Air Traffic Management Strategy

Business Case

Contents

1 Executive summary

1.1 Overview

HIAL is facing a number of challenges to ensure the resilience of Air Traffic Control (ATC) operations and the continuation of safe, efficient air travel though the Highlands and Islands:

- Low staff numbers and difficulties with resilience, recruitment and retention have, in some instances, led to airport closures
- The changing regulatory environment and compliance with new policies on safe service provision requires change.
- The urgent need to modernise an ageing infrastructure and outdated methods of controlling air traffic.
- The need to create a competitive edge in the operation and ultimately deliver a more sustainable and cost-effective service.

Sustainable air traffic control is the foundation stone for air connectivity in the Highlands and Islands.

Following an independent scoping study undertaken by Helios to assess the options for Air Navigation Service Provision (ANSP) at HIAL's 11 airports, approval to begin the Air Traffic Management Strategy (ATMS) Programme was granted by the Scottish Government in 2018. The programme has been underway since late 2018 and an options appraisal (see 1.2 below) was developed options to meet HIAL's Air Traffic Service (ATS) requirements.

The options appraisal was considered by the HIAL Board and approval to progress with Option 4 (detailed below) was granted. This option provides improvements and delivery of a more efficient centralised operation.

HIAL is now seeking funding to move the programme forward.

1.2 Options Appraisal

In seeking to meet the business challenges, four options have been developed in detail:

1. Option 1 -To do nothing
2. Option 2 - Provision of Controlled Airspace and Surveillance at each site (minimum effort option)To centralise as originally approved and outlined in the Helios report
3. Option 3 – Centralisation without increased efficiency (Approved ATMS Programme)
4. Option 4 – Centralisation with increased efficiency

Of these, Option 1 was considered non-viable as staff resilience issues and changes in regulation are not addressed. Option 2 would address regulatory change, but would significantly increase staff numbers to manage extra positions. It would intensify business resilience issues and increase costs. Option 3 would address all programme issues, but scope remains for increased

efficiencies. Option 4 addresses all programme issues and delivers an improved and more efficient operation.

1.3 Costs

The additional funding required to deliver the ATMS Programme is shown here:

	FY20/21 £	FY21/22 £	FY22/23 £	FY23/24 £	FY24/25 £	FY25/26 £	TOTAL £
Capital							
ATMS Programme Requirement	11,137,312	11,504,039	4,081,696	3,533,975	643,949	55,272	30,956,243
Revenue							
Additional ATMS Programme Requirement	1,452,169	1,663,462	3,383,180	3,351,027	1,783,510	693,885	12,327,233

Notes
1. Does not include £2.392m funding released for FY19/20

Upon review of the Financial Case with the Transport Scotland IDM Board, additional Capital and Revenue contingency was recommended, based on the experience of recent projects. Details of this are contained in section 6.6. The total programme need, inclusive of this contingency is shown here:

	FY20/21 £	FY21/22 £	FY22/23 £	FY23/24 £	FY24/25 £	FY25/26 £	TOTAL £
Capital							
Additional Contingency	637,500	1,147,500	382,500	382,500	-	-	2,550,000
Total - Requirement + Contingency	**11,774,812**	**12,651,539**	**4,464,196**	**3,916,475**	**643,949**	**55,272**	**33,506,243**
Revenue							
Additional Contingency	-	-	65,564	58,526	51,008	-	175,098
Total - Requirement + Contingency	**1,452,169**	**1,663,462**	**3,448,743**	**3,409,553**	**1,834,518**	**693,885**	**12,502,332**

Notes
1. Does not include £2.392m funding released for FY19/20

2 Strategic Requirement

2.1 Change

Air Traffic Control around the world is changing. The expanse of air travel in China, and elsewhere in the Far East, has led to unprecedented demand for air traffic controllers and a re-visiting of traditional methodologies. Moreover, modern working practices, views on safety and level of service, as well as regulatory frameworks are creating a new environment for HIAL's ATC. This new environment presents challenges but also opportunities as we drive towards our ultimate goal to deliver a sustainable air traffic service provision for the Highlands and Islands.

The key drivers for change and the mitigations to them are outlined below.

2.2 Business Resilience

Due to the dispersed nature of the HIAL ATC operation, the majority of airport teams are very small, with seven/eight being an average team size. As a result, any staff absence from the operation (long-term sickness or temporary loss of licence due to medical issues) has a disproportionate impact on the provision of service. This has resulted in airport closures at most of HIAL's units, impacting the business and the communities served by it.

Additionally, HIAL has had difficulties in filling ATC vacancies at some of the units which, when combined with the long timescales to bring in new controllers, has led to extended staff shortages. This is exacerbated by the reliance of HIAL ATC on Procedural Control methods (i.e. ATC without radar). This operational model is disappearing, leading to a scarcity of staff with the right qualifications and the availability of new training courses.

Candidly, it is becoming increasingly difficult to attract staff to train in old techniques when more relevant digital technologies are available elsewhere.

The combination of all HIAL ATC operations in one centre will allow for cross training of staff on multiple units. This will ensure that absences can be managed without affecting the operation of the airports. This, alongside the improved recruitment potential of an exciting new centre, using modern operational methods, improves business resilience markedly.

2.3 Regulatory Change

As the regulatory environment in which HIAL operates changes, the way that ATC is performed must evolve to meet these requirements. Driven by the European Union Aviation

Safety Agency (EASA) and the Civil Aviation Authority (CAA), new regulations governing the use of surveillance (RADAR), the use of controlled airspace (the legal framework all users of airspace must follow) and the levels of service required are undergoing review.

In order to comply with the new regulation, surveillance and controlled airspace will be deployed at the five of seven HIAL's ATC airports, which do not currently have either. These are significant deployments in and of themselves.

2.4 Modernisation

Much of HIAL's ATC infrastructure is of a significant age and requires extensive modernisation to meet current business practices and to comply with changes in regulation. ATC tower buildings were built between the 1960's and 1993 and, as a result, are not designed for modern operations, nor are they environmentally efficient. The buildings have reached, or are reaching, the end of useful service life.

Additionally, most of the connectivity infrastructure in and around HIAL's airports is due for replacement. With the BT 21CN programme ending the support for private wires, upon which we rely, a replacement is needed. It is prudent to take a company-wide approach to address this issue that than a piecemeal solution. By creating a centre for all HIAL's ATC in Inverness, the requirement to replace and/or modernise the existing tower buildings is removed. The buildings themselves could be repurposed as needed. At the same time, the connectivity infrastructure at each unit will be enhanced by the provision of high-specification resilient lines.

2.5 Business Development

Over time, as pressure on budgets increases, it is anticipated that HIAL will require to ensure safe travel and connectivity to and from its airports, while managing limited finances. To do this, the ATC operation must be as efficient as possible, while also pursuing and embracing potential income opportunities as they arise.

With a modern, efficient, Combined Surveillance Centre in place, HIAL will be able to deliver a safe, effective, operation in the most cost effective manner possible. This will also provide opportunities to provide potential services to external organisations, such as the provision of ATC service, training, or consultation on operational setup.

2.6 Environmental Improvement

As with all parts of the organisation, Air Traffic Services (ATS) within HIAL must be configured to minimise the environmental impact of its operations. While there are minimal directly attributed impacts from ATC operations, opportunities for impact reduction do exist.

The HIAL ATC towers are older buildings with outdated insulation and, as such, are not as efficient as they could be. The move to the CSC provides the opportunity to design and create the building to be as energy efficient and environmentally friendly as possible, through high quality insulation, efficient equipment use and alternative power sources.

Current ATS operations are as efficient as possible with the technology currently available at each unit. However, the controllers in the CSC will have improved visibility through surveillance and will therefore have the capability to provide aircraft with the most efficient routes through straight lines with direct climb and decent profiles.

A specific programme to develop direct routing, with key stakeholders such as our airline partners, HIAL ATS will enable a significant reduction in fuel consumption and subsequent CO_2 emission

These opportunities will be actively pursued, and delivered as the programme progresses.

3 Programme Need

3.1 Existing approval of the ATMS Programme

The ATMS Programme was approved at a joint meeting of the HIAL Board and the Scottish Government in 2018 to deliver the future of HIAL's Air Traffic Control service.

From this approval, the ATMS Programme was created and a dedicated programme team was established to manage the activity and deliver the benefits.

3.2 Updated Approval and release of funds

The Programme team has now been in place for eleven months and the underpinning justifications identified in the Helios study have been assessed and validated. However, in order to ensure the most efficient delivery, the conclusion of the study have been reviewed and updated as more information has become available.

The Programme has been revised and approval to proceed with the submission of a Business Case was sought and granted by HIAL Board on 29 October 2019. From this approval, Transport Scotland has been requested to approve the Financial Case for the programme, based on the developed timescale/cost estimates for delivering, in the most efficient and effective manner, a safe, resilient and cost-effective operation.

Having an updated approval for the programme and crucially, the committed release of funds, will provide the programme with assurance on spend profiles and allow the business to place the multi-year contracts required for implementation of a Remote Tower, Centralised Surveillance operation.

4 Options for meeting the requirement

4.1 Option 1 – Do nothing (Non-Viable option)

This option, detailed in the Helios study, is to carry on providing Air Traffic Services as we do presently, perform no centralisation or modernisation activities beyond the minimal to maintain the equipment. As highlighted in the study, this is not a viable option as changes to regulation and issues with staff retention will put the current operation at serious risk of failure.

This option is written in the Helios study as maintaining the business as-is and so has been termed as "Business as Usual".

4.2 Option 2 – Provision of Controlled Airspace and Surveillance at each site (minimum effort option)

This option, detailed in the Helios study, is to carry on providing Air Traffic Services at each of our units, but to provide controlled air space (CAS) and new surveillance technology to improve the operation. This option would provide no centralisation activities and no modernisations, save that mentioned above.

As per the study, while this option does, in part, reduce the regulatory risk to the business, the staff retention issue is increased significantly, as the majority of units require additional controller numbers to manage the new equipment.

This option is written in the Helios study as the minimum that could be done and so has been termed the "Helios Baseline".

4.3 Option 3 – Centralisation without increased efficiency (Approved ATMS Programme)

This option, detailed in the Helios study, is to bring the provision of Air Traffic Services from each of our units into one location, while providing CAS and new surveillance technology at each unit, thereby improving the operation. This option would provide full centralisation, moving all ATC staff to the centre, bringing in new controllers to manage the increase in positions required and modernisation of the operation. This option reduces the regulatory risk to the business and decreases the staff retention issue significantly.

This option is taken from the Helios study and used as the basis for the ATMS Programme and so has been termed the "ATMS Baseline".

4.4 Option 4 – Centralisation with increased efficiency

This option, which is a development of Option 3, was not detailed in the Helios study will bring the provision of Air Traffic Services from each of our units, into one location in the most efficient manner, while providing CAS and new surveillance technology at each unit, thereby improving the operation. This option would be to provide full centralisation, moving all ATC staff to the centre, deploying new operational models to utilise the transitioned staff effectively and modernising the operation. As with option 3, the modernisation of the operation and the centralisation of the controller staff, reduces the regulatory risk to the business and decreases the staff retention issue significantly.

This option has been developed by the ATMS Programme team as an improvement over the ATMS Baseline and so has been termed the "ATMS Improvement Plan".

5 Proposed Solution

5.1 Option 4 – Centralisation with increased efficiency

As the decision has been taken by the HIAL Board and the Scottish Government to proceed with the ATMS programme and undertake a centralisation and modernisation exercise, thereby dealing with the regulatory and staffing issues, Option 1 (Business as Usual) and Option 2 (Helios Baseline) can be discounted.

Now that the Programme has been thoroughly scoped, Option 3 (ATMS Baseline), the timescales for delivery of that option have been confirmed as ten years. However, undertaking the change over this timeframe will lead to a significant revenue spend across the Programme, due to the additional personnel required.

After detailed exploration of the different potential methodologies of delivering the programme, Option 4 (ATMS Improvement Plan) was developed. This option can be delivered within the timeframe, at a lower capital and revenue delta than was originally defined, whilst fully delivering the level of service required.

The recommendation, to deliver the programme outlined in Option 4 (ATMS Improvement Plan) was approved by the HIAL Board for submission to Transport Scotland.

6 Economic Case

6.1 Through-life Costs

Option		15 Year Cost	Notes
1 - Business As Usual (BAU)	Capital	£ 10,301,734	Non-viable option. For reference purposes only.
	Revenue	£ 167,772,048	Costs based upon capital expenditure plan and existing staff
	Total	**£ 178,073,782**	numbers/costs (adjusted for inflation).
2 - Helios Baseline	ATMS Programme Capital	£ 19,829,522	Minimal change option.
	Operational Revenue	£ 278,514,703	Costs based on Helios Scoping Study Option 1 assumptions, adjusted
	Total	**£ 298,344,225**	where necessary for additional or more current information.
3 - ATMS Baseline	ATMS Programme Capital	£ 33,585,418	Full delivery option, over 10 year period.
	ATMS Programme Revenue	£ 28,663,826	Costs based on Helios Scoping Study Option 3, adjusted where necessary
	Operational Revenue	£ 191,939,917	for additional or more current information.
	Total	**£ 254,189,161**	
4 - ATMS Improvement Plan	ATMS Programme Capital	£ 32,165,090	Efficient full delivery option, over 6 years.
	ATMS Programme Revenue	£ 13,510,021	
	Operational Revenue	£ 205,163,443	Costs based on the ATMS team's detailed delivery plan.
	Total	**£ 250,838,554**	

Note: Option 1 is Non-viable, as explored in 4.1 above. Additionally, this option does not include a significant capital spend (approx. £28m) on replacement of ATC towers, which, if not replaced as part of the Programme, would have to be detailed and then delivered.

These figures above include an updated capital/revenue split, which has been refined as part of this submission.

6.2 Risks to ATMS Improvement Plan

An extraction of the ATMS risk register is shown in Appendix 2.

6.3 Benefit of ATMS Improvement Plan

- Reduced Capital spend (£1.4m) over life of Programme when compared to ATMS Baseline.
- Reduced Programme Revenue spend (£15.1m) over the life of the Programme when compared to ATMS Baseline.
- Reduced delivery timescale and Programme expenditure.
- Introduction of a resilient and sustainable operation four years earlier.
- Reduced staff uncertainty around transition timescales.
- Enables corporate ATC resilience risks (ageing infrastructure, outmoded operational practices, staff resilience, training single point of failure) to be mitigated more swiftly.

6.4 Airfield Specific Costs

The below table includes the Capital and Revenue breakdown for each airfield (as far as can be attributed directly), as well as the direct Programme costs, to be borne irrespective of the number of Remote Tower airfields delivered.

	Programme £	Inverness £	Dundee £	Stornoway £	Kirkwall £	Sumburgh £	Benbecula £	Wick £	Total £
Capital									
ATMS Programme Costs	20,021,356	1,061,456	1,808,115	1,809,788	1,810,441	1,918,279	1,874,537	1,861,118	32,165,090
Revenue									
ATMS Programme Costs	6,840,307	365,816	1,150,323	1,081,853	1,182,130	952,382	1,008,443	928,768	13,510,021
Total	**26,861,662**	**1,427,272**	**2,958,438**	**2,891,641**	**2,992,571**	**2,870,661**	**2,882,979**	**2,789,886**	**45,675,110**

Notes
1. These are total programme costs, including FY19/20 funding of £2.392m

6.5 Long-term Tower Capital investment

At this time, there is minimal inclusion of capital investment for existing tower refurbishment/replacement in the 10 year Capital Plan, partly as the plan was built with the understanding the Programme would go ahead and negate the need such works.

However, while it is expected that HIAL could retain the assets as-is throughout this timeframe, refurbishment and/or replacement will be required for all ATC towers in the subsequent decade. The detail of this activity requires development, but high level estimates indicate that, should the programme not replace existing towers, approx. £30m would be required over this period to fund the critical works.

6.6 Contingency

At the IDM Board on 9th December 2019, the need for further Capital and Revenue contingency coverage was identified.

A 10 per cent capital contingency was considered sufficient for procurement of the main Remote Tower solution. However, following experience on recent capital projects the IDM Board recommended this should be increased and we have therefore reviewed our contingency to 25 per cent.

Additional revenue contingency was increased from £8k to £16k per person to cover for potential unforeseen overspend.

The increased funding needed to cover the contingency requirement is shown here:

	FY20/21 £	FY21/22 £	FY22/23 £	FY23/24 £	FY24/25 £	FY25/26 £	TOTAL £
Capital							
ATMS Programme Requirement	11,137,312	11,504,039	4,081,696	3,533,975	643,949	55,272	30,956,243
Additional Contingency	637,500	1,147,500	382,500	382,500	-	-	2,550,000
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Additional Contingency	-	-	65,564	58,526	51,008	-	175,098
Total	**1,452,169**	**1,663,462**	**3,448,743**	**3,409,553**	**1,834,518**	**693,885**	**12,502,332**

Notes
1. Does not include £2.392m funding released for FY19/20

The budget includes funding for Flexible Early Severance (EFS) for an estimated number HIAL staff who may chose this option.   Provision has not been made within the programme budget for staff who choose not to transfer to the new CSS and do not wish to take (FES).

6.7 Further operational efficiencies and opportunities

Providing air navigation services in the most safe, effective and efficient way has been a driving focus for the Programme Team.

The development of the options appraisal for this business case provided an opportunity to review our proposals to ensure Air Navigation Services are proportionate for the scheduled flights and air traffic at each of the airports included the programme. This highlighted the difference in service provision for airports with similar air traffic movements.

Any change is not without challenge (the military range for Benbecula and overflights at Wick being standout risks), but proposals can be developed further for clarity.

The opportunities below have been put forward as options for further exploration and any efficiencies a result are not accounted for within the overall funding request for the ATMS Programme.

6.7.1 Revision of service to Airport Flight Information Service (AFIS) at Benbecula

Currently, Benbecula, while providing critical services to the Western Isles, handles a low number of aircraft movements per year at under 4,000 (For example, Stornoway handles over 10,000 and Kirkwall over 14,000). As can be seen from the table in 6.4, the airport-specific cost of deployment of the ATMS Programme into Benbecula is £2.88m.

An alternative approach may be possible in revising the level of service from ATC to AFIS (similar to the level of service provided in Islay). By undertaking this change, airline operations could safely carry on providing a service, however the cost to the taxpayer could

be reduced by the programme cost of £2.88m. This proposal could release a revenue saving in the region of £1m per annum.

This proposal would have an additional benefit of providing staff who cannot, or do not wish to relocate to the CSC an alternative, locally retained, role as an AFISO in their island location.

6.7.2 Revision of service from Air Traffic Control (ATC) to Airport Flight Information Service (AFIS) at Wick

Wick handles a low number of aircraft movements per year at around 4,000. As can be seen from the table in 6.4, the airport-specific cost of deployment of the ATMS Programme into Wick is £2.79m to train the staff and deploy the equipment.

An alternative approach may be possible to revise the level of service from ATC to AFIS, but with the addition of a radar position, shared with Kirkwall. By undertaking this change, the safety of the operation at the airport will increase significantly, due to the provision of surveillance, airline operations could continue unaffected, and employment opportunities for full time AFISO staff will become available – ensuring a retention of jobs in the local community.

The implementation of this change would allow staff to be released to join the programme at a significantly earlier stage. This is something that has been highlighted as a priority by ATC staff during engagement discussions.

6.7.3 Review the place of Dundee within the ATMS Programme

There is an opportunity to review the appropriate positioning of Dundee within the ATMS programme.

Dundee, as part of the ATMS Programme, presents significant challenge in defining the most appropriate solution for Air Navigation Services. Unlike Benbecula and Wick with just under 4,000, Dundee has the highest number of aircraft movements of any airport in the HIAL group. Most of these being small, non-passenger carrying, training flights with limited opportunities for income generation.

Additionally, given the volume of traffic at Dundee, it will not be possible to perform Approach Radar Control (APS) from a single, Radar In The Tower (RITT) position, as is the current model for mid-sized airports such as Kirkwall. Due to the increase in Controller

workload, Dundee will require a two-position operation – a Remote Tower and a radar position, similar to Inverness and Sumburgh.

In order to deliver services from two positions, an increase in staff will be required, from the seven currently providing the operation to 14 in the CSC. The overall impact to salaries of increased controller numbers and Radar validations is a direct increase of around £1.1m per annum to the long-term revenue cost of the operation. Additionally, the inclusion of Dundee in the ATMS programme will require the capital outlay of between £2.96m and £7.8m (dependant on the required surveillance solution) in direct Programme costs.

6.8 Income generation opportunities

As an outcome of delivering the ATMS programme, a number of income generation opportunities present themselves for serious consideration.

The safe, effective, delivery of the Programme remains the highest priority. Therefore, whilst considered viable, the options have not been developed fully

6.8.1 Provision of Air Traffic Services (ATS) to non HIAL airports

Upon the successful transition of Inverness Tower and Radar into the CSC, HIAL will have demonstrated the technology, concept and ability to deliver that will attract customers who may wish to outsource ATC services.

There will be capacity within the CSC for expanded non-HIAL operations. An initial review of potential customers for this service (namely small- to medium-sized ATC airports in the UK), has highlighted a number of opportunities for further exploration.

In order to deliver the services to another organisation, minimal additional investment would be required from HIAL. This will require deployment of a position into the CSC and camera technology on site. Due to the multi-unit endorsements the staff at the CSC will have, HIAL will be able to offer ATC services with lower controller numbers than a standalone operation could sustain.

6.8.2 Delivery of Remote Tower Operation to external organisations

Upon completion of the HIAL Remote Tower operation delivery into the CSC, HIAL will be the only Air Navigation Service Provider (ANSP) in the UK, and one of only three in Europe to possess the skills and experience to deliver these services. As

such, an opportunity exists to provide a comprehensive service to other ANSPs who intend to set up a remote tower centre.

As evidenced by Scandinavian Mountain Airport and several Centres in development, the aviation world is moving away from physical ATC towers towards technological solutions. The potential market for the deployment of a ready-designed remote tower operation is significant, with key market areas being those with large numbers of smaller airports (such as Canada, West Africa, Oceania and the Caribbean).

6.8.3 Delivery of ATC/AFIS training to non-HIAL airport staff

As part of the Programme, and the wider business requirements, a training centre will be developed to deliver the extensive unit training requirements of the programme.

A future opportunity may exist in the provision of ATC training to external Air Navigation Service Providers. Enhancing internal training provision and exploring opportunities to deliver training to non-HIAL staff has been identified as a significant opportunity for the project.

7 People Management

In initiating the ATMS programme, and preparing for its delivery, the organisation has understood that the management and support of people will be as important as providing a technical solution that delivers an enhanced and future proofed service.

With a world shortage of qualified controllers it is imperative that the programme maximises the opportunity to retain as many existing controllers as possible. The programme has been designed to ensure this objective can be achieved wherever possible. This includes a focus on ensure that existing staff receive the appropriate training to operate in the new CSC as well as an appropriate support package to allow both them and their families to relocate to Inverness.

Using the principles of Investors in People, our company values and our Organisational Change policy the company is committed to managing the implementation in a way that maximises the opportunities for the company whilst minimising the disruption for staff.

At an early stage, the programme has directly engaged with staff, highlighting the positive aspects of the new operation, while emphasising the company will do everything possible to minimise the impact of the change on our people. The delivery of a bright, modern centre, with advanced technology and the latest operational methods will be an attraction in itself to many staff. However, the implementation of a new operation will not succeed if staff do not embrace the change.

The most significant risk to the programme exists around current staff who may choose not to transition into the CSC. This could result in a significant number of controllers opting not to join the CSC, resulting in an over-reliance on the recruitment of external controllers. The Scottish Government's commitment to 'non-compulsory redundancy' presents further challenges.

7.1 Resettlement

Staff have raised concerns around the need to relocate, the opportunity to commute and the ability to retrain on new equipment. The programme must be in a position to provide suitable and sufficient support to address these concerns through attractive terms and conditions and support packages.

We will fully engage with our staff and their families to present them with a clear and practical picture around relocation.

A specialist relocation company will be appointed to fully engage with our staff and their families, to help us develop the most appropriate arrangements.   To meet this commitment we have made an initial budget allocation of £8k for each move to the CSC. This will be subject to further refinement following the engagement exercise.

7.2 Commuting

For those to whom relocation remains impossible, commuting options are being developed to enable staff to stay at home as much as possible, while still providing a vital air traffic control service for their local communities.

Our engagement with staff has highlighted that some would actively pursue this option as a means of mitigating the impact to personal lives.

Options for commuting are still in development. In order to be successful, creative solutions and flexible working work require to be explored to enable staff and operational needs to be met.

7.3 Working Patterns

The primary objective of designing working patterns and rosters will be to resource the new CSC to meet demand at all times. Wherever possible a balance can be achieved between meeting the needs of the company and the individual members of staff thus ensuring a good work-life balance can be achieved for all staff.

Margins will require to be built into CSC rosters to cope with potential disruptions and ensure effective service delivery at all times.

7.4 Training

In order to deliver a new model of air traffic control, a significant investment in training is required. Most of our controllers will be upskilled to provide Radar Approach Control (APS).

To ensure our staff receive the best opportunity possible to succeed, additional investment will be required to provide pre-course support will be tailored towards individual strengths and weaknesses. Each controller will have a personal Training Plan on developing them into APS controllers, the plan will contain:

- Pre-course material for work at home
- Pre-course webinars to demonstrate equipment and best practice
- Familiarisation periods at active APS units
- Tailored course materials
- Supported learning before, during and after the courses
- Re-running of specific course objectives to help those who need the support

This is in addition to the standard training packages of approximately £20k per head and, as with all unit training, will be conducted within the CSC environment.

8 Centralised Surveillance Centre (CSC) Building

The requirement for the ATMS programme is for a single building from which to deliver all of HIAL's Air Traffic Control (ATC) services. In order to ensure that the transitions from existing towers proceed without issue, the centre must be completed and fitted-out before the Inverness (INV) tower transition begins in mid-2022.

The initial CSC design proposals have been drafted; giving a preliminary output and provides the anticipated number of operational positions and the area required for each position. From this output, the overall requirements for the centre have been scoped. Altogether, this information allowed the key area requirement of the building to be defined.

A detailed review was performed on the options for a building to house the centre, including existing available buildings and various new build locations. From the discovery works performed, only one existing building met the programme requirements, while two plots of land were favourable for a new build option. Upon completion of the options analysis - looking at timescales, risk, cost, environmental and social impact, as well as a host of other factors - the HIAL Board approved the purchase and refit of New Century House in Inverness.

A table with the costs for the option submitted to the HIAL Board are shown below:

Option	Site area	Building floor space (m2)	Building Purchase Price	Renovation Cost	Land Price (125 year lease)	Annual Common Services Contribution (based on 25 yrs)	New Build Cost	Land & Building Transaction Tax (LBTT)	Total	Risk	Max total (inc. risk)	Comments
Renovation of existing building - New Century House	1.3 acres	2,700	£ 2,500,000	£ 4,024,035				£ 113,500	£ 6,637,535	£ 1,609,614	£ 8,247,149	Risk calculated as + 40% of renovation cost as per Riba accuracy range
New Build - IABP Plot 3/8	1 acre	2,021			£ 250,000	£ 31,250	£ 6,295,000	£ 1,000	£ 6,577,250	£ 3,147,500	£ 9,724,750	Risk calculated as + 50% of new build cost as per Riba accuracy range

9 Commercial Case

9.1 Procurement Strategy

An updated summary of the Programme's Contract and Procurement Strategy is attached. The strategy is that a Solution Provider (which may be a consortium) will deliver as much as possible of the Remote Tower Solution under a single contract. Where there is good reason (such as cost, risk, time or market appetite), certain elements of the programme will be delivered under other contracts. To the maximum extent possible, the Solution Provider will participate in design and specification of relevant elements of the programme that are outside its scope of delivery.

9.2 Service Streams and Required Output

The programme will deliver a combined air-traffic control service for in-scope HIAL airports.

The current timeline for procurement to provide outputs to support the service is as follows:

Gateways

	Gateway
1	Initiation (Business Case, CM, Prof Services)
2	Planning (Feasibility, Outline Design/Spec)
3	Pre-Tender (Detailed Design/Spec/Tender Docs)
4	Pre-Delivery (Tender, Evaluation, Contract)
5	Delivery (Works/Services/Goods delivered)
6	Closing (Lessons Learned/End of Project Report)

Project timeline (2019/20 – 2020/21):

CAPITAL
- Remote Tower and Combined Surveillance Solution
- Consultancy Framework (Airspace Change)
- Fresson House Refurbishment
- Professional Services (Fresson House) (Mini-Comp)
- Relocation Specialist (SG Framework Call-Off)
- Radar Simulator
- Academy Fit-Out
- Tower Decommissioning
- Main Connectivity Contract
- Demo Connectivity
- Contingency Centre Connectivity

REVENUE (FROM CSC GO LIVE DATE)
- Term Engineering Contract
- Power Contract
- Facilities Contract

The ATMS Programme team will deliver the following outputs with the support of experts procured under the Consultancy framework shown in the planner:

- ATCO Transition;
- Concept of Operations;
- Operational Requirements;
- Airspace Change

9.3 Potential Risk Apportionment

Risk Category	Potential Allocation		
	HIAL	Supplier	Shared between HIAL & Supplier
Design Risk			X
Construction and Development Risk			X
Transition and Development Risk			X
Availability and Performance Risk			X
Operating risk	X		
Technology and obsolescence risk			X
Residual Value Risks	X		
Financing risks	X		
Legislative risks			X
Brexit			X
Other Programme Risks	X		

9.4 Potential Payment Mechanisms

Appropriate forms of payment mechanism are:

- Fixed price/costs, e.g. supplier would be paid a fixed price for completing each activity in its programme.
- Payment on the delivery of agreed outputs: E.g., supplier would be paid a fixed amount when each airport goes live.

Details of the payment mechanism may be subject of negotiation during the procurement process.

Target Costs and other forms of gain/pain share mechanism have been discounted on the basis of HIAL's funding situation. The annual Scottish Government funding cycle does not permit.

9.5 Key Contract Provisions and Accountancy Treatment

Initial contract work has identified that a modified form of the NEC3 form of contract would be suitable for use on the Solution Provider Contract.

Related contracts (such as professional services contracts) will also use the NEC3 suite of contracts, which is familiar to HIAL.

Key Contract Clauses	
Duration of Contract:	**Equipment Lifecycle (assume 15 years).** Initial Six-Year Delivery Period plus: • Period for optional purchase of additional CWPs; • Equipment Refresh; • Provision of Spares; • Third/Fourth Line Support
Break Clauses:	Contract should a right for HIAL to terminate if the Solution Provider cannot deliver a prototype system to HIAL's satisfaction.
Solution Provider Responsibility:	• Integrate all elements of programme to ensure successful CSC "go-live" • Design to meet HIAL's Operational Requirements; • Supply and install Remote Tower Solution for initial phase(s); • Supply and install Surveillance equipment; • Specify connectivity requirements; • Supply and install the Solution at further airports as required.
HIAL Responsibility:	• Provide Customer Assets (defined and agreed through negotiation); • Provide information on and access to people, sites and exiting equipment.

Payment Mechanism:	HIAL's preference would be for the bulk of payment on the delivery of agreed outputs (i.e. as each phase becomes live).
Change Control:	Per NEC3 contract.
Remedies:	Principal "remedy" is that payment is conditional on system "go-live"; Delay damages payable for key milestones.
Assets	Property in assets to transfer to HIAL when system goes live;
Intellectual Property Rights:	HIAL to own all IPRs generated in delivering the CSC (e.g. in Safety Cases, MATS Part 2, Maintenance Exposition); Supplier to licence its existing IPRs to HIAL with right of use for HIAL's contractors (especially term maintenance provider).
Compliance with Regulations:	Supplier to ensure system complies with UK CAA regulation (in particular CAP670)
Contract Administration:	HIAL and Supplier each to appoint contract manager.
Dispute Resolution:	NEC3 Mechanisms.

Risk Allocation:	Supplier Risks: • Integration risk; • Design risk (partial); • Delivery risk; • Transition risk (partial); • System obsolescence (fixed period)	HIAL Risks: • Regulatory approval risk; • Staffing risks.
Contract Options:	• Equipment Refresh (7 year interval) • Additional phases • Non HIAL airports/CWPs	

10 Financial Case for Approval

10.1 Detail

Delivery of the ATMS Improvement Plan requires Capital funding of £31.0m and programme specific Revenue funding of £12.3m over years 2020 to 2026. The anticipated year-by-year split is detailed in Appendix 1. The approval requested is for full programme delivery and does not account for further potential efficiency and income opportunities.

The actual cost and spend profile for the remote tower and surveillance equipment solution is currently unknown. A high-level estimate of £17m, split over years two to five has been included at this stage. The solution cost estimate and spend profile can be refined following input from the down selected supplier group in January 2020.

Following completion of the programme and transition of ATC services to the, there will be an additional operational revenue funding requirement of approx. £3m per annum above the non-viable BAU requirement. Principally, this is driven by increased salary costs associated with the higher level of qualification required in the CSC, as well the additional maintenance requirement for Remote Tower and surveillance equipment.

Approval is sought for:

- £31.0m capital funding for delivery of the ATMS Programme

- £12.3m revenue funding for the delivery of the ATMS Programme over the duration of the programme

- Commitment to fund the on-going additional HIAL Revenue requirement (approx. £3m per annum), needed to operate the new resilient Remote Tower and Combined Surveillance Centre, from 2024.

 See Appendix 1 for financial summary table

11 Management Case

11.1 Programme Governance

Reflecting the critical nature of the ATMS programme, several governance steps have been included in the decision-making process for the Programme. These are designed to ensure the programme is delivered in a safe, controlled, efficient and cost-effective manner.

At the highest level of the business, the HIAL Board is accountable for the overall deliver of the programme within HIAL's wider strategic priorities.

The ATMS Programme Board reports to the HIAL and is responsible for the oversight of the delivery of projects within the ATMS Programme Board. HIAL Prospect branch are represented on the Programme Board.

A dedicated project team has been recruited to deliver all aspects of the ATMS Programme Board. The Programme Director is a member of HIAL's Senior Management Team and provides regular updates on progress.

A specific programme Risk Register is in place to manage the risks associated with the ATMS programme. Significant risks are also monitoring at the Corporate Risk Oversight Group.

Regular opportunities for interface with the Trade Unions is undertaken through a regular meeting schedule.

In addition, a number of other forums are in place where regular programme updates are provided.

Engagement with our staff is key to the success of the Programme. A communication plan was created upon inception and will be continually updated as the programme progresses.

To ensure best practice is followed, that lessons learned across other programmes within Scottish Government purview, are understood and incorporated, the programme will request Audit Scotland perform a formal Gate review as the programme moves from Feasibility and Options, into the Design phase.

11.2 Programme Management

At the day-to-day working level, the key principals of programme management are applied to ensure good governance.

In order to ensure the programme can deliver benefits, it will be delivered in a timely manner against the Programme Plan. To facilitate this delivery, a comprehensive, detailed schedule has been generated, detailing the principal programme activities. This schedule has

been resourced and has allowed for a full financial breakdown of the Programme to be performed, with subsequent issues, efficiencies and improvements identified.

The developed plan has highlighted a series of milestones, key deliverables that mark critical points in the Programme, be they financial, transitional or delivery-related. Each milestone has a delivery date and costs associated, which will allow cost benefit analysis to be performed. The milestones will form the KPI's, against which the programme success will be measured.

The Programme includes detailed estimates through the life cycle of the programme and these have been provided to the governing Boards.

Detailed financial reporting is provided to the HIAL and ATMS Boards, with progress against spend being tracked. Any variance on estimate is analysed and reported, and any change to the financial baseline requires approval though the ATMS and HIAL Boards.

Appendix 1 – Financial Summary table

	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	
	Y0	Y1	Y2	Y3	Y4	Y5	Y6	TOTAL
Capital - Building Purchase (New Century House)	200,000	2,300,000	-	-	-	-	-	2,500,000
% of Building Cost	*8%*	*92%*	*0%*	*0%*	*0%*	*0%*	*0%*	
Capital - CSC Renovation, Fit-out & associated professional fees	193,852	1,821,693	2,345,791	458,093	-	-	-	4,819,429
% Building Renovation & Fit-out	*4%*	*38%*	*49%*	*10%*	*0%*	*0%*	*0%*	
Capital - Solution	-	4,250,000	7,650,000	2,550,000	2,550,000	-	-	17,000,000
% of Solution Cost	*0%*	*25%*	*45%*	*15%*	*15%*	*0%*	*0%*	
Capital - Programme Other	814,995	2,765,619	1,508,248	1,073,603	983,975	643,949	55,272	7,845,661
% of Programme Cost	*10%*	*35%*	*19%*	*14%*	*13%*	*8%*	*1%*	
ATMS Programme Capital	1,208,847	11,137,312	11,504,039	4,081,696	3,533,975	643,949	55,272	32,165,090
ATMS Programme Revenue	1,182,787	1,452,169	1,663,462	3,383,180	3,351,027	1,783,510	693,885	13,510,020
Total ATMS Programme Cost	2,391,634	12,589,481	13,167,501	7,464,876	6,885,002	2,427,459	749,157	45,675,110
								-
Funded by:								-
CAPITAL								
FY2019/20 HIAL ATC Capital Budget	142,670							142,670
FY2019/20 ATMS Capital Approved Budget	1,066,177							1,066,177
ATMS Programme Additional Capital Requirement	-	11,137,312	11,504,039	4,081,696	3,533,975	643,949	55,272	30,956,243
REVENUE								
FY19/20 ATMS Revenue Approved Budget	1,182,787							1,182,787
ATMS Programme Revenue Requirement	-	1,452,169	1,663,462	3,383,180	3,351,027	1,783,510	693,885	12,327,233
Total	**2,391,634**	**12,589,481**	**13,167,501**	**7,464,876**	**6,885,002**	**2,427,459**	**749,157**	**45,675,110**

*Note: Financial requirement above is for full programme delivery and does not account for potential opportunities.

Appendix 2 – Programme high level Risk register

Risk No.	Risk Subject/Activity	Hazards - Detail the risk including potential consequences	Hazards - Current Scoring	Hazards - Existing Control Measures	Hazards - Further Controls or Action Required Detailed	Hazards - Proposed Scoring
ATMS - Flag - 001	Recruitment of ATS Staff	Up to 30% of ATCOs unable or unwilling to relocate and/or achieve APS validation: Increased ATCO headcount.	12	ATS Recruitment and Training Plan; Regulatory Requirement; Organisational Oversight.	1. Fundamental review of the ATS recruitment, selection, career development and retention strategy. 2. Develop a Pre APS Course and support package.	6
ATMS - Flag - 002	Finance	No financial commitment to fund the project leading to project delay or cancellation.	15	Continued dialogue with Transport Scotland and provision of forecast numbers.	1. Total budget over 6 years to be allocated and confirmed by Transport Scotland. Not possible under the current one year budget cycle.	15
ATMS - Flag - 003	Finance	No financial commitment to fund the project team leading to project delay or cancellation.	15	Continued dialogue with Transport Scotland and provision of forecast numbers.	1. Work with TS to define annual budgetary requirement.	15
ATMS - Flag - 004	Finance	Project budget reported by Helios too low leading to project delay or cancellation.	12	Initial Forecast was prepared based on the Helios report	1. Updated Business Case to be submitted to Transport Scotland covering improved forecasts. 2. Detail financial manageent of the Programme to prevent cost overruns.	8
ATMS - Flag - 005	Procurement/Legal	Value for Money challenge - political and public scrutiny of budget allocation v actual spend; delivery of a quality public service.	9	Dedicated Project Team appointed; High level market research on supplier costs performed	1. Sufficient time allowed for scoping, research and planning. 2. Accuracy of pre-tender cost estimates and realistic budget set inclusive of contingencies. 3. No scope creep allowed by the Project Board. 4. Robust contract documents. 5. Pro-active contract management. 6. Robust project management.	6
ATMS - Flag - 006	Regulatory Risks	Competent Authority fails to develop new regulation in support of advances in technology, operational capability, operational procedures and/or ATCO licensing. Failure to update regulation to support advancing technology and innovative operational procedures in time with the development of ATMS underlying strategies. It will result in delayed implementation.	20	Appointment of ATMS Programme Board; Regular interface between ATMS team and Competent Authority.	1. Regular interface with Competent Authority provides opportunity for CAA to provide regulation which meets the timelines of ATMS Programme. 2. Formally request a named resource (case officer) from the CAA.	8
ATMS - Flag - 007	Technical Evaluation	Inability to gain approval for SSR only approach operations will not allow for any other solution other than PSR. This will drive an increase to the overall cost to the Programme, and an increase to the timescale for transition.	9		1. The implementation of the required Airspace Change Proposals will remove some of the challenge in approval for SSR only approach service.	9
ATMS - Flag - 008	Technical Evaluation	Inability to gain approval of required airspace change proposals. This will drive a change in the Programme, and may lead to cost increases due to changes in equipment (PSR) as well as time impact.	12		1. 1st Airspace Change Proposal to be launched to act as a testbed and provide assurance for the approval of the remaining ACPs.	8