

HEATHROW T2: THE QUEEN'S TERMINAL – A LESSON IN VALUE AND SUSTAINABILITY



Highlights from the Major Projects Association event held on **12th November 2014**

The opening and subsequent operation of Terminal 2 (T2) has been hailed a huge success by all involved and it is a testament to the possibilities that are achievable with collaborative, integrated and innovative thinking.

'Major projects like Terminal 2 are the game changers for our industry.'

Dr Peter Hansford, Government Chief Construction Advisor

ABOUT HEATHROW

- The UK's only hub airport
- 171 destinations served in 90 countries
- 72 million passengers and 470,000 flights a year
- 78% of UK's long haul flights
- At 98% capacity

In line with Heathrow's business objectives, the successful completion of the new T2 was a key milestone in Heathrow's overall master plan for continuously improving safety, passenger satisfaction, economic development and environmental impacts. With £11bn of private investment since 2003, a clear vision for transforming a 1950s layout into a modern 'toast-rack' style airport will deliver greater efficiency in the movement of aircraft, accommodation for larger aircraft, and flexibility. This is currently the only way to increase capacity at the airport without a third runway; a critical goal for Heathrow with history telling us that the survival of a hub airport is entwined with growth, to see off global competition.

'Change effected by major projects like Terminal 2 is critical for our focus on passenger satisfaction and other strategic priorities.'

Phil Wilbraham, Development Director, Heathrow Airport

DEFINING THE BRIEF

Commencing in 2006, defining the brief for T2 was influenced by an array of complexities. At its heart were the needs of T2's customers: the forecast 17.9m passengers and 26 airlines (together forming the Star Alliance that would occupy Terminal 2). The site itself was a key consideration, constrained by the position of existing and live facilities including Heathrow operations, the Piccadilly Line, control tower sight lines and the 23cm radar. Additionally, stringent sustainability targets and planning conditions applied.

'For 8 million transfer passengers a year, Terminal 2 will be their first and last impression of London.'

Luis Vidal, Architect Heathrow T2

There were three key facets of the design process:

1. **Functionality** – how to physically get round the constraints of the site, keep passengers at one level as much as possible and maintain flexibility of use through modularisation and cognisance of the future.
2. **Identity** – creating an iconic social meeting space that can handle vast flows of people smoothly, whilst maintaining a pleasant and stress-free environment.
3. **Responsibility** – delivering a BREEAM Excellent building on time and to budget.

'Everything was planned like clockwork to keep the pace on this job.'

Julian Foster, Delivery Director, Heathrow Airport

DELIVERING A GREAT OUTCOME

It was through the alignment of all actors that Heathrow have been able to deliver on both business objectives and the needs of airlines and end users. The key elements to this success were:

- **Safety** – through designing for safety, effective risk mitigation was 'baked in' from the earliest possible stages.
- **Early contractor involvement** enabled value to be driven from the earliest and most influential part of the process, as well as the early assessment of alternative construction techniques to secure schedule.
- **Integration** of all key parties allowed robust and meticulous strategic planning, which was fundamental to the success of the project. In some ways this was made easier given that the vast majority of suppliers were rooted in the UK.
- **Collaboration** – incorporation of the right collaborative behaviours from the early stages optimised solutions development. This includes accepting that 'issues are good', not being afraid to raise problematic issues so that these can be resolved. There were over 30 active stakeholder organisations, numerous interfacing projects and the need to transfer up to 4,000 workers to the security controlled 'air side' site every day. Early and joint planning by all parties allowed efficient processing of workers.

- **Design for manufacture and assembly** – off-site manufacture and modularised components with ‘just in time’ delivery to site created the opportunity to improve safety, quality and delivery (schedule) outcomes.

‘I firmly believe that more modularisation is required to achieve quite radical industry changes over the next decade.’

Dr Peter Hansford, Government Chief Construction Advisor

- **Building Information Modelling (BIM)** – the implementation of ‘4-dimensional’ BIM was a game changer for the project and became a key enabler for delivery, supporting modularisation, pre-planning and clash detection, options visualisation and modelling. This enabled reduction in schedule in a very time-constrained environment, confidence in the project team that the right solution was being pursued and, for example, led to the highly innovative and definitive ‘top-down’ and ‘bottom-up’ concurrent construction methodology that resulted in £10m savings and a five-week reduction in schedule.

‘BIM is a game changer if used properly.’

John Keaveney, Aviation Director, Balfour Beatty

- **Innovation** – the promotion and capture of innovation was central to the workings of the project, and this facilitated the effective capture, funding and implementation of good ideas with over 200 innovations put forward.
- **Operational readiness** – a six-month operational readiness period was established, based on benchmark data and collaboration with all stakeholders. Over 178 trials involving up to 2,000 people at a time were key enablers for success, for example leading to 400 amendments to way-finding.

Behavioural and leadership training was provided to all staff who would operate the terminal. The terminal opened on 04 June 2014 with just 36 flights on that day, part of a progressively expanding timetable to allow a gradual ‘ease in’ for the facility as opposed to a ‘big bang’ launch.

‘Early contractor involvement is important, it’s the supply chain who have the real smarts.’

John Keaveney, Aviation Director, Balfour Beatty

REALISING THE CHANGE

Since opening, T2 has achieved unprecedented levels of passenger satisfaction, with an Airport Service Quality (ASQ) score of 4.26 (out of a top score of 5). This makes it the top-ranking terminal in the whole of Europe, and indeed Heathrow has recently moved into first place for overall ASQ score in Europe.

Lufthansa, part of the Star Alliance and one of the 26 airlines now operating from T2, emphasise the high level of customer experience provided by the facility, providing peace of mind for their customers and enhancing both their economy and premium offer. Whilst there are lessons to be learnt, such as some process adjustments needed to increase capacity resilience in the check-in hall, the Alliance are very happy with their new home at Heathrow; they are able to provide their collective customers with functional, responsible and iconic access to the 192 countries that their airlines serve – with the likelihood that their customers’ lasting impression of London through Terminal 2 will be a positive one.

POINTS FOR FURTHER DISCUSSION:

- Can off-site manufacture and modularisation really create great outcomes?
- Is BIM only useful for very complex projects?
- What can we do if collaboration does not work?
- How can we promulgate innovation?

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Peter Hansford, Government Chief Construction Advisor, Department for Business, Innovation & Skills

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