AIRPORT DEVELOPMENT

CYRRUS
Enabling Excellence in Aviation

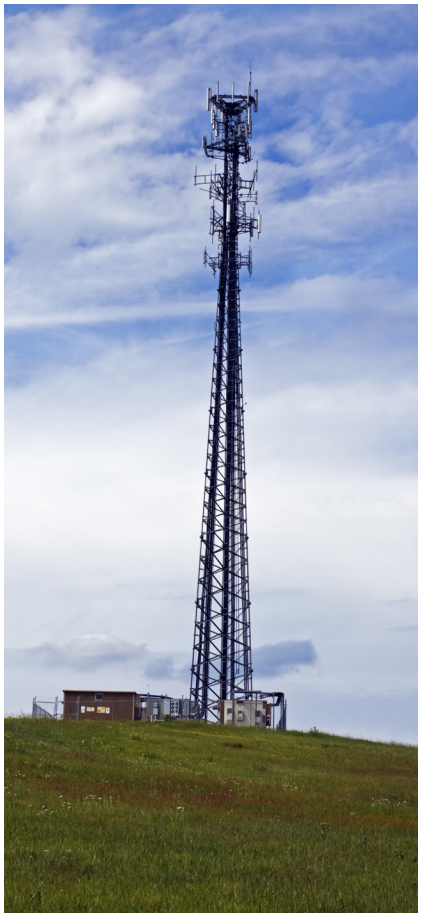
Aviation Consultancy at its best.

Specialist aviation support to help solve problems for airports and airport developers

www.cyrrus.co.uk

AIRPORT DEVELOPMENT

Airports need to constantly develop and expand in a controlled and sustainable manner to meet increasing traffic demand. Cyrrus expertise can play a vital role in ensuring that airport development potential is maximised. Development and progress may be achieved either by better use of existing assets and infrastructure, or by realising the full benefits of new developments and technology. There is also the role of key service providers and the associated responsibilities, performance and partnering approaches to consider.



Maximising Potential

Cyrrus provide feasibility and option studies to explore traditional and more innovative solutions to meet an airports business needs. These are developed into Concepts of Operations and ultimately Airport Master Plans.

Where out-sourced regulated services are used (e.g. Air Navigation Service Provision, Rescue Fire Fighting Services), Cyrrus can identify the contracting models and alternatives, together with their associated risk and opportunities. This ensures an optimum match with the needs of the airport business and the service provider.

Whatever the development needs of the airport, Cyrrus can ensure that maximum benefit is derived in terms of safety, regulatory compliance, efficiency, cost, sustainability, timescales, and future proofing.

Minimising Risk

As recommended by EUROCONTROL, Cyrrus follows System Engineering processes to capture User, Regulatory, Safety, and Commercial requirements and maintains the system engineering processes throughout the project lifecycle. This rigorous approach supports project governance and evidences compliance. Together with our six sigma change management process and project management controls, it reduces risk and ensures business objectives are realised.

AIRPORT DEVELOPMENT

Cyrrus understand the commercial, financial and governance requirements associated with major airport infrastructure developments. Our staff are able to airport boards and senior management teams from business case development through to final project delivery.

We are recognised and respected internationally for our expertise in airport project management. Through innovation, Cyrrus has successfully assisted many airports in maximising the utility of existing infrastructure. Additionally, we develop innovative solutions that enable development at airports which would be denied by conventional thinking.

Cyrrus has practical experience of passenger terminal design and delivery of key airport systems and facilities for Air Traffic management and Airport Operations. This breadth of experience is essential for delivery of cost effective Airport Master Plans and major developments.

SAFETY

Safety Management System
Safety Cases
Safety Audit
Safety Training
Risk Assessments

RUNWAY OPTIMISATION

Categorisation
Declared Distances
Extensions
Runway End Safety Area
Aircraft Performance
Obstacle Restrictions

CAPACITY STUDIES

Airspace
Runway
Apron

AIR NAVIGATION SERVICE PROVIDER

Air Traffic Control Requirements
Air Traffic Engineering Requirements
Tender Process
Contract Requirements

BUILDING DEVELOPMENT

Maximising Potential:
On-Airport
Off-Airport
Design Advice
Mitigations
Control Tower Building Design

AIRPORT PLANNING

Runway Design
Taxiway Design
Apron Design
Control Tower Building Design
Control Tower Building Location
Rescue and Fire Fighting Service Location
Building Locations
Airside Facilities

AERONAUTICAL GROUND LIGHTING

Approach
Runway
Taxiway
Stands
Apron
Precision Approach Path Indicator
Obstructions
Audit

PROCUREMENT

Communications, Navigation and Surveillance
Tender Packs
Tender Evaluation
Contract Negotiation

RUNWAY OPTIMISATION

Obstacles in the vicinity of an airport can pose collision risks to aircrafts, as well as reducing safety margins. It is therefore vital that airports consider any construction in the area of the airport to ensure that it does not cause an obstacle risk.

Obstacle Limitation Surface

The control of obstacles around an airport is based on Obstacle Limitation Surfaces (OLS). OLS is a series of complex surfaces around a runway where the control of obstacles is necessary. Ideally, no new construction would be permitted to penetrate the OLS, but in situations where a proposed construction does compromise the OLS, then the impact of that penetration will be assessed. Once the impact is known, mitigation options can be considered to ascertain whether the proposed development would have any unacceptable effects on the airport operations.

Cyrrus provides OLS mapping around runways, allowing airport operators and local planning authorities to determine if a proposed development requires detailed assessment or aeronautical study, an online web based assessment tool can also be used if required.

Should an assessment be necessary, you can trust that Cyrrus will provide extensive expertise to evaluate the potential effects, identify mitigations and provide robust advice to airports and developers.

Cyrrus can also deliver a full assessment of aeronautical obstacle surveys against the OLS to inform the airport operator on the control of obstacles in the vicinity of the airport.

CAPACITY STUDIES

CYRRUS' recent experience covers a range of aviation capital and strategic projects including:

- New Ajman International Airport – Airport Master Planning, Cost Estimates, Project Management, Regulatory Compliance;
- SCATSTA Airport – New Control Tower Building, Navigation aids, Instrument Flight Procedures;
- Birmingham International Airport – ANS Procurement & New Control Tower Building and associated Air Navigation Equipment;
- London Oxford Airport – Runway Extension, AGL, Navaids, Fibre Optic network;
- Leeds Bradford Airport – Runway Reconfiguration & CAT2 ILS Design;
- London Luton Airport –Surface Movement Surveillance System, voice communication system, MET system;
- Athens International Airport – Real Time data provision to Airport Operations Centre;
- Robin Hood Doncaster Airport – Controlled Airspace Implementation, Surveillance radar;
- London Gatwick Airport – Air Navigation Service(ANS) Procurement;
- Edinburgh Airport – Air Navigation Service(ANS) Procurement, asset management

AIRPORT NAVIGATION SERVICE PROVIDER

Cyrrus provides professional project management services and business change management to the aviation sector, including procurement process design, project management, control and commercial support.

Our industry background and market knowledge, enables Cyrrus to manage tenders for Air Navigation Service (ANS) provision. This includes commercial and project management as well as requirements definition for the Air Navigation Service Provider (ANSP). Traditionally, these services were provided by the large state organsisations that still dominate this sector. Today there are alternative service models that align with airports businees plans and a range of service providers.

Service Options

Out-sourced ANS provision

All ATC/ATE operational staff, certication/ designation, processes and procedures provided by the supplier

Managed ANS provision

All ATC/ATE operational staff recruited by the Airport company, certification/designation, process and procedures provided controlled and audited by the supplier

Self Supply

All ATC/ATE operational staff, certication/ designation, processes and procedures provided by the Airport Company

Managed Service to Self Supply

All ATC/ATE operational staff recruited by the Airport with transition to managed service.

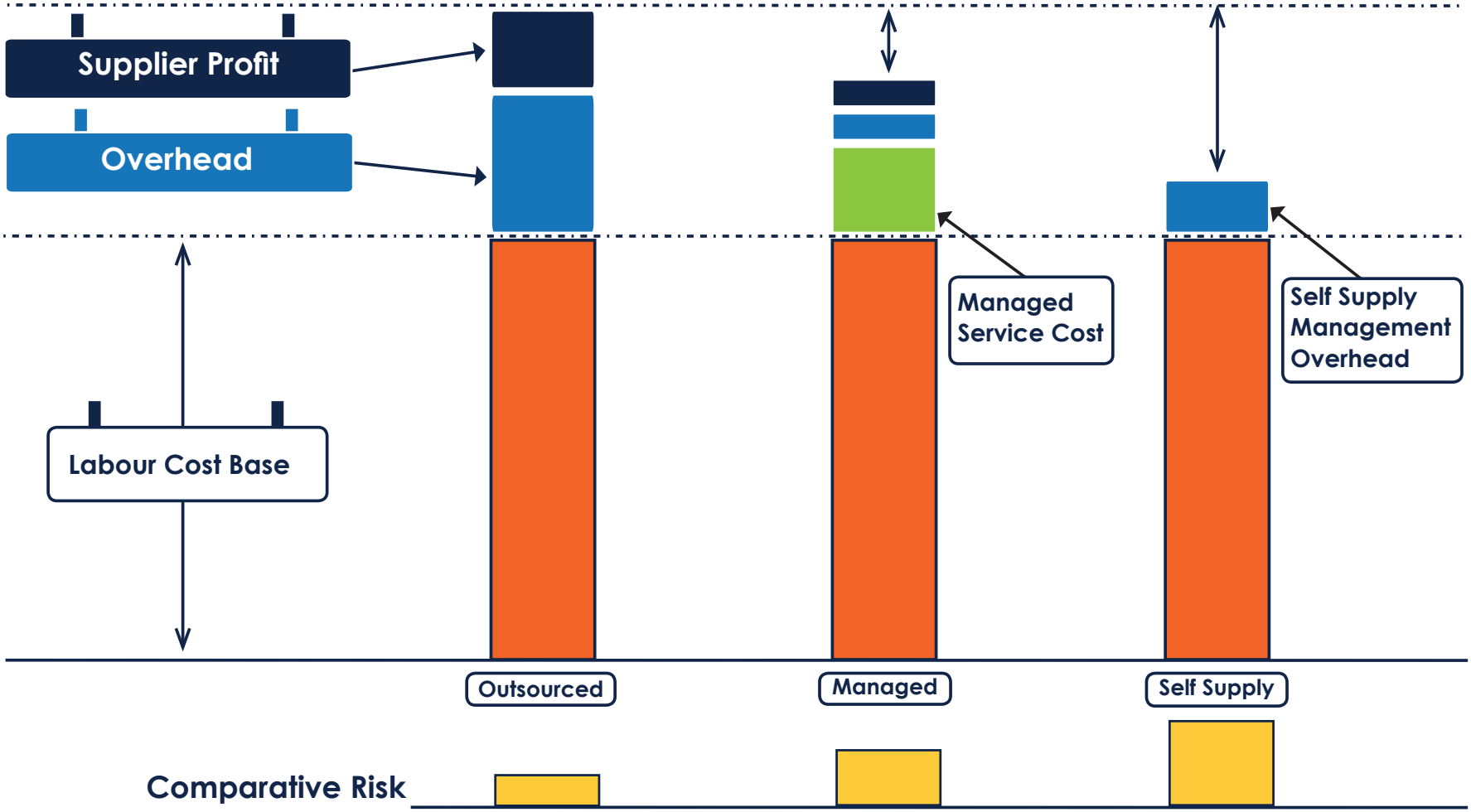
Downstream transition of supplied processes and procedures to the Airport Company, at which point the Airport is a licensed ANSP.

In the UK, we are acknowledge by the UK CAA as instrumental in developing a true market for the provision of Air Navigation Services for airports. This has realised major cost savings and improved servce levels for Airports. This process has also provided more clarity on state of airport assets, significantly improming CAPEX planning and changing the way future projects are delivered

AIRPORT NAVIGATION SERVICE PROVIDER

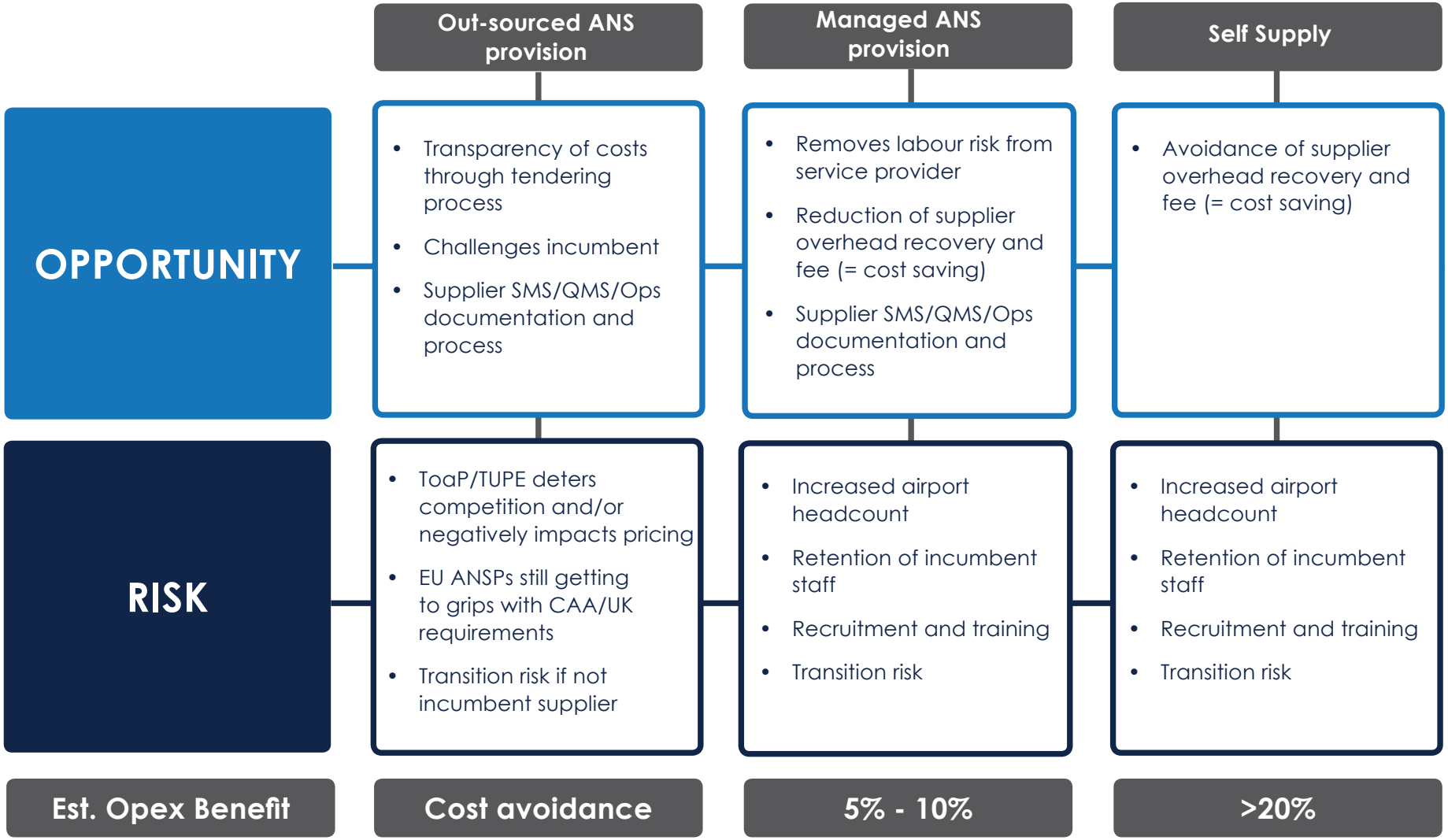
Comparative Cost

Working with Airports across Europe and the Middle East, we have a demonstrable record of delivering client solutions, delivering value and expertise that is cost effective and efficient. We can advise on the ANSP Service Options that best meet the Airports business needs and the associaed risks and opportunities.



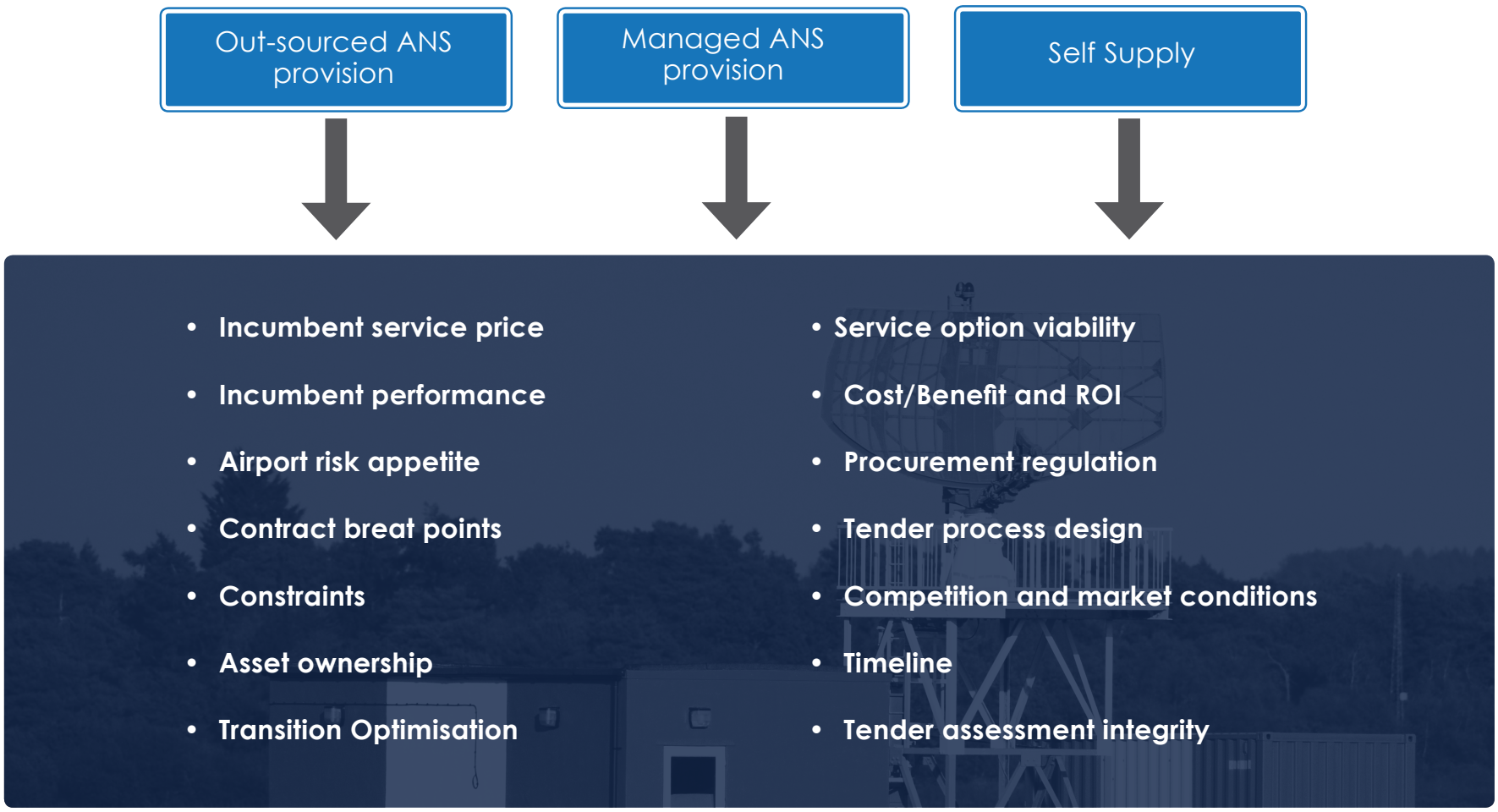
AIRPORT NAVIGATION SERVICE PROVIDER

Procurement Options



AIRPORT NAVIGATION SERVICE PROVIDER

Procurement Strategy



Trade Space

AIRPORT NAVIGATION SERVICE PROVIDER

Procurement Strategy

Cyrrus' experience covers a range of managed ANS procurement projects including:

- London Luton Airport
- Birmingham International Airport;
- London Gatwick Airport;
- Edinburgh Airport;

Cyrrus provides a managed service for ANS procurement includes:

- Potential service provider/supplier communication support;
- Support to OJEU process and developoment of the associated documentation;
- Development and preparation of Invitation to Tender (ITT) documentation;
- PQQ and ITT process management and coordination;
- Data room requirement and preparation process to enable potential bidders to gain a detailed understanding of the airport operation;
- Management of the tender evaluation process and output reporting.

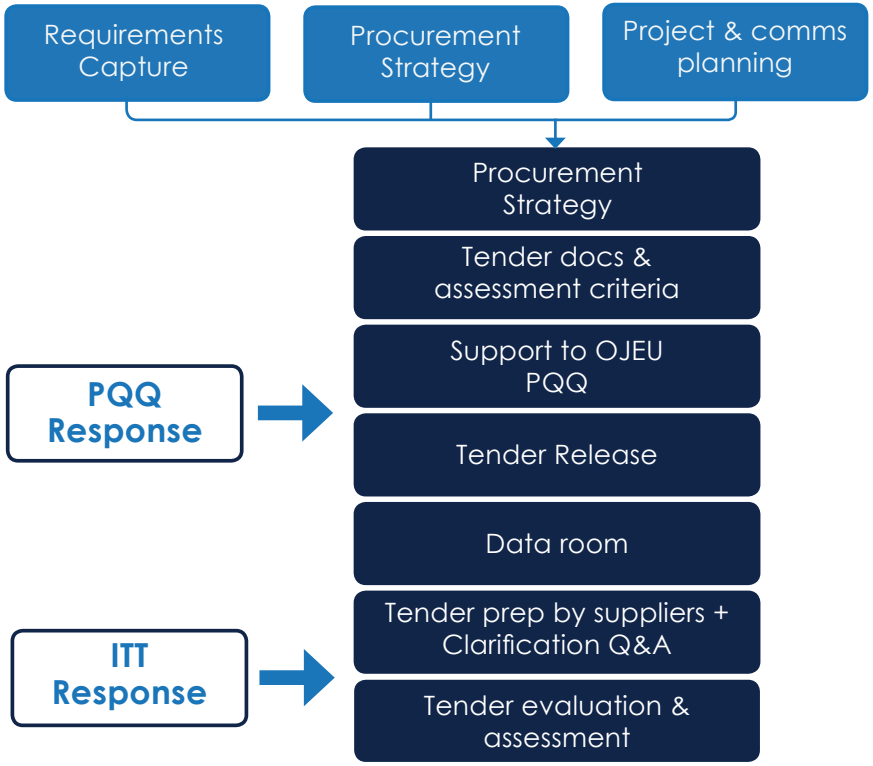
Additional support options can be provided including:

- Independent engineering survey of Air Navigation Equipment (ANE) assets and associated airport infrastructer;
- 5 year CAPEX validation with rational;
- Contingency facility capabiity assessment against business requirements;
- Support to contract negotiation with the preferred supplier.

Our Procurement Strategy for ANSP or other regulated service tenders is tailored to meet individual airport requirements (in order to maximise the use of in-house capability) and provides additional resource in support of ad hoc tasks on an arising basis.

The approach proposed maximises the use of our experience and learning gained from applying our ANSP procurement project life cycle as illustrated in Figure 1 below.

High Level Tender Process



AIRPORT PLANNING

World growth in Aviation

Growth forcast vary, but all agree that the growth in aviation over the next 20 years will be substatial. The Airbus study 'Mapping Demand' study states:

……..air traffic will grow at 4.5 per cent annually, requiring some 33,000 new passenger and dedicated freighter aircraft at a value of US$ 5.2 trillion over the next 20 years……..Maintenance Repair & Overhaul (MRO) business totalling US$1.8 trillion and the need for in excess of a 500,000 new pilots over the next 20 years.

This demand requires existing airports to undertake major expansion programmes, but has also seen new airports being constructed with several Mega Airport projects currently underway around the world.

Planing new airports and major upgrades to existing airports requires a breadth of expertise. Cyrrus has played a key role in determining the feasibility, concept of operations and business case for major international developemnents. Cyrrus understands the technical and reglatory constraints that make airport planning different to many other construction projects.

An up to date Airport Master Plan (AMP) is essential for ensuring coordinated growth at an airport. Airport planing extends beyond the airport boundary, impacting local emergency response services, transport, security and environmental issues. In many countries the AMP is a statutory requirement to ensure alignement with regional developement plans.

Before the AMP can be approved it must meet the Business needs of the airport. A fundamentatl question is whether the capital investment will realise a return. This can only be determined by the analysis of traffic forecast that typically cover:-

AIRPORT PLANNING

An important consideration is the Level of Service (LOS) offered to passengers. Recently IATA has reclassified these levels

UNDER-PROVIDED - SUB-OPTIMUM - OPTIMUM - OVER DESIGN

For low cost operations, longer queques as passport control or check-in may be acceptable and the LOS could be SUB-OPTIMUM. For most airports OPTIMUM is clearly the more appropriate option. OVER DESIGN is expensive and rarely appropriate. The LOS is a major cost driver and must be agreed before an plan is finalised. Cyrrus can provide expertise to provide airport management teams with the clarity needed to develop their thinking and define their Business Plan.

Expand Existing

Existing airports are constrained by the need to maintain safe operations with minimum impact to the business. Land availablility and its use is more likely to be contrained, Cyrrus can assess the feasibilty and options for best use of land both airside and landside. Using simulation tools, Cyrrus can evaluate the impact of Airspace Design, Airport Layouts and Passanger Terminal Design. This will identify pinch-points and the impact on peak traffic. Before consturction, airports and investors can have demonstrable evidence that the design will meet the requirements.

New Airports

A new airport is an opportunity to select the airport layout, buildings and operational systems with little constraint. Cyrrus recognise that these cannot designed in isolation, with completx interactions and dependancies. A new Airport Master Plan may take many iteration before business, regulatory and financial requirements are aligned.

New airports in particular need to address power, water and waste requirements. These can be significant requiring state providers to make major investments in infrastructure. Defining these requirements at an early stage, enables all parties to understand the budgets and timescales needed to delivery these enabling projects. Airport Master Plans must integrate with regional development plans.

AIRPORT PLANNING

Plan for Construction - now!

For megaprojects, the construction industry is moving away from the tradional processes, to Building Information Modelling (BIM); considered by goveernments and industry leaders as the only way to deliver complex projects.

Studies show that BIM projects use 25% less labour, reduce cost by 5% and accelerate completion timescales by 5%. Early adoption of BIM will maximise the benefits for project and realise long-term cost savings through reduced maintainance cost. While not normally addressed as part of airport master planning, Cyrrus stronly recommends that this approach is adopted from the outset. Applying BIM standards from the outset is identifed as a key factor in delivering the benefits. Working with the BIM planner Cyrrus can esnure the AMP and BIM Plan are aligned.

Airspace

For cities served by multiple airports, access to Airspace is likely to be restricted and may even limit an airports ability to expand.

Cyrrus are recognised experts in Airspace Design and have managed the integration of airspace needs in high density traffic areas in Northern Europe and the Middle East. Folowing on from the Airspace design, Instrument Flight Procedures are required for arriving and departing aircraft. Cyrrus are a licenced IFP provider delivering new procedures to major international airports.

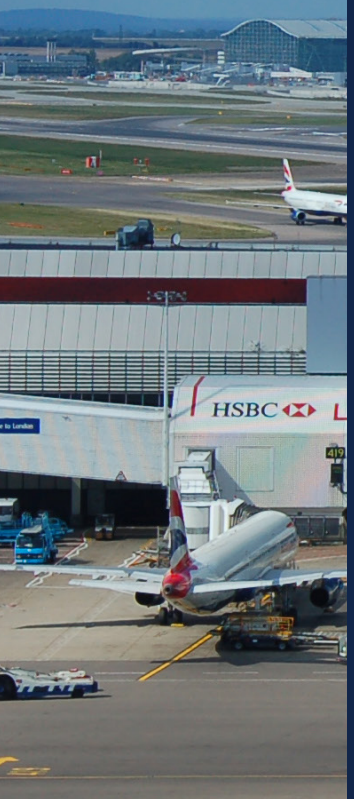
The Airport Master Plan

The Airport Master Plan layout is normally a publically available document, showing current and future plans for areas within the airport. The AMP document is a substantial treaty on the airport operations and business aspiratons…..It builds on the airports business Case by providing the next level of detail to enable the project and airport management teams to work from a common understanding. Working with investors and airport companies, Cyrrus can produce the first draft of an AMP for new build airport and update this living document until airport opening. For existing airports, cyrrus can provide valuable input to enable the AMP to fully reflect future plans.

The AMP also enable Human Resource and Commercial Managers to plan their staff and service contracts. Physical development alone will not deliver a functioning airport.

WHY CHOOSE CYRRUS FOR YOUR AIRPORT DEVELOPMENT NEEDS

- We have a wealth of experience in Airport Development Projects.
- We are recognised and respected internationally for our expertise in Airport project management.
- Through Innovation, Cyrrus has successfully assisted many airports in maximising the utilisation of existing infrastructure.
- By innovative means, we have facilitated development at airports which would be denied by conventional thinking.



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