HIGHLANDS AND ISLANDS AIRPORTS LTD

AIR TRAFFIC MANAGEMENT STRATEGY 2030
Centralised Surveillance, Airspace Change and Remote Towers
Air Traffic Management Service

Pre-Tender Market Consultation

QUESTIONNAIRE

May 2018

INTRODUCTION

This questionnaire should be read and completed in conjunction with the Pre-Tender Market Consultation 'Context & Procedural Details' document. It seeks to obtain up-to-date information and feedback from the market on procuring the necessary equipment and services to manage the change and transition to a Centralised Surveillance, Airspace Change and Remote Tower Solution.

Parties should use the boxes and tables provided to outline their responses. **Answers should be kept succinct and should not exceed 500 words.**

This questionnaire does not constitute a pre-qualification or tendering exercise, and no specific contract will be awarded based on the responses. Therefore, HIAL welcomes responses from any potential supplier who may be able to provide answers to any or all of the questions contained herein. Respondents need only answer questions most relevant to their offering and are not expected to answer all questions.

The responses shall be used to help inform any future procurement process, which would comprehensively involve HIAL's operational Air Traffic Services staff. All aspects of a transition can therefore be appropriately planned and managed, with stakeholder interests protected.

The following sub sections are used to group the questions, for suppliers' easier reference:

- **Transition – Human Performance Management**: questions on managing a transition to new operations
- **Market capability**: single question to establish the breadth of market experience in designing and delivering the Centralised Surveillance, Airspace Change and Remote Tower Solution in question
- **Tender strategy**: questions establishing the nature and requirements for holistic tender documentation
- **Systems and infrastructure**: questions establishing the risks, mitigations and technical requirements of the systems and infrastructure
- **Operations and maintenance**: questions on the risks and mitigations associated with the systems and infrastructure
- **Indicative timeline and costs**: questions establishing the likely timeline and costs involved in delivering the remote tower systems, infrastructure and service.

COMPANY INFORMATION

Please complete the following table providing your company details:

Company name:			
Business nature:			
Address:			
Contact person:		Position:	
Telephone no:		Email:	

QUESTIONNAIRE

Transition – Human Performance Management

1. HIAL wants to consider how a change to a Centralised Surveillance, Airspace Change and Remote Tower Solution, as outlined in the Pre-Tender Market Consultation 'Context & Procedural Details' document, could be effectively managed, in particular from an ATS staff recruitment and retention perspective. In the short-term, additional resourcing may be required due to some ATS staff remaining at their current location and the potential need for additional suitably qualified personnel at both the centralised and remote facilities to enable 'active and passive shadow modes' where operations can be run from either location during transition.
    a. Please provide your general views, and relevant experience where possible, on how the transition to a centralised operation might best be phased and resourced, particularly highlighting the extent to which Air Traffic Services staff and their representatives have been and could be involved in similar projects.

    Response:

2. The Centralised Surveillance, Airspace Change and Remote Tower Solution will have a significant impact on ATS staff. HIAL expects to therefore comprehensively involve operational Air Traffic Services staff from the start of the programme and continue to actively involve them throughout the design, implementation and operational delivery of the Centralised Surveillance, Airspace Change and Remote Tower Solution.
    a. How could integration of operational end-users in the design, development, testing/tuning, and transition process best be facilitated?
    b. What level of resourcing i.e. FTEs (Full Time Equivalent), would be required from HIAL to enable the above?

    Response:

3. If transferring a controller from the airport location in which services are being provided to an alternative location, an extensive human performance assessment and regulatory approval of the consequential safety case would be required.
    a. What system functionalities could be provided to effectively manage the human performance requirements?
    b. What additional system functionalities could be provided to give a controller greater situational awareness of the airport conditions?

    Response:

Market capability

4. HIAL is considering different approaches to implementing a large-scale programme that will encompass airspace change, surveillance services (sensors, processing and a centralised suite of

approach positions) and a remote tower solution across several sites, as outlined in the Pre-Tender Market Consultation 'Context & Procedural Details' document. HIAL would therefore like to gauge market capability to deliver a 'turn-key' solution, or other potential delivery models:

    a. Considering the large-scale nature and complexity of the project – and providing evidence from previous projects where possible – to what extent is the Centralised Surveillance, Airspace Change and Remote Tower Solution achievable as a single procurement?

    b. What are the major challenges in delivering this solution?

Response:

5. HIAL understand that a single supplier may not be able to deliver the fully managed solution on its own. HIAL would nevertheless seek an arrangement with a single contractor.

    a. Considering the full scope of delivering a *fully managed 'turn-key' solution*, or other potential delivery model, as described in section 1.1 of the Pre-Tender Market Consultation 'Context & Procedural Details' document, what roles are likely to be performed by different suppliers?

    b. What models of purchase might be recommended and why (considering asset ownership, maintenance, new business opportunities etc)?

Response:

6. Controlled airspace may be introduced at several of the airports. HIAL would likely be the airspace change sponsor but, considering the scope of work and dependency with other aspects of the overall programme, HIAL may require support from the market in delivering this change. HIAL therefore seeks to better understand if and how potential support could be provided.

    a. In what ways could HIAL best be supported in delivering the airspace change process?

Response:

Tender strategy

7. HIAL recognises that the complex nature of the Centralised Surveillance, Airspace Change and Remote Tower Solution involves a degree of uncertainty and unpredictability, which HIAL would seek to manage, minimise and control where possible. Opportunities may also arise to take advantage of innovation in the product and delivery.

    a. What commercial contractual models (e.g. gain/risk sharing) could make best use of any unexpected benefits and provide greater control over fluctuations in delivery eg timescales and costs?

Response:

8. HIAL is seeking to better understand the challenges suppliers have faced for different procurement models:
    a. What procurement approaches have been used in a similar delivery to that outlined in question 4, and why?
    b. What benefits and challenges do such approaches present and why?

Response:

9. HIAL understands that, to be able to respond to any future tender, suppliers will require various details of the operational environment in order to appropriately specify any potential solutions.
    a. What supporting information and data would be required from HIAL within the tender documentation (for example, traffic data, environmental data, aerodrome charts etc)?
    b. In addition to the data above, what other requirements might apply, for example a requirement for site visits? Please provide details.

Response:

System and infrastructure

10. Other than Eurocae ED-240[1], there are very few standards developed specifically for remote tower equipment. However, it is expected that component parts of remote tower systems will nevertheless follow international requirements and standards, wherever they are available.
    a. Please identify the standards and documents that you recommend using as a means of compliance (to the regulatory requirements) for a remote tower system.
    b. Please identify any divergences from standards, or elements for which there is no international standard.

Response:

11. The Centralised Surveillance, Airspace Change and Remote Tower Solution will involve an extensive certification and approvals process. It is important that HIAL understands the extent to which 'tried and tested' or 'commercial off the shelf' technology is available compared to new or novel technology that has not been operationally deployed – particularly in the case of remote towers and non-radar surveillance infrastructure:
    a. How could the approvals process be effectively managed to avoid excess delay, particularly for novel or bespoke equipment and other aspects that aren't necessarily approved elsewhere?

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[1] https://eshop.eurocae.net/eurocae-documents-and-reports/ed-240/#non-member

Response:

12. A rigorous safety and approvals process will be undertaken to address risks, particularly in the case of any new and unfamiliar remote tower technology, as well as to ensure the safety of the overall systems in normal and non-normal situations. HIAL is therefore seeking to gain a market view of the key risks and potential mitigations from a systems perspective.
    a. What are the main safety risks that you have encountered in your experience of implementing the Centralised Surveillance, Airspace Change and Remote Tower Solution?
    b. What processes and tools, particularly technical, are available to mitigate these risks?

Response:

13. Whilst the initial Centralised Surveillance, Airspace Change and Remote Tower Solution is anticipated to cover 7 airports, there may be a need for expansion to other sites in future. Furthermore, HIAL wishes to invest in 'future-proof' technologies to the extent possible, that take account of the changing ATM environment and evolution of ATM (particularly digital) technologies.
    a. What systems/features of a remote tower solution do you see being most at risk of becoming out-of-date and why?
    b. How are remote tower solutions future-proofed?
    c. How could any expansion in the Centralised Surveillance, Airspace Change and Remote Tower Solution be accommodated?

Response:

14. Resilient communications links are required between the Remote Tower Centre (RTC) and each airport. HIAL therefore seeks to understand how redundancy could be provided.
    a. What mitigations can be implemented within the remote tower system and communications infrastructure to prevent and detect communications failures?
    b. Are cable-free links (e.g. via satellite or microwave link) a suitable alternative and if so, how?

Response:

15. Visual and audio data will need to be communicated from the airports to the Remote Tower Centre without degradation. HIAL therefore wish to better understand the requirements for communication performance and infrastructure.
    a. What in your view would be a) the minimum and b) the recommended bandwidth requirement for each connection between an airport and the remote tower centre?
    b. What would be the minimum communications performance requirements for each connection (for example latency and other performance aspects)?

    c.   What end user requirements are likely to impact on the communications requirements and how could these be managed?

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Response:



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Operation and maintenance

16.   HIAL may eventually introduce multi-mode operations under certain controlled conditions and at certain locations, in which a single controller might be responsible for operations at more than one airport at a time.
    a.   What system functionalities could enable this concept if it were introduced?
    b.   What additional system functionalities could support the controller, for example to reduce the risk of confusion between airports (for example via audio[2] or visual means)?

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Response:



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17.   HIAL currently outsources Air Traffic Engineering. Given the importance of each airport to local communities and the remote locations of some, it is likely that any maintenance support will require some local support.
    a.   Considering the importance of maintaining key infrastructure, what would be considered the optimum maintenance solution to ensure the integrity and resilience of the systems and equipment?

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Response:



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Indicative timeline and costs

18.   Due to project complexity and extensive nature of the certification and approvals process mentioned above, there are risks of project delays should the regulator not keep pace with progress. The project team would therefore need to be actively engaged with the regulator to reduce this risk:
    a.   In what ways could regulator delays be mitigated (referencing previous project experience where applicable)?

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Response:



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[2] For example, aircraft operating on two separate frequencies at two separate aerodromes could create a more confusing mental picture for the controller and pilots

19.   The Strategy Scoping Study indicated a high-level timescale of 8-10 years from procurement to operation of the Centralised Surveillance, Airspace Change and Remote Tower Solution. Considering the complexity of this solution, HIAL wishes to better understand the expected timescales needed to deliver it. This will enable more robust planning and give visibility of any major risks that could adversely impact the implementation of the solution.

   a.   What do you view as the main risks to this timeline and how (if at all) could the timeline be compressed?

Response:

20.   The Strategy Scoping Study indicated high-level costs for the infrastructure purchase, their ongoing running costs and resourcing requirements (available in Appendix O.6, page 214 of the Strategy Scoping Study). HIAL is seeking to better understand how these costs could change over time.

   a.   Do these costs seem reasonable?
   b.   What would be the main reasons and likely magnitude of any changes to these costs over the project lifecycle?

Response: