AIRWAYS

Auckland Air Traffic Control Tower Replacement

Industry Consultation Clarification

12 February 2025

AIRWAYS

Contents

1. Executive Summary		**3**
2. Clarifications		**5**
2.1	Preferred Solution Change	5
2.2	Strategic Alignment	7
2.3	Auckland Capacity (International Equivalents)	9
2.4	Cost Confidence	10
2.5	Pier A1 impact on visibility of the current tower	13
2.6	Pier A1 impact on provision of contingency	14
2.7	70m Tower Visibility	15
3. Next steps		**16**

1. Executive Summary

In 2024, Airways conducted industry consultation to gather feedback on the Auckland Air Traffic Control Tower replacement options. This followed initial consultation in 2022, the outcome of which was to develop a hybrid solution with digital contingency. At that time, Airways indicated it would first investigate digital contingency and reconfirm the proposed approach prior to physical construction.

Having undertaken significant work and due diligence on digital solutions, the proposal consulted on in November 2024 was to construct a replacement physical tower as the most appropriate solution to maintain consistent service at Auckland's largest airport.

Airways is grateful for the submissions received.

In reviewing the submissions, Airways noted there were some differing interpretations of the information presented in the consultation document. This document seeks to clarify information provided in the consultation document, based on the feedback provided by stakeholders. Airways invites respondents to review and, if necessary, update their submission.

Below are the key areas where the response from submitters suggested a differing interpretation of the information presented in the consultation document to what was intended by Airways.

- **Preferred Solution Change** – clarification that the solution for the current runway is in line with the proposed approach outlined in the 2022 response to consultation document.
- **Strategic Alignment** – clarification on the alignment of the preferred solution with the recommendation from the industry engagement on Digital Aerodrome Services (DAS)
- **Auckland Capacity (International Equivalents)** – clarification on the statement that the scale of Auckland Airport's current and projected operations exceeds any digital unit currently operating globally.
- **Cost Confidence** – clarification on the construction costs for the replacement conventional tower, and when additional detail would be available.
- **Pier A1 impact on visibility from the Current Tower** – clarification on the impact to replacement plans caused by ongoing construction activities around the tower (e.g., Pier A1).

- **Pier A1 impact on Current Contingency Tower** – clarification on the statement that the construction of Pier A1 will obstruct critical views from the current contingency tower, impacting safety and requiring an alternative solution before 2026.
- **70m Tower Visibility** – clarification on potentially using a single tower for both the current and future runways.

2. Clarifications

2.1 Preferred Solution Change

Submission Topic

Airways has changed its preferred solution for the current runway due to external influences (e.g., Pier A1).

Clarification

The change to the preferred solution was not due to external influences but a result of the agreed approach of first investigating digital solutions to determine feasibility. The preferred solution in 2022 included a physical tower to control the current runway if a full digital solution was not deemed to be feasible.

The 2022 Consultation concluded with a decision to:

> *…"proceed with its proposal to implement a Hybrid digital tower at Auckland Airport, supported by a digital contingency tower".*

Hybrid Tower was defined as:

> *"A new tower structure, approximately 35m high, to provide a conventional tower for controlling the current runway, with digital capability for controlling the proposed northern runway in the future. Contingency would be a remote digital tower".*

The further investigation and due diligence on digital solutions undertaken by Airways following the 2022 consultation identified several concerns that were outlined in the 2024 consultation document affecting safety, capacity, and posing potential financial risks.

In 2022, Airways made the following two commitments:

1. "*Engage with an independent consultant to validate the concept of operations, requirements, including siting, and the implementation and procurement approach.*
2. *As our confidence and experience builds with the undertaking of the digital contingency tower validation there will be a review carried out prior to construction commencing on the Hybrid tower. This review will provide an opportunity to consider whether*
   (1) to proceed with the current plan to construct the hybrid tower and digital contingency facility, or

(2) go with a full digital primary tower facility (along with the digital contingency facility).”

Airways engaged with the independent consultant and progressed the Digital Contingency Tower project through a procurement process. Airways identified two key issues which resulted in the ‘review’ (Commitment 2 above) being completed before the deployment/ validation of the Digital Contingency Tower as a primary solution:

1. **Site Limitations:** Two potential sites were identified for the digital contingency tower, but one site’s visibility constraints compromised safety and operational capacity. The other site was reserved for a future conventional tower if the digital solution proved unfeasible.
2. **Cost Implications:** The costs associated with developing a digital contingency tower to primary tower standards increased significantly, making it comparable to a full digital solution. The key concern is that if the digital solution is unsuccessful as a primary tower, the cost increase incurred in developing a high-standard contingency tower would be wasted, making the overall expenditure higher than necessary.

For the current runway, the proposed solution of a **conventional tower** as the primary facility remains an option as stated in the 2022 consultation decision. However, the required height of that tower has increased to ensure it meets regulatory requirements, considering the proposed tower site and future airport development plans.

Additional Comments

Preferred Option Definition

The 2024 Industry Consultation aimed to confirm the review’s findings (Commitment 2 above) and proceed with design and construction of the selected solution from the 2022 Consultation — a conventional tower for the current runway.

Because the digital contingency is no longer considered as an option for the primary solution, it is no longer a prerequisite for construction of the conventional tower. Current efforts focus on delivering a tactical contingency solution for Pier A1, while a longer term solution is designed. The northern runway solution will be revisited once its timeline and operational requirements are clearly defined.

Secondary Concern—Timing Constraints

An additional concern remains regarding **when** the digital tower can be built. The proposed site for the digital mast is unavailable until 2029. Even if the two

primary issues — site obstructions and cost — are both resolved, the digital tower would not be delivered and fully validated until around 2033–2034.

Furthermore, as outlined in the 2024 consultation document, a digital solution requires substantial validation and operational trials to assess its feasibility and service performance in New Zealand's unique conditions. This lack of precedent increases the risk of scope creep, additional funding requirements and unanticipated challenges in gaining regulatory approval.

Meanwhile, the current tower's lifespan ends around 2035 and will require additional investment to maintain until that time. AIAL has indicated that 2035 is the latest possible lease extension due to airport development.

Therefore, if the digital solution were not validated in time to serve as the primary tower, there would be insufficient time to build a conventional replacement. This means a final decision must be made by 2030–2031 to accommodate potential construction of a new tower before the existing lease expires.

Airways' key priority is ensuring continuous safe and efficient air traffic service and this is the defining factor behind our preferred approach.

2.2 Strategic Alignment

Submission Topic

Airways' industry engagement for Digital Aerodrome Services (DAS) resulted in a recommendation Airways is not following; a conventional tower locks the industry into a legacy asset, and the consultants developing the strategy may have not been aware of the issues with Auckland Tower.

Clarification

The proposal to build a conventional tower at Auckland Airport is consistent with the Digital Aerodrome Services recommendation. This recommendation was made with full visibility of the requirements to replace Auckland Tower. The Digital Aerodrome Services strategy is designed to take a whole of system approach and minimise a piecemeal approach to digital solutions based on aging infrastructure at specific sites.

THINK Research, who facilitated the industry engagement and produced the DAS strategy and recommendation, was significantly involved with Auckland Airport and understood the context. As well as the DAS Strategy, THINK Research were also engaged as:

1. **Airways:** Independent Project Consultants for 'Commitment 1' from the 2022 Consultation.
2. **AIAL:** Independent consultants for the validation of Pier A1 impact and mitigation options.

Additional Comments

The DAS recommendation was not mentioned as part of the consultation because it concentrates on regional operations and keeps main trunk towers in their current state. As digital technologies continue to advance, Airways may consider integrating digital enhancements to the new tower in Auckland. Furthermore, no decisions have yet been made and the project has an anticipated 15 year time horizon from commencement.

The preferred scenario identified as part of the work with THINK Research and currently being investigated retains physical towers at main trunk aerodromes (such as Auckland) while transitioning regional aerodromes to remote DAS. This recommendation was based on several factors, including the related risks, lack of regulatory pathway, insufficient international examples, and combined with the timeframe for replacement.

This means the replacement of Auckland's physical tower is *not* at odds with the recommended Scenario 3. Rather, preserving on-site air traffic services at major airports aligns with the preferred approach, which focuses DAS investments on regional facilities for improved network resilience and efficiency.

In response to the topic that a physical tower locks the industry into a legacy asset, as outlined in the consultation document, construction of a physical tower "does not preclude future advancements. Should the rest of the country transition to digital towers, the new physical tower can still serve as a mast for mounting cameras and sensors, supporting a hybrid or fully digital setup if needed. This flexibility allows Airways to adapt to evolving technologies without compromising current safety and operational efficiency."

2.3 Auckland Capacity (International Equivalents)

Submission Topic

Clarification has been sought on the statement that the scale of Auckland Airport's current and projected operations exceeds any digital unit currently operating globally, specifically noting London City, West Sydney, Budapest, and Changi.

Clarification

The scale of Auckland Airport's operations is compared below against digital units currently operating.

Following the 2022 consultation, Airways has been undertaking detailed investigation and due diligence on digital towers, which has included considering the capacity for sites currently utilising digital capabilities.

NavCanada, known for its progressive approach to Digital Towers, has adopted a strategy of not implementing digital towers at aerodromes with more than 150,000 movements per year.

The table below shows the comparative annual movements for aerodromes with digital towers referenced by respondents:

Aerodrome	Annual Movements
Auckland	157,000 (2024)
Budapest	120,000
London City	60,000 (Max planning limit of 111k)
West Sydney (Not commissioned)	63,000 (Est by 2030)
Changi	Prototype/Lab Only

Additional Comments:

Auckland: https://corporate.aucklandairport.co.nz/-/media/Files/Corporate/Monthly_Traffic_Reports/2024/Auckland-Monthly-Traffic-Statistics-Dec24.ashx

Budapest:
https://www.bud.hu/file/documents/8/8025/bud_traffic_report_2024_2023.pdf

London City: https://www.caa.co.uk/Documents/Download/10288/81d07410-dbcd-46e7-aacc-d0a5accf0d90/16452

https://www.londoncityairport.com/corporate/environment/noise-management-and-monitoring/restricted-movements

West Sydney: https://www.westernsydneyairport.gov.au/sites/default/files/07-volume-1-chapter-5.pdf

Changi:
https://www.icao.int/APAC/Meetings/2022%20CNS%20SG%2026/IP08_SGP%20A.I.%2013%20-%20Digital%20Tower%20Prototype.pdf

2.4 Cost Confidence

Submission Topic

Cost estimates for the new 45m conventional tower are likely understated.

Clarification

Current cost estimates for the proposed ATC tower construction are outlined below. These are based on feasibility work conducted by Airways in conjunction with an external Quantity Surveyor and reflect current assumptions about the site, access, and potential congestion due to other airport construction.

Costs will be refined further during the next design stages (e.g., Preliminary and Detailed design) and the RFP process

Conventional Tower Replacement Costs:

Budget Item	Cost
Construction Costs	$22,500,000
Construction Escalation	$2,700,000
Equipment	$1,800,000
External Professional Fees	7,331,089
Project Resourcing	$5,170,040
CONVENTIONAL TOWER CAPEX TOTAL	**$39,501,129**

Construction Cost Breakdown:

Main Heading Item	Cost
Site Preparation	$652,350
Substructure	$1,773,005
Frame	$2,010,500
Structural Walls	$505,425
Upper Floors	$319,200
Roof	$422,700
Exterior Walls and Exterior Finish	$3,320,500
Stairs and Balustrades	$450,000
Fitout	$4,416,000
Sanitary Plumbing	$325,000
Electrical Services	$460,000
Vertical and Horizontal Transportation	$270,000
Special Services	$50,000
Drainage	$100,000
External Works	$1,058,500
Design Development	$1,198,739
Preliminaries	$3,479,745
Margins	$1,673,773
Rounding	$14,563
Min Option Tower Only TOTAL	**$22,500,000**

- Items Specifically Included
  - Preliminary and General allowances for construction Land side (18%). Building Design to meet Air side Design requirements, included.
  - Square tower footprint.
  - Allows for two levels of service floors within the tower.
  - General site clearance allowance i.e. no removal of existing structures or hard surfaces.
  - Allowance for connections into existing services only, assumed all site services are located at boundary of development.

- Pavement and Hardstand allowances for Aircraft movements.
- Walkway allowance for frame and roof structure only.
- Design Development allowance of 7.5% based on current Feasibility level design information.

- Items Specifically Excluded
  - GST
  - Contingencies
  - Escalation
  - Currency Fluctuations
  - FF&E
  - Airways Equipment and Fit-out
  - Contaminated ground conditions
  - Boring through rock
  - Upgrading of infrastructure
  - Any works outside of the "service boundary"
  - Generators.
  - Any landlord (Auckland International Airport Limited) requirements
  - Consents, levies and infrastructure growth charges

Additional Comments:

The cost difference between solutions is not cited as a reason to construct a conventional tower, and any increase on the cost would be represented as increased risk on an unsuccessful implementation of digital. The cost driver for the decision is the risk of having to build both a higher cost Digital Contingency Tower, and a Conventional Tower should a trial be unsuccessful.

2.5 Pier A1 impact on visibility of the current tower

Submission Topic

Planned height of Pier A1 is effectively the same as the eye height from the **current tower**, which has influenced an urgent replacement of the ATC tower.

Clarification

The planned height of Pier A1 has not influenced the preference to proceed with a physical conventional replacement tower. It is a consideration in determining whether to proceed with a replacement conventional tower now or in three years.

In July 2023, Airways conducted site line reviews for potential new locations. Although not the purpose of the review, this process allowed Airways to identify that the construction of Pier A1 would potentially have an adverse impact on the visibility from the current tower and how it would impact on operational and safety delivery. This was immediately raised to AIAL.

- Viewsheds, Pier A1 Design, and confirmed dimensions (e.g., height of the tower eye level) were provided by AIAL.
- These dimensions were built into the Airways simulator, and exercises completed. This identified an expected capacity reduction of circa 30% of the declared capacity (42 movements per hour).
- Airways and AIAL collaborated on a solution to address the capacity impact, involving a combination of procedural and infrastructure adjustments (additional stop bars, redesigned Pier A1 roof, etc.).
- This analysis and options were validated by a third party engaged by AIAL, which confirmed the findings and options.

These changes restored forecast capacity to the existing declared 42 movements per hour. Since the current runway capacity is forecast to be restored, this issue is not driving the tower replacement but is a consideration contributing to the timing for building a replacement conventional tower.

The proposed replacement conventional tower will offer improved visibility of the remaining obstructed areas caused by Pier A1, enabling a return to surveillance control. The proposed tower will also have the ability to include technological advancements, further mitigating potential future bottlenecks.

Additional Comments

Some parts of Taxiway Bravo at the end Pier A1 will remain obstructed despite the redesign, however the impact is forecast to be manageable at the current declared capacity (42 movements per hour).

- Potential adverse impacts caused by construction activities (e.g., cranes) are still being worked through between AIAL and Airways.
- The obstructed area, which will operate under procedural control, has been flagged as a potential bottleneck if capacity is required to exceed 42 movements per hour. Airways has not been asked to assess this and would be dependent on traffic mix. The solutions to this may also not be possible due to physical constraints in the existing tower.

2.6 Pier A1 impact on provision of contingency

Submission Topic

The sightline conflict will render the current tower inoperable by 2026, forcing Airways to urgently pursue a conventional tower replacement.

Clarification

This statement conflates the primary and contingency towers. As with the above, the planned height of Pier A1 has not influenced the preference to proceed with a physical replacement conventional tower.

The site line review conducted for potential new locations, which is outlined above also identified that the construction of Pier A1 would potentially have an adverse impact on the visibility from the current **Auckland ATC Contingency Tower** (also referred to as the Apron Tower, currently located on the international terminal). This was immediately raised to AIAL.

Viewsheds were provided by AIAL.

- This information identified a loss of visibility to approximately 25% of the runway (including the 23L threshold), and approximately 40% of Taxiways Alpha and Bravo.
- This visibility issue was unable to be addressed by a redesign of Pier A1, as the Apron Tower is lower.
- Due to the loss of visibility, an appropriate alternative contingency solution was required to be delivered before the visibility is obstructed.

- The tactical nature of this resulted in an interim solution, using a mobile ATC tower being deployed, while a longer-term solution is designed and planned for.
- Limited options exist to deploy the mobile tower, the available sites are on the southern side of the airfield.

This visibility issue, caused by Pier A1, has introduced a timing constraint on Airways to replace the contingency tower.

Airways has responded to this tactically, with a solution which can be repurposed in the future to avoid over investment while a longer-term solution is planned for.

Additional Comments

Airways has advised that contingency operations would be at a lower capacity from the new facility due to an unfamiliar orientation, restricted visibility, and fewer positions, although this may increase overtime.

2.7 70m Tower Visibility

Submission Topic

A 70m Control Tower would undoubtably provide better visibility over all operations on the manoeuvring area with the least blind spots therefore less reliance on technology.

Clarification

While a 70m control tower may provide visibility of the current and future northern runway, this option was not the selected option or included in the interim review point. Significant work into this option has not occurred as a result.

The 2022 Industry Consultation included an option for a taller single structure:

> ***Conventional tower:*** *A new tower structure, approximately 70m high, which would enable conventional service for both the existing runway and the proposed northern runway. Contingency would be provided from a remote digital tower. This conventional tower would be centrally located between the current runway and the proposed site for the proposed northern runway, as shown in the Auckland Airport masterplan documents.*

Additional Comments

A 70-metre tower concept, originally proposed to control both runways, was developed before Airways fully understood the details of AIAL's extensive development plans, many of which are still being planned, designed and communicated to Airways.

With current limited insights into terminal expansion and assuming the northern runway remains free of blind spots, positioning a 70-metre tower centrally will not necessarily eliminate blind spots for either runway. It may also introduce new blind spots, due to restrictions on surface view, leading to greater reliance on technologies or procedural control. Additionally, constructing a taller tower to mitigate these obstacles would result in significantly higher construction costs.

Airways understands that AIAL is currently revising the timeline for the northern runway, with the latest estimate placing it at least 15 years in the future. In the meantime, Airways is actively collaborating with AIAL on an AIAL-led investigation to optimise the capacity of the existing runway.

3. Next steps

Airways is holding a meeting to discuss these points at 1:30 pm on Monday, 17 February 2025. If you would like to attend the meeting online, please contact feedback@airways.co.nz

Following this meeting, customers and stakeholders are invited to submit amended or additional feedback.

Please send your submissions by email to submissions@airways.co.nz by 3pm Friday 28 February 2025

Airways will consider all submissions received when making a final decision on the Auckland Tower replacement and implementation approach.

Airways intends to communicate an outcome to customers and stakeholders by no later than the end of March 2025. A paper outlining Airways' decision will be published on the Airways website along with all submissions.

Please ensure submissions do not contain any commercial sensitive or confidential information, as they will be made public.