Heathrow Terminal 5: Managing Severe Engineering Risk

Heathrow Terminal 5: Successful Construction, Difficult Operational Opening

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Key Facts

Cost: Approx. GBP 4.3 billion

Date: Opened 27 March 2008

Category: Megaprojects

Executive Summary

Heathrow Terminal 5 was delivered on schedule and broadly on budget through the groundbreaking T5 Agreement - client-held risk, integrated teams, off-site pre-assembly. Then its March 2008 opening collapsed into a baggage and operational failure. This investigation examines both halves honestly: why the delivery model worked, why the opening failed, and why the recovery took weeks instead of years.

Executive Lessons

- Risk You Pretend to Transfer Is Risk You Cannot See

The T5 Agreement recognised that on a project of this complexity, risk nominally transferred to contractors simply returns as claims and concealment. Client-held risk with open books made problems visible early, when they were still cheap to fix.

- Integrated Teams Remove the Incentive to Conceal

Because suppliers were reimbursed audited costs plus agreed margin, nobody profited from another party's failure. Problems surfaced at the moment they were found rather than at the claims stage - the single most valuable behaviour on a complex build.

- Convert Construction Risk into Manufacturing Risk

Off-site fabrication and trial pre-assembly of major elements let T5 test and rehearse in controlled conditions before installing beside live runways. Rehearsal is the cheapest insurance a megaproject can buy.

- Operational Readiness Is a Separate Workstream - and It Failed

The building and systems were ready; the people, processes and interfaces were not rehearsed at full scale. Opening-day baggage chaos was an operational integration failure, not a construction failure - and it was entirely foreseeable.

- Recovery Speed Is the True Test of Governance

T5's baggage problems were substantially stabilised within days and normal within weeks; Denver's comparable failure delayed an airport for sixteen months. A governance culture built on surfacing problems also fixes them fast.

- Strong Clients Are a Prerequisite, Not a Given

Client-held risk only works with an owner technically strong enough to understand what it is holding. Copying the T5 Agreement without BAA's depth is not bold - it is imprudent.

Timeline

- 1989: RSHP wins the design competition for Terminal 5 for client BAA; CMS Cameron McKenna begins advising BAA on the project.
- 1992-05: BAA formally announces its proposal to build a fifth terminal at Heathrow.
- 1993-02: BAA submits the formal planning application for Terminal 5 on 17 February 1993.
- 1995-05: The Terminal 5 public inquiry opens on 16 May 1995; it becomes the longest planning inquiry in UK history.
- 1999-03: The public inquiry closes on 17 March 1999 after sitting for 525 days, hearing about 700 witnesses at a cost of around GBP 80 million.
- 2001-11: Planning permission for Terminal 5 is granted by the Secretary of State on 20 November 2001, eight years

after application.
- 2002: BAA adopts the bespoke T5 Agreement - a relational contract under which BAA holds all project risk with a pooled contingency - after its study found no comparable UK megaproject had delivered on time, budget and quality.
- 2002-09: Main construction of the GBP 4.3 billion T5 programme begins in September 2002, then the largest construction project in Europe.
- 2007-09: T5 works are formally handed over to the operator on 17 September 2007, followed by six months of operational readiness trials including 72 proving trials with up to 2,500 participants each.
- 2008-03-14: Queen Elizabeth II officially opens Terminal 5 on 14 March 2008.
- 2008-03-27: T5 opens to passengers on 27 March 2008 on schedule and within the GBP 4.3 billion budget, but the baggage system and staff-readiness failures force BA to cancel flights and lose track of over 20,000 bags in the first days.
- 2008-04: T5 achieves its first full scheduled day of operations about 12 days after opening; the disruption cost BA an estimated GBP 16-31 million in the opening week.
- 2008-11: House of Commons Transport Committee publishes 'The Opening of Heathrow Terminal 5' (12th Report, Session 2007-08), concluding the disruption was avoidable with better preparation and joint working between BAA and BA.
- 2009-03: On its first anniversary T5 is reporting BA's best punctuality and baggage-delivery standards for a decade, completing the transition from chaotic opening to benchmark terminal.

Sources

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- The Heathrow Terminal 5 inquiry - why it has taken so long and the importance of a fifth terminal (CMS Cameron McKenna (CMS Law), 1998-04-17)
- Terminal 5, Heathrow Airport (RSHP (Rogers Stirk Harbour + Partners), 2020)
- VIDEOS: London Heathrow Terminal 5 - first anniversary but is it working? (FlightGlobal, 2009-03-27)