

High flyers

16 March 2017

Tim Walder considers the strategies required in managing major works at airports

The planning and implementation of major airport programmes such as Terminals 2 and 5 at Heathrow, Pier 6 at Gatwick and terminal extensions and new satellite buildings at Stansted can be highly complex, and requires a breadth of planning expertise, environmental and legal knowledge, business acumen, good design and an appreciation for operational readiness.

Increasingly topical debates about new runway capacity can take as much time to untangle as an intense 48-month capital investment programme affecting 14 regional airports in Greece, for example, so it is crucial to get the commercial management processes right.

Commercial management for aviation programmes may vary with scale. However, all projects require commercial acumen, strategy, insight and an understanding of process if they are to succeed. An airport needs to align the main motivations for its development programme with the commercial strategy.

The key factors prompting airport developments are:

- traffic and capacity demand projections;
- key considerations in business planning, including:
 - capital, revenue and operating expenditures;
 - aeronautical (landing fees) and non-aeronautical revenues such as retail, catering and car parking;
- regulatory requirements;
- maximising return for investors or shareholders;
- meeting demand and capacity planning;
- sustainable development for planned growth;
- planning for aviation innovation, for instance in security, check-in and IT;
- capital investment planning: balancing capacity development with maintaining existing assets and facilities
- masterplanning:
 - airfield layout, allowing for potential changes to aircraft;
 - terminal facilities development, considering space requirements based on peak demands and [International Air Transport Association standards](#) ;
- environmental impacts, for example noise, air quality, effect on water courses, carbon footprint.

Understanding these factors comes down to making allowances when estimating costs and in business planning for a range of relationships between various parties and aviation process and procedures; for instance, weighing airlines' and customers' needs and regulatory engagement against shareholder returns.

Masterplanning and design

There are 3 key commercial processes to consider in the masterplanning stage:

1. cost estimating and planning;
2. risk and opportunity management;
3. commercial and contract management.

Cost estimating and planning

Depending on the nature of the programme, facility-level or 'top-down' estimation of costs – that is, considering the cost per square metre of gross floor areas – will be used during the masterplanning stage. Cost must be aligned with the schedule and scope of the programme as well, in order to minimise risk and the occurrence of gaps in the overall masterplan.

The process of estimation will then proceed to the system level, with consideration of the elements in the RICS and BCIS templates – often termed 'bottom-up' analysis – as the design, scope and schedule become defined.

Various cost planning and estimating tools and processes can be applied, depending on the scale and complexity of the programme. Three-point estimating, which looks at 3 values – the most optimistic, the most likely and pessimistic estimates – and associated Monte Carlo analysis – which uses repeat random samples to understand risk and uncertainty when preparing models – is becoming increasingly popular in major aviation programmes to allow articulation of the degree of cost certainty. This is a more intelligent client approach than using optimism bias.

Risk and opportunity management

This will involve the creation and implementation of risk and opportunity management processes and procedures, including development of a risk and opportunity register, as well as devising mitigation measures and identifying where the risk lies and therefore who is responsible for it, whether at project or programme level.

Commercial and contract management

At the start of the masterplanning process, it is important that the commercial strategy is developed and implemented. Major programmes will be spending large sums on consultant fees and client team costs; in addition, environmental impact studies and development consent order processes may be required alongside land purchases and legal fees. These all entail processes and procedures for measurement, benchmarking, control, contracting strategy, management and reporting.

Terminal 5 at Heathrow required an average of £80m per month to meet tight programme deadlines

As the masterplan progresses into the design stages, procurement and contracting strategies need to be developed alongside one another. A number of procurement routes are

commonly chosen in aviation programmes, namely:

- traditional detailed design and tender;
- engineer procure and construct (EPC or 'turnkey');
- design and build (D&B);
- 2-stage tendering with a managing contractor;
- 2-stage tendering with construction management;
- combination of any the above with contractor finance options.

The above options all have their benefits and disadvantages. It is important to test which will be the most suitable for a particular programme as soon as possible, preferably during the masterplanning stage, and multiple routes may be appropriate across a programme of work as some projects lend themselves to differing procurement processes.

The key factor running through all stages is ascertaining risk. If it is possible to ensure a high level of certainty in the client brief and the design, then EPC or D&B may well be the most appropriate route as these mean that there will be a limited requirement for change.

Where there are potentially significant operational constraints? for example in major complex programmes at Heathrow Terminal 2, or when there is the potential for client-driven design changes? then 2-stage tendering would be more appropriate. The commercial team needs to be integral in the choice of appropriate procurement route as this will inform both the risk and the expenditure profiling.

Programme & project delivery

Commercial management during the programme and project delivery stage will move from being driven by the design and business case to focusing on the production stages. During the design stage, both procurement and contracting strategies will have been planned and executed; therefore, the baton has now been passed to the delivery team.

Thus, commercially speaking, the focus will now be on contract administration, risk management, cost reporting and proactive change management. Work at airports often takes place in operational environments, and changes to the design and operational constraints are common while projects are in progress. The following are 2 examples of challenges facing the commercial management teams when they are working at operational airports.

Site logistics

Our major UK airports have in the past had to spend exceptional amounts on a monthly basis to meet tight programme deadlines; for instance, an average of ?80m per month was spent on Heathrow Terminal 5. This work requires substantial logistical support, at an overall programme level, to enable high levels of productivity on site.

Examples of such logistical support at Terminal 5 included off-site operational facilities for: storing and processing materials; security processing, welfare and health and safety for site staff; waste removal; and common mobile equipment.

Airline moves

Airports develop alongside the airlines that use them, and changes and relocations to the former may be required to accommodate the latter, including decanting and temporary facilities, to ensure that their operations remain as efficient as possible.

Such moves are complex logistical undertakings because people, equipment and facilities all have to be coordinated and adjustments made to very tight timescales. Both Gatwick and Heathrow Airports have recently undertaken major airline moves as a preliminary to their own major programmes, with EasyJet's move to North Terminal at Gatwick and the closure of Terminal 1 and the old Terminal 2 before the new Terminal 2 opened at Heathrow. These airline moves were substantial programmes, with budgets of more than ?100m each.

Activation

It is important to remember that the commercial process does not end at the point of handover to the operations team. Operational readiness and transfer need to be understood as early as possible in the programme, and the commercial strategy should be directed towards providing a working asset, sharing knowledge and recording requirements for operation and maintenance.

Incorporating new facilities into ageing assets can present compatibility challenges, and commercially speaking, the impact of additional costs can be extensive – not only in terms of replacing plant and equipment but also the outlay needed for integration, commissioning and testing.

Airports are massively complex in terms of the IT that keeps the flight information, baggage-handling equipment, security and life-support systems operational. These systems are a significant expense in any airport development, and are often underestimated in terms of their cost and the impact they have on the schedule. It is vital that all these are considered during the commercial management process.

Tim Walder is a partner at [Arcadis](#) and a board member of the [British Aviation Group](#)

Further information

- Related competencies include [Business planning](#) , [Commercial management of construction](#) , [Contract administration](#) , [Design economics and cost planning](#) , [Procurement and tendering](#) , [Programming and planning](#) , [Risk management](#) , [Sustainability](#)
- This feature is taken from the RICS *Construction journal* (March/April 2017).