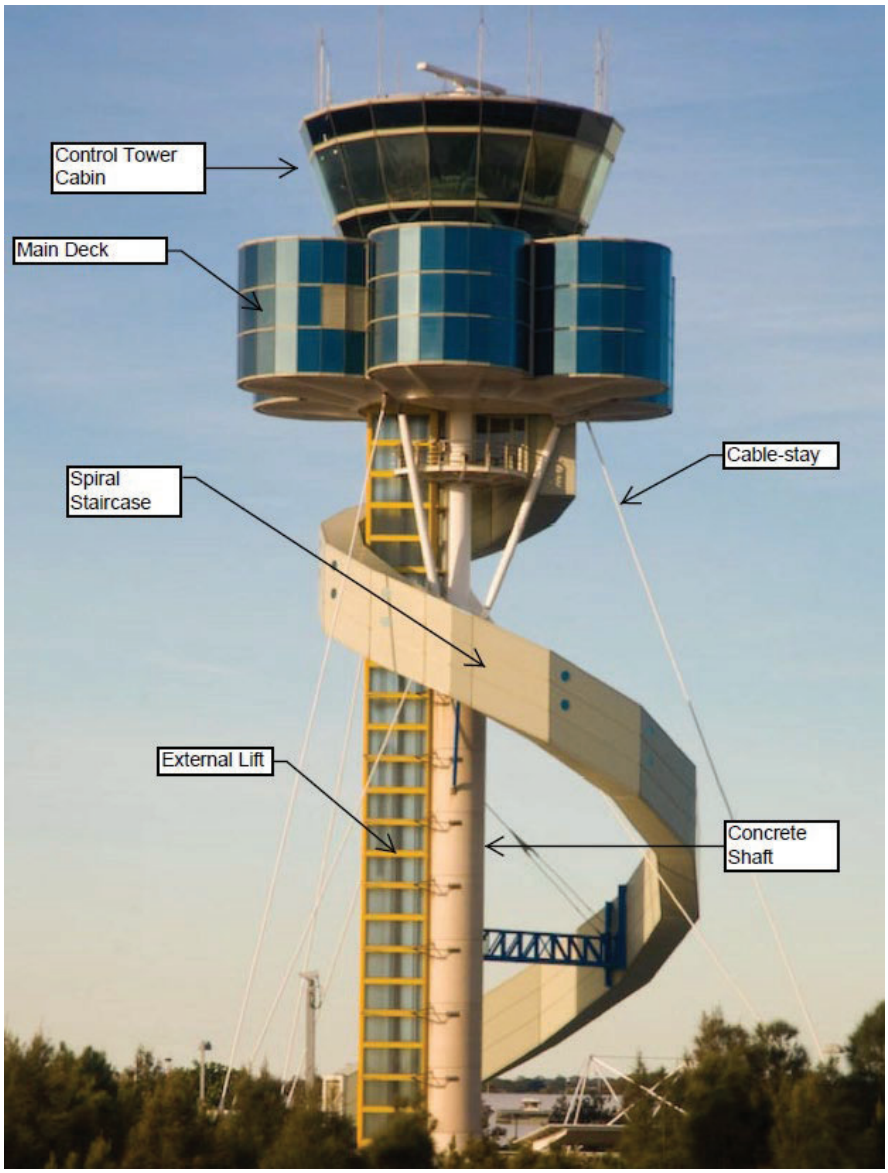

Figure 1 – Sydney (Kingsford Smith) Tower Structural Components

4.10 Stakeholder consultation

4.10.1 The following internal stakeholders have been consulted in the design phase:

- operational teams and air traffic controllers
- technicians
- maintenance staff
- project team.

4.10.2 Airservices is consulting further with both internal and external stakeholders including the airport, unions, the appropriate government departments, Airport Planning Coordination

Forum, and the Sydney Airport Community Forum. This engagement commenced in July 2020.

4.10.3 The project team will engage with the unions, industry and airlines once the project enters implementation phase, to inform all stakeholders of the timelines, scope and any impacts to the aviation industry.

4.10.4 Airservices will also engage a contractor to provide support in managing the heritage implications of the tower refurbishment, including consultation with the Department of Agriculture, Water and the Environment.

4.10.5 As the facility is located within an area of land leased by Airservices from SACL, extensive and ongoing consultation is being undertaken with SACL about the proposed project.

4.11 Stakeholder Feedback

4.11.1 In line with the project's communication plan, the project team has continued to engage key internal stakeholders through the distribution of project newsletters and conducting several staff forums/workshops in order to inform and update staff on the project's progress through the design phases.

4.11.2 Staff forums were held in Sydney to present the design for the refurbishment activities. Feedback received from staff and key internal stakeholders has been incorporated into the final design.

4.12 Impact on local community

4.12.1 The proposed works are not expected to have any significant impact on the local community, as the construction and siting are located within the current Airservices compound at Sydney Airport. Construction will be conducted during normal working hours. As the tower will remain fully operational during the project, power and communications will be unaffected, and there will no impact on surrounding businesses or the public.

4.12.2 Mitigation strategies (per the Construction Environmental Management Plan) will be implemented to minimise any impact on public access to Shep's Mound (airport viewing facility). Construction noise will be lower than the normal airport environmental noise level, and will not be noticeable to the residents of Botany (approximately one kilometre away).

4.12.3 The project is expected to generate new employment opportunities for construction and building contractors during the life of the project. This is anticipated to include a minimum of 20 full time trade jobs over a period of 13 months, equating to an approximate $2.6 million (based on an average salary of $120,000 net per year) economic benefit to the local economy. Tender evaluation for the construction works will include an assessment of the tenderer's commitment to engage local sub-contractors for the majority of the works.

5. Purpose of Works

5.1 Project Objectives

5.1.1 The objectives of the project are to:

- upgrade the supporting services to extend the tower design life and meet current building codes and standards;
- modernise and enhance the building amenities to bring them to up to modern standards; and
- provide a suitable tower facility at Sydney Airport to support the upgraded INTAS technology.

5.2 Site Selection

5.2.1 Construction activities will be conducted within the existing secure Airservices compound at Sydney Airport, as shown in **Figure 2** below.

5.2.2 An additional temporary site will be required (outside the current Airservices lease site boundary) for the duration of construction activities. This site will accommodate the Airservices temporary carpark (as indicated), as well as providing a lay-down and office area for the contractor conducting the refurbishment.

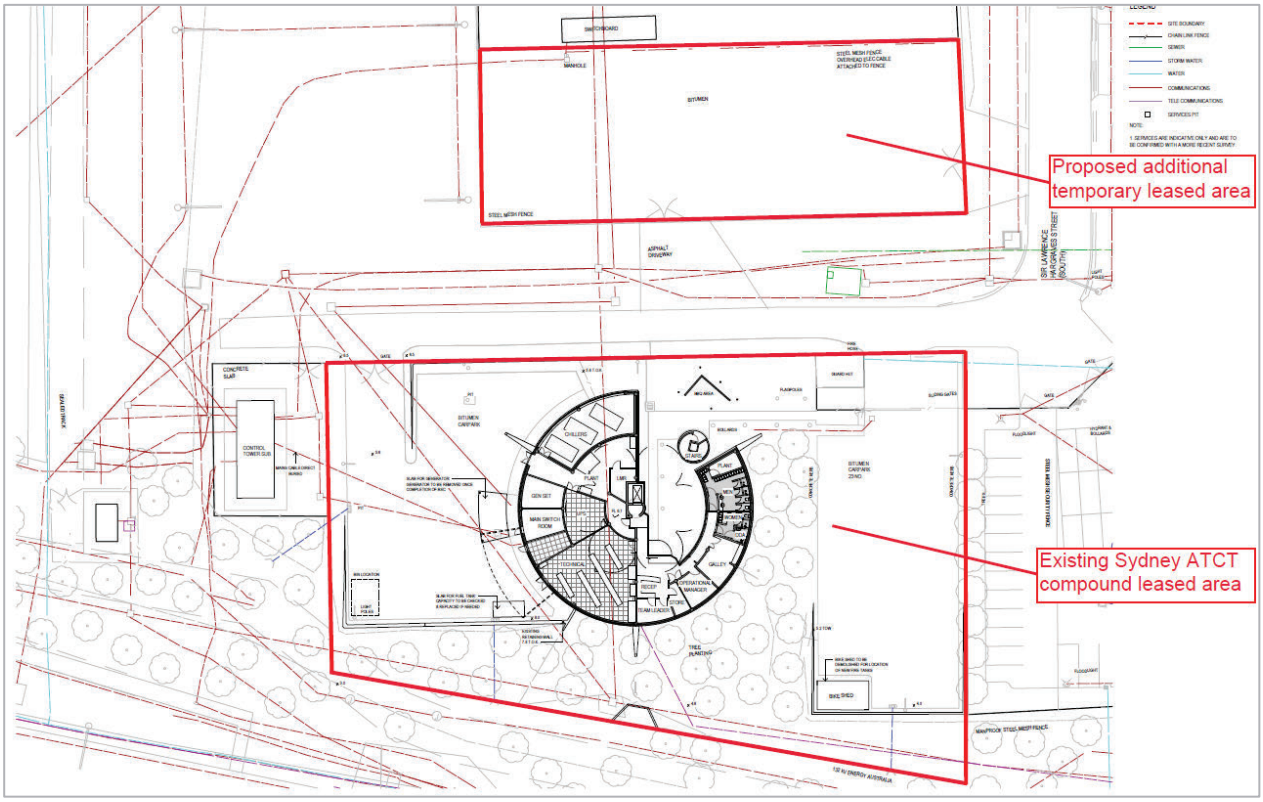

Figure 2 - Airservices Sydney Air Traffic Control Tower Compound

5.3 Project Scope

5.3.1 The Sydney (Kingsford Smith) Airport Tower Refurbishment Project includes the following in-scope items:

- construction of a new Building Services Centre to accommodate the new chillers, generators, electrical distribution boards and Uninterruptible Power Supply
- upgrade and/or replacement of building services (including electrical, mechanical, hydraulics, fire protection, physical security and communications)
- general refurbishment activities including:
    - roof repair
    - structural corrosion repairs
    - inspection/replacement of ductwork and pipe work
    - security upgrades including fencing and access control
    - optimised layout of the administration area at the base of the building (due to the removal of plant)
    - painting of internal and external surfaces
    - fit-out and refurbishment of tower internals, including flooring, kitchens, amenities and doors
    - cabin refurbishment including flooring, ceiling, carpet, consoles, task lights and blinds
    - external landscaping / car park
- rectification of WHS issues (such as fire protection, lift, cladding)
- decommissioning, make good and disposal of legacy equipment, systems and services.

5.4 Zoning and local approvals

5.4.1 The proposed works will take place within the tower compound area leased by Airservices from SACL in accordance with the approved airport Master Plan.

5.4.2 Under the Sydney Airport Master Plan, the tower compound is zoned as *Aviation Activity and Aviation Support Facilities*.

5.4.3 Airservices will arrange with Sydney Airport to use an additional temporary leased area (shown in **Figure 2**) to establish a contractor's lay-down and administration area, and accommodate the Airservices staff carpark for the duration of the construction activities.

5.5 Applicable legislation

5.5.1 The following key legislation is applicable to this project:

- *Air Services Act 1995*
- *Disability Discrimination Act (DDA) 1992*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Airports Regulations 1997*
- *Aviation Transport Security Act 2004*
- *Building and Construction Industry (Improving Productivity) Act 2016*
- *Work Health and Safety Act 2011*
- *Fair Work Act 2009*
- *Noise Policy for Industry, NSW EPA, 2017*
- *New South Wales State Planning Policy.*

5.5.2 The project is consistent with the Sydney Airport Master Plan, airport environmental policies and landscaping/planting plans.

5.6 Applicable codes and standards

5.6.1 The design of the new Building Services Centre and refurbishment of the existing facility will comply with all relevant sections of the following:

- *National Construction Code (NCC*
- *Building Code of Australia (BCA)*
- *Australian Standards*
- *International Organization for Standardization (ISO)/ International Electrotechnical Commission (IEC) 11801 – Part 1*
- *Airservices Environment Strategy.*

5.7 Planning and design concepts

5.7.1 The planning and design considerations for the project include:

- extending the tower design life by 15 years
- design life of 50 years for the new Building Services Centre
- meeting all applicable government legislation, regulations, building codes and standards in relation to:
    - energy use and management
    - stormwater management, water conservation and water recycling
    - environmental sustainability
- Building Importance Level 4 (with regards to earthquake and wind loads)
- finishes and facades that blend in with the existing building and which comply with the Heritage Management Plan recommendations
- accommodation layouts to meet WHS standards, Airservices office accommodation guidelines and air traffic control operational requirements
- security requirements
- whole-of-life cycle cost and resource requirements.

5.8 Plans and drawings

5.8.1 The Schematic Design (architectural) for the Sydney (Kingsford Smith) Airport Tower Refurbishment project is included as Attachment 2 of the confidential submission provided separately (Submission 1.1).

5.9 Master site planning, including details of future developments

5.9.1 The tower site is zoned as AD1 (Aviation Activity and Aviation Support Facilities) in SACL's Master Plan 2039 - Land Use Plan (see **Figure 3**):

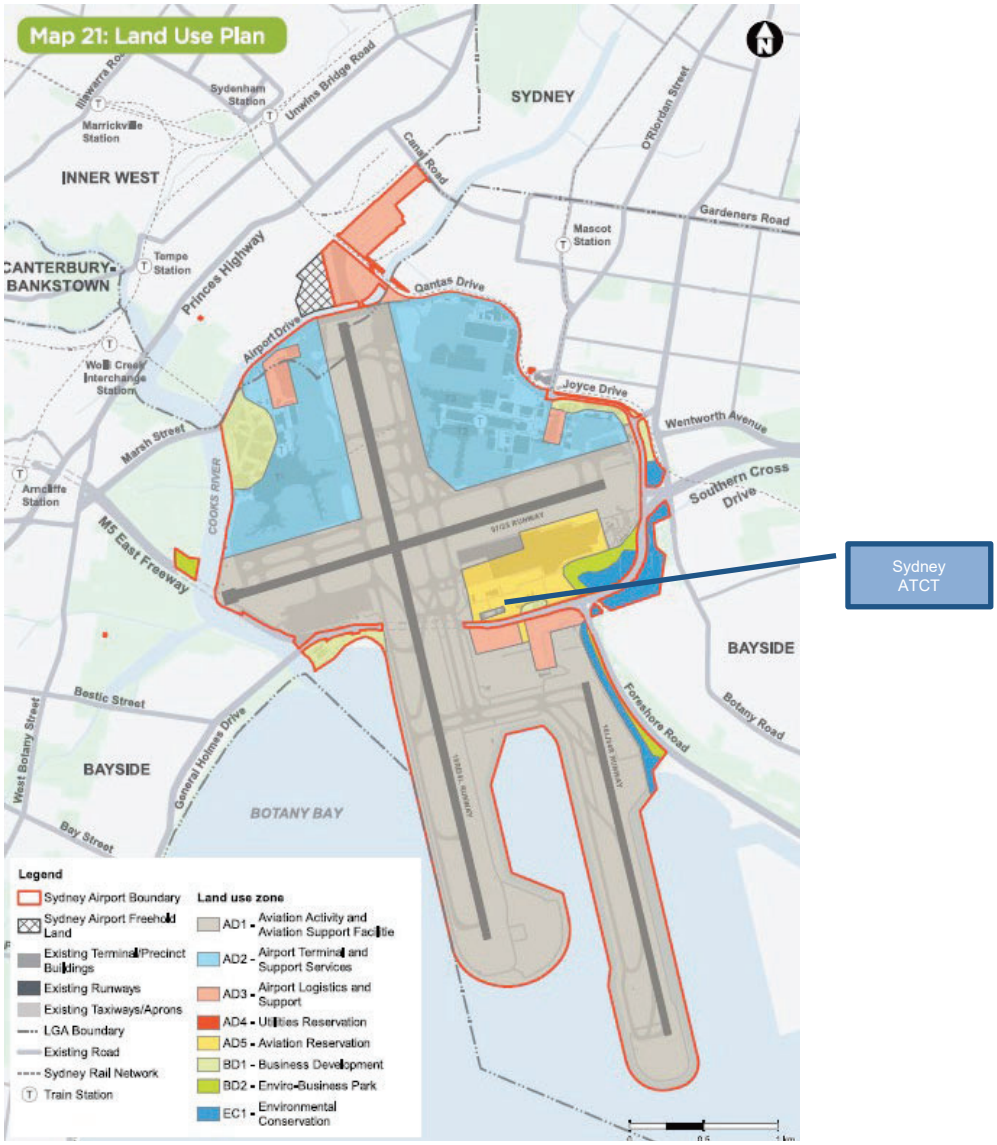

Figure 3 - Master Plan 2039 - Land Use Plan (p.181)

5.10 Building/Structural works

5.10.1 The existing tower is to be retained due to heritage obligations, and the proposed design will not modify the tower structure. In order to comply with current Australian standards for access, as well as integrating Airservices facilities user requirements, the tower base building, level 4 main deck and cabin will be refurbished. The tower base building refurbishment activities will include repurposing of existing areas to accommodate a new

stand down room for the controllers, flexible office space for staff, and upgraded bathroom and amenities.

5.10.2 The new Building Services Centre (BSC) is situated on the western side of the existing tower compound. The BSC will be designed as a Building Importance Level 4 structure (post-disaster function) and will consist of a reinforced concrete slab and footings with a steel-braced framed structure above to form the structure for louvred plant enclosures.

5.10.3 The Building Services Centre footprint is 30m x 8m, and is shown in perspective at **Figure 4** below, and plan view at **Figure 5** below.

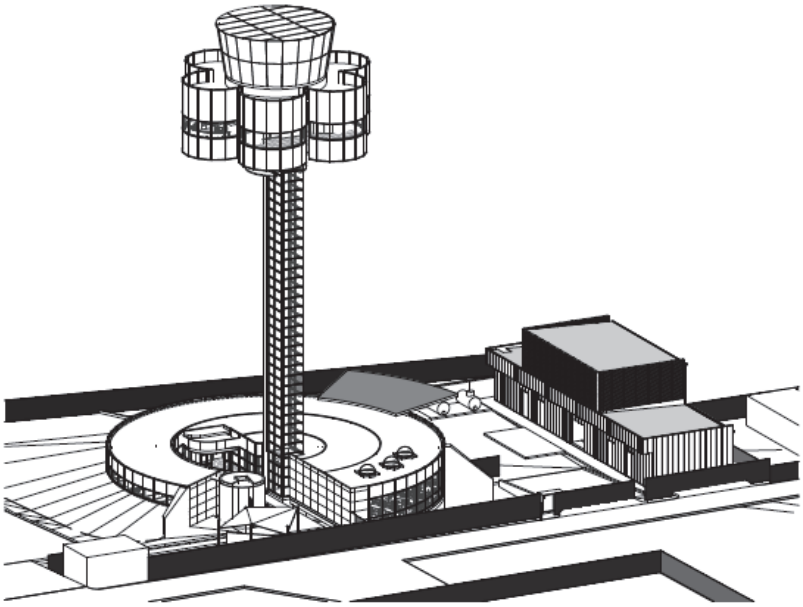

Figure 4 - Tower and Building Services Centre Perspective

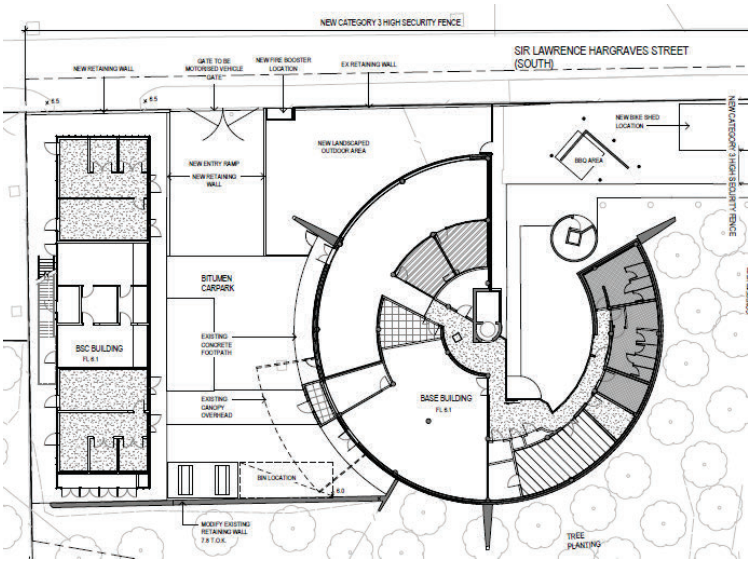

Figure 5 - Tower and Building Services Centre plan view

5.11 Mechanical and electrical services

5.11.1 The mechanical and electrical services will be upgraded or replaced to reliably accommodate the INTAS technology, and to provide service for an additional 15 years.

5.11.2 The new Building Services Centre building will house new chillers, generators, fuel pumps, electrical distribution boards, Uninterruptible Power Supply systems, battery racks and gas suppression systems.

5.11.3 Chillers:

- Two new air cooled chillers will be housed on the roof of the new Building Services Centre.

5.11.4 Generators:

- Two rooms each sized 3.5m x 7m for the A-Side and B-side Standby Generator.
- Both rooms equipped with large ventilation louvres for intake and exhaust.

5.11.5 Fuel:

- Two bulk fuel tanks each sized 3m x 4m for the A-Side and B-Side Bulk Fuel, with heavy vehicle access.
- Fuel pumps will be internally mounted in a 3m x 3m plant room.

5.11.6 Main Low Voltage Switchroom:

- Two rooms each sized 3.5m x 7m for the A-Side and B-side Main Switchboard.

5.11.7 Electricity Supply:

- The tower site current load is 261 Amps, and the expected total load (including INTAS) during transition is 460 Amps.
- The electrical infrastructure in the new Building Services Centre will supply a maximum demand of 546 Amps to support the new infrastructure and INTAS, as well as a contingency of 30 per cent for future load requirements.

5.11.8 Uninterruptible Power Supply (UPS):

- Two UPS equipment rooms each sized at 5.5m x 6m for the A-Side and B-side UPS.
- Each room will house the UPS equipment, switchboards and battery racks.
- Separate enclosures will be provided for the two battery strings.

5.12 Fire protection

5.12.1 The tower refurbishment activities will include the following fire protection works:

- Implementation of gas fire suppression systems to protect the equipment rooms, electrical UPS and switch rooms and provide aspirated type smoke detection to the tower base building, the main deck and the cabin for early smoke detection
- Provision of fire sprinklers and associated fire pumps (subject to a fire engineering assessment).

5.13 Security Measures

5.13.1 The refurbished facilities will align with the Australian Government's *Protective Security Policy Framework (PSPF)* and *Information Security Manuals (ISM)* security standards as well as requirements under the *Aviation Transport Security Act 2004*.

5.13.2 The physical security measures in scope for this project include upgrades and replacement of the following:

- Perimeter Fence
- CCTV System
- Electronic Access Control System
- Intruder Detection System
- Security Alarm System
- Guard Tour System
- Key Management System
- Security Lighting

- Security Intercom
- Crime Prevention through Environmental Design.

5.14 Acoustics

5.14.1 Airservices has specified maximum noise level requirements for sensitive areas such as the control tower cabin, equipment rooms, offices, plant rooms and external areas. An appropriate level of acoustic treatment will be provided for the control tower cabin, with the provision of a suitable working environment for air traffic controllers.

5.14.2 Construction noise and vibration will be managed and minimised in accordance with the Construction Environmental Management Plan.

5.14.3 A construction noise and vibration assessment is to be undertaken by the construction contractor prior to commencing work to identify the impacts of construction on the tower (critical internal areas) and neighbouring sites. All feasible and reasonable noise management measures identified in the assessment will be implemented, including:

- a detailed construction noise and vibration management plan will be developed before commencement of the site construction
- proper maintenance and operation of all plant and equipment
- fitting residential grade mufflers/silencers to all plant
- the use of acoustic screening and hoardings, where applicable
- conducting high-noise activities during standard construction hours only
- not undertaking construction activities predicted to result in excessive impact without additional precautions in place, as recommended by the noise impact assessment
- scheduling construction noise monitoring for when construction activities with greatest noise output are planned. This will identify the possibility of excessive noise impact and necessity for further noise monitoring
- monitoring of vibration in critical areas during construction activities that may disrupt normal activities
- a means for prompt communications between Airservices staff and construction management in case it is necessary to interrupt construction until effective measures can be implemented to reduce noise and vibration to an acceptable level.

5.14.4 An operational noise review was carried out during the detailed design stage to ensure operational noise emissions do not affect the amenity of adjacent areas at any time.

5.14.5 Post-construction noise monitoring is to be performed by the contractor to ensure that noise from the site meets the project specification and regulatory limits in the *NSW Noise Policy for Industry (2017)*.

5.15 Landscaping

5.15.1 Minimal new landscaping is expected under the construction activities, as the new Building Services Centre will be constructed within the existing Airservices compound. Some existing landscaping and vegetation may be disturbed due to the installation of the new security fence around the compound perimeter. Any new landscaping will be designed not to attract animals that may conflict with aircraft and to be of low maintenance and low water use.

5.16 Water and energy conservation measures

5.16.1 The refurbishment and construction works will meet all applicable government legislation, regulations, building codes and standards in relation to water and energy use and management including:

- design options that reduce the operational costs of energy and water consumption over the life of the asset
- energy efficient systems and equipment to achieve a National Australian Built Environment Rating System (NABERS) energy rating of at least 4.5 stars
- water efficient systems and fixtures to achieve a NABERS energy rating of at least 4 stars
- digital sub-metering, linked back to the building management system, to enable measurement of energy and water consumption
- a Construction Environmental Management Plan to manage the site works, including a waste management plan to maximise the recycling of construction and demolition waste
- collection, transportation and disposal of waste at approved regional landfills in accordance with local regulations
- disposal of redundant electrical equipment in compliance with the standard for collection, storage, transport and treatment of end-of-life electrical and electronic equipment.

5.17 Environmental sustainability

5.17.1 The project will implement Environmentally Sustainable Design initiatives as part of the design development process for the following categories:

- energy
- water
- wastes, hazardous substances and contamination
- land and soils
- air quality and emissions
- biodiversity
- heritage
- social and community.

5.18 Provisions for people with disabilities

5.18.1 The project will comply with required provisions for disabled access detailed in the *Disability Discrimination Act 1992*. Provisions for people with disabilities (including a disabled toilet) are already available at the tower, and will be refurbished.

5.18.2 A Building Surveyor site inspection of the tower building identified a number of non-compliances with respect to current building code and disability requirements. These non-compliances will be addressed during the design development process.

5.19 Childcare provisions

5.19.1 The tower facility is a restricted area and no childcare provision is applicable.

5.20 Work health and safety (WHS) measures

5.20.1 The proposed refurbishment activities and facility will comply with Airservices Safety Management System and WHS policies and procedures, as well as the *Work Health and Safety Act 2011* and National Codes of Practice.

5.20.2 Project safety and WHS specialists will be engaged on the project to undertake assessments to ensure all potential impacts are identified and correctly managed.

5.20.3 In accordance with the *Building and Construction Industry (Improving Productivity) Act 2016*, Airservices will require building contractors to hold full occupational health and safety accreditation from the Office of the Federal Safety Commissioner under the Australian Government Building and Construction Work Health and Safety Accreditation Scheme.

5.20.4 The construction site is within a restricted area and will be appropriately secured to prevent unauthorised access during the construction period. No special or unusual public safety risks have been identified.

6. Cost Effectiveness and Public Value

6.1 Project cost and budget

6.1.1 The project cost estimate for the proposed works is estimated at $24.6 million (exclusive of GST). This estimate was based on an analysis of the detailed design by two quantity surveyors, plus comparison with actual costs obtained from comparable projects. The estimate is at a P80 level of confidence and incorporates all construction and consultant costs, internal labour, equipment, travel and a contingency provision. A detailed breakdown of the cost elements is provided in the confidential cost estimate submitted separately (Submission 1.1).

6.2 Project delivery method

6.2.1 All projects in Airservices are managed in accordance with the Airservices Portfolio, Program and Project Management (P3M) framework, which is based on four project lifecycle stages – Start-up, Define, Execute and Close. An independent 'gate' review is conducted at the end of each stage to ensure readiness to proceed to the next stage.

6.2.2 A project manager will be engaged to manage the tower construction and refurbishment activities. In order to meet specific legislative and internal requirements, Airservices has developed robust project management systems to establish and enforce policies, procedures and accountabilities in areas such as safety management, systems engineering management, environmental management, operational management, risk management and financial management. To ensure all projects comply with these management systems, resources are engaged from each specialist area to:

- develop management plans
- document, validate and sign-off requirements
- approve final designs, work plans and other deliverables.

6.2.3 Specific engineering roles within Airservices have delegated authority under the *Air Services Act 1995* and associated legislation to approve engineering requirements, designs and commissioning readiness.

6.2.4 A construction contractor for the refurbishment work in the Execute stage will be appointed under contract via a tender process. Independent consultants, such as a quantity surveyor, are engaged via the Airservices preferred supplier panel.

6.2.5 External resources including technical support were utilised during the Define stage for cost and design planning, specialised assessments, and the preparation of the Construction Environmental Management Plan, Heritage Impact Statement and Review of Environmental Factors.

6.3 Construction program and schedule

6.3.1 Subject to parliamentary approval, construction works will commence as soon as feasible, with completion scheduled for September 2022.

6.3.2 A 52 week defects liability period (DLP) will commence on the date of practical completion of the refurbishment works.

6.4 Revenue

6.4.1 The project is funded under the Airservices Investment Plan. Airservices charges airlines and aircraft operators for services and this revenue funds its capital expenditure requirements. Charges levied are subject to extensive consultation with these customers and are regulated by the Australian Competition and Consumer Commission (ACCC) under the Prices Surveillance sections of the Competition and Consumer Act 2010.

6.5 Public Value

6.5.1 The public will benefit from the implementation of modern technology and fit-for-purpose facilities that enable the delivery of air traffic control services enhancing the safety and efficiency of airport operations.

6.5.2 The refurbishment and upgrade of supporting infrastructure will enable Airservices to meet current regulations, standards and guidelines, and improve its environmental performance, further contributing to a reduced level of emissions.

6.5.3 The project will generate short-term employment within the office fit-out and building infrastructure sectors and will provide local employment opportunities in a number of areas. These employment opportunities will be managed under the Airservices procurement processes (Professional Panels or vacancies advertised on the Airservices website).

7. Acronyms

Term	Description
ACCC	Australian Competition and Consumer Commission
ARFFS	Aviation Rescue Fire Fighting Services
ATC	Air Traffic Control
BSC	Building Services Centre
CHL	Commonwealth Heritage List
CMATS	Civil Military Air Traffic Management System
DDA	Disability Discrimination Act 1992
DLP	Defects Liability Period
EIA	Environmental Impact Assessment
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESA	Environmental Site Assessment
IEC	International Electrotechnical Commission
INTAS	Integrated Tower Automation Suite
ISM	Information Security Manuals
ISO	International Organization for Standardization
MDP	Major Development Plan
NABERS	National Australian Built Environment Rating System
NCC	National Construction Code
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
OneSKY	OneSKY Australia Program
PFAS	Per- and poly-fluoroalkyl Substances
P3M	Portfolio, Program and Project Management framework
PSPF	Protective Security Policy Framework
SACL	Sydney Airport Corporation Limited
UPS	Uninterruptible Power Supply
WHS	Work Health and Safety