Capex Benchmark

Benchmark of Terminal Building projects

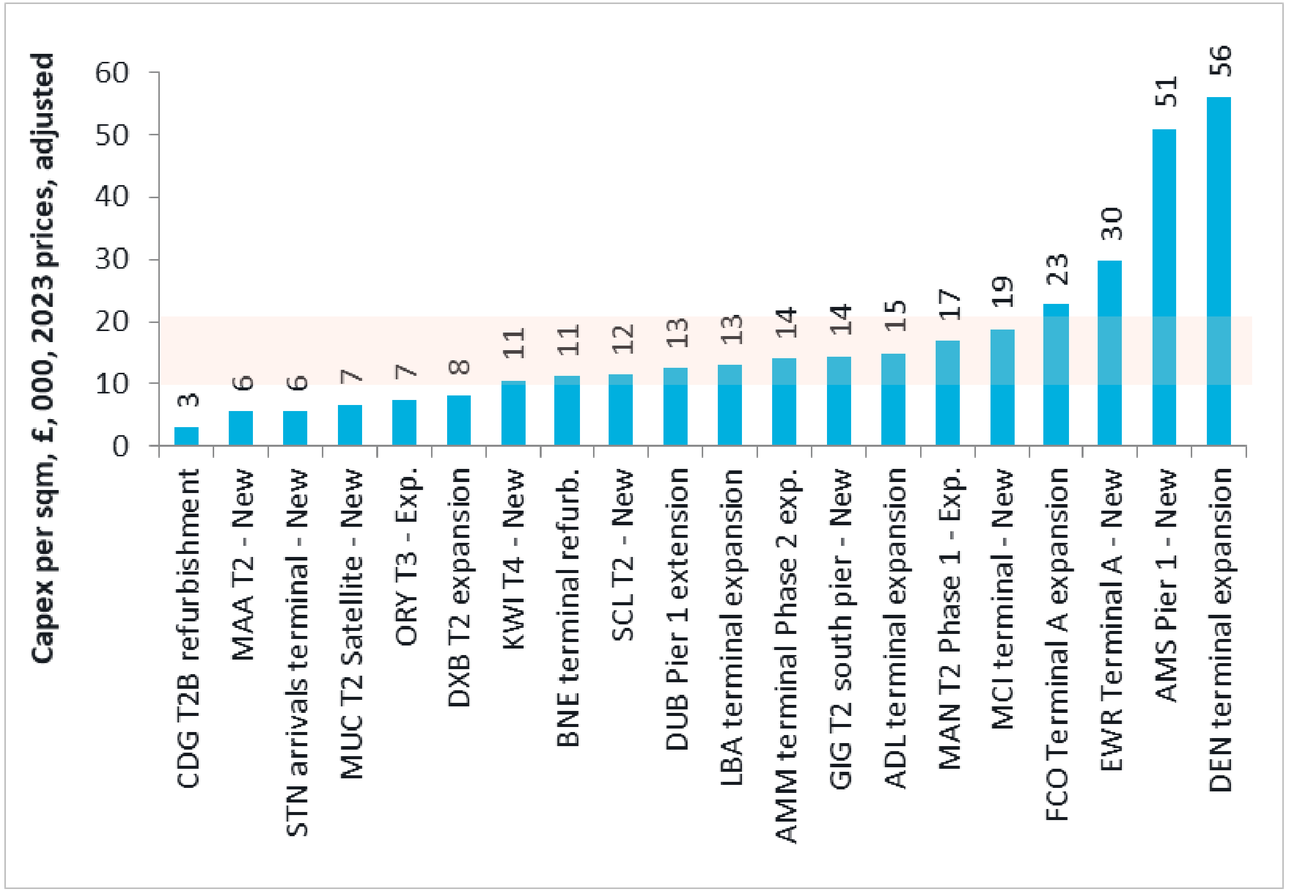
Prepared for: Heathrow Airport Limited
Date: 9 October 2024

steer

Contents

Executive summary (1)

- 20 world-class airports in the UK, Europe and around the world have been selected for the high-level benchmarking analysis.
- Even adjusting for economic and location-specific factors, the resulting **Capex per sqm for terminal buildings cover a broad spectrum**.
- However, a large proportion of the projects sit between £10k and £20k Capex per sqm (2023 prices).
- London is the most expensive location to build
- The analysis concludes that: (1) the type of construction work (e.g. refurbishment, expansion, new); and (2) the total Capex amount of a project do not determine the Capex per sqm.

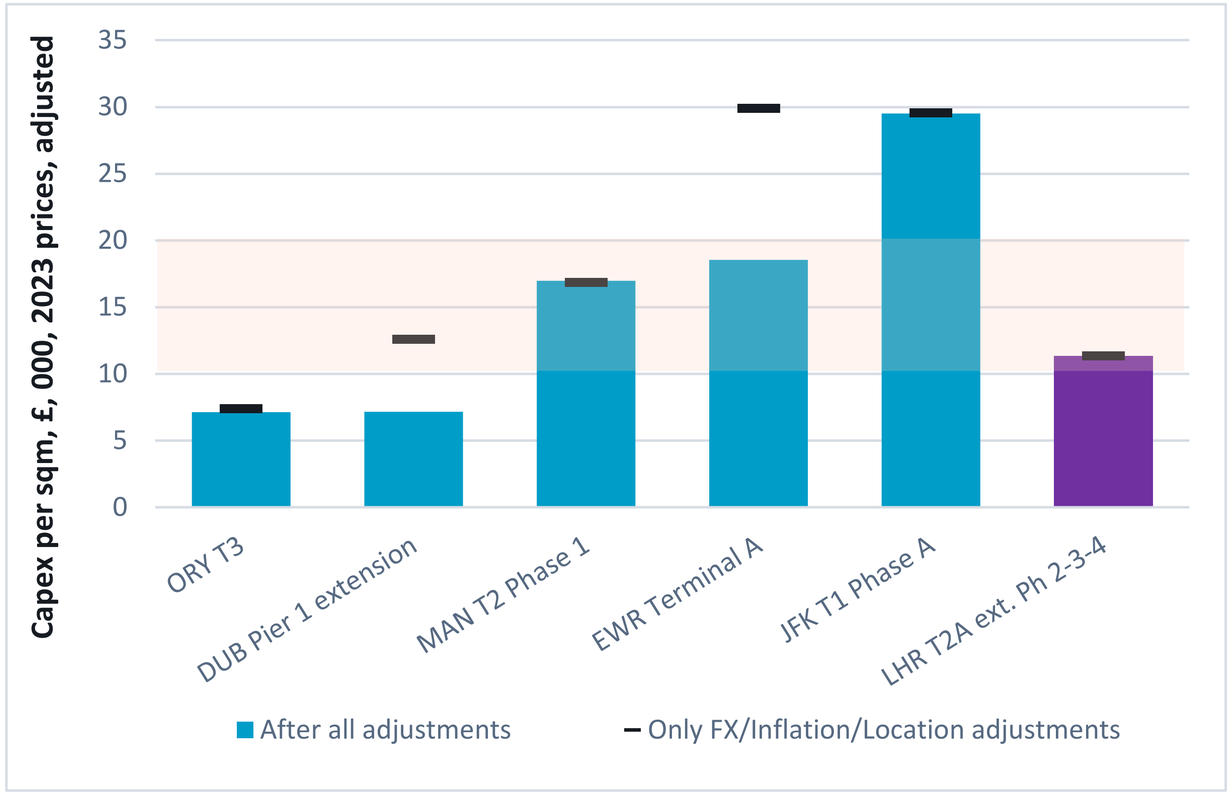


Source: Steer

Executive summary (2)

- A more detailed analysis of certain projects has resulted in material changes of some of the original Capex per sqm values when comparing them with a project at Heathrow.
- The adjustments that have been implemented are the following:
  - Exchange rate
  - Inflation
  - Location (London is the most expensive)
  - Site constraints (LHR is the most constrained)
  - Scope
- The specific scope of the project is the parameter that can have the greatest impact when two projects are compared.
- **In a like-for-like comparison, a project developed in LHR will be more expensive due to London construction prices and the site constrains.**

- **Heathrow's reference project is in the mid-range of the benchmarks**; both in the High-level benchmark and in the Detailed benchmark.



Source: Steer

Project roadmap

Current scope

High-level Benchmark

- Development of capex per sqm benchmark for 20 terminal projects.
- Adjustment of the benchmark for currency, inflation and local constructions costs.

Detailed Benchmark

- Development of a more detailed benchmark for 5 projects, using a HAL project as a reference.
- The detailed benchmark will include further adjustments such as scope of work, operational environment and service quality.

Potential future phases

Assessment of HAL project processes

We could look at reporting, cost control, value-engineering, risk management across the project stages, i.e. planning, design, procurement and construction.

and/or

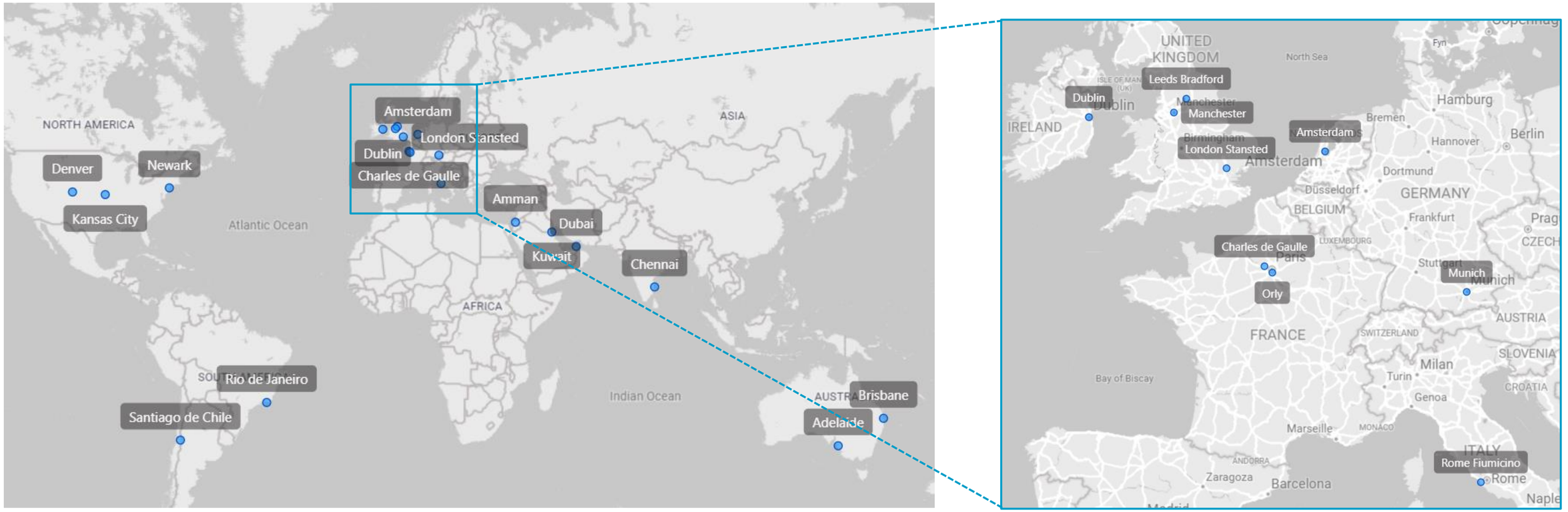
‘Critical friend’ efficiency review

We can also take on the role of an IFS (similar to the work we do at Dublin Airport) and provide a 'critical friend' efficiency review of one or more of HAL projects. This assessment will follow the DIWE (Demonstrably Inefficient or Wasteful Expenditure) principles, which are used in UK Economic Regulation and with which we are familiar.

High-level Benchmark

Benchmark sample

We have carefully selected 20 terminal projects at 20 world-class airports in the UK, Europe and around the world. We prioritised projects with reliable information, a value of more than £50 million and a construction mid-point after 2014. The locations of the projects is shown on the maps below and their details are presented in the next pages.



Source: OpenStreetMap

Manchester Airport (MAN) – T2 Phase 1 – Expansion

Overview

An expansion to Terminal 2 which doubled the size of the terminal area.

Key data

Capex	£850m	**Timeline**	2017-2020
Capex stage	Completion	**Baggage**	In-scope
Surface (GFA)	75,000sqm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	In-scope

Description

- Departure lounge with new retail and F+B
- Pier with 11 aircraft stands
- 3,800 space multistorey car park and pick up facility
- Security hall (10 security lanes)
- Bus gate lounge (40 vehicles)
- Immigration hall (100m wide, 31 border force desks) and
- Baggage sortation hall

Source: MAG, Business Traveller

Stansted Airport (STN) – Arrivals terminal – New

Overview

Proposed works on building a new arrival terminal connected to the current terminal.

Source: Construction News

Key data			
Capex	£150m	**Timeline**	[2019-2020]
Capex stage	Design	**Baggage**	In-scope
Surface (GFA)	39,000sqm	**Aircraft stands**	Out of Scope
Works type	New	**Car parking**	Out of Scope

Description

- Arrival terminal including immigration and baggage reclaim areas and shops
- Current terminal to be reconfigured to departures only, with expansion of security and check-in areas and
- As of 2023, the arrivals terminal has been deferred to a subsequent phase of development, expected between 2028-2031, following revised plans to extend the existing Terminal building.

Leeds Bradford Airport (LBA) – Terminal Expansion

Overview

A three-storey extension to the existing terminal building, alongside refurbishment of the terminal.

Source: Travel Weekly

Key data

Capex	£100m	**Timeline**	2023-2026
Capex stage	Design	**Baggage**	In-scope
Surface (GFA)	9,500sqm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	Out of scope

Description

- New baggage reclaim hall and baggage belts
- New arrivals hall
- Additional aircraft stands
- Larger immigration hall and
- Improved access for passengers with restricted mobility.

Orly Airport (ORY) – T3 – Expansion

Overview
New terminal building connecting terminal 1,2 and 4 at Paris Orly Airport.

Key data			
Capex	€382m (€2015)	**Timeline**	2016-2020
Capex stage	Design	**Baggage**	In-scope
Surface (GFA)	80,000sqm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	Out of Scope

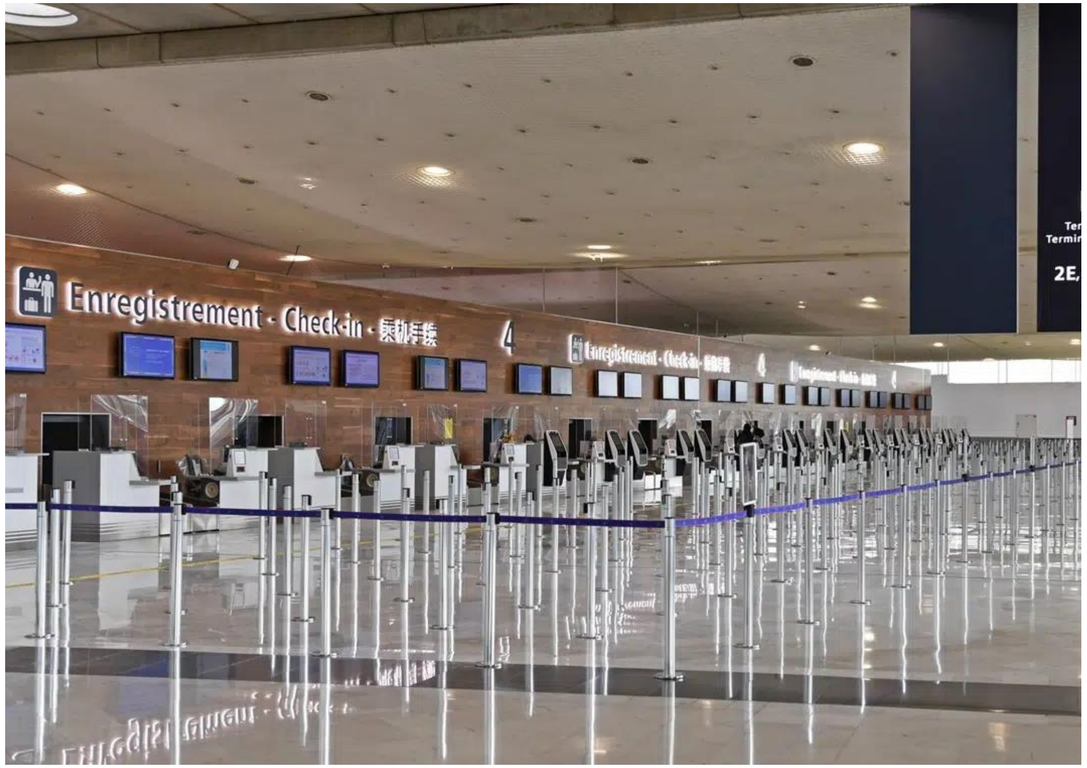
Description

- Check-in facilities (80 check-in desks)
- Security Hall (12 screening lanes)
- Immigration hall (15 border control checkpoints, 5 self-service)
- Departure lounge including 5,000sqm of duty free + F&B
- Improved baggage system (8MPPA)
- Pier with 4 contact stands and
- Rehabilitation of interface Hall B/Hall 3 (3,500m2)

Source: Paris Aeroport

Charles de Gaulle Airport (CDG) – T2B Refurbishment

Overview
Renovations of the departure and arrival systems at Terminal B.



Source: Alstef Group

Key data			
Capex	€77m	**Timeline**	2016-2019
Capex stage	Design	**Baggage**	In-scope
Surface (GFA)	39,900sqm	**Aircraft stands**	Out of scope
Works type	Refurbishment	**Car parking**	Out of scope

Description

- Improved check-in and boarding areas (50 check-in desks, 3 EDS Security machines)
- Enhanced baggage system upgrades (automated sorting system to two carousels) and
- Addition of a connecting building, known as BD, was created to link Terminal 2D.

Fiumicino Airport (FCO) – Terminal A expansion

Overview
New boarding area within Terminal A for Schengen and Domestic flights.

Key data			
Capex	€400m	**Timeline**	2017-2022
Capex stage	Completion	**Baggage**	Out of scope
Surface (GFA)	37,000sqm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	Out of scope

Description

- +6MPPA capacity
- 3 storey structure departure lounge which is linked to Terminal 1
- 23 additional gates, 13 of which are equipped with boarding bridges and
- 11,000 square meters of large windows and skylights
- 6,000-square-meter shopping arcade features 21 outlets, dedicated retail, and food & beverage spaces
- Nursery and VIP Business area

Source: Wanted in Rome, Turismo Roma

Munich Airport (MUC) – T2 Satellite – New

Overview
Construction of a new satellite terminal, which is an expansion to the existing Terminal 2.

Key data			
Capex	€650m	**Timeline**	2012-2016
Capex stage	Completion	**Baggage**	Out of Scope
Surface (GFA)	125,000sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	Out of scope

Description

- 600 m long Satellite terminal extension to Terminal 2 (125,000sqm, +11MPPA in capacity)
- Airside-only facility
- 52 additional gates and 27 additional stands (of which 11 can cater code E aircraft)
- Additional security (44 passport control desks, 24 security lanes)
- 5 new Lufthansa lounges + new retail and F&B
- Automated People Mover from T2 to the new satellite

Source: Airport Technology

Dublin Airport (DUB) – Pier 1 extension

Overview
Additional Terminal and Pier Capacity development to serve Terminal 1.

Source: CIP 2022 Report

Key data			
Capex	€264m	**Timeline**	2025-2028
Capex stage	Design	**Baggage**	Out of Scope
Surface (GFA)	22,000sqm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	Out of Scope

Description

- Construction of a new Pier 1 East (Module 1), associated contact stands and site development works, to the east of the existing Pier 1.
- Additional 6 code C stands
- +4MPPA capacity

Schiphol Airport (AMS) – Pier 1 – New

Overview

New Pier extension at Amsterdam Schiphol which went through various challenges and cost increases

Key data

Capex	£1,393m	**Timeline**	2017-2027
Capex stage	In construction	**Baggage**	Out of scope
Surface (GFA)	55,000sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	Out of scope

Description

- Challenges during the project leading to repair work, delays, and the extended project duration
- 370 metres long, 40 metres wide and 20 metres high (3 floors)
- 7 MARS stands
- Security filters, border controls, retail spaces, and dining options.
- Two bus stations – one for transfer passengers and one for arriving passengers.

Source: Schiphol, Aviation Source News

Queen Alia Airport (AMM) – Terminal phase 2 – Expansion

Overview

Phase 2 of construction of the new terminal which included installation of contact stands and other support facilities to the new terminal.

Key data			
Capex	$214m	**Timeline**	2014-2016
Capex stage	Completion	**Baggage**	In-scope
Surface (GFA)	43,000sqm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	Out of Scope

Description

- Capacity increased by 5 MPPA in phase 2 (7MPPA to 12MPPA).
- 9 additional contact stands (one used as a temporary remote boarding lounge for aircraft parked at a distance from the gates)
- Two new business lounges and
- Two new duty-free areas

Source: Jordan Times , Airport Technology

Dubai Airport (DXB) – T2 expansion

Overview
Phase 3 of the terminal expansion included structural and installation work of new equipment.

Key data			
Capex	$152.7m	**Timeline**	2012-2014
Capex stage	Design	**Baggage**	In-scope
Surface (GFA)	50,000sqm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	Out of Scope

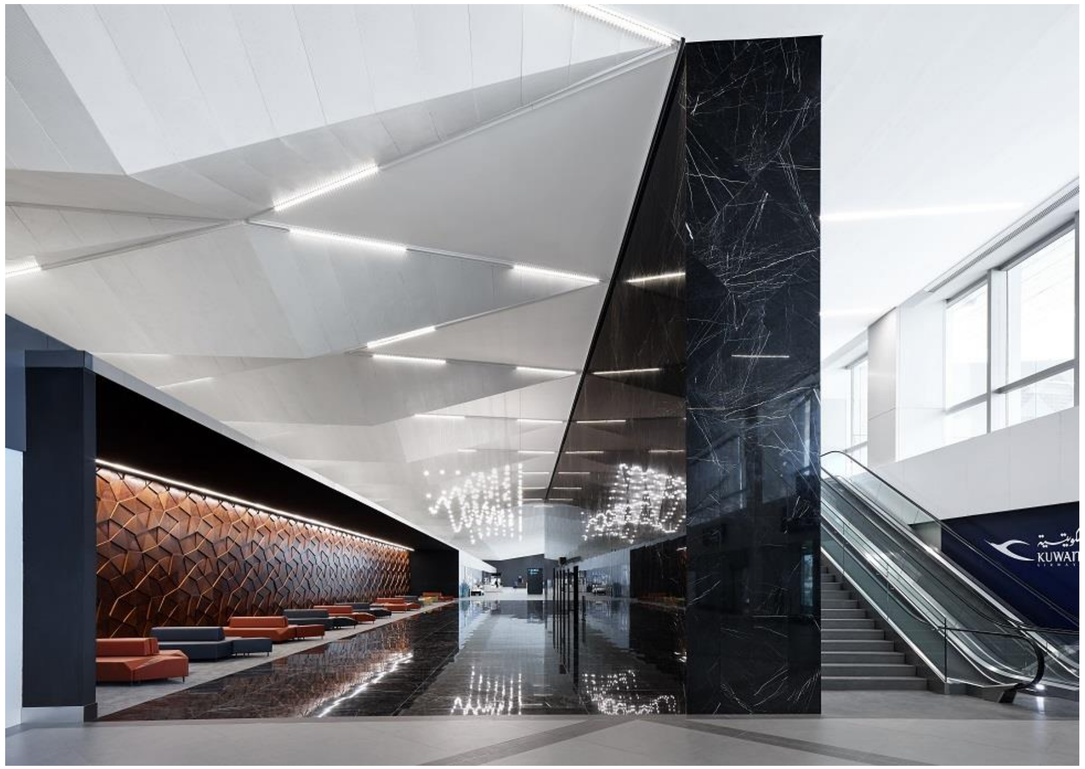
Description

- Security hall (7 new automatic tray return security screening machines)
- Immigration Hall (40 additional immigration and passport desks and
- Baggage Reclaim (3 additional baggage carrousels) and
- 6 additional gates

Source: Airport Technology, International Airport Review

Kuwait Airport (KWI) – T4 – New

Overview
A new passenger terminal building with stands and taxiway was built to replace the existing T4.



Key data			
Capex	$128m	**Timeline**	2016-2018
Capex stage	Completion	**Baggage**	In-scope
Surface (GFA)	55,000sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	In-Scope

Description

- +4.5 MPPA
- 14 gates of which 9 with boarding bridges
- Transportation facilities (5 bus gates)
- Parking facilities (2,450 car spaces for passengers)
- Staff parking (650 spaces)
- New pedestrian bridge connecting existing car park and satellite building
- 6 ancillary facilities supporting operations.

Source: Aecom, Airport Technology

Brisbane Airport (BNE) – Terminal refurbishment

Overview

Major reconfiguration works and the redesign of the terminal to better suit customer experience.

Key data

Capex	$AUD 45m	**Timeline**	2014-2015
Capex stage	Completion	**Baggage**	Out of Scope
Surface (GFA)	4,600sqm	**Aircraft stands**	Out of Scope
Works type	Refurbishment	**Car parking**	Out of Scope

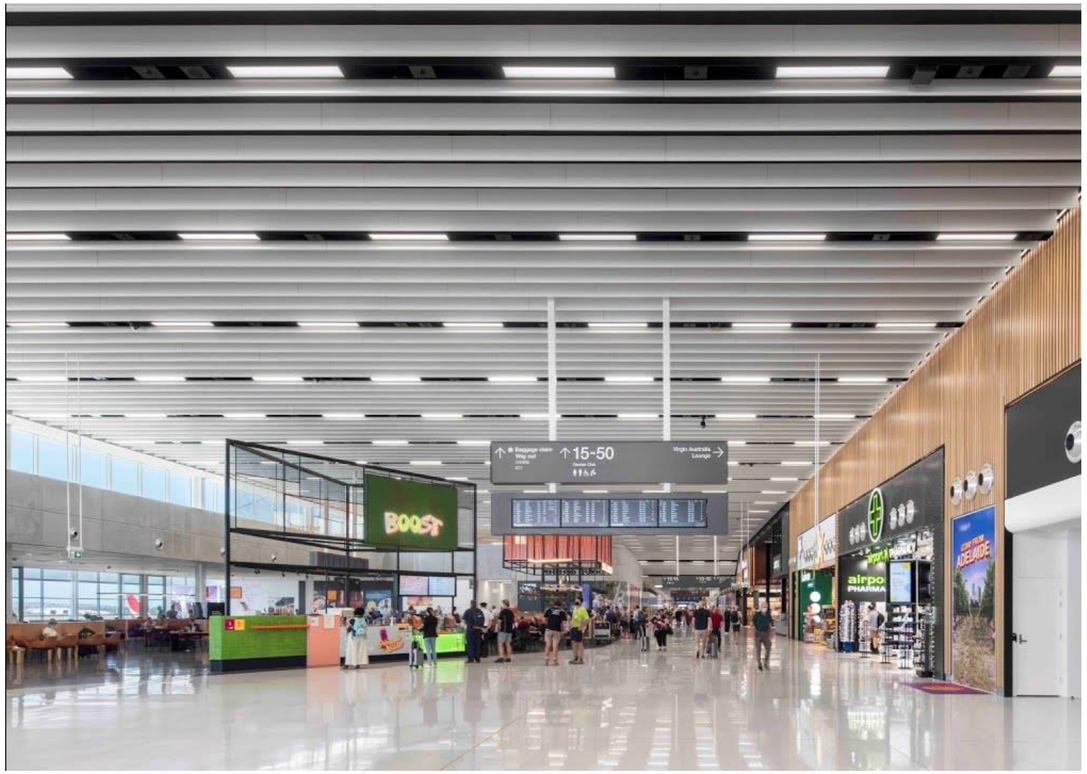
Description

- 11 additional check-in desks were installed
- New storage facilities at Level 1
- Upgraded retail area to Levels 2 & 3
- New themed departures lounge
- New route through duty free stores
- Improved wayfinding

Source: Airport Technology, News Room, The World of Aviation

Adelaide Airport (ADL) – Terminal expansion

Overview
Refurbishment and expansion of main terminal to upgrade international arrival and departures.



Key data			
Capex	$AUD 165m	**Timeline**	2018-2021
Capex stage	Design	**Baggage**	In-scope
Surface (GFA)	16,500qm	**Aircraft stands**	In-scope
Works type	Expansion	**Car parking**	Out of Scope

Description

- 3 additional gates
- New baggage handling system
- Expanded international arrivals hall
- Upgraded retail and dining areas (7,257 sqm)
- Additional security screening areas to handle increased passenger numbers
- New and improved lounge facilities for both domestic and international travellers

Source: Adelaide Airport

Chennai Airport (MAA) –T2 – New

Overview
Newly integrated terminal building for both domestic and international passengers.

Key data			
Capex	$154m	**Timeline**	2018-2023
Capex stage	Completion	**Baggage**	In-scope
Surface (GFA)	136,295sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	Out of Scope

Description

- +7 MPPA capacity
- Check-in facilities (100 check-in counters and self-check-in kiosks)
- Immigration Hall (more than 100 immigration counters);
- Baggage Hall (6 baggage reclaim belts)
- Security Hall (15 security check lanes)
- 6 new stands

Source: Airport Technology

Denver Airport (DEN) – Terminal expansion

Overview
Expansion and refurbishment project of the existing terminal to improve passenger experience and increase capacity.

Key data			
Capex	$770m	**Timeline**	2018-2024
Capex stage	Completion	**Baggage**	Out of scope
Surface (GFA)	17,600sqm	**Aircraft stands**	Out of Scope
Works type	Expansion	**Car parking**	Out of Scope

Description

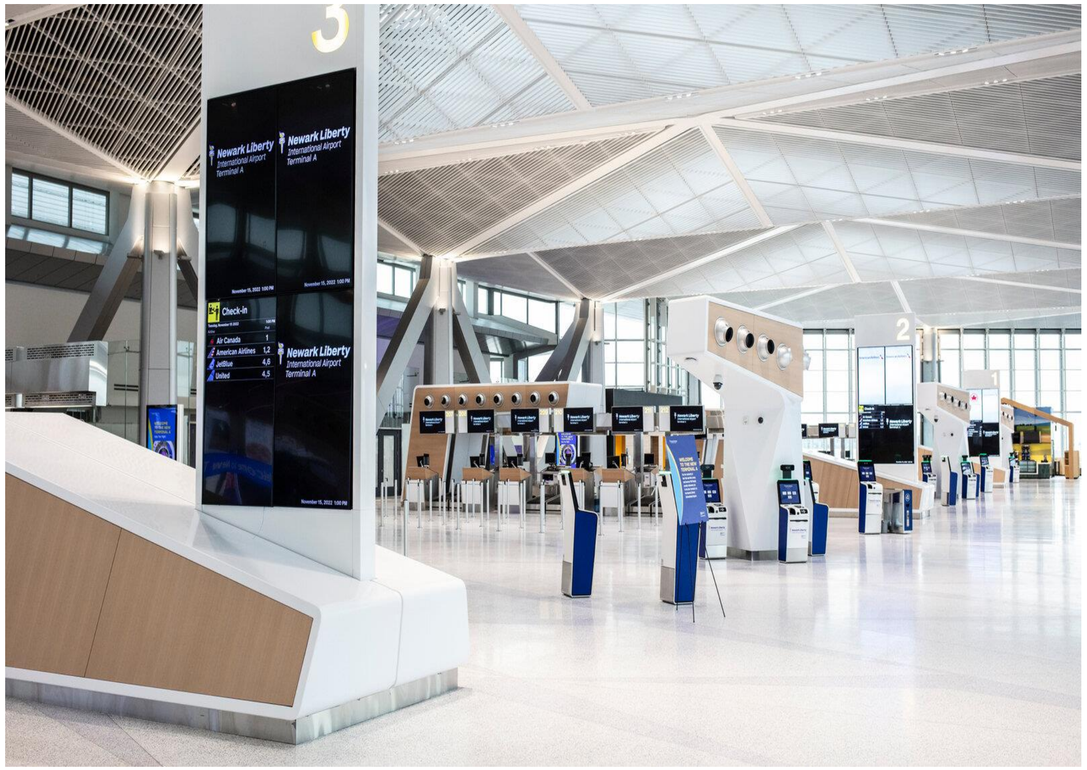
- Expansion of security check points to level 6 (2,900 sqm expansion)
- Refurbishment of check-in area (14,700 sqm)
- New check-in space with 86 Automated self-bag drop units
- New Arrivals hall
- 3 new security checkpoints
- 1 triple escalator
- Complex workplace environment; undertaken in parallel to regular terminal operations and with limited number of hours without passengers.

Source: Denver International Airport

Newark Airport (EWR) – Terminal A – New

Overview

Construction of new Terminal A to replace the old Terminal A, which was built in the 1970s and was no longer meeting the needs of the growing passenger traffic.



Key data

Capex	$2,700m	**Timeline**	2018-2023
Capex stage	Completion	**Baggage**	In-scope
Surface (GFA)	93,000sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	Out of Scope

Description

- Brand new terminal
- Stated capacity of 13.6 MPPA
- 6 individual check-in piers
- 30 Transportation Security Administration checkpoints
- Pier of 33 gates and
- Retail and F+B provided by 60 brands

Source: New York Times

Kansas City Airport (MCI) – Terminal – New

Overview

In March 2019, the old Terminal A at Kansas City airport was demolished to make way for a new single terminal.

Key data

Capex	$1,500m	**Timeline**	2019-2023
Capex stage	Completion	**Baggage**	In-scope
Surface (GFA)	102,000sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	In-scope

Description

- The new terminal has a central spine with 2 amenity areas with 4 piers of gates (40 gates in total).
- Departure lounge (50 new retail and F&B options)
- Security hall (16 TSA security checkpoints)
- Parking facilities (6,300 parking spaces)
- 16 MPPA capacity

Source: SOM, Points Guy, Kansas City News

Santiago de Chile Airport (SCL) – T2 – New

Overview
New terminal of capacity of 22 MPPA with 45 boarding gates and associated car parking facilities

Key data			
Capex	$990m	**Timeline**	2015-2022
Capex stage	Completion	**Baggage**	In-scope
Surface (GFA)	248,000sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	In-scope

Description

- +22MPPA
- Departure lounge (72 new retail + F&B stores)
- 45 additional boarding gates
- 96 check-in stations (64 self-bag-drop positions and 55 e-gates)
- Parking facilities (6,000 parking lots)
- 2 bus terminals
- 250-seat theatre

Source: Listin Diario

Rio de Janeiro Airport (GIG) – T2 south pier – New

Overview
New pier at Terminal 2 and refurbishment of several facilities before the Olympic Games in 2016

Key data			
Capex	$600m	**Timeline**	2014-2016
Capex stage	Completion	**Baggage**	Out of Scope
Surface (GFA)	100,000 sqm	**Aircraft stands**	In-scope
Works type	New	**Car parking**	In-scope

Description

- A new south pier at Terminal 2, 1km long and 100,000 sqm
- Additional 26 gates
- Additional duty free shopping area (8,000 sqm)
- Additional business lounge (6,000 sqm)
- Security Hall (new X-ray scanners)
- 68 new check-in desks
- L-shaped apron with 42 remote aircraft stands
- Expansions of car parking facilities (2,640 spaces)
- A new operational control centre

Source: WIRED, Airport Technology

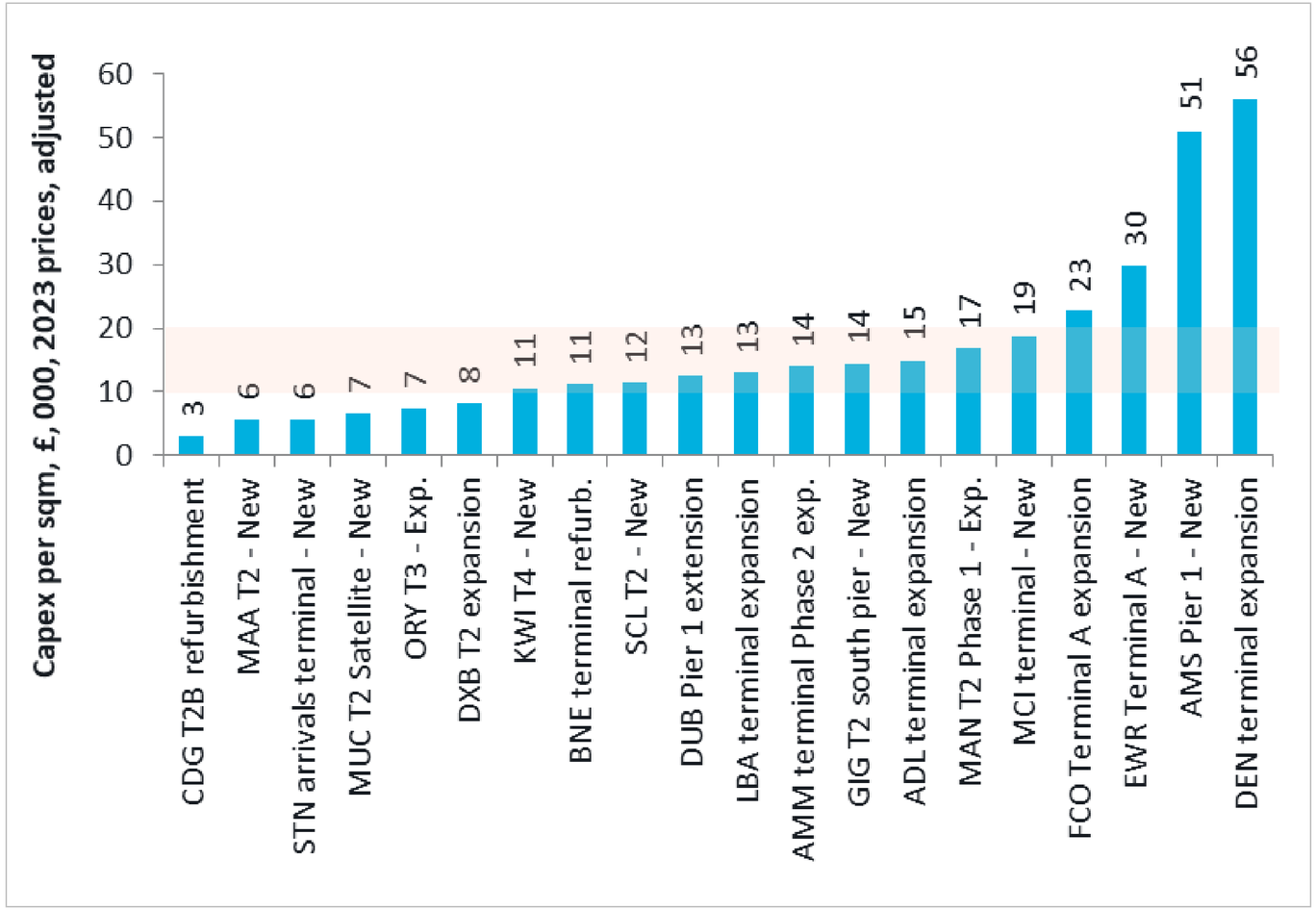
Adjustment methodology

In order to account for cost influencing factors beyond the airport boundary and allow a reasonable comparison, we have adjusted the Capex per sqm metric to currency exchange, inflation from the midpoint of construction to 2023 and local constructions costs. The methodology is illustrated below on one project example.

Process	Project data	Conversion to GBP	Conversion to 2023 prices	London Capex adjustment	Equivalent Terminal project developed in London in 2023
	 Project: AMS Pier 1 Construction mid-point: 2022 Country: Netherlands City: Amsterdam	EUR to GBP exchange rate (2022): 0.85	Local cost inflation (construction inflation where available)	Arcadis International Construction Cost Index	
Capex / sqm	€25,300	£21,600	£22,800	£50,900	

Benchmarking results – Overview

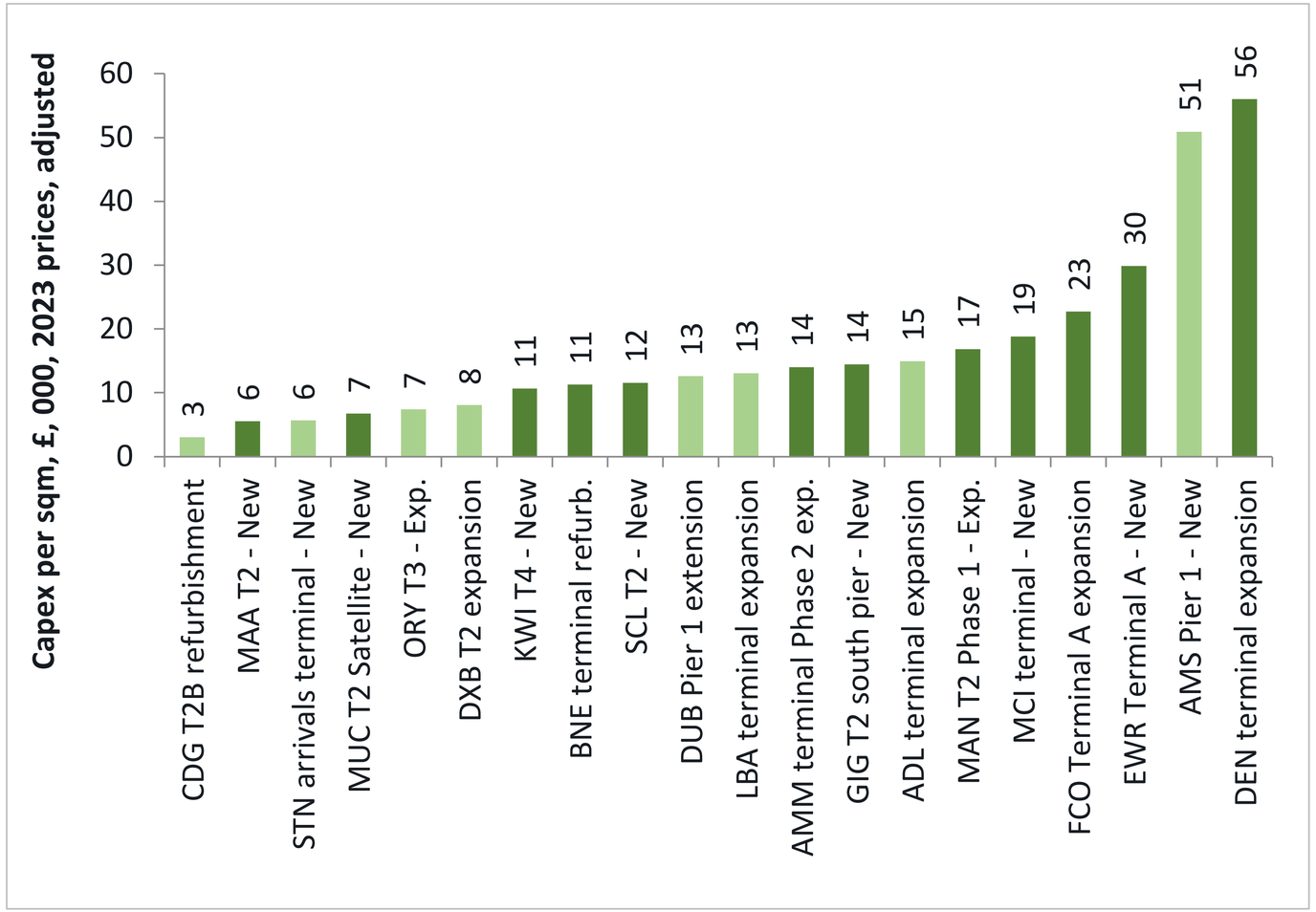
- The results of the benchmark for all the 20 projects are presented after the adjustments.
- As expected, even after adjustments, there is a **high variance of Capex per sqm among the projects**.
- This variance could be explained by several factors, such as: the type of terminal work (Refurbishment, Expansion or New); the inclusion or not of baggage work, aircraft stands and/or car parking facilities; and the scale and complexity of the project.
- However, **a large proportion of the projects sit between £10k and £20k Capex per sqm** (2023 prices).



Source: Steer

Benchmarking results – Estimated vs. Actual

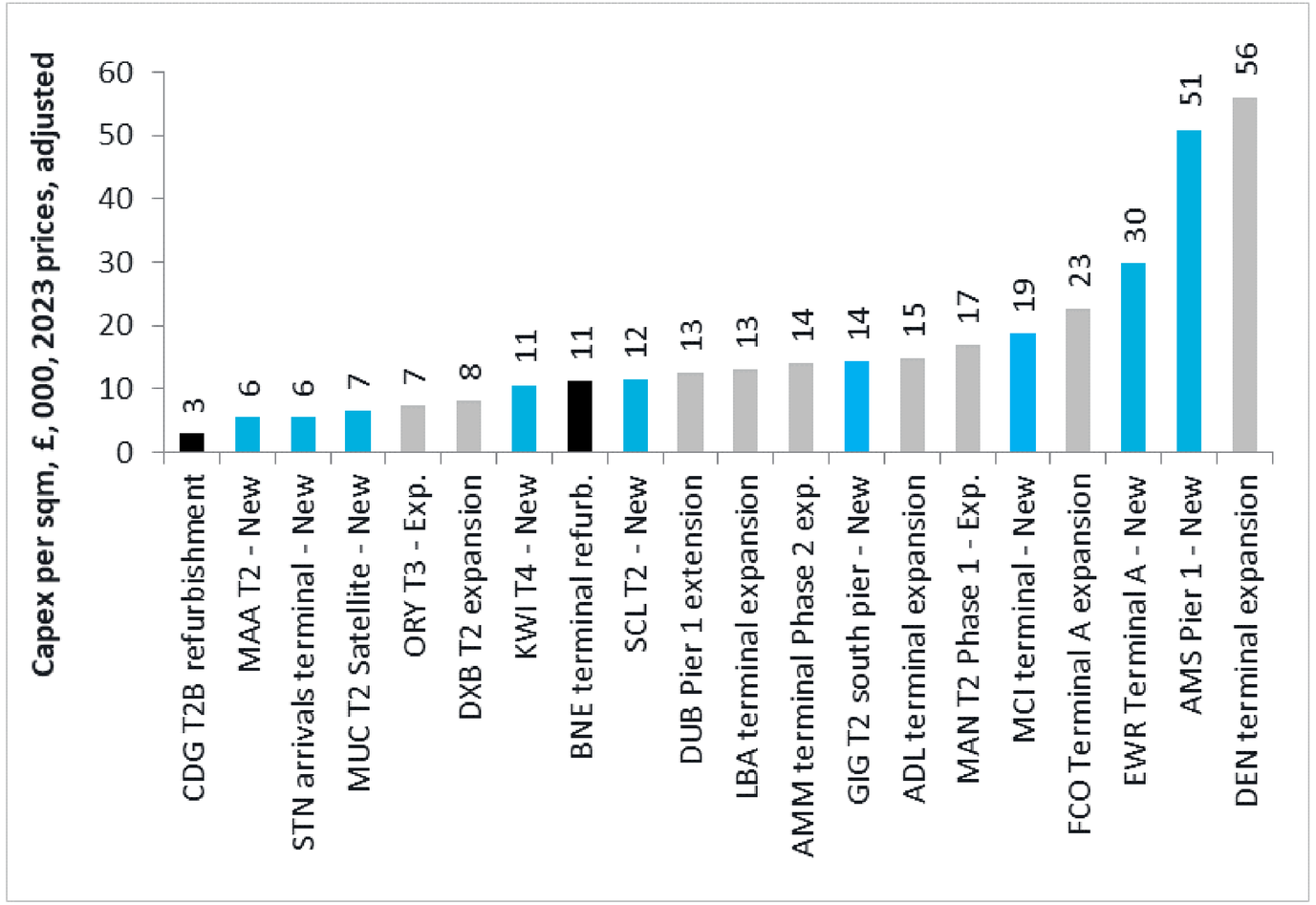
- The chart displays the stage at which the Capex amount was disclosed: **Design stage (i.e., estimated)**, **Completion stage (i.e., actual)**.
- More than half of the projects in the sample have been completed and the Capex amount that is used in the analysis is the incurred amount.
- Although it is common to spend more than budgeted in large and complex project, the sample used in this analysis provides a balanced set of examples that do not indicate to be affected by the stage at which the Capex was disclosed.



Source: Steer

Benchmarking results – Type of project

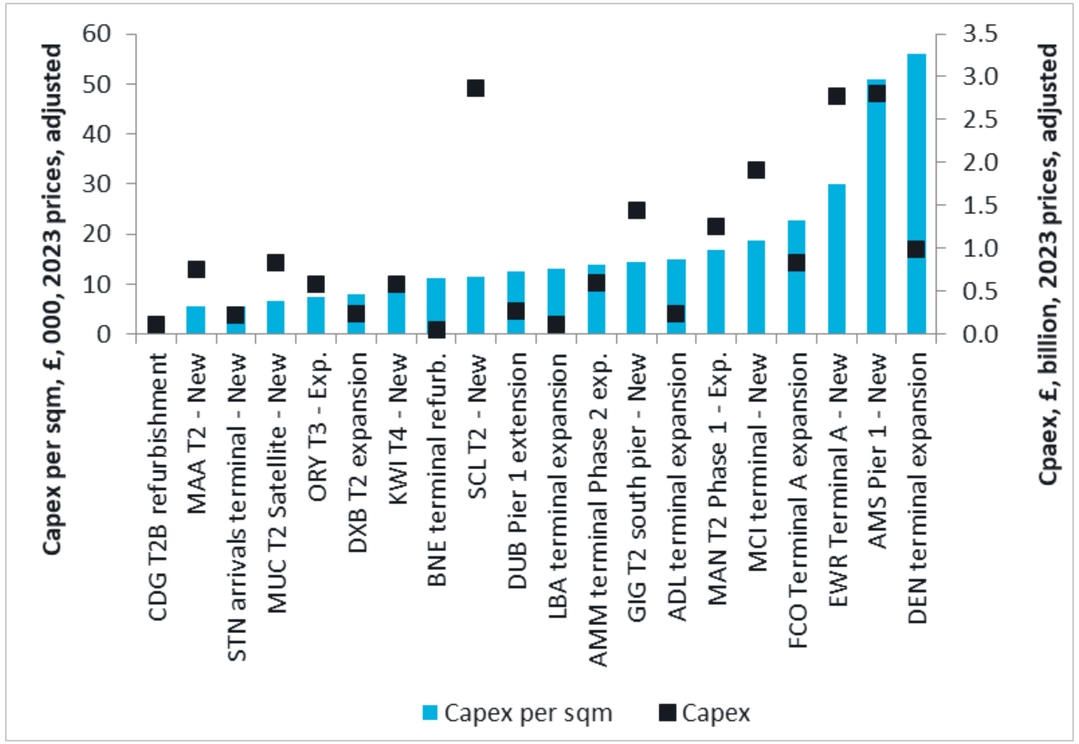
- The chart displays the type of terminal work, i.e. **Refurbishment**, **Expansion** or **New building**.
- Bearing in mind that we have only two data points, Refurbishment type projects appear to have a lower Capex per sqm compared to other type of works. This is also expected given that refurbishment projects tends to have limited building work, limited or no baggage work and no airfield pavement work.
- The comparison between Expansion and New building works is more complex. This may be because these work types can be more or less complex depending on project specific factors.



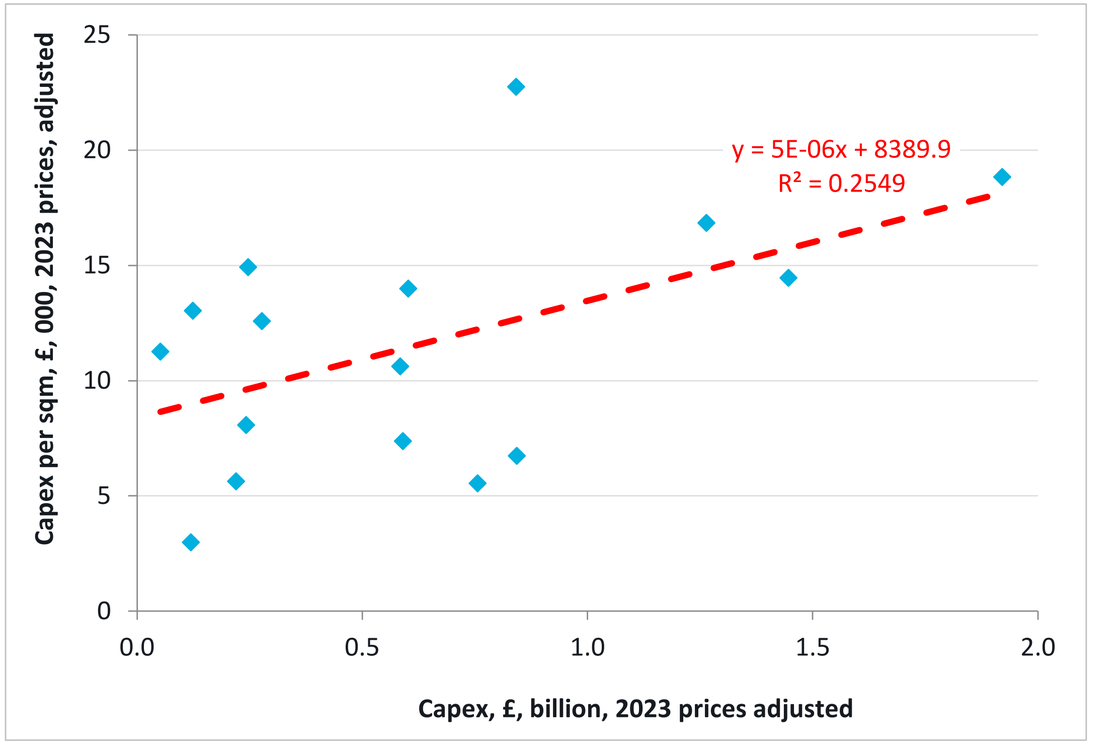
Source: Steer

Benchmarking results – Correlation with Capex amount

- The analysis shows that there is very little correlation between the size of the project (in terms of absolute Capex amount) and the Capex per sqm. The values that are out of range have been removed from the analysis.
- This doesn't mean that economies of scales cannot be achieved on terminal projects at an airport level. However, it means that conclusions on project efficiency cannot be drawn from this statical analysis.



Source: Steer



Source: Steer

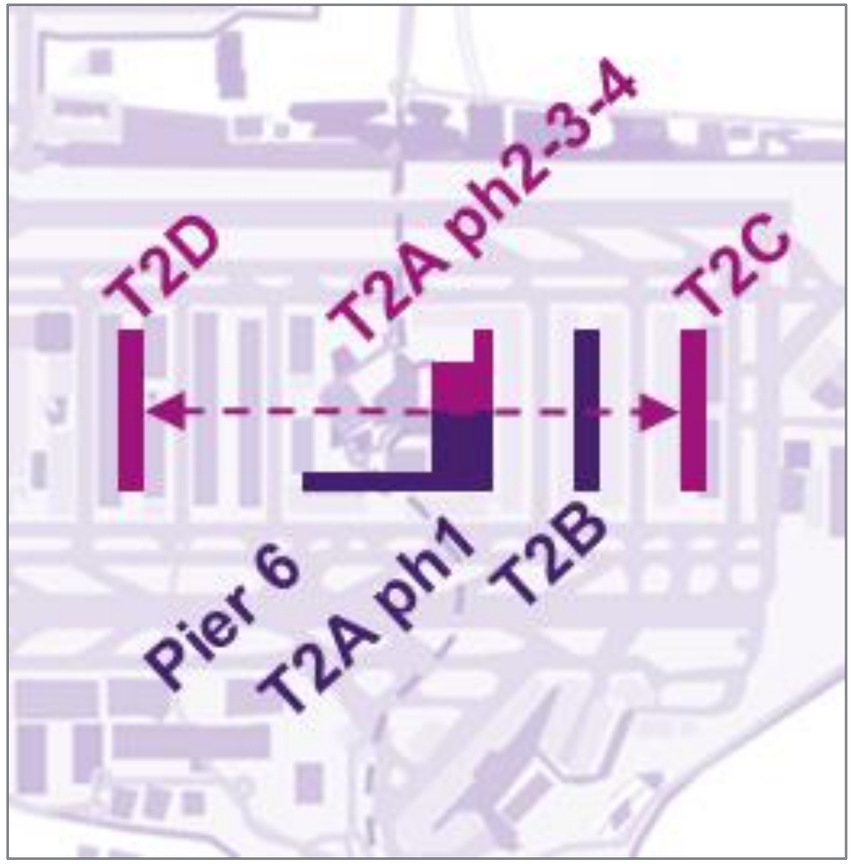
Benchmarking results – Conclusions

- Adjusting for economic and location-specific factors, the Capex per sqm for terminal buildings cover a broad spectrum.
- A large proportion of the projects sit between £10k and £20k Capex per sqm (2023 prices).
- The type of construction work (e.g. refurbishment, expansion, new) does not determine the Capex per sqm.
- The total Capex amount of a project does not determine the Capex per sqm.

Detailed Benchmark

Heathrow reference project: T2A Extension Phases 2-3-4

We have developed a detailed comparison of a selected number of projects with a reference project at Heathrow, T2A Extension Phases 2-3-4.



Key data		Source
Capex (£2014/£2023)	£1.7bn / £2.5bn	IFS M5 entry report, Table 6.8
Capex stage	Design	
Surface (GFA)	225,000 sqm	M5 Entry Cost Plan Report – Task Order 3.1, Section 3.2
Pax capacity	+17 MPPA	

Scope included in the capex

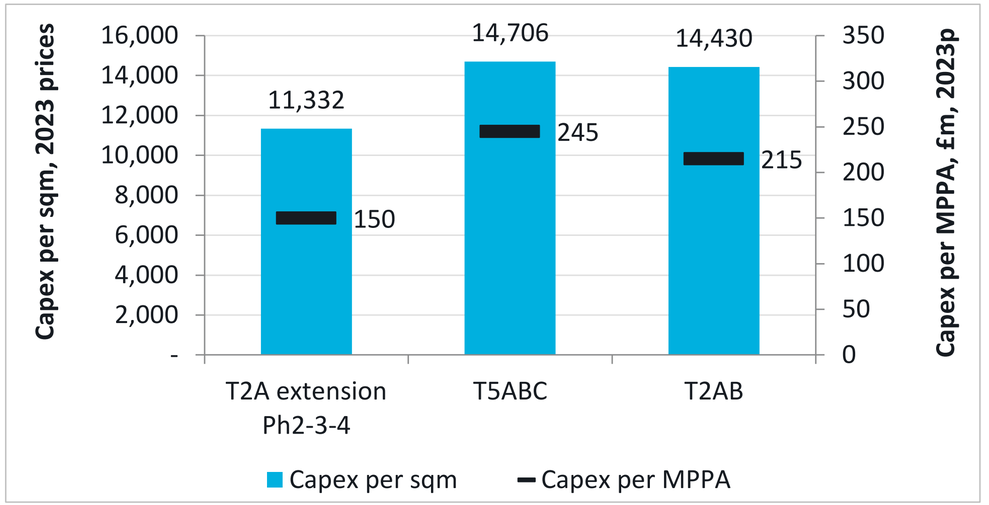
- Terminal
- Fixed Links
- Vertical Circulation Cores (VCCs) – external / internal / hybrid
- Nodes
- Loading Bridges (APBBs)
- Substructure areas associated with terminals for baggage, APM, stations
- Exclusion of associated aircraft stands and demolition and reconfiguration works

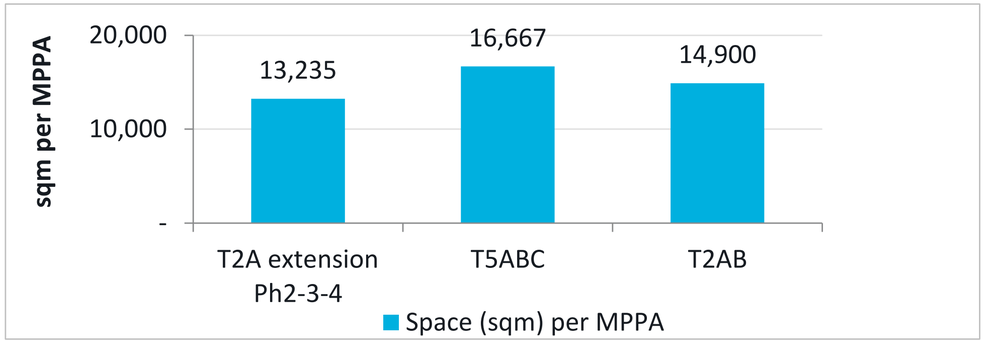
T2A Extension Phases 2-3-4 versus other Heathrow terminal projects

Comparing the reference project with other historical projects at Heathrow, the Capex per sqm of T2A Extension is estimated to be lower. However, the scope included in the project is much narrower than in the other projects.

T5ABC
Construction period: 2002-2008
Capex (nom./£2023): £4.3bn / £7.4bn
Surface (GFA): 500,000 sqm
Pax capacity: +30 MPPA

T2AB
Construction period: 2010-2014
Capex (nom./£2023): £2.5bn / £4.3bn
Surface (GFA): 298,000 sqm
Pax capacity: +20 MPPA





Source: Steer

Selected projects for benchmarking

We have selected four projects from the initial high-level benchmark sample to develop a detailed benchmark. We added the new Terminal One at New-York JFK as a fifth one after discussion with HAL.

ORY T3

Timeline: 2016-2020

Capex (€2015): €382m

Surface (GFA): 80,000 sqm

Work type: Expansion

DUB Pier 1 extension

Timeline: 2025-2028

Capex (nominal): €264m

Surface (GFA): 22,000 sqm

Work type: Expansion

Pax capacity: +4 MPPA

MAN T2 Phase 1

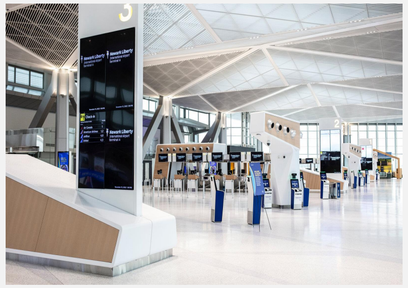
Timeline: 2017-2020

Capex (nominal): £850m

Surface (GFA): 75,000 sqm

Work type: Expansion

EWR Terminal A



Timeline: 2018-2023

Capex (nominal): $2.7bn

Surface (GFA): 93,000 sqm

Work type: New terminal

Pax capacity: 13.6 MPPA

JFK T1 Phase A

Timeline: 2022-2026

Capex (nominal): $5.7bn

Surface (GFA): 167,000 sqm

Work type: New terminal

Pax capacity: 15 MPPA

Source: High-level benchmark section of this report and A New JFK

Methodology (1)

Despite the adjustments made in the high-level benchmark, there are still significant differences between the projects of the benchmark to consider a like-for-like comparison of their Capex per sqm. We have developed a methodology to correct some of these differences.

Site constraints adjustments

- The road congestion and lack of space at the construction site can add complexity to terminal building projects. To account for this, we have considered the two following parameters:

  1. Airport congestion = $\frac{Annual\ pax}{Airport\ site\ size}$

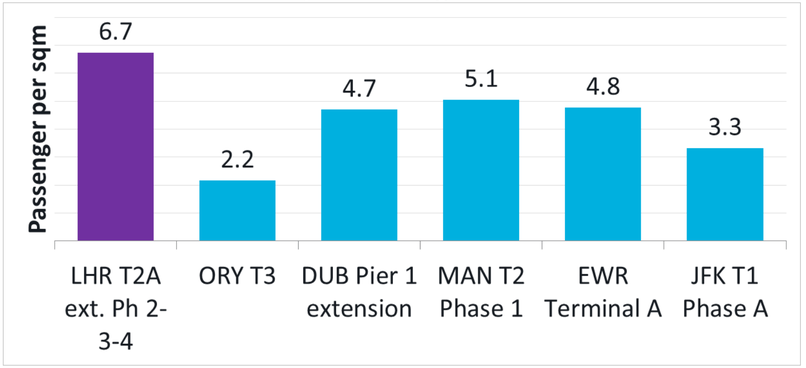
  Captures the overall ground traffic congestion of the airport.

  2. Construction site congestion(1) = $\frac{Constructed\ building\ footprint}{Construction\ site\ size}$

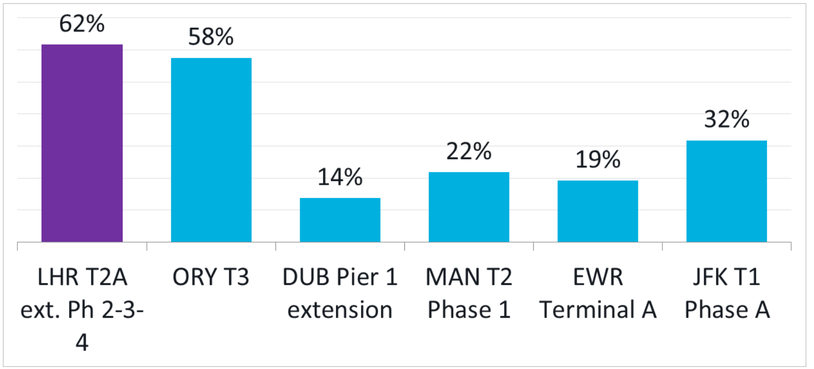
  Captures the space constraints at the project location.

- LHR shows the highest levels of congestion/constraints.
- These parameters have converted into indexes that measure the relative differences of LHR versus the other projects.
- These constraints can imply overnight working, more staff and/or a longer project duration, which influence labour costs of projects. Labour costs represent usually 20-40% of project costs (2). A 25% value has been used as the multiplying factor of the level of constraints.

Airport congestion



Construction site congestion(1)



Source: Steer

(1) Visuals of the construction sites and calculations are available in Annex.
(2) Labor vs material cost in construction, Bridgit (accessed 16/09/2024)

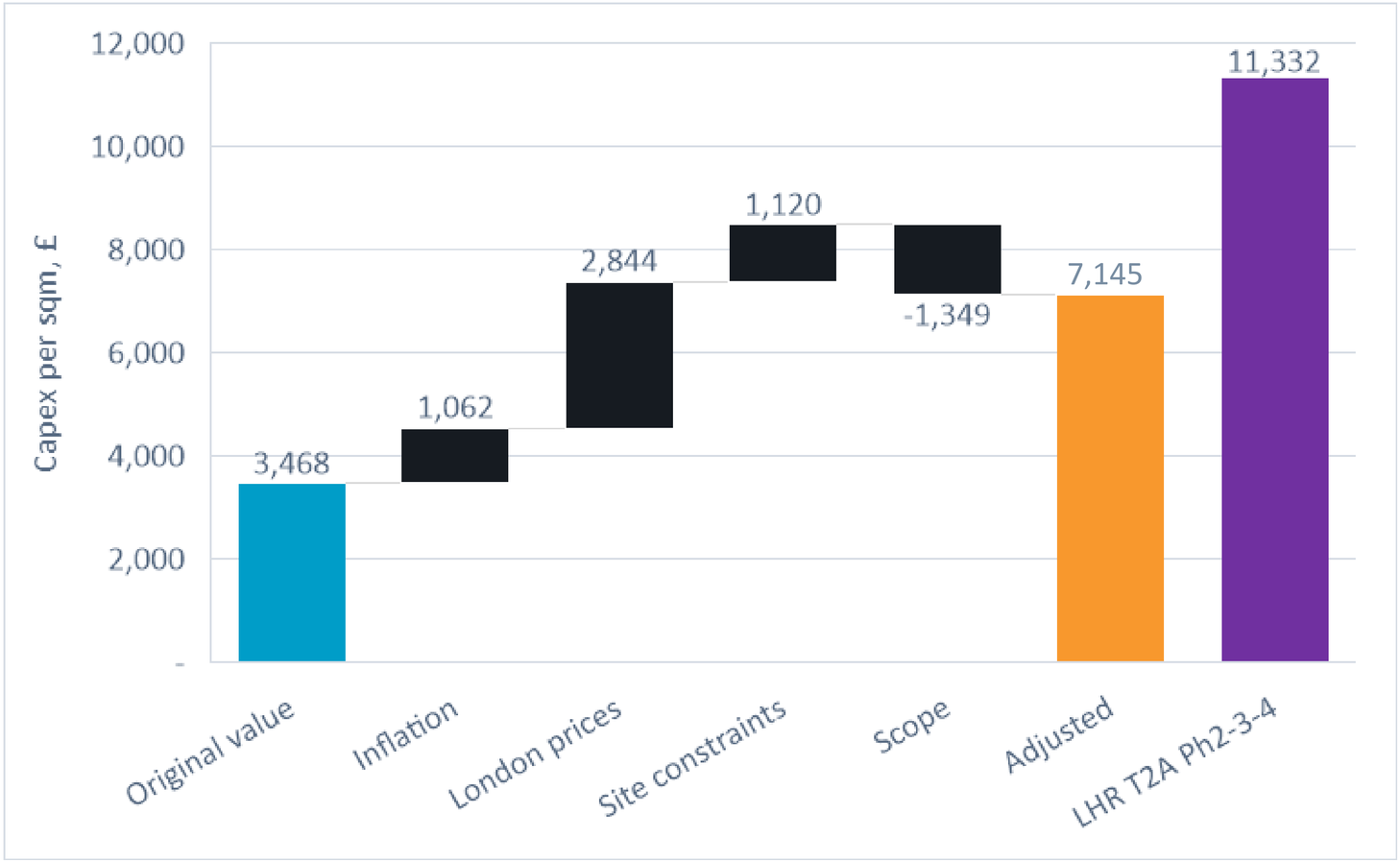
Methodology (2)

Scope adjustments

- Even though all of the projects in the study are terminal building projects, there are significant differences in scope. The major differences that we have made adjustments for are the following:
  - Baggage system;
  - Aircraft stands;
  - Other airfield pavements;
  - Demolition work; and
  - Car park.
- We have adjusted the Capex of the projects to take into account these scope differences and ensure more precise like-for-like comparisons.
- We have not made adjustments for:
  - Quality of the materials;
  - Technology;
  - Boarding bridges; and
  - Shape and height of the structure.

Benchmarking results (1) – ORY T3

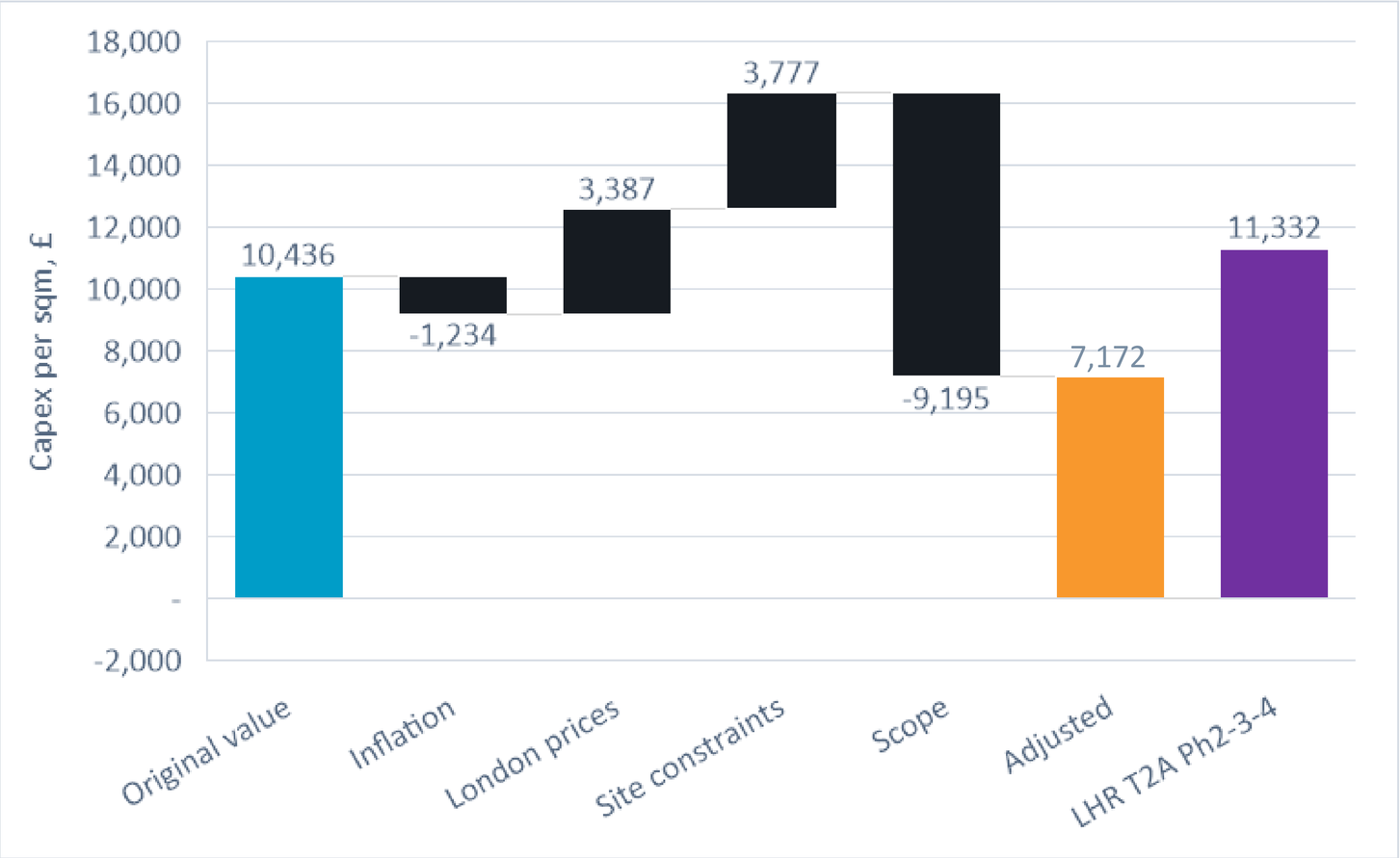
Steps	Description
Original value	Conversion from EUR to GBP
Inflation adjustment	From 2015 to 2023 prices
London prices adjustment	London vs Paris
Site constraints adjustments	Airport congestion & Construction site congestion
Scope adjustments	- Baggage system works - Aircraft stands



Source: Steer

Benchmarking results (2) – DUB Pier 1 extension

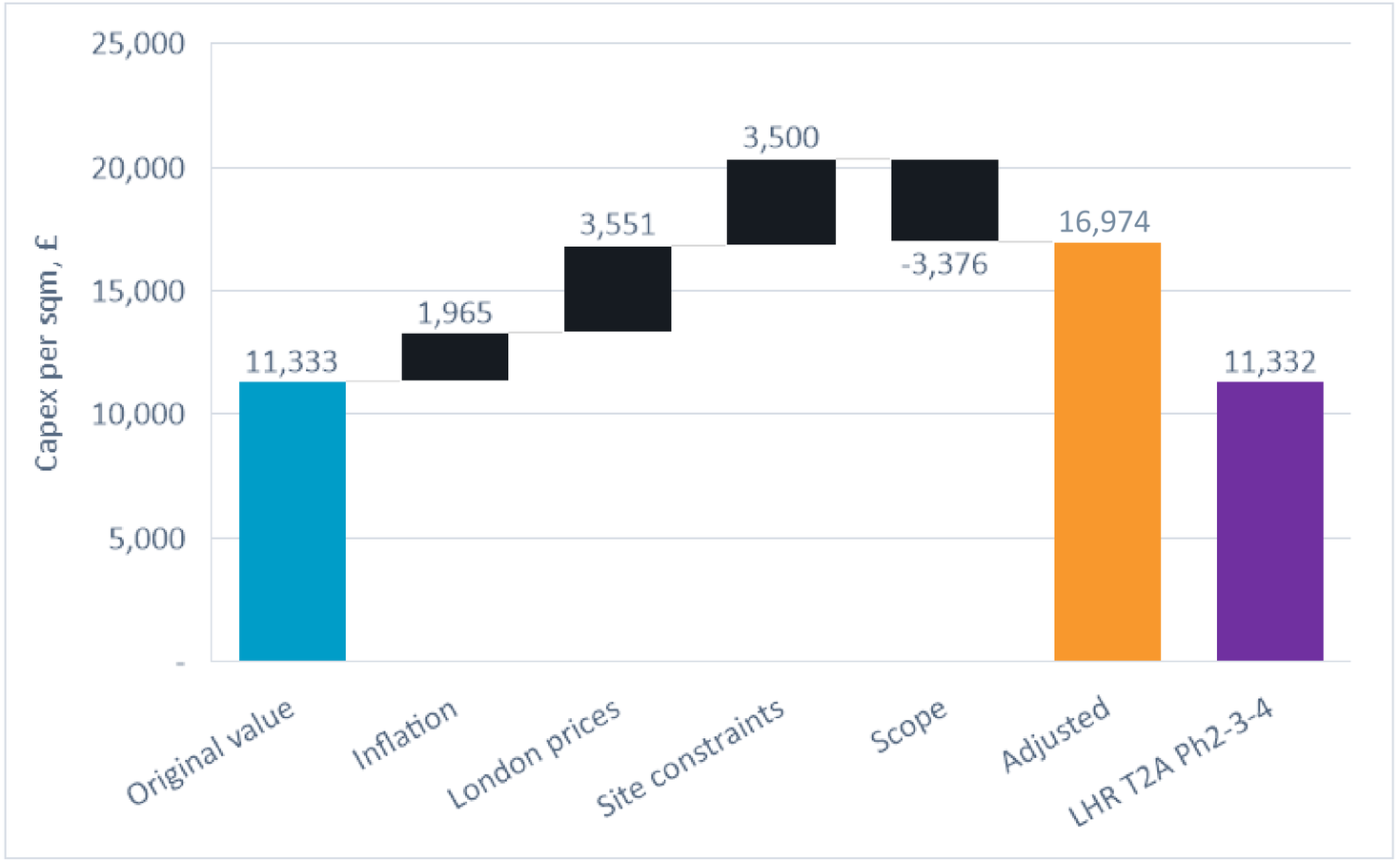
Steps	Description
Original value	Conversion from EUR to GBP
Inflation adjustment	From 2026 to 2023 prices
London prices adjustment	London vs Dublin
Site constraints adjustments	Airport congestion & Construction site congestion
Scope adjustments	- Aircraft stands - Apron works - Demolitions - Relocations



Source: Steer

Benchmarking results (3) – MAN T2 Phase 1

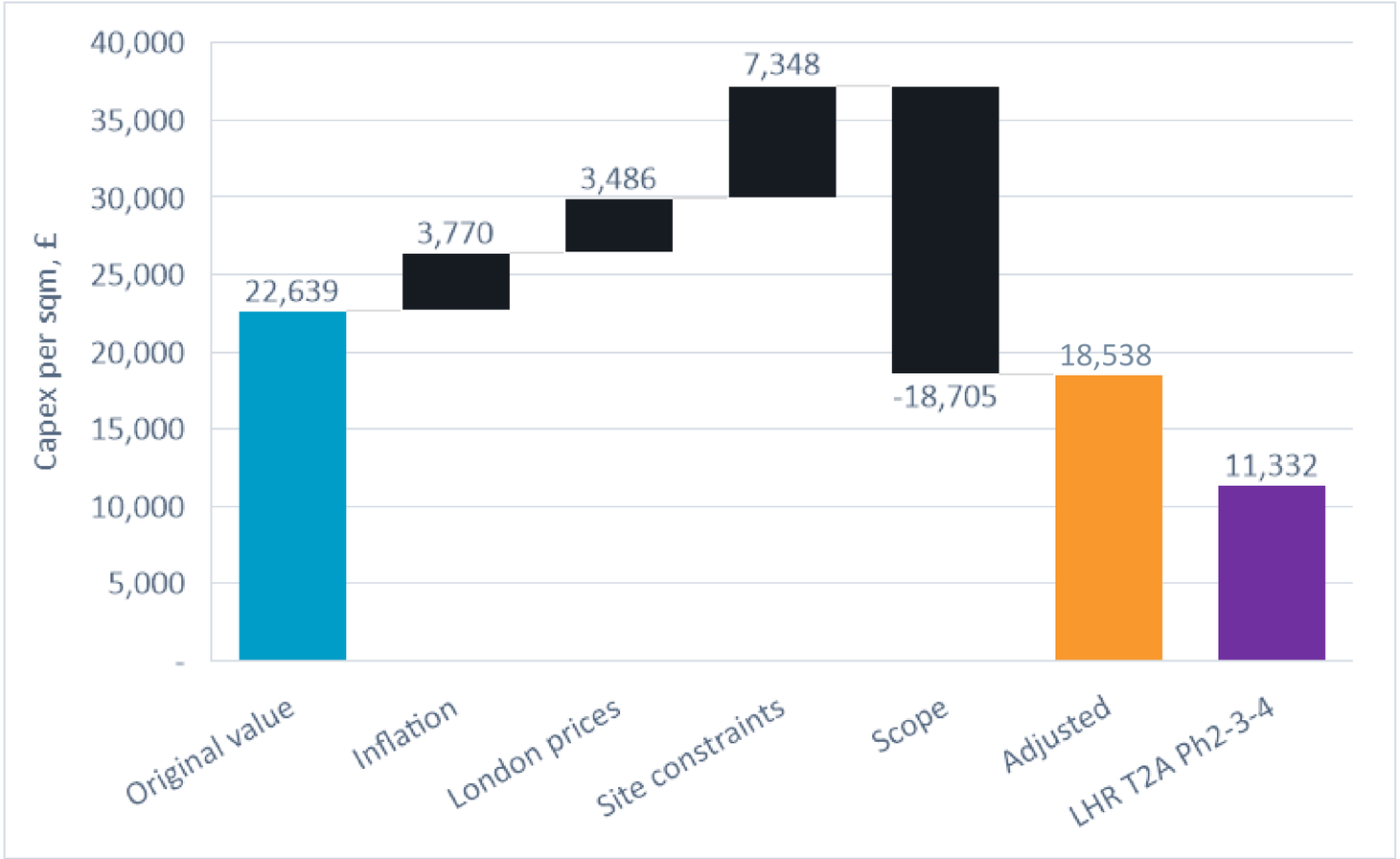
Steps	Description
Original value	No change (already in GBP)
Inflation adjustment	From 2018 to 2023 prices
London prices adjustment	London vs Manchester
Site constraints adjustments	Airport congestion & Construction site congestion
Scope adjustments	- Baggage system works - Aircraft stands - Multi-storey car park



Source: Steer

Benchmarking results (4) – EWR Terminal A

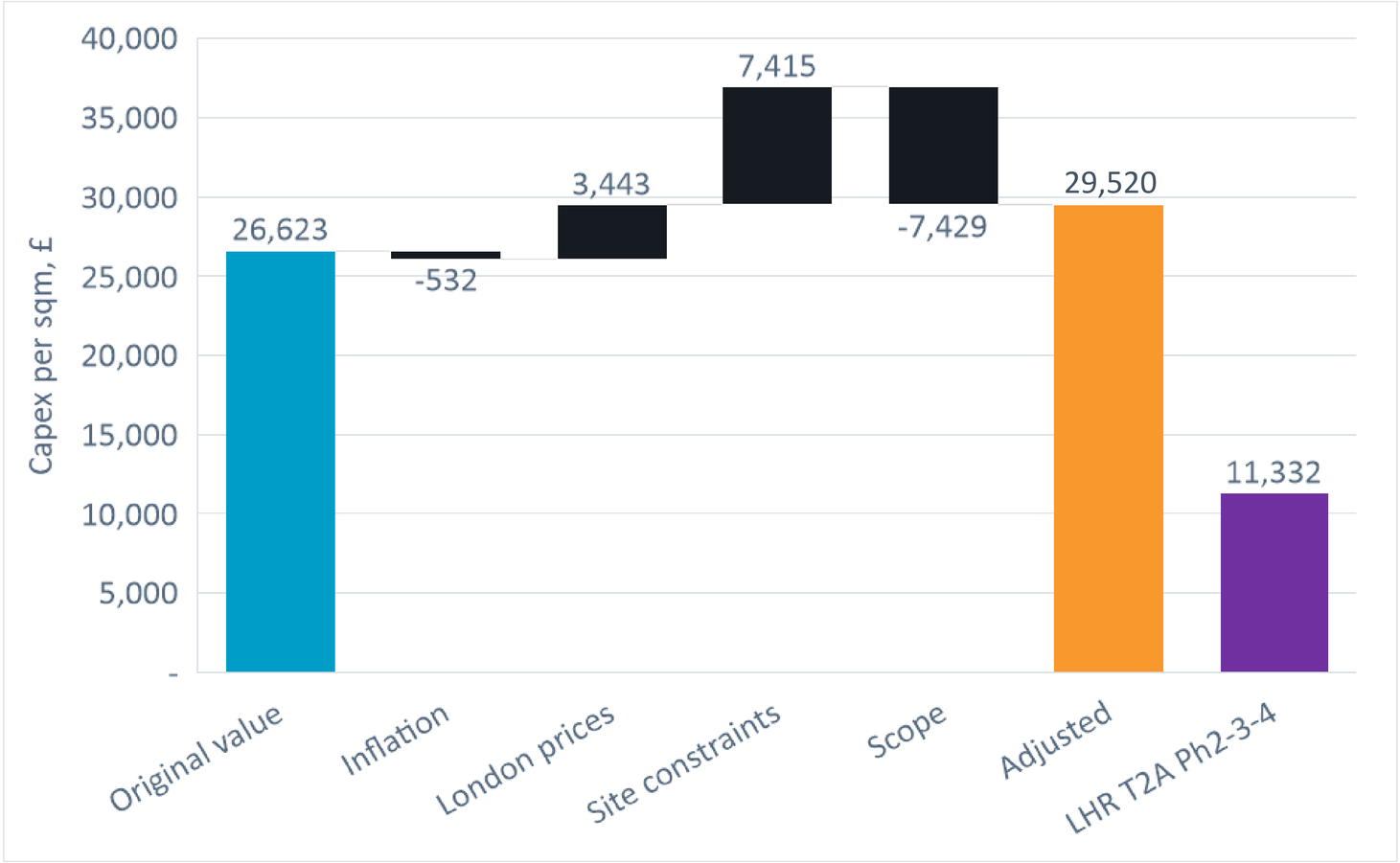
Steps	Description
Original value	Conversion from USD to GBP
Inflation adjustment	From 2020 to 2023 prices
London prices adjustment	London vs New York
Site constraints adjustments	Airport congestion & Construction site congestion
Scope adjustments	- Baggage system works - Aircraft stands - Apron works - Demolitions - Multi-storey car park - Surface access



Source: Steer

Benchmarking results (5) – JFK T1 Phase A

Steps	Description
Original value	Conversion from USD to GBP
Inflation adjustment	From 2024 to 2023 prices
London prices adjustment	London vs New York
Site constraints adjustments	Airport congestion & Construction site congestion
Scope adjustments	- Baggage system works - Aircraft stands - Apron works - Demolitions - Surface access

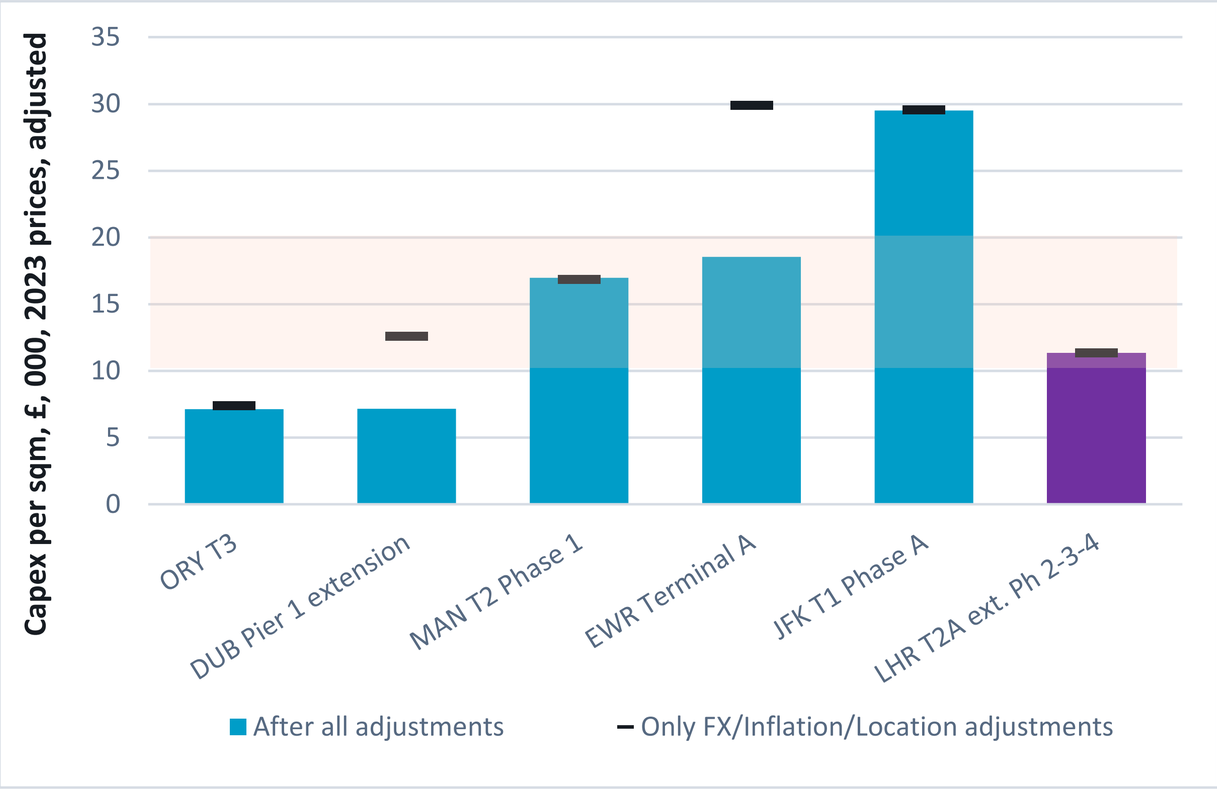


Source: Steer

Benchmarking results (6) – Conclusions

- A more detailed analysis of certain projects has resulted in material changes of some of the original Capex per sqm values when comparing them with a project at Heathrow.
- The adjustments that have been implemented are the following:
  - Exchange rate
  - Inflation
  - Location (London is the most expensive)
  - Site constraints (LHR is the most constrained)
  - Scope
- The specific scope of the project is the parameter that can have the greatest impact when two projects are compared.
- **In a like-for-like comparison, a project developed in LHR will be more expensive due to London construction prices and the site constrains.**

- **Heathrow's reference project is in the mid-range of the benchmarks**; both in the High-level benchmark and in the Detailed benchmark.



Source: Steer

Annex – Construction site congestion calculations

LHR T2A Extension Phases 2-3-4

$$\text{Construction site congestion} = \frac{\textit{Constructed building footprint}}{\textit{Construction site size}} = 62\%$$

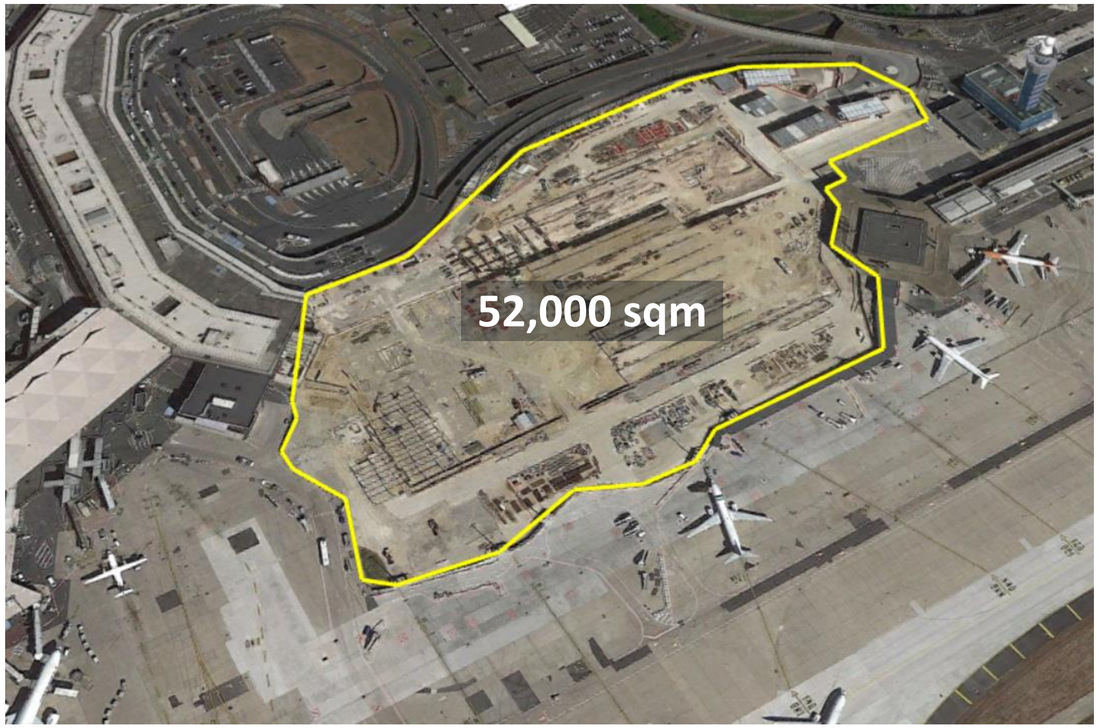
Estimate of the project boundaries

Source: Google Earth, Steer analysis

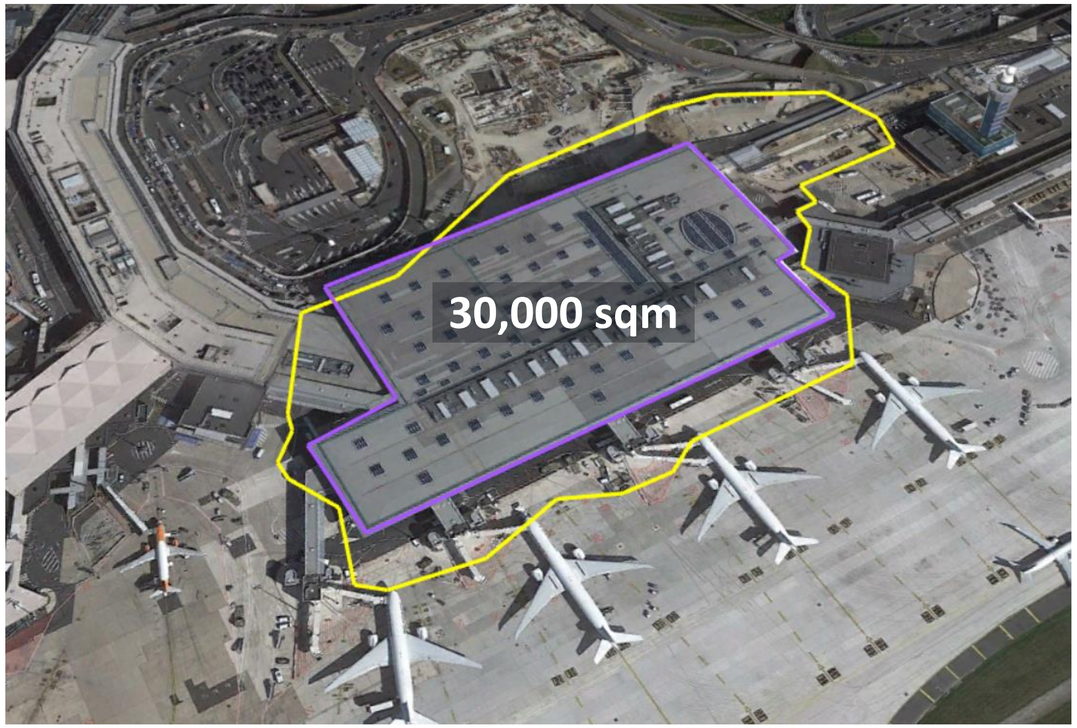
ORY T3

$$\text{Construction site congestion} = \frac{\textit{Constructed building footprint}}{\textit{Construction site size}} = 58\%$$

Construction site footprint, August 2016



T3 footprint, August 2019



Source: Google Earth, Steer analysis

DUB Pier 1 Extension

$$\text{Construction site congestion} = \frac{\textit{Constructed building footprint}}{\textit{Construction site size}} = 14\%$$

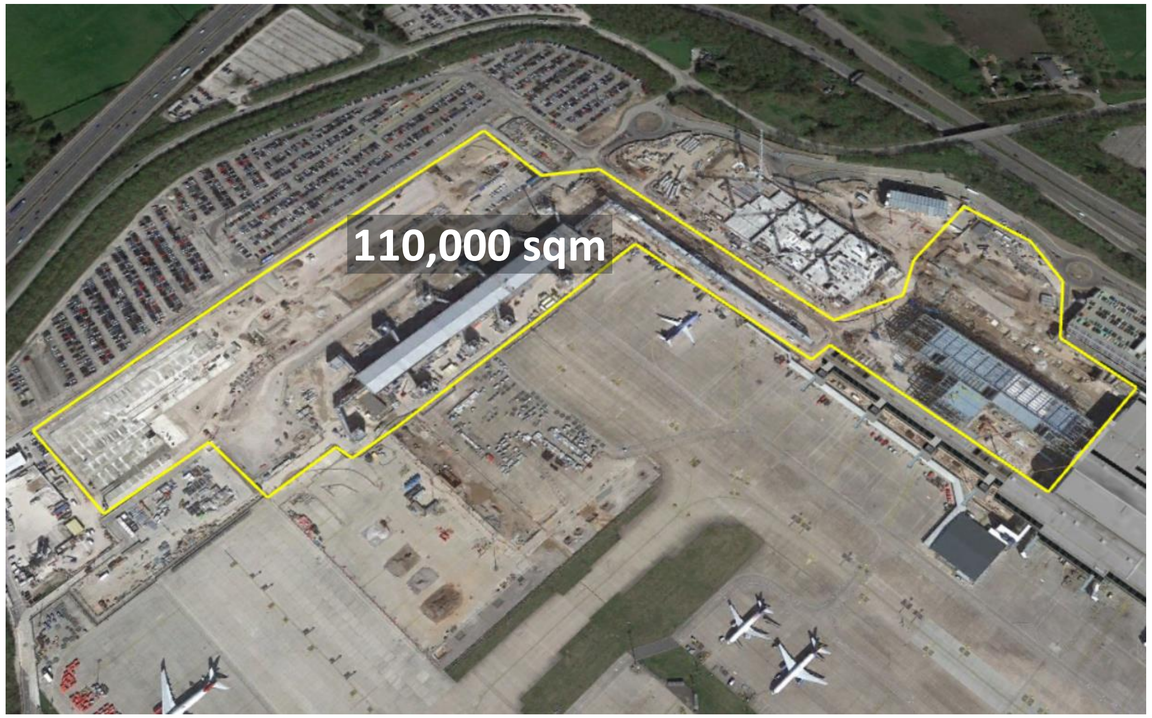
Estimate of the project boundaries

Source: Google Earth, Steer analysis

MAN T2 Phase 1

$$\text{Construction site congestion} = \frac{\textit{Constructed building footprint}}{\textit{Construction site size}} = 22\%$$

Construction site footprint, April 2018



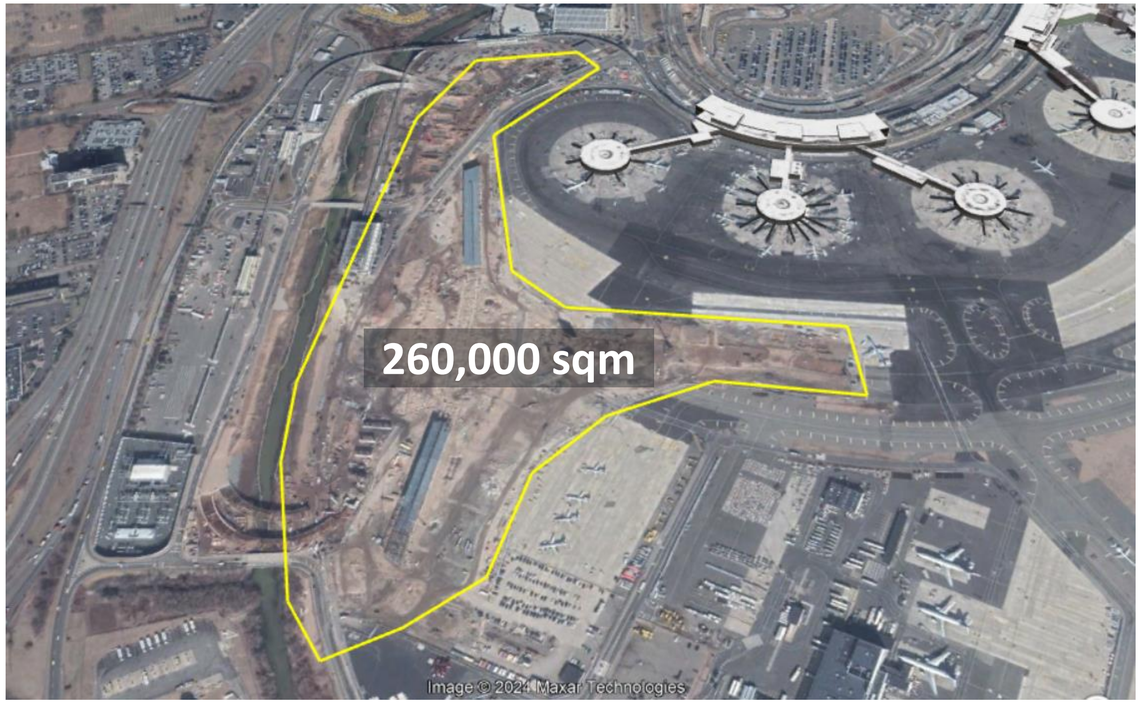
Expansion footprint, April 2022

Source: Google Earth, Steer analysis

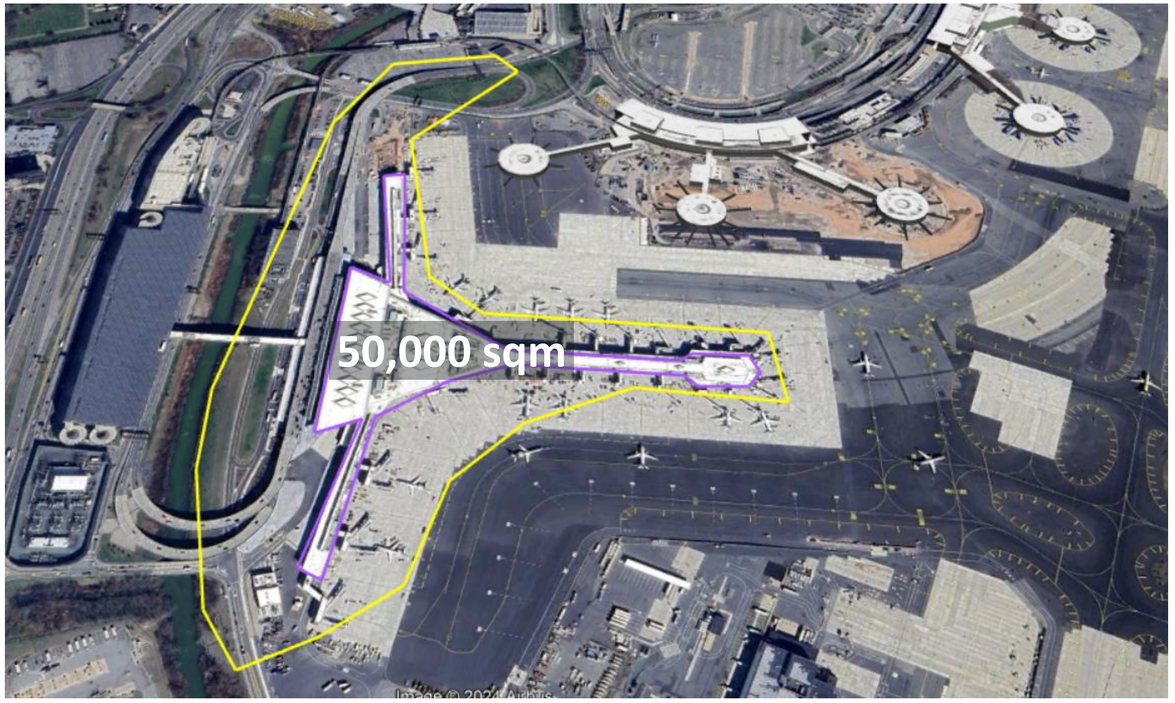
EWR Terminal A

$$\text{Construction site congestion} = \frac{\textit{Constructed building footprint}}{\textit{Construction site size}} = 19\%$$

Construction site footprint, February 2018



New terminal footprint, March 2024

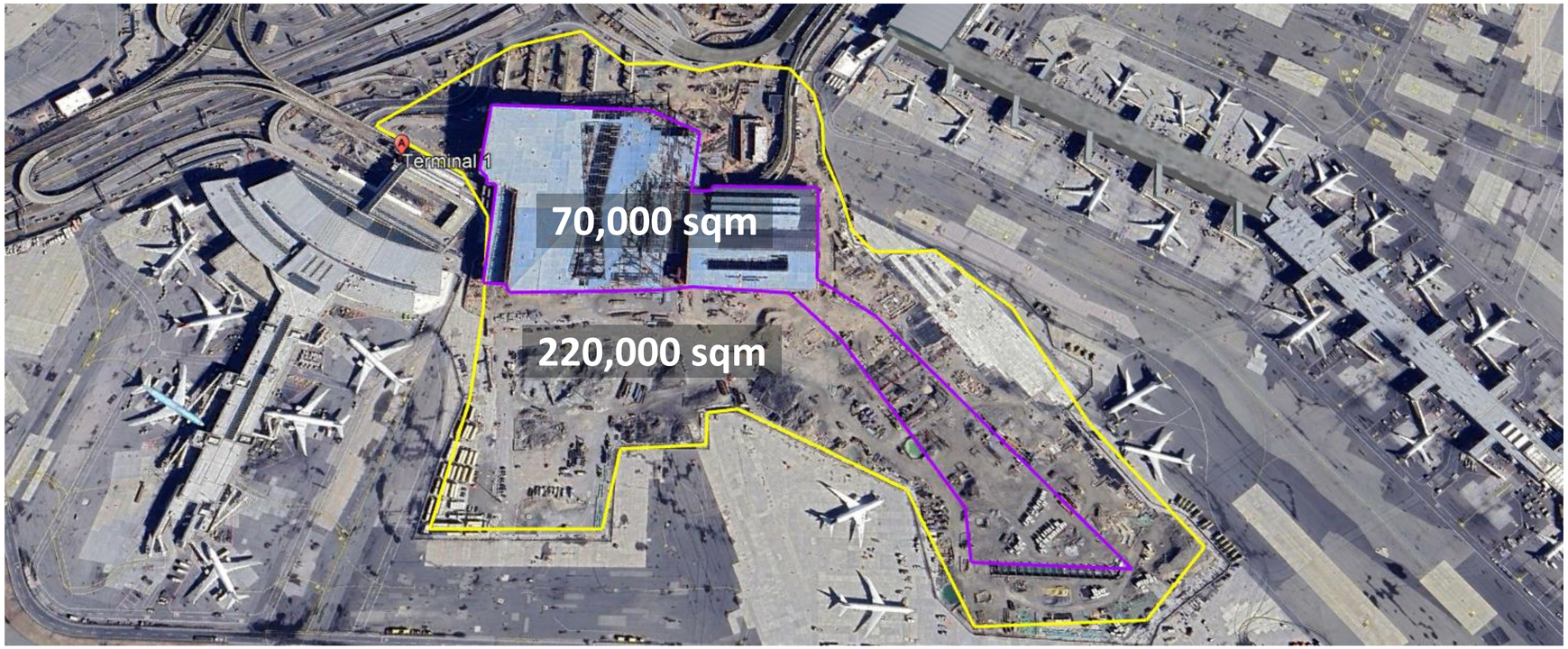


Source: Google Earth, Steer analysis

JFK T1 Phase A

$$\text{Construction site congestion} = \frac{\textit{Constructed building footprint}}{\textit{Construction site size}} = 32\%$$

Estimate of the project boundaries



Source: Google Earth, Steer analysis

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