

Final report
April 2026

Initial technical and cost efficiency assessment of capex expansion plans for Heathrow Airport



Civil Aviation Authority
Our ref: 24949401
Client ref: Contract Ref. 3634

steer

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Prepared by:

Steer
14-21 Rushworth Street
London SE1 0RB

+44 20 7910 5000

www.steergroup.com

Prepared for:

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

Client ref: Contract Ref. 3634

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The logo for Steer, featuring the word "steer" in a bold, lowercase, sans-serif font.

Contents

Glossary	4
1 Executive Summary	6
2 Introduction	13
Background	14
Review of the status of Heathrow’s expansion	17
Information reviewed	19
Structure of this report	20
3 Maturity assessment of proposals received by the Department for Transport	22
Introduction	22
Maturity assessment framework	24
Assessment by proposal	26
Selected proposals for the technical assessment	30
4 Technical assessment of capex expansion plans	31
Introduction	31
Optioneering	33
Airport scheme design	37
Operability and Capacity	52
Expected timelines and Deliverability	56
Sustainability	62
Stakeholder engagement	66
Conclusions	68
Risks	78
5 Cost efficiency assessment of capex expansion plans	81
Introduction	81
Methodology	81
Cost efficiency assessment	84
Conclusions	92
Risks	95
6 Recommendations	96
Recommendations for further development of the expansion plans	96

Figures

Figure Exc. 1: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 CPI prices) 10

Figure 2.1: Proposed third runway at Heathrow – DfT's Future of Air Transport White Paper 2003 14

Figure 2.2: Heathrow's proposed third runway - Northwest option. Airports Commission (Final Report 2015)	16
Figure 3.1: Maturity assessment framework – Scoring mechanism	26
Figure 4.1: Technical Assessment Methodology	32
Figure 4.2: Indicative land use and acquisition plan for Heathrow expansion	38
Figure 4.3: Proposed masterplan layout by HAL	41
Figure 4.4: Visual representation of M25 modification according to HAL	42
Figure 4.5: Relative locations of the three runways options presented by HWL	44
Figure 4.6: HWL's proposed terminal area development	49
Figure 4.7: Steer's proposed additional road access to Western Campus	50
Figure 4.8: Terminal capacity	53
Figure 4.9: HWL's proposed aprons	55
Figure 4.10: Estimated DCO process duration (Steer)	58
Figure 4.11: Estimated duration of HAL's expansion plan for runway opening (Steer)	59
Figure 4.12: Estimated DCO process duration (Steer)	61
Figure 4.13: Estimated duration of HWL's expansion plan for runway opening (Steer)	62
Figure 4.14: Potential development constraints to the expansion of Heathrow	71
Figure 4.15: Road congestion around Heathrow	72
Figure 4.16: Average road traffic delay in M25 J14 (minutes, July 2024)	72
Figure 4.17: Potential development constraints for the expansion of Heathrow and their implications	73
Figure 5.1: Methodology process for cost efficiency assessment	81
Figure 5.2: CPI and TPI forecasts	83
Figure 5.3: HWL capex recategorisation	88
Figure 5.4: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 TPI prices)	93
Figure 5.5: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 CPI prices)	93

Tables

Table Exc.1: Steer's maturity assessment by proposal	8
Table 2.1: Information reviewed	19
Table 3.1: Proposals for Heathrow Airport expansion received by DfT on 31 July 2025	22
Table 3.2: Steer's maturity assessment framework	24
Table 3.3: Maturity assessment framework – Scoring mechanism	25
Table 3.4: Steer maturity assessment by proposal	29
Table 4.1: Where we assess the requirements outlined in the Secretary of State's Letter	32
Table 4.2: Aircraft parking stand capacity	55
Table 4.3: Assessment of optioneering process - summary	69
Table 4.4: Potential development constraints to the expansion of Heathrow	70

Table 5.1: Capex estimates provided by HAL and HWL	83
Table 5.2: HAL capex recategorisation	85
Table 5.3: Cost assessment summary of HAL’s proposal (2024 prices, TPI)	87
Table 5.4: HAL - Cost assessment summary results – HAL proposal	88
Table 5.5: Cost assessment summary of HWL’s proposal (2024 prices, TPI)	91
Table 5.6: HWL - Cost assessment summary results – HWL proposal	92
Table 5.7: Capex estimations of the schemes – Benchmarking ranges and proponents (£bn, 2024 TPI prices)	94
Table 5.8: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 CPI prices)	95

Appendices

A	Maturity assessment of proposals received by Department for Transport
B	Initial technical assessment of capex expansion plans for Heathrow Airport: HAL proposal
C	Initial technical assessment of capex expansion plans for Heathrow Airport: HWL proposal
D	Initial cost efficiency assessment of capex expansion plans for Heathrow Airport: HAL proposal
E	Initial cost efficiency assessment of capex expansion plans for Heathrow Airport: HWL proposal

Glossary

Acronym	Definition
AC	Airports Commission
ANPS	Airports National Policy Statement (2018)
Arora	Arora Group
ATM	Air Traffic Movement
ATRS	Automated Tray Return System
BHS	Baggage Handling System
BRAG	Black Red Amber Green
CAA	Civil Aviation Authority
Capex	Capital expenditure / Capital investment
CPI	Consumer Price Index
CPZ	Compulsory Purchase Zone
dB LAeq	A-weighted Equivalent Continuous Sound Pressure Level (i.e. human perception of noise)
DCO	Development Consent Order
EBS	Early Baggage Storage
HAL	Heathrow Airport Limited
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICC	International Construction Costs
KPI	Key Performance Indicator
KCM	Key Component Masterplans
LDA	Landing Distance Available
M	Metres
MARS	Multiple Aircraft Ramp System
Mppa	Million passengers per annum
NB	Narrow Body Aircraft
OBR	Office for Budget Responsibility
OLS	Obstacle Limitation Surfaces

Acronym	Definition
ONS	Office for National Statistics
Opex	Operational expenditure
ORAT	Operational Readiness and Transfer
OSS	One Stop Security
PINS	Planning Inspectorate
RAB	Regulated Asset Base
RAG	Red Amber Green
RESA	Runway End Safety Area
SLA's	Service Level Agreements
SoS	Secretary of State
Sqm	Square metres
TOGA	Take-Off Go-Around
TORA	Take Off Runway Available
TPI	Tender Price Index
WACC	Weighted Average Cost of Capital
WB	Wide Body Aircraft
WPOZ	Wider Property Offer Zone

Source: Steer

1 Executive Summary

Context

- 1.1 The Civil Aviation Authority (CAA) commissioned Steer to conduct an initial technical and cost efficiency assessment of the capital expenditure (capex) expansion plans for Heathrow Airport. This assessment is part of the CAA's response to the Department for Transport's (DfT) renewed support for expanding Heathrow, following the Secretary of State's invitation for proposals in June 2025. The expansion aims to address long-standing capacity constraints, support economic growth, and align with environmental and climate commitments.
- 1.2 This independent assessment, conducted by Steer on behalf of the CAA, reviews the proposals and, where appropriate, suggests recommendations for further development of the proposals to help ensure the plans are feasible, operational, deliverable in a timely manner and cost efficient. It is also designed to help inform the CAA's work on early costs and its judgement on whether proposals are credible and appropriately mature. Feasibility, operability, deliverability in a timely way and efficiency are all key dimensions of the CAA's work on the credibility of proposals and important to ensuring any proposal furthers the interests of consumers and helps the CAA discharge its statutory duties.

Maturity assessment of proposals received by the Department for Transport

- 1.3 Seven proposals for Heathrow's expansion were submitted to the DfT in July 2025. These proposals varied significantly in scope, detail, and technical maturity. Steer has evaluated each submission against a bespoke maturity assessment framework which takes account of the information requirements set out in the Secretary of State's letter to potential promoters in June 2025. Our framework assessed completeness (quantity) and robustness (quality) of the plans across key technical categories, to form a view on whether the plans are appropriately mature. The key categories of our framework include airport scheme design, capacity uplift, timelines, costs, financing, deliverability, environmental implications, and stakeholder engagement.
- 1.4 Our assessment revealed that only two proposals—those from Heathrow Airport Limited (HAL) and Heathrow West Limited (HWL)—demonstrated sufficient technical maturity and supporting evidence to warrant detailed review of feasibility, operability, timely delivery, and cost efficiency, as requested by the CAA. Both covered essential areas of Steer's bespoke maturity assessment framework such as runway and terminal design, capacity assessment,

environmental considerations, and deliverability planning. The remaining proposals were found to be incomplete, lacking critical technical detail, supporting data, or clear implementation timelines.

- 1.5 The results from the maturity assessment are presented in the table below, with the assessment reported in Chapter 3 and full maturity assessment in Appendix A of this report.

Table Exc.1: Steer’s maturity assessment by proposal

	Proponent 1		Proponent 2		Heathrow Airport Ltd.		Heathrow West Ltd.		Proponent 5		Proponent 6		Proponent 7	
	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment
Airport Scheme Design														
Runway	1	3	1	2	1	3	1	3	1	2	1	1	1	3
Terminal	1	1	0	N/A	1	3	1	3	0	N/A	0	N/A	1	1
Land Use	1	2	0	N/A	1	3	1	3	0	N/A	0	N/A	1	3
Additional capacity	1	1	0	N/A	1	3	1	3	1	1	0	N/A	1	1
Expected timelines														
Expected timelines	0	N/A	0	N/A	1	3	1	3	1	1	1	1	1	3
Costs and revenues														
Capex	0	N/A	0	N/A	1	2	1	2	0	N/A	0	N/A	1	2
Airport Charges	0	N/A	0	N/A	1	2	1	1	0	N/A	0	N/A	1	1
Economic Impact	0	N/A	0	N/A	1	3	1	2	0	N/A	0	N/A	0	N/A
Ownership, financing and funding														
Ownership, financing and funding	0	N/A	0	N/A	1	3	1	2	0	N/A	0	N/A	1	2
Deliverability														
Deliverability	0	N/A	0	N/A	1	2	1	2	1	1	0	N/A	1	2
Stakeholder Feedback	0	N/A	0	N/A	1	3	1	3	0	N/A	0	N/A	0	N/A
Environmental implications & planned mitigations														
Environmental implications	0	N/A	0	N/A	1	3	1	3	1	1	0	N/A	1	3
Surface access	0	N/A	0	N/A	1	3	1	3	0	N/A	0	N/A	1	2
Sub-Total score	4	7	1	2	13	36	13	33	5	6	2	2	11	23
Sub-Total score (%)	31%	18%	8%	5%	100%	92%	100%	85%	38%	15%	15%	5%	85%	59%
Total score (Out of 52 points)	11		3		49		46		11		4		34	
Total score (%)	21%		6%		94%		88%		21%		8%		65%	

Source: Steer

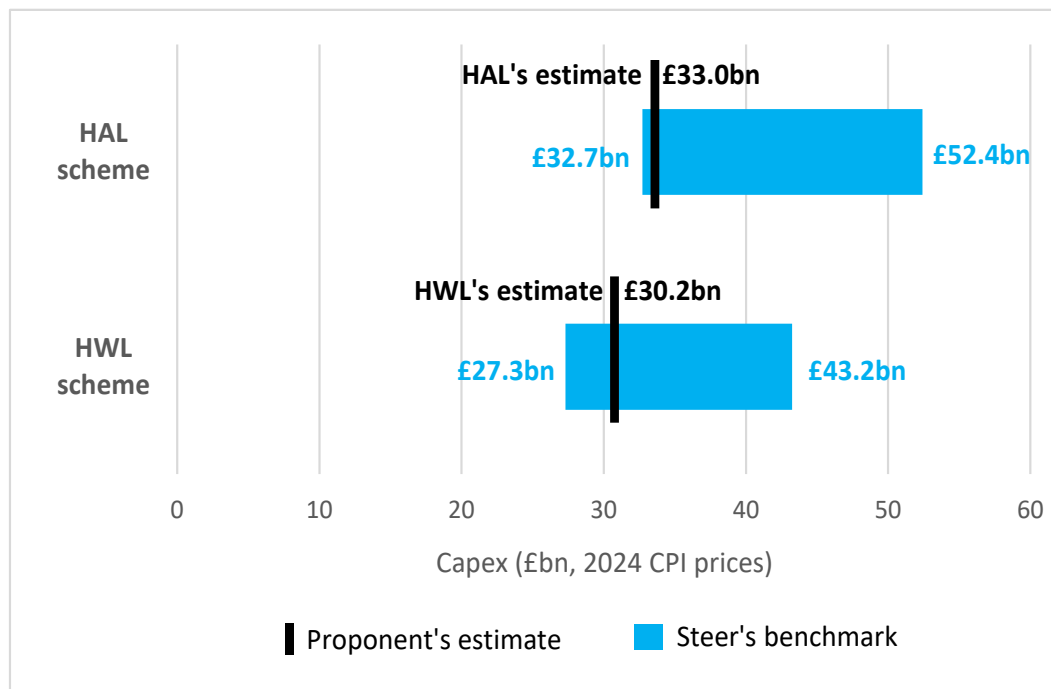
Technical assessment of capex expansion plans

- 1.6 Our independent technical assessment focused on the HAL and HWL proposals, examining their masterplan optioneering processes, feasibility, and alignment with regulatory and policy requirements against a set of key areas that we consider key to assess the feasibility, operability, timely delivery and cost efficiency of the mature proposals, as requested by the CAA. The key areas we reviewed included:
- Airport scheme design: Land acquisition, runway length and location, airfield configuration, terminal area, and surface access.
 - Operability and Capacity: Projected air traffic movements, passenger throughput, and infrastructure phasing.
 - Expected timelines and Deliverability: Programme milestones, DCO process, construction duration, and overall timeline for the delivery of the new runway.
 - Sustainability: Environmental impacts, mitigation measures, carbon strategy, and community wellbeing.
 - Stakeholder engagement: Depth and breadth of consultation with airlines, regulators, and local communities.
- 1.7 HAL’s proposal aligns with the 2018 ANPS, proposing a 3,500m Northwest runway and expanded terminal capacity to the west of Terminal 5 and between the Northern Runways. The design meets International Civil Aviation Organisation (ICAO) and CAA safety standards but relies on data and assumptions dating from 2018 or earlier. The optioneering process was extensive but lacked clarity in terminal location decisions. Surface access depends heavily on future rail projects and expanded road capacity. Although the plan includes increased capacity of the M25, it might not be sufficient. The sustainability framework is comprehensive but lacks quantitative evidence for some mitigation measures.
- 1.8 HWL’s proposal suggests a 2,800m runway east of the M25 and new terminal facilities, all concentrated to the west of Terminal 5. The optioneering process is less developed, focusing mainly on runway location and length. The proposal demonstrates compliance with key safety standards but omits detailed analysis of airfield configuration, terminal sizing, and surface access. HWL indicates that the proposed runway length will only have an impact on 14 departures per day versus a full-length runway, which we assess needs to be validated with independent analysis. Environmental and community impacts are addressed methodologically, but supporting data is limited.
- 1.9 Both proposals present ambitious timelines for delivering an operational runway by the Government’s target of 2035. Steer independent technical assessment is that risk factors—including further design work needed, supply chain constraints, and uncertainties in land acquisition—may impact feasibility and deliverability within this ambitious timescale.

Cost efficiency assessment of capex expansion plans

- 1.10 HAL provided a cost estimate of £33.0bn (2024 CPI prices), and HWL’s estimate is £30.2bn (2024 CPI prices) which include costs related to land acquisition¹.
- 1.11 Steer benchmarked the capex estimates provided by HAL and HWL against independent cost ranges. Both proposals’ cost estimates fall at the lower end of the benchmarking range, indicating significant risk that the schemes may not be deliverable within the stated envelopes.
- 1.12 Our benchmarks show that HAL’s scheme is more expensive than HWL’s, with the high-end estimate for HAL of £52.4bn (2024 CPI prices) being 16% higher than HWL’s at £43.2bn (2024 CPI prices), and the low-end estimate for HAL at £32.7bn (2024 CPI prices) being 15% higher than HWL’s at £27.3bn (2024 CPI prices). These differences are mainly due to HAL proposing a longer runway and additional infrastructure, such as a satellite terminal and tunnels, which increase costs in several categories including airfield, passenger terminals, utilities, and risk management.

Figure Exc.1: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 CPI prices)



Source: HAL, HWL, Steer

¹ HWL’s proposal as submitted to DfT in July 2025 indicated an overall cost of █████, in Q4 2024 TPI prices. HWL proposal also stated that this cost did not account for costs related to land acquisition. Subsequent information provided to the CAA through Q&A indicated costs of land acquisition at █████ (Q4 2024 TPI prices). To ensure comparability with HAL proposal, we added the costs related to land acquisition to HWL’s initial cost of █████ (Q4 2024 TPI). We converted costs of both proposals in common price bases – 2024 TPI and 2024 CPI.

Recommendations

1.13 On the 25 November 2025, the Secretary of State for Transport announced the ‘decision to identify the scheme promoted by Heathrow Airport Limited as the scheme to take forward in informing the ongoing review of the Airports National Policy Statement (ANPS) and that any resulting proposed amendment to the ANPS, along with any other proposed amendments, will be subject to public consultation’². Acknowledging that HAL’s scheme is going to be used by the DfT as the reference to update the ANPS, we have included a series of recommendations for the promoters’ further development and refinement of the scheme. Initial areas where additional work by any promoters of the scheme may be beneficial include:

- **Update technical inputs:** Refresh traffic forecasts, aircraft data, population figures, and environmental baselines to reflect current conditions and future scenarios. This will enable to design more resilient and fit-for-purpose infrastructure.
- **Enhance optioneering:** Develop clearer, measurable criteria for option selection, especially for terminal and apron locations, surface access, and runway length scenarios. The exact location of the new runway once the length is defined, and the location of the additional terminal capacity (between the west of T5 and to the north) that is planned to be provided needs to be reassessed.
- **Design and modelling:** Undertake comprehensive airfield, terminal, and surface access design studies, including dynamic capacity assessments, peak hour modelling, and simulation of operational flows. There is a risk that more stand capacity and a larger taxiway system might be required to accommodate the planned traffic growth.
- **Surface access strategy:** Reassess road and rail connectivity assumptions, validate mode share targets, and consult with DfT and National Highways on infrastructure requirements. Particularly, the capacity requirements of the M25 need to be reevaluated, and specific inputs on new rail capacity need to be included in the analysis.
- **Programme risk management:** Build in additional time allowances for design, land acquisition, and Development Consent Order (DCO) approval; identify and mitigate critical path risks.
- **Sustainability and community Impact:** Provide quantitative modelling of noise, air quality, carbon emissions, and health outcomes; define binding performance indicators and mitigation strategies. Public transport targets need to be reassessed.
- **Stakeholder engagement:** Broaden and deepen consultation with all relevant stakeholders, ensuring transparent integration of feedback into scheme development.

² <https://questions-statements.parliament.uk/written-statements/detail/2025-11-25/hcws1093>

- Cost estimation: Develop detailed, transparent cost estimates with clear scope definitions, contingency levels, and unit rates; update estimates to reflect current market conditions.

1.14 These recommendations for any promoters of the scheme aim to ensure that the expansion scheme is technically robust, operationally feasible, environmentally sustainable, and cost efficient, supporting the strategic objectives of the CAA, DfT, and wider stakeholders.

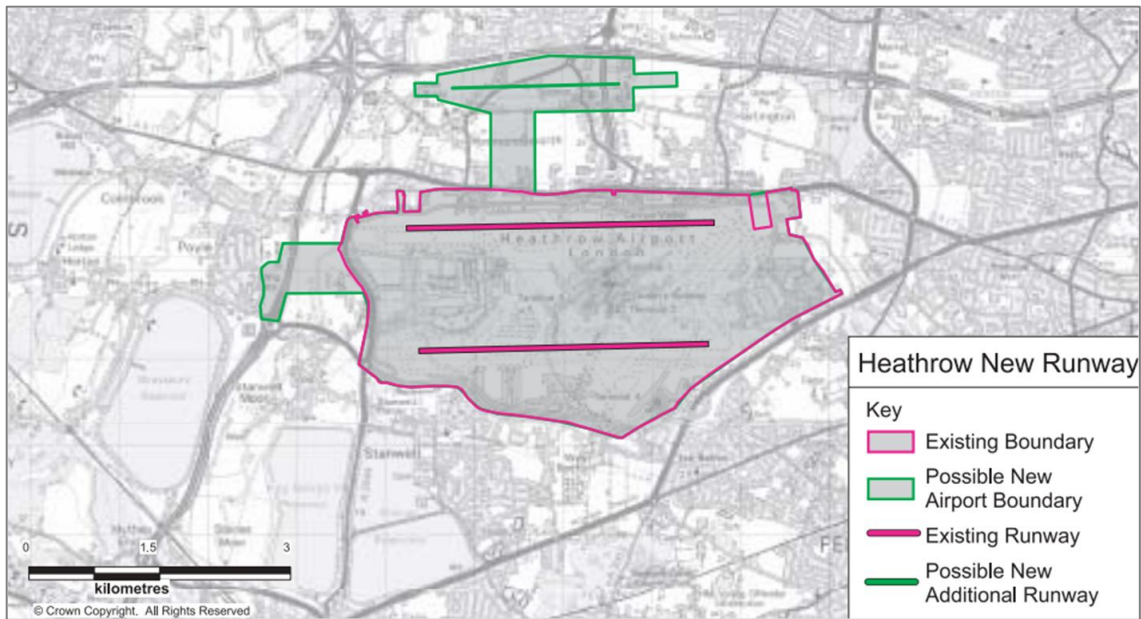
2 Introduction

- 2.1 Steer has been commissioned by the Civil Aviation Authority (CAA) to undertake an initial technical and cost efficiency assessment of expansion proposals for Heathrow Airport. The technical assessment includes the review of proposals received by the Department for Transport (DfT) in response to the Secretary of State’s Letter to potential promoters of Heathrow expansion. The first stage of this process focused on appraising the maturity of the seven proposals submitted. Those proposals that our independent maturity assessment judged to be sufficiently mature were then progressed to a more detailed technical assessment.
- 2.2 Our independent technical assessment focuses on a series of key areas that we consider essential to assess the feasibility, operability, timely delivery, and cost efficiency of the mature proposals, as requested by the CAA. The assessment areas we consider are also informed by the Secretary of State’s letter. Our assessment considers the optioneering methodology and process to select the option put forward by the promoters in their proposals, examining how alternatives were identified, compared, and justified. It evaluates the airport scheme design, including the location and scope of proposed development, associated enabling works (such as terminal infrastructure and required road changes), land use requirements, and the capacity uplift associated with the expansion. Our assessment also considers the expected timelines, including plans for delivering an operational third runway by 2035 and indicative milestones for statutory consultation, DCO application, construction, and phasing.
- 2.3 Finally, our assessment reviews deliverability and environmental implications and planned mitigations. Environmental considerations include compatibility with legal and climate obligations, air and noise pollution, carbon and decarbonisation impacts, night operations, and effects on local communities. Surface access plans, including mode share targets and proposed changes to road, rail, public transport, parking, and active travel, are also evaluated as part of the overall assessment.
- 2.4 Our initial technical assessment focusses on the key master planning elements and is intended to build the foundations for our more detailed independent technical assessment of more mature proposals at a later stage of this project.
- 2.5 To complement our technical assessment, a cost efficiency assessment has also been undertaken. Our cost efficiency assessment includes an independent cost benchmark for the development of the expansion plans as proposed by HAL and HWL in July 2025.

Background

- 2.6 The construction of a third runway at Heathrow has been debated since the early 1990s. A key milestone was in 2003 with the publication of the Department for Transport (DfT) White Paper – The Future of Air Transport³. The support for the expansion of Heathrow was clearly summarised in the following statement by the DfT: *“We recognise the immense value to the UK of Heathrow’s status as an international hub airport and we want to see that continue. However, we do not believe that there is a strong case for attempting to create a second hub airport in the South East, whether or not additional capacity is created at Heathrow.”*

Figure 2.1: Proposed third runway at Heathrow – DfT’s Future of Air Transport White Paper 2003



Source: DfT, The Future of Air Transport White Paper 2003, p.124

- 2.7 The key events related to the development of the third runway at Heathrow are summarised below:
- 2001–2003: The UK government began considering a third runway at Heathrow to address growing capacity issues. The DfT published The Future of Air Transport White Paper in 2003 formally backing the idea.
 - 2007–2009: The Labour government under Gordon Brown pushed forward with plans despite strong opposition from environmental groups, local councils, and residents. In 2009, the project was officially approved.
 - 2010: The incoming Conservative-Liberal Democrat coalition government scrapped the project, citing environmental concerns and public opposition.
 - 2012–2015: The Airports Commission, led by Sir Howard Davies, was established to reassess UK airport capacity. In 2015, it recommended Heathrow as the best site for expansion, and specified that the best option for

³ [The Future of Air Transport White Paper 2003](#)

developing the third runway was the proposed northwest location⁴, as shown in Figure 2.2.

- 2018: Parliament voted in favour of the expansion. The DfT published the Airports National Policy Statement⁵ (ANPS), confirming the preferred option of the Airports Commission (i.e. Heathrow Northwest) and establishing the requirements for the developer to obtain the DCO.
- 2019: HAL launched the Airport Expansion Consultation⁶, as part of the legal steps towards the planning approval of the third runway.
- 2020: The Court of Appeal ruled the expansion unlawful due to non-compliance with the Paris Climate Agreement. However, the Supreme Court overturned this decision later that year, allowing the project to proceed.
- 2021–2024: HAL continued to face legal and environmental challenges. The airport emphasised its commitment to sustainability and began planning upgrades.
- January 2025: Chancellor Rachel Reeves publicly endorsed the third runway, citing economic growth and job creation⁷. She emphasised that the project must align with environmental and climate goals, and that private investment would fund associated transport infrastructure.
- June 2025: The Secretary of State for Transport Heidi Alexander invited promoters to submit proposals for a third runway as part the government’s support for Heathrow Airport expansion plans.
- October 2025: The Government formally launched the review of the ANPS and will consult on any revisions to the ANPS in July 2026 with the aim to complete the process by the end of 2026. The revised ANPS provides the primary basis for decision making on development consent applications for a third runway at Heathrow Airport.
- November 2025: The Secretary of State for Transport announced the decision to select HAL’s scheme to inform the update of the ANPS.

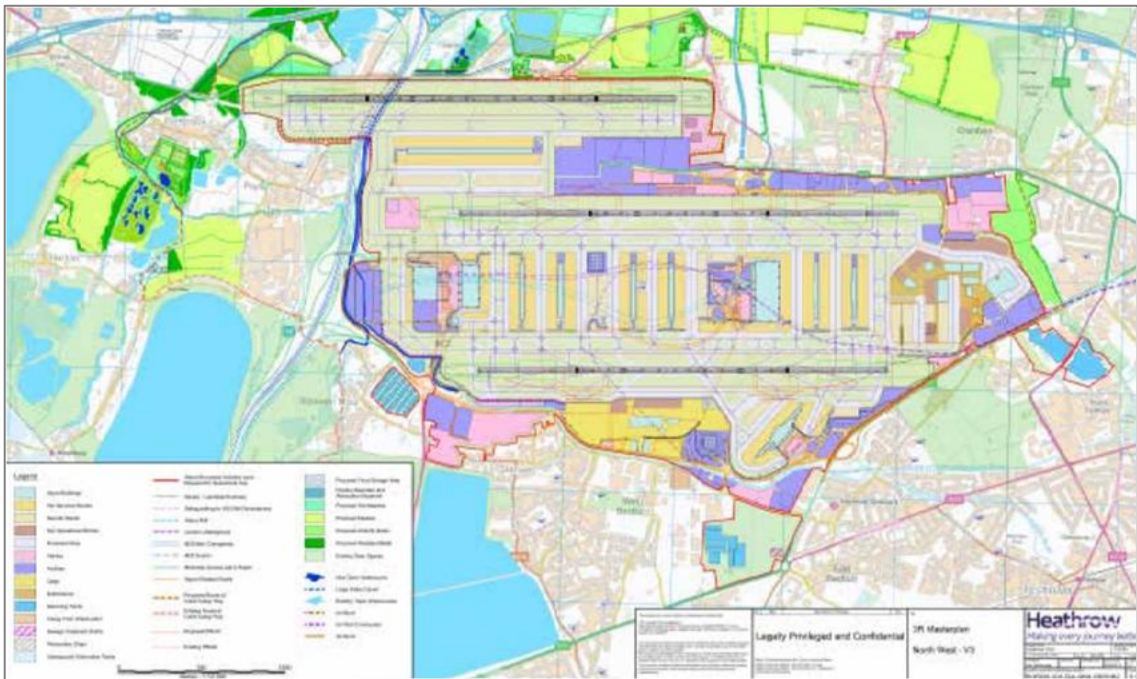
⁴ [Airports Commission: final report](#)

⁵ [Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England](#)

⁶ [3780-HRW-CON DOC-June 2019-A-MASTER-BOOK-FINAL AW-19.6.indb](#)

⁷ [Government backs Heathrow expansion to kickstart economic growth - GOV.UK](#)

Figure 2.2: Heathrow's proposed third runway - Northwest option. Airports Commission (Final Report 2015)



Source: Airports Commission, Final Report 2015, p.99

Review of the status of Heathrow's expansion

- 2.8 Following the Chancellor's January 2025 announcement of the Government's support for a third runway at Heathrow, the Secretary of State for Transport invited proposals for expansion in a June 2025 letter. After a review process, the Government has decided to select HAL's proposed expansion scheme to inform the review of the ANPS. The Government will consult on any amendments to the ANPS by July 2026 and plans to publish the amended ANPS in late 2026.
- 2.9 The existing ANPS was published in 2018, and the conclusions reached back then may need to be reassessed to factor industry and technology developments. The 2018 ANPS was based on the Airports Commission work which dates back to 2015 and, therefore, the studies and conclusions are more than ten years old. We assess that most of the principles and methodologies that were applied back then, are still applicable, but there are others that need to be revisited. In the last decade, technology has advanced, including that of aircraft. For example, the runway length that is required by commercial aircraft nowadays is shorter than what it was expected to be ten years ago.
- 2.10 The ANPS published in 2018 included a series of criteria to determine the preferred option for the addition of runway capacity in the Southeast of England. The 2018 ANPS criteria that were used to design Heathrow's Northwest runway option over the others (Gatwick's second runway and Heathrow's in-line runways) were the following:
- More aircraft movement and passenger capacity;
 - More long-haul flights;
 - Sooner to deliver;
 - Better connected by road and rail;
 - More freight capacity; and
 - Noise respite for the surrounding community.
- 2.11 In this report we assess the proposals from a technical perspective and on its own merits, without providing a better evaluation to the proposals that best fulfil the 2018 ANPS or a future ANPS.
- 2.12 On the 22 October 2025, the Government made an announcement which stated that a new ANPS will be published by the end of 2026 and will consult on any amendments to the ANPS by July 2026⁸. The announcement also included the following information, which we took into account in our independent assessment of the feasibility, operability, deliverability, and cost efficiency of the mature proposals, as mandated by the CAA:
- The ambition to have the new runway operational in 2035.
 - Only two potential schemes remain under consideration, HAL, and HWL.
 - In carrying out the ANPS review, DfT will consider how any proposed scheme must meet the following 4 tests:

⁸ [Realising the benefits of expansion at Heathrow Airport - GOV.UK](#)

- That it contributes to economic growth across the country;
- That it meets our air quality obligations;
- That it is consistent with the Government’s noise commitments; and
- That it aligns with legal obligations on climate change, including net zero.
- Intention to reach a final decision on the scheme taken forward to inform the ongoing ANPS review to inform the remainder of the ANPS review by the end of November 2025.
- The criteria the DfT considered in making the decision on the scheme taken forward to inform the ongoing ANPS review are the following:
 - Interoperability of the proposed scheme with existing infrastructure;
 - Plans for transport to and from the airport and associated road schemes;
 - Land take and impact on surrounding homes and communities;
 - Evidence that the scheme can be privately financed; and
 - Economic benefits of the scheme.
- Other related initiatives that will be launched:
 - The Planning and Infrastructure Bill will aim to streamline the delivery of major infrastructure, including Heathrow. This includes faster consenting routes and more proportionate consultations.
 - On Judicial Reviews, there is an aim to cut the amount of time it takes for a review to move through the court system for National Policy Statements and Nationally Significant Infrastructure Projects.
 - Establishing the UK Airspace Design Service to deliver modernised airspace. This will initially prioritise airspace design for the London region, supporting both Heathrow and the wider network.
 - Initiation of the slot reform to ensure future allocation maximises benefits of an expanded Heathrow.

2.13 On the 25 November 2025, the Secretary of State for Transport announced the ‘decision to identify the scheme promoted by Heathrow Airport Limited as the scheme to take forward in informing the ongoing review of the Airports National Policy Statement (ANPS)’⁹. The reasons for selecting this scheme are summarised as follows:

- Relative maturity of its proposal;
- The comparative level of confidence in the feasibility and resilience of its surface access plans;
- The stronger comfort it provides in relation to the efficient, resilient, and sustainable operations of the airport over the long-term;
- The HAL scheme is considered comparatively more mature in its approach to road infrastructure. The Government considers that both schemes would have a considerable impact on the M25;
- It would require the acquisition of fewer residential properties around the airport;

⁹ <https://questions-statements.parliament.uk/written-statements/detail/2025-11-25/hcws1093>

- The runway length proposed by HAL – up to 3.5km – is considered to be advantageous in terms of providing greater resilience and potential futureproofing for next-generation;
- Overall, the HAL scheme provides the greatest likelihood of meeting the Government’s ambition for a decision on Development Consent application within this Parliament.

Information reviewed

2.14 The table below summarises the information we reviewed, including materials submitted by the proponents as well as relevant documentation such as policy and guidance. This evidence forms the basis of our assessment.

Table 2.1: Information reviewed

Source	Date	Event/Document
DfT	07/2015	“Airports Commission: Final Report”
	06/2018	“Airports National Policy Statement: new runway capacity and infrastructure at airports in the Southeast of England”
	30/01/2025	“Policy paper – Government update on airport expansion”
	30/06/2025	“Letter to potential promoters of Heathrow expansion”
	22/10/2025	“Realising the benefits of expansion at Heathrow Airport – Review of the ANPS”
	25/11/2025	“Selection of the scheme to inform the ANPS”
Proponent 1	31/07/2025	“Heathrow 3rd Runway”
Proponent 2	31/07/2025	“Third LHR Runway Proposal”
Heathrow Airport Limited	31/07/2025	“Expanding Heathrow-MAIN-REPORT”
	31/07/2025	“Expanding Heathrow-APPENDICES”
	05/09/2025	CAA-HAL Q&A session for the technical assessment of Heathrow expansion proposals
	10/09/2025	“Q2 - CAA-H8-038 - EH Forecast Extract v1.1 (CAA)”
	10/09/2025	“Updated Scheme Development Report - Document 1 of 5” (2019)
	10/09/2025	“Updated Scheme Development Report - Document 2 of 5” (2019)
	10/09/2025	“Updated Scheme Development Report - Document 3 of 5” (2019)
	19/09/2025	“2025-09-09-cao-Expansion-Rfl-to-HAL-tracker_Answered”
	01/10/2025	“Heathrow Airport Expansion – Consultation Document June 2019”
	01/10/2025	“Airspace Principles – Consultation Document January 2018”

Source	Date	Event/Document
	01/10/2025	“Airport Expansion – Consultation Document January 2018”
	01/10/2025	“Airspace and future operations – Consultation Document January 2019”
	01/10/2025	“Making better use of our existing runways – Consultation Document January 2019”
	03/10/2025	“2025-03-10-cao-Expansion-Rfl-to-HAL-tracker”
	14/10/2025	“CAA-H8-054 - EH Cost Overview 131025”
	12/11/2025	“Heathrow’s Appraisal of the Heathrow West Limited (“HWL”) Scheme
	12/11/2025	“Heathrow additional scheme information 20251112”
Heathrow West Limited	31/07/2025	“Proposal for the Expansion of Heathrow Airport Final Report”
	13/10/2025	“25.10.14 HW 2800 RWY [CAA]”
	13/10/2025	“2025-10-13-cao-Expansion-Rfl-to-Arora-tracker”
	13/10/2025	“cao-Heathrow expansion capex template_for_Arora (with responses)”
	30/10/2025	“Q39-HWL Capex Price Indices”
	01/11/2025	“25.10.14 HW 2800 RWY [CAA] Final”
	12/11/2025	“Letter VAA to HWL re expansion (12 Nov 25)”
	12/11/2025	“25.11.12 2800 RWY REPORT (DfT) [11.12 FINAL REDACTED] (1) “
Proponent 5	31/07/2025	“INTERIM, QUICK, COST-EFFECTIVE EXPANSION OF HEATHROW AIRPORT CAPACITY”
Proponent 6	31/07/2025	“The TNU Heathrow Solution”
Proponent 7	31/07/2025	Proponent 7 cover letter”
	31/07/2025	“Proponent 7 technical annex”
CAA	08/09/2025	“10 Arcadis - HAL Masterplan 4 Review_ Step 3& 8 – 14072020”
	08/09/2025	“11 Arcadis - HAL Masterplan 4 Review_Step 0 - xx102019”
	08/09/2025	“12 Arcadis Review of Design & Build Airport Terminals_FINAL – 16032018”

Source: Steer

Structure of this report

2.15 This report is divided into the following chapters:

- **Chapter 1:** Executive summary.
- **Chapter 2:** Introduction and context for the report, the status of the expansion plans, and the information that has been reviewed for this work.
- **Chapter 3:** Assessment of the maturity of the proposals based on the quantity and quality of the information received from the proponents and selection of proposals for the technical assessment.
- **Chapter 4:** Technical assessment of the selected proposals, including optioneering and feasibility.
- **Chapter 5:** Cost efficiency assessment of the selected proposals, including a comparison of selected proposals.
- **Chapter 6:** Recommendations to ensure that the selected expansion scheme is technically robust, operationally feasible, environmentally sustainable, and cost efficient.
- **Appendix A:** Maturity assessment of proposals received by the Department for Transport.
- **Appendix B:** Initial technical assessment of capex expansion plans for Heathrow Airport – Heathrow Airport Limited (HAL) proposal.
- **Appendix C:** Initial technical assessment of capex expansion plans for Heathrow Airport – Heathrow West Limited (HWL) proposal.
- **Appendix D:** Initial cost efficiency assessment of capex expansion plans for Heathrow Airport – Heathrow Airport Limited (HAL) proposal.
- **Appendix E:** Initial cost efficiency assessment of capex expansion plans for Heathrow Airport – Heathrow West Limited (HWL) proposal.

3 Maturity assessment of proposals received by the Department for Transport

Introduction

3.1 In response to the Secretary of State’s letter to potential promoters of Heathrow expansion published on 30 June 2025¹⁰, seven proposals were received by the Department for Transport (DfT) on 31 July 2025. These proposals are summarised in the table below accompanied with an illustration of the proposed location of the new runway.

Table 3.1: Proposals for Heathrow Airport expansion received by DfT on 31 July 2025

Promoter	Summary of expansion proposal	Third runway scheme illustration
Proponent 1	Option 1: Move Southern Runway to the west and develop a closely spaced 3,700m parallel runway to the South. Option 2: A closely spaced 2,800m parallel runway on southern side of the airport. Removal of Terminal 4.	
Proponent 2	2,000m runway in the north.	

¹⁰ [Letter to potential promoters of Heathrow expansion - GOV.UK](#)

Promoter	Summary of expansion proposal	Third runway scheme illustration
Heathrow West Limited (HWL)	2,800m runway in the north, east of the M25 motorway. New passenger terminal (T6A) located west of existing T5 with a satellite building (T6B).	
Heathrow Airport Limited (HAL)	3,500m runway in the northwest. New terminal 5XW to the west of Terminal 5 and satellite Terminal 5XN between Terminal 5 and the existing Northern Runway and the new runway.	
Proponent 5	Extend Northern Runway, up to the M25 Motorway, and create 2 in-line runways of 2,200m (Option 1) or 2,500m (Option 2).	
Proponent 6	A closely spaced 1,500m parallel runway on northern side of the airport, east of the M25 motorway.	
Proponent 7	Extend Northern Runway to the west, up to the M25 Motorway, and create 2 in-line runways of 3,000m. Additional terminal capacity at T5 Western Campus.	

Source: Proposals for Heathrow Expansion, Steer. Note: Green arrows indicate sufficient distances between runways to enable independent operations; whereas Red arrows indicate too close proximity of runways to enable independent operations. The Dark Grey runway indicates the proposed new third runway, whereas the Light Grey runways indicate the existing two runways.

Maturity assessment framework

3.2 We conduct our independent assessment of the maturity of the proposals, by assessing the completeness (quantity) and robustness (quality) of the information presented in each proposal using a bespoke Multi-Criteria Assessment Framework (MCAF) developed and used by Steer for the purpose of this assessment. Our bespoke maturity framework is informed by the information requirements set out in the Secretary of State’s (SoS) letter to potential promoters of Heathrow expansion. The key categories of our framework include airport scheme design, capacity uplift, timelines, costs, financing, deliverability, environmental implications, and stakeholder engagement. These are the categories we consider key for our independent assessment of the feasibility, operability, timely delivery, and cost efficiency of the credible and sufficiently mature proposals, as requested by the CAA. The categories we consider in our bespoke maturity framework are summarised in the table below.

Table 3.2: Steer’s maturity assessment framework

Element	Sub-element	Information required
Airport Scheme Design	Runway	Location of proposed development.
	Terminal	Scope of project, including associated enabling elements (for example a terminal, any road changes required to construct the project).
	Land Use	Land use.
	Additional Capacity	Capacity uplift provided by the proposed expansion, including passenger numbers and air transport movements (ATMs) the infrastructure is capable of supporting by year – along with supporting information on these assumptions if it is material to the numbers of ATMs (e.g. long/short haul assumptions), or any network assumptions.
Expected Timelines	Expected Timelines	Plans for delivering an operational third runway by 2035, including sight of planned timelines for: <ul style="list-style-type: none"> – statutory consultation; – DCO application, working towards securing development consent in this Parliament; – construction timeline; and – phasing of release of runway and terminal capacity by year, if different phases or staged terminal builds are proposed.
Costs and Revenues	Capex	Information on expected costs by year, with details of the underlying analysis and assumptions.
	Airport Charges	Expected incremental impact on overall revenues and airport charges per passenger per

Element	Sub-element	Information required
		year, with details of underlying analysis, modelling, and assumptions.
	Economic Impact	Ambition of maximising economic growth opportunities for the UK.
Ownership, financing, and funding	Ownership, financing, and funding	Details of the commercial model used, including key assumptions underpinning it, and demonstration of ability to finance the scheme.
Deliverability	Deliverability	Technical assurance that the plans are feasible and can be reasonably delivered to timetables within the proposal.
	Stakeholder Feedback	Details of any discussions and endorsements from airlines on proposals.
Environmental implications and planned mitigations	Environmental implications	All proposals should ensure that plans are compatible with the UK’s legal, environmental and climate obligations and consider: <ul style="list-style-type: none"> – direct and indirect impacts, taking both construction and operation of a third runway by 2035 into account; – air and noise pollution; – decarbonisation targets, including an assessment of the whole life carbon impacts of the proposal; – night period operations; and – impacts on the local community regarding health, wellbeing, and quality of life.
	Surface access	Surface access mode share targets, including elements of a surface access strategy covering changes to highways, rail, and any assumptions on parking, public transport, and active travel to achieve any targets set.

Source: Secretary of State’s letter to potential promoters of Heathrow, Steer

3.3 Each proposal was evaluated against the information requirements outlined above using a two-step scoring process as shown in Table 3.3:

- **Step 1 – Binary assessment:** A Yes/No check, with ‘Yes’ assigned 1 point when information is provided and ‘No’ assigned 0 points when information is not provided.
- **Step 2 – Information maturity assessment:** An evaluation of the completeness (quantity) and robustness (quality) of the information provided in the proposals submitted to DfT, with a range of scores, as outlined below.

Table 3.3: Maturity assessment framework – Scoring mechanism

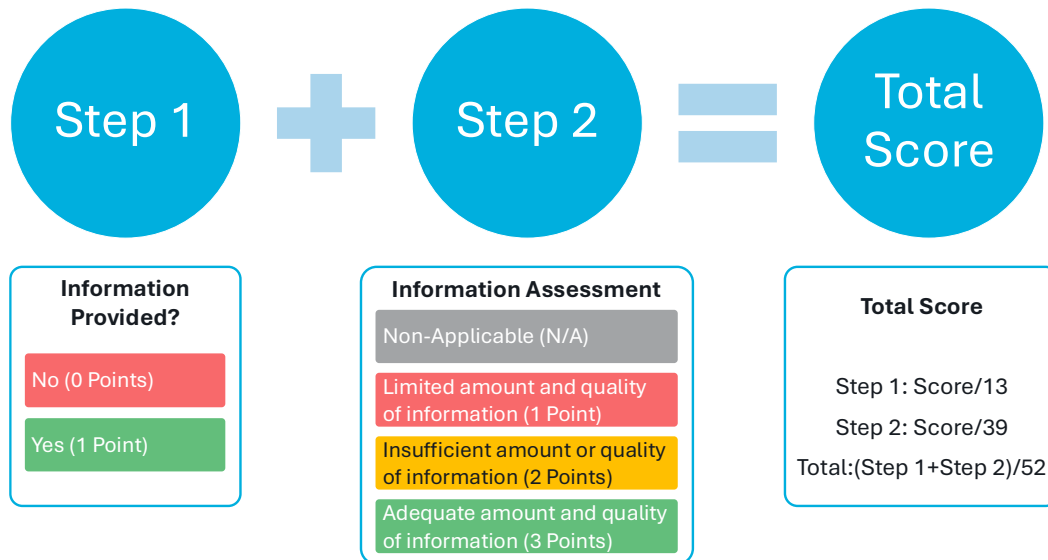
Assessment	Score
Step 1	
Yes – Information provided	1
No – Information not provided	0

Assessment	Score
Step 2	
Not Applicable (no information provided)	N/A
Limited amount and quality of information	1
Insufficient amount or quality of information	2
Adequate amount and quality of information	3

Source: Steer

3.4 As a result of this two-step process, each applicable information category could obtain a total score ranging from 0 to 4, by combining the binary check (0 or 1) with the information maturity assessment (1 to 3). Where an information category did not have any information to evaluate, only the binary score (0 or 1) was considered, and the overall score is zero.

Figure 3.1: Maturity assessment framework – Scoring mechanism



Source: Steer.

Note: In Step 1 the maximum score is 13, corresponding to the 13 information categories set out in the SoS's letter to potential promoters replicated in Table 2.2. In Step 2, the maximum score is 39, which corresponds to the scenario where each of the 13 information categories receive the maximum score of 3 (13 x 3 = 39).

Assessment by proposal

- 3.5 Based on the methodology outlined above, each proposal has been assessed against a consistent framework of criteria designed to evaluate the completeness and maturity of the information submitted.
- 3.6 For each area, the assessment considers: (1) the information provided; (2) the level of detail provided; and (3) the extent to which the submission demonstrates alignment with the SoS letter. The results are presented in the tables below, which summarise the evidence reviewed for each criterion and assign an assessment of the proposal's current level of maturity. This systematic method facilitates

transparent comparison among the proposals, identifies sections that may need further information or clarification, and establishes an impartial foundation for subsequent evaluation and decision-making.

- 3.7 The full assessment of each proposal, using the maturity assessment framework, can be found in Appendix A. Below we provide a summary of the assessments and a table with all the scores.
- 3.8 **Proponent 1:** The proposal includes two potential locations for the new runway and the implications of each for the existing infrastructure. Option 1 involves relocating the existing Southern Runway to the west and developing a closely spaced 3,700m parallel runway to the south. Option 2 proposes a closely spaced 2,800m parallel runway on the southern side of the existing runway, remaining within the airport boundaries. Both options would require the removal of the cargo area and Terminal 4. However, the submission provides limited detail on the overall scheme design. It does not provide any information about the other elements of the project.
- 3.9 **Proponent 2:** The proposal recommends the construction of a new third runway, limited to a maximum length of 2,000m. While the submission highlights potential reductions in delivery timelines and costs associated with a shorter runway, it does not specify the proposed location nor any other specific information on the merits of the proposed scheme. Beyond the runway concept, the proposal lacks information against most of the elements requested in the Secretary of State’s letter.
- 3.10 **Heathrow Airport Limited:** The proposal considers a new 3,500m northwest runway, as well as a new terminal in the Western Campus with a T5W and satellite T5N, designed to accommodate up to an additional 40 million passengers per annum. The main document and supporting appendices presented by HAL, provide a comprehensive amount of information and have covered the essential areas requested by the Secretary of State’s letter to potential promoters. There is also detailed information on most of the main areas.
- 3.11 **Heathrow West Limited:** The proposal includes the development of a 2,800m runway located northwest of Heathrow’s two existing runways and entirely east of the M25 motorway with a new T6 passenger terminal, capable of accommodating 40 million passengers per annum, including T6A and satellite pier T6B. The proposal also includes associated infrastructure and works required to deliver the scheme. The information provided covers all essential areas requested by the SoS’s “Letter to potential proponents of Heathrow expansion” and in most areas presents a level of completeness (quantity) and robustness (quality) of information that supports the proposal’s assumptions. However, there were areas such as Costs and Revenues where more information was expected to meet the requirements of the SoS’ letter, particularly regarding the underlying capex assumptions, impacts on airport charges, and economic impact. Furthermore, the ownership, financing and funding scheme section provides only limited information on how the expansion will be financed and does not provide information of the commercial model used.

- 3.12 **Proponent 5:** The sets out an interim option involving the extension of the Northern Runway, running from the M25 in the west to the existing infrastructure in the east. The proponent claims that the extended pavement could be operated as two in-line runways, configured either as two 2,200m runways or as two 2,500m runways, separated by a 650m central safety zone. The supporting information in the proposal highlights potential benefits in terms of deliverability, affordability, increased capacity, and flexibility for future growth, while also suggesting that impacts and disruption to existing operations during construction would be minimised. However, the submission provides little evidence to demonstrate how these conclusions were reached, nor does it include supporting analysis. In addition, the concept of operating two in-line runways raises safety and operational concerns, as there are no known precedents at other airports, and this matter deserves an extensive analysis which was lacking in the proposal.
- 3.13 **Proponent 6:** The proposal recommends the development of a short Northern Runway of approximately 1,500m in length. The submission highlights that this option would avoid encroachment on the M25, require less land acquisition, and could be connected directly to Terminal 5. However, the proposal does not provide supporting detail on the design, operational capacity, delivery timelines, or any of the other elements required by the SoS's letter.
- 3.14 **Proponent 7:** The proposal draws on the Airports Commission Final Report (2015) that an extended Northern Runway is a viable option for Heathrow's expansion. According to the proposal, the development involves extending the Northern Runway to the west creating two separate in-line 3,000m runways, separated by a 650m safety zone. The proposal provides most of the essential information requested but with varying levels of quality and detail across the assessment categories (e.g. capacity of the runway system, airport charges). Some areas are supported by sufficient evidence, while others lack depth or clarity.

Initial technical and cost efficiency assessment of capex expansion plans for Heathrow Airport | Final report

Table 3.4: Steer maturity assessment by proposal

	Proponent 1		Proponent 2		Heathrow Airport Ltd.		Heathrow West Ltd.		Proponent 5		Proponent 6		Proponent 7	
	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment	Information Provided	Information Assessment
Airport Scheme Design														
Runway	1	3	1	2	1	3	1	3	1	2	1	1	1	3
Terminal	1	1	0	N/A	1	3	1	3	0	N/A	0	N/A	1	1
Land Use	1	2	0	N/A	1	3	1	3	0	N/A	0	N/A	1	3
Additional capacity	1	1	0	N/A	1	3	1	3	1	1	0	N/A	1	1
Expected timelines														
Expected timelines	0	N/A	0	N/A	1	3	1	3	1	1	1	1	1	3
Costs and revenues														
Capex	0	N/A	0	N/A	1	2	1	2	0	N/A	0	N/A	1	2
Airport Charges	0	N/A	0	N/A	1	2	1	1	0	N/A	0	N/A	1	1
Economic Impact	0	N/A	0	N/A	1	3	1	2	0	N/A	0	N/A	0	N/A
Ownership, financing and funding														
Ownership, financing, and funding	0	N/A	0	N/A	1	3	1	2	0	N/A	0	N/A	1	2
Deliverability														
Deliverability	0	N/A	0	N/A	1	2	1	2	1	1	0	N/A	1	2
Stakeholder Feedback	0	N/A	0	N/A	1	3	1	3	0	N/A	0	N/A	0	N/A
Environmental implications & planned mitigations														
Environmental implications	0	N/A	0	N/A	1	3	1	3	1	1	0	N/A	1	3
Surface access	0	N/A	0	N/A	1	3	1	3	0	N/A	0	N/A	1	2
Sub-Total score	4	7	1	2	13	36	13	33	5	6	2	2	11	23
Sub-Total score (%)	31%	18%	8%	5%	100%	92%	100%	85%	38%	15%	15%	5%	85%	59%
Total score (Out of 52 points)	11		3		49		46		11		4		34	
Total score (%)	21%		6%		94%		88%		21%		8%		65%	

Source: Steer

Selected proposals for the technical assessment

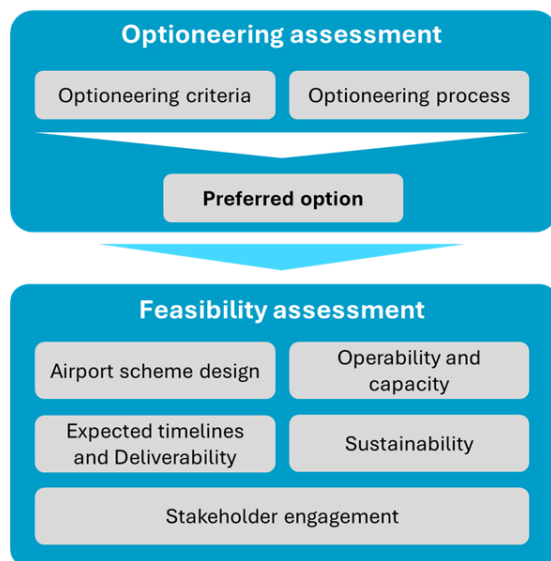
- 3.15 The maturity assessment framework enabled the scoring of proposals based on both the completeness (quantity) of information provided and the robustness (quality) of that information. This process ensured that only proposals demonstrating a sufficient level of technical development and supporting evidence were taken forward for detailed review.
- 3.16 The results of this initial assessment indicate that the highest-scoring proposals were those submitted by **Heathrow Airport Limited (HAL) and Heathrow West Limited (HWL)**. These submissions provided the most comprehensive and well-substantiated material across key areas such as airport scheme design, capacity assessment, environmental considerations, and deliverability planning.
- 3.17 By contrast, the remaining proposals were found to be less developed or incomplete, with significant gaps in critical areas such as technical design detail, supporting data, or implementation timelines. In several cases, the information provided did not allow for a consistent or evidence-based comparison against the assessment framework.
- 3.18 On this basis, only the HAL and HWL proposals were deemed sufficiently complete and robust to proceed to the technical and cost efficiency assessment of their Heathrow Airport expansion plans, and these form the focus of the subsequent sections of this report.
- 3.19 Our selection of the HAL and HWL proposals coincide with, but are separate to, the announcement of the Government on 22 October 2025.

4 Technical assessment of capex expansion plans

Introduction

- 4.1 We have undertaken the technical assessment of capex expansion plans for Heathrow Airport on the proposal submitted by Heathrow Airport Limited (HAL) and Heathrow West Limited (HWL).
- 4.2 This chapter describes the methodology that we followed to undertake the assessments and summarises the key findings. More extended versions of the technical assessments of the two proposals are included in the corresponding Appendices.
- 4.3 This chapter covers the following areas:
- Optioneering assessment.
 - Feasibility assessment of the schemes sufficiently mature, including:
 - Airport scheme design;
 - Operability and Capacity;
 - Timelines and Deliverability;
 - Sustainability; and
 - Stakeholder engagement.
 - Conclusions.
 - Risks.
- 4.4 The figure below illustrates the structure we follow in our assessment, starting with optioneering assessment at masterplan level followed by the feasibility assessment of each of the key components of the masterplan.

Figure 4.1: Technical Assessment Methodology



Source: Steer

4.5 The feasibility assessment has been designed to follow the structure and themes of the Secretary of State’s Letter, to provide consistency in how the information submitted by each promoter is reviewed and compared. The table below indicates where each area of information requested in the Letter is addressed within this section.

Table 4.1: Where we assess the requirements outlined in the Secretary of State’s Letter

Secretary of State’s Letter requirements	Sub-heading in this document
<ul style="list-style-type: none"> Airport scheme design 	<ul style="list-style-type: none"> Airport scheme design (location of proposed development, land acquisition, scope of project, surface access) Operability and Capacity (capacity uplift) Sustainability
<ul style="list-style-type: none"> Expected timelines 	<ul style="list-style-type: none"> Expected timelines and Deliverability
<ul style="list-style-type: none"> Costs and revenues 	<ul style="list-style-type: none"> Only Cost efficiency assessment carried out
<ul style="list-style-type: none"> Ownership, financing, and funding 	<ul style="list-style-type: none"> Out of scope
<ul style="list-style-type: none"> Deliverability 	<ul style="list-style-type: none"> Expected timelines and Deliverability (technical assurance) Stakeholder engagement (discussions and endorsements on proposals)
<ul style="list-style-type: none"> Environmental implications and planned mitigations 	<ul style="list-style-type: none"> Sustainability

Source: Steer

Optioneering

Methodology

- 4.6 The methodology for the optioneering assessment involved a structured process to identify, review, and evaluate the proposals submitted in a consistent and transparent manner. Each proposal was first examined in terms of the optioneering criteria defined by the proponent, that is, the parameters, objectives, and assumptions used to evaluate different expansion options. The optioneering process itself was then reviewed, assessing the logic and robustness of the approach taken, the range and relevance of options considered, and the extent to which the analysis aligned with the proponent’s stated objectives and wider policy requirements.
- 4.7 We also examined the rationale for the option put forward by the promoters, assessing the clarity and reasonableness of the justification provided and identifying its main advantages and disadvantages. Finally, to ensure the robustness and impartiality, we carried out a cross-review of our assessments. This involved revisiting and comparing how the assessment had been applied across proposals to confirm that each was judged to the same level of scrutiny, that criteria had been interpreted consistently, and that the evaluation remained objective and balanced throughout.

Optioneering assessment of proposals

- 4.8 In the following sections we present the optioneering assessment followed by each proponent. The detailed assessments can be found in the corresponding Appendices.
- 4.9 We conclude this section with a discussion of the option put forward by the promoters, rationale for its selection and high-level assessment of its advantages and disadvantages.
- 4.10 We assess the options considered for runway, terminals, and other elements of the masterplan in more detail as part of our feasibility assessment of the option put forward by the promoters, which we cover in subsequent sections of this report.

Optioneering assessment – HAL

- 4.11 Our assessment of the optioneering criteria and process of HAL’s proposal is mainly based on the work that HAL conducted back in 2019, as the proponent included very limited information on optioneering in the July 2025 submission to the DfT.
- 4.12 The proposal, based on the information presented in the 2019 Updated Scheme Development Report, encompasses a broad spectrum of alternatives, each assessed through an extensive list of parameters and a rigorous methodology to identify the solution option put forward by the promoters.

- 4.13 However, the 2019 process concluded that there were two options for the terminal buildings with similar scoring and HAL’s final decision in 2019 of concentrating all terminal capacity to the west (over concentrating terminal capacity between the Northern Runways) was not clearly justified.
- 4.14 In 2025, the proponent took preference for splitting the additional terminal building capacity between the west and the north areas, thereby choosing a hybrid between the two 2019 terminal options with the highest scores. Although the rationale for the choice of terminals location made in 2025 is unclear, it can arguably be justified through the optioneering process followed in 2019, which resulted in two very similar options, rather than one, preferred terminal location option.
- 4.15 We assess that an optioneering process that enables a clearer differentiation among options would be preferable. To that end, the option assessment criteria would need to be clearer, measurable, and consistently applied across the optioneering process. The key improvements that would add robustness to HAL’s options assessment are the following:
- Include the following KPIs for assessing options of terminal area: airline strategy assumptions; distribution of facilities; evaluation gap that reflects the difference between a unified northern terminal area and a split between western and northern terminal areas.
 - Include the following KPIs for assessing options of surface access: public transport connections by rail, underground, and road, including dependencies on third-party enablers, such as train service provision or river crossings. Rail connectivity is primarily enabled by third parties, creating a material risk on the overall surface access strategy and targets.
- 4.16 Overall, we consider that, although HAL carried out an extensive optioneering process for all of the key elements of the masterplan, the process for the final decision making of the terminal building infrastructure could have been clearer.
- 4.17 The advantages and disadvantages of the option put forward by the promoter compared to other alternatives are not clearly articulated in HAL’s 2025 proposal, although it can be inferred from the optioneering work that was undertaken in 2019 and from further clarifications provided by the proponent.
- 4.18 There is a lack of detailed explanation regarding the key factors influencing the selection of the proposed scheme, as well as its distinct value, strengths, and weaknesses, relative to the other options.
- 4.19 The option HAL put forward is compliant with the 2018 ANPS requirements and aims to put forward a robust airport scheme that fulfils the DfT’s objectives underpinning the 2018 ANPS: higher aircraft movement and passenger capacity; higher number of long-haul flights; sooner to deliver; better connected by road and rail; higher freight capacity; and noise respite for the surrounding community.
- 4.20 For further validation of the option that HAL puts forward, the following key areas of HAL’s master planning exercise should be updated:

- **Traffic and airline strategy:** traffic scenarios and a high-level flight programme should be developed to assess airline strategies. For example, the introduction of long-haul flights with narrowbody aircraft could alter the distribution of widebody/narrowbody ratios across runways and affect future scheduling.
- **Aircraft data:** calculations should be updated to reflect re-engined aircraft such as the A320/A321neo or B737 MAX, and the actual performance of newer widebodies such as the A350 or B787. The lack of updated data might lead to wrong conclusions about the option HAL puts forward.
- **Population data:** population figures and other relevant datasets should be updated to 2025 levels to ensure accuracy, and new forecast for noise contours and impact on the community should be developed.
- **3D and topographical evaluation:** modelling should include topography, runway slopes, and the impact on the M25, together with the compliance with OLS requirements.
- **Terminal and apron options:** the option of providing more terminal capacity in the North could be reassessed, in particular if there are indications of a potential future rail link development between the Northern Runways.
- **Aircraft movement capacity:** a robust and detailed analysis is needed on how traffic will be split among the three runways, including taxiing arrangements depending on airline, terminals, and origin–destination strategies. These have an influence in the split of operations between the main terminal building and the satellite building.

Optioneering assessment – HWL

- 4.21 In the proposal, the optioneering criteria and process is largely focused on the location and length of the runway, with limited consideration of other major infrastructure elements such as terminal area configuration, satellite terminal, apron layouts, and surface access by road and rail.
- 4.22 To enable a clearer differentiation between options, the assessment criteria should be relevant, measurable, and consistently applied. Some suggestions of the criteria and KPIs that can be included in the assessment are following:
- **Community impacts:** environmental effects, including population affected by noise and air pollution along future time horizons.
 - **Surface access:** modal split with specific targets for public transport from rail and road, road congestion, convenience of access.
 - **Demand and capacity:** analysis of passenger and aircraft movement capacity and related service parameters.
 - **Operational management:** integration with air traffic control and ongoing airport operations.
 - **Safety:** including obstacle clearance, bird strike risks, and related hazards.
 - **Efficiency:** overall cost-effectiveness.
 - **Programme duration:** including dependencies on external enablers.

- Delivery risks: from construction challenges to operational integration and material availability.
- 4.23 Opportunities to undertake more complex evaluations combining multiple factors are not explored. For instance, intramodality objectives could have been tested through scenarios involving both different runway locations and the introduction of a new terminal processor (terminal building which interfaces with the non-restricted area and usually includes at least the check-in, security and baggage reclaim areas) or satellite between runways.
- 4.24 Other areas where additional option development could have been valuable include:
- Terminal area: airline strategy assumptions, distribution of facilities, and the potential role of a new processor between the Northern Runways; assessment of alternative satellite terminal locations.
 - Surface access: public transport connections by rail, underground, and road, including dependencies on third-party enablers such as train service provision or river crossings.
- 4.25 The document does present comparisons between HWL’s proposal and HAL 2019 masterplan and the ANPS, though these are mostly qualitative and with limited quantitative analysis. More detailed evaluation would strengthen the decision-making process. For example, a structured comparison between constructing the runway over the M25 versus the M4, including implications and potential solutions.
- 4.26 Overall, we note the absence of a comprehensive optioneering analysis demonstrating how the option HWL puts forward was selected in comparison with other schemes.
- 4.27 The runway is the most developed element within the optioneering process. HWL’s proposal highlights the benefits of a 2,800m runway and presents these as outweighing the disadvantages. However, further analysis is required to validate the conclusions provided in the proposal for selecting the option HWL puts forward. Key areas for improvement include:
- Traffic and airline strategy: traffic scenarios and a high-level flight programme should be developed to assess airline strategies. For example, the introduction of long-haul flights with narrowbody aircraft could alter the distribution of widebody/narrowbody ratios across runways and affect future scheduling.
 - Aircraft data: the noise analysis relies on traffic data as early as 2015, originally prepared for Arora’s 2017 response to the DfT’s NPS Consultation. Calculations have not been updated to reflect re-engined aircraft such as the A320/A321neo or B737 MAX, nor the actual performance of newer widebodies such as the A350 or B787. The lack of updated data might lead to wrong conclusions.

- **Population data:** population figures and other relevant datasets should be updated to 2025 levels to ensure accuracy, and new forecast for noise contours and impact on the community should be developed.
- **3D and topographical evaluation:** modelling should include topography, runway slopes, and the M4 Spur tunnel to confirm assumptions such as the lack of impact on the M25 and compliance with OLS requirements.
- **Terminal and apron options:** while terminal and apron feasibility are addressed in subsequent sections, options for a terminal area between the new runway and the existing Northern Runway should have been considered, at least as a satellite facility, if not a full terminal. This would address significant taxiing distances from Apron Location 3 to existing terminal areas and challenges at Apron Location 2.
- **Surface access and car parking strategy:** the treatment of surface access and car parks lacks detail, particularly in relation to the disadvantages and justification for reduced parking provision. Some road scheme images still show the runway over the M25, suggesting that these may have been prepared before the decision to place the 2,800m runway further east.
- **Runway length scenarios:** definition of Take Off Runway Available (TORA) and full length should be complemented with wind and temperature scenarios to assess the real value of runway length.
- **Comparison of runway locations:** further work is needed on the relative benefits and risks (including programme and cost) of constructing the runway over the M4 Spur versus the M25.
- **Aircraft movement capacity:** a robust and detailed analysis is needed on how traffic will be split among the three runways, including taxiing arrangements depending on airline, terminals, and origin–destination strategies. This is a core disadvantage of the current proposal (alongside noise impacts) but could be mitigated through additional enhancements, such as a terminal area between the new runway and the existing Northern Runway.

Airport scheme design

Methodology

- 4.28 Our methodology for assessing the airport scheme design focused on reviewing each proposal across five key design components: land acquisition requirements, runway length and location, airfield configuration, terminal area, and surface access arrangements.
- 4.29 The assessment sought to determine the extent to which each promoter had defined and justified the overall layout and scope of their scheme, and whether the proposed design demonstrated internal consistency and alignment with the wider airport operational, and environmental objectives.
- 4.30 For land acquisition, the analysis considered the land requirements identified, distinguishing between land essential for airport infrastructure and land required for associated enabling works. For runway length and location, the review examined whether the proposed dimensions and alignment were consistent with

operational needs, airspace considerations, and the physical constraints of the site.

- 4.31 The airfield configuration was assessed in terms of its safety, functional logic, and the relationship between runways, taxiways, aprons, and terminal areas. The terminal area assessment examined the proposed terminal footprint and layout, as well as its integration with the wider airfield and passenger processing flows. Finally, surface access considerations focused on the adequacy and proportionality of proposed road and public transport infrastructure to support the scheme. Surface access is also addressed in the Sustainability section.
- 4.32 Our assessment of the planned infrastructure also evaluates its impact on the resilience of the operations.

Airport scheme design assessment

Land acquisition

Airport scheme design assessment - Land acquisition - HAL

- 4.33 HAL’s 2025 proposal has aligned the land required for the development of its proposal to the 2018 ANPS Annex A boundary. This is based on a consideration of the needs to operate and construct the third runway and the associated infrastructure. The required boundary will need to be reviewed as part of further design stages; however, it is unlikely that major changes to the boundaries as set out in the 2018 ANPS will be necessary.
- 4.34 It is unclear from HAL’s 2025 proposal whether any of the land required during construction will be released back following completion.
- 4.35 HAL’s 2025 proposal does not set out the parameters that define the Wider Property Offer Zone (WPOZ), and these will need to be clarified as part of further design development to submit with the DCO application. Both the Compulsory Purchase Order Zone (CPZ) and the WPOZ will need to be reviewed to align with future design stages required by the DCO process; however, major changes are unlikely to occur to the current boundaries. The figure below provides the indicative land use and acquisition plan from HAL.

Figure 4.2: Indicative land use and acquisition plan for Heathrow expansion

[Redacted]

Source: HAL July 2025 Expansion Proposal, p. 42. [Redacted].

- 4.36 HAL’s 2025 proposal focuses on [Redacted] (opening the new runway in 2035). This scenario considers that significant land acquisition will need to occur prior to the DCO being obtained. HAL’s proposal does not identify a breakdown of the exact areas of land that will need to be acquired before the DCO is obtained. However, HAL’s proposal notes that this refers to “*all land within the runway and terminal footprint*”. We assess that land acquisition prior to obtaining DCO should also include the land required for the M25 realignment, the river diversions, and

utilities relocations, which are likely to form part of the first activities post DCO approval.

Airport Scheme Design Assessment - Land acquisition - HWL

- 4.37 HWL’s land acquisition proposal, compared to HAL’s proposal, requires additional land purchase to the east of the new runway, and avoids acquisition to the west of the M25, as well as land adjacent to the Bath Road. The proposal suggests that land acquisition to the east will affect approximately 260 more homes, which will need to be acquired. HWL states that, compared with the 2018 ANPS boundary, their proposal presents a reduction of the total area of land acquisition required by circa 43ha.
- 4.38 The HWL proposal does not clearly identify the strategy for the Lakeside Energy from Waste and Aggregate Industries plant. Currently, this facility processes over 450,000 tonnes of residual waste per year, generating 306GWh of power. The loss of this facility, if not provided elsewhere, would have a significant impact on the surrounding local areas.
- 4.39 The land acquisition details provided within the HWL proposal do not consider the impact on any voluntary purchase zone in the surrounding area.
- 4.40 The HWL proposal has not considered the impact of land acquisition on the wider context of the programme, and this will need careful consideration to allow construction works to commence.
- 4.41 Land acquisition has been reviewed in the context of the delivery of the final infrastructure, and hence no information has been provided with regards to any land that is required for temporary works that may be offered back following the completion of the works.

Runway length and location

Airport scheme design assessment - Runway length and location - HAL

- 4.42 HAL presents a proposal that is consistent with the solution outlined in the Airports National Policy Statement (ANPS) of 2018. The documentation includes HAL’s conclusions regarding the proposed runway length and location, supported by qualitative assessments and optioneering. However, the analysis lacks relevant information, which limits the ability to fully evaluate the technical adequacy of the proposal.
- 4.43 We assess the three key runway aspects - runway location, length, width, and elevation; separation between runways; and OLS- in turn.
- 4.44 Runway location: The description of the optioneering process for runway location lacks sufficient detail. The comparison between alternatives is primarily qualitative, using terms such as “*less to build*” or “*least interaction with landfills*”, rather than providing a more robust quantitative assessment. The proposed location of the new runway requires the realignment and lowering of the M25 to allow the runway to cross above via a tunnel structure. This option implies elevating the runway, yet no detailed terrain data is provided to confirm feasibility.

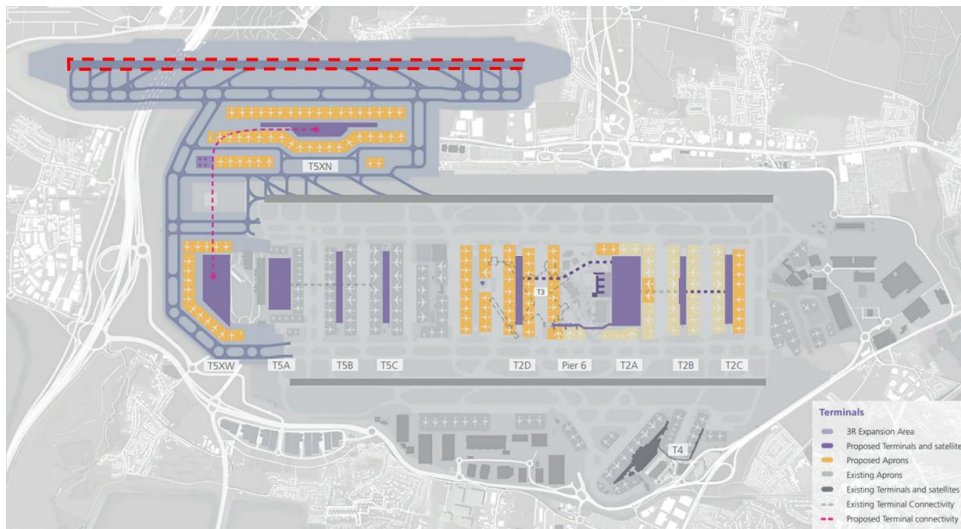
Additionally, elevating the runway has substantial capex implications and impacts the surrounding communities.

- 4.45 Separation between runways: The separation between the proposed third runway and the existing Northern Runway is 1,035m, which is compliant with international standards for independent parallel runway operations. This distance is considered sufficient to enable full operational independence, allowing simultaneous arrivals and departures with reduced separation minima between aircraft. Such separation is a key enabler for increasing runway throughput and overall airfield capacity.
- 4.46 Length of the runway: The proposed third runway has a total length of 3,500m, compared to the existing runways which measure approx. 3,900m and 3,600m. While HAL presents an optioneering process in its documentation, the basis for the justification provided needs more detail to assess the technical adequacy of the proposed runway length. HAL proposes the 3,500m runway also based on the conclusions provided by BA/IAG in regard to the penalties associated to shorter runways. The proposal is further supported with conclusions coming from airlines that operate long-haul routes, operational limitations, and a benchmark of international airports. We assess that greater detail and explanation for an adequate assessment of the proposal is required, including aircraft fleet compositions, destinations, payloads and routes, assumed meteorological conditions.
- 4.47 In order to undertake a proper technical assessment of the length of the runway, the key inputs, and assumptions (aircraft fleet mix, meteorological conditions, payload, and routes analysis, etc.) will need to be updated with the latest technical and market data.
- 4.48 We assess that the minimum runway length that could accommodate all the current aircraft types and long-haul ranges needs to be, at least, 2,800 metres (this figure does not take into account airspace route structures, payloads, take-off power requirements, weather/temperature changes, and gradient of runway used). This distance needs to increase by c.300m at both runway thresholds to accommodate the Runway End Safety Areas (RESAs), consistently with international design standards (ICAO), albeit the appropriate dimensions will be subject to a detailed study.
- 4.49 Width of the runway: The proposed third runway has a total width of 60m, comprising a 45m central runway flanked by 7.5m paved shoulders on each side. In accordance with CAA and ICAO specifications, this configuration is sufficient to accommodate Code F aircraft, including aircraft such as the Airbus A380 and Boeing B747, along with their respective variants. The proposed width is enough for the operation of any commercial aircraft currently in the market.
- 4.50 Elevation of the runway: According to HAL, the proposed runway is expected to be elevated between 3m and 5m above the existing ground level (which is currently unknown and not included in the documentation). This elevation is primarily due to the planned realignment and lowering of the M25 motorway, which is intended to pass beneath the new runway via a tunnel. Furthermore, HAL has proposed

elevation levels of 25.942 AMSL and 26.543 AMSL for runway thresholds 09L and 27R, respectively. These levels seem appropriate regarding the overall runway slope. However, it will be necessary to assess any slope variations along the full runway alignment to ensure compliance with applicable standards and operational requirements.

- 4.51 **Obstacle Limitation Surfaces:** The documentation provided by HAL includes a list of obstacles that interfere with the Obstacle Limitation Surfaces (OLS). This list is based on a survey conducted in 2017, and HAL has indicated that the identified obstacles will either be removed or relocated. However, it remains unclear whether the list encompasses all existing obstacles or only those deemed most critical. It is therefore recommended that a map indicating the location of obstacles be included, along with a more comprehensive description – such as the ownership of the infrastructure and potential mitigation measures. One important obstacle is the Lakeside Energy facility, which is situated in proximity to the airport, and it is likely to be affected by the proposed new runway. We acknowledge that the relocation of this facility is included within the portfolio of assets designated by HAL for acquisition.
- 4.52 Overall, the runway proposed by HAL aligns with the solution presented in the 2018 ANPS and meets the safety standards. However, the documentation omits specific assumptions and critical information required for a comprehensive understanding and assessment of the proposal, and some of the key inputs that HAL used in their decision-making process might date from 2018 or before.
- 4.53 The figure below shows the proposed location of the runway.

Figure 4.3: Proposed masterplan layout by HAL



Source: HAL July 2025 Expansion Proposal, p. 38

- 4.54 The figure below provides a recreation of the new runway over the M25.

Figure 4.4: Visual representation of M25 modification according to HAL

Source: HAL July 2025 Expansion Proposal, Appendix 1 Technical Annex p. 12

- 4.55 Steer’s independent assessment is that a robust runway options assessment should include two steps. The first step should be assessing the required runway length independently from its proposed location. This assessment should be based on well-defined and up-to-date assumptions regarding anticipated flight schedules and aircraft types expected to operate on the new runway within the next decades, meteorological conditions, as well as consideration of future airspace structures involving three runways, among other relevant parameters. The second step should be evaluating potential locations by balancing investment requirements, impacts on road access—particularly the choice between affecting either the M4 Spur or the M25—and the noise impact on current and projected population distributions over the next years.

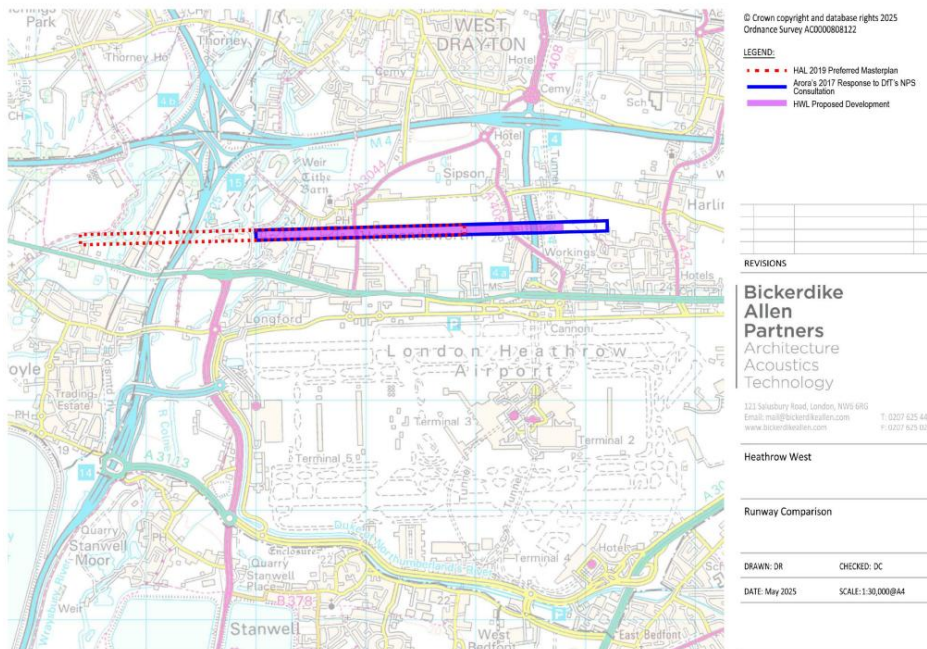
Airport scheme design assessment - Runway length and location - HWL

- 4.56 HWL has submitted a proposal for a new Northwest Runway that deviates from the scheme set out in the Airports National Policy Statement (ANPS) of 2018, particularly with respect to runway length and location. The documentation outlines HWL’s justification for a 2,800m runway situated entirely to the east of the M25 motorway, supported by a qualitative and quantitative assessment. Nevertheless, the analysis omits key information, which restricts a comprehensive assessment of the proposal’s technical adequacy, such as design day schedules, aircraft types, destinations, etc.
- 4.57 Runway location: The description of the optioneering process for runway location lacks the necessary level of detail. The only optioneering process outlined consists of a comparison of noise levels among HAL’s 2019 proposal, Arora’s 2017 response to the ANPS consultation, and the current proposal. Additionally,

there is a brief mention of the possibility of shifting the new runway 350m north to avoid relocating the Lakeside Energy-from-Waste Plant due to its conflict with the OLS. Moving the runway further north will conflict with an English heritage site and a cemetery. The proponent has not disclosed what could be a new location for the waste treatment facility.

- 4.58 **Obstacle Limitation Surfaces (OLS):** The proposal suggests that OLS analysis has been conducted; however, the documentation provided lacks detail. We recommend that a comprehensive OLS analysis is presented, clearly identifying the presence, location, and nature of each obstacle. This step is particularly important given that, according to the Aeronautical Information Publication (AIP), the current OLS for the existing runways already include various obstacles.
- 4.59 **Separation between runways:** The proposed third runway is 1,035m from the existing Northern Runway, meeting international criteria for independent operations. This spacing is deemed adequate to support fully autonomous runway usage, enabling concurrent take-offs and landings with reduced aircraft separation requirements. Such separation is a key enabler for increasing runway throughput and overall airfield capacity.
- 4.60 **Length of the runway:** The proposed runway length of 2,800m is notably shorter than the existing two runways at the airport (3,700m, 3,900m). HWL supports this proposal based on findings from an analysis conducted by IAG and their consultants, which focused on the current British Airways fleet operating at Heathrow. These findings have been extrapolated to the operations of other airlines at the airport. According to their assessment, a 2,800m runway would impact approximately 14 daily wide-body flights, which would need to take off from one of the other two runways. We recommend that the proponent undertakes an independent assessment of the technical capabilities of the new runway and provides a more comprehensive and transparent explanation of the methodology used to determine the suitability of a 2,800m length runway. Within the runway design, HWL includes Run End Safety Areas of 300m in length at each runway threshold, which we assess are consistent with international design standards (ICAO), albeit the appropriate dimensions will be subject to a detailed study. These areas are additional to the 2,800m runway.
- 4.61 **Width of the runway:** The documentation does not provide any reference to the runway width. As a result, it is unclear whether the width of the runway and its shoulders meet the requirements for Code F aircraft (e.g. A380) operations. We recommend that this information is explicitly included.
- 4.62 Overall, it is recommended that the proponent provides further detail regarding the proposal and the issues outlined above. The current information provided omits specific assumptions and critical information necessary for a thorough understanding and evaluation of the proposal.
- 4.63 The illustration below shows the options that HWL evaluated, being the pink option the option put forward in their proposal.

Figure 4.5: Relative locations of the three runways options presented by HWL



Source: HWL July 2025 Expansion Proposal, p. 12-34

- 4.64 We consider that a robust runway options assessment should include two steps. The first step should be assessing the required runway length independently from its proposed location. This assessment should be grounded in clearly defined and up-to-date assumptions regarding expected flight schedules, aircraft types expected to operate from the new runway over the coming decades, prevailing meteorological conditions, and future airspace configurations involving three runways, among other relevant factors. The second step should be evaluating potential locations by balancing investment requirements, impacts on road access—particularly the choice between affecting either the M4 Spur or the M25—and the noise impact on current and projected population distributions over the next years.

Airfield configuration

Airport scheme design assessment - Airfield configuration - HAL

- 4.65 HAL has submitted documentation with its 2025 proposal outlining the proposed taxiway and apron system associated with the overall expansion of the airport. While the proposal appears to align with ICAO / CAA standards and includes several key infrastructure elements, the level of detail provided is insufficient to fully assess the technical adequacy of the design. Several critical aspects remain unsubstantiated or lack supporting analysis, limiting the ability to evaluate the operational efficiency and safety of the proposed layout.
- 4.66 We assess each of the key aspects of airfield configuration in turn.
- 4.67 Rapid Exit Taxiways (RETs): The proposal includes multiple Rapid Exit Taxiways (RETs) along the new runway. However, no supporting analysis has been provided

regarding the expected aircraft fleet mix or the results of any runway simulation. HAL indicates that the positioning of the RETs was determined in coordination with NATS, resulting in a runway occupancy time of 55 seconds. The details of the assumptions and simulation results would assist to validate the adequacy of the RETs' positioning and dimensions.

- 4.68 Taxiways: HAL asserts that the airfield layout has been optimised to minimise ground taxiing distances. However, the proposal does not include any quantitative evidence to substantiate this claim, nor it includes a comparison between options that could help to evaluate distances.
- 4.69 Western bypass taxiways: Our analysis indicates that certain aircraft stands in the western apron may necessitate pushback manoeuvres into the Western Bypass Taxiways. This arrangement has operational challenges, as these taxiways are designed to support significant volumes of both northbound and southbound taxiing traffic. Consequently, direct pushbacks into the bypass taxiways can provoke taxiway congestion, ground delays or even safety incidents. A more prudent solution would involve conducting pushbacks into adjacent taxi lanes prior to accessing the bypass taxiways, but this approach may require relocating the bypass taxiways further west or reducing T5XW footprint. Additional studies—such as airfield capacity simulations—are recommended to substantiate HAL's proposed strategy or to explore potentially superior alternatives.
- 4.70 Aircraft circulation routes: To enable a more robust assessment of the proposed taxiway system, it would be necessary to include detailed aircraft circulation routes between aprons and runways. Additionally, any coordination or agreement with Air Traffic Services (ATS) regarding the strategy should be documented.
- 4.71 Stand demand: No reference to the expected aircraft demand, aircraft fleet mix, allocation strategy, flight schedule (DDFS), or occupation times is found in the documentation for the estimation of stand requirements. Consequently, there is no justification of the proposed total number of stands and their distribution between the western and northern aprons. More detail would be necessary to undertake an assessment. Additionally, it would be beneficial to assess other areas such as Ground Support Equipment (GSE) designated parking areas, service roads and airside shuttle busses boarding areas.
- 4.72 The proposal presents a general airfield configuration in accordance with ICAO Code F operational requirements, and we are generally in agreement with the overall conceptual approach for the taxiway system. Nevertheless, the documentation provided lacks sufficient technical detail and supporting data necessary for an in-depth assessment. Specifically, the absence of simulations or quantitative analyses pertaining to the standardised taxiing routes—particularly given the complexities associated with three-runway operations—restricts our ability to fully evaluate the design. Furthermore, such information is essential to address our concern about the potential operational inefficiencies resulting from the interaction between aircraft pushback from the western apron and traffic utilising the western bypass taxiways.

Airport scheme design assessment - Airfield configuration - HWL

- 4.73 The conceptual design appears to align with ICAO Code F operational requirements and incorporates essential infrastructure to support the proposed 2,800m North Runway and the new Terminal 6. However, the submission lacks specific technical details. There is no evidence of an optioneering process having been undertaken to explore or compare alternative design solutions.
- 4.74 Each of the main elements of the airfield configuration is examined individually in turn.
- 4.75 Rapid Exit Taxiways (RETs): The proposal includes multiple Rapid Exit Taxiways (RETs) along the new runway; however, no supporting analysis has been provided regarding the anticipated aircraft fleet mix, projected runway occupancy times, or the outcomes of any runway simulation studies. Such data would be necessary to validate the suitability of the RETs' positioning and dimensions.
- 4.76 Taxiways: The proposal includes a parallel taxiway network connecting the new runway with T6 and the existing airfield. The single connection of the runway (and parallel taxiways) through the west with the rest of the airfield might create bottlenecks and reduce the operational capability. No quantitative data, detailed aircraft circulation routes or simulation outputs are provided to evaluate possible bottlenecks during peak operations or compare different taxiway layouts. To support a more robust evaluation of the proposed taxiway system, it would be necessary to include detailed aircraft circulation routes between aprons and runways. Additionally, any coordination with or endorsement from Air Traffic Services (ATS) regarding the proposed strategy should be clearly documented.
- 4.77 Western bypass taxiways: The western-most Code E and F taxiways are intended to serve as a bypass route for aircraft transitioning between terminals and runways. While the concept is operationally sound, the interaction between pushback manoeuvres from adjacent stands and through-traffic on the bypass taxiways warrants further analysis. The documentation does not address whether pushbacks will encroach upon the bypass taxiways or whether mitigation strategies – such as pushbacks into adjacent lanes prior to taxiway access – have been considered. Additional simulation studies are recommended to evaluate taxiway congestion risks and to explore alternative layouts that may improve operational resilience.
- 4.78 Aircraft parking stands: The documentation does not include references of expected aircraft demand, fleet composition, flight schedules, or stand occupation times, which are essential parameters for estimating stand requirements. As a result, the proposed total number of stands and their allocation between the western and northern apron lacks substantiation. Furthermore, it would be advisable to evaluate other critical airside components, such as designated Ground Support Equipment (GSE) parking areas, service roads, and boarding zones for airside shuttle buses.

Terminal area

Airport scheme design assessment - Terminal area - HAL

- 4.79 HAL sets out capacity targets consistent with the Airports National Policy Statement (ANPS), projecting the addition of 40 mppa of terminal capacity associated with the third runway¹¹.
- 4.80 We assess each of the key aspects of terminal area in turn.
- 4.81 Terminal capacity: Relying solely on annual throughput figures is insufficient to accurately undertake a terminal sizing, as passenger demand fluctuates throughout the year and tends to concentrate during peak periods. We have not had access to data concerning Peak Hour Passenger (PHP) volumes and busy-hour distributions, all of which are essential parameters for determining the appropriate size and operational capacity of specific terminal areas. For a comprehensive assessment of capacity requirements, it is also necessary that HAL develops detailed flight schedules and an overarching strategy outlining airline and destination allocations across the airport.
- 4.82 Terminal location: The exclusion of the option to locate all the new terminal capacity between the Northern Runways is based on the lack of current plans for new rail and underground access, as well as insufficient space to accommodate a complete terminal area with the processor. Should rail access become a possibility for this northern location, it would be advisable to revisit the key decisions, as the potential for landside terminal development in this northern area—particularly when considering in tandem with an increased separation between the runways which could interfere with the church, the cemetery and the listed Tithe Barn in Harmondsworth—has not been fully investigated and may warrant further assessment. Additionally, there is an inherent risk associated with concentrating a substantial portion of Heathrow’s operations in the western area, equivalent to the entire current airport operation.
- 4.83 Terminal functional analysis: The phasing strategy ensures terminal functionality during construction by commissioning T5XW first as a new processor, while T5A/B/C continue to handle operations. This staged approach balances demand across the existing and new facilities, ensures apron and stand capacity can be progressively integrated, and avoids major breaks in passenger flows. The proposal does not include a detailed operational analysis of transfer movements between terminals, either for passengers or for baggage, but additional information submitted in response to the request by the DfT shows the integration of such infrastructure in order to have a single integrated operations approach. Before the commissioning of T5XN in the 2050s, there is a risk of having insufficient passenger capacity even with high levels of remote stand operations.

¹¹ HAL claims that the airport can reach 150 mppa with the Modernising Heathrow programme (which provides additional capacity to the existing infrastructure) and with the Expansion programme. The Modernising Heathrow programme is out of the scope of this assessment.

- 4.84 Terminal footprints: The total footprint and number of levels of the proposed terminal buildings remain unknown. Gross floor area for each terminal by level and processing area should be provided at later development stage to undertake a feasibility assessment.

Airport scheme design assessment - Terminal area - HWL

- 4.85 HWL's proposed development outlines the addition of 40 mppa of terminal capacity. This growth will be supported through the phased construction of Terminal 6A and its satellite, Terminal 6B.
- 4.86 Each of the key components of the terminal area is reviewed sequentially.
- 4.87 Terminal capacity: HWL's proposal outlines a phased development for the new Terminal 6. The first phase would focus on T6A, while the second would introduce the additional satellite T6B, forming a unified operational complex. However, the proposal does not include any supporting demand analysis or provide evidence of how the stated capacities were derived. There is also no reference to busy-hour passenger modelling, peak-flow assessments or assumed flight schedules, all of which are essential for validating the terminal's operational performance and required capacity.
- 4.88 Terminal location: There is a lack of options analysis for the location of the additional terminal capacity. The proposer does not provide an assessment of the potential benefits of a satellite facility between the new runway and existing Northern Runway. Additionally, the location of T6 brings inherent risks related to its accessibility. The surface access strategy builds upon Heathrow's existing multimodal transport infrastructure, integrating rail and underground services through a central Inter-Terminal Plaza (ITP). This spatial consolidation could increase the likelihood of landside congestion and create a single point of failure, particularly during peak demand periods or in the event of service disruptions.
- 4.89 Terminal functional analysis: The terminal complex is designed to operate either as a stand-alone facility or as part of an integrated hub system with Terminal 5 and the other existing terminals. Despite the conceptual consistency of the design, the proposal does not include a detailed operational analysis of transfer movements between terminals, either for passengers or for baggage.
- 4.90 Terminal size: The resulting configuration delivers a total gross floor area of approximately 440,000 square metres, distributed between T6A and T6B. The design achieves a floor area-to-capacity ratio of approximately 11,000 square metres per mppa, consistent with international benchmarks established by leading global hub airports such as Hong Kong, Schiphol, and Beijing. To support a more detailed assessment, it is recommended that the documentation include the footprint of each terminal level and processing areas, allowing for a clearer understanding of spatial distribution across the different areas.
- 4.91 The illustration below shows the proposed new terminals next to the existing T5.

Figure 4.6: HWL's proposed terminal area development

Source: HWL July 2025 Expansion Proposal, p. 5-13

Surface access

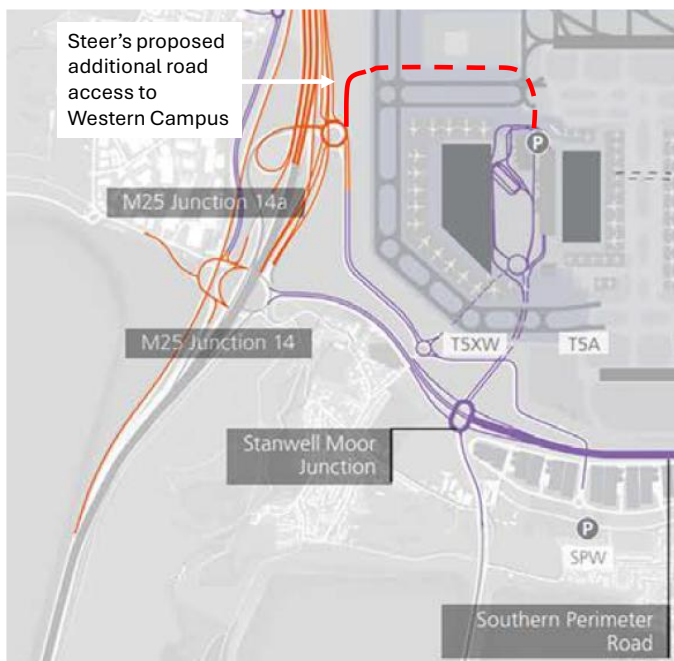
Airport scheme design assessment – Surface access – HAL

- 4.92 Surface Access Strategy: HAL’s strategy is reliant on leveraging existing rail and underground systems, supplemented by strategic future projects, Western Rail Link to Heathrow (WRLtH) and Southern Access to Heathrow (SAtH), and providing additional capacity in the M25 between junctions 14 and 15 through an additional collector/distributor lane for accessing Heathrow West Campus.
- 4.93 Road access: At the cross-section of the M25 near Heathrow, the current configuration provides a total of six lanes in each direction (four mainline lanes and two entry/exit auxiliary lanes). This allows vehicles to enter and exit M25 without interfering with the mainline flow. HAL’s proposed new infrastructure increases the total lane count to seven per direction, maintaining the four mainline lanes but replacing the two entry/exit lanes with a more structured system of three lanes dedicated for collector-distributor roads. This one lane increase in each direction will service airport demand. Traffic modelling is required to validate if the proposed capacity meets future demand. The total passenger capacity planned for the Western Campus is more than 75 million passengers per annum (more than double of today’s traffic at T5A/B/C). Even assuming that the current connecting passenger share remains constant, the volume of passengers that will access this area will put a lot of pressure on the surface access points.
- 4.94 HAL selected a road option to access the Western Campus that provides two separate points of access, one via the A3044 and another via the Southern

Perimeter Road (SPR). The access reflected in HAL’s documentation depicts M25 Junction 14a as a roundabout with a southbound leg that eventually converges with the same downstream roundabout used by the SPR access route. This convergence of the two access points may lead to potential traffic flow conflicts or excessive queuing, particularly during peak periods.

- 4.95 Currently HAL has plans to have road access by the southern side into the West Campus, which will run below the Southern Runway and taxiways. The scheme would significantly improve with an additional northern access. We strongly recommend considering the addition of another road access point into the Western Campus, north of the future T5XW. The image below provides an illustration of the additional road access, marked in red (the dotted line indicates an underground section).

Figure 4.7: Steer’s proposed additional road access to Western Campus



Source: HAL, Steer

- 4.96 **Car parking:** The consolidation of parking facilities into the Southern and Northern Parkways further underpins the terminal development strategy, freeing airport land for terminal and apron expansion while maintaining passenger accessibility through dedicated shuttle, and rapid transit connections. This reallocation of surface access and parking capacity directly supports the functional reorganisation of processing and gate operations across the airport. The total car parking capacity proposed at the Parkways is [REDACTED] spaces. We will need to assess its appropriateness with information on mode share, busy hours, and terminal operations, which is not available in HAL’s 2025 proposal.
- 4.97 **Rail connectivity:** The current rail schemes that provide service to Heathrow could potentially increase their capacity, although we assess that the additional capacity will not be able to cope with the additional passengers that the expansion project will bring in order to maintain the same share of public

transport. This additional capacity will enhance the connectivity to the east. HAL references future projects such as the Western Rail Link and Southern Rail Link but lacks detail regarding their expected timelines and the capacity enhancements they will deliver.

- 4.98 **Active Travel:** While the Active Travel Strategy highlights significant improvements to cycling and pedestrian infrastructure, such as the Green Loop and the Active Green Network, most of the emphasis of HAL’s plan is on enhancing local connectivity and providing recreational opportunities for the community. However, when considering the airport’s Surface Access Strategy and the specific targets for reducing employee car trips, it is important to ensure that a clear distinction is made between community-focused active travel projects and those directly supporting airport-related commuting.
- 4.99 **Mode share:** HAL’s 2025 proposal does not provide details on how the mode share targets could be achieved, and what could mitigate the absence of additional rail services, beyond the rail services that already exist to connect the Western Campus. We acknowledge and support HAL’s approach for surface access modelling, and we recommend developing an updated plan that captures different road infrastructure and rail services development scenarios.

Airport scheme design assessment – Surface access - HWL

- 4.100 **Access to West Terminal Campus:** The proposed two-point access strategy is designed to distribute traffic demand across multiple entry routes, thereby increasing resilience to the operations and shortening travel distances.
- 4.101 **Road network:** The proposed network allows general access to the airport from major corridors, M4, M25 and A4, via two primary entry points: the M4 Spur and the A3113 (re-designated as A3044). This configuration is expected to improve route choice flexibility and resilience. The proposed layout removes Junction 14A and includes two adjacent roundabouts in proximity to the West Terminal Campus south access point. This configuration raises a potential risk for congestion and disruption of the operations, particularly during peak traffic periods. Proposed layout and distances should be validated through detailed microsimulation modelling to confirm that queuing does not compromise operational performance.
- 4.102 **Car parking:** The scheme includes the development of two large car parking facilities (Central Parkway and Southern Parkway). According to HWL, these car parks will be connected to the West Terminal Campus with Automated People Movers. These facilities are completed by the capacity provided in the Inter-Terminal Plaza parking, although we note that there is already a car parking facility next to T5.
- 4.103 **Rail connectivity:** Although the proposal includes the assumption that the current rail services at the airport (Heathrow Express, Elizabeth Line, Piccadilly Line) will increase their capacity, it is unclear how and when this is going to be materialised. HWL states that the implementation of the Western Rail Link and the Southern Rail Link is not essential for efficient operations of Terminal 6.

- 4.104 Active mobility: We recommend including active mobility strategy maps showing proposed pedestrian paths and cycling infrastructure.
- 4.105 Mode share: HWL proposes to meet the public transport targets included in the 2018 ANPS, albeit it is unclear how these are going to be achieved as there is no evidence of the calculations that can drive that outcome. Updated and complete modelling should be undertaken to redefine realistic targets.

Operability and Capacity

Methodology

- 4.106 Our methodology for assessing operability and capacity focused on evaluating the extent to which each promoter had demonstrated a clear approach to meeting the capacity uplift requested by the SoS's Letter, together with the flexibility and resilience of the operations that can be accommodated in the proposed infrastructure. The assessment reviewed the information provided on runway, stand, and passenger terminal capacity, as well as how these components interact to deliver the proposed increase in air transport movements (ATMs) and passenger throughput.
- 4.107 Each proposal was reviewed to determine whether its phasing of capacity release and delivery was internally consistent and aligned with the assumed demand growth trajectory. The analysis considered the number of passengers and ATMs that the proposed infrastructure could accommodate by year, assessing whether these figures were supported by reasonable and transparent assumptions.
- 4.108 As part of this assessment, we have not made any consideration related to the possibility of having split operations of the airport among different parties. The existence of more than one airport operator within the same airport perimeter requires a detailed analysis of the additional risks and procedures to mitigate those risks.

Operability and Capacity assessment

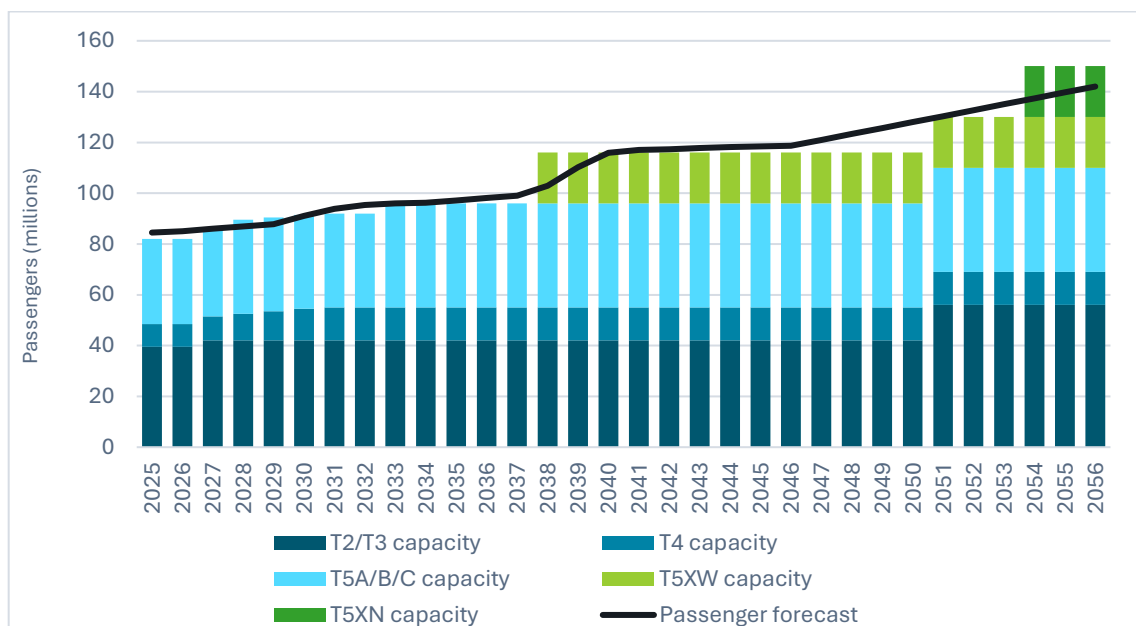
Operability and Capacity assessment – HAL

- 4.109 HAL has indicated that the addition of a third runway is expected to provide a total capacity for the airport of 756,000 air traffic movements (ATMs) per annum, based on a 17.5-hour operational day. However, no further details have been provided regarding the aircraft fleet mix or the operational procedures to evaluate the expected capacity. We assess that, at a high-level, this capacity could be achieved even considering some operational restrictions to mitigate noise impacts in the community.
- 4.110 More detailed analysis should be conducted in the next phase to determine the capacity balance of the system considering some key elements like meteorology, aircraft types, airspace capacity, restrictions, and airfield congestion.
- 4.111 The proposal lacks a comprehensive justification for the proposed number of stands, as no supporting analysis is provided to demonstrate how the stand

capacity aligns with the projected air traffic movements or aircraft mix. With the high-level analysis that we have undertaken (using only annual passengers per stand) we assess that the number of stands in the plan could be in the right order of magnitude, as it is aligned with some of the current operating ratios, albeit at the very high end. This indicates that there is risk that more stand capacity (and land) might be required to accommodate the planned traffic growth.

- 4.112 We recommend incorporating a dynamic stand capacity assessment in the next stage of the proposal. This should consider variations in aircraft types, turnaround times, and scheduling patterns throughout the operational day. A robust analysis should be based on an assumed flight schedule, including peak hour distributions, aircraft size categories, and operational constraints such as towing requirements and remote stand usage. The analysis would also support the validation of apron layout efficiency and ensure that the proposed infrastructure is capable of accommodating the forecasted demand under both typical and peak operating conditions.
- 4.113 The proposed expansion plan should clearly define the expected required increase in terminal capacity, specifying the peak hour and busy hour passenger forecast, and defining the square metres by processing area. An updated traffic forecast should start projecting the “unconstrained” demand, and then incorporate constraints, which could be linked to certain infrastructure elements not being able to be developed in time.
- 4.114 The high-level analysis that we have undertaken with annual passenger numbers concludes that the planned terminal capacity might be sufficient to accommodate the traffic forecast until 2046. From that point, HAL’s proposal shows some terminal capacity shortage. Some investments, such as T5XN, could be brought forward to meet the required terminal capacity demand.

Figure 4.8: Terminal capacity



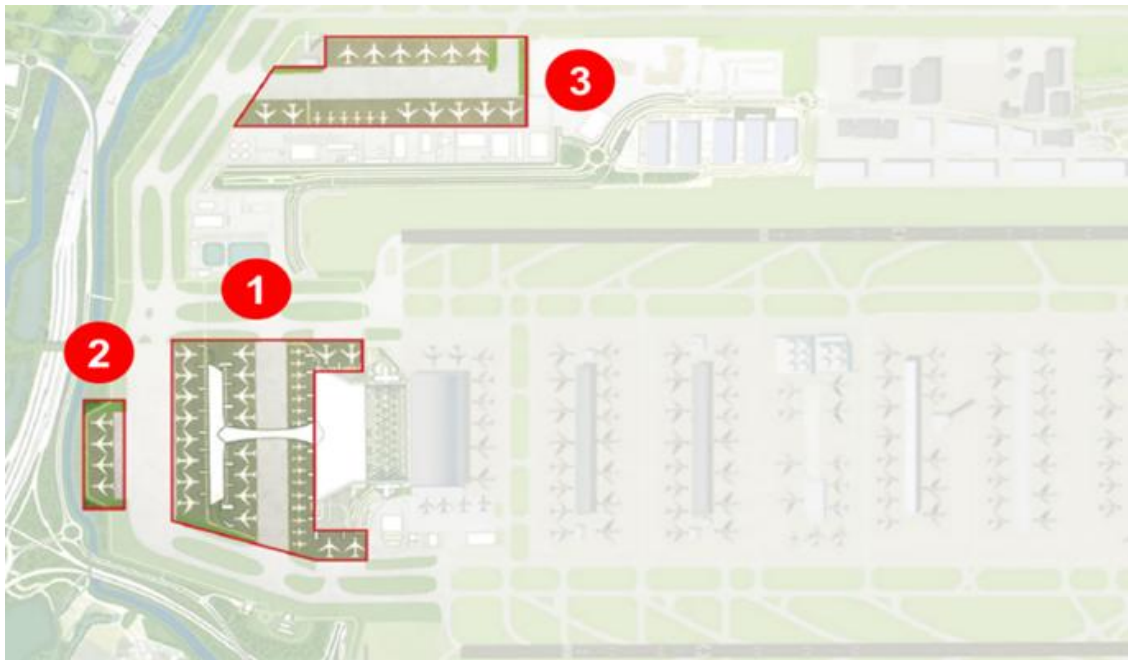
Source: HAL, Steer

- 4.115 The new satellite building (T5XN) that will be linked to the new terminal (T5XW) is planned to be operational by the beginning of the 2050s. This implies that, if passenger demand increases without opening of T5XN, there will be a large amount of remote stands operations of the Western Campus to accommodate the traffic forecast until T5XN becomes operational. Until then, the airfield operations will be challenging around the Western Campus, with aircraft taxiing between the runways and the passenger bussing movements.

Operability and Capacity assessment – HWL

- 4.116 HWL has stated that the addition of a 2,800m runway is anticipated to enable a total airport capacity of 769,420 air traffic movements (ATMs) per year. However, no supporting information has been provided regarding the aircraft fleet mix or operational procedures used to derive this estimate. At a high level, this capacity does not appear achievable because it is equivalent to a three-runway system without restrictions. The penalisation for having a runway that is not capable of accommodating all flights needs to be properly assessed using future flight schedules. A more detailed assessment should be undertaken to evaluate the system's capacity balance, taking into consideration key factors such as meteorological conditions, aircraft types, airspace limitations, operational restrictions, and airfield congestion. We cannot confirm that the proposed runway design can accommodate the capacity that HWL claims.
- 4.117 HWL's proposal does not include a thorough justification for the proposed number of stands, as it lacks supporting analysis to demonstrate how the stand capacity corresponds with the forecasted air traffic movements and aircraft fleet composition. The calculated implied capacity ratio of 0.77 mppa per stand is 54% higher than the maximum performance that Heathrow is achieving currently at a terminal level, and 93% higher than the average performance of the airport. With the addition of Apron 3 for day operations, the ratio moves to 0.47 mppa per stand, which is still higher than the current performance and would require an adjustment to factor for the lower efficiency of remote stands. This suggests that additional aircraft parking stand capacity – and potentially more land – may be required to accommodate the projected growth in demand. The figure shows the location of the aprons.

Figure 4.9: HWL's proposed aprons



Source: HWL July 2025 Expansion Proposal, p. 5-10

The table below illustrates the high-level calculations of the stand capacity.

Table 4.2: Aircraft parking stand capacity

	T2A/B (2025)	T3 (2025)	T4 (2025)	T5A/B/C (2025)	Total (2025)	T6 Aprons 1,2	T6 Aprons 1,2,3
Narrow Body (NB) stands	8	4	4	19	35	52	86
Wide Body (WB) stands	16	27	29	42	114	0	0
MARS (2NB or 1WB) stands	15	4	2	7	28	0	0
Maximum number of stands	54	39	37	75	205	52	86
Passengers (mppa)	20	19.5	9	33.5	82	40	40
mppa per Maximum number of stands	0.37	0.50	0.24	0.45	0.40	0.77	0.47

Source: HWL, Steer

4.118 The intended use of Apron 3 for overnight aircraft parking or other functions may need to be reconsidered and adapted to serve as remote boarding stands supporting Terminal 6 operations. It is uncertain how passengers would access

this apron, as no airside tunnels have been identified in HWL’s scheme to connect the West Terminal Campus with Apron 3.

- 4.119 We recommended that the proposal includes an assessment of dynamic stand capacity. This should account for variations in aircraft types, turnaround durations, and scheduling patterns throughout the operational day. The analysis should be based on an indicative flight schedule, incorporating peak hour distributions, aircraft size classifications, and operational factors such as towing requirements and the use of remote stands. Such an assessment would also support the validation of apron layout efficiency and confirm that the proposed infrastructure can accommodate the forecasted demand under both typical and peak operating conditions.
- 4.120 The calculation of the high-level capacity ratio of 11,000 square metres per million passengers suggests an adequate level of terminal space for new terminal complex. However, the proposed HWL’s plan should provide peak-hour and busy-hour passenger forecasts alongside the capacity sizing of each of the terminal processing areas.

Expected timelines and Deliverability

Methodology

- 4.121 Our methodology for assessing expected timelines and deliverability focused on reviewing each promoter’s programme for achieving an operational third runway by 2035, in line with the expectations set out by the Secretary of State for Transport.
- 4.122 The assessment examined the overall project timeline, including the sequencing of key milestones from statutory consultation through to construction and operational readiness. Particular attention was given to the proposed schedules for statutory consultation and DCO preparation and submission, assessing whether the timelines demonstrated a realistic pathway to securing development consent within the current Parliament.
- 4.123 For the construction timeline, the review considered the clarity and logic of the proposed phasing, critical path dependencies, and the feasibility of delivering the required infrastructure within the stated period. Where applicable, assumptions regarding construction methodology, procurement strategy, and enabling works were reviewed to identify potential delivery risks.
- 4.124 The deliverability review evaluated the extent to which promoters had demonstrated a coherent and achievable implementation plan, considering interdependencies. The analysis also examined whether the programme built in sufficient flexibility to accommodate uncertainties or external dependencies that could affect the delivery of an operational runway by 2035.
- 4.125 In our assessment, we have included the assumption that the DfT will publish the new ANPS at the end of 2026, but we have not assumed the shortening of the

duration of the processes as a consequence of the initiatives that the Government plans to undertake as these are not sufficiently defined at this stage.

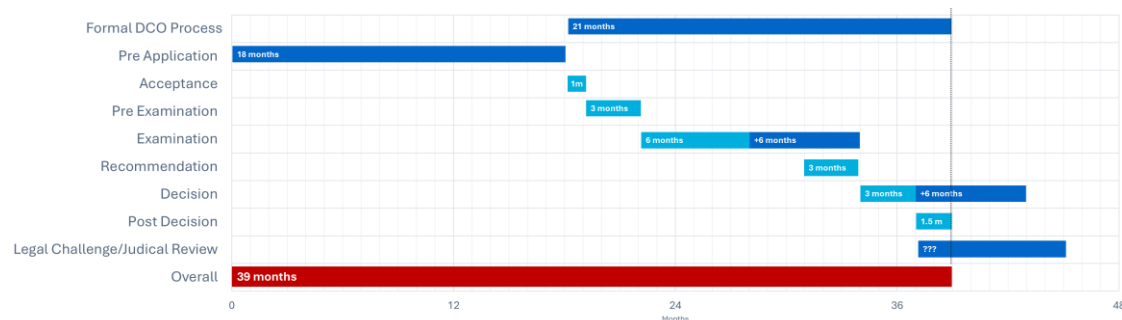
Expected timelines and Deliverability assessment

Expected timelines and Deliverability assessment – HAL

- 4.126 HAL’s timeline for the Heathrow expansion has been developed using a 2024 baseline, with early enabling activities anticipated to commence in 2025. HAL have identified that they have progressed activities since the July 2025 submission, however, recognise that they have not progressed with mobilisation of early delivery planning teams or property teams, which introduces uncertainty regarding the achievability of all subsequent milestones. On this basis, the target date of 2035 for the third runway opening appears ambitious and may be subject to delay.
- 4.127 The timeline also assumes that certain preparatory works, including land acquisition which includes relocation of key infrastructure, could proceed ahead of the Development Consent Order (DCO) approval. While this approach could accelerate delivery, it would expose HAL to financial and planning risk, should consent not be granted or the scheme design change materially.
- 4.128 Design progression and Previous DCO consultations: Design work undertaken as part of the previous DCO process is expected to inform the current scheme. However, the extent to which this work remains valid is unclear, and efficiencies derived from previous work cannot be assumed with confidence. There is certainly data that needs to be updated. Similarly, although HAL has referenced lessons learnt from the earlier consultation process, there is no evidence that these have yet been reflected in the revised programme or engagement strategy. In practice, this uncertainty supports the need for a cautious approach to estimating DCO timelines.
- 4.129 DCO process and durations: The assumed durations for the DCO process aligns with the minimum periods set out in the UK Government’s guidance for Nationally Significant Infrastructure Projects (NSIPs)—typically 15 to 18 months for the main examination and decision stages, excluding a minimum of 12 months for pre-application. HAL’s schedule allows for approximately 15 months from start of consultation to DCO submission, and 17 months for the DCO to be approved, which falls within this indicative range but does not include any contingency for delay.
- 4.130 Experience from recent comparable projects suggests that longer durations are more likely. For example, the Luton Airport DCO took around 28 months to complete, which is significantly above the 18-month time allowance. Given the complexity of Heathrow’s expansion plan, a longer duration than 18 months would be a more plausible assumption.
- 4.131 We provide below an estimation for Heathrow’s expansion DCO process, starting from the Pre Application stage (or Preparation and Consultation) and ending with the Post Decision milestone (or Approval granted). We estimate the overall

duration in 39 months (18 months for the Pre-Application stage and 21 months for formal DCO process), reflecting more realistic timeframes for each stage based on recent experience. This compares with the 32 months that are assumed by HAL.

Figure 4.10: Estimated DCO process duration (Steer)

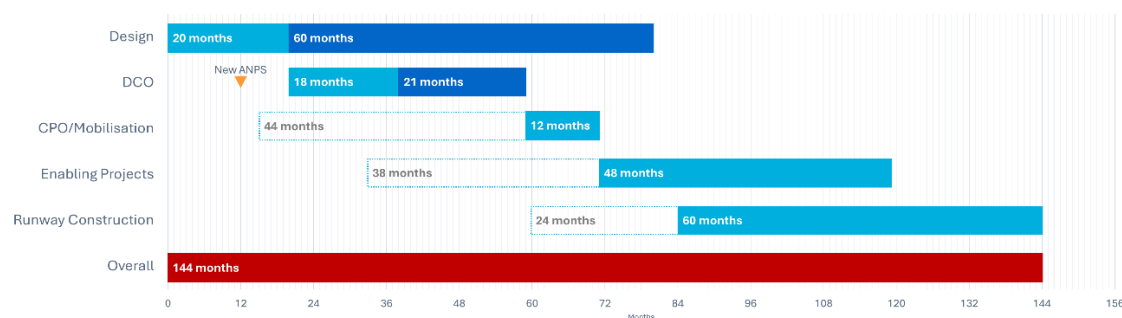


Source: Steer

- 4.132 Programme structure and critical path: From a delivery perspective the timeline is dependent on achieving key milestones derived from key activities such as design works, consenting and construction works. At present, the DCO approval remains the single dominant driver of the programme, with significant impact on downstream dependencies such as procurement, mobilisation, or operational readiness for the opening of the runway.
- 4.133 Operational readiness: The current schedule includes an allowance for operational readiness and integration testing of the new runway. For an expansion of this scale, a phased commissioning period of at least six to twelve months would typically be required to ensure safe and coordinated activation of new infrastructure, including interfaces with air traffic control and existing airfield operations.
- 4.134 Benchmarking of construction durations: Benchmarking against comparable aviation infrastructure projects indicates that the indicative durations for individual work packages are broadly reasonable. The construction of Dublin Airport’s North Runway, for example, took approximately three years (2019 to 2022), while Heathrow’s Terminal 2 redevelopment required around five years from demolition to opening (2009 to 2014). However, given the combined scale of the proposed runway, terminal facilities, and surface access improvements, overall delivery is likely to fall towards the upper end of these benchmarks.
- 4.135 Supply chain capacity: The overlap between Heathrow expansion and other major infrastructure programmes, notably HS2 (expected completion in 2033), is likely to place additional pressure on the UK construction market. Competing demand for specialist labour, materials, and equipment could increase costs and extend procurement lead times. Early engagement with the supply chain would be necessary to test delivery assumptions and develop mitigation measures.
- 4.136 Proposed timeline: A detailed review of the Scenarios 1 and 2 timelines has not been explored by HAL to the same level as the Scenario 3, which forms the basis of their proposal. To test the robustness of HAL’s assumptions, we undertook a

high-level assessment to incorporate some of the above technical observations, including the revised date for the new ANPS being issued (i.e. end of 2026), potential extensions to the DCO process (2 additional months for consultation and 4 months for determination), delays relating to, critical land acquisition requiring CPO (12 months) that impact on key enabling projects allowing for a potential for resequencing works (-3 months), and allowances for construction mobilisation. The resulting alternative timeline is presented below and shows a total timeline duration of 144 months, or 12 years for the opening of the new runway. This is an increase of 15 months from the 129 months outlined in the HAL timeline for the runway opening (Scenario 1).

Figure 4.11: Estimated duration of HAL’s expansion plan for runway opening (Steer)



Source: Steer

- 4.137 Considering that Government will consult on any amendments to the ANPS by July 2026 and complete the review process by the end of 2026 the opening of the new runway by the Government’s target of December 2035 is feasible but ambitious. Steer’s independent estimations of the work that HAL would need to undertake, including land acquisition and further design works, suggest that it is possible that the opening of the third runway could happen at a later date, potentially by December 2037.

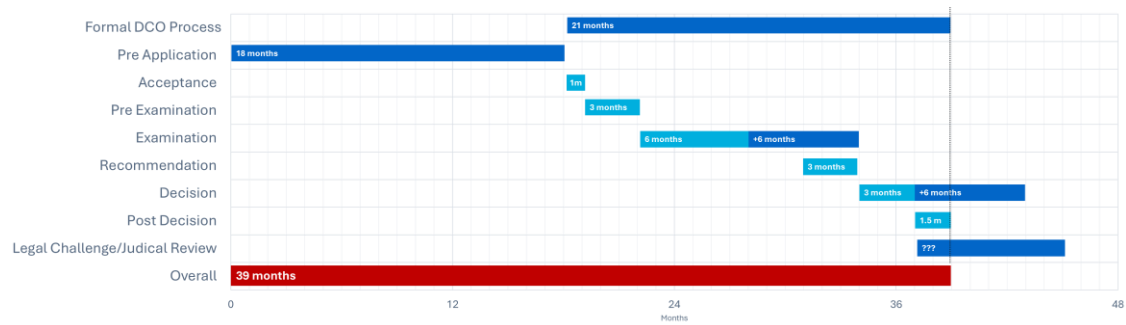
Expected timelines and Deliverability assessment – HWL

- 4.138 Baseline: HWL’s proposal for the Heathrow Expansion has been developed using a Q3 2025 baseline. This milestone has not commenced at the time of writing this report, hence the risk of not achieving the 2035 target date for the new runway opening without an additional optimisation of the plan.
- 4.139 Overall timeline: The DCO approval is assumed to be granted in mid-2029. The construction timeline for the completion of the runway has a duration of more than six years. The construction works are planned to commence only after the DCO has been approved (July 2029), and this suggest that any delays during this process would have an impact on the target delivery date. The overall duration of the programme starting in August 2025 and finishing in December 2035 with the opening of the new runway is 125 months.
- 4.140 Design development: HWL’s proposal does not provide information on design activities to develop an updated scheme aside from a 7-month period prior to the DCO preparation and consultation commencement. We assess that this period

will need to be increased based on the degree of development of the current proposal. If the revised ANPS includes a very different scheme than the proposed one, the work required for the new design will also take longer. We assume that the detail design work will be undertaken in parallel to the DCO Evaluation and Approval process.

- 4.141 Timeline structure and critical path: HWL’s timeline implies that the key sequence of activities for a critical path is: (1) revised ANPS approval, (2) DCO approval, and (3) commencement of construction works. The details on the sequence, timing, and durations of key activities such as compulsory purchase orders, M4 Spur diversion and impacts on wider utilities diversions have not been included in the documentation, making it difficult to ascertain key risks that may impact the deliverability of the project.
- 4.142 Revised ANPS: On 22 October 2025, the Government advised that it had launched a review of the ANPS and committed to publish a revised ANPS by the end of 2026 with consultation on amendments by July 2026. This date is six months later than the one envisaged by HWL, which implies that the overall timeline would need to be delayed by six months. In the same announcement, the Government made commitments to shorten the approval processes to enable a shorter development programme for the expansion of Heathrow. We have not factored these potential reductions in timescales in our analysis.
- 4.143 DCO process: The assumed durations of the DCO process aligns with the periods set out in the UK Government’s guidance for Nationally Significant Infrastructure Projects (NSIPs) – typically 15 to 18 months for the main examination and decision stage (i.e. after the submission of the DCO). The HWL DCO timeline is from Q3 2026 to Q3 2029 (35 months) and includes an evaluation and approval period of 18 months. HWL’s time allowance to obtain the DCO approval is aligned with the Government’s guidance. However, we recommend that an additional time allowance should be considered for this critical phase of the programme. Experience from recent comparable projects suggests that longer durations are more likely. For example, the Luton Airport DCO took around 28 months to complete, which is significantly above the 18-month time allowance. Given the complexity of Heathrow’s expansion plan, a longer duration than 18 months would be a more plausible assumption.
- 4.144 We provide below an estimation for Heathrow’s expansion DCO process, starting from the Pre Application stage (or Preparation and Consultation) and ending with the Post Decision milestone (or Approval granted). We estimate the overall duration is 39 months (18 months for the Pre-Application stage and 21 months for formal DCO process), reflecting more realistic timeframes for each stage based on recent experience. This compares with the 35 months that are assumed by HWL. Although we note that HWL contemplates 7 additional months for preparation work before the revised ANPS is approved, we assess that this work cannot be accounted for Pre-Application stage.

Figure 4.12: Estimated DCO process duration (Steer)



Source: Steer

- 4.145 **Compulsory purchases:** The construction works are envisaged to commence immediately after the DCO is approved, however time allowance for compulsory purchases of land has not been identified. The time required for compulsory purchases will likely impact the sequence of the “space creation” activities and will probably have an impact on the overall programme duration. This increases the risk for the delivery, with specific delays to land acquisition, which might potentially have a significant impact on enabling and construction works.
- 4.146 **Construction:** Benchmarking against comparable aviation infrastructure projects indicates that the duration of key work packages in HWL’s proposal are reasonable. In particular, the construction of Dublin Airport’s North Runway took approximately three years (2019 to 2022), hence the four-year time allowance (including operational readiness but excluding space creation and earthworks) provided in HWL’s proposal for the construction of the new runway provides some potential headroom. The new T6A terminal construction is estimated to last for 5.5 years, and the T6B for 6 years, which are similar construction durations to Heathrow’s Terminal 2 (2009 to 2014).
- 4.147 **Operational readiness:** The current schedule includes provisions for the operational readiness of the new runway and the other major infrastructure developments (e.g. terminals, car parks). We are aligned with the twelve months that are allocated for ensuring a safe and coordinated activation of the new runway, including interfaces with air traffic control and existing airfield operations. We assess the time included for the operational readiness of the terminal buildings could be slightly shortened.
- 4.148 **Supply chain capacity:** The overlap between Heathrow expansion and other major infrastructure programmes, notably HS2 (expected completion in 2033), is likely to place additional pressure on the UK construction market. Competing demand for specialist labour, materials, and equipment could increase costs and extend procurement lead times. Early engagement with the supply chain would be necessary to test delivery assumptions and develop mitigation measures.
- 4.149 **Proposed timeline:** A detailed timeline has not been presented at this stage by HWL, however key activities and dates are highlighted, to form the basis of their proposal. To test the robustness of HWL’s assumptions, we undertook a high-level assessment to incorporate some of the above technical observations,

including additional design time, and allowances for compulsory purchase order (CPO) negotiations. The resulting timeline is presented below and shows a total duration of 147 months (12 years and 3 months) up to the opening of the new runway. This is an increase of 27 months from the 120 months outlined in the HWL timeline for the runway opening.

Figure 4.13: Estimated duration of HWL’s expansion plan for runway opening (Steer)



Source: Steer

- 4.150 Considering that Government will consult on any amendments to the ANPS by July 2026 and complete the review process by the end of 2026 the opening of the new runway by the Government’s target of December 2035 is feasible but ambitious. Steer’s independent estimations of the work that HWL would need to undertake, including land acquisition and further design works, suggests that it is possible that the opening of the third runway could happen at a later date, potentially by March 2038.

Sustainability

Methodology

- 4.151 Our methodology for assessing sustainability focused on evaluating how each proposal addressed the environmental and social implications of constructing and operating a new runway. The assessment considered compliance with the UK’s legal, environmental, and climate obligations, as well as the adequacy of proposed mitigations.
- 4.152 The review covered both direct and indirect impacts, including air quality, noise pollution, and night-period operations, assessing whether mitigation measures were clearly defined. Carbon emissions were reviewed in relation to whole-life impacts and the promoters’ alignment with national decarbonisation targets.
- 4.153 The assessment also considered effects on community health, wellbeing, and quality of life, particularly for populations affected by construction activity or airport operations. Finally, surface access was examined in terms of mode share targets and the environmental implications of changes to highways, rail, parking, and public or active travel provision.

Sustainability assessment

Sustainability assessment - HAL

- 4.154 The 2025 HAL expansion proposal presents a broad sustainability framework encompassing environmental protection, carbon reduction, air quality, noise, and community wellbeing. However, the documentation reviewed provides limited technical evidence and lacks the quantitative modelling needed to verify the effectiveness of the proposed mitigation measures. The assessment below evaluates the robustness of HAL’s approach across key sustainability themes and identifies areas where further information and assurance would be required.
- 4.155 Updated studies on population exposure, affected households, aircraft and engine types, and baseline environmental conditions would help substantiate the justification for proposed development and its expected impacts and mitigations.
- 4.156 HAL’s proposal identifies a Code of Construction Practice (CoCP) as the main mechanism for controlling construction-phase environmental impacts, including noise and air quality. While this framework is consistent with good practices, the current submission lacks detail on specific noise thresholds, monitoring requirements, and enforcement mechanisms. It is therefore not possible to assess the adequacy of mitigation at this stage.
- 4.157 Biodiversity impacts are to be managed through a Green Infrastructure Strategy incorporating biodiversity offsetting, ecological enhancement, and floodplain mitigation. These initiatives are positive in principle but remain at a conceptual level. Detailed implementation plans, metrics for net-gain evaluation, and long-term monitoring commitments will be required to demonstrate effectiveness.
- 4.158 The expansion is expected to result in higher emissions of nitrogen dioxide (NO₂) and particulate matter (PM), reflecting the increase in aircraft movements and surface access traffic. While measures such as cleaner fleets, ULEZ expansion, and public transport promotion are appropriate, they may not fully offset the environmental and health impacts of up to 276,000 additional flights per year. Without continuous monitoring, and health-based performance indicators, there remains a risk that local air-quality standards could be exceeded.
- 4.159 HAL’s air-quality modelling indicates that emissions would remain within legal limits, supported by mitigation such as dust suppression, traffic management, and the use of low-emission or electric construction equipment. However, the proposal does not quantify the expected reductions or specify how compliance would be demonstrated. Similarly, while reference is made to extending electric-vehicle infrastructure, supporting the Ultra Low Emission Zone (ULEZ), and promoting low-emission public transport, the reduction in total emissions from these measures has not been calculated.
- 4.160 HAL’s Noise Action Plan outlines a progressive approach to mitigation but lacks sufficient modelling to assess future exposure levels. The proposal does not quantify how noise contours will change under expanded operations or present the underlying assumptions on fleet mix, flight paths, and operational hours. In the

absence of this analysis, it is not possible to determine whether the proposed measures will deliver meaningful improvements or simply stabilise existing exposure levels. HAL should undertake comprehensive noise modelling for multiple expansion scenarios and disclose the anticipated population exposure under each scenario.

- 4.161 Heathrow’s night operations are governed by existing government-mandated restrictions. HAL expects that the Department for Transport will review these in 2026 in line with ICAO’s Balanced Approach, which prioritises operational and technological measures over outright restrictions. While this framework provides a structured methodology, HAL’s proposal lacks clarity on how it would be applied in practice until the publication of the updated ANPS where the objectives will be stated. No projections are presented to demonstrate how night-time noise exposure will evolve with expansion, nor how progressive mitigation (for example, new aircraft fleet or new operating procedures) would offset the increase in aircraft movements. Without this evidence, it is uncertain whether the Balanced Approach alone can adequately protect affected communities. HAL should therefore include scenario-based modelling, define health-based thresholds for exposure, and specify the conditions under which stricter night-flight restrictions would be triggered according to Government guidelines.
- 4.162 HAL’s carbon strategy represents one of the most advanced components of the sustainability framework and aligns in principle with the UK Jet Zero Strategy and the Climate Change Committee’s (CCC) Balanced Net Zero Pathway. The plan integrates operational efficiencies, airspace modernisation, fleet renewal, and large-scale deployment of Sustainable Aviation Fuel (SAF) to achieve net-zero emissions by 2050. Complementary initiatives include electrification of airport vehicles, low-carbon buildings, and improved surface access.
- 4.163 However, the strategy’s reliance on SAF—accounting for over 50 % of total projected reductions—creates significant dependency on external supply chains and policy support. Global SAF production and distribution remain limited, and it is uncertain whether supply will scale at the pace required. Likewise, zero-emission aircraft are not expected to be commercially viable before the 2040s, prolonging reliance on fossil fuels. Heavy use of market-based mechanisms such as CORSIA and the UK ETS means that a substantial portion of projected reductions are compensatory rather than absolute, exposing the airport to carbon-price volatility. These dependencies make achievement of the 2050 net-zero target technically challenging without accelerated investment and technological advancement.
- 4.164 We note that the proposed expansion presents long-term risks to community health and wellbeing arising from increased noise exposure, air-quality degradation, and the loss of green space and local amenities. While mitigation actions such as insulation, biodiversity offsetting, and compensation funds are positive, they are primarily reactive and compensatory. A more preventative strategy would include scenario-based noise and air-quality projections, conditional limits on operations, and integration of land-use planning to preserve green infrastructure. The cumulative effects of noise, air quality, and social

disruption could contribute to health inequalities in surrounding areas. Without binding performance indicators, continuous monitoring, and accelerated mitigation, there is a credible risk of deterioration in quality of life for nearby communities.

- 4.165 HAL’s Surface Access Strategy seeks to reduce emissions and congestion through public transport investment, zero-emission vehicle infrastructure, and behavioural-change initiatives. The technical approach is sound, but its effectiveness will depend on timely delivery of transport infrastructure, market uptake of zero-emission vehicles, and ongoing governance to ensure mode-share targets are met. These dependencies introduce uncertainty that will need to be actively managed to maintain compliance with environmental and community objectives. Certainty on the timing of new rail schemes connecting Heathrow will be key to achieve mode shift targets for public transport.
- 4.166 Overall, HAL’s sustainability framework provides a high-level commitment to managing environmental and social impacts but lacks the technical evidence required to evaluate its effectiveness. Quantitative data on noise, air-quality improvements, population exposure, and health outcomes are absent, and no clear performance baselines have been established. The strategy’s success will depend heavily on factors outside HAL’s control, including rail access, pace of SAF deployment, technological readiness, and evolving regulatory requirements.

Sustainability assessment – HWL

- 4.167 HWL’s air quality assessment is methodologically sound, using established modelling tools and comparative baselines. The proposal demonstrates compliance with legal NO₂ thresholds and outlines embedded mitigation measures such as electrification of fleets and avoidance of major roadworks. However, the analysis lacks detailed quantification of particulate matter (PM) and cumulative traffic-related emissions during peak operational years. Ecological impacts are addressed, particularly in relation to Ramsar and SPA sites.
- 4.168 Aircraft noise modelling is robust, with AEDT simulations showing minor differences between HWL’s proposal and HAL’s 2019 Masterplan. HWL’s runway length and location scheme results in a 3% increase in population exposed to >57 dB LAeq,16h. Mitigation measures are proposed, including acoustic barriers and insulation.
- 4.169 HWL’s commitment to net-zero carbon buildings is a clear strength, supported by a centralised energy centre, renewable heat technologies, and sustainable aviation fuel infrastructure. The scheme avoids fossil fuel combustion and leverages grid decarbonisation. Nonetheless, the proposal concedes that aviation emissions will result in a major adverse impact.
- 4.170 The proposal adopts a multi-scalar and interdisciplinary approach to community impacts, defining six study areas and integrating health and equality assessments. HWL claims its alignment with 2018 ANPS requirements for compensation, housing support, and stakeholder engagement. Initiatives such as the Legacy Housing Fund and Temporary Workforce Accommodation Strategy

reflect awareness of indirect socio-economic pressures. The proposal reflects a commitment to delivering a socially responsible expansion that balances infrastructure growth with the protection and enhancement of local quality of life.

- 4.171 HWL’s Surface Access Strategy prioritises public transport, active travel, and future mobility trends, and avoids disruptive motorway works. The Public Transport Hub is designed to be integrated in the West Terminal Campus, and the car parking strategy is designed to reduce road traffic around the airport. The strategy is aligned with national policy objectives and reflects a forward-looking approach to infrastructure development in the context of climate and environmental challenges, although the supporting evidence shows an increase in traffic on the M25 which has not been considered in the surface access strategy design.
- 4.172 The proposal integrates green infrastructure as a core component of its environmental strategy. HWL adopts a landscape-led approach, incorporating blue and green buffers, restored river corridors, and native planting schemes. These elements serve ecological, recreational, and mitigation functions, supporting biodiversity, noise attenuation, and air quality improvement. The inclusion of active travel routes within green corridors enhances connectivity and promotes low-emission mobility.
- 4.173 In general, HWL’s expansion proposal presents a technically robust and environmentally conscious plan, albeit lacking the evidence to support core assumptions, mainly related to noise impact and surface access. The scheme explains the benefits of not undertaking works on the M25, but it does not provide a road traffic analysis to support the required changes to the road infrastructure. HWL positions itself as a lower-impact, more sustainable scheme, with a reduced construction footprint and a design philosophy that prioritises mitigation, resilience, and alignment with the 2018 ANPS sustainability targets. To validate the conclusions stated by HWL, we would need new or updated studies on aircraft and engine types, population exposure, affected households, river diversions, flood risk, water quality plans, waste management plans, road traffic demand, and public transport targets for passengers and staff.

Stakeholder engagement

Methodology

- 4.174 Our methodology for assessing stakeholder engagement was based primarily on the information submitted by each promoter, including details of any discussions or endorsements from airlines, as requested by the Secretary of State for Transport. This was supplemented, where relevant, with publicly available information.
- 4.175 The assessment followed a structured process consistent with best practice for major infrastructure projects. Stakeholders were first identified and categorised by type (e.g. airlines, regulators, local authorities, community groups, and environmental organisations) and then mapped using an influence–interest

framework to determine the proportionality and intensity of engagement expected for each group.

Stakeholder engagement assessment

Stakeholder engagement assessment – HAL

- 4.176 Engagement has been wide-ranging, covering airlines, regulators, government departments, local authorities, environmental bodies, communities, NGOs, and other key interest groups. The strategy has evolved over time, moving from broad consultation during the development of the first masterplans to more targeted, technical engagement since 2025, particularly in response to the Government’s reaffirmed support for expansion.
- 4.177 Airline engagement has been a central component of the expansion planning process, with HAL facilitating thousands of interactions and extensive dialogue through formal governance structures, bilateral meetings, and specialist working groups. Feedback from airlines has directly influenced key aspects of the masterplan, including runway design, cost optimisation, regulatory structure, slot policy, surface access, and the integration of environmental policy requirements. While overall support for expansion exists, some of this support remains conditional, reflecting ongoing concerns about affordability, cost transparency, and regulatory clarity.
- 4.178 Engagement with regulators and airspace partners has supported the alignment of airspace modernisation with runway development. Meanwhile, dialogue with environmental bodies, heritage organisations, and community groups has informed the development of noise, air quality, compensation, and mitigation proposals, although strong opposition remains from several groups.
- 4.179 Overall, HAL’s engagement work demonstrates a structured and iterative process that has materially shaped the proposals and embedded stakeholder perspectives into scheme development. However, further work will be needed as the project progresses towards a DCO submission, particularly to address outstanding concerns on affordability and regulatory arrangements, to secure clearer positions from key airline stakeholders, and to maintain trust and transparency with local communities and environmental groups. Strengthening these areas will be critical to ensuring continued stakeholder support and enabling a robust and deliverable expansion programme.

Stakeholder engagement assessment – HWL

- 4.180 HWL has mainly provided evidence of stakeholder engagement with airlines and, particularly, with IAG. We assess that, although gathering inputs and feedback from the largest airline group currently operating at Heathrow is important, views from other airlines is also key to provide non-biased conclusions on very critical design aspects such as the length of the runway and the operational capabilities of the new infrastructure.

- 4.181 HWL has had initial engagement with key stakeholders such as Highways England, Transport for London, Network Rail, and Department for Transport.
- 4.182 Engagement with other stakeholders, including airport users, the community surrounding the airport, and public authorities, is mentioned in HWL’s plans, but it does not provide evidence of the information that was received nor how this information was incorporated into the proposed scheme.
- 4.183 HWL suggests future engagement with a broader spectrum of stakeholders, which we fully endorse.
- 4.184 We assess that the definition of an optimal airport expansion scheme can only be undertaken after an in-depth consultation process with all stakeholders, which has not been done by HWL at this stage. We also recommend following a structured approach for factoring the stakeholder engagement in the development of the scheme such as: Stakeholder Identification, Engagement Strategy, Engagement Activities, Feedback Integration, Endorsements and Outcomes, and Transparency and Reporting.

Conclusions

Optioneering conclusions

- 4.185 The conclusions for HAL’s proposal and HWL’s proposal are summarised below:
- Common to HAL and HWL:
 - Absence of a comprehensive optioneering analysis demonstrating how the option put forward by each promoter was selected in comparison with other schemes.
 - HAL specific:
 - Most of the master planning decisions were taken with data from 2018 or before.
 - The decision of the new terminal location is based on the non-reliance on new rail schemes and the lack of sufficient space between the runways.
 - HWL specific:
 - The runway is the most developed element within the optioneering process. HWL’s proposal highlights the benefits of a 2,800m runway and presents these as outweighing the disadvantages. However, further analysis is required to validate the conclusions provided in the proposal for selecting the option HWL puts forward in their proposal.
- 4.186 The optioneering assessment has shown that both proposals have undertaken a significant amount of work to identify the best option for the runway length and location, but not sufficient optioneering for other key elements of the masterplan.
- 4.187 While some elements of the optioneering process are more mature and are supported with some evidence (e.g. runway length and location), others remain less developed or insufficiently detailed (e.g. terminal infrastructure).
- 4.188 The table below summarises the level of maturity of the optioneering process followed by each proponent for key airport elements through a RAG (Red–Amber–

Green) scoring. This scoring reflects both the degree of comprehensiveness and the degree of clarity of the optioneering criteria, process, and decisions.

Table 4.3: Assessment of optioneering process - summary

Element	HAL	HWL	Rationale
Runway	Green	Green	Both proposals offer a fairly mature optioneering process for runway length and location, including the impacts on roads and noise.
Aprons	Green	Red	HWL does not provide options.
Terminals	Amber	Red	HWL does not provide options. HAL does not provide a complete decision-making process for the location of the terminal infrastructure.
Surface access	Green	Red	HWL does not provide options.
Car parks	Green	Red	HWL does not provide options.
River diversions	Green	Red	HWL does not provide options.

Source: Steer

- 4.189 There are quantitative aspects of the optioneering process that are missing from both proponents, which relate to capex and deliverability. For the range of options that have been analysed by the proponents and also for those that we can assess to be plausible, we consider that these are not determining factors for selecting an initial masterplan option at this stage of the master planning process but should be part of the next level of analysis.
- 4.190 We note that the ANPS is under review and DfT expects to consult on any amendments to the ANPS by July 2026. HAL’s proposal is consistent with the 2018 ANPS, whereas HWL proposes some areas of divergence from the 2018 ANPS, including:
- Length and location of runway – shorter and further east than the boundary established by Annex A of the 2018 ANPS.
 - Terminal capacity configuration – no terminal capacity located between the new runway and the existing Northern Runway.
 - Changes to the highway network – changes to the M4 Spur instead of the M25.
- 4.191 We acknowledge that the optioneering process could be a very complex exercise and that the potential options that would need to be analysed could be very broad. To narrow down options, the first elements to be fixed are: (1) the location and length of the runway; and (2) the location of the terminal processing facilities. In the case of the expansion of Heathrow, there might be a number of initial constraints that dramatically narrow down the potential options that need to be explored to develop a high-level masterplan and to inform the ANPS. These initial constraints have been sourced from the proposals and are listed in the following table and map below.

Table 4.4: Potential development constraints to the expansion of Heathrow

Potential development constraints	Rationale
English heritage (barn) and cemetery to the North	The removal/relocation of these sites will imply a complex and lengthy process with multiple stakeholders involved.
Runway length (at least 2,800m)	Assuming that the requirements that will be set by the new ANPS will include the need to ensure a certain degree of operational flexibility and connectivity, the length of the runway would need to be, at least, 2,800m (plus 300m at each end for Runway End Safety Area). The exact length is subject to detailed analysis with updated data and an assessment on the percentage of penalisation linked to different runway lengths. There are also noise respite implications if certain type of aircraft cannot operate from the new runway.
Populated area to the east (noise impact)	The east side of the airport presents a higher density of population than the west side. The precise noise impact of the runway options will need to be assessed with updated data.
Distance between runways (at least 1,035 metres)	According to ICAO, independent runway operations can only be achieved with a minimum separation of 1,035m between the centres of the runways. Independent operations will be necessary to enable greater operational flexibility and capacity.
Rail access to existing terminals	Heathrow currently has three rail services (Piccadilly Line, Elizabeth Line and Heathrow Express) connecting existing terminals with the east. These services have some capacity to increase frequencies, but not sufficient to cope with the proposed expansion plans. There are currently no further rail schemes that have a defined development programme. The Western and Southern rail schemes are potential candidates.
Populated area, Cargo area, and Terminal 4 to the South	The south area of the airport is densely occupied with operational facilities (e.g. cargo area, T4), support businesses next to the perimeter of the airport, and residential areas.

Source: Steer

Figure 4.14: Potential development constraints to the expansion of Heathrow

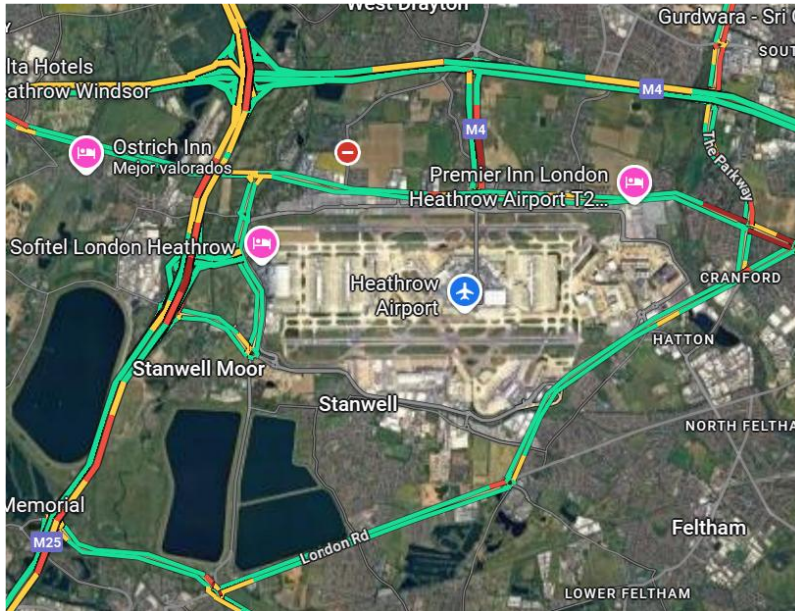


Source: Steer

- 4.192 The above listed potential development constraints should also be assessed by the CAA and DfT, as there might be solutions that are out of our knowledge and also different weights might be assigned to different impacts. The future of the rail schemes that could provide enhanced public transport access to Heathrow should be carefully addressed by the DfT to assess both the best masterplan option and the public transport access targets.
- 4.193 The four (out of 6) potential constraints (1) English heritage and cemetery to the north; (2) Populated area to the east; (3) Minimum distance between runways; and (4) Populated area, Cargo area, and Terminal 4 to the south, narrow down the options for the location of the runway to the north of the existing Northern Runway, below the English heritage site, and as west as possible. These elements, together with the minimum runway length consideration, imply that it will be necessary to undertake heavy works in the M25 and/or the M4 Spur roads to build the new runway over one (or both) of them.
- 4.194 Increasing the capacity for surface access is going to be required as part of the expansion plans. Increasing the capacity just in line with passenger growth will be a challenge. We note that assuming that there will not be additional rail schemes connecting Heathrow, the existing services will not be able to cope with the additional demand. The current rail accesses into the airport provide connection to all the existing terminals. In this scenario, it seems reasonable that the new terminal capacity will be developed near a current rail connection. Considering this element plus the constraints to runway location and minimum runway length previously mentioned, means that the most favourable location for the new main terminal building will be next to Terminal 5 (to the west of Terminal 5). The implication of this decision is that the road access demand to the airport through the M25 will materially increase, even if there is an additional future rail link into this terminal area (the Western Campus).

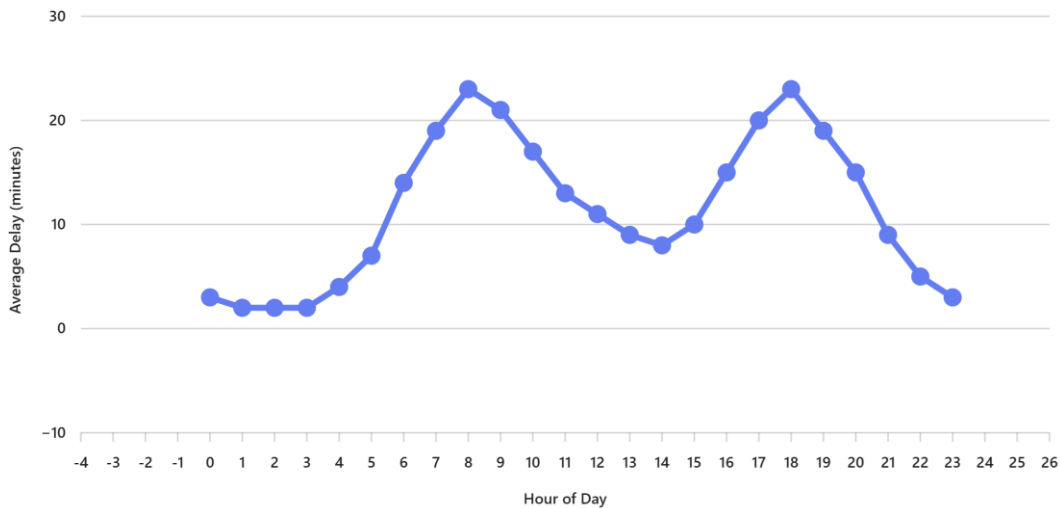
4.195 The current road traffic load in the M25 to the west of Heathrow (near J14) is one of the highest in the UK and has creates material traffic delays every day¹². The figures below show a heat map with the road congestion around Heathrow and the average delays of the M25.

Figure 4.15: Road congestion around Heathrow



Source: Google maps. 23 October 2025, 8AM

Figure 4.16: Average road traffic delay in M25 J14 (minutes, July 2024)



Source: TomTom Traffic Index & National Highways (July 2024)

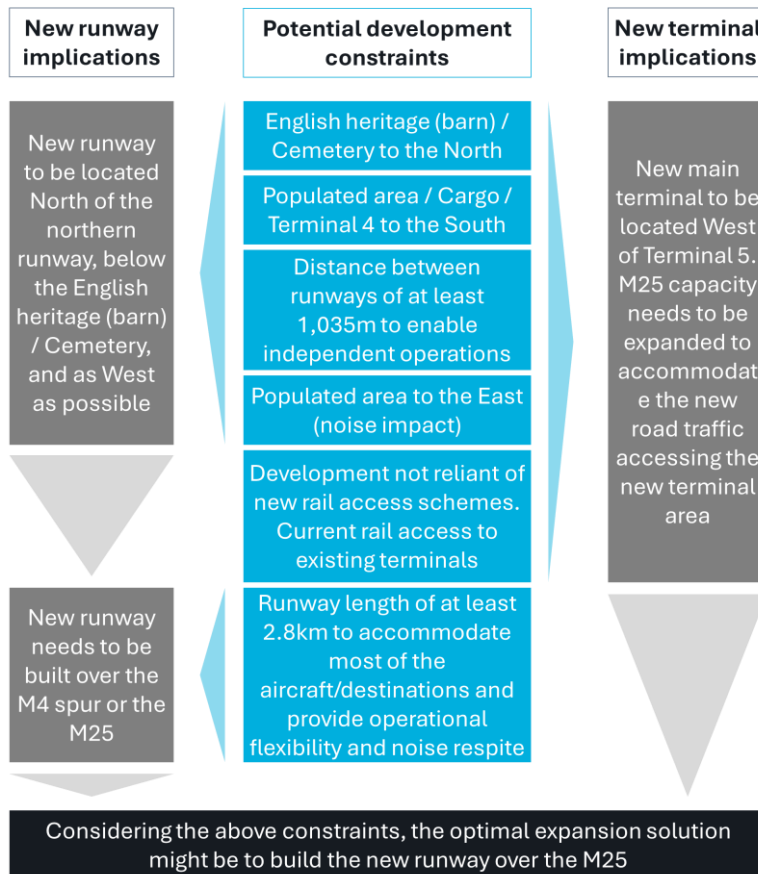
4.196 Subject to detailed analysis on the future capacity requirements of the section of the M25 that runs to the west of Heathrow for airport users and non-airport users, we initially conclude that the M25 infrastructure capacity will need to be

¹² <https://www.commercialmotor.com/news/article/its-official-the-m25-really-is-the-worst-motorway>

expanded, regardless of whether the runway will cross above the M25. The potential capacity expansion of the M25 could potentially be greater than the proposed additional distributor lanes by HAL.

- 4.197 Taking into account the conclusions on runway location and length, and the associated surface access infrastructure, the option of constructing the new runway over the M25 appears to be a plausible solution. This is because, with the main capacity uplift concentrated to the west of the airport, the M25 would already require major works to accommodate increased traffic and new access arrangements. Undertaking the runway construction in this area would therefore consolidate interventions within a single corridor, rather than introducing additional disruption and complexity along the M4 Spur, which would also be affected under alternative configurations.
- 4.198 The diagram below summarises the decision-making process that emerges from the identified development constraints.

Figure 4.17: Potential development constraints for the expansion of Heathrow and their implications



Source: Steer

Airport scheme design conclusions

- 4.199 The conclusions for HAL’s proposal and HWL’s proposal are summarised below:
 - Common to HAL and HWL:

- Runway separation distance enables independent operations with the existing runways.
- Code F (e.g. A380) capability.
- The minimum runway length that could accommodate all the current aircraft types and long-haul ranges needs to be, at least, 2,800m.
- The airfield, including the runway, complies with ICAO and CAA safety standards
- The projected passenger traffic in the Western Campus after the expansion is more than double of today’s traffic handled at T5A/B/C, going from 35 mppa to 75 mppa.
- The relocation of certain facilities is not clearly defined.
- The documentation does not include references of expected aircraft demand, fleet composition, flight schedules, or stand occupation times to understand the capacity requirements of the airfield.
- HAL specific:
 - The required boundary for the expansion follows the 2018 ANPS and will need to be reviewed as part of further design stages; however major changes are unlikely to occur to the current boundaries if the infrastructure to be developed remains the same.
 - The runway was designed to accommodate all types of aircraft and destinations with the flight schedules that were developed back in 2018.
 - The new main terminal (T5XW) is planned to be located to the west of T5A. This implies that almost all of today’s traffic will operate from the Western Campus.
 - A new satellite building (T5XN) is planned to be linked to T5XW to provide more contact stands by 2054.
 - HAL’s Surface Access Strategy is reliant on leveraging existing rail and underground systems, supplemented by strategic future projects, Western Rail Link to Heathrow (WRLtH) and Southern Access to Heathrow (SAtH), and providing more capacity in the M25 section that will be under the new Northern Runway.
- HWL specific:
 - The land acquisition proposal requires additional land purchase to the east of the new runway compared to the 2018 ANPS, and avoids acquisition to the west of the M25, as well as land adjacent to the Bath Road. It is suggested that land acquisition to the east will affect approximately 260 more homes than HAL’s scheme, which will need to be acquired. Overall, the reduction in land versus the 2018 ANPS boundary is claimed to be 43ha.
 - The separation of the new runway with the existing North Runway is sufficient to enable independent operations.
 - The proposal suggests that the Obstacle Limitation Surfaces analysis has been conducted; however, the documentation requires further development.
 - The development outlines the addition of 40 mppa of terminal capacity, to be provided between T6A (main terminal processor) and T6B (satellite

building connected via a walkway with T6A), and located west of T5. A total floor area of 440,000 square metres is proposed.

- The proposer does not provide an assessment of the potential benefits of a satellite facility between the new runway and the existing Northern Runway.
- The proposed two-point access strategy to the West Terminal Campus is designed to distribute traffic demand across multiple entry routes, thereby increasing resilience to the operations and shortening travel distances.
- The proposed road network allows general access to the airport from major corridors, M4, M25 and A4, via two primary entry points: the M4 Spur and the A3113.
- The proposed changes to the M25 junctions and South access to the West Terminal Campus might create road congestion.
- The scheme includes the development of two large car parking facilities (Central Parkway and Southern Parkway). According to HWL, these car parks will be connected to the West Terminal Campus with Automated People Movers.
- Although the proposal includes the assumption that the current rail services at the airport (Heathrow Express, Elizabeth Line, Piccadilly Line) will increase their capacity, it is unclear how and when this is going to be materialised. HWL states that the implementation of the Western Rail Link and the Southern Rail Link is not essential for efficient operations of Terminal 6.

Operability and Capacity conclusions

4.200 The conclusions for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - The development of a runway that could accommodate all types of aircraft will provide full flexibility and efficiency for the optimal operation and capacity of the aircraft ground movements and the air traffic management.
 - There is no justification for the proposed number of stands, lacking supporting analysis to demonstrate how the stand capacity corresponds with the forecasted air traffic movements and aircraft fleet composition.
- HAL specific:
 - We assess that, at a high-level, 756,000 air traffic movements per annum (480,000 current movements cap plus 276,000 additional movements) could be achieved even considering some operational restrictions to mitigate noise impacts in the community.
 - The high-level analysis that we have undertaken with annual passenger numbers concludes that the planned terminal capacity might be sufficient to accommodate the traffic forecast until 2046. From 2046 onwards, capacity shortages are presented in HAL’s plan until T5XN comes into operation (in 2054).
- HWL specific:
 - We cannot confirm that the proposed runway design can accommodate the aircraft movement capacity that HWL claims.

- The calculation of the high-level capacity ratio of 11,000 square metres per million passengers suggests an adequate level of terminal space for new terminal complex.

Expected timelines and Deliverability conclusions

4.201 The conclusions for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - The assumed durations for the DCO process aligns with the minimum periods set out in the UK Government’s guidance for Nationally Significant Infrastructure Projects (NSIPs).
 - From a delivery perspective, the programme does not present detailed interdependencies between key activities, and no critical path analysis has been provided.
- HAL specific:
 - Steer’s independent assessment for delivering the new runway provides a duration of 144 months (12 years). This is an increase of 15 months from the 129 months outlined in the HAL timeline for the runway opening.
 - Considering that Government will consult on any amendments to the ANPS by July 2026 and complete the review process by the end of 2026 the opening of the new runway by the Government’s target of December 2035 is feasible but ambitious. Steer’s independent estimations of the work that HAL would need to undertake, including land acquisition and further design works, suggest that it is possible that the opening of the third runway could happen at a later date, potentially by December 2037.
- HWL specific:
 - Steer’s independent assessment for delivering the new runway provides a duration of 147 months (12 years and 3 months). This is an increase of 27 months from the 120 months outlined in the HWL timeline for the runway opening.
 - Considering that Government will consult on any amendments to the ANPS by July 2026 and complete the review process by the end of 2026 the opening of the new runway by the Government’s target of December 2035 is feasible but ambitious. Steer’s independent estimations of the work that HWL would need to undertake, including land acquisition and other preparatory works, suggest that it is possible that the opening of the third runway could happen at a later date, potentially by March 2038.

Sustainability conclusions

4.202 The conclusions for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - Surface Access Strategy seeks to reduce emissions and congestion through public transport investment, zero-emission vehicle infrastructure, and behavioural-change initiatives. The technical approach is sound, but its effectiveness will depend on timely delivery of transport infrastructure (particularly additional rail capacity), market uptake of zero-emission

vehicles, and ongoing governance to ensure mode-share targets are met. The plan does not provide the supporting evidence to validate the road traffic demand around the airport (and its potential congestions), nor how to achieve the public transport targets in the plan.

- HAL specific:
 - Overall, HAL’s sustainability framework provides a high-level commitment to managing environmental and social impacts but lacks the technical evidence required to evaluate its effectiveness. Quantitative data on noise, air-quality improvements, population exposure, and health outcomes are absent, and no clear performance baselines have been established. The strategy’s success will depend heavily on factors outside HAL’s control, including rail access, pace of SAF deployment, technological readiness, and evolving regulatory requirements.
- HWL specific:
 - HWL’s air quality assessment is methodologically sound, using established modelling tools and comparative baselines. The proposal demonstrates compliance with legal NO₂ thresholds and outlines embedded mitigation measures.
 - Aircraft noise modelling is robust, with AEDT simulations showing minor differences between HWL’s proposal and HAL’s 2019 Masterplan. HWL’s runway length and location scheme results in a 3% increase in population exposed to >57 dB LAeq,16h. Mitigation measures are proposed, including acoustic barriers and insulation.
 - The proposal adopts a multi-scalar and interdisciplinary approach to community impacts, integrating health and equality assessments.

Stakeholder engagement conclusions

4.203 The conclusions for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - (None)
- HAL specific:
 - Airline engagement has been a central component of the expansion planning process, with HAL facilitating thousands of interactions and extensive dialogue through formal governance structures, bilateral meetings, and specialist working groups. Feedback from airlines has directly influenced key aspects of the masterplan, including runway design, cost optimisation, regulatory structure, slot policy, surface access, and the integration of environmental policy requirements.
 - While overall support for expansion exists, some of this support remains conditional, reflecting ongoing concerns about affordability, cost transparency, and regulatory clarity.
- HWL specific:
 - HWL has mainly provided evidence of stakeholder engagement with IAG. We assess that, although gathering inputs and feedback from the largest airline group currently operating at Heathrow is important, HWL would

benefit from further engagement with airlines beyond IAG to provide non-biased conclusions on very critical design aspects such as the length of the runway and the operational capabilities of the new infrastructure.

- Engagement with other stakeholders, including airport users and public authorities, is mentioned in HWL’s proposal, but it does not provide evidence of the information that was received nor how this information was incorporated into the proposed scheme.
- HWL suggests future engagement with a broader spectrum of stakeholders, which we fully endorse.
- We assess that the definition of an optimal airport expansion scheme can only be undertaken after an in-depth consultation process with all stakeholders, which has not been done by HWL at this stage.

Risks

Optioneering risks

4.204 The risks for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - Some of the data that is needed to analyse the masterplan options might be outdated and might lead to wrong assessments.
 - The lack of clarity on the future rail schemes to connect Heathrow jeopardises the ability to assess the masterplan options appropriately and conditions the whole surface access strategy and sustainability plans.
- HAL specific:
 - (None)
- HWL specific:
 - Until a proper optioneering process is carried out, there is a risk of not developing the optimal option.
 - The conclusions of the length and location of the runway might not properly address the operability and noise impact criteria.

Airport scheme design risks

4.205 The risks for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - Additional land might be required to be included in the Compulsory Purchase Zone if there are changes in the runway location, changes in the taxiway system or additional aircraft parking stands are needed.
 - No detailed information regarding the Obstacle Limitation Surfaces.
 - With the increase in road traffic generated by the expansion of the airport (plus the non-airport traffic) there is a very high risk of increased road congestion at several sections around the airport.
 - The concentration of all the additional passengers that the expansion will bring in the west side of the airport could increase the likelihood of landside congestion and create a potential constraint point which will

impact most of the airport operations, particularly during peak demand periods or in the event of service disruptions.

- Risk of future increases in rail services capacity or rail links not materialising and putting pressure on the road system.
- HAL specific:
 - Before the commissioning of T5XN in 2054, there is a risk of having insufficient passenger capacity even with high levels of remote stand operations.
- HWL specific:
 - There could be severe congestion issues in the airfield design, limiting the number of operations and reducing resilience.

Operability and Capacity risks

4.206 The risks for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - The amount of bus operations to serve remote stands could be a safety and an airfield capacity risk during certain periods of the forecast.
 - There is a risk that more stand capacity and a larger taxiway system might be required to accommodate the planned traffic growth. These additional infrastructures will increase the land acquisition requirements and the capex estimate.
- HAL specific:
 - Risk of demand exceeding terminal capacity at certain points in the future before the opening of T5XN (planned for 2054).
- HWL specific:
 - The capacity of the new runway might not be capable of handling additional capacity estimated by HWL.
 - The number of aircraft parking stands in the plan might not be sufficient to accommodate all the ATMs and passengers in the forecast.

Expected timelines and Deliverability risks

4.207 The risks for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - The delivery of the programme implies several important risks that can materially impact the timescales such as publication of the updated ANPS, approval of the DCO including legal challenges, land acquisition, construction, and operational readiness.
 - The current programme also has a risk of overlap of the DCO approval with the next government general election.
 - The overlap between Heathrow expansion and other major infrastructure programmes, notably HS2 (expected completion in 2033), is likely to place additional pressure on the UK construction market.
- HAL specific:
 - (None)
- HWL specific:

- (None)

Sustainability risks

4.208 The risks for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - No projections are presented to demonstrate how day and night-time noise exposure will evolve with expansion, nor how progressive mitigation (for example, new aircraft fleet or new operating procedures) would offset the increase in aircraft movements. Without this evidence, it is uncertain whether the Balanced Approach alone can adequately protect affected communities.
 - The uncertainty around new rail schemes connecting Heathrow creates a risk on the mode shift targets for public transport and carbon emissions.
- HAL specific:
 - Without continuous monitoring, and health-based performance indicators, there remains a risk that local air-quality standards could be exceeded.
- HWL specific:
 - (None)

Stakeholder engagement risks

4.209 The risks for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - (None)
- HAL specific:
 - Risk of diminishing support from the key stakeholders, including airlines, environmental groups, and community and resident groups.
- HWL specific:
 - The views of all key stakeholders have not been captured in the proposal, nor have been addressed in the option for airport scheme put forward in HWL’s proposal.
 - Some key public authorities have not been consulted.

5 Cost efficiency assessment of capex expansion plans

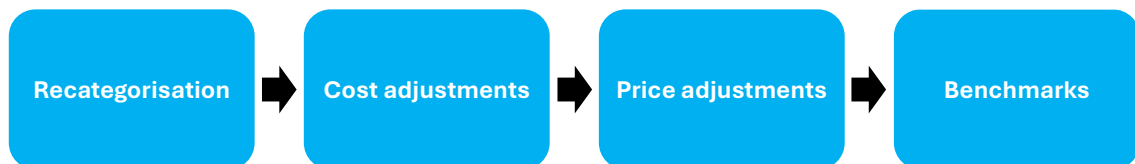
Introduction

- 5.1 We have undertaken a cost efficiency assessment of capex expansion plans for Heathrow Airport on the proposal submitted by HAL and HWL.
- 5.2 This chapter describes the methodology that we followed to undertake the assessments and summarises the key findings. More extended versions of the technical assessments of the two proposals are included in the corresponding Appendices.

Methodology

- 5.3 The process that we have followed to undertake the assessment is presented in the figure below and explained step by step afterwards.

Figure 5.1: Methodology process for cost efficiency assessment



Source: Steer

Recategorisation

- 5.4 The two proposals differ in terms of scope definition, cost structure, and task grouping. Therefore, we have developed our own cost categorisation and have allocated the cost items of the two proponents to the relevant categories. While the two proposed schemes are significantly different, translating them into a common cost categorisation structure allows comparison of similar activities and identifies what is included and excluded in each proposal.
- 5.5 Subsequent to the July 2025 submission, both proponents have shared with us further information related to scope and cost breakdown. We have categorised the cost breakdown we received from the proponents according to our common cost structure based on our understanding of the information provided to us. We explain our cost categorisation of each proposal in the corresponding Appendix.
- 5.6 We have categorised the capex components into the following main categories:

- Airfield infrastructure;
- Passenger terminals and processing;
- Landside access and transport;
- Utilities, ancillary and support facilities;
- Environmental and community; and
- Programme and risk.

5.7 Each of these main cost categories have been divided into subcategories, covering the main scope of works according to the proponent’s proposal. These subcategories, the proponent’s scope, and our own assumptions are the basis for our quantity estimates and unit cost benchmarking.

Cost adjustments

- 5.8 HAL’s proposal of £33bn (2024 CPI prices) explicitly says that it includes land acquisition costs.
- 5.9 We excluded from our cost assessment the activities linked to the refurbishment and expansion of existing airport facilities included in HAL’s proposal under the label ‘Modernising Heathrow’.
- 5.10 HWL stated in their proposal submitted to DfT in July 2025 that the costs when land acquisition (and associated elements) was not included resulted in the [REDACTED] (Q4 2024 TPI prices) cost of their proposal. Through engagement and Q&A, HWL indicated to us that their estimate of costs with land acquisition would be in the range of [REDACTED] to [REDACTED] (Q4 2024 TPI prices). We therefore adjusted the overall cost of HWL to include the cost of land acquisition, taking the high end of the range.
- 5.11 We note that none of the proposals include costs for new railway schemes connecting Heathrow and we did not make allowances for such costs in our assessment. Both proposals have indicated that the Western Terminal Campus development will be future proofed for any potential new rail scheme.

Price adjustments

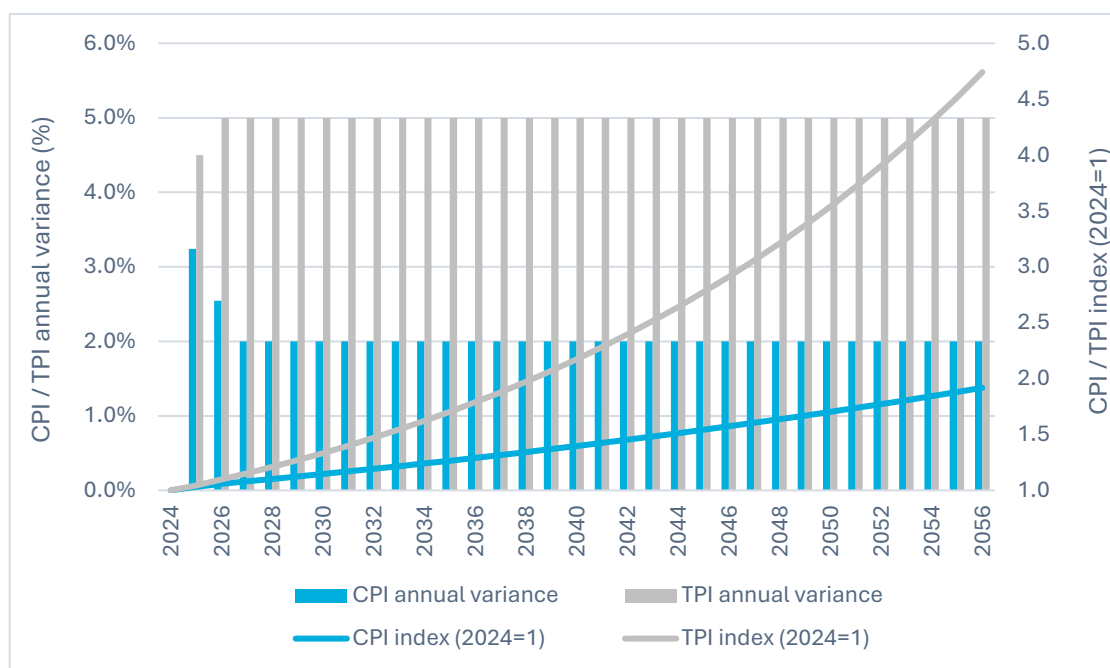
- 5.12 The two proposals have presented their costs estimates in a different price base:
- HAL’s cost estimate has been expressed in 2024 CPI (Consumer Price Index) prices, as clearly stated in the July 2025 proposal; and
 - HWL’s cost estimate has been expressed in Q4 2024 prices, which was later clarified to be TPI (Tender Price Index) prices.
- 5.13 Given the nature of the works that we need to benchmark at this stage of the expansion project, we assess that the construction price index (i.e. TPI) is a better reference than the CPI index. TPI is the construction index standard in the UK and benchmarks are commonly presented using this index, rather than CPI. Therefore, our benchmarking exercise is presented in annual average 2024 construction prices (2024 TPI prices). For forecasts, we have used the Q2 2025 Infrastructure tender price index (TPI) forecast from Turner & Townsend¹³. This index provides

¹³ UK market intelligence Q2 2025, Turner & Townsend.

annual construction costs forecast from 2025 to 2028. After that, we have assumed that the year-on-year construction cost increase in 2028 will remain constant for the following years.

- 5.14 The chart below shows the CPI forecast from the ONS and our TPI forecast. It shows that the TPI prices are forecast to be 1.6 times higher than CPI prices by 2040, and 2.5 times higher by 2056, which correspond respectively to the completion of HWL’s and HAL’s construction programmes.

Figure 5.2: CPI and TPI forecasts



Source: ONS, T&T, Steer analysis

- 5.15 In the table below we present a summary of the capex estimates provided by the proponents, with a comparison in both CPI and TPI prices.

Table 5.1: Capex estimates provided by HAL and HWL

	HAL’s proposal	HWL’s proposal	HWL versus HAL
Costs as in the proponents’ July 2025 proposal			
2024 CPI prices	████	████	N/A
Q4 2024 TPI prices	████	████	N/A
Cost adjustments			
Land acquisition (and associated costs), Q4 2024 TPI prices	████	████	N/A
Proponents’ costs including adjustments			
2024 CPI prices	████	████	N/A
Q4 2024 TPI prices	████	████	N/A

	HAL’s proposal	HWL’s proposal	HWL versus HAL
Proponents’ costs including adjustments – common price base			
2024 CPI prices	£33.0bn	£30.2bn	-8%
2024 TPI prices	£24.8bn	£23.7bn	-5%

Source: HAL, HWL, Steer

Benchmarks

- 5.16 The result of multiplying our quantity estimates by our unit cost benchmarks provides a new cost estimate per subcategory, which we compare against the costs provided by the proponents. We note that, at this stage, HWL has provided more granular information than HAL, which allows us to undertake a more accurate assessment of the cost efficiency for the HWL’s proposal than for HAL’s proposal.
- 5.17 Proponents might have sourced their costs from specific projects with an advanced design development level. For example, HAL mentions that for some estimates, the maturity of the information ranges between RIBA 2+(Concept design) and RIBA 3 (Space coordination).¹⁴ The information that we have used in this cost assessment is derived solely from the proponent’s master plan or general site drawings.
- 5.18 Based on the maturity of the master plans and the level of information currently available, the cost estimate that we provide in this assessment corresponds approximately to the early design stages of the RIBA Plan of Work, namely Stages 1 and 2 (Preparation and Brief / Concept Design). This RIBA classification reflects the early planning phase of the project, where the scope definition remains at a high-level and conceptual. As a result, the expected accuracy range that we are assuming for the Contingency and Risk management element of the capex estimate is approximately between 15% and 30%.

Cost efficiency assessment

Cost efficiency assessment - HAL

- 5.19 The following table reflects how we have categorised HAL’s capex estimate according to our capex categorisation template. The capex numbers are presented in both CPI and TPI prices of 2024.

¹⁴ [How to Use RIBA 2020 Plan of Work: RIBA Design Stages Explained \[Updated\] - Urbanist Architecture - Small Architecture Company London](#)

Table 5.2: HAL capex recategorisation

Steer categorisation template	HAL categories	Capex (£bn, 2024, CPI)	Capex (£bn, 2024, TPI)	Comments
Total Airfield infrastructure		████	████	
New runway	Runway	████	████	Assumed 20% of item Airfield Ancillary for new runway
	Systems	████	████	
	Operational Readiness	████	████	
	Airfield Ancillary	████	████	
	Sub-total	████	████	
Taxiway system and runway access	Airfield Ancillary	████	████	Assumed 80% of item Airfield Ancillary for new runway
	Taxiways	████	████	
	Sub-total	████	████	
Aircraft stands, aprons and airside roads	Airside Roads	████	████	
	Remote Stands / Taxi lanes	████	████	
	Contact Stands / Aprons	████	████	
	Sub-total	████	████	
Total Passenger terminals and processing		████	████	
New passenger terminals	T5XW	████	████	
	T5XN	████	████	
	Sub-total	████	████	
Airside underground links	Baggage	████	████	Assumed BHS for both terminals and BHS underground link connecting them. TTS/APM cost between terminals assumed to be included in this item.
	Sub-total	████	████	
Total Landside access and transport		████	████	
Road connections	M25 Mainline	████	████	Underpass and local roads works have been assumed to be included in these works.
	M25 Junctions	████	████	
	Roads	████	████	
	Connectivity	████	████	

Steer categorisation template	HAL categories	Capex (£bn, 2024, CPI)	Capex (£bn, 2024, TPI)	Comments
	Surface access	████	████	
	Sub-total	████	████	
Car parks and internal roads	Landside Parkways	████	████	We assume that HAL has included part of the landside roads also in this cost item.
	Sub-total	████	████	
Total Utilities, ancillary and support facilities		████	████	
Ancillary aviation facilities	Airfield Utilities	████	████	
	Sub-total	████	████	
Relocation and new critical services	Displaced Uses	████	████	
	Utility Diversion	████	████	
	Sub-total	████	████	
River diversions / Major civil works	Rivers	████	████	
	Sub-total	████	████	
Cargo facilities	NA	████	████	HAL has not provided a specific cost for this item; however, it has been kept as an independent item for its identification and evaluation.
	Sub-total	████	████	
Temporary works	Logistics	████	████	Logistics for the development of works, demolitions and earthworks are considered as temporary works.
	Demolitions / Earthworks	████	████	
	Sub-total	████	████	
Total Environmental and community Cost		████	████	
Land acquisition and property compensation	Land & Property	████	████	
	Sub-total	████	████	
Community compensation and social programmes	Community	████	████	
	Sub-total	████	████	
	Archaeology	████	████	

Steer categorisation template	HAL categories	Capex (£bn, 2024, CPI)	Capex (£bn, 2024, TPI)	Comments
Specific environmental mitigations	Natural Environment	████	████	
	Sub-total	████	████	
Total Programme and risk		████	████	
Contingency and risk management	Contingency	████	████	
	Sub-total	████	████	
Development Consent Order (DCO) process	Consents	████	████	
	Sub-total	████	████	
Total		32.9	24.8	

Source: HAL, Steer. Note: There could be differences due to rounding.

5.20 The following table includes a summary of our capex benchmarking assessment, followed by an explanation of the key conclusions.

Table 5.3: Cost assessment summary of HAL’s proposal (2024 prices, TPI)

Capex category	HAL cost (£bn)	Steer low range benchmark (£bn)	Steer high range benchmark (£bn)	RAG
Airfield infrastructure	████	3.5	4.9	In range
Passenger terminals and processors	████	5.7	7.2	Low
Landside access and transport	████	3.9	5.7	In range
Utilities, ancillary and support facilities	████	3.6	6.4	In range
Environmental and community	████	5.2	7.1	Low
Programme and risk	████	2.7	8.0	Low
Total	24.8	24.6	39.4	In range

Source: HAL, Steer

5.21 Airfield infrastructure: HAL’s estimate is close to the low range of the benchmark. There are some differences at the subcategory level between HAL and the benchmarks, mainly due to the lack of granular information. There is a large discrepancy in the subcategory ‘Aircraft stands, aprons and airside roads’, which needs to be investigated further.

5.22 Passenger terminals and processor: HAL’s estimate is close to the lower end of the benchmark range, although the subcategories included in ‘Airside underground links’ require further information.

- 5.23 Landside access and transport: HAL’s estimate is at the lower end of the cost benchmark. The scope of the works for the external road connections needs to be further detailed, and it might be underestimated.
- 5.24 Utilities, ancillary and support facilities: Although there is lack of detail in HAL’s information for the costs estimates of each major activity within this category, the overall amount is within the benchmark range.
- 5.25 Environmental and community: The subcategory ‘Land acquisition and compensation’ presents a large difference between HAL’s estimates and the benchmark range. The cost of this element will need to be calculated by undertaking a bottom-up exercise at the specific locations.
- 5.26 Programme and risk: HAL’s implied cost is 12% of all of the categories above except for ‘Environmental and community’. Compared with our benchmark range of 16% to 33% (including DCO costs), the Programme and risk cost category assumed for HAL is low. As HAL explains in their methodology, each of the capex elements already include an allowance for risk, which varies depending on their level of estimation maturity. Due to the differences in estimation methodologies, we assess that the capex estimates should also be compared at a total level and, on that basis, we assess that the overall risk allocation included in HAL’s estimate could be reasonable.
- 5.27 Total capex estimate proposed by HAL is inside the benchmarking range.
- 5.28 In order to facilitate the traceability and usability of the results, we provide in the table below the capex estimates in the original prices (2024 CPI prices) and in 2024 TPI prices.

Table 5.4: HAL - Cost assessment summary results – HAL proposal

Price base	HAL	Steer low range benchmark [vs. HAL]	Steer high range benchmark [vs. HAL]
2024 CPI prices	£33.0 bn	£32.7 bn [-1%]	£52.4 bn [+59%]
2024 TPI prices	£24.8 bn	£24.6 bn [-1%]	£39.4 bn [+59%]

Source: HAL, Steer

Cost efficiency assessment - HWL

- 5.29 The following table reflects how HWL’s capex estimate has been categorised using our standard categorisation template. The capex numbers are presented in both Q4 2024 and 2024 (i.e. average of the year) prices, both linked to TPI.

Figure 5.3: HWL capex recategorisation

Standard template	HWL categories	Capex (£bn, Q4 2024, TPI)	Capex (£bn, 2024, TPI)	Comments
Total Airfield infrastructure				
New runway	New runway	████	████	
	Sub-total	████	████	

Standard template	HWL categories	Capex (£bn, Q4 2024, TPI)	Capex (£bn, 2024, TPI)	Comments
Taxiway system and runway access	Taxiway system and runway access:	████	████	
	Sub-total	████	████	
Aircraft stands, aprons and airside roads	Airside Roads	████	████	Includes provision for tunnels for airside roads
	Sub-total	████	████	
Total Passenger terminals and processing		████	████	
New passenger terminals	New passenger terminals	████	████	
	Sub-total	████	████	
Airside underground links	Airside underground links	████	████	Assumed that includes BHS tunnel and BHS
	Sub-total	████	████	
Total Landside access and transport		████	████	
Intermodal plaza / Public transport hub	Intermodal plaza / Public transport hub	████	████	Several items have been grouped under this category
	Station Box	████	████	
	Hotels	████	████	
	Conference Centre	████	████	
	Listed building decants	████	████	
	Sub-total	████	████	
Road connections	Road connections	████	████	
	Sub-total	████	████	
Car parks and internal roads	Landside Parkways	████	████	Includes the APM systems connecting the remote car parks with the Inter Terminal Plaza
	Sub-total	████	████	
Total Utilities, ancillary and support facilities		████	████	
Ancillary aviation facilities	Airfield Utilities	████	████	
	Sub-total	████	████	
Relocation and new critical services	Relocation and new critical services	████	████	

Standard template	HWL categories	Capex (£bn, Q4 2024, TPI)	Capex (£bn, 2024, TPI)	Comments
	Sub-total	████	████	
River diversions / Major civil works	River diversions	████	████	
	Sub-total	████	████	
Cargo facilities	Cargo building west	████	████	No detailed information provided
	Sub-total	████	████	
Temporary works	Temporary works	████	████	Archaeology is included in this category
	Archaeology	████	████	
	Sub-total	████	████	
Total Environmental and community		████	████	
Green infrastructure, landscaping, and environmental enhancements	Green infrastructure	████	████	HWL’s costs based on Jacobs Cost and Commercial Viability Report dated 30 June 2015
	Sub-total	████	████	
Land acquisition and property compensation	Land acquisition	████	████	Clarification provided by HWL. We assume the upper end of the range provided
	Sub-total	████	████	
Community compensation and social programmes	Community	████	████	HWL’s costs based on Jacobs Cost and Commercial Viability Report dated 30 June 2015
	Sub-total	████	████	
Sustainability and energy efficiency investments	Sustainability	████	████	HWL’s costs based on Jacobs Cost and Commercial Viability Report dated 30 June 2015
	Sub-total	████	████	
Specific environmental mitigations	Environmental mitigations	████	████	HWL’s costs based on Jacobs Cost and Commercial Viability Report dated 30 June 2015
	Sub-total	████	████	
Total Programme and risk		████	████	
Contingency and risk management	Contingency and risk	████	████	For comparison purposes, these three items have been grouped under this category
	Sub-total	████	████	
Development Consent Order (DCO) process	Consents	████	████	
	Sub-total	████	████	

Standard template	HWL categories	Capex (£bn, Q4 2024, TPI)	Capex (£bn, 2024, TPI)	Comments
Professional Fees	Professional Fees	████	████	
	Sub-total	████	████	
Total		23.9	23.7	

Source: HWL, Steer. Note: There could be differences due to rounding.

5.30 The following table includes a summary of our capex benchmarking assessment, followed by an explanation of the key conclusions.

Table 5.5: Cost assessment summary of HWL’s proposal (2024 prices, TPI)

Capex category	HWL cost (£bn)	Steer low range benchmark (£bn)	Steer high range benchmark (£bn)	RAG
Airfield infrastructure	████	3.0	4.0	Low
Passenger terminals and processors	████	4.5	5.8	Low
Landside access and transport	████	3.7	5.3	In range
Utilities, ancillary and support facilities	████	3.1	5.3	Low
Environmental and community	████	4.8	6.7	In range
Programme and risk	████	2.3	6.7	In range
Total	23.7	21.4	33.9	In range

Source: HWL, Steer

- 5.31 Airfield infrastructure: We assess that HWL might have underestimated the earthworks and taxiway system that are required to develop the proposed runway and enable a flexible operability of the airfield; hence the costs are materially lower than the benchmark.
- 5.32 Passenger terminals and processor: HWL’s cost estimate is close to the lower end of the benchmark range.
- 5.33 Landside access and transport: The proposed cost estimates are in line with the benchmark range at an overall level, albeit there are differences among subcategories.
- 5.34 Utilities, ancillary and support facilities: We assume that HWL’s cost estimate fall short of the benchmark due to the absence of critical elements of the scope, which include ‘Ancillary aviation facilities’, and ‘Relocation and new critical services’.
- 5.35 Environmental and community: Costs are in line with benchmarks, with Land acquisition being the largest element of the category.

- 5.36 Programme and risk: HWL’s implied cost for Contingency and risk management is 25% of all of the categories above except for ‘Environmental and community’, versus a benchmark range of 15% to 30%. On top of that, HWL applies an implied 1% cost, which is also aligned with the benchmark range. Contrary to our methodology, HWL applies an additional implied 17% cost for Professional Fees. Considering that the cumulative costs over which these percentages are applied to are lower for HWL than for our own estimation, the overall Programme and risk category cost is still within the benchmark range.
- 5.37 Total capex estimate proposed by HWL is inside the benchmarking range.
- 5.38 In order to facilitate the traceability and usability of the results, we provide in the table below the capex estimates in 2024 CPI prices and in 2024 TPI prices.

Table 5.6: HWL - Cost assessment summary results – HWL proposal

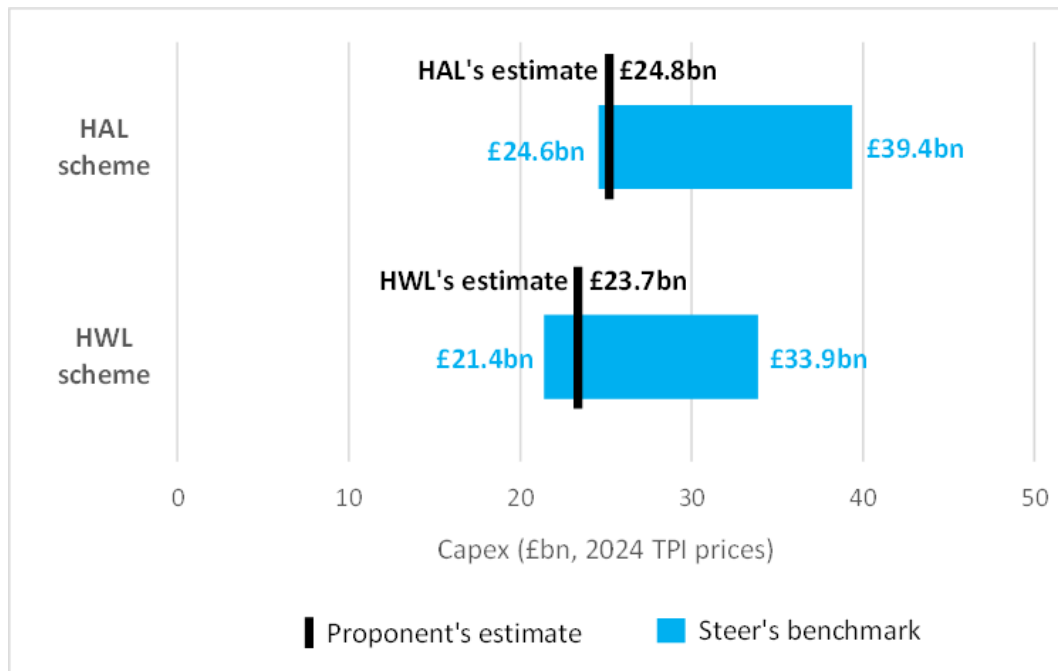
Price base	HWL	Steer low range benchmark [vs. HWL]	Steer high range benchmark [vs. HWL]
2024 CPI prices	£30.2 bn	£27.3 bn [-10%]	£43.2 bn [+43%]
2024 TPI prices	£23.7 bn	£21.4 bn [-10%]	£33.9 bn [+43%]

Source: HWL, Steer. Note: HWL costs are inclusive of █████ (2024 Q4 TPI prices) for land acquisition, which HWL did not include in its proposal costed at █████ (Q4 2024 TPI) but provided to us as part of Q&A.

Conclusions

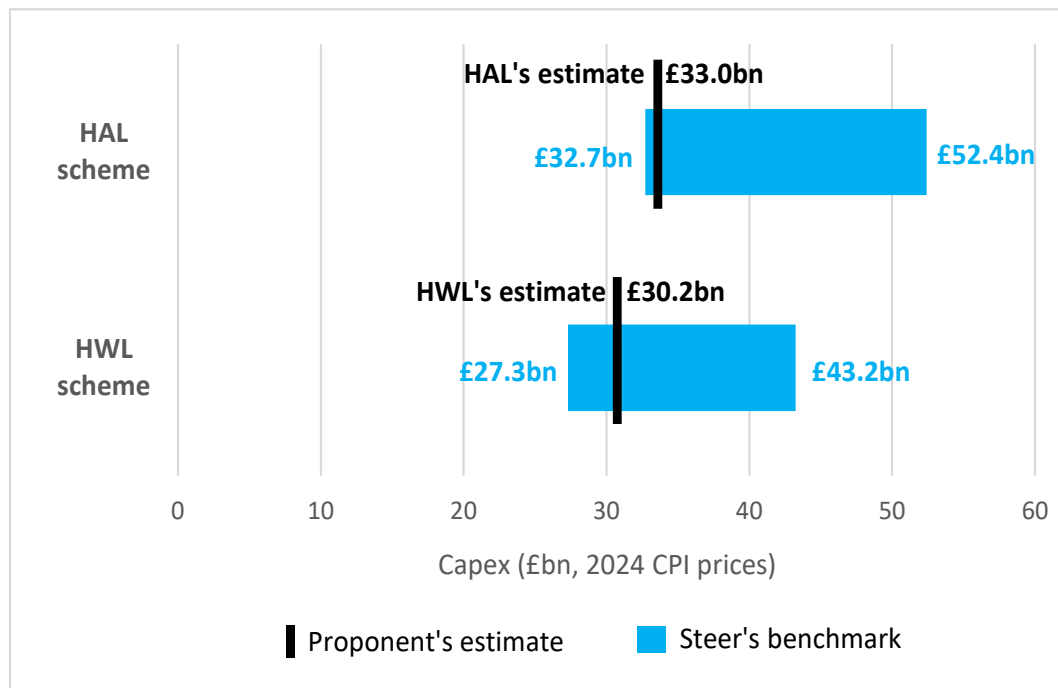
- 5.39 Our independent capex estimations for the Heathrow expansion scheme proposed by HAL provide a benchmarking range of £24.6bn to £39.4bn (2024 TPI prices). HAL’s estimate of their plan at £24.8bn (2024 TPI prices) is at the very low end of the range, suggesting that there is a very high risk that HAL’s scheme may not be delivered within the capex envelope of £24.8bn (2024 TPI prices) that HAL set in its July 2025 submission.
- 5.40 Our capex estimations for the Heathrow expansion scheme proposed by HWL provide a benchmarking range of £21.4bn to £33.9bn (2024 TPI prices). HWL’s estimate of their plan at £23.7bn (2024 TPI prices) is at the lower end of the range, also suggesting a significant risk that HWL’s scheme may not be deliverable within the capex envelope of £23.7bn (2024 TPI prices) that HWL set in its July 2025 submission.
- 5.41 The overall outcome of the cost efficiency assessment is summarised in the chart below.

Figure 5.4: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 TPI prices)



Source: HAL, HWL, Steer

Figure 5.5: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 CPI prices)



Source: HAL, HWL, Steer

5.42 The cost estimate proposed by HAL and HWL (black lines in the chart above) indicate that, when presented in the same price base and the cost of land acquisition is added to the cost of HWL’s proposal, the £24.8bn (2024 TPI prices)

cost estimate that HAL proposes is 5% higher than the £23.7bn (2024 TPI price) cost estimate proposed by HWL.

- 5.43 The comparison of our independent capex estimation range for the expansion schemes proposed by HAL and by HWL (blue bars in the chart above) show that:
- The high-end of our cost range for the HAL scheme at £39.4bn (2024 TPI prices) is 16% greater than the high-end of our cost range for the HWL scheme of £33.9bn (2024 TPI prices);
 - The low-end of our cost range for the HAL scheme of £24.6bn (2024 TPI prices) is 15% greater than the low-end of our cost range for the HWL scheme at £21.4bn (2024 TPI prices).
 - The variability of our independent cost range, measured by the range of our high-end estimate as a proportion of our low-end cost estimate for each scheme, indicates a slightly higher variability for the HAL scheme, where our cost range is 60% of our lower-end estimate of £24.6bn (2024 TPI prices), which compares with a 58% variability in the HWL scheme.
- 5.44 The difference in our independent cost estimates, and variability of our estimates, between the two schemes is mainly driven by two components of the master plans: (i) HAL is proposing a longer runway than HWL ('Airfield infrastructure' category); and (ii) HAL is proposing a satellite building between the future Northern Runways with a baggage tunnel and a tunnel to accommodate a new passenger Track Transit System, both tunnels connecting T5XN to T5XW ('Passenger terminal' category). The differences in these two elements also drive increases in costs in other categories, such as 'Utilities, ancillary and support facilities' and 'Programme and risk'.
- 5.45 This is evident in the tables below (data in TPI and CPI prices), which compare capex estimates of both airport expansion schemes contrasting the cost proposed by each proponent against our independent cost estimate range by cost category.

Table 5.7: Capex estimations of the schemes – Benchmarking ranges and proponents (£bn, 2024 TPI prices)

Cost category	HAL scheme (£bn, 2024 TPI)			HWL scheme (£bn, 2024 TPI)		
	HAL	Steer low range	Steer high range	HWL	Steer low range	Steer high range
Airfield infrastructure	████	3.5	4.9	████	3.0	4.0
Passenger terminals and processing	████	5.7	7.2	████	4.5	5.8
Landside access and transport	████	3.9	5.7	████	3.7	5.3
Utilities, ancillary and support facilities	████	3.6	6.4	████	3.1	5.3
Environmental and community	████	5.2	7.1	████	4.8	6.7
Programme and risk	████	2.7	8.0	████	2.3	6.7

Cost category	HAL scheme (£bn, 2024 TPI)			HWL scheme (£bn, 2024 TPI)		
	HAL	Steer low range	Steer high range	HWL	Steer low range	Steer high range
Total	24.8	24.6	39.4	23.7	21.4	33.9

Source: HAL, HWL, Steer

Table 5.8: Capex estimations of the schemes – Benchmarking ranges and proposals (£bn, 2024 CPI prices)

Cost category	HAL scheme (£bn, 2024 CPI)			HWL scheme (£bn, 2024 CPI)		
	HAL	Steer low range	Steer high range	HWL	Steer low range	Steer high range
Airfield infrastructure	████	4.7	6.5	████	3.8	5.1
Passenger terminals and processing	████	7.5	9.6	████	5.8	7.4
Landside access and transport	████	5.2	7.6	████	4.8	6.8
Utilities, ancillary and support facilities	████	4.8	8.6	████	3.9	6.7
Environmental and community	████	6.9	9.5	████	6.1	8.6
Programme and risk	████	3.6	10.6	████	2.9	8.6
Total	33.0	32.7	52.4	30.2	27.3	43.2

Source: HAL, HWL, Steer

5.46 The results provided in this assessment should be further revisited once there is more detailed information available from the proponents.

Risks

5.47 The cost estimates provided by the proponents and the estimates that we have provided as a benchmark are not exempt from material future deviations coming from changes in the scope and unit cost rates.

5.48 The key areas of risk associated with the scope of the programme are:

- Road works;
- Rail works (if applicable in the future);
- Earthworks related to the new airfield;
- Tunnels under the existing airfield;
- Utilities infrastructure;
- Relocation of non-Heathrow facilities; and
- Land acquisition (cost and timelines).

5.49 The volatility of the unit cost rates is an intrinsic risk that is linked to the UK construction market, and also to cost of the raw materials worldwide.

6 Recommendations

Recommendations for further development of the expansion plans

6.1 Based on our initial technical assessment, we suggest a series of recommendations for further development of the proposals to ensure the plans are feasible, operational, deliverable, and cost efficient.

Optioneering recommendations

6.2 The recommendations for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - The potential of new rail schemes connecting Heathrow should be consulted with the DfT.
 - For further validation of the option put forward by the promoters in their proposals, the following key areas of the master planning exercise should be updated:
 - Traffic and airline strategy: traffic scenarios and a high-level flight programme should be developed to assess airline strategies. For example, the introduction of long-haul flights with narrowbody aircraft could alter the distribution of widebody/narrowbody ratios across runways and affect future scheduling.
 - Aircraft data: calculations should be updated to reflect re-engined aircraft such as the A320/A321neo or B737 MAX, and the actual performance of newer widebodies such as the A350 or B787. The lack of updated data might lead to wrong conclusions.
 - Population data: population figures and other relevant datasets should be updated to 2025 levels to ensure accuracy, and new forecast for noise contours and impact on the community should be developed.
 - 3D and topographical evaluation: modelling should include topography, runway slopes, and the impact on the M25/M4, together with the compliance with OLS requirements.
 - Terminal and apron options: the option of providing more terminal capacity in the North (via a large satellite building or a processor building) could be reassessed if there are indications of a potential future rail link development between the Northern Runways.
 - Aircraft movement capacity: a robust and detailed analysis is needed on how traffic will be split among the three runways, including taxiing arrangements depending on airline, terminals, and origin–destination strategies which have

an influence in the split of operations between the main terminal building and the satellite building.

- HAL specific:
 - To enable a clearer differentiation among options, the options assessment criteria should be clearer, measurable, and consistently applied across the optioneering process. The key areas for improvement are the following:
 - Terminal area: airline strategy assumptions, distribution of facilities, evaluation gap that reflects the difference between a unified northern terminal area and a split between western and northern terminal areas.
 - Surface access: public transport connections by rail, underground, and road, including dependencies on third-party enablers such as train service provision or river crossings. Rail connectivity is primarily enabled by third parties, creating a material risk on the overall surface access strategy and targets
- HWL specific:
 - Develop a full optioneering exercise for, at least, the new runway and the terminal buildings.
 - For further validation of the option put forward by the promoters in their proposal, the following key areas of the master planning exercise should be updated:
 - Terminal and apron options: while terminal and apron feasibility are addressed in subsequent sections, options for a terminal area between the new runway and the existing Northern Runway should have been considered, at least as a satellite facility, if not a full terminal. This would address significant taxiing distances from Apron Location 3 to existing terminal areas and challenges at Apron Location 2.
 - Surface access and car parking strategy: the treatment of surface access and car parks lacks detail, particularly in relation to the disadvantages and justification for reduced parking provision. Some road scheme images still show the runway over the M25, suggesting that these may have been prepared before the decision to place the 2.8 km runway further east.
 - Runway length scenarios: definition of Take Off Runway Available (TORA) and full length should be complemented with wind and temperature scenarios to assess the real value of runway length.
 - Comparison of runway locations: further work is needed on the relative benefits and risks (including programme and cost) of constructing the runway over the M4 Spur versus the M25.

Airport scheme design recommendations

6.3 The recommendations for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - Land acquisition plans should be reassessed once there is an updated airport masterplan and updated noise impact contours.
 - For runway location and length, we suggest a two-step evaluation process. First, assess the required runway length independently from its proposed location. This assessment should be based on well-defined and up-to-

date assumptions regarding anticipated flight schedules and aircraft types expected to operate on the new runway within the next decades, meteorological conditions, as well as consideration of future airspace structures involving three runways, among other relevant parameters. Subsequently, evaluate potential locations by balancing investment requirements, impacts on road access—particularly the choice between affecting either the M4 Spur or the M25—and the noise impact on current and projected population distributions over the next years.

- Detailed airfield design should be undertaken to assess the appropriateness of the slopes, location of Rapid Exit Taxiways, taxiways' system, western bypass, aircraft circulation and stands.
- Detailed terminal design should be undertaken in terms of required space and functional analysis.
- Reassess surface access assumptions and provide details on how the mode share targets could be achieved, and what could mitigate the absence of additional rail schemes to connect the Western Campus. We recommend revisiting the current statistics and developing an updated plan that captures different infrastructure development scenarios. Consultation with the DfT and National Highways is recommended.
- The relocation of the critical facilities needs to be defined.
- HAL specific:
 - The road access to the West Terminal Campus would improve in capacity and resilience by adding another underground road access point north of the future T5XW. This additional infrastructure will increase the capex estimate.
- HWL specific:
 - The Obstacle Limitation Surfaces analysis should be provided.
 - We recommend that the proponent undertakes an independent assessment of the technical capabilities of the new runway and provides a more comprehensive and transparent explanation of the methodology used to determine the suitability of a 2,800m length runway.
 - The alternative of having a satellite building between the new runway and the existing Northern Runway should be analysed in order to support the uplift in capacity and optimisation of operations.
 - The future increases in the capacity of the existing rail services to Heathrow should be clarified.

Operability and Capacity recommendations

6.4 The recommendations for HAL's proposal and HWL's proposal are summarised below:

- Common to HAL and HWL:
 - More detailed analysis should be conducted in the next phase to determine the capacity balance of the runway system considering some key elements like meteorology, aircraft types, airspace capacity, restrictions, and airfield congestion.

- We recommend incorporating a dynamic stand capacity assessment, which considers variations in aircraft types, turnaround times, and scheduling patterns throughout the operational day. A robust analysis should be based on an assumed flight schedule, including peak hour distributions, aircraft size categories, and operational constraints such as towing requirements and remote stand usage.
- Terminal capacity requirements should be reassessed based on updated information and busy hour passenger data.
- There needs to be analysis on the volume of passengers that will be boarding the aircraft through a boarding gate (using a contact stand) versus remote operations (using remote stands and requiring bus services) throughout the forecast.
- HAL specific:
 - (None)
- HWL specific:
 - The capacity of the new runway should be assessed independently and with a detailed analysis.

Expected timelines and Deliverability recommendations

6.5 The recommendations for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - A revised programme schedule should be developed, aligning it with the expected publication date of the revised ANPS and providing sufficient time allowances for further design work and land acquisition.
- HAL specific:
 - (None)
- HWL specific:
 - (None)

Sustainability recommendations

6.6 The recommendations for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - Update studies including evidence and quantitative modelling on population exposure, affected households, aircraft and engine types, and baseline environmental conditions would help substantiate the justification for the proposed development and its expected impacts and mitigations.
 - Seek clarity on the development of rail services connecting Heathrow to define realistic public transport targets and carbon emissions reductions.
- HAL specific:
 - (None)
- HWL specific:
 - (None)

Stakeholder engagement recommendations

6.7 The recommendations for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - (None)
- HAL specific:
 - Further work will be needed as the project progresses towards a Development Consent Order submission, particularly to address outstanding concerns on affordability and regulatory arrangements, to secure clearer positions from key airline stakeholders, and to maintain trust and transparency with local communities and environmental groups. Strengthening these areas will be critical to ensuring continued stakeholder support and enabling a robust and deliverable expansion programme.
- HWL specific:
 - We recommend following a structured approach for factoring the stakeholder engagement in the development of the scheme such as: Stakeholder Identification, Engagement Strategy, Engagement Activities, Feedback Integration, Endorsements and Outcomes, and Transparency and Reporting.

Cost efficiency recommendations

6.8 The recommendations for HAL’s proposal and HWL’s proposal are summarised below:

- Common to HAL and HWL:
 - Develop an updated cost estimate reflecting today’s construction prices outlook.
 - Develop a detailed list of concepts included and excluded from the cost estimate.
 - Clarify the approach with the facilities and utilities that need to be relocated as part of the expansion.
 - Provide a “Bill of quantities” type format indicating measurements and unit rates.
 - Indicate the level of contingency included in each of the categories.
- HAL specific:
 - (None)
- HWL specific:
 - Develop a land acquisition (and associated elements) cost estimate.

Appendices

A Maturity assessment of proposals received by Department for Transport

B Initial technical assessment of capex expansion plans for Heathrow Airport: HAL proposal

C Initial technical assessment of capex expansion plans for Heathrow Airport: HWL proposal

D Initial cost efficiency assessment of capex expansion plans for Heathrow Airport: HAL proposal

E Initial cost efficiency assessment of capex expansion plans for Heathrow Airport: HWL proposal

Control Information

Prepared by

Steer
14-21 Rushworth Street
London SE1 0RB
+44 20 7910 5000
www.steergroup.com

Prepared for

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

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Author/originator

Fernando Ardavin

Reviewer/approver

Stephen Wainwright

Other contributors

Gonzalo Velasco
Javier Losada
Viral Bhavsar
Antonio Oliver del Pozo
Jorge Fernandez
Valeria del Pilar Rosillo
Miguel Varas de Dios
Martin Lavrilloux

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Appendix A – Maturity assessment of proposals received by Department for Transport

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Prepared by:

Steer
14-21 Rushworth Street
London SE1 0RB

+44 20 7910 5000

www.steergroup.com

Prepared for:

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

Client ref: Contract Ref. 3634

Our ref: 24949401

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Contents

1	Introduction	1
2	Maturity assessment framework	2
3	Maturity assessment of proposals received by Department for Transport	5
	List of proposals received	5
	Proponent 1	5
	Proponent 2	7
	Heathrow Airport Limited	8
	Heathrow West Limited	10
	Proponent 5	12
	Proponent 6	14
	Proponent 7	15
4	Risks identified in the maturity assessment	16
	Airport Scheme Design	16
	Expected Timelines	17
	Costs and Revenues	17
	Ownership, financing and funding	18
	Deliverability	18
	Environmental implications and planned mitigations	18

Figures

Figure 2.1: Maturity Assessment framework – Scoring mechanism	4
Figure 3.1: Heathrow Airport expansion proposal by HAL	8
Figure 3.2: Heathrow Airport expansion proposal by HWL	10

Tables

Table 2.1: Assessment framework – Information requirements set out in the SoS’s letter to promoters	2
Table 2.2: Maturity Assessment framework – Scoring mechanism	4
Table 3.1: Proponent 1 Proposal information scoring against information requirements in SoS’s letter	6
Table 3.2: Future Flight Proposal information scoring against information requirements in SoS’s letter	7
Table 3.3: Heathrow Airport Limited Proposal information scoring against information requirements in SoS’s letter	8
Table 3.4: Heathrow West Limited Proposal information scoring against information requirements in SoS’s letter	10

Table 3.5: Proponent 5 Proposal information scoring against information requirements in SoS's letter	12
Table 3.6: Proponent 6 Proposal information scoring against information requirements in SoS's letter	14
Table 3.7: Proponent 7 Proposal information scoring against information requirements in SoS's letter	15
Table 4.1: Airport Scheme Design risks	16
Table 4.2: Expected Timelines risks	17
Table 4.3: Costs and Revenues risks	17
Table 4.4: Ownership, financing and funding risks	18
Table 4.5: Deliverability risks	18
Table 4.6: Environmental implications and planned mitigations risks	18

1 Introduction

1.1 This appendix forms part of the technical assessment of expansion proposals for Heathrow Airport. It provides detailed information, analyses and supporting evidence that underpin the assessment and the conclusions presented in the Main Report. The materials included are intended to offer additional technical detail and context for specific aspects of the work. This document is structured as follows:

- **Chapter 2: Maturity assessment framework** – This chapter outlines the process by which maturity of proposals was assessed;
- **Chapter 3: Maturity assessment of proposals received by Department for Transport** – This chapter assesses the maturity of proposals received as well as the information submitted by the proponents; and
- **Chapter 4: Risks identified in the maturity assessment** – This chapter highlights the main risks identified through the high-level maturity assessment undertaken for each of the proposals received.

2 Maturity assessment framework

2.1 In order to assess the maturity of the proposals, we assess the completeness and robustness of the information presented in each proposal using a bespoke Multi-Criteria Assessment Framework (MCAF). The framework was informed by the information requirements set out in the Secretary of State’s (SoS) letter¹ to potential promoters of Heathrow expansion, which identified the elements summarised in the table below.

Table 2.1: Assessment framework – Information requirements set out in the SoS’s letter to promoters

Element	Sub-element	Information required
Airport Scheme Design	Runway	Location of proposed development.
	Terminal	Scope of project, including associated enabling elements (for example a terminal, any road changes required to construct the project).
	Land Use	Land use.
	Additional Capacity	Capacity uplift provided by the proposed expansion, including passenger numbers and air transport movements (ATMs) the infrastructure is capable of supporting by year – along with supporting information on these assumptions if it is material to the numbers of ATMs (e.g. long/short haul assumptions), or any network assumptions.
Expected Timelines	Expected Timelines	Plans for delivering an operational third runway by 2035, including sight of planned timelines for: <ul style="list-style-type: none"> – statutory consultation; – development consent order (DCO) application, working towards securing development consent in this Parliament; – construction timeline; and – phasing of release of runway and terminal capacity by year, if different phases or staged terminal builds are proposed.

¹ [Letter to potential promoters of Heathrow expansion - GOV.UK](#)

Element	Sub-element	Information required
Costs and Revenues	Capex	Information on expected costs by year, with details of the underlying analysis and assumptions.
	Airport Charges	Expected incremental impact on overall revenues and airport charges per passenger per year, with details of underlying analysis, modelling and assumptions.
	Economic Impact	Ambition of maximising economic growth opportunities for the UK.
Ownership, financing and funding	Ownership, financing and funding	Details of the commercial model used, including key assumptions underpinning it, and demonstration of ability to finance the scheme.
Deliverability	Deliverability	Technical assurance that the plans are feasible and can be reasonably delivered to timetables within the proposal.
	Stakeholder Feedback	Details of any discussions and endorsements from airlines on proposals.
Environmental implications and planned mitigations	Environmental implications	All proposals should ensure that plans are compatible with the UK’s legal, environmental and climate obligations and consider: <ul style="list-style-type: none"> – direct and indirect impacts, taking both construction and operation of a third runway by 2035 into account; – air and noise pollution; – decarbonisation targets, including an assessment of the whole life carbon impacts of the proposal; – night period operations; and – impacts on the local community regarding health, wellbeing and quality of life.
	Surface access	Surface access mode share targets, including elements of a surface access strategy covering changes to highways, rail, and any assumptions on parking, public transport, and active travel to achieve any targets set.

Source: Secretary of State’s letter to potential promoters of Heathrow, Steer

2.2 Each proposal was evaluated against the information requirements outlined above using a two-step scoring process as shown in Table 2.2:

1. **Step 1 – Binary assessment:** A simple Yes/No check, with ‘Yes’ assigned 1 point when information is provided and ‘No’ assigned 0 points when information is not provided.
2. **Step 2 – Information maturity assessment:** An evaluation of the completeness (quantity) and robustness (quality) of the information provided in the proposals submitted to DfT, with a range of scores, as outlined below.

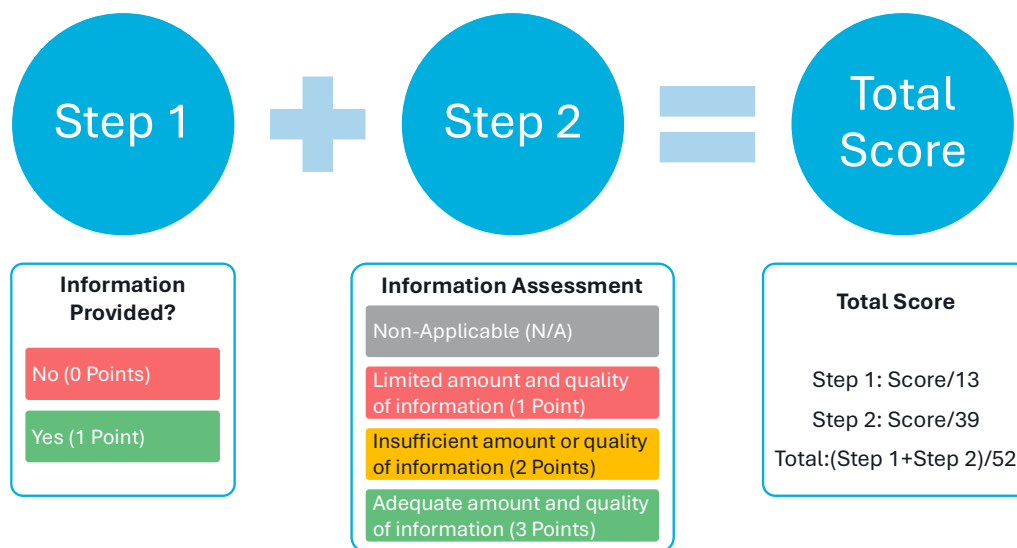
Table 2.2: Maturity Assessment framework – Scoring mechanism

Assessment	Score
Step 1	
Yes – Information provided	1
No – Information not provided	0
Step 2	
Not Applicable (no information provided)	N/A
Limited amount and quality of information	1
Insufficient amount or quality of information	2
Adequate amount and quality of information	3

Source: Steer

2.3 As a result of this two-step process, each applicable information category could obtain a total score ranging from 0 to 4, combining the binary check (0–1) with the information maturity assessment (1–3). Where an information category did not have any information to evaluate, only the binary score (0-1) was considered, and the overall score is zero. This scoring mechanism is summarised in the figure below.

Figure 2.1: Maturity Assessment framework – Scoring mechanism



Source: Steer

Note: In Step 1 the maximum score is 13, corresponding to the 13 information categories set out in the SoS’s letter to potential promoters replicated in Table 2.2. In Step 2, the maximum score is 39, which corresponds to the scenario where each of the 13 information categories receive the maximum score of 3 (13 x 3 = 39).

3 Maturity assessment of proposals received by Department for Transport

List of proposals received

- 3.1 The proponents that submitted documentation to the Department for Transport on 31 July 2025 were the following:
1. Proponent 1;
 2. Proponent 2;
 3. Heathrow Airport Limited;
 4. Heathrow West Limited Group;
 5. Proponent 5;
 6. Proponent 6; and
 7. Proponent 7.

Proponent 1

- 3.2 The proposal submitted by Proponent 1 identifies the location for the construction of a closely spaced parallel runway (CSPR) on the southern side of the airport.
- 3.3 This proposal builds on previously available public information from Heathrow Airport Limited's Proposal and Heathrow West Limited's proposal to draw benefits of a new CSPR runway compared to wider expansion plans.
- 3.4 The appendices presented in Proponent 1's submission outline two potential locations for the new runway and the implications of each for the existing infrastructure. Option 1 involves relocating the existing southern runway to the west and developing a closely spaced 3,700-metre parallel runway to the south. Option 2 proposes a closely spaced 2,800-metre parallel runway on the southern side of the existing runway, remaining within the airport boundaries. Both options would require the removal of the cargo area and Terminal 4. However, the submission provides limited detail on the overall scheme design. It does not provide any information about the other elements of the project, namely a proposed solution to accommodate the cargo and terminal building capacity. A summary of the information maturity assessment is presented in the table below.

Table 3.1: Proponent 1 Proposal information scoring against information requirements in SoS’s letter

Proponent 1		Information Provided	Information Assessment
Airport Scheme Design			
	Runway	1	3
	Terminal	1	1
	Land Use	1	2
	Additional capacity	1	1
Expected timelines			
	Expected timelines	0	N/A
Costs and revenues			
	Capex	0	N/A
	Airport Charges	0	N/A
	Economic Impact	0	N/A
Ownership, financing and funding			
	Ownership, financing and funding	0	N/A
Deliverability			
	Deliverability	0	N/A
	Stakeholder Feedback	0	N/A
Environmental implications and planned mitigations			
	Environmental implications	0	N/A
	Surface access	0	N/A
Sub-Total score		4	7
Sub-Total score (%)		31%	18%
Total score (Out of 52 points)		11	
Total score (% of maximum score of 52)		21%	

Source: Steer

Proponent 2

- 3.5 The proposal submitted by Proponent 2 recommends the construction of a new third runway, limited to a maximum length of 2,000 metres, in order to avoid encroaching on the M25. While the submission highlights potential reductions in delivery timelines and costs associated with a shorter runway, it does not specify the proposed location nor any other specific information on the merits of the proposed scheme.
- 3.6 Beyond the runway concept, the proposal lacks information against most of the elements requested in the Secretary of State’s letter. A summary of the assessment of the information provided is presented in the table below.

Table 3.2: Future Flight Proposal information scoring against information requirements in SoS’s letter

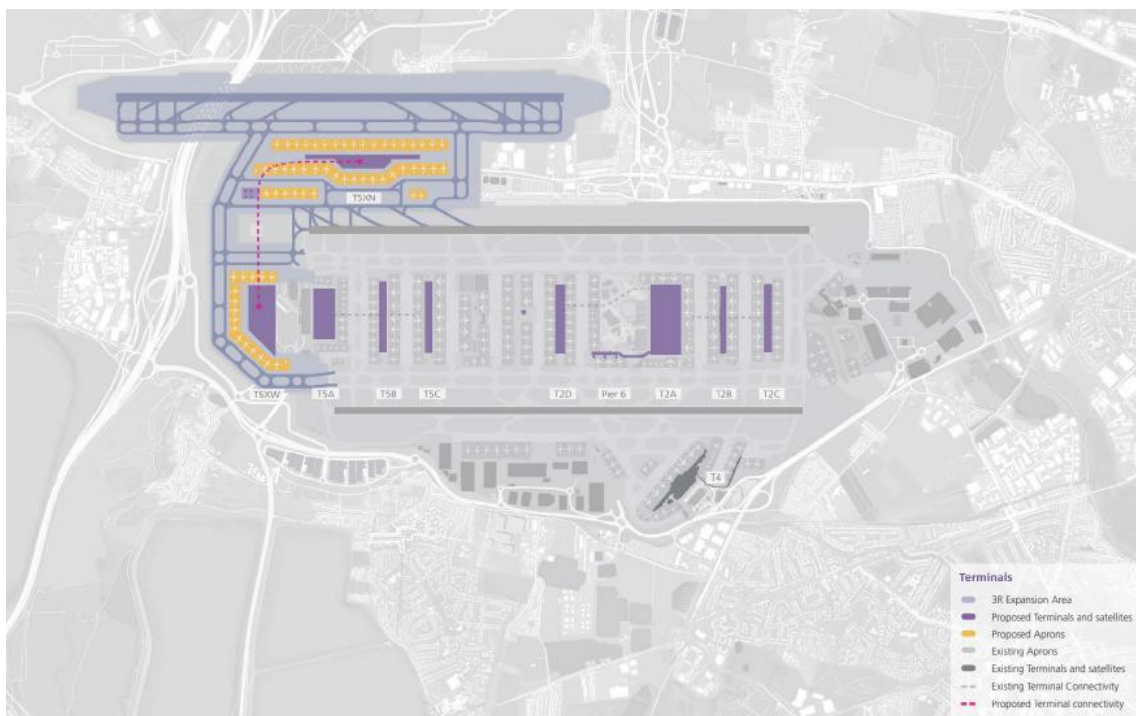
Proponent 2		Information Provided	Information Assessment
Airport Scheme Design			
	Runway	1	2
	Terminal	0	N/A
	Land Use	0	N/A
	Additional capacity	0	N/A
Expected timelines			
	Expected timelines	0	N/A
Costs and revenues			
	Capex	0	N/A
	Airport Charges	0	N/A
	Economic Impact	0	N/A
Ownership, financing and funding			
	Ownership, financing and funding	0	N/A
Deliverability			
	Deliverability	0	N/A
	Stakeholder Feedback	0	N/A
Environmental implications and planned mitigations			
	Environmental implications	0	N/A
	Surface access	0	N/A
Sub-Total score		1	2
Sub-Total score (%)		8%	5%
Total score (Out of 52 points)		3	
Total score (% of maximum score of 52)		6%	

Source: Steer

Heathrow Airport Limited

- 3.7 The proposal presented by Heathrow Airport Limited (HAL) considers a new 3,500m northwest runway, as well as a new terminal west campus with a T5W and satellite T5N, designed to accommodate up to an additional 40 million passengers per annum.
- 3.8 The main document and supporting appendices presented by HAL, provide a comprehensive amount of information and have covered the essential areas requested by the Secretary of State’s letter to potential promoters. There is also detailed information on most of the main areas. However, we found the capex information and impacts on charges lacked the underlying analysis and assumptions as requested in the SoS’s letter. We also found the proposal lacked technical assurance that the plans are feasible and deliverable.

Figure 3.1: Heathrow Airport expansion proposal by HAL



Source: Heathrow Airport Limited Proposal p.38

Table 3.3: Heathrow Airport Limited Proposal information scoring against information requirements in SoS’s letter

Heathrow Airport Limited		Information Provided	Information Assessment
Airport Scheme Design			
	Runway	1	3
	Terminal	1	3
	Land Use	1	3
	Additional capacity	1	3
Expected timelines			
	Expected timelines	1	3

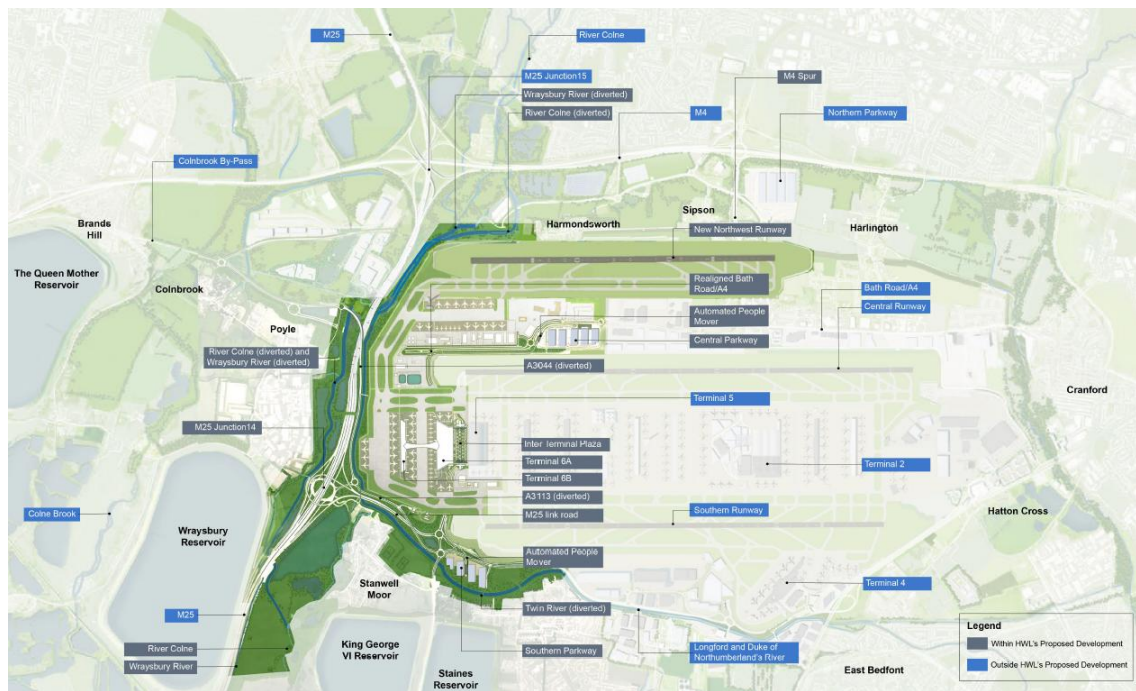
Heathrow Airport Limited		Information Provided	Information Assessment
Costs and revenues			
	Capex	1	2
	Airport Charges	1	2
	Economic Impact	1	3
Ownership, financing and funding			
	Ownership, financing and funding	1	3
Deliverability			
	Deliverability	1	2
	Stakeholder Feedback	1	3
Environmental implications and planned mitigations			
	Environmental implications	1	3
	Surface access	1	3
Sub-Total score		13	36
Sub-Total score (%)		100%	92%
Total score (Out of 52 points)		49	
Total score (% of maximum score of 52)		94%	

Source: Steer

Heathrow West Limited

- 3.9 The proposal presented by Heathrow West Limited (HWL) (part of Arora Group) includes the development of a 2,800m runway located northwest of Heathrow’s two existing runways and entirely east of the M25 motorway with a new T6 passenger terminal, capable of accommodating 40 million passengers per annum (mppa), including T6A and satellite pier T6B. The proposal also includes associated infrastructure and works required to deliver the scheme.
- 3.10 The information provided covers all essential areas requested by the SoS’s “Letter to Proponents” and in most areas presents a level of completeness (quantity) and robustness (quality) of information that supports the proposal’s assumptions. However, there were areas such as Costs and Revenues where more information was expected to meet the requirements of the SoS’ letter, particularly regarding the underlying capex assumptions, impacts on airport charges, and economic impact. Furthermore, the ownership, financing and funding scheme section provides only limited information on how the expansion will be financed and does not provide information of the commercial model used. There is also limited information about technical assurance that the plans are feasible and deliverable to the timetables within the proposal.

Figure 3.2: Heathrow Airport expansion proposal by HWL



Source: Heathrow West Limited Proposal p.43.

Table 3.4: Heathrow West Limited Proposal information scoring against information requirements in SoS's letter

Heathrow West Limited		Information Provided	Information Assessment
Airport Scheme Design			
	Runway	1	3

Heathrow West Limited		Information Provided	Information Assessment
	Terminal	1	3
	Land Use	1	3
	Additional capacity	1	3
Expected timelines			
	Expected timelines	1	3
Costs and revenues			
	Capex	1	2
	Airport Charges	1	1
	Economic Impact	1	2
Ownership, financing and funding			
	Ownership, financing and funding	1	2
Deliverability			
	Deliverability	1	2
	Stakeholder Feedback	1	3
Environmental implications and planned mitigations			
	Environmental implications	3	3
	Surface access	3	3
Sub-Total score		13	33
Sub-Total score (%)		100%	85%
Total score (Out of 52 points)		46	
Total score (% of maximum score of 52)		88%	

Source: Steer

Proponent 5

- 3.11 The proposal submitted by Proponent 5 sets out an interim option involving the extension of the Northern Runway, running from the M25 in the west to the existing infrastructure in the east. The proponent claims that the extended pavement could be operated as two in-line runways, configured either as two 2,200-metre runways or as two 2,500-metre runways, separated by a 650-metre central safety zone as shown in the diagram below.
- 3.12 The supporting information in the proposal highlights potential benefits in terms of deliverability, affordability, increased capacity, and flexibility for future growth, while also suggesting that impacts and disruption to existing operations during construction would be minimised. However, the submission provides little evidence to demonstrate how these conclusions were reached, nor does it include supporting analysis. In addition, the concept of operating two in-line runways raises safety and operational concerns, as there are no known precedents at other airports, and this matter deserves an extensive analysis which was lacking in the proposal. Although the proposal cites Madrid Barajas International Airport (MAD) as an example, this is inaccurate: MAD operates parallel runways with different orientations rather than in-line runways. A summary of the information assessment is presented in the table below.

Table 3.5: Proponent 5 Proposal information scoring against information requirements in SoS’s letter

Proponent 5		Information Provided	Information Assessment
Airport Scheme Design			
	Runway	1	2
	Terminal	0	N/A
	Land Use	0	N/A
	Additional capacity	1	1
Expected timelines			
	Expected timelines	1	1
Costs and revenues			
	Capex	0	N/A
	Airport Charges	0	N/A
	Economic Impact	0	N/A
Ownership, financing and funding			
	Ownership, financing and funding	0	N/A
Deliverability			
	Deliverability	1	1
	Stakeholder Feedback	0	N/A
Environmental implications and planned mitigations			
	Environmental implications	1	1
	Surface access	0	N/A
Sub-Total score		5	6
Sub-Total score (%)		38%	15%

Proponent 5	Information Provided	Information Assessment
Total score (Out of 52 points)		11
Total score (% of maximum score of 52)		21%

Source: Steer

Proponent 6

- 3.13 The proposal submitted by Proponent 6 recommends the development of a short northern runway of approximately 1,500 metres in length. The submission highlights that this option would avoid encroachment on the M25, require less land acquisition, and could be connected directly to Terminal 5. It also suggests that the scheme would involve less legislative effort in terms of planning and could be delivered within five years, citing the example of London City Airport’s timeline from concept design to operation.
- 3.14 However, the proposal does not provide supporting detail on the design, operational capacity, delivery timelines or any of the other elements required by the SoS’s letter. A summary of the information assessment is presented in the table below.

Table 3.6: Proponent 6 Proposal information scoring against information requirements in SoS’s letter

Proponent 6		Information Provided	Information Assessment
Airport Scheme Design			
	Runway	1	1
	Terminal	0	N/A
	Land Use	0	N/A
	Additional capacity	0	N/A
Expected timelines			
	Expected timelines	1	1
Costs and revenues			
	Capex	0	N/A
	Airport Charges	0	N/A
	Economic Impact	0	N/A
Ownership, financing and funding			
	Ownership, financing and funding	0	N/A
Deliverability			
	Deliverability	0	N/A
	Stakeholder Feedback	0	N/A
Environmental implications and planned mitigations			
	Environmental implications	0	N/A
	Surface access	0	N/A
Sub-Total score		2	2
Sub-Total score (%)		15%	5%
Total score (Out of 52 points)		4	
Total score (%of maximum score of 52)		8%	

Source: Steer

Proponent 7

- 3.15 The proposal submitted by Proponent 7 draws on the Airports Commission Final Report (2015) that an extended northern runway is a viable option for Heathrow’s expansion. According to the proposal, the development involves extending the northern runway to the west creating two separate in-line 3,000m runways, separated by a 650m safety zone.
- 3.16 The proposal provides most of the essential information requested but with varying levels of quality and detail across the assessment categories (e.g. capacity of the runway system, airport charges). Some areas are supported by sufficient evidence, while others lack depth or clarity. A summary of the information assessment is presented in the table below.

Table 3.7: Proponent 7 Proposal information scoring against information requirements in SoS’s letter

Proponent 7		Information Provided	Information Assessment
Airport Scheme Design			
	Runway	1	3
	Terminal	1	1
	Land Use	1	3
	Additional capacity	1	1
Expected timelines			
	Expected timelines	1	3
Costs and revenues			
	Capex	1	2
	Airport Charges	1	1
	Economic Impact	0	N/A
Ownership, financing and funding			
	Ownership, financing and funding	1	2
Deliverability			
	Deliverability	1	2
	Stakeholder Feedback	0	N/A
Environmental implications and planned mitigations			
	Environmental implications	1	3
	Surface access	1	2
Sub-Total score		11	23
Sub-Total score (%)		85%	59%
Total score (Out of 52 points)		34	
Total score (% of maximum score of 52)		65%	

Source: Steer

4 Risks identified in the maturity assessment

- 4.1 As with the maturity assessment of information presented in the proposals, the information used to identify risks in Heathrow expansion plans is drawn from the submissions made to the Department for Transport (DfT) on 31 July 2025.
- 4.2 This risk analysis forms part of the maturity assessment of information, which evaluates the seven proposals received. As noted, the level of detail varies across submissions. Where insufficient information was provided, elements have been recorded as non-applicable (N/A) and cannot be assessed in terms of risk. The assessment therefore reflects only the information made available by the proponents and excludes areas where proposals lacked sufficient detail.
- 4.3 The tables below include our assessment of the High risks (coloured in Red) and the Medium risks (coloured in Amber) for each element of the proposals, noting the level of materiality of the identified risk. There are risks that are ‘common to all proposals and others that are specific to certain proposals.

Airport Scheme Design

- 4.4 The following risks regarding the airport scheme design have been identified.

Table 4.1: Airport Scheme Design risks

Item no.	Risk Description	RAG
Common to all proposals		
1	Land acquisition would be required for the portion of runway outside the current airport boundary.	Amber
Specific to each proposal		
2	Proponent 1: Runway location requires the removal of the cargo area and Terminal 4.	Red
3	Proponent 1: A closely spaced and shorter runway might have a larger impact on capacity.	Amber
4	HWL: The shorter runway impact on the lack of flexibility might have a larger impact on capacity.	Amber
5	Proponent 5: Significant safety concerns in operating in-line runways.	Red
6	Proponent 5: The lack of independent operations and the shorter length of 2 of the 3 runways might have a larger impact in capacity.	Red
7	Proponent 7: Significant safety concerns in operating in-line runways.	Red

Item no.	Risk Description	RAG
8	Proponent 7: The lack of independent operations and the shorter length of 2 of the 3 runways might have a larger impact in capacity.	Red

Source: Steer

Expected Timelines

4.5 The following risks regarding the expected timelines have been identified.

Table 4.2: Expected Timelines risks

Item no.	Risk Description	RAG
Common to all proposals		
1	Delivery timelines for 2035 might be at risk due to planning regulations, legislative periods and permits approvals.	Amber
2	Construction on a live airport environment brings significant constraints and may significantly extend the timeline.	Amber
Specific to each proposal		
3	Proponent 5: The delivery timescales of a single parliamentary term (4 years if considering current term) might be tight with current planning and statutory processes. Construction during nighttime to minimise disruption can significantly extend the construction timelines.	Red
4	Proponent 6: The delivery timescales of 5 years might be tight with current planning and statutory processes and the existing land uses in the proposed area.	Red

Source: Steer

Costs and Revenues

4.6 The following risks regarding costs and revenues have been identified.

Table 4.3: Costs and Revenues risks

Item no.	Risk Description	RAG
Common to all proposals		
1	Cost overruns due to cost pressures, insufficient risk/contingency allowance and optimism bias allocation.	Red
2	Lack of granularity on Capex estimates which adds uncertainty.	Red
Specific to each proposal		
3	HWL: Impact on airport charges without detailed analysis of revenue impact and cost to airlines.	Amber
4	Proponent 7: Cost estimates from Airports Commission (2015) and updated to 2025 prices through TPI. Risk of not being accurate current estimates.	Amber

Source: Steer

Ownership, financing and funding

4.7 The following risks regarding the ownership, financing and funding have been identified.

Table 4.4: Ownership, financing and funding risks

Item no.	Risk Description	RAG
Common to all proposals		
1	Risk around the regulatory and commercial model, including key underpinning assumptions.	Red
Specific to each proposal		
2	HWL: Uncertainty around funding and financing details. Lack of transparency of ownership model.	Amber
3	Proponent 7: Unclear on how financing arrangements would work and lack of evidence of engagement with institutions to finance the scheme. Unclear ownership and funding structure	Amber

Source: Steer

Deliverability

4.8 The following risks regarding the deliverability of the scheme have been identified.

Table 4.5: Deliverability risks

Item no.	Risk Description	RAG
Common to all proposals		
1	Risk around delivering a major infrastructure project in a constrained environment with live operations (excluding timescales and cost risks allowances as have been assessed in previous sections).	Amber
Specific to each proposal		
2	Proponent 5: Deliverability risks around the construction of in-line runways as it will generate considerable operating disruptions.	Red
3	Proponent 7: Deliverability risks around the construction of in-line runways as it will generate considerable operating disruptions.	Red

Source: Steer

Environmental implications and planned mitigations

4.9 The following risks regarding the environmental implications and planned mitigations have been identified.

Table 4.6: Environmental implications and planned mitigations risks

Item no.	Risk Description	RAG
Common to all proposals		
1	Increased air pollution and noise impact.	Amber
2	Increased carbon emissions impacts.	Amber

Item no.	Risk Description	RAG
3	Surface access impacts during construction.	Red
4	Surface access strategy to accommodate increased demand.	Red
Specific to each proposal		
5	HWL: Noise impact on eastern side of the airport.	Red
6	Proponent 5: The proposed runways would increase the area that is affected by noise.	Red

Source: Steer

Control Information

Prepared by

Steer
14-21 Rushworth Street
London SE1 0RB
+44 20 7910 5000
www.steergroup.com

Prepared for

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

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Author/originator

Fernando Ardavin

Reviewer/approver

Stephen Wainwright

Other contributors

Gonzalo Velasco
Javier Losada

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Appendix B – Initial technical assessment of capex expansion plans for Heathrow Airport: HAL Proposal

Final report
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Prepared by:

Steer
14-21 Rushworth Street
London SE1 0RB

+44 20 7910 5000

www.steergroup.com

Prepared for:

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

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Our ref: 24949401

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The logo for Steer, featuring the word "steer" in a bold, lowercase, sans-serif font.

Contents

1	Introduction	1
2	Optioneering	2
	Introduction	2
	Optioneering criteria and process	3
	Option put forward in HAL’s 2025 proposal	12
3	Airport scheme design	15
	Land acquisition	15
	Runway length and location	17
	Airfield configuration	22
	Terminal area	25
	Surface Access	32
4	Operability and Capacity	41
	Capacity phasing	41
	Capacity analysis	42
5	Expected timelines and Deliverability	46
	Overall timelines	46
	Development Consent Order and Statutory consultation	47
	Construction timeline	47
	Deliverability	48
6	Sustainability	52
	Direct and indirect impacts	52
	Air and noise pollution	55
	Carbon emissions	57
	Impacts on the community health, wellbeing and quality of life	58
	Surface access	59
7	Stakeholder engagement	63
	Introduction	63
	Stakeholder identification	63
	Engagement strategy and activities	64
	Airline engagement	64
8	Conclusions, Risks, and Recommendations	68
	Conclusions	68
	Risks	70
	Recommendations	71

Figures

Figure 2.1: Technical Assessment Methodology	3
Figure 2.2: HAL's optioneering process	6
Figure 2.3: HAL's KCMs grouped in families	7
Figure 2.4: AO3B - Draft Preferred Masterplan	11
Figure 3.1: Indicative land use and acquisition plan for Heathrow expansion	15
Figure 3.2: Proposed layout by HAL	17
Figure 3.3: Summary of runway options in relation to key local geography	18
Figure 3.4: Diagrammatic representation of options	19
Figure 3.5: Heathrow's Runway End Safety Areas	20
Figure 3.6: Proposed layout by HAL	23
Figure 3.7: Proposed layout by HAL	26
Figure 3.8: Illustration of the T5XW terminal building	28
Figure 3.9: HAL's Example of integrated terminal design	30
Figure 3.10: HAL's road traffic routes during construction	33
Figure 3.11: Heathrow's rail connections	37
Figure 3.12: HAL's approach to surface access modelling	38
Figure 3.13: Steer's proposed additional road access to West Campus	39
Figure 4.1: Terminal capacity	44
Figure 5.1: Schedule Plan Redacted – Ambitious Schedule	46
Figure 5.2: Timeline to DCO consent	47
Figure 5.3: Estimated DCO process duration	49
Figure 5.4: Estimated duration of HAL's expansion plan for runway opening	51
Figure 6.1: Water infrastructure plan	53
Figure 7.1: Heathrow expansion consultation timeline	63

Tables

Table 2.1: HAL's options and their Assessment Criteria in 2025 proposal	4
Table 2.2: HAL's Evaluation disciplines and its Key assessment variables (2019)	4
Table 2.3: HAL's Key Component Masterplans (2019)	6
Table 2.4: HAL's selected assembly options (2019)	8
Table 2.5: HAL's selected assembly options evaluation (2019)	9
Table 2.6: Option HAL put forward in their 2025 proposal – Advantages and disadvantages	13
Table 3.1: Roadway alignment and access reconfiguration selection	34
Table 4.1: Aircraft parking stand capacity	43
Table 5.1: Construction activities and approximate duration	48
Table 7.1: Stakeholder engagement assessment summary	66

Table 8.1: Initial technical assessment conclusions of HAL’s proposal	68
Table 8.2: Risks identified through the initial technical assessment of HAL’s proposal	70
Table 8.3: Recommendations for further development of HAL’s proposal	71

Glossary

Acronym	Definition
AC	Airports Commission
ANPS	Airports National Policy Statement (2018)
ATM	Air Traffic Movement
BRAG	Black Red Amber Green
CAA	Civil Aviation Authority
Capex	Capital expenditure / Capital investment
CPI	Consumer Price Index
CPZ	Compulsory Purchase Zone
dB LAeq	A-weighted Equivalent Continuous Sound Pressure Level (i.e. human perception of noise)
DCO	Development Consent Order
HAL	Heathrow Airport Limited
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
KPI	Key Performance Indicator
KCM	Key Component Masterplans
LDA	Landing Distance Available
mppa	Million passengers per annum
NB	Narrow Body Aircraft
OBR	Office for Budget Responsibility
OLS	Obstacle Limitation Surfaces
Opex	Operational expenditure
PINS	Planning Inspectorate
RAB	Regulated Asset Base
RAG	Red Amber Green
sqm	Square metres
TORA	Take Off Runway Available
TPI	Tender Price Index
WACC	Weighted Average Cost of Capital

Acronym	Definition
WB	Wide Body Aircraft
WPOZ	Wider Property Offer Zone

Source: Steer

1 Introduction

1.1 This appendix forms part of the technical assessment of expansion proposals for Heathrow Airport. It provides detailed information, analyses and supporting evidence that underpin the assessment and the conclusions presented in the Main Report. The materials included are intended to offer additional technical detail and context for specific aspects of the work. This document is structured as follows:

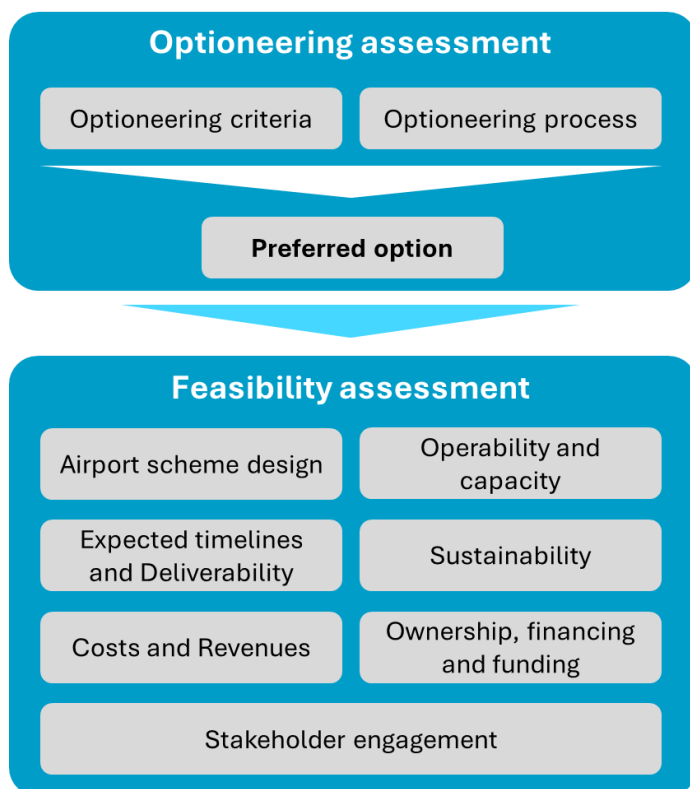
- **Chapter 2: Optioneering** – Reviews the processes used by scheme promoters to develop and assess options, including the range of alternatives considered and the evidence supporting the preferred approaches;
- **Chapter 3: Airport Scheme Design** – Assesses the scope and maturity of proposed airport designs, including runways, terminals, aprons and surface access, and the extent to which they are supported by technical justification;
- **Chapter 4: Operability and Capacity** – Summarises key operational and capacity considerations, including airfield performance, passenger throughput, airspace integration and resilience under different demand scenarios;
- **Chapter 5: Expected Timelines and Deliverability** – Reviews proposed development programmes, delivery strategies and key dependencies, assessing the overall feasibility of schemes within suggested timeframes;
- **Chapter 6: Sustainability** – Examines how sustainability has been addressed, including carbon reduction, climate resilience, biodiversity and alignment with policy and regulatory requirements;
- **Chapter 7: Stakeholder Engagement** – Reviews the extent and effectiveness of stakeholder engagement, including how feedback has informed scheme development and future engagement plans; and
- **Chapter 8: Conclusions, Risks, and Recommendations** – Summarises the main findings from the assessment, identifies key risks across the relevant areas, and provides recommendations for further work to ensure the plan is feasible, operational, deliverable and cost effective.

2 Optioneering

Introduction

- 2.1 Based on the available documentation submitted by the proponent, mainly the document *Expanding Heathrow Capacity, Connectivity and Growth – Summer 2025* and its Appendices, we understand that Heathrow Airport Limited (HAL) presents their selected solution put forward in their proposal as the option previously developed for the consultation process in 2019. This 2019 selected option was compiled in the Updated Scheme Development Report (2019).
- 2.2 In this chapter we start with an assessment of the optioneering criteria and process followed at the masterplan level, which resulted in the choice of the option HAL put forward in their proposal. Specifically, we consider:
- **Optioneering criteria**, which sets out the parameters used to evaluate the options, together with the proponent’s views and objectives.
 - **Optioneering process**, which describes the logic of the process and the range of options considered by the proponent.
- 2.3 We conclude this chapter with a discussion of the option HAL put forward in their proposal, rationale for its selection and high-level assessment of its advantages and disadvantages.
- 2.4 We assess the options considered for runway, terminals, and other elements of the masterplan as part of our feasibility assessment of the option HAL put forward in their proposal, which we cover in subsequent chapters of this report.
- 2.5 The figure below illustrates the structure we follow in our assessment, starting with the optioneering assessment at masterplan level followed by the feasibility assessment of each of the key components of the masterplan.

Figure 2.1: Technical Assessment Methodology



Source: Steer

Optioneering criteria and process

Optioneering criteria

- 2.6 The optioneering included in the document: Expanding Heathrow Capacity, Connectivity and Growth – Summer 2025 and its Appendices, with the exception of discussion on the runway length and location, is primarily qualitative in nature, making use of comparative measures such as assessing whether a solution is affecting “More homes” than others. Other elements to be addressed in an optioneering stage, like for example the terminal area, does not present any option other than the preferred one.
- 2.7 Whereas HAL’s 2025 proposal primarily focuses on developing options related to the location and length of the runway, the 2019 consultation document incorporated analysis of these options within its Masterplan. We consider the information of the 2019 consultation document in our assessment of the masterplan optioneering process presented in this section.
- 2.8 The option HAL put forward in the 2025 proposal shows some differences compared to that of 2019; however, these variations are not material.
- 2.9 The following table provides an overview of the Optioneering Assessment Criteria referenced in HAL’s 2025 proposal. As stated above, HAL’s 2025 proposal does not provide an option assessment of elements beyond runway location and length, resulting in elements such as Apron and taxiway system, Terminal area,

Surface access, River diversions, Land acquisition, Car parks and Constructability being absent from the table below. The table shows the following categories:

- **Element:** the critical variables assessed by the proponent (e.g., runway length);
- **Options:** the number and type of options evaluated. In the absence of any, it is implied that the proponent only disclosed the “option put forward in its proposal”;
- **Assessment Criteria:** the Key Performance Indicators (KPIs) used to evaluate the options; and
- **Comments:** issues arising from the review of information.

Table 2.1: HAL’s options and their Assessment Criteria in 2025 proposal

Element	Options	Assessment Criteria	Comments
Runway location	<ul style="list-style-type: none"> • 4 main options and 2 additional options including phasing of the main options. 	<ul style="list-style-type: none"> • Capacity to accommodate large aircraft. • Homes impacted by noise. • Alignment with the ANPS. • Resilience. • Noise management objectives. • Global route network. • Complexity of interfaces with existing infrastructure. • Impact on M25 and M4. • Aircraft ground movement distances. 	<ul style="list-style-type: none"> • Only qualitative evaluation.
Runway length	<ul style="list-style-type: none"> • 2,300 m. • 2,800 m. • 3,500 m. 	<ul style="list-style-type: none"> • Capacity (annual ATMs). • Long-haul / Short-haul split. • Noise respite for the community. 	<ul style="list-style-type: none"> • Only qualitative evaluation, with the exception of ATMs.

Source: HAL, Steer

2.10 The 2019 Updated Scheme Development Report used different optioneering assessment criteria, which are referred to as ‘Evaluation disciplines’. Each discipline is accompanied by a description of purpose and a breakdown into ‘Key assessment variables’. These are summarised in the following table.

Table 2.2: HAL’s Evaluation disciplines and its Key assessment variables (2019)

Evaluation	Purpose	Key assessment variables
Operations and Service	<ul style="list-style-type: none"> • Operational efficiency. • Safety. • Passenger experience. 	<ul style="list-style-type: none"> • Airfield performance (runway/taxiway layout, flexibility). • Airspace performance. • Passenger experience (distances, amenities). • Security process. • Hub connectivity (transfers, minimum connecting times). • Baggage performance.

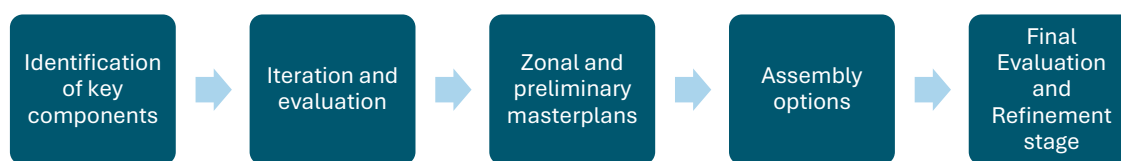
Evaluation	Purpose	Key assessment variables
		<ul style="list-style-type: none"> • Surface access (road/rail). • Cargo/logistics. • Aviation fuel infrastructure. • Staff facilities and support.
Delivery	<ul style="list-style-type: none"> • Evaluate feasibility and risks of construction and delivery. 	<ul style="list-style-type: none"> • Construction complexity and phasing. • Programme risk (delays, dependencies). • Enabling works (land, utilities). • Disruption to operations. • Health and safety during delivery.
Business Case	<ul style="list-style-type: none"> • Assess economic viability. • Financial sustainability. 	<ul style="list-style-type: none"> • Capital and operational expenditure (Capex/Opex). • Viability and return on investment. • Commercial income (airlines, retail, property). • Capacity versus demand. • Affordability. • Phasing of investment.
Sustainability	<ul style="list-style-type: none"> • Evaluate environmental impacts. • Long-term sustainability. 	<ul style="list-style-type: none"> • Carbon emissions and climate change. • Landscape and visual impact. • Historic environment (heritage, archaeology). • Biodiversity (habitats, species). • Water (flood risk, drainage). • Air quality. • Land quality (contamination). • Noise and waste management.
Community	<ul style="list-style-type: none"> • Social and economic impacts on local communities. 	<ul style="list-style-type: none"> • Job creation and local economic benefits. • Community impacts (displacement, access, quality of life). • Incorporation of consultation feedback.
Planning	<ul style="list-style-type: none"> • Ensure compliance with planning and regulatory frameworks. 	<ul style="list-style-type: none"> • Fit with Airports National Policy Statement (ANPS). • Compliance with local/regional planning. • Likelihood of obtaining development consent (DCO).
Property	<ul style="list-style-type: none"> • Assess land requirements and property impacts. 	<ul style="list-style-type: none"> • Land take (amount/type). • Property acquisition and compensation. • Land use efficiency (on/off airport).

Source: HAL, Steer

Optioneering Process

2.11 HAL's 2025 proposal refers to the masterplan optioneering process outlined in the 2019 Updated Scheme Development Report (Document 1- Chapter 3: Masterplan Options Development). The figure below summarises the optioning process followed in 2019 to arrive at the selected 2019 option, which is the option HAL put forward in its 2025 proposal.

Figure 2.2: HAL’s optioneering process



Source: HAL Updated Scheme Development Report (1 of 5) 2019

- 2.12 In the 2019 masterplan, the Identification of Key Component Masterplans (KCMs) involved selecting the most critical elements that would define the future airport’s layout and operational capabilities. Initially, seven main components were identified as essential for the master planning exercise: runways, taxiways, terminals, satellites, the alignment and junctions of the M25 motorway, local roads (such as the A4 and A3044), and river diversions.
- 2.13 As the process evolved, additional components were included, such as access points, fuel farms, and maintenance facilities, to ensure a comprehensive approach.
- 2.14 KCMs are conceptual layouts that combine the options put forward in HAL’s proposal for each critical component of the Heathrow expansion (such as runways, taxiways, terminals, roads, rivers, etc.). The purpose is to test how these components interact together before finalizing the overall masterplan for the expanded airport. The table below provides the summary of the KCMs that HAL evaluated in 2019.

Table 2.3: HAL’s Key Component Masterplans (2019)

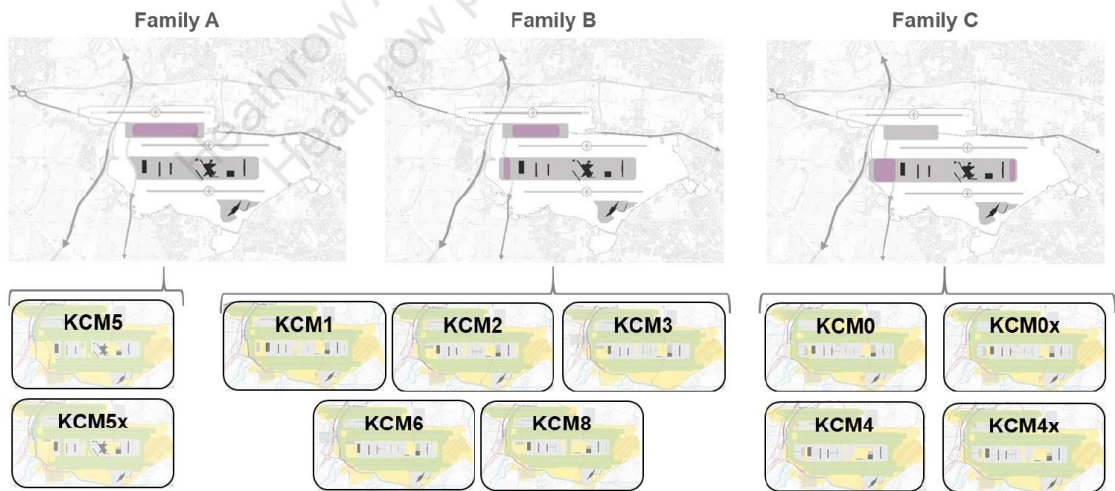
KCM	Strategic Focus	Runway	Terminals	Satellites	M25 Alignment & Junction	Local Roads	Rivers
KCM 1	Business as usual	Family A 3500 (Sipson W)	T2N, T5XW	Linear (A2, A3, A5, N)	O11 (130m W, lowered), O4 (J14/14a)	A4_2A, A3044_3D	B2
KCM 2	Passenger/ commercial focus	Family A 3500 (Sipson W)	T2N, T5L	H (A2, A3), Linear (A5, N)	O11 (130m W, lowered), O5 (J14/14a)	A4_3A, A3044_2B	A2
KCM 3	Airfield/ transport hub focus	Family D 3500 (M4 Spur W)	T2N, T5XW	Linear, Sunken H (A3), Linear (A5, N)	O11 (130m W, lowered), O7 (J14 only)	A4_2A, A3044_3E	B1
KCM 4	Hub passenger	Family A 3500 (Sipson W)	T2N, T5SWT	Linear (A2, A5, N), H	O11 (130m W, lowered), O9 (J14 only)	A4_3A, A3044_2A	B2

KCM	Strategic Focus	Runway	Terminals	Satellites	M25 Alignment & Junction	Local Roads	Rivers
	operations focus						
KCM 5	Low CAPEX (cost minimization)	Family A 3200 (Sipson W)	T2N Pier, T5X NC	Linear (A2, A5)	O11 (130m W, lowered), O1 (J14/14a)	A4_3A, A3044_3A	A1
KCM 6	Community impact minimization	AC 3200 (AC West)	T2N, T5L	Linear (A2, A3, A5, N)	O11 (130m W, lowered), O4 (J14/14a)	A4_3A, A3044_3A	A1

Source: HAL, Steer

2.15 Most of the KCMs were grouped under a limited number of “families” in order to facilitate the decision-making process, as illustrated below.

Figure 2.3: HAL's KCMs grouped in families



Source: HAL Updated Scheme Development Report (1 of 5) 2019, pp 3.8 – 3.17

2.16 The multidisciplinary evaluation of the KCMs was a core part of Heathrow’s expansion planning process in 2019, ensuring that each proposed airport layout was assessed from multiple technical perspectives. Each KCM was reviewed by teams specialised in the seven Evaluation disciplines, as described in the Optioneering criteria above.

2.17 For each Evaluation discipline, evaluators used a structured scoring system called BRAG (Black/Red/Amber/Green) to rate the strengths and weaknesses of every option, both qualitatively and quantitatively. This approach allowed the project team to identify not only the best-performing combinations of components but

also to understand trade-offs, synergies, and potential conflicts between different priorities—such as minimising environmental impact versus maximising operational efficiency or cost-effectiveness. The multidisciplinary evaluation ensured that decisions were made with a holistic view, balancing technical, economic, social, and environmental factors, and that the final masterplan would be robust, deliverable, and aligned with stakeholder expectations and statutory requirements.

2.18 Following the initial evaluations, the highest-performing components from each KCM were selected. Subsequent iterations were generated by integrating the most promising features and eliminating less effective or unviable alternatives. This cycle continued, with each stage incorporating feedback from technical experts, stakeholders, and public consultations.

2.19 ‘Assembly Options’ were created by combining selected options from the preliminary phase into four credible options. These assembly options were the best of every family of options, and went through further detailed evaluation, including operational modelling, cost analysis, and environmental assessment. The selected options were the following:

- Assembly Option 1 – Improved “Westerly” Option (AO1B).
- Assembly Option 2 – Improved “Best of Family C” Compact / Consolidated (AO2B).
- Assembly Option 3 – Improved “Best of Family B” Balanced north-west (AO3B).
- Assembly Option 4 – Improved “Best of Family A” Northern Expansion (AO4B).

2.20 The main features of the selected assembly options are summarised in the table below.

Table 2.4: HAL's selected assembly options (2019)

Assessment element	AO1B	AO2B	AO3B	AO4B
Location	Major new terminal and apron development to the west of Terminal 5.	Highly compact, consolidated expansion mainly north of the new runway.	Balanced expansion between the north and west of the airport.	Expansion primarily to the north of the airport.
Terminal strategy	Focuses on consolidating airline operations in a new western campus, adjacent to and expanding from T5.	Terminals and aprons grouped in a compact zone, minimizing transfer distances.	New facilities distributed between the north (north of new runway) and west (adjacent to T5).	Most new terminal and apron capacity is north of the existing runways, minimizing disruption to current infrastructure.

Assessment element	AO1B	AO2B	AO3B	AO4B
Airfield layout	Balanced airfield with new runway to the northwest, and western bypass taxiways.	Focus on short taxi distances and efficient aircraft movement.	Well-balanced, flexible airfield with efficient taxiways and apron distribution.	Balanced airfield, with focus on minimizing operational impact during construction.
Surface access	Requires significant new road diversions (M25, A3044) and a new Southern Road Tunnel for landside connectivity.	Single M25 junction solution, with new road alignments and a Southern Road Tunnel.	Dual M25 junctions, improved road layouts, and Southern Road Tunnel.	Dual M25 junctions, new road alignments, and Southern Road Tunnel.
Community/ Environment	Greater impact on western communities (Stanwell Moor, Poyle) due to land take and road realignment.	Higher density development, with significant impact on Stanwell Moor due to road and infrastructure proximity.	Less impact on Stanwell Moor, better mitigation for local communities, and efficient land use.	Less impact on western and southern communities, easier to phase construction.

Source: HAL, Steer

2.21 The table below summarises HAL’s evaluation of the selected assembly options, according to the chosen evaluation disciplines. It should be noted that, at this stage of the optioneering process, HAL included the following five new evaluation disciplines: baggage, hub connectivity, passenger experience, airfield, and commercial at terminals.

Table 2.5: HAL's selected assembly options evaluation (2019)

Evaluation discipline	AO1B	AO2B	AO3B	AO4B
Operations and Service	Amber/Green	Amber/Green	Green	Green
Baggage	Good (shorter journeys, less space for arrivals off-loads)	Good (shorter journeys, innovative build cells)	Longer journeys, more space	Longer journeys, more space
Hub connectivity	Good (shorter transfer times, walking-based)	Good (shorter transfer times, walking-based)	Longer transfer times, more reliance on APM	Longer transfer times, more reliance on APM

Evaluation discipline	AO1B	AO2B	AO3B	AO4B
Passenger experience	Good (consolidation, but some level changes)	Good (consolidation, but some level changes)	Best (consolidation, minimal level changes)	Best (consolidation, one terminal)
Airfield	Viable, balanced	Viable, balanced	Most preferred (balanced, flexible)	Most preferred (balanced, less flexible)
Commercial at terminals	Mid spend/income per pax, more space	Lower spend/income per pax, more space	Highest spend/income per pax, less space	Highest spend/income per pax, less space
Delivery	Amber	Red (single M25 junction risk)	Green (good phasing, less complexity)	Green (good phasing, less complexity)
Business Case	Amber	Red (cost, flexibility)	Green (best for cost, flexibility)	Green (best for cost, flexibility)
Sustainability	Amber/Green	Amber	Green (landscape, air quality)	Green (landscape, air quality)
Community	Amber/Green	Red (Stanwell Moor impact)	Green (less impact, better mitigation)	Green (less impact, better mitigation)
Planning	Amber/Green	Amber	Green (policy fit, land use)	Green (policy fit, land use)
Property	Amber/Green	Amber	Green (less land take, better use)	Green (less land take, better use)

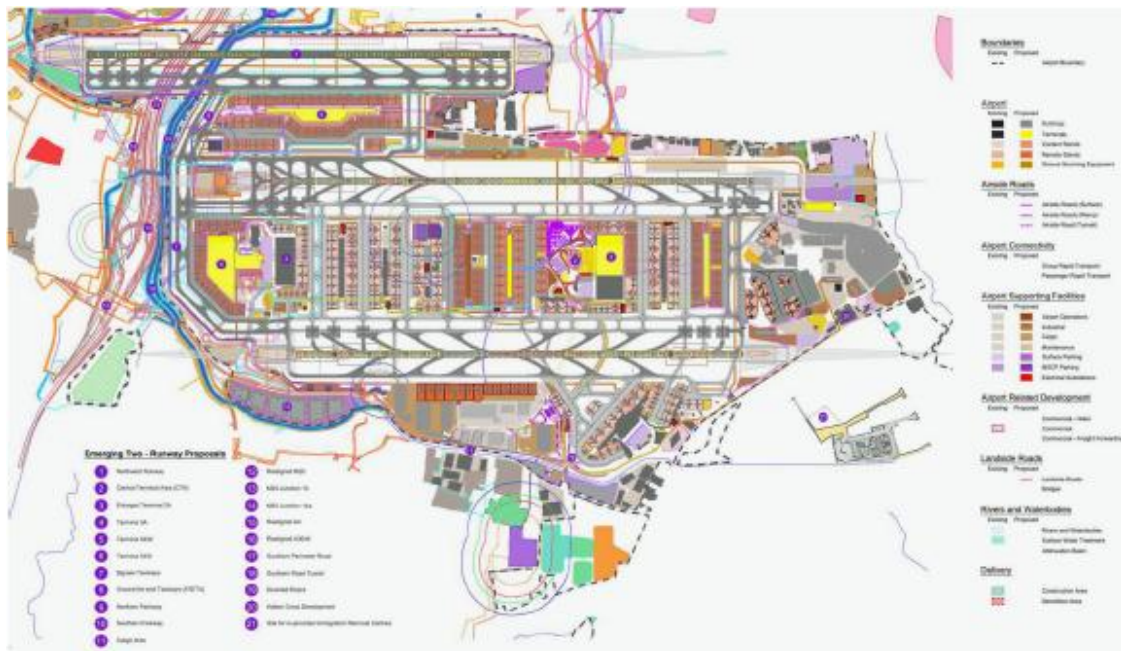
Source: HAL, Steer.

Note: The colour coding is Steer’s interpretation of HAL’s evaluation.

2.22 The Assembly Option AO3B was identified as the option put forward in HAL’s proposal, with an overall evaluation closely aligned with that of AO4B. We note that Option AO3B featured the new terminal building in the west, while Option AO4B featured the new aircraft stands capacity entirely between the northern runways. The differentiating factors of AO3B compared to AO4B were its enhanced flexibility and a more balanced allocation of infrastructure capacity. AO3B was subsequently identified as the ‘Draft Preferred Masterplan’

2.23 Further information recently provided by HAL indicates that the decision to favour the option of having the new main terminal building in the west (i.e. AO3B) rather than in the north, was to enable better rail connectivity for passengers. This was decided through HAL’s discontinuation rules which state that all new landside terminal capacity will be located on the public transport spine with the objective to maximise the number of journeys made to the airport by public transport. The rail connectivity objective was part of the 2018 ANPS.

Figure 2.4: AO3B - Draft Preferred Masterplan



Source: HAL July 2025 Expansion Proposal, p. 33

2.24 The ‘Final Evaluation’ and ‘Refinement stage’ were undertaken after the Draft Preferred Masterplan received additional feedback from more technical analyses and the public consultation carried out in 2019. During this phase, modifications were implemented to resolve outstanding matters, enhance phasing strategies, and ensure alignment with policy directives and stakeholder expectations.

2.25 The refined masterplan called the ‘Preferred Masterplan’, was selected after the consultation was closed in September 2019. At that time, HAL claimed that this option represented the best balance for operational efficiency, cost, deliverability, sustainability, and community impact, and was validated by a transparent, evidence-based process. This formed the option that HAL put forward in its 2025 proposal.

2.26 Our assessment of HAL’s masterplan optioneering criteria and process is summarised in the box below:

Our assessment of the optioneering criteria and process of HAL’s proposal is mainly based on the work that HAL conducted back in 2019, as the proponent included very limited information on optioneering in the July 2025 submission to the DfT.

The proposal, based on the information presented in the 2019 Updated Scheme Development Report, encompasses a broad spectrum of alternatives, each assessed through an extensive list of parameters and a rigorous methodology to identify the solution HAL put forward in their proposal.

However, the 2019 process concluded that there were two options for the terminal buildings with similar scoring and HAL’s final decision in 2019 of concentrating all terminal capacity to the west (over concentrating terminal capacity between the northern runways) was not clearly justified.

In 2025, the proponent took preference for splitting the additional terminal building capacity between the west and the north areas, thereby choosing a hybrid between the two 2019 terminal options with the highest scores. Although the rationale for the choice of terminals location made in 2025 is unclear, it can arguably be justified through the optioneering process followed in 2019, which resulted in two very similar options, rather than one, preferred terminal location options.

We assess that an optioneering process that enables a clearer differentiation among options would be preferable. To that end, the option assessment criteria would need to be clearer, measurable, and consistently applied across the optioneering process. The key improvements that would add robustness to HAL’s options assessment are the following:

- Include the following KPIs for assessing options of terminal area: airline strategy assumptions; distribution of facilities; evaluation gap that reflects the difference between a unified northern terminal area and a split between western and northern terminal areas.
- Include the following KPIs for assessing options of surface access: public transport connections by rail, underground, and road, including dependencies on third-party enablers, such as train service provision or river crossings. Rail connectivity is primarily enabled by third parties, creating a material risk on the overall surface access strategy and targets.

Overall, we consider that, although HAL carried out an extensive optioneering process for all the key elements of the masterplan, the process for the final decision making of the terminal building infrastructure could have been clearer.

Option put forward in HAL’s 2025 proposal

- 2.27 The option HAL put forward in their 2025 proposal is a scheme based on a new 3,500 m long runway, an additional terminal building next to existing T5, and a satellite building between the northern runways. This scheme is broadly aligned with the one presented in 2019 and consistent with the 2018 ANPS.
- 2.28 This option put forward in HAL’s proposal, which was initially documented in the Updated Scheme Development Report in 2019, has been updated to include

modifications and progress in the design, including enhancements to the terminal area within the West Campus.

- 2.29 In its 2025 proposal, HAL assesses the advantages and disadvantages of some, but not all elements of its option, which we summarise in the table below. Elements that HAL did not assess, such as Green Infrastructure, are excluded from the table.

Table 2.6: Option HAL put forward in their 2025 proposal – Advantages and disadvantages

Element	HAL's 2025 option	Main advantages	Main disadvantages
Runway	3,500 m, impacting M25.	Full operational capabilities to deliver required ATMs and alignment with ANPS.	Increase of noise impact on eastern communities and impact on M25.
Aprons	Two new aprons (52 WB and 14 NB Stands).	Number of stands and flexibility for passenger access.	Two areas of operation.
Terminals	One terminal building and satellite building connected by an underground Track Transit System.	Balanced terminal areas including aprons, and better rail connectivity.	Passenger transits; distances and times.
Surface access	Dual M25 junctions, Southern Road Tunnel.	Balanced traffic distribution; more space to provide optimal public transport interchange; A3044 and A4 diversions provide alternative routes for Strategic Road Network (SRN).	A4 diversion option increases journey distance, potential internal congestion in West Campus.
Car parks	Two major multi-storey car parking facilities.	Distribution of vehicle access, efficient connections to terminals via dedicated transit links.	The Northern Parkway construction is to be delivered at a later stage.
River diversions	River diversions in north and west of the airport.	Minimises the number of crossings, improved ecological corridor and buffer zones for flooding.	Complexity in the northwest with A4 and railhead. Approach to construction to be defined.

Source: HAL, Steer

2.31 Our technical assessment of HAL’s selection of the option they put forward in their proposal is summarised in the box below:

The advantages and disadvantages of the option put forward in HAL’s 2025 proposal compared to other alternatives are not clearly articulated in HAL’s 2025 proposal, although it can be inferred from the optioneering work that was undertaken in 2019 and from further clarifications provided by the proponent.

There is a lack of detailed explanation regarding the key factors influencing the selection of the proposed scheme, as well as its distinct value, strengths, and weaknesses, relative to the other options.

The option HAL put forward in their 2025 proposal is compliant with the 2018 ANPS requirements and aims to put forward a robust airport scheme that fulfils the DfT’s objectives underpinning the 2018 ANPS: higher aircraft movement and passenger capacity; higher number of long-haul flights; sooner to deliver; better connected by road and rail; higher freight capacity; and noise respite for the surrounding community.

For further validation of its the option put forward in HAL’s 2025 proposal, the following key areas of HAL’s master planning exercise should be updated:

- **Traffic and airline strategy:** traffic scenarios and a high-level flight programme should be developed to assess airline strategies. For example, the introduction of long-haul flights with narrowbody aircraft could alter the distribution of widebody/narrowbody ratios across runways and affect future scheduling.
- **Aircraft data:** calculations should be updated to reflect re-engined aircraft such as the A320/A321neo or B737 MAX, and the actual performance of newer widebodies such as the A350 or B787. The lack of updated data might lead to wrong conclusions about the option put forward in HAL’s proposal.
- **Population data:** population figures and other relevant datasets should be updated to 2025 levels to ensure accuracy, and new forecast for noise contours and impact on the community should be developed.
- **3D and topographical evaluation:** modelling should include topography, runway slopes, and the impact on the M25, together with the compliance with OLS requirements.
- **Terminal and apron options:** the option of providing more terminal capacity in the north could be reassessed, in particular if there are indications of a potential future rail link development between the northern runways.
- **Aircraft movement capacity:** a robust and detailed analysis is needed on how traffic will be split among the three runways, including taxiing arrangements depending on airline, terminals, and origin–destination strategies. These have an influence in the split of operations between the main terminal building and the satellite building.

3 Airport scheme design

Land acquisition

- 3.1 HAL’s proposal identifies that expanding Heathrow requires a significant area of land beyond the current airport boundary to accommodate the runway, terminal campus, taxiways, surface access, flood compensation, and environmental infrastructure. Additionally, land is also required to facilitate construction works.
- 3.2 A significant portion of the land required is outside the operational boundary of the existing airport and, therefore, will need to be acquired from various public and private landowners. In its proposal, HAL split the land to be acquired into two zones, the Compulsory Purchase Zone (CPZ), which refers to homes within areas that are directly impacted by the proposal, and the Wider Property Offer Zone (WPOZ), which refers to enabling voluntary acquisition of homes and land outside the CPZ. These two areas are marked by the red and the purple lines, respectively, in the illustration below.

Figure 3.1: Indicative land use and acquisition plan for Heathrow expansion

[Redacted]

Source: HAL July 2025 Expansion Proposal, p. 42. [Redacted].

- 3.3 The land acquisition includes the following:
- Residential areas, including [Redacted].
 - Commercial and infrastructure assets, such as:
 - British Airways (BA) Waterside headquarters (to be re-provided in a suitable facility off-site);
 - Total Rail Head (to be relocated north of the new runway); and
 - Lakeside Energy from Waste and Aggregate Industries plant (to be relocated north of the new runway).
 - Community facilities, including:
 - Harmondsworth Primary School (to be relocated to Stockley Road);
 - Heathrow Special Needs Centre and local allotments (with re-provision nearby); and
 - Utilities, such as power lines and substations, to be diverted or placed underground.
- 3.4 There is also land within the existing operational boundary of the airport that will need to be acquired to facilitate the development of elements of expansion affecting the area within and around the existing runways.

3.5 HAL’s 2025 proposal outlines an intent to phase land acquisition, and presents three scenarios:

- **Scenario 1:** [Redacted]
- **Scenario 2:** [Redacted]
- **Scenario 3:** [Redacted]

3.6 The proposal has considered [Redacted] in more detail, and the other scenarios are not further developed and, therefore, we have not provided an assessment for these.

3.7 In its response to the SoS’s request for further information, submitted in November 2025, HAL provided additional information on the properties impacted by the scheme. HAL’s assessment is that 5,938 residential properties will be impacted within WPOZ, of which HAL are already freehold owners of 251. HAL also outlined the number of properties within DCO order limits under CPZ, with a total of 756 residential properties and 1,219 non-residential properties.

3.8 Our feasibility assessment of HAL’s strategy for land acquisition is summarised in the box below:

HAL’s 2025 proposal has aligned the land required for the development of its proposal to the 2018 ANPS Annex A boundary. This is based on a consideration of the needs to operate and construct the third runway and the associated infrastructure. The required boundary will need to be reviewed as part of further design stages; however, it is unlikely that major changes to the boundaries as set out in the 2018 ANPS will be necessary.

It is unclear from HAL’s 2025 proposal whether any of the land required during construction will be released back following completion.

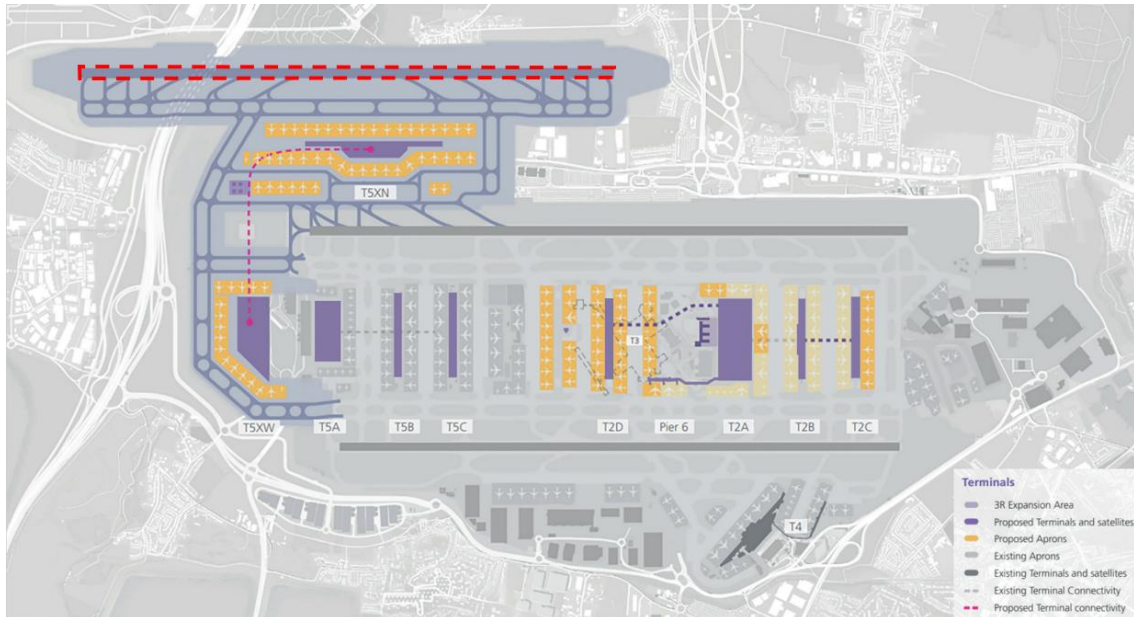
HAL’s 2025 proposal does not set out the parameters (eligibility criteria) that define the Wider Property Offer Zone (WPOZ), and these will need to be clarified as part of further design development to submit with the DCO application. Both the Compulsory Purchase Order Zone (CPZ) and the WPOZ will need to be reviewed to align with future design stages required by the DCO process; however, major changes are unlikely to occur to the current boundaries.

HAL’s 2025 proposal focuses on [Redacted] (opening the new runway in 2035). This scenario considers that significant land acquisition will need to occur prior to the DCO being obtained. HAL’s proposal does not identify a breakdown of the exact areas of land that will need to be acquired before the DCO is obtained. However, HAL’s proposal notes that this refers to “all land within the runway and terminal footprint”. We assess that land acquisition prior to obtaining DCO should also include the land required for the M25 realignment, the river diversions and utilities relocations, which are likely to form part of the first activities post DCO approval.

Runway length and location

- 3.9 HAL proposes to construct a new third runway, measuring 3,500 metres in length and 60 metres in width, located to the northwest of the existing airport, as shown in the figure below. According to the proposal, this runway is proposed to (i) match the operational capabilities of Heathrow’s existing runways and (ii) accommodate all current and future aircraft types, including large long-haul aircraft such as the Airbus A380, Boeing B777X, and their variants.

Figure 3.2: Proposed layout by HAL



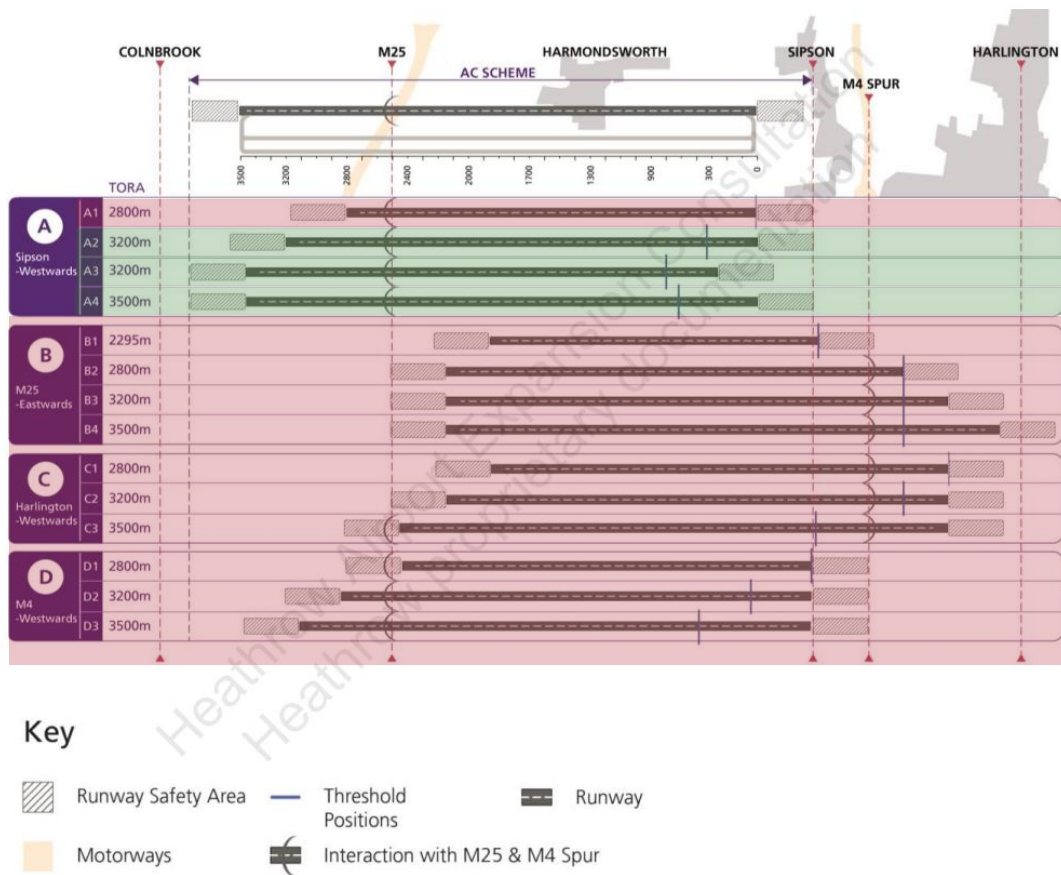
Source: HAL July 2025 Expansion Proposal, p. 38

- 3.10 The proposed location of the runway offers optimal separation – 1,035 metres from the existing northern runway – allowing independent runway operations in accordance with international safety standards (i.e. ICAO). This separation is critical for enabling simultaneous arrivals and departures and achieving the planned uplift in capacity to 756,000 ATMs annually.
- 3.11 The methodology adopted by HAL for determining the optimal location and length of the proposed runway is based on a comprehensive process conducted in 2019, which involved the identification, development, and evaluation of a wide range of alternatives, with the aim of balancing operational requirements, environmental impacts, community considerations, and deliverability. The approach combined technical analysis, stakeholder engagement, and iterative refinement. Although a comprehensive optioneering process was conducted in 2019, HAL documentation of the process is insufficiently detailed and does not include an explicit list of assumptions, such as flight schedules, and aircraft fleet composition.
- 3.12 **First set of alternatives:** The initial set of alternatives for the new runway at Heathrow included a range of lengths – 2,295m; 2,800m; 3,200m; and 3,500m – and several possible locations, grouped into four main “families” based on their position relative to key local infrastructure such as Sipson village, the M25, and

the M4 Spur. Each combination of length and location was evaluated for its ability to meet operational requirements (such as supporting long-haul flights at maximum take-off weight); compliance with safety standards; and its impacts on local communities, property, and the environment.

- 3.13 Through this process, shorter runway options (2,295m and 2,800m) and locations east of Sipson were discarded because they could not deliver the required capacity, operational flexibility, or would result in unacceptable property loss and environmental impacts. The options that remained for further consideration were those with a length of 3,200m or 3,500m, located west of Sipson (Family A), with the 3,500m option – matching the Airports Commission (AC) scheme – emerging as the preferred solution due to its superior operational performance and limited community impacts.

Figure 3.3: Summary of runway options in relation to key local geography

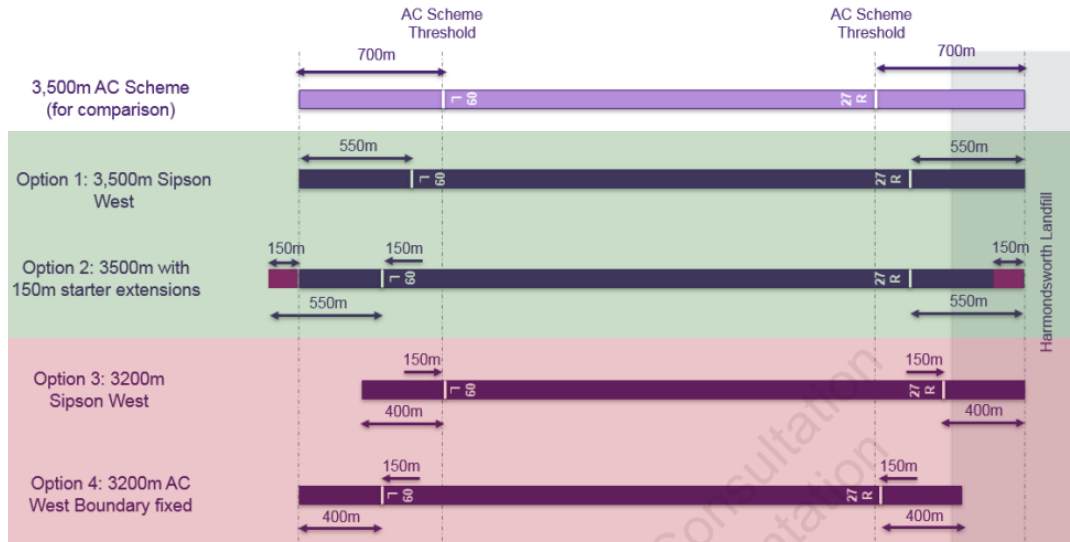


Source: HAL Figure 1.10 of document “Updated SDR Document”

- 3.14 **Second set of alternatives:** During the Masterplan Assembly phase, the refinement of options focused on two key components: runway lengths across the three-runway system and the runway west shift.
- 3.15 For runway lengths, further engagement with airlines confirmed that a Take Off Runway Available (TORA) of 3,200 – 3,500 metres was required for the Northwest Runway (NWR), with a Landing Distance Available (LDA) of at least 2,800 metres (ideally 2,950-3,100m for resilience). Four main options were evaluated: (i)

3,500m TORA in the AC scheme position; (ii) 3,500m with starter extensions; and (iii) two 3,200m options anchored at the east or west. The 3,200m options were discontinued due to lower operational resilience and uncertain performance, while the 3,500m options were retained for further development.

Figure 3.4: Diagrammatic representation of options



Source: HAL Figure 1.20 of document “Updated SDR Document”

- 3.16 For the runway west shift, three alternatives were assessed: shifting the runway 342m, 200m, or 100m west of the AC scheme baseline. While the largest shift reduced landfill interaction, it caused major encroachment into Colnbrook and increased complexity for infrastructure and river diversions. The 200m and 100m shifts offered some balance but still introduced significant planning and sustainability challenges. Ultimately, all west shift options were rejected due to negative sustainability, community, and consenting risks, and the baseline AC scheme position was retained.
- 3.17 As part of the additional documentation that HAL provided, we analysed a technical note addressing the proposed runway length, outlining the rationale and conclusions supporting the suitability of a 3,500-metre runway. The document includes the outcome of a BA/IAG analysis concerning operational penalties associated with shorter runways. It also presents HAL’s further justification for the proposed length, which is based on meetings with airlines that operate long-haul routes, operational constraints, and benchmarks against international airports.
- 3.18 In addition to the runway length, HAL proposes Runway End Safety Areas (RESAs) extending 300 metres beyond each runway end. The illustration below shows the existing RESAs of the existing runways at Heathrow.

Figure 3.5: Heathrow's Runway End Safety Areas

Source: Google Earth, Steer

- 3.19 Our feasibility assessment of the option HAL put forward in their proposal for runway length and location is summarised in the box below:

HAL presents a proposal that is consistent with the solution outlined in the Airports National Policy Statement (ANPS) of 2018. The documentation includes HAL's conclusions regarding the proposed runway length and location, supported by qualitative assessments and optioneering. However, the analysis lacks relevant information, which limits the ability to fully evaluate the technical adequacy of the proposal.

We assess the three key runway aspects - runway location, length, width and elevation; separation between runways; and OLS- in turn.

Runway location: The description of the optioneering process for runway location lacks sufficient detail. The comparison between alternatives is primarily qualitative, using terms such as “less to build” or “least interaction with landfills”, rather than providing a more robust quantitative assessment. The proposed location of the new runway requires the realignment and lowering of the M25 to allow the runway to cross above via a tunnel structure. This option implies elevating the runway, yet no detailed terrain data is provided to confirm feasibility. Additionally, elevating the runway has substantial capex implications and impacts the surrounding communities.

Separation between runways: The separation between the proposed third runway and the existing northern runway is 1,035 metres, which is compliant with international standards for independent parallel runway operations. This distance is considered sufficient to enable full operational independence, allowing simultaneous arrivals and departures with reduced separation minima between aircraft. Such separation is a key enabler for increasing runway throughput and overall airfield capacity.

Length of the runway: The proposed third runway has a total length of 3,500 metres, compared to the existing runways which measure approx. 3,900 and

3,600 metres. While HAL presents an optioneering process in its documentation, the basis for the justification provided needs more detail to assess the technical adequacy of the proposed runway length. HAL proposes the 3,500 metres runway also based on the conclusions provided by BA/IAG in regard to the penalties associated to shorter runways. The proposal is further supported with conclusions coming from airlines that operate long-haul routes, operational limitations and a benchmark of international airports. We assess that greater detail and explanation for an adequate assessment of the proposal is required, including aircraft fleet compositions, destinations, payloads and routes, assumed meteorological conditions.

In order to undertake a proper technical assessment of the length of the runway, the key inputs and assumptions (aircraft fleet mix, meteorological conditions, payload and routes analysis, etc.) will need to be updated with the latest technical and market data.

We assess that the minimum runway length that could accommodate all the current aircraft types and long-haul ranges needs to be, at least, 2,800 metres (this figure does not take into account airspace route structures, payloads, take-off power requirements, weather/temperature changes, and gradient of runway used). This distance needs to increase by c.300 metres at both runway thresholds to accommodate for the Runway End Safety Areas (RESAs), consistently with international design standards (ICAO), albeit the appropriate dimensions will be subject to a detailed study.

Width of the runway: The proposed third runway has a total width of 60 metres, comprising a 45-metre central runway flanked by 7.5-metre paved shoulders on each side. In accordance with CAA and ICAO specifications, this configuration is sufficient to accommodate Code F aircraft, including aircraft such as the Airbus A380 and Boeing B747, along with their respective variants. The proposed width is enough for the operation of any commercial aircraft currently in the market.

Elevation of the runway: According to HAL, the proposed runway is expected to be elevated between 3 and 5 metres above the existing ground level (which is currently unknown and not included in the documentation). This elevation is primarily due to the planned realignment and lowering of the M25 motorway, which is intended to pass beneath the new runway via a tunnel. Furthermore, HAL has proposed elevation levels of 25.942 AMSL and 26.543 AMSL for runway thresholds 09L and 27R respectively. These levels seem appropriate regarding the overall runway slope. However, it will be necessary to assess any slope variations along the full runway alignment to ensure compliance with applicable standards and operational requirements.

Obstacle Limitation Surfaces: The documentation provided by HAL includes a list of obstacles that interfere with the Obstacle Limitation Surfaces (OLS). This list is based on a survey conducted in 2017, and HAL has indicated that the identified obstacles will either be removed or relocated. However, it remains unclear whether the list encompasses all existing obstacles or only those

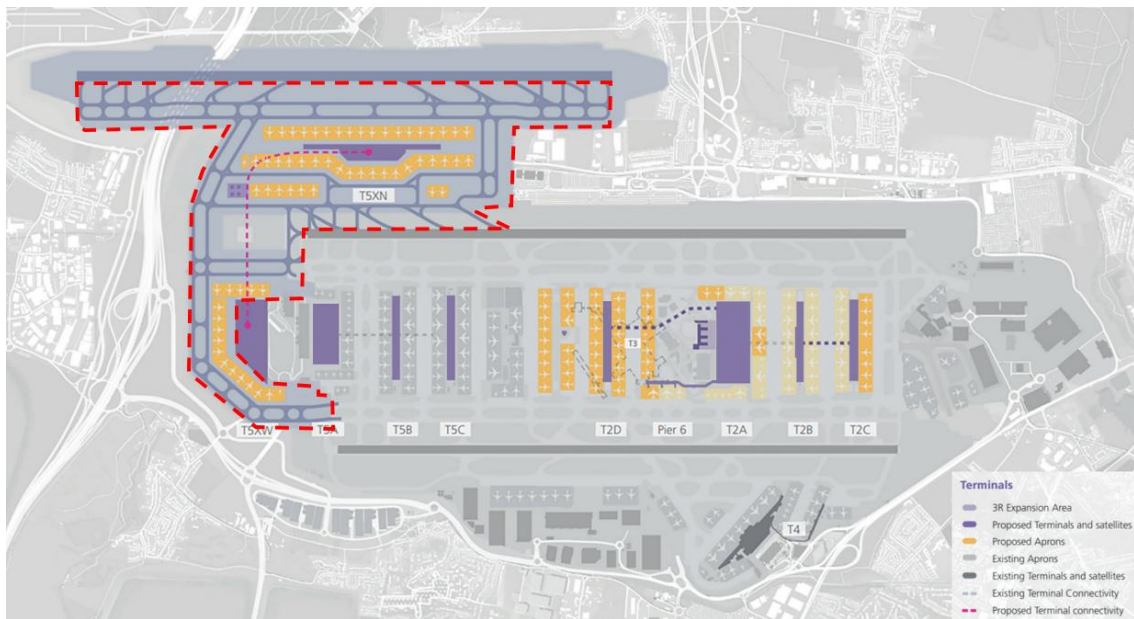
deemed most critical. It is therefore recommended that a map indicating the location of obstacles be included, along with a more comprehensive description – such as the ownership of the infrastructure and potential mitigation measures. One important obstacle is the Lakeside Energy facility, which is situated in proximity to the airport, and it is likely to be affected by the proposed new runway. We acknowledge that the relocation of this facility is included within the portfolio of assets designated by HAL for acquisition.

Overall, the runway proposed by HAL aligns with the solution presented in the 2018 ANPS and meets the safety standards. However, the documentation omits specific assumptions and critical information required for a comprehensive understanding and assessment of the proposal, and some of the key inputs that HAL used in their decision-making process might date from 2018 or before.

We consider that a robust runway options assessment should include two steps. The first step should be assessing the required runway length independently from its proposed location. This assessment should be based on well-defined and up-to-date assumptions regarding anticipated flight schedules and aircraft types expected to operate on the new runway within the next decades, meteorological conditions, as well as consideration of future airspace structures involving three runways, among other relevant parameters. The second step should be evaluating potential locations by balancing investment requirements, impacts on road access—particularly the choice between affecting either the M4 spur or the M25—and the noise impact on current and projected population distributions over the next years.

Airfield configuration

- 3.20 HAL’s expansion proposal includes a comprehensive taxiway system designed to integrate the proposed 3,500 m northwest runway into the existing airfield infrastructure. This system comprises new taxiway links that facilitate aircraft movement between the new runway and the central terminal areas. Notably, the design incorporates Around-the-End Taxiways (ATETs) at the western end of the central runway, enabling aircraft to transition between runways without interfering with operations on the central runway. This configuration supports independent runway operations and enhances overall airfield throughput.

Figure 3.6: Proposed layout by HAL

Source: HAL July 2025 Expansion Proposal, p. 38

- 3.21 To further optimise ground operations, HAL proposes the development of Western Bypass Taxiways located west of Terminal 5. These taxiways provide an alternative north-south route for aircraft, helping to alleviate congestion and reduce taxiing distances.
- 3.22 The methodology adopted by HAL for the development of the taxiway system was grounded in a multi-disciplinary evaluation process, aiming to ensure operational resilience, maximise capacity, and minimise environmental and community impacts. The process began with the identification of key requirements, such as supporting all runway operating modes, avoiding single points of failure, and ensuring compliance with standards. Options were developed and qualitatively assessed through high-level modelling and a BRAG (Black-Red-Amber-Green) scoring system. Stakeholder engagement and iterative refinement were integral to the process. The key considerations of the evaluation process were the following:
- **Alternatives for crossing the central runway:** A range of alternatives for crossing the central runway were initially considered, including direct runway crossing and Cross the End Taxiways (XTET), but both were discontinued due to their negative impact on runway capacity. The selected solution was the implementation of Around the End Taxiways (ATETs), with several configurations evaluated for both the eastern and western ends of the runway. Ultimately, only western Code F ATETs were retained, as they accommodate all aircraft types and minimize community and environmental impacts. Eastern ATETs and lower code alternatives were discarded due to high costs, significant land and property impacts, and adverse effects on local communities.
 - **Alternatives for the Western Bypass:** There was no substantive optioneering for the Western Bypass Taxiway or the remainder of the taxiway system, as

their locations were dictated by adjacent infrastructure and terminal/apron layouts.

- **Alternatives for a north-east taxiway:** The north-east taxiway was also subject to optioneering, with several layout options evaluated. However, it was ultimately excluded from the current Masterplan due to its limited operational benefit relative to its significant property and infrastructure impacts, though it is safeguarded for potential future need.

3.23 In addition to airside connectivity, HAL masterplan includes significant addition of aircraft parking stands: a total of 47 stands in the northern apron and a total of 19 stands in the western apron.

3.24 Our feasibility assessment of the option HAL put forward in their 2025 proposal for the airfield configuration is summarised in the box below:

HAL has submitted documentation with its 2025 proposal outlining the proposed taxiway and apron system associated with the overall expansion of the airport. While the proposal appears to align with ICAO / CAA standards and includes several key infrastructure elements, the level of detail provided is insufficient to fully assess the technical adequacy of the design. Several critical aspects remain unsubstantiated or lack supporting analysis, limiting the ability to evaluate the operational efficiency and safety of the proposed layout.

We assess each of the key aspects of airfield configuration in turn.

Rapid Exit Taxiways (RETs): The proposal includes multiple Rapid Exit Taxiways (RETs) along the new runway. However, no supporting analysis has been provided regarding the expected aircraft fleet mix or the results of any runway simulation. HAL indicates that the positioning of the RETs was determined in coordination with NATS, resulting in a runway occupancy time of 55 seconds. The details of the assumptions and simulation results would assist to validate the adequacy of the RETs' positioning and dimensions.

Taxiways: HAL asserts that the airfield layout has been optimised to minimise ground taxiing distances.; However, the proposal does not include any quantitative evidence to substantiate this claim, nor it includes a comparison between options that could help to evaluate distances.

Western bypass taxiways: Our analysis indicates that certain aircraft stands in the western apron may necessitate pushback manoeuvres into the Western Bypass Taxiways. This arrangement has operational challenges, as these taxiways are designed to support significant volumes of both northbound and southbound taxiing traffic. Consequently, direct pushbacks into the bypass taxiways can provoke taxiway congestion, ground delays or even safety incidents. A more prudent solution would involve conducting pushbacks into adjacent taxi lanes prior to accessing the bypass taxiways, but this approach may require relocating the bypass taxiways further west or reducing T5XW footprint. Additional studies—such as airfield capacity simulations—are

recommended to substantiate HAL’s proposed strategy or to explore potentially superior alternatives.

Aircraft circulation routes: To enable a more robust assessment of the proposed taxiway system, it would be necessary to include detailed aircraft circulation routes between aprons and runways. Additionally, any coordination or agreement with Air Traffic Services (ATS) regarding the strategy should be documented.

Stand demand: No reference to the expected aircraft demand, aircraft fleet mix, allocation strategy, flight schedule (DDFS) or occupation times is found in the documentation for the estimation of stand requirements. Consequently, there is no justification of the proposed total number of stands and their distribution between the western and northern aprons. More detail would be necessary to undertake an assessment. Additionally, it would be beneficial to assess other areas such as Ground Support Equipment (GSE) designated parking areas, service roads and airside shuttle busses boarding areas.

The proposal presents a general airfield configuration in accordance with ICAO Code F operational requirements, and we are generally in agreement with the overall conceptual approach for the taxiway system. Nevertheless, the documentation provided lacks sufficient technical detail and supporting data necessary for an in-depth assessment. Specifically, the absence of simulations or quantitative analyses pertaining to the standardised taxiing routes—particularly given the complexities associated with three-runway operations—restricts our ability to fully evaluate the design. Furthermore, such information is essential to address our concern about the potential operational inefficiencies resulting from the interaction between aircraft pushback from the western apron and traffic utilising the western bypass taxiways.

Terminal area

Terminal area capacity

- 3.25 Heathrow Airport currently handles more than 80 million passengers per annum (mppa) across its four terminals (T2, T3, T4 and T5). Average daily occupancy levels already exceed 92% of the airport’s design capacity, with peak periods frequently surpassing 100%. In response to these operational pressures, HAL has proposed an expansion and modernisation programme aimed at increasing overall terminal capacity to 150 mppa.
- 3.26 HAL has positioned the new Terminal 5 Western Complex (T5X) as the focal point of its proposed capacity expansion, contributing an additional 40 mppa. The complex will comprise two key components:
- T5XW: a newly constructed processing terminal, featuring 12 wide-body aircraft stands and 7 MARS/narrow-body stands, designed to accommodate 20 mppa. By definition, this processing terminal will include the majority of passenger processing activities (check-in counters, security screening areas,

immigration/customs) and serves as the core hub for managing passenger flow, connecting landside operations (access roads, parking) with airside operations (boarding gates).

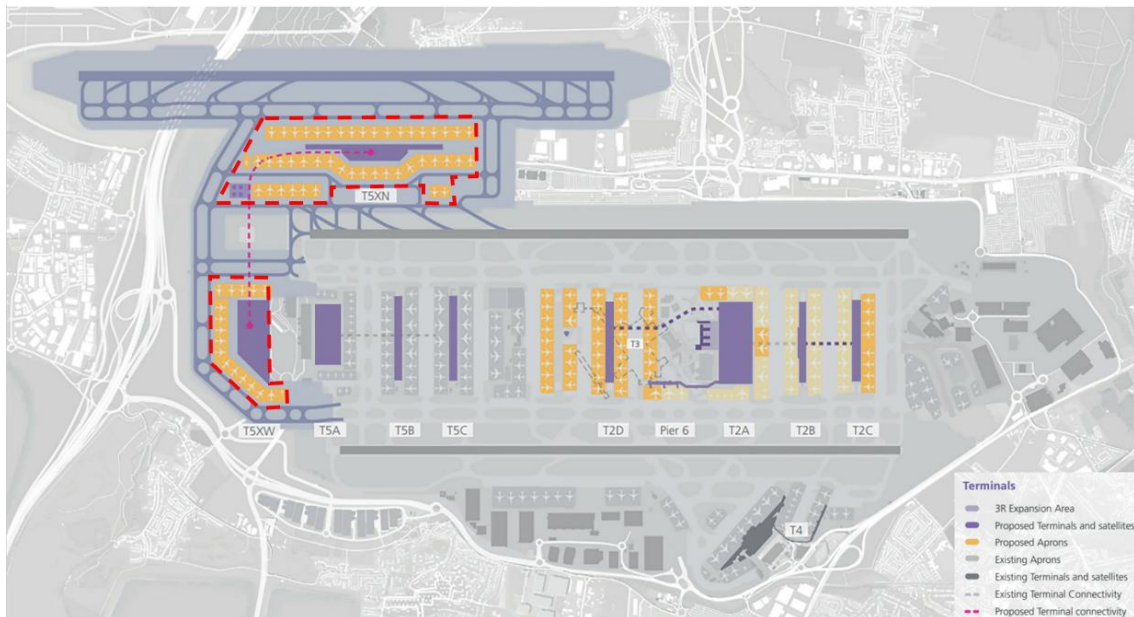
- T5XN: a linear satellite building, equipped with 28 wide-body pier-served stands, 17 wide-body remote stands, and 2 narrow-body remote stands, also intended to support an additional 20 mppa. Being a satellite building, T5XN is a separate building located away from the main terminal (processing terminal) and is primarily used for boarding and disembarking passengers, gate operations and passenger amenities near departure gates.

3.27 In parallel, enhancements to the existing Terminal 5 campus, through process optimisation and stand reconfiguration, are expected to increase its capacity from 33.5 to more than 40 mppa.

3.28 Simultaneously, the modernisation of the Central Terminal Area (CTA) focuses on the expansion of Terminal 2 (T2), raising its capacity from 20 mppa to more than 55 mppa. This will be achieved through the extension of T2A, the delivery of new satellites T2C and T2D, and the structural integration of Pier 6 from Terminal 3 (T3) via a footbridge. Terminal 4 (T4) will remain in operation with a more limited role, and its capacity will be raised to approximately 13 mppa.

Terminal area location

Figure 3.7: Proposed layout by HAL



Source: HAL July 2025 Expansion Proposal, p. 38

3.29 HAL conducted a comparative analysis of terminal assemblies and configurations, comprising processor buildings, satellite buildings, and associated apron systems, to determine the optimal allocation of facilities within the expanded airport system. This evaluation considered a broad set of performance criteria including: (1) stand-to-runway separation; (2) taxiway efficiency; (3) the ratio of contact to remote stands; (4) internal passenger

circulation and Track Transit System (TTS), also called Automated People Mover (APM); connectivity; and (5) the capacity to implement phased construction without compromising ongoing operations. In addition, HAL also assessed (1) the integration with surface access infrastructure, particularly the Public Transport Interchange (PTI); (2) heavy rail; (3) underground systems; and (4) compliance with safeguarded ILS and obstacle-free zones.

- 3.30 The option of constructing a northern processor terminal was ultimately dismissed on functional grounds. Key limitations included inadequate accessibility via rail and underground services, as well as spatial constraints within the inter-runway corridor, which cannot be extended northward without adversely impacting runway geometry. There is a barn that is classified as English Heritage and a cemetery, which are assessed to be critical constraints to the north.
- 3.31 HAL’s analysis concluded that the 1,035-metre corridor between the existing Northern Runway (09L/27R) and the proposed third runway represents the most suitable location for a linear satellite terminal building development.
- 3.32 In the West Campus, located on the western edge of the airport, HAL’s proposal designates this area as the primary expansion node. The complex comprises T5XW, positioned between the existing T5A and the realigned M25, and T5XN, an east-west linear satellite situated within the inter-runway corridor between the Northern Runway (09L/27R) and the proposed third runway. This terminal arrangement centralises passenger processing in T5XW and adds incremental gate capacity in T5XN.
- 3.33 In the Central Terminal Area (CTA), located between the Northern Runway (09L/27R) and the Southern Runway (09R/27L), the existing T2A processor is planned to be extended northwards and integrated with satellite buildings, T2B and T2C to the east, and T2D to the west, forming the core of the future “toast-rack” terminal configuration. Pier 6, currently part of T3, will be connected into the T2 complex via a dedicated connection. To enable this transformation, the remainder of the existing T3, as well as T1, will be demolished. T4, located south of the Southern Runway, will be retained as part of the overall terminal system, although it will remain peripheral to the main “toast-rack” layout.

Functional analysis

- 3.34 HAL’s 2025 proposal establishes a clearly defined functional arrangement, whereby processor terminals are dedicated to passenger processing, and satellite buildings serve boarding and apron access functions.
- 3.35 According to HAL’s 2025 proposal, the West Complex represents Heathrow’s principal expansion zone, centred on the Terminal 5 campus. The phased development plan foresees that T5XW will be commissioned first, ahead of the delivery of northern satellite T5XN, which is not expected to enter into operation until around 2050.
- 3.36 During this transitional period, T5A, T5B and T5C will continue to serve as the main gate infrastructure, with T5XW assuming the role of additional processor capacity.

This implies that passenger processing flows will be expanded incrementally in T5XW; while departing and arriving passengers will continue to access contact stands primarily through the existing satellites (T5B/C) until T5XN becomes operational. Airfield operations in the West Campus will therefore rely on optimised stand allocation around the western apron, alongside gradual integration of new apron capacity associated with T5XW

- 3.37 Once T5XN is commissioned, it will add significant gate capacity aligned to the third runway, transforming the West Campus into a fully integrated processor-satellite system. At that stage, passenger connectivity will be supported by an Automated People Mover (APM) linking T5XW and T5XN. Until then, the operability of the West complex depends on maximising the existing T5A/B/C capacity and progressively reallocating traffic flows to balance demand between these facilities and the new processor T5XW.
- 3.38 The image below shows an illustration of the T5XW terminal building.

Figure 3.8: Illustration of the T5XW terminal building



Source: HAL July 2025 Expansion Proposal, Appendix 1 Technical Annex p. 9

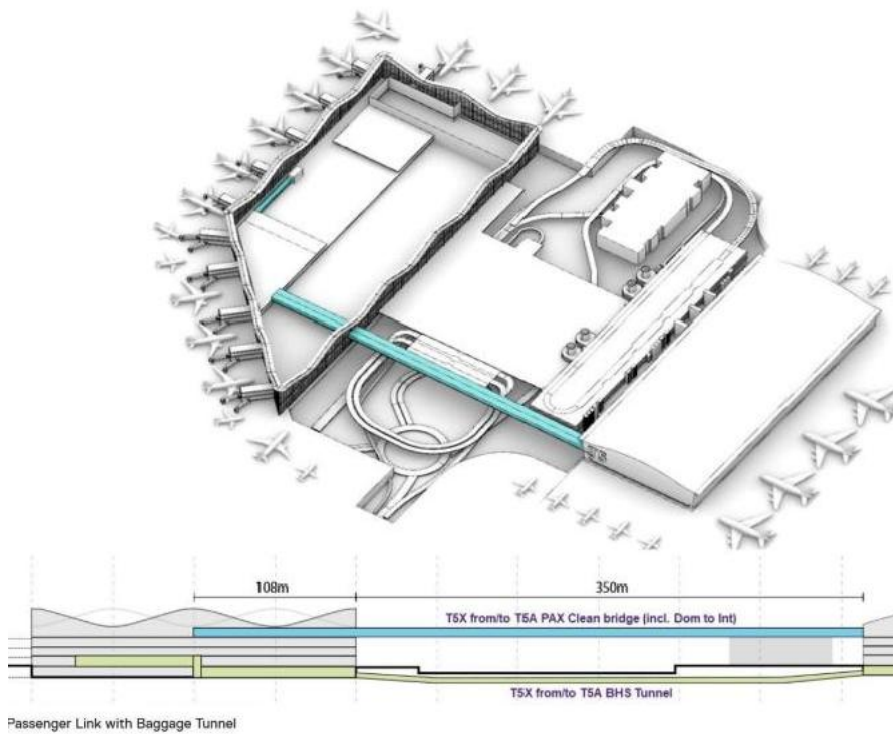
Terminal landside facilities

- 3.39 HAL's 2025 proposal for landside facilities and terminal connectivity is designed to maximise multimodal access while ensuring resilience during and after the expansion construction programme.
- 3.40 The surface access strategy is founded on a multimodal approach. HAL anticipates a certain increase in rail capacity from existing services including the Elizabeth Line, Heathrow Express, and the Piccadilly Line. Additionally, this uplift

might be further supported by future potential infrastructure projects, notably the Western Rail Link to Heathrow (WRLtH) and Southern Access to Heathrow (SAth), enhancing connectivity and resilience across the network.

- 3.41 According to HAL’s proposal, the T5X complex will function as an extension of the existing Terminal 5 (T5) campus within the Western Campus, increasing overall throughput to more than 75 mppa across the western system. The West Landside Transport Zone (WLTZ) is established as the principal landside access point, served by rail, bus, and coach within a unified transport environment comparable to the current Central Terminal Area (CTA). The WLTZ will also be connected to the proposed Southern Parkway and will provide direct links between T5 and the future T5XW facility. HAL’s proposal incorporates a Public Transport Interchange (PTI), designated areas for vehicle drop-off and pick-up, passenger transit infrastructure, commercial developments, and associated passenger facilities. A central podium will operate as the main entrance, facilitating access to the PTI, adjacent commercial blocks, MSCP5, and both T5XW and T5A terminals.
- 3.42 T5XW will be connected to Terminal 5A via a landside PTI corridor that traverses the WLTZ and passes through MSCP5. In addition, a footbridge will link the airside areas of T5XW and T5A to facilitate transfer passenger flows. The T5XW processor will be connected to the satellite facility T5XN through underground infrastructure comprising an Automated People Mover (APM).
- 3.43 The figure below shows HAL’s proposed example of the new T5X and existing T5 ‘clean-clean’ airside pedestrian link with baggage interconnection tunnel between the terminal buildings to support connecting passenger and baggage flows and create an integrated terminal design.

Figure 3.9: HAL’s Example of integrated terminal design



Source: HAL November 2025 response to SoS request for additional information p.11

- 3.44 Surface access for most of the additional passengers will be concentrated at a redeveloped central PTI, with direct integration to rail (Elizabeth Line, Heathrow Express, Piccadilly Line) and reconfigured road forecourts.
- 3.45 In the Central Terminal Area (CTA), landside functionality is reorganised around the expansion of T2. The proposed configuration is specifically designed to maintain compact transfer distances and minimise passenger crossflows. An underground Automated People Mover (APM) will connect satellites to the processor, ensuring consistent transfer performance across the expanded CTA.
- 3.46 Parkway car parks represent a key component of the overall strategy. The Southern Parkway, offering [REDACTED] spaces, and the Northern Parkway, with [REDACTED] spaces, are designed to consolidate currently dispersed parking into two centralised hubs. According to HAL’s proposal, these facilities will be connected to the terminals via direct shuttle services, and Rapid Transit systems for passengers and staff. In the vicinity of Terminal 5, the current Multi-storey Car Park MSCP 5 enables direct integration with the West Landside Transport Zone (WLTZ), while within the Central Terminal Area (CTA), MSCP 3 will be retained and MSCP 2 will be extended. The consolidation of long-stay parking demand into the new Parkway hubs will release valuable land for terminal and apron development, thereby supporting the continued centralisation and uninterrupted operation of processing functions in the West Campus and in the East Campus.

Terminal building size

- 3.47 According to HAL’s 2025 Proposal, Heathrow’s Terminal area is projected to require a significant increase in building footprints and gross floor areas in order to support the increase from current 82 mppa capacity to 150 mppa.
- 3.48 Within the West Campus, the introduction of T5XW will provide processing capacity comparable in scale to the existing T5A, effectively doubling the processing capability of the T5 complex. The T5XN satellite, will offer a gate concourse significantly larger in length than T5B or T5C. Collectively, T5XW and T5XN will expand the processing and gate infrastructure of the T5 complex to more than twice its current capacity, in alignment with forecast demand.
- 3.49 In the Central Terminal Area (CTA), HAL’s proposal includes the expansion of T2A, supported by the development of satellite buildings T2B, T2C and T2D, as well as the integration of Pier 6 from the existing Terminal 3. Following the planned decommissioning of Terminals 1 and 3, this configuration will significantly enlarge the CTA footprint, occupying most of the space between the Northern and Southern Runways. HAL estimates that this transformation will result in an increase in terminal area compared to the current CTA layout.
- 3.50 T4, located south of the Southern Runway, remains unchanged in footprint and function, retaining a peripheral role in the wider operational model.
- 3.51 HAL has not provided information HAL on the square metres and building design of the proposed terminals.
- 3.52 Our feasibility assessment of the option HAL put forward in their 2025 proposal for terminal area is summarised in the box below:

HAL sets out capacity targets consistent with the Airports National Policy Statement (ANPS), projecting additional terminal capacity of 40 mppa between the new terminal buildings T5XW and T5XN.

We assess each of the key aspects of terminal area in turn.

Terminal capacity: Relying solely on annual throughput figures is insufficient to accurately undertake a terminal sizing, as passenger demand fluctuates throughout the year and tends to concentrate during peak periods. We have not had access to data concerning Peak Hour Passenger (PHP) volumes and busy-hour distributions, all of which are essential parameters for determining the appropriate size and operational capacity of specific terminal areas. For a comprehensive assessment of capacity requirements, it is also necessary that HAL develops detailed flight schedules and an overarching strategy outlining airline and destination allocations across the airport.

Terminal location: The exclusion of the option to locate all the new terminal capacity between the northern runways is based on the lack of current plans for new rail and underground access, as well as insufficient space to accommodate a complete terminal area with the processor. Should rail access become a possibility for this northern location, it would be advisable to revisit the key decisions, as the potential for landside terminal development in

this northern area—particularly when considering in tandem with an increased separation between the runways—has not been fully investigated and may warrant further assessment. Additionally, there is an inherent risk associated with concentrating a substantial portion of Heathrow’s operations in the western area—equivalent to the entire current airport operation—within a single underground surface access point.

Terminal functional analysis: The phasing strategy ensures terminal functionality during construction by commissioning T5XW first as a new processor, while T5A/B/C continue to handle operations. This staged approach balances demand across the existing and new facilities, ensures apron and stand capacity can be progressively integrated, and avoids major breaks in passenger flows. The proposal does not include a detailed operational analysis of transfer movements between terminals, either for passengers or for baggage, but additional information submitted in response to the request by the DfT shows the integration of such infrastructure in order to have a single integrated operations approach. Before the commissioning of T5XN in the 2050s, there is a risk of having insufficient passenger capacity even with high levels of remote stand operations.

Terminal footprints: The total footprint and number of levels of the proposed terminal buildings remain unknown. Gross floor area for each terminal by level and processing area should be provided at later development stage to undertake a feasibility assessment.

Surface Access

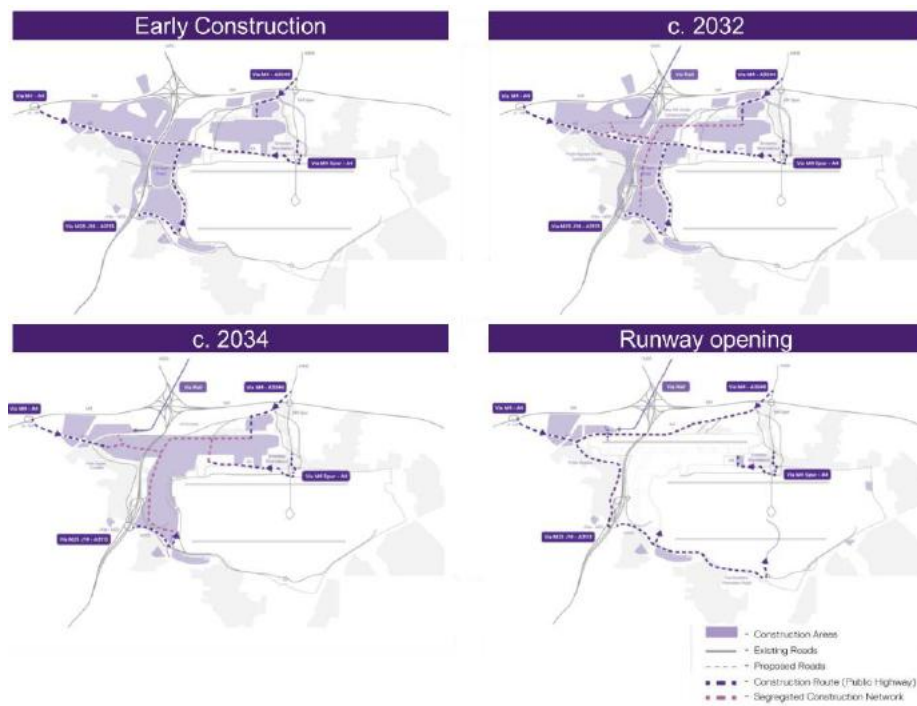
- 3.53 The proposed new West Campus will include the main processing terminal (T5XW), located between T5A and a realigned M25, and a satellite terminal (T5XN), linked by a passenger transit system. HAL estimates that the new T5XW and T5XN will provide a combined capacity of 40mppa. This new capacity will be in addition to the existing c.35mppa at T5A/B/C, bringing the total capacity of the West Campus to more than 75 million passengers per annum and surpassing 80 mppa in the long term.
- 3.54 The public transport interchange (PTI) will provide designated zones for vehicle drop-off and pick-up and passenger transit amenities, and the West Landside Transport Zone (WLTZ) will serve as the principal gateway to the West Campus.

During construction

- 3.55 In its response to the SoS’s request for further information, submitted in November 2025, HAL provided additional information on how their proposed construction strategy is designed to minimise disruption during construction. HAL states that no existing through-routes will be extinguished without a replacement route being fully operational, and roads such as Hatch Lane, Stanwell Moor Road (north), and parts of Airport Way will only be decommissioned once alternative alignments are in place.

- 3.56 Major new links, including sections of the M25, A4 and A3044, will be built away from existing alignments, with tie-ins carried out during engineering hours using overnight lane closures. Along the M25 corridor, the new runway tunnel and taxiway bridges would be constructed around 130 metres west of the existing carriageway, with associated works (collector/distributor roads and junction upgrades, including J14 and J14A) carried out in phases so that junctions remain operational, supported by temporary diversions where required.
- 3.57 For structures over retained infrastructure (such as the M4 Spur and parts of the A4), HAL proposes offline bridge construction with bridge launches during night hours to avoid peak-period disruption. Road diversions shown in the figure below would be delivered over approximately four years following DCO grant, with local roads completed by around 2032 and M25 works by around 2033. Throughout, access to existing terminals would be maintained, using segregated construction routes and phased delivery of new links (including the new A4 and Poyle bypass) to minimise use of public roads by construction traffic and to enable the later closure of the existing A4 and A3044 once replacement routes are open.

Figure 3.10: HAL’s road traffic routes during construction



Source: HAL November 2025 response to SoS request for additional information p.35

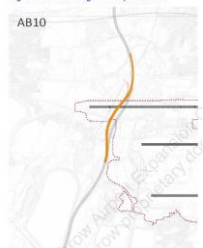

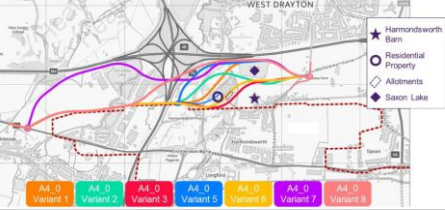
Roads








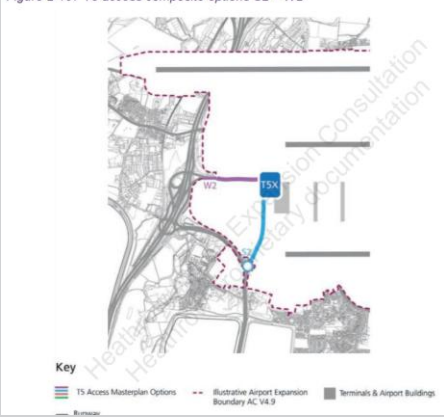
- 3.58 The HAL proposed access road strategy is defined by the realignment of the M25 with the new runway crossing overhead.
- 3.59 According to HAL, the benefits of the M25 realignment design are two: (1) keeping traffic flowing during the construction phase and (2) increasing the road capacity. HAL’s proposal states that new M25 mainline will keep the existing four lanes in each direction for the central corridor, along with separate northbound and

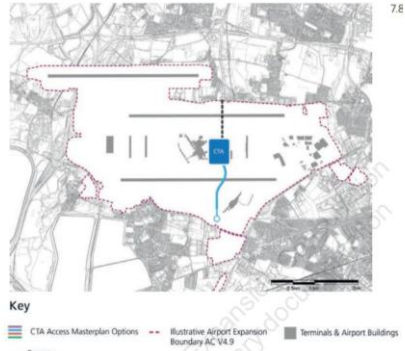
southbound collector distributor roads each providing the two existing lanes in each direction plus an additional lane in each direction, totalling an increase in capacity from six to seven lanes in each direction.

- 3.60 Changes to M25 include an enlarged roundabout at Junction 14 and a new elevated roundabout at Junction 14a that will provide access to new terminal zones. The selected junction scheme retains much of the existing Junction 14 and 14a infrastructure. The A3044 will be diverted west of the M25 as a dual carriageway with bus lanes, bypassing Poyle and avoiding a tunnel under the new runway. The A4 will also be diverted, running parallel to the M4 Spur before rejoining its original route. Around T5, landside access will be reconfigured with the T5 spur rerouted. Local road diversions will also be required as part of these changes.
- 3.61 The 2019 *Updated Scheme Development Report* provided to us by HAL outlines a surface access selection process that begins with a longlist of viable road options and potential variants. Discontinuation rules were applied at several key milestones to refine the options. For each component, a preferred option was selected for inclusion in the Preferred Masterplan. A summary table of the selected options is provided below.

Table 3.1: Roadway alignment and access reconfiguration selection

Description of changes	Illustrations
<p>M25 alignment (AB10): horizontal shift to the west, allowing a lowered vertical alignment. It retains Junction 15 in its current configuration and includes collector-distributor roads to manage traffic between closely spaced junctions.</p>	<p>Figure 1.27 M25 alignment option AB10</p> 
<p>M25 Junction (JB18): retains and modifies Junctions 14 and 14a. It includes an elevated roundabout at J14a and an elongated roundabout at J14, with improved connectivity to the A3044.</p>	<p>Figure 1.55 M25 junction option JB18</p> 
<p>A4 alignment (0-Variant 6) with 2A: provides a new offline route between Colnbrook and Harmondsworth, bypassing sensitive areas like Saxon Lake and allotments. It includes a dual carriageway east of Harmondsworth and single carriageway to the west. Option 2A adds a direct route from the M4 with secondary access from the A4 for resilience.</p>	

Description of changes	Illustrations
<p>A3044 (MOD7 -JB18): provides a north-south connection from Stanwell Moor Junction to the diverted A4, running east of the M25. It shortens the route and integrates with JB18 and A4 Option 6D.</p>	<p>Figure 2-41 A3044 options created prior to M3c</p> 
<p>NPW Access (NPW 8): provides access to the Northern Parkway via the M4 Junction 4, with a secondary link from the A4.</p>	<p>Figure 2-42 NPW access options created prior to M3c</p> 
<p>Emirates Roundabout (ERJ 13 - MOD1): the existing Emirates Roundabout is kept but updates the layout to reduce footprint and improve traffic flow. All traffic movements are maintained.</p>	<p>Figure 2-58 ERJ options created prior to M3b</p> 
<p>Southern Perimeter Road (SPR 7): is a realigned section of the Southern Perimeter Road designed to run north of the proposed Southern Parkway (SPW),</p>	<p>Figure 2-59 SPR options created prior to M3b</p> 
<p>Beacon Road Junction (BRJ 1b): provides an enlarged roundabout taking into consideration a cargo area link road and a Southern Road Tunnel to the CTA (CTA 4).</p>	<p>Figure 2-60 BRJ options created prior to M3b</p> 
<p>Cargo Area Junction (CAJ 6): provides access to the cargo area via a simple junction layout.</p>	<p>Figure 2-84 CAJ options created prior to M3b milestone</p> 
<p>Stanwell Moor Junction (SMJ 13A): features a 510m horizontal radius on the A3113, reducing the need for widening and improving sight distance.</p>	<p>Figure 2-85 SMJ options created prior to M3b</p> 
<p>Terminal 5 Access (S2 +W2): re-establishes access to Terminal 5 via new links from the A3044 and SPR.</p>	<p>Figure 2-107 T5 access composite options S2 + W2</p> 

Description of changes	Illustrations
<p>Central Terminal Area (DN+S6/Option 4): maintains the existing northern tunnel access and adds a secondary route from the south.</p>	<p>Figure 2-119 Central Terminal Access composite option DN + S6</p>  <p>The illustration is a site plan of Heathrow Airport's Central Terminal Area. It shows the existing northern tunnel access (indicated by a blue line) and a new secondary route from the south (indicated by a red dashed line). The map includes various airport buildings, runways, and expansion boundaries. A key at the bottom identifies the symbols used: CTA Access Masterplan Options (blue and red lines), Illustrative Airport Expansion Boundary AC V4.9 (dashed red line), Terminals & Airport Buildings (grey rectangles), and Runway (black lines). The number 7.8 is visible in the top right corner of the map area.</p>

Source: HAL, Steer

- 3.76 HAL’s 2025 proposal states that the modal share of public transport increased by 5% between 2020 to 2024. The modal share for employee single-occupancy car decreased by 10% between 2017 and 2024 reaching 52% in 2024. HAL states that with the implementation of their Surface Access Strategy, public transport modal share is expected to increase by 5% in 15 years from runway opening. Additionally, the new rail capacity is expected to increase the modal share by another 5%, reaching the ANSP target of 55% public transport modal share in 15 years from runway opening.

Car parking

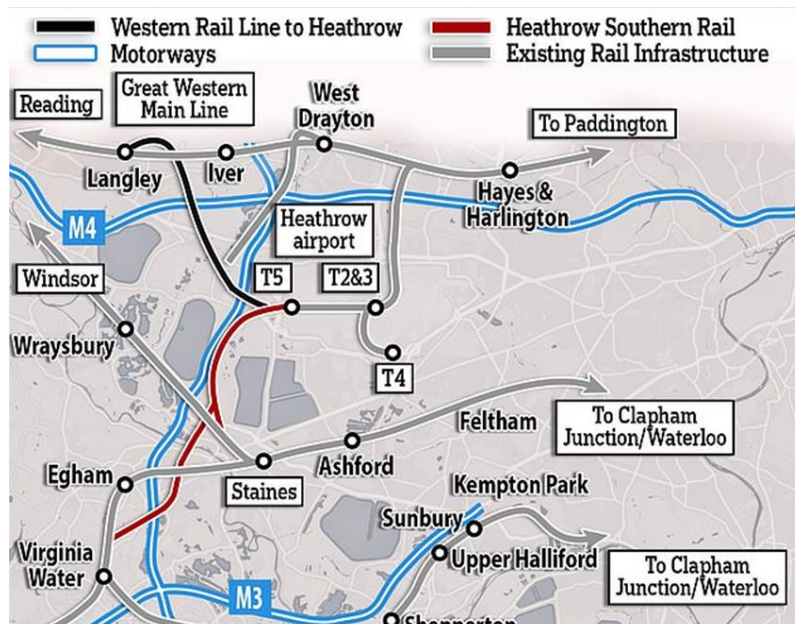
- 3.77 Part of the proposed Surface Access Strategy is to consolidate existing car parking facilities, freeing up central airport space for airfield and passenger facilities. HAL’s plan is to have two new large car parks: the Southern Parkway (SPW) and Northern Parkway (NPW).
- 3.78 The 2025 proposal states that the SPW will provide [REDACTED] parking spaces with access via the proposed Southern Perimeter Road. The NPW will provide [REDACTED] parking spaces with access via the proposed M4 and A4 routes. There will be a direct shuttle service which will link parkways to terminals. Mass Rapid Transit (for staff) and Group Rapid Transit (for passengers) will connect parkways to airport areas.
- 3.79 Short-term taxi and private hire vehicle movements will be managed within terminals to prevent illegal parking.
- 3.80 Car hire, taxi feeder, and authorized vehicle areas will be consolidated in a new multi-storey car park at the former T4 Long Stay site. This will service the Western Campus, T4 and the CTA (via the proposed new Southern Road Tunnel).
- 3.81 The redevelopment of the CTA will include retention of the multi-storey car park 3 (MSCP 3) and the extension of the upper levels of MSCP 2.

Railway

- 3.82 Heathrow airport currently is served by the Heathrow Express, the Elizabeth Line and the Piccadilly Line.

- 3.83 HAL states that one of the essential components to the success of the Surface Access Strategy is continued ownership and access rights of Heathrow Express (HEX), alluding to the [REDACTED] license expiry date.
- 3.84 HAL emphasises that, based on their interim transport modelling, submitted in Summer 2025, surface access targets set by the 2018 ANPS will only be achievable with the significant capacity increase that the Western Rail Link to Heathrow (WRLtH) and the Southern Access to Heathrow (SAtH) could bring. The WRLtH will provide direct access from the West of England and South Wales, and the SAtH will provide access to South England and surrounding counties. This new rail capacity would enable Heathrow to meet the 55% public mode share target, whilst without new rail links the mode share would drop to 50%.
- 3.85 The map below illustrates the current rail connections with Heathrow and the potential new connections from the west and south.

Figure 3.11: Heathrow's rail connections



Source: Daily Mail¹

Surface access modelling

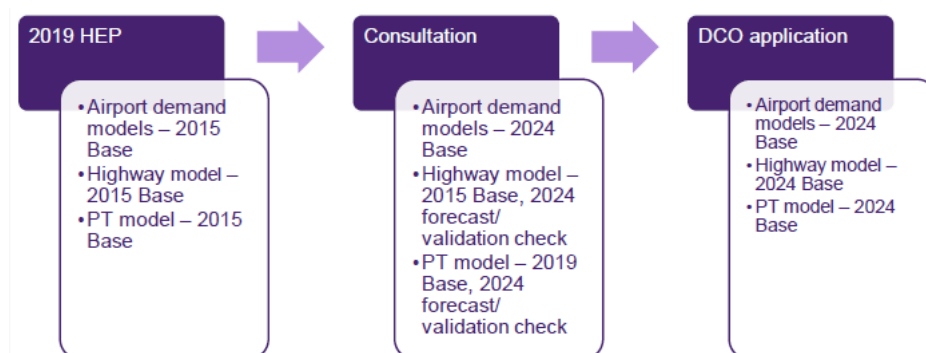
- 3.86 In its response to the SoS’s request for further information, submitted in November 2025, HAL states that it has developed a comprehensive surface access modelling suite over the past 20 years, comprising five strategic models (covering airport passenger and staff demand, background traffic, public transport and highway assignment) and a set of tactical operational models for key junctions on the M25, M4, A4 and airport perimeter roads. HAL reports that these models have been developed in line with current DfT’s best practises and also

¹ Is YOUR station on the brand new £1.3bn railway line? Route could connect Surrey, Berkshire and Hampshire to Heathrow and get holidaymakers from Guildford to the airport in less than half an hour | Daily Mail Online, published 6 September 2023

notes recent collaboration with TfL and National Highways to integrate data from their models into the Heathrow suite.

- 3.87 HAL explains that it has already remobilised its surface access modelling supply chain and updated the models using 2024–2025 data, including over 500 traffic counts, mobile network data, GPS travel times and bespoke freight and employee surveys. This is intended to allow DCO modelling to commence promptly following a Government decision on the scheme taken forward to inform the ongoing ANPS review. HAL estimates it would take up to two years for another promoter to reach a similar level of readiness.
- 3.88 HAL also describes a “twin-track” approach, shown in the figure below, whereby interim TAG²-aligned model updates are used to support consultation while a fully updated TAG-compliant 2024 Base Year suite is developed in parallel to underpin the application for development consent, with technical scrutiny of the approach taken forward through the Heathrow Area Transport Forum.

Figure 3.12: HAL’s approach to surface access modelling



Source: HAL November 2025 response to SoS request for additional information p.38

- 3.89 Our feasibility assessment of the surface access option that HAL put forward in their 2025 proposal is summarised in the box below:

Surface Access Strategy: HAL’s strategy is reliant on leveraging existing rail and underground systems, supplemented by strategic future projects (Western Rail Link to Heathrow - WRLtH and Southern Access to Heathrow - SAtH), and providing additional capacity in the M25 between junctions 14 and 15 through an additional collector/distributor lane for accessing Heathrow West Campus.

Road access: At the cross-section of the M25 near Heathrow, the current configuration provides a total of six lanes in each direction (four mainline lanes and two entry/exit auxiliary lanes). This allows vehicles to enter and exit M25 without interfering with the mainline flow. HAL’s proposed new infrastructure increases the total lane count to seven per direction, maintaining the four mainline lanes but replacing the two entry/exit lanes with a more structured system of three lanes dedicated for collector-distributor roads. This one lane increase will service airport demand. Traffic modelling is required to validate if

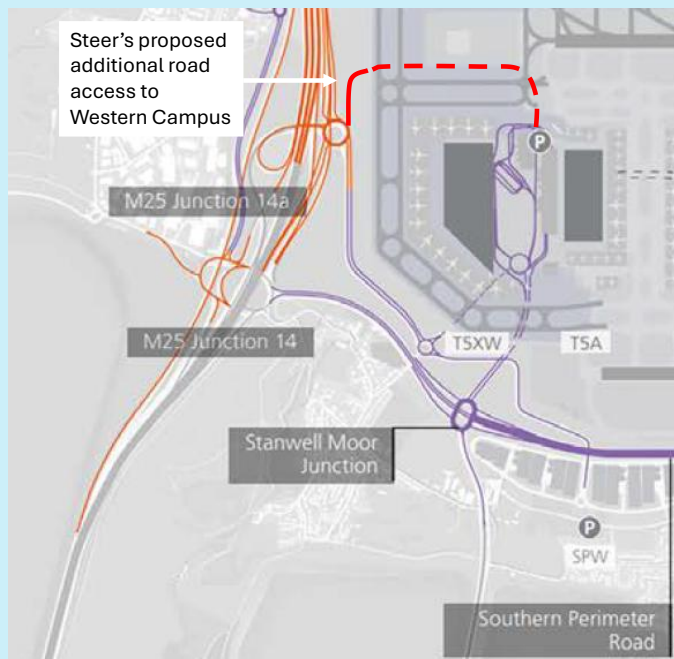
² TAG: Transport Analysis Guidance, which is a set of guidelines published by the DfT.

the proposed capacity meets future demand. The total passenger capacity planned for the West Campus is more than 75 million passengers per annum. Even assuming that the current connecting passenger share remains constant, the volume of passengers that will access this area will put a lot of pressure on the surface access points.

HAL selected a road option to access the West Campus that provides two separate points of access, one via the A3044 and another via the Southern Perimeter Road (SPR). The access reflected in HAL’s documentation depicts M25 Junction 14a as a roundabout with a southbound leg that eventually converges with the same downstream roundabout used by the SPR access route. This convergence of the two access points may lead to potential traffic flow conflicts or excessive queuing, particularly during peak periods.

Currently HAL has plans to have road access by the southern side into the West Campus, which will run below the Southern Runway and taxiways. The scheme would significantly improve with an additional northern access. We strongly recommend considering the addition of another road access point into the West Campus, north of the future T5XW. The image below provides an illustration of the additional road access, marked in red (the dotted line indicates an underground section).

Figure 3.13: Steer’s proposed additional road access to West Campus



Source: HAL, Steer

Car parking: The consolidation of parking facilities into the Southern and Northern Parkways further underpins the terminal development strategy, freeing airport land for terminal and apron expansion while maintaining passenger accessibility through dedicated shuttle, and rapid transit connections. This reallocation of surface access and parking capacity directly

supports the functional reorganisation of processing and gate operations across the airport. The total car parking capacity proposed at the Parkways is [REDACTED] spaces. We will need to assess its appropriateness with information on mode share, busy hours, and terminal operations, which is not available in HAL's 2025 proposal.

Rail connectivity: The current rail schemes that provide service to Heathrow could potentially increase their capacity, although we assess that the additional capacity will not be able to cope with the additional passengers that the expansion project will bring in order to maintain the same share of public transport. This additional capacity will enhance the connectivity to the east. HAL references future projects such as the Western Rail Link and Southern Rail Link but lacks detail regarding their expected timelines and the capacity enhancements they will deliver.

Active Travel: While the Active Travel Strategy highlights significant improvements to cycling and pedestrian infrastructure, such as the Green Loop and the Active Green Network, most of the emphasis of HAL's plan is on enhancing local connectivity and providing recreational opportunities for the community. However, when considering the airport's Surface Access Strategy and the specific targets for reducing employee car trips, it is important to ensure that a clear distinction is made between community-focused active travel projects and those directly supporting airport-related commuting.

Mode share: HAL's 2025 proposal does not provide details on how the mode share targets could be achieved, and what could mitigate the absence of additional rail services, beyond the rail services that already exist to connect the West Campus. We acknowledge and support HAL's approach for surface access modelling, and we recommend developing an updated plan that captures different road infrastructure and rail services development scenarios.

4 Operability and Capacity

- 4.1 The documentation HAL provided to us outlines the expected operational performance and capacity thresholds associated with their proposal. The following summarizes the key elements related to runway, airport, stand, and terminal capacity, as derived from the information HAL made available to us.
- 4.2 **Runway capacity:** HAL anticipate that the proposed third runway, with a total length of 3,500 metres³ and a separation of 1,035 metres from the existing northern runway, will enable independent parallel operations in accordance with international safety standards. This configuration is expected to support up to additional 276,000 air traffic movements (ATMs) per annum. In conjunction with the third runway, the total airport capacity is projected to reach 756,000 ATMs per annum, subject to the final phase of the scheme.
- 4.3 **Stand capacity:** The documentation presents a static stand demand of 47 stands in the northern apron and 19 stands in the western apron. However, no dynamic stand capacity analysis is provided, and there is no indication of how stand availability will vary under different operational scenarios, peak periods, or aircraft types.
- 4.4 **Passenger terminal capacity:** Passenger terminal capacity is planned to increase from the current 82 mppa to approximately 150 mppa. The planned new T5XW and T5XN are estimated to provide 40mppa. T2 is projected to exceed 50 mppa with the extension of T2A, the delivery of satellites T2B, T2C and T2D, and the incorporation of Pier 6 from T3, while T4 will remain in operation to support the overall system.

Capacity phasing

- 4.5 HAL's 2025 proposal sets out a phased long-term pathway to progressively raise the target capacity projected for the airport, ensuring continuity of service throughout construction.
- 4.6 Phase 1 (2025-2038) of HAL's development plan initiates the enabling works required for the expansion. These works include the diversion of rivers and watercourses, the realignment of the M25 motorway, and the relocation and optimisation of major utilities across existing terminal infrastructure. Construction of the new northern runway and associated taxiway systems is scheduled within this phase, with operational readiness targeted for 2035. The

³ HAL has stated on public sources that the length of the proposed third runway is up to 3,500m.

introduction of the third runway is intended to support early redistribution of air traffic movements, although its integration with full apron and satellite capacity is deferred to later years, ~~phases~~ aligned with the planned commissioning of T5XW in 2038.

- 4.7 On the terminal side, HAL’s 2025 proposal specifies that T5XW will be operational by 2038, delivering an incremental 20 mppa of passenger processing capacity. T5A, T5B, and T5C will continue to provide the main boarding gate capacity, while T5XW will add processor functions such as check-in, security, and baggage handling as well as boarding capacity. Passenger flows will be incrementally redistributed across the West Campus. Apron capacity and aircraft contact stands in the western campus is gradually expanded around T5XW.
- 4.8 According to HAL’s 2025 proposal, Phase 2 (2038-2042) focuses on the Central Terminal Area (CTA), where capacity is increased by extending T2A northwards, commissioning satellites T2C and T2D, and structurally integrating Pier 6 from T3. This development is designed to bring T2 capacity to more than 50 mppa and replacing T3. During this period, T3 is decommissioned, reducing complexity and construction risk. T1 is also decommissioned. Airfield functionality benefits from expanded apron frontage, enabling higher proportions of contact stands and minimising reliance on remote positions. Transfers are supported by Automated People Movers (APM), ensuring compact transfer distances and consistent Minimum Connecting Times (MCTs).
- 4.9 Phase 3 (2042-2049) delivers new midfield apron and terminal capacity to absorb increasing air traffic movements demand. Airfield operability benefits from near-complete implementation of the “toast-rack” system, ensuring efficient taxiway corridors between satellites and the three runways. This reduces taxiing times and improves predictability under peak schedules.
- 4.10 Phase 4 (2049-2054) completes HAL’s long-term expansion plan with the delivery of T5XN by 2054. The satellite T5XN adds approximately 20 mppa of gate capacity, bringing the total capacity of the T5X complex (T5XW + T5XN) to 40 mppa. At this stage, the airport system reaches its full design capacity envelope of 142 – 150 mppa and 756,000 air traffic movements per annum. HAL’s proposal states that the consolidation from four to three main terminal systems improves predictability, reduces inter-terminal transfer times, and strengthens hub alignment.

Capacity analysis

- 4.11 An airport’s runway capacity is measured using several methods and factoring multiple variables, including meteorological data, aircraft type, obstacles, noise or other restrictions. In absence of this information, we can only undertake a high-level assessment for the annual air traffic movements (ATMs).
- 4.12 Heathrow operates under an annual ATMs cap of 480,000 that was imposed to mitigate the noise impact in the surrounding community. This annual cap implies

that Heathrow only reaches a maximum of 92 ATMs per hour⁴ for the two-runway system, has a night curfew, and operates in segregated mode (i.e. arrivals and departures operate from different runways) for most of the operating hours. As an example, Gatwick Airport operates with one runway and reaches 55 ATMs per hour⁵, which implies 20% more operations than each of the runways at Heathrow, although with a different mix of aircraft and operations.

- 4.13 With the current two-runway system, Heathrow could reach 528,000 ATMs per annum if there was no cap. This is assuming less than 50 ATMs per hour per runway (or 100 ATMs per hour for the runway system).
- 4.14 The addition of a third runway could theoretically provide a capacity of 792,000 ATMs per annum, assuming that the new runway operates independently from the existing runways and can accommodate all types of aircraft. This theoretical capacity would need to be adjusted to allow for noise respite and to account for the mix of aircraft.
- 4.15 Regarding stand capacity, the high-level information that can be analysed to assess the number of stands that are required for the expansion is included in the table below. We have undertaken a simple calculation to estimate the number of passengers that are using (in 2025) and are expected to be using the aircraft parking stands of the proposed scheme.

Table 4.1: Aircraft parking stand capacity

	T2A/B (2025)	T3 (2025)	T4 (2025)	T5A/B/C (2025)	Total (2025)	T5XW/N
Narrow Body (NB) stands	8	4	4	19	35	NA
Wide Body (WB) stands	16	27	29	42	114	NA
MARS ⁶ (2NB or 1WB) stands	15	4	2	7	28	NA
Maximum number of stands	54	39	37	75	205	78
Passengers (mppa)	20	19.5	9	33.5	82	40
mppa per Maximum number of stands	0.37	0.50	0.24	0.45	0.40	0.51

Source: HAL, Steer. Note: For the T5XW/N stands calculation we assume a 19% of MARS stands (as per the current infrastructure). The number of passengers per stand represents the average performance of the group of stands assigned to each terminal; individual stands could have higher or lower performance.

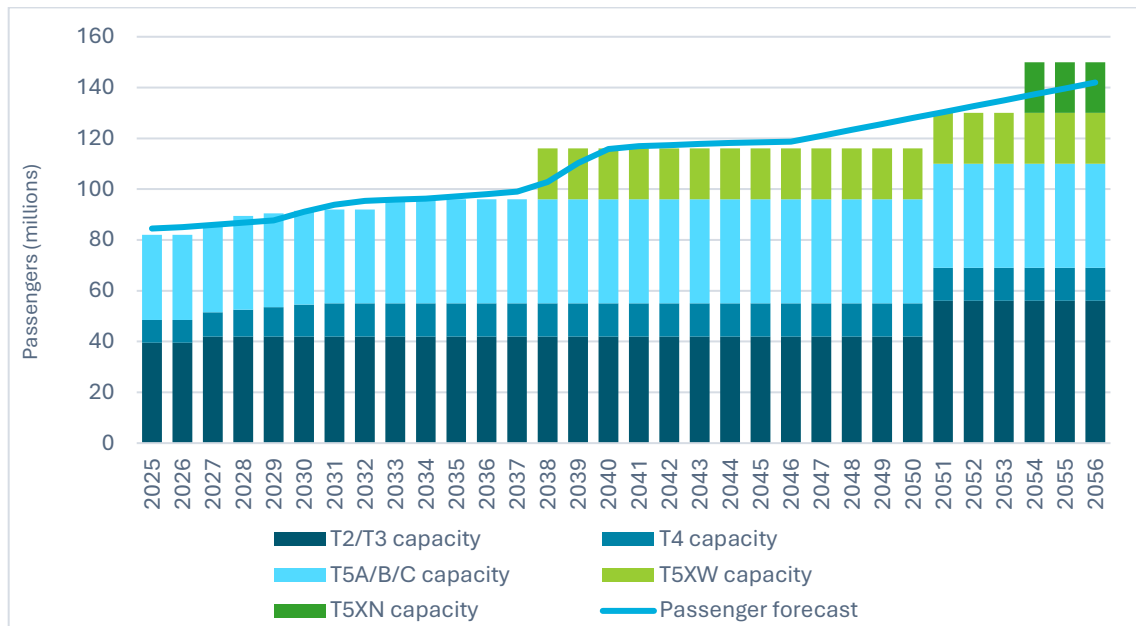
- 4.16 As per terminal capacity, our analysis of the terminal capacity uses the high-level comparison of the annual traffic forecast and the capacity that each terminal is anticipated to provide (also in annual passenger numbers), as shown in the chart below.

⁴ [Heathrow Airport Limited](#)

⁵ [TR020005-001850-10.7 Capacity and Operations Summary Paper.pdf](#)

⁶ MARS: Multiple Aircraft Ramp System stand; can accommodate one large aircraft or two small aircraft

Figure 4.1: Terminal capacity



Source: HAL, Steer

- 4.17 The traffic forecast presented in HAL’s 2025 proposal (blue line in the chart above) seems to be a “constrained” forecast. We understand that the main constraints are the ATMs cap and the terminal capacity.
- 4.18 Our feasibility assessment of the operability and capacity option that HAL put forward in their 2025 proposal is summarised in the box below:

Runway capacity: HAL has indicated that the addition of a third runway is expected to provide a total capacity for the airport of 756,000 air traffic movements (ATMs) per annum, based on a 17.5-hour operational day. However, no further details have been provided regarding the aircraft fleet mix, the operational procedures or other assumptions to evaluate the expected capacity. We assess that, at a high-level, this capacity could be achieved even considering some operational restrictions to mitigate noise impacts in the community.

More detailed analysis should be conducted in the next phase to determine the capacity balance of the system considering some key elements like meteorology, aircraft types, airspace capacity, restrictions, and airfield congestion.

Stand capacity: HAL’s 2025 proposal lacks a comprehensive justification for the proposed number of stands, as no supporting analysis is provided to demonstrate how the stand capacity aligns with the projected air traffic movements or aircraft mix. With the high-level analysis that we have undertaken (using only annual passengers per stand) we assess that the number of stands in the plan could be in the right order of magnitude, as it is aligned with some of the current operating ratios, albeit at the very high end.

This indicates that there is a risk that more stand capacity (and land) might be required to accommodate the planned traffic growth.

We recommend incorporating a dynamic stand capacity assessment in the next stage of the proposal. This should consider variations in aircraft types, turnaround times, and scheduling patterns throughout the operational day. A robust analysis should be based on an assumed flight schedule, including peak hour distributions, aircraft size categories, and operational constraints such as towing requirements and remote stand usage. The analysis would also support the validation of apron layout efficiency and ensure that the proposed infrastructure is capable of accommodating the forecasted demand under both typical and peak operating conditions.

Terminal capacity: The proposed expansion plan should clearly define the expected required increase in terminal capacity, specifying the peak hour and busy hour passenger forecast, and defining the square metres by processing area. An updated traffic forecast should start projecting the “unconstrained” demand, and then incorporate constraints, which could be linked to certain infrastructure elements not being able to be developed in time.

The high-level analysis that we have undertaken with annual passenger numbers concludes that the planned terminal capacity might be sufficient to accommodate the traffic forecast until 2046. From that point, HAL’s 2025 proposal shows some terminal capacity shortage. Some investments, such as T5XN, could be brought forward to meet the required terminal capacity demand.

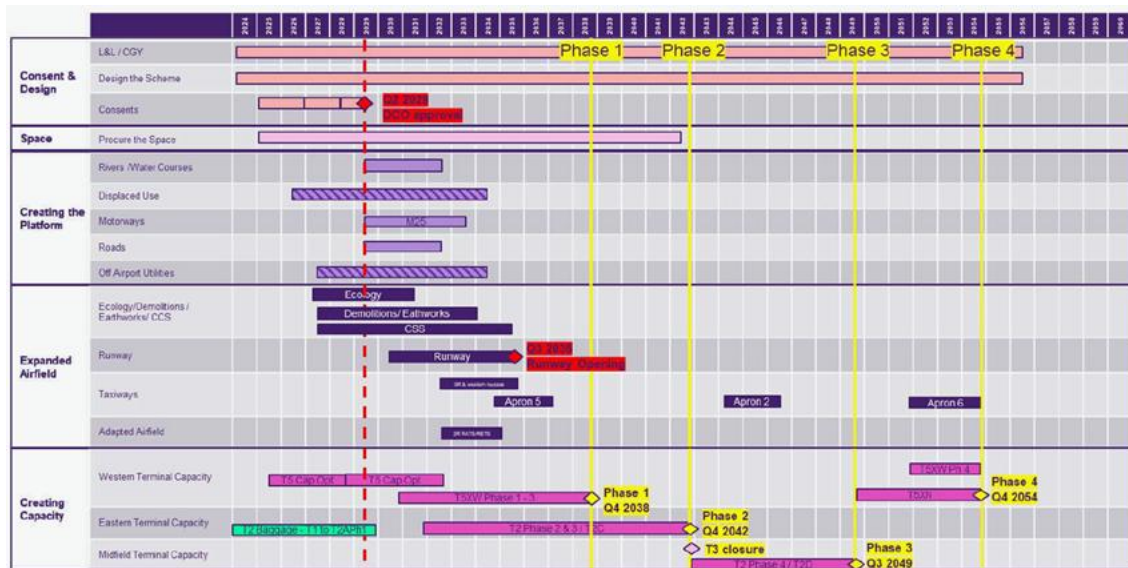
Opening of T5XN: The new satellite building that will be linked to the new terminal is planned to be operational by the beginning of the 2050s. This implies that, if passenger demand increases without opening of T5XN, there will be a large amount of remote stand operations of the Western Campus to accommodate the traffic forecast until T5XN becomes operational. Until then, the airfield operations will be challenging around the West Campus, with aircraft taxiing between the runways and the passenger bussing movements.

5 Expected timelines and Deliverability

Overall timelines

- 5.1 HAL's 2025 proposal details an intent to phase land acquisition aligned with a target of runway opening by 2035. It states that this requires significant pre-DCO activity including land acquisition, design completion and mobilisation of enabling works.
- 5.2 The overall timeline presented by HAL for the full realisation of the expansion considers a timeframe from Q1 2024 to Q4 2054, which is a period of 31 years. A further timeline to DCO consent is also presented by HAL which has a baseline date of Q1 2025.
- 5.3 The following figure is provided within the HAL’s 2025 proposal to outline the overall timeline and key activities and milestones within each phase for Scenario 3 – Ambitious Schedule.

Figure 5.1: Schedule Plan – Ambitious Schedule



Source: HAL July 2025 Expansion Proposal, p. 47

HAL indicated that the above schedule is the only viable Scenario that meets the UK government’s objective for an operational runway by 2035. HAL have however stated that these dates are at risk due to the delay in the announcements from the

Secretary of State on the scheme taken forward to inform the ongoing ANPS review.

- 5.4 We discuss the works and milestones of HAL’s schedule earlier in this report, in the Capacity and Operability chapter.

Development Consent Order and Statutory consultation

- 5.5 To achieve the Scenario 3 schedule, HAL has outlined the key activities for the Development Consent Order (DCO) application.
- 5.6 HAL’s timeline for the DCO process follows the steps outlined in the “The process for Nationally Significant Infrastructure Projects (NSIPs)” with a consultation period in advance of the DCO submission. The DCO process will require further design work to be undertaken prior to the consultation period. HAL consider further design work to commence in January 2025 and last for c.20 months.
- 5.7 The consultation period prior to DCO includes an initial two-month period of initial consultations followed by a further 13 months for updates and responses to issues raised. HAL’s 2025 proposal assumes submitting the DCO application at the end of Q4 2027, with an estimation that an approval will be obtained in Q2 2029.
- 5.8 A breakdown of the key stages within the DCO application process has been provided by HAL, which includes: (1) periods for the DCO acceptance, pre-examination, examination, recommendation; (2) a period for the Secretary of State’s decision; and finally (3) a statutory period for any legal challenges to be raised prior to approval being obtained.
- 5.9 Based on HAL’s timeline, DCO process would take over almost four years and a half to be obtained, commencing in January 2025 with the development of the scheme information and concluding with the DCO approval in May 2029. There is an assumption within the programme that some of the pre commencement work and consultations already undertaken as part of the previous 2019 DCO process, which was halted, will reduce the timeline. HAL’s programme also considers that design work undertaken to date is valid to a large extent. Necessary further developments are less onerous than commencing a full design and will benefit from extending the initial mobilisation and development of scheme information.

Figure 5.2: Timeline to DCO consent

[Redacted]

Source: HAL July 2025 Expansion Proposal, p. 46

Construction timeline

- 5.10 HAL’s 2025 proposal sets the construction works to commence in 2029 with a construction period of six years considered for completion of phase 1 (runway opening).

- 5.11 Key construction activities and durations are shown within the HAL timeline, and these include the following:

Table 5.1: Construction activities and approximate duration

Construction activities	Approximate duration
Rivers and watercourse diversions	c. 3 years
M25 works and associated roads	c. 4 years
Offsite Utilities estimated	c. 7 years
Construction of new runway	c. 5 years
T5XW	c. 8 years

Source: HAL

Deliverability

- 5.12 The construction timeline presented as part of HAL’s Scenario 3 - “ambitious schedule” considers the breakdown of activities into three main groups:
- **“Creating the platform”** which includes significant enabling works elements, including the diversions of rivers/watercourses and the M25.
 - **“Expanded airfield”** which includes the construction of the third runway; and
 - **“Creating capacity”** which focuses on works to terminals.
- 5.13 Most of the activities in each of the above groups that relate directly to the third runway are planned to commence after the DCO has been approved.
- 5.14 Overlaps and high-level sequencing of works for the various construction activities are considered, as well as some activities commencing prior to the DCO approval. However, several significant elements of the construction works are directly dependent on the DCO approval.
- 5.15 Our assessment of the expected timelines and deliverability is summarised in the box below:

HAL’s timeline for the Heathrow expansion has been developed using a 2024 baseline, with early enabling activities anticipated to commence in 2025. HAL have identified that they have progressed activities since the July 2025 submission, however, recognise that they have not progressed with mobilisation of early delivery planning teams or property teams, which introduces uncertainty regarding the achievability of all subsequent milestones. On this basis, the target date of 2035 for the third runway opening appears ambitious and may be subject to delay.

The timeline also assumes that certain preparatory works, including land acquisition which includes relocation of key infrastructure, could proceed ahead of the Development Consent Order (DCO) approval. While this approach could accelerate delivery, it would expose HAL to financial and planning risk, should consent not be granted or the scheme design change materially.

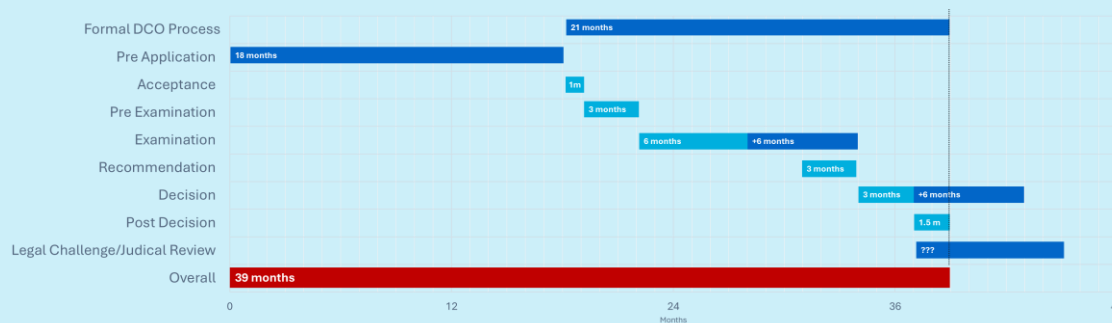
Design progression and Previous DCO consultations: Design work undertaken as part of the previous DCO process is expected to inform the current scheme. However, the extent to which this work remains valid is unclear, and efficiencies derived from previous work cannot be assumed with confidence. There is certainly data that needs to be updated. Similarly, although HAL has referenced lessons learnt from the earlier consultation process, there is no evidence that these have yet been reflected in the revised programme or engagement strategy. In practice, this uncertainty supports the need for a cautious approach to estimating DCO timelines.

DCO process and durations: The assumed durations for the DCO process aligns with the minimum periods set out in the UK Government’s guidance for Nationally Significant Infrastructure Projects (NSIPs)—typically 15–18 months for the main examination and decision stages, excluding a minimum of 12 months for pre-application. HAL’s schedule allows for approximately 15 months from start of consultation to DCO submission, and 17 months for the DCO to be approved, which falls within this indicative range but does not include any contingency for delay.

Experience from recent comparable projects suggests that longer durations are more likely. For example, the Luton Airport DCO took around 28 months to complete, which is significantly above the 18-month time allowance. Given the complexity of Heathrow’s expansion plan, a longer duration than 18 months would be a more plausible assumption.

We provide below an estimation for Heathrow’s expansion DCO process, starting from the Pre Application stage (or Preparation and Consultation) and ending with the Post Decision milestone (or Approval granted). We estimate the overall duration in 39 months (18 months for the Pre-Application stage and 21 months for formal DCO process), reflecting more realistic timeframes for each stage based on recent experience. This compares with the 32 months that are assumed by HAL.

Figure 5.3: Estimated DCO process duration



Source: Steer

Programme structure and critical path: From a delivery perspective the timeline is dependent on achieving key milestones derived from key activities

such as design works, consenting and construction works. At present, the DCO approval remains the single dominant driver of the programme, with significant impact on downstream dependencies such as procurement, mobilisation, or operational readiness for the opening of the runway.

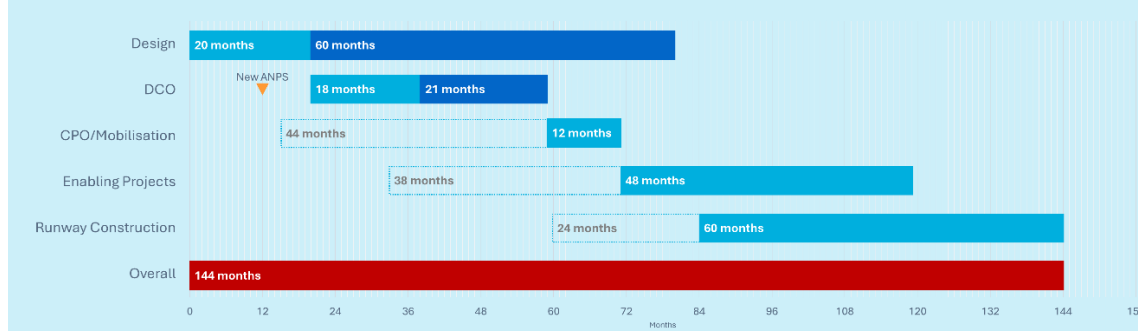
Operational readiness: The current schedule includes an allowance for operational readiness and integration testing of the new runway. For an expansion of this scale, a phased commissioning period of at least six to twelve months would typically be required to ensure safe and coordinated activation of new infrastructure, including interfaces with air traffic control and existing airfield operations.

Benchmarking of construction durations: Benchmarking against comparable aviation infrastructure projects indicates that the indicative durations for individual work packages are broadly reasonable. The construction of Dublin Airport’s North Runway, for example, took approximately three years (2019–2022), while Heathrow’s Terminal 2 redevelopment required around five years from demolition to opening (2009–2014). However, given the combined scale of the proposed runway, terminal facilities, and surface access improvements, overall delivery is likely to fall towards the upper end of these benchmarks.

Supply chain capacity: The overlap between Heathrow expansion and other major infrastructure programmes, notably HS2 (expected completion in 2033), is likely to place additional pressure on the UK construction market. Competing demand for specialist labour, materials, and equipment could increase costs and extend procurement lead times. Early engagement with the supply chain would be necessary to test delivery assumptions and develop mitigation measures.

Proposed timeline: A detailed review of the Scenarios 1 and 2 timelines has not been explored by HAL to the same level as the Scenario 3, which forms the basis of their proposal. To test the robustness of HAL’s assumptions, we undertook a high-level assessment to incorporate some of the above technical observations, including the revised date for the new ANPS being issued (i.e. end of 2026), potential extensions to the DCO process (2 additional months for consultation and 4 months for determination), delays relating to, critical land acquisition requiring CPO (12 months) that impact on key enabling projects allowing for a potential for resequencing works (-3 months), and allowances for construction mobilisation. The resulting alternative timeline is presented below and shows a total timeline duration of 144 months, or 12 years for the opening of the new runway. This is an increase of 15 months from the 129 months outlined in the HAL timeline for the runway opening (Scenario 1).

Figure 5.4: Estimated duration of HAL’s expansion plan for runway opening



Source: Steer

Considering that Government will consult on any amendments to the ANPS by July 2026 and complete the review process by the end of 2026, the opening of the new runway by the Government’s target of December 2035 is feasible but ambitious. Steer’s independent estimations of the work that HAL would need to undertake, including land acquisition and further design works, suggest that it is possible that the opening of the third runway could happen at a later date, potentially by December 2037.

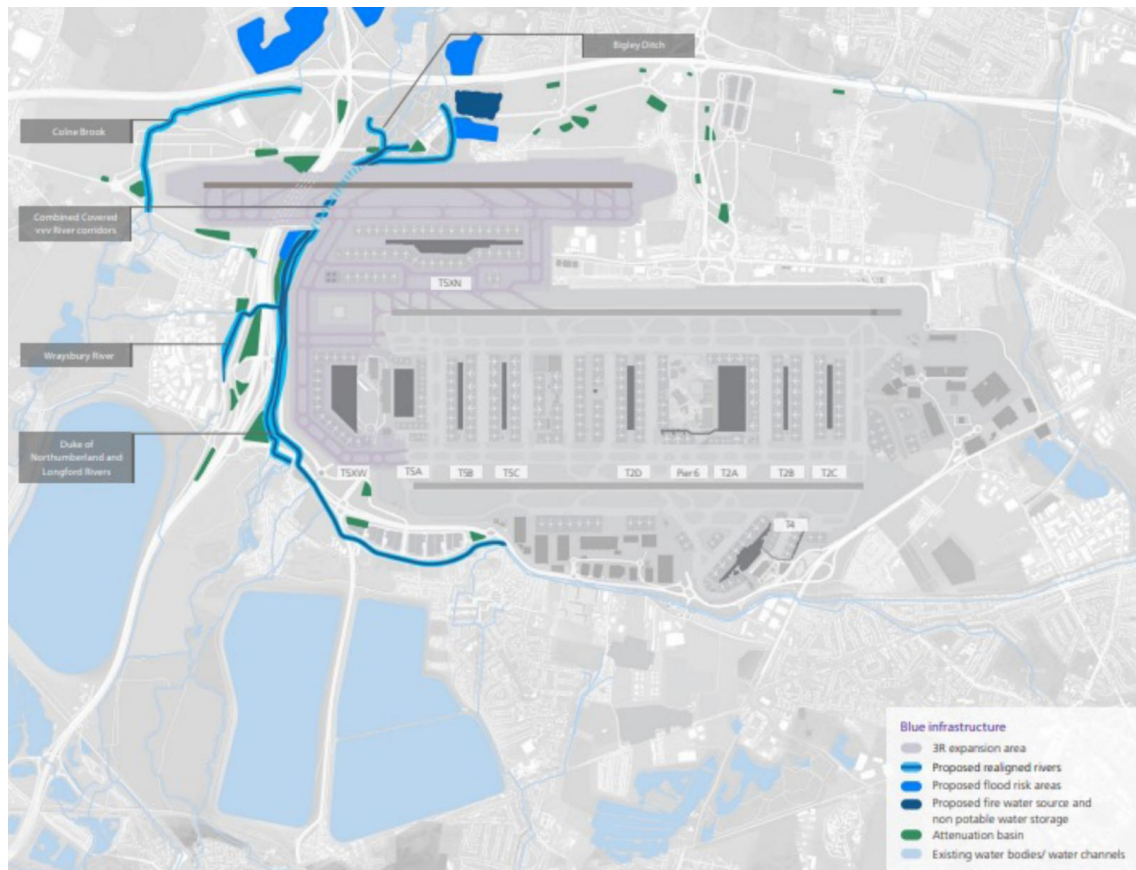
6 Sustainability

| Direct and indirect impacts

During construction

- 6.1 According to HAL, the construction phase of the airport’s expansion will entail a series of large-scale civil engineering operations. These include land acquisition, the realignment of the M25 motorway, and the development of new terminal and taxiway infrastructure. As outlined in HAL’s strategic documentation, these activities are expected to generate a range of environmental impacts, both direct and indirect, which must be carefully managed to ensure compliance with national environmental standards and policy frameworks.
- 6.2 The direct environmental impacts during the construction phase are primarily associated with land-use change, emissions from construction activities and disruption to local ecosystems. The development of the third runway, terminal infrastructure and the realignment of the M25 motorway will require extensive earthworks, utility diversions and the use of high-carbon materials such as concrete and steel. . These activities will result in significant embodied carbon emissions during construction.
- 6.3 There are also significant impacts on blue infrastructure, including rivers that will require realignment to make space for new airport infrastructure, as shown in the figure below.

Figure 6.1: Water infrastructure plan



Source: HAL July 2025 Expansion Proposal, Appendix 1 Technical Annex p. 14

- 6.4 Noise pollution is also anticipated to be a major direct impact during construction. The continuous operation of heavy machinery, particularly during earthworks and tunnelling, will elevate ambient noise levels in surrounding residential areas. However, HAL has a noise mitigation approach to mitigate the noise for construction activities.
- 6.5 Air quality may be temporarily compromised due to the release of particulate matter and vehicle emissions. Nonetheless, HAL’s environmental modelling suggests that the project will remain within legal air quality limits. Mitigation measures, including dust suppression systems, traffic management protocols, and the deployment of electric or hybrid construction equipment, are expected to reduce these impacts effectively.
- 6.6 In terms of biodiversity, the clearance of land and disruption of habitats will pose risks to local ecosystems. HAL states that best practice measures to minimise impacts on local wildlife during construction will be deployed and biodiversity net gain will be delivered; however, this needs further assessment.
- 6.7 Beyond the immediate footprint of construction, the expansion project will generate a series of indirect environmental impacts. These include emissions associated with supply chain activities, such as the production and transport of construction materials. These upstream and downstream processes contribute to

the overall carbon footprint of the project and are accounted for in HAL’s whole-life carbon assessment framework.

- 6.8 The displacement of existing land uses also constitutes a significant indirect impact. The expansion will necessitate the acquisition of residential, commercial, and community properties, including educational and public facilities. This may lead to social and ecological disruption, particularly in areas where relocation affects vulnerable populations or sensitive habitats.
- 6.9 To address these concerns, HAL has committed to compensating affected residents through the Compulsory Purchase Zone (CPZ), offering 25% above the unblighted market value of properties. Furthermore, biodiversity offsetting and ecological enhancements will be deployed to mitigate habitat loss and support long-term environmental resilience.
- 6.10 To manage effects during the construction phase of the programme, Heathrow intends to prepare a framework Code of Construction Practice (CoCP) which will be submitted with the DCO. The CoCP will outline the control measures and standards that Heathrow and its contractors must follow and meet throughout the construction period.

During operation

- 6.11 Following the completion of construction, the operational phase of the Heathrow expansion will introduce a new set of environmental impacts. These impacts, both direct and indirect, are primarily associated with increased air traffic, intensified ground movements inside and outside the airport perimeter, and the broader consequences of enhanced airport capacity. HAL has acknowledged these challenges and committed to a series of mitigation strategies to ensure that the expanded airport operates within the UK’s environmental and climate policy frameworks.
- 6.12 The most significant direct environmental impact during the operational phase will stem from the increase in aircraft movements. The addition of a third runway is expected to enable up to 276,000 additional Air Transport Movements (ATMs) per year, resulting in a substantial rise in emissions from aircraft operations. These emissions include carbon dioxide (CO₂), nitrogen oxides (NO_x), and other greenhouse gases, which contribute to climate change and local air quality degradation.
- 6.13 To address this, HAL has committed to a net zero pathway by 2050. This strategy includes the adoption of Sustainable Aviation Fuel (SAF), the modernisation of UK airspace to reduce holding patterns and flight inefficiencies, and investment in durable greenhouse gas removals.
- 6.14 Noise pollution is another direct impact of the expanded operations. The increased frequency of take-offs and landings will elevate noise exposure for communities surrounding the airport. However, HAL has incorporated design features to mitigate these effects. The new runway could include a displaced threshold, which will raise the altitude of arriving aircraft over residential areas, thereby reducing ground-level noise. In addition, HAL will extend its Quieter

Neighbourhoods Scheme (QNS), committing over [REDACTED] to provide noise insulation for more than 200,000 homes. This programme includes free independent home surveys and insulation measures valued at up to [REDACTED] per property.

- 6.15 Air quality impacts will also persist during operation, particularly from ground-based sources such as airport vehicles, passenger transport, and service logistics. HAL’s modelling indicates that, with the implementation of mitigation measures, air quality standards will continue to be met across all surrounding communities.
- 6.16 The operational phase will also generate a range of indirect environmental impacts, many of which are linked to the broader consequences of increased airport capacity. One of the most significant of these is the anticipated rise in road traffic volumes. As passenger and cargo throughput increases, so too will the demand for surface access, placing additional pressure on local and regional transport infrastructure and contributing to secondary emissions.
- 6.17 To mitigate these effects, HAL has developed a Surface Access Strategy that includes the potential for the development of new rail links, expanded parkway systems, and active travel infrastructure. The objective is to increase the public transport mode share and reduce reliance on single-occupancy car journeys. These measures are aligned with the targets set out in the 2018 Airports National Policy Statement and are intended to ensure that surface access improvements contribute to the overall environmental performance of the airport.
- 6.18 Furthermore, the expansion is expected to influence long-term land use and regional development patterns. The increased connectivity and economic activity associated with a larger Heathrow may drive urbanisation and infrastructure development in surrounding areas. While these changes can bring economic benefits, they also carry environmental risks, including habitat fragmentation, increased resource consumption, and pressure on local ecosystems.
- 6.19 Finally, the expansion will indirectly affect community health and wellbeing. Changes in noise exposure, air quality, and access to green space can influence physical and mental health outcomes for residents. HAL has committed to inclusive planning process and long-term community engagement to address these concerns. This includes investment in environmental protection, social infrastructure, and compensation mechanisms for those most affected by the expansion.

Air and noise pollution

- 6.20 HAL’s expansion proposal frames air quality and noise as binding constraints that must be satisfied alongside economic and operational goals.
- 6.21 On noise, HAL’s proposal argues that expansion can proceed while improving long-term outcomes for nearby communities through a combined package of quieter aircraft fleets, runway geometry, operational practices, and property insulation. HAL claims that it already attracts “one of the quietest fleet mixes” among major hubs, partly due to noise-differentiated landing charges, and that

this pricing will continue to incentivise low-noise aircraft as new capacity is utilised.

- 6.22 HAL’s 2025 proposal provides a strategy regarding noise management that combines infrastructure design, operational changes, and direct mitigation measures.
- **Runway design and displaced threshold:** The new third runway could feature a displaced threshold, meaning aircraft will land further along the runway than on existing runways. This design increases arrival altitudes over residential areas, thereby reducing ground-level noise exposure.
 - **Airspace modernisation:** HAL plans to implement Performance Based Navigation (PBN), which allows aircraft to follow more precise and predictable flight paths. This will reduce noise dispersion and improve operational efficiency. Airspace reform is considered a parallel programme.
 - **Quieter Neighbourhoods Scheme (QNS):** HAL’s proposal indicates that they will invest in noise insulation for the homes affected by airport noise. The scheme includes free independent home surveys and insulation measures.
 - **Historical reductions:** According to HAL’s proposal, since 2006, the number of people exposed to noise above 48 dB during the 6.5-hour night-time period has decreased by 38%, equivalent to 52,400 fewer people. On a constant population basis, this reduction is even greater—53%, or 73,400 fewer people exposed. These improvements are attributed to aircraft fleet modernisation, operational changes, and targeted mitigation.
- 6.23 Air quality is identified by HAL as a fundamental environmental concern in the context of its proposed expansion.
- 6.24 To mitigate future air quality impacts, HAL proposes a multi-layered strategy:
- **Transition to cleaner vehicles:** The shift to electric and low-emission vehicles is already underway and will be accelerated by the expansion. Heathrow is investing in electric vehicle infrastructure and promoting the use of zero-emission vehicles (ZEVs) across its operations.
 - **Extension of the Ultra Low Emission Zone (ULEZ):** The ULEZ has already been extended to West London, contributing to improved air quality. HAL supports this initiative and considers it a key component of its air pollution mitigation strategy.
 - **Surface Access Strategy:** HAL aims to increase public transport mode share and reduce reliance on private vehicles. This includes new rail links, expanded parkway systems, and active travel infrastructure. These measures are designed to reduce emissions from surface access and support compliance with air quality standards.
 - **Monitoring and compliance:** HAL commits to continuous air quality monitoring and to maintaining compliance with national and international standards throughout the construction and operational phases of the expansion.

- 6.25 As a noise-designated airport, Heathrow operates under a comprehensive legal framework governed by the International Civil Aviation Organization (ICAO) and the UK Government. It is required to publish a Noise Action Plan every five years, developed in consultation with local communities and subject to formal government approval. The current strategy is aligned with the ICAO Balanced Approach, which includes four pillars: quieter aircraft, quieter procedures, land-use planning and mitigation, and operating restrictions.
- 6.26 The Noise Action Plan sets out smart objectives and delivery plans across six key areas:
- Adoption of quieter aircraft technologies.
 - Implementation of quieter operational procedures.
 - Engagement with local communities.
 - Support for noise-related research.
 - Use of operating restrictions and voluntary measures.
 - Land-use planning and mitigation strategies.
- 6.27 Quantitative data supports the effectiveness of these measures. Since 2013, the number of people within the 54 dB LAeq16hr contour has decreased by over 230,000. In 2024, Heathrow recorded its quietest year for night operations between 23:30 and 04:30, with 189 nights free from scheduled flights, up from 144 in 2023. Additionally, since 2006, the number of people exposed to noise above 48 dB during the 6.5-hour night-time period has dropped by 38%, equating to 52,400 fewer people. On a constant population basis, this represents a 53% reduction. However, future population growth may increase the number of households affected by higher noise levels. The Government retains powers to mitigate this through land-use planning guidance.
- 6.28 The proposal also integrates Performance Based Navigation (PBN) to modernise airspace, allowing for more direct and predictable flight paths, which can reduce noise exposure and improve operational efficiency.

Carbon emissions

- 6.29 Heathrow is committed to reaching net-zero greenhouse-gas emissions by 2050 with the third runway in place, across Scopes 1, 2, and 3. . HAL’s Net Zero Plan integrates the expansion plan across the most significant emissions sources, excluding supply chain which requires further detailed assessment, and projects total emissions to be held at or below 2019 levels over the long term. The pathway aligns with the UK Jet Zero Strategy, Sustainable Aviation’s roadmap, and the Climate Change Committee (CCC) carbon budgets, with expansion projected to outperform the CCC’s latest Seventh Carbon Budget by 2050.
- 6.30 Versus 2019, Heathrow reports around a 10% absolute reduction in flight emissions by the end of 2024, outperforming the CCC’s Sixth Carbon Budget trajectory. Drivers include retirement of older types, faster fleet renewal and operational efficiencies (e.g. “Pairwise” on Arrivals). The Sustainable Aviation Fuel (SAF) incentive (since 2022) has been oversubscribed, with 17% of the global SAF

uplift occurring at Heathrow in 2024, supported by lower landing-charge incentives.

- 6.31 Emissions reductions rely on modernised airspace and procedures to cut fuel burn, continued fleet renewal and preparation for zero-emission aircraft and a material ramp-up in SAF. Over half of total reductions are expected from SAF, complemented by UK Emissions Trading Scheme (UK ETS) and Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).
- 6.32 According to HAL’s 2025 proposal, carbon emission reductions will come from surface-access mode shift (more public transport and active travel initiatives), zero-emission airport vehicles, supply-chain decarbonisation, and low-carbon buildings and infrastructure as part of the expansion’s delivery and operations.
- 6.33 HAL states that a full whole-life carbon (WLC) assessment of the expansion will be carried out as part of the DCO, quantifying embodied and operational emissions across the life cycle (materials, construction, operation, maintenance, end-of-life). The assessment will support the identification of carbon hotspots and inform decisions around design, materials, and construction methods to minimise carbon impacts in line with Heathrow’s net zero ambition.
- 6.34 In addition to CO₂ emissions, non-CO₂ effects from aviation contribute to climate change, although scientific understanding of the precise impact and appropriate mitigation strategies is still evolving. Heathrow is supporting research to target SAF to flights with higher predicted non-CO₂ impacts.

Impacts on the community health, wellbeing and quality of life

- 6.35 Regarding environmental and health safeguards during construction, the proposal outlines HAL’s commitment to mitigating adverse effects on community health and wellbeing through a structured environmental management framework. As stated in their proposal, HAL will submit a Code of Construction Practice (CoCP) as part of the Development Consent Order (DCO). This framework will define control measures and standards for contractors, including site-specific management plans for pollution prevention, contaminated land and waste management. These measures aim to prevent or reduce significant adverse effects on people, fauna, flora, soil, water, air, climate, and material assets, thereby safeguarding community health and quality of life.
- 6.36 The proposal acknowledges the link between aircraft noise and human health and wellbeing. HAL commits to operating within clear noise limits as required by the 2018 Airports National Policy Statement (ANPS), reducing the number of people affected by significant aircraft noise and implementing operational changes and aircraft technology improvements to mitigate noise exposure.
- 6.37 The expansion plan includes a Surface Access Strategy that promotes healthier travel options and reduces congestion-related health risks. This strategy proposes Local Cycling and Walking Infrastructure Plans (LCWIP), development of hub-and-spoke cycling routes, safer pedestrian access, capped car parking, drop-off

charges, and integration of Mobility-as-a-Service (MaaS) and smart ticketing to encourage public transport use.

- 6.38 HAL claims that all components of the expansion plan will be delivered within clearly defined environmental limits, including thresholds for climate, air quality, and noise. The Environmental Impact Assessment (EIA) will assess the likely significant effects of the scheme as required by the EIA regulations and a full Environmental Statement will be submitted with the DCO application. This process ensures transparency and the adoption of proportionate, enforceable mitigation measures. HAL further commits to aim to avoid, reduce, or mitigate any major adverse impacts identified during the EIA process. Compensation and mitigation will be fair and effective, tailored to the nature and scale of the impact on communities. The approach reflects a broader commitment to responsible development, aligning infrastructure delivery with environmental and social obligations.

Surface access

- 6.39 Surface access directly affects the operational efficiency of the airport, its appeal to passengers and airlines, the environmental impact of expansion, and the daily experience of local communities. The 2018 ANPS includes specific targets to shift travel to sustainable modes, limit airport-related traffic growth and reduce environmental impact.
- 6.40 Surface access is a critical component of Heathrow’s environmental strategy, directly influencing air quality, carbon emissions, and community wellbeing.
- 6.41 HAL’s expansion proposal includes a comprehensive set of mitigation measures to address the environmental impacts of increased surface access. These measures are structured around a hierarchy of avoid, reduce, and mitigate. To avoid impacts, the strategy promotes a modal shift from private vehicles to public transport, supported by improved rail and bus connectivity and an expanded catchment area that allows the airport to serve more passengers without increasing local traffic intensity. In order to reduce carbon emissions, measures include the promotion of zero-emission vehicles, investment in electric vehicle infrastructure, and support for the extension of the Ultra Low Emission Zone (ULEZ) into West London. Heathrow also funds the Sustainable Travel Zone (STZ), which in 2024 enabled over one million public bus and coach journeys to depart from the airport, along with free bike services and car-sharing schemes for staff. Mitigation measures involve strategic upgrades to road and rail infrastructure to reduce congestion and emissions, as well as detailed construction-phase controls such as logistics planning, off-site construction hubs, and just-in-time delivery systems to minimize disruption and pollution. The proposal also includes continuous monitoring and adaptive management to ensure that mitigation strategies remain effective and responsive to changing environmental and operational conditions.
- 6.42 Our feasibility assessment of HAL’s proposed sustainability strategy is summarised in the box below:

HAL's 2025 expansion proposal presents a broad sustainability framework encompassing environmental protection, carbon reduction, air quality, noise, and community wellbeing. However, the documentation reviewed provides limited technical evidence and lacks the quantitative modelling needed to verify the effectiveness of the proposed mitigation measures. The assessment below evaluates the robustness of HAL's approach across key sustainability themes and identifies areas where further information and assurance would be required.

Updated studies on population exposure, affected households, aircraft and engine types, and baseline environmental conditions would help substantiate the justification for proposed development and its expected impacts and mitigations.

During construction: HAL's proposal identifies a Code of Construction Practice (CoCP) as the main mechanism for controlling construction-phase environmental impacts, including noise and air quality. While this framework is consistent with good practices, the current submission lacks detail on specific noise thresholds, monitoring requirements, and enforcement mechanisms. It is therefore not possible to assess the adequacy of mitigation at this stage.

Biodiversity: Biodiversity impacts are to be managed through a Green Infrastructure Strategy incorporating biodiversity offsetting, ecological enhancement, and floodplain mitigation. These initiatives are positive in principle but remain at a conceptual level. Detailed implementation plans, metrics for net-gain evaluation, and long-term monitoring commitments will be required to demonstrate effectiveness.

Air quality: The expansion is expected to result in higher emissions of nitrogen dioxide (NO₂) and particulate matter (PM), reflecting the increase in aircraft movements and surface access traffic. While measures such as cleaner fleets, ULEZ expansion, and public transport promotion are appropriate, they may not fully offset the environmental and health impacts of up to 276,000 additional flights per year. Without continuous monitoring, and health-based performance indicators, there remains a risk that local air-quality standards could be exceeded.

HAL's air-quality modelling indicates that emissions would remain within legal limits, supported by mitigation such as dust suppression, traffic management, and the use of low-emission or electric construction equipment. However, the proposal does not quantify the expected reductions or specify how compliance would be demonstrated. Similarly, while reference is made to extending electric-vehicle infrastructure, supporting the Ultra Low Emission Zone (ULEZ), and promoting low-emission public transport, the reduction in total emissions from these measures has not been calculated.

Noise: HAL’s Noise Action Plan outlines a progressive approach to mitigation but lacks sufficient modelling to assess future exposure levels. The proposal does not quantify how noise contours will change under expanded operations or present the underlying assumptions on fleet mix, flight paths, and operational hours. In the absence of this analysis, it is not possible to determine whether the proposed measures will deliver meaningful improvements or simply stabilise existing exposure levels. HAL should undertake comprehensive noise modelling for multiple expansion scenarios and disclose the anticipated population exposure under each scenario.

Heathrow’s night operations are governed by existing government-mandated restrictions. HAL expects that the Department for Transport will review these in 2026 in line with ICAO’s Balanced Approach, which prioritises operational and technological measures over outright restrictions. While this framework provides a structured methodology, HAL’s proposal lacks clarity on how it would be applied in practice until the publication of the updated ANPS where the objectives will be stated. No projections are presented to demonstrate how night-time noise exposure will evolve with expansion, nor how progressive mitigation (for example, new aircraft fleet or new operating procedures) would offset the increase in aircraft movements. Without this evidence, it is uncertain whether the Balanced Approach alone can adequately protect affected communities. HAL should therefore include scenario-based modelling, define health-based thresholds for exposure, and specify the conditions under which stricter night-flight restrictions would be triggered according to Government guidelines.

Carbon emissions: HAL’s carbon strategy represents one of the most advanced components of the sustainability framework and aligns in principle with the UK Jet Zero Strategy and the Climate Change Committee’s (CCC) Balanced Net Zero Pathway. The plan integrates operational efficiencies, airspace modernisation, fleet renewal, and large-scale deployment of Sustainable Aviation Fuel (SAF) to achieve net-zero emissions by 2050. Complementary initiatives include electrification of airport vehicles, low-carbon buildings, and improved surface access.

However, the strategy’s reliance on SAF—accounting for over 50 % of total projected reductions—creates significant dependency on external supply chains and policy support. Global SAF production and distribution remain limited, and it is uncertain whether supply will scale at the pace required. Likewise, zero-emission aircraft are not expected to be commercially viable before the 2040s, prolonging reliance on fossil fuels. Heavy use of market-based mechanisms such as CORSIA and the UK ETS means that a substantial portion of projected reductions are compensatory rather than absolute, exposing the airport to carbon-price volatility. These dependencies make achievement of the 2050 net-zero target technically challenging without accelerated investment and technological advancement.

Community health, wellbeing and quality of life: The proposed expansion presents long-term risks to community health and wellbeing arising from

increased noise exposure, air-quality degradation, and the loss of green space and local amenities. While mitigation actions such as insulation, biodiversity offsetting, and compensation funds are positive, they are primarily reactive and compensatory. A more preventative strategy would include scenario-based noise and air-quality projections, conditional limits on operations, and integration of land-use planning to preserve green infrastructure. The cumulative effects of noise, air quality, and social disruption could contribute to health inequalities in surrounding areas. Without binding performance indicators, continuous monitoring, and accelerated mitigation, there is a credible risk of deterioration in quality of life for nearby communities.

Surface access: HAL's Surface Access Strategy seeks to reduce emissions and congestion through public transport investment, zero-emission vehicle infrastructure, and behavioural-change initiatives. The technical approach is sound, but its effectiveness will depend on timely delivery of transport infrastructure, market uptake of zero-emission vehicles, and ongoing governance to ensure mode-share targets are met. These dependencies introduce uncertainty that will need to be actively managed to maintain compliance with environmental and community objectives. Certainty on the timing of new rail schemes connecting Heathrow will be key to define mode shift targets for public transport.

General assessment: Overall, HAL's sustainability framework provides a high-level commitment to managing environmental and social impacts but lacks the technical evidence required to evaluate its effectiveness. Quantitative data on noise, air-quality improvements, population exposure, and health outcomes are absent, and no clear performance baselines have been established. The strategy's success will depend heavily on factors outside HAL's control, including rail access, pace of SAF deployment, technological readiness, and evolving regulatory requirements.

7 Stakeholder engagement

Introduction

- 7.1 This chapter presents the technical assessment of stakeholder engagement undertaken by Heathrow Airport Limited (HAL) as part of their proposal for a third runway. It evaluates the breadth and depth of stakeholder identification, the quality and timing of engagement activities, the extent to which stakeholder feedback has informed the proposals, and the degree of support or concern expressed by key stakeholder groups.

Figure 7.1: Heathrow expansion consultation timeline



Source: HAL Heathrow Airport Expansion Consultation Document June 2019, p.8

- 7.2 The assessment is primarily based on information provided by HAL in its submitted materials, supported by publicly available consultation documents from Heathrow Airport Limited’s website⁷, including the *Airport Expansion Consultation Document (2018)*, *Airspace Principles Consultation (2018)*, *Airspace and Future Operations Consultation (2019)*, and *Making Better Use of Our Existing Runways (2019)*.

Stakeholder identification

- 7.3 HAL’s engagement programme demonstrates a broad and comprehensive understanding of the stakeholder landscape, identifying and engaging with the following groups:

- **Airlines:** British Airways (IAG), Virgin Atlantic, easyJet, Lufthansa Group, Air France–KLM, and Middle Eastern carriers (Emirates, Qatar Airways, Etihad, Turkish Airlines). Engagement with airlines has been a central component of HAL’s approach, reflecting their critical role in the commercial viability of the expanded airport. Between January 2018 and February 2020, HAL worked closely with airline partners to co-develop and approve the M5 Masterplan, forming the basis of the original DCO submission. This included over 4,000

⁷ [Heathrow consultation documents](#)

structured interactions, supported by a dedicated engagement team and SharePoint platform for information sharing, with more than 600 hours of direct dialogue delivered through the Joint Expansion Board, fortnightly Airline Working Groups, and specialist forums focused on cost, night flights, and surface access.

Following the Government’s reaffirmation of support for Heathrow expansion in January 2025, structured airline engagement intensified. Since April 2025, HAL has hosted over 70 hours of focused engagement through multilateral workshops, topic-specific bilateral meetings, and targeted focus sessions, alongside regular governance meetings where expansion has been a standing agenda item.

- **Industry bodies:** IATA, ACI Europe.
- **Regulators and government:** Civil Aviation Authority (CAA), Department for Transport (DfT), National Highways (NH), and Network Rail (NR).
- **Airspace and operational partners:** National Air Traffic Services (NATS).
- **Statutory planning and local authorities:** Planning Inspectorate (PINS), Greater London Authority (GLA), Transport for London (TfL), and local borough councils (Hillingdon, Hounslow, Windsor & Maidenhead, among others).
- **Environmental stakeholders:** National Highways (NH), Network Rail (NR), Environment Agency, Natural England, Aviation Environment Federation, Friends of the Earth, Greenpeace.
- **Community and resident groups:** HACAN, CISHA, Stop Heathrow Expansion, parish councils, and local resident associations.
- **Heritage and cultural bodies:** Historic England, National Trust.
- **Public health stakeholders:** Public Health England, local NHS trusts.

7.4 HAL claims that airline engagement has spanned strategic priorities, operational requirements, and commercial concerns, with key areas including runway design, affordability, regulatory structure, airspace modernisation, slot policy, surface access, and compliance with the ANPS. Feedback from airlines has driven over 200 topics of discussion and more than 300 changes to the Masterplan.

Engagement strategy and activities

7.5 HAL’s stakeholder engagement strategy has been iterative and collaborative, aiming to align evolving scheme design with stakeholder priorities while meeting regulatory and policy requirements.

7.6 Airline engagement has gone beyond consultation to become a co-development process, with HAL proactively testing alternative design options and operational scenarios in response to airline input, including variations in runway length and location, regulatory frameworks, and cost structures.

Airline engagement

7.7 Airline feedback has played a significant role in shaping HAL’s proposals and continues to influence the ongoing development of the Heathrow Masterplan. Engagement has focused not only on capturing views but also on responding with

tangible changes to scheme design, operational planning, and delivery strategy. Key areas where stakeholder feedback, particularly from airlines, has influenced the project, according to HAL, include:

- **Runway length and location:** Airlines expressed a strong preference for maintaining flexibility in runway length and alignment, highlighting the potential operational, cost, and deliverability implications of a longer (3,500 m) runway. In response, HAL has explored and modelled a range of alternative runway configurations, including 2,800 m, 2,300 m, and 3,100 m options, to balance operational performance with cost efficiency and environmental constraints.
- **Cost and affordability:** Airlines identified the overall cost of the Masterplan and the associated impact on aeronautical charges as a key concern, noting that rising costs could affect route viability and competitiveness. HAL has responded by reviewing scope reduction opportunities, exploring cost optimisation measures, and committing to reassess cost assumptions ahead of the next design phase and DCO submission.
- **Regulatory environment and finance:** Airlines emphasised the need for a clear, affordable regulatory framework that supports long-term investment and limits user cost exposure. HAL has engaged with the Government to shape the regulatory structure and financing model, seeking alignment between economic regulation and infrastructure delivery.
- **Slot policy and competition:** Concerns about slot allocation and market access have driven HAL to work with the DfT and Airport Coordination Limited (ACL) on possible reforms.
- **Airspace modernisation:** Airlines highlighted the importance of aligning runway delivery with airspace capacity, operational performance, and legal requirements. HAL has worked closely with authorities to coordinate airspace modernisation reforms under the UK's Airspace Modernisation Strategy.
- **Policy considerations:** Airlines emphasised the need to integrate environmental and policy requirements, including noise, air quality, carbon, and connectivity objectives. HAL is engaging with Government to ensure noise policy requirements, and the use of Sustainable Aviation Fuel (SAF) are clearly reflected in scheme design and delivery.
- **Surface access:** Airlines expressed concern over the cost and complexity of surface access schemes and the potential burden on users.

7.8 In addition to airlines, feedback from other stakeholders, including regulators, government bodies, environmental organisations, and communities, has also influenced project development. Notable outcomes include commitments to a 6.5-hour scheduled night flight ban, legally binding noise envelopes, over [REDACTED] in community compensation, and a requirement that new capacity will only be released if it does not delay UK compliance with air quality targets.

7.9 While not all airline and stakeholder concerns have been resolved, particularly regarding affordability, slot allocation, regulatory clarity, and environmental impact, the structured engagement programme has ensured that their perspectives are embedded into both the strategic direction and technical detail of the Masterplan.

7.10 In order to inform our assessment of the stakeholder engagement work undertaken by HAL, we have included below a table with a qualitative valuation methodology commonly used in major infrastructure projects to evaluate stakeholder engagement. It is structured as a criteria-based review which is standard in regulatory, planning, and consultation contexts. The approach is designed to ensure that all relevant aspects of engagement are systematically reviewed, documented, and improved upon.

Table 7.1: Stakeholder engagement assessment summary

Criterion	Evidence	Rating	Observations	Recommended Actions
Stakeholder Identification	Comprehensive mapping of airline stakeholders and other key groups.	Green	Consistent with best practice and proportionate to project scale.	Continue monitoring emerging airline stakeholders and new entrants.
Engagement Strategy	Multi-phase, iterative, and aligned with regulatory timelines.	Green	Structured approach and strong focus on airline collaboration.	Sustain depth of engagement through DCO preparation.
Engagement Activities	Over 70 hours of structured engagement since 2025, with bilateral and multilateral forums.	Green	Strong technical collaboration and co-development approach.	Publish summaries of outcomes from airline working groups.
Feedback Integration	Airline input has shaped runway options, cost strategy, regulatory approach, and surface access plans.	Green	Integration is clear and ongoing, though some areas remain unresolved.	Enhance transparency around how feedback influences specific design decisions.
Endorsements and Outcomes	Broad strategic support; conditional support from key airlines.	Amber	Formal letters of support are limited; several issues remain under discussion.	Secure written endorsements and set clear pathways for resolving outstanding concerns.
Transparency and Reporting	Engagement outputs, consultation documents, and next steps are publicly available.	Green	Reporting is clear and accessible.	Maintain reporting cadence as the DCO process advances.

Source: Steer

7.11 Our assessment of stakeholder engagement is summarised in the box below:

Engagement has been wide-ranging, covering airlines, regulators, government departments, local authorities, environmental bodies, communities, NGOs, and other key interest groups. The strategy has evolved over time, moving from broad consultation during the development of the first masterplans to more targeted, technical engagement since 2025, particularly in response to the Government's reaffirmed support for expansion.

Airline engagement has been a central component of the expansion planning process, with HAL facilitating thousands of interactions and extensive dialogue through formal governance structures, bilateral meetings, and specialist working groups. Feedback from airlines has directly influenced key aspects of the masterplan, including runway design, cost optimisation, regulatory structure, slot policy, surface access, and the integration of environmental policy requirements. While overall support for expansion exists, some of this support remains conditional, reflecting ongoing concerns about affordability, cost transparency, and regulatory clarity.

Engagement with regulators and airspace partners has supported the alignment of airspace modernisation with runway development. Meanwhile, dialogue with environmental bodies, heritage organisations, and community groups has informed the development of noise, air quality, compensation, and mitigation proposals, although strong opposition remains from several groups.

Overall, HAL's engagement work demonstrates a structured and iterative process that has materially shaped the proposals and embedded stakeholder perspectives into scheme development. However, further work will be needed as the project progresses towards a Development Consent Order submission, particularly to address outstanding concerns on affordability and regulatory arrangements, to secure clearer positions from key airline stakeholders, and to maintain trust and transparency with local communities and environmental groups. Strengthening these areas will be critical to ensuring continued stakeholder support and enabling a robust and deliverable expansion programme.

8 Conclusions, Risks, and Recommendations

Conclusions

8.1 Based on our initial technical assessment of HAL’s 2025 proposal, we have outlined the following conclusions.

Table 8.1: Initial technical assessment conclusions of HAL’s proposal

Area	Initial technical assessment conclusions
Optioneering	<ul style="list-style-type: none"> • Most of the master planning decisions were taken with data from 2018 or before. • Although HAL carried out an extensive optioneering process for all the key elements of the masterplan, the process for the final decision making of the terminal building infrastructure could have been clearer. • The decision for the new runway location considered where best to locate a 3,500m runway while minimising the noise impacts and avoiding impacting the church, cemetery, and listed Tithe Barn in Harmondsworth. • The decision of the new terminal location is influenced by the non-reliance on new rail schemes and the lack of sufficient space between the runways. • The advantages and disadvantages of the option put forward in the 2025 proposal compared to other alternatives are not clearly articulated in HAL’s proposal, although can be inferred from the optioneering work that was undertaken in 2019 and from further clarifications provided by the proponent.
Airport Scheme Design	<ul style="list-style-type: none"> • The required boundary for the expansion follows the 2018 ANPS and will need to be reviewed as part of further design stages; however major changes are unlikely to occur to the current boundaries if the infrastructure to be developed remains the same. • The runway was designed to operate independently from the existing runways, and to accommodate all types of aircraft and destinations with the flight schedules that were developed back in 2018. • We assess that the minimum runway length that could accommodate all the current aircraft types and long-haul ranges needs to be, at least, 2,800 metres. • The airfield, including the runway, complies with ICAO and CAA safety standards. • The new main terminal (T5XW) is planned to be located to the west of T5A. This implies that almost all of today’s traffic will operate from the Western Campus.

Area	Initial technical assessment conclusions
	<ul style="list-style-type: none"> • A new satellite building (T5XN) is planned to be linked to T5XW to provide more contact stands by 2054. • HAL’s Surface Access Strategy is reliant on leveraging existing rail and underground systems, supplemented by strategic future projects (Western Rail Link to Heathrow - WRLtH and Southern Access to Heathrow - SAtH). Highway capacity will be increased on the M25 in the section that will be under the new Northern Runway. A detailed analysis of the origin and destination of Heathrow’s costumers might conclude that, even with the addition of the rail schemes connecting the west and the south, the overall public transport capacity after expansion could be lower than today’s capacity on a per passenger basis, implying a lower public transport mode share.
Operability and Capacity	<ul style="list-style-type: none"> • We assess that, at a high-level, 756,000 air traffic movements per annum could be achieved even considering some operational restrictions to mitigate noise impacts in the community. • With the high-level analysis that we have undertaken (using only annual passengers per stand) we assess that the number of stands in the plan could be in the right order of magnitude, as it is aligned with some of the current operating ratios, albeit at the very high end. • The high-level analysis that we have undertaken with annual passenger numbers concludes that the planned terminal capacity might be sufficient to accommodate the traffic forecast until 2046. From 2046 onwards, capacity shortages are presented in HAL’s plan until T5XN comes into operation (in 2054).
Expected Timelines and Deliverability	<ul style="list-style-type: none"> • The assumed durations for the Development Consent Order (DCO) process aligns with the minimum periods set out in the UK Government’s guidance for Nationally Significant Infrastructure Projects (NSIPs). • From a delivery perspective, the programme does not present detailed interdependencies between key activities, and no critical path analysis has been provided. • Steer’s independent assessment for delivering the new runway provides a duration of 144 months (12 years). This is an increase of 15 months from the 129 months outlined in the HAL timeline for the runway opening. • Considering that Government will consult on any amendments to the ANPS by July 2026 and complete the review process by the end of 2026, the opening of the new runway by the Government’s target of December 2035 is feasible but ambitious. Steer’s independent estimations of the work that HAL would need to undertake, including land acquisition and further design works, suggest that it is possible that the opening of the third runway could happen at a later date, potentially by December 2037.
Sustainability	<ul style="list-style-type: none"> • Overall, HAL’s sustainability framework provides a high-level commitment to managing environmental and social impacts but lacks the technical evidence required to evaluate its effectiveness. Quantitative data on noise, air-quality improvements, population exposure, and health outcomes are absent, and no clear performance baselines have been established. The strategy’s success will depend heavily on factors outside HAL’s control, including rail access, pace of SAF deployment, technological readiness, and evolving regulatory requirements.

Area	Initial technical assessment conclusions
	<ul style="list-style-type: none"> • HAL’s Surface Access Strategy seeks to reduce emissions and congestion through public transport investment, zero-emission vehicle infrastructure, and behavioural-change initiatives. The technical approach is sound, but its effectiveness will depend on timely delivery of transport infrastructure, market uptake of zero-emission vehicles, and ongoing governance to ensure mode-share targets are met.
Stakeholder Engagement	<ul style="list-style-type: none"> • Airline engagement has been a central component of the expansion planning process, with HAL facilitating thousands of interactions and extensive dialogue through formal governance structures, bilateral meetings, and specialist working groups. Feedback from airlines has directly influenced key aspects of the masterplan, including runway design, cost optimisation, regulatory structure, slot policy, surface access, and the integration of environmental policy requirements. • While overall support for expansion exists, some of this support remains conditional, reflecting ongoing concerns about affordability, cost transparency, and regulatory clarity.

Source: Steer

Risks

8.2 Based on our initial technical assessment of HAL’s proposal, we have identified the following risks.

Table 8.2: Risks identified through the initial technical assessment of HAL’s proposal

Area	Risks
Optioneering	<ul style="list-style-type: none"> • Some of the data that is needed to analyse the masterplan options might be outdated and might derive to taking wrong assessments. • The lack of clarity on the future rail schemes to connect Heathrow jeopardises the ability to assess the masterplan options appropriately and conditions the whole surface access strategy and sustainability plans.
Airport Scheme Design	<ul style="list-style-type: none"> • Additional land might be required to be included in the Compulsory Purchase Zone if there changes in the runway location or additional aircraft parking stands are needed. • No detailed information regarding the Obstacle Limitation Surfaces. • Risk associated with concentrating a substantial portion of Heathrow’s operations in the western area—equivalent to the entire current airport operation, with a potential constraint point in the access roundabout. • Before the commissioning of T5XN in 2054, there is a risk of having insufficient passenger processing capacity even with high levels of remote stand operations. • Risk of future increases in rail services capacity or rail links not materialising and putting pressure on the road system.
Operability and Capacity	<ul style="list-style-type: none"> • Risk of demand exceeding terminal capacity at certain points in the future, before the opening of T5XN (planned for 2054). • The amount of bus operations to serve remote stands could be a safety and an airfield capacity risk during certain periods of the forecast.

Area	Risks
	<ul style="list-style-type: none"> There is a risk that more stand capacity (and land) might be required to accommodate the planned traffic growth.
Expected Timelines and Deliverability	<ul style="list-style-type: none"> The delivery of the programme implies several important risks that can materially impact the timescales such as publication of the updated ANPS, approval of the DCO including legal challenges, land acquisition, construction, and operational readiness. The current programme also has a risk of overlap of the DCO approval with the next government general election. The overlap between Heathrow expansion and other major infrastructure programmes, notably HS2 (expected completion in 2033), is likely to place additional pressure on the UK construction market.
Sustainability	<ul style="list-style-type: none"> Without binding air-quality limits, continuous monitoring, and health-based performance indicators, there remains a risk that local air-quality standards could be exceeded. No projections are presented to demonstrate how day and night-time noise exposure will evolve with expansion, nor how progressive mitigation (for example, new aircraft fleet or new operating procedures) would offset the increase in aircraft movements. Without this evidence, it is uncertain whether the Balanced Approach alone can adequately protect affected communities. The uncertainty around new rail schemes connecting Heathrow creates a risk on the mode shift targets for public transport and carbon emissions.
Stakeholder Engagement	<ul style="list-style-type: none"> Risk of diminishing support from the key stakeholders, including airlines, environmental groups, and community and resident groups.

Source: Steer

Recommendations

8.3 Based on our initial technical assessment of HAL’s proposal, we suggest a series of recommendations for further development of HAL’s proposal to ensure the plan is feasible, operational, and deliverable.

Table 8.3: Recommendations for further development of HAL’s proposal

Area	Recommendations
Optioneering	<ul style="list-style-type: none"> The potential of new rail schemes connecting Heathrow should be consulted with the DfT. To enable a clearer differentiation among options, the options assessment criteria should be clearer, measurable, and consistently applied across the optioneering process. The key areas for improvement are the following: <ul style="list-style-type: none"> Terminal area: airline strategy assumptions, distribution of facilities, evaluation gap that reflects the difference between a unified northern terminal area and a split between western and northern terminal areas. Surface access: public transport connections by rail, underground, and road, including dependencies on third-party enablers such as train service provision or river crossings. Rail

	<p>connectivity is primarily enabled by third parties, creating a material risk on the overall surface access strategy and targets.</p> <ul style="list-style-type: none"> • For further validation of the option put forward in HAL’s 2025 proposal, the following key areas of the master planning exercise should be updated: <ul style="list-style-type: none"> - Traffic and airline strategy: traffic scenarios and a high-level flight programme should be developed to assess airline strategies. For example, the introduction of long-haul flights with narrowbody aircraft could alter the distribution of widebody/narrowbody ratios across runways and affect future scheduling. - Aircraft data: calculations should be updated to reflect re-engined aircraft such as the A320/A321neo or B737 MAX, and the actual performance of newer widebodies such as the A350 or B787. The lack of updated data might lead to wrong conclusions. - Population data: population figures and other relevant datasets should be updated to 2025 levels to ensure accuracy, and new forecast for noise contours and impact on the community should be developed. - 3D and topographical evaluation: modelling should include topography, runway slopes, and the impact on the M25, together with the compliance with OLS requirements. - Terminal and apron options: the option of providing more terminal capacity in the north could be reassessed if there are indications of a potential future rail link development between the northern runways. - Aircraft movement capacity: a robust and detailed analysis is needed on how traffic will be split among the three runways, including taxiing arrangements depending on airline, terminals and origin–destination strategies which have an influence in the split of operations between the main terminal building and the satellite building.
<p>Airport Scheme Design</p>	<ul style="list-style-type: none"> • The Compulsory Purchase Zone (CPZ) and the Wider Property Offer Zone (WPOZ) should reassessed once there is an updated airport masterplan and updated noise impact contours. • For runway location and length, we suggest a two-step evaluation process. First, assess the required runway length independently from its proposed location. This assessment should be based on well-defined and up-to-date assumptions regarding anticipated flight schedules and aircraft types expected to operate on the new runway within the next decades, meteorological conditions, as well as consideration of future airspace structures involving three runways, among other relevant parameters. Subsequently, evaluate potential locations by balancing investment requirements, impacts on road access—particularly the choice between affecting either the M4 spur or the M25—and the noise impact on current and projected population distributions over the next years. • Detailed airfield design should be undertaken to assess the appropriateness of the slopes, location of Rapid Exit Taxiways, taxiways’ system, western bypass, aircraft circulation and stands. • Detailed terminal design should be undertaken in terms of required space and functional analysis.

	<ul style="list-style-type: none"> • The road access to the West Terminal Campus would improve in capacity and resilience by adding another underground road access point north of the future T5XW. • HAL does not provide details on how the mode share targets could be achieved, and what could mitigate the absence of additional rail schemes to connect the West Campus. We recommend developing an updated plan that captures different road infrastructure and rail services development scenarios.
<p>Operability and Capacity</p>	<ul style="list-style-type: none"> • More detailed analysis should be conducted in the next phase to determine the capacity balance of the runway system considering some key elements like meteorology, aircraft types, airspace capacity, restrictions, and airfield congestion. • We recommend incorporating a dynamic stand capacity assessment, which considers variations in aircraft types, turnaround times, and scheduling patterns throughout the operational day. A robust analysis should be based on an assumed flight schedule, including peak hour distributions, aircraft size categories, and operational constraints such as towing requirements and remote stand usage. • Terminal capacity requirements should be reassessed based on updated information and busy hour passenger data. • There needs to be analysis on the volume of passengers that will be boarding the aircraft through a boarding gate (using a contact stand) versus remote operations (using remote stands and requiring bus services) throughout the forecast.
<p>Expected Timelines and Deliverability</p>	<ul style="list-style-type: none"> • A revised programme schedule should be developed, aligning it with the expected publication date of the revised ANPS and providing additional time allowances for further design work and land acquisition.
<p>Sustainability</p>	<ul style="list-style-type: none"> • Update studies including evidence and quantitative modelling on population exposure, affected households, aircraft and engine types, and baseline environmental conditions would help substantiate the justification for the proposed development and its expected impacts and mitigations. • Seek clarity on the development of rail services connecting Heathrow.
<p>Stakeholder Engagement</p>	<ul style="list-style-type: none"> • Further work will be needed as the project progresses towards a Development Consent Order submission, particularly to address outstanding concerns on affordability and regulatory arrangements, to secure clearer positions from key airline stakeholders, and to maintain trust and transparency with local communities and environmental groups. Strengthening these areas will be critical to ensuring continued stakeholder support and enabling a robust and deliverable expansion programme.

Source: Steer

Control Information

Prepared by

Steer
14-21 Rushworth Street
London SE1 0RB
+44 20 7910 5000
www.steergroup.com

Prepared for

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

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Author/originator

Javier Losada

Reviewer/approver

Stephen Waiwright

Other contributors

Gonzalo Velasco
Fernando Ardavin
Viral Bhavsar
Antonio Oliver del Pozo

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Appendix C – Initial technical assessment of capex expansion plans for Heathrow Airport: HWL Proposal

Final report
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Prepared by:

Steer
14-21 Rushworth Street
London SE1 0RB

+44 20 7910 5000

www.steergroup.com

Prepared for:

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

Client ref: Contract Ref. 3634

Our ref: 24949401

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The logo for Steer, featuring the word "steer" in a bold, lowercase, sans-serif font.

Contents

1	Introduction	1
2	Optioneering	2
	Introduction	2
	Optioneering criteria and process	3
	Option put forward in HWL’s 2025 proposal	8
3	Airport scheme design	12
	Land acquisition	12
	Runway length and location	14
	Airfield configuration	18
	Terminal area	20
	Surface Access	25
4	Operability and Capacity	30
	Capacity phasing	30
	Capacity analysis	31
5	Expected timelines and Deliverability	35
	Overall timelines	35
	Development Consent Order and Statutory consultation	36
	Construction timeline	36
	Deliverability	37
6	Sustainability	41
	Direct and indirect impacts	41
	Air and noise pollution	43
	Carbon emissions	47
	Impacts on the community health, wellbeing and quality of life	48
	Surface access	49
	Green Infrastructure	50
7	Stakeholder engagement	54
	Introduction	54
	Stakeholder identification	54
	Engagement strategy and activities	54
	Airline engagement	55
8	Conclusions, Risks, and Recommendations	57
	Conclusions	57
	Risks	60
	Recommendations	61

Figures

Figure 2.1: Technical Assessment Methodology	3
Figure 2.2: HWL's proposed road access scheme - Runway over M25	9
Figure 3.1: HWL's land acquisition proposal compared with HAL's proposal	12
Figure 3.2: HWL's proposed development	14
Figure 3.3: Relative locations of the three runways options presented by HWL	15
Figure 3.4: Heathrow's Runway End Safety Areas	16
Figure 3.5: HWL's taxiway system	18
Figure 3.6: HWL's proposed terminal area development	21
Figure 3.7: HWL's proposed terminal area development (illustration)	23
Figure 3.8: HWL Proposed Conceptual Location of M4 Spur Crossing	26
Figure 3.9: HWL's proposed access roadway	27
Figure 4.1: HWL's proposed aprons	32
Figure 5.1: Estimated construction timeline	35
Figure 5.2: Indicative timeline to meet Government's target DCO approval date	36
Figure 6.1: Existing rivers within Heathrow West Development Area	41
Figure 6.2: Summary of river diversion solution	42
Figure 6.3: Estimated 2030 average annual NO ₂ concentrations	44
Figure 6.4: Green infrastructure plan	51

Tables

Table 2.1: HWL's options and their Assessment Criteria	4
Table 2.2: Optioneering for runway length and location	6
Table 2.3: Option HWL put forward in their 2025 proposal – Advantages and disadvantages	8
Table 3.1: HWL's targets for Heathrow mode share	27
Table 4.1: Aircraft parking stand capacity	33
Table 5.1: Construction works timeline	36
Table 8.1: Initial technical assessment conclusions of HWL's proposal	57
Table 8.2: Risks identified through the initial technical assessment of HWL's proposal	60
Table 8.3: Recommendations for further development of HWL's proposal	61

Glossary

Acronym	Definition
ANPS	Airports National Policy Statement (2018)
Arora	Arora Group
ATM	Air Traffic Movement
CAA	Civil Aviation Authority
Capex	Capital expenditure / Capital investment
CPI	Consumer Price Index
dB LAeq	A-weighted Equivalent Continuous Sound Pressure Level (i.e. human perception of noise)
DCO	Development Consent Order
HAL	Heathrow Airport Limited
HWL	Heathrow West Limited, a wholly owned subsidiary of Arora Group
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
KPI	Key Performance Indicator
MARS	Multiple Aircraft Ramp System
mppa	Million passengers per annum
NB	Narrow Body Aircraft
OBR	Office for Budget Responsibility
OLS	Obstacle Limitation Surfaces
ORAT	Operational Readiness and Transfer
RESA	Runway End Safety Area
sqm	Square metres
TOGA	Take-Off Go-Around
TPI	Tender Price Index
WB	Wide Body Aircraft

Source: Steer

1 Introduction

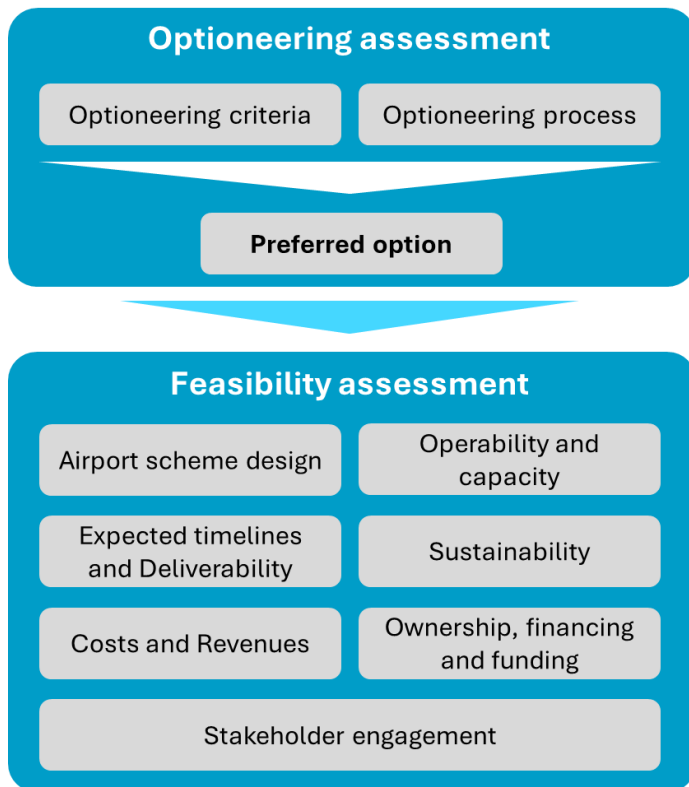
1.1 This appendix forms part of the technical assessment of expansion proposals for Heathrow Airport. It provides detailed information, analyses and supporting evidence that underpin the assessment, and the conclusions presented in the Main Report. The materials included are intended to offer additional technical detail and context for specific aspects of the work. This document is structured as follows:

- **Chapter 2: Optioneering** – Reviews the processes used by scheme promoters to develop and assess options, including the range of alternatives considered and the evidence supporting the preferred approaches;
- **Chapter 3: Airport Scheme Design** – Assesses the scope and maturity of proposed airport designs, including runways, terminals, aprons and surface access, and the extent to which they are supported by technical justification;
- **Chapter 4: Operability and Capacity** – Summarises key operational and capacity considerations, including airfield performance, passenger throughput, airspace integration and resilience under different demand scenarios;
- **Chapter 5: Expected Timelines and Deliverability** – Reviews proposed development programmes, delivery strategies and key dependencies, assessing the overall feasibility of schemes within suggested timeframes;
- **Chapter 6: Sustainability** – Examines how sustainability has been addressed, including carbon reduction, climate resilience, biodiversity and alignment with policy and regulatory requirements;
- **Chapter 7: Stakeholder Engagement** – Reviews the extent and effectiveness of stakeholder engagement, including how feedback has informed scheme development and future engagement plans; and
- **Chapter 8: Conclusions, Risks, and Recommendations** – Summarises the main findings from the assessment, identifies key risks across the relevant areas, and provides recommendations for further work to ensure the plan is feasible, operational, deliverable and cost effective.

2 Optioneering

Introduction

- 2.1 Based on the available documentation, we understand that the proposal from Heathrow West Limited (HWL) presents their solution as the option they put forward by comparing it against previous approaches including: the Airports National Policy Statement from 2018 (ANPS), HAL’s 2019 masterplan, and Arora/HWL’s 2017 development. We view this methodology as a proxy for undertaking an optioneering process and, accordingly, we have included these comparisons in our assessment.
- 2.2 The majority of the comparisons with other schemes that HWL provides are more qualitative than quantitative in nature, and most of them lack a technical justification. However, these comparisons provide a basis for selecting the solution put forward in HWL proposal presented in their document.
- 2.3 In this chapter we start with an assessment of the optioneering criteria and process followed at the masterplan level, which resulted in the choice of the option HWL put forward in their 2025 proposal. Specifically, we consider:
- **Optioneering criteria**, which sets out the parameters used to evaluate the options, together with the proponent’s views and objectives.
 - **Optioneering process**, which describes the logic of the process and the range of options considered by the proponent.
- 2.4 We conclude this chapter with a discussion of the option put forward in HWL proposal, rationale for its selection and high-level assessment of its advantages and disadvantages.
- 2.5 We assess the options considered for runway, terminals, and other elements of the masterplan as part of our feasibility assessment of the option put forward in HWL proposal, which we cover in subsequent chapters of this report.
- 2.6 The figure below illustrates the structure we follow in our assessment, starting with optioneering assessment at masterplan level followed by the feasibility assessment of each of the key components of the masterplan.

Figure 2.1: Technical Assessment Methodology

Source: Steer

Optioneering criteria and process

Optioneering criteria

- 2.7 In addition to drawing on comparisons with previous schemes, HWL’s document sets out the range of options considered, and the Assessment Criteria used in their optioneering process. The narrative also mentions that similar evaluations had been undertaken previously, notably following the publication of the Airports Commission Final Report in June 2015.
- 2.8 The Assessment Criteria presented is primarily qualitative in nature, making use of comparative measures such as assessing whether a solution is considered “more efficient” than another.
- 2.9 Within the scheme vision, HWL identifies four key areas intended to deliver meaningful advantages, which form part of the framework for assessing options:
- **Efficient and Cost-Effective Delivery Achieved:** Results in reduced land take, minimal construction disruption, and faster delivery timelines with simplified logistics, improved buildability—all at a lower cost.
 - **Improved Environmental and Community Outcomes Realised:** Supports sustainable transport, preserves more Green Belt land, and enhances green infrastructure—respecting surrounding communities and improving quality of life and accessibility for local residents.

- **Greater Value and Innovation Delivered:** Offers enhanced value for airlines and passengers, encourages innovation in both design and delivery, and introduces competitive alternatives to traditional delivery models.
- **Policy-Compliant and Integrated Redevelopment Secured:** Aligns with key elements of HAL’s plans and contributes to a coherent, strategic, and policy-compliant redevelopment of Heathrow that fulfils the aims of the ANPS.¹

2.10 The following table provides an overview of the Assessment Criteria referenced in the HWL document and its appendices. The document highlights the advantages of the option HWL put forward in their 2025 proposal, rather than detailing or referencing alternative options. The table fields correspond to the definitions outlined below:

- **Element:** the critical variables that are assessed by HWL (e.g. runway length);
- **Options:** the number and type of options evaluated. In the absence of any, it is implied that the proponent only disclosed the “option put forward in HWL proposal”;
- **Assessment Criteria:** the Key Performance Indicators (KPIs) used to evaluate the options; and
- **Comments:** relevant aspects to consider.

Table 2.1: HWL’s options and their Assessment Criteria

Element	Options	Assessment Criteria	Comments
Runway location	<ul style="list-style-type: none"> • Option 1: 2019 HAL’s Preferred masterplan consultation, with 3.5 km and western location. • Option 2: Arora 2017, 3.1 km to the east, being placed 0.5 km short of M25. • Option 3: HWL 2025, Same as above, but with a length of 2.8 km. • Additional option: 1.4 km separation to the north (mentioned but not explored). 	<ul style="list-style-type: none"> • Minimise the cost and complexity, including land acquisition and constructability. • Impact on existing developments and communities. • Air quality sensitivity analysis. • Noise impact based on: Area (sq. Km) 57 dB LAeq,16h; population. • OLS clash with Lakeside Energy-from-Waste facility. 	<ul style="list-style-type: none"> • The three options were assessed considering the impact on air quality and noise. • The OLS clash is a critical factor in their assessment. • The option of moving the runway to the north is an open option for the future, but it is not addressed in the document.
Runway length	<ul style="list-style-type: none"> • Option 1: 3.5 km; • Option 2: 3.1 km; • Option 3: 2.8 km. 	<ul style="list-style-type: none"> • Minimise the cost and complexity, including land 	<ul style="list-style-type: none"> • The option put forward in HWL proposal includes capability for 100% of Narrow Body

¹ Heathrow West: Proposal for the Expansion of Heathrow Airport Final Report (31 July 2025) p. 3-7

Element	Options	Assessment Criteria	Comments
		acquisition and constructability. <ul style="list-style-type: none"> • WB should be able to operate from the new runway. • Percentage of flights/aircraft that could take off from the new runway. 	aircraft (NB) and 89% Wide Body aircraft (WB), leaving 14 daily flights to operate from the existing runways.
Apron and taxiway system	NA	NA	NA
Terminal area	<ul style="list-style-type: none"> • Absence of options. 	<ul style="list-style-type: none"> • Airline connectivity. • Passenger convenience. • Uninterrupted through-traffic capacity across the airfield. • Efficient land use. • Preservation of existing landside assets. • Requirements for additional land acquisition. 	<ul style="list-style-type: none"> • Only qualitative evaluation.
Surface access	<ul style="list-style-type: none"> • Absence of options. 	<ul style="list-style-type: none"> • Modal split objectives. • Resilience. • Safety and security. • Operational efficiency. 	<ul style="list-style-type: none"> • The proposal indicates a reduction of 53% in car use.
River diversions	<ul style="list-style-type: none"> • Absence of options. 	<ul style="list-style-type: none"> • Flood risk. • Separation from communities. • Replace man-made watercourses with naturalised channels. • Avoid impeding fish or eel passage. • Bird strikes. • Maintain the flows in all watercourses at their present-day values. 	<ul style="list-style-type: none"> • Only qualitative evaluation.
Land acquisition	<ul style="list-style-type: none"> • Comparison with ANPS. 	<ul style="list-style-type: none"> • Area required. 	<ul style="list-style-type: none"> • The proposal indicates a potential reduction of 43Ha.

Element	Options	Assessment Criteria	Comments
Car parks	<ul style="list-style-type: none"> Absence of options. 	<ul style="list-style-type: none"> Impact on local communities and green belt. Efficient investment. Sustainability. 	<ul style="list-style-type: none"> The proposal suggests less parking than other schemes and with better connection to main road network.
Constructability	<ul style="list-style-type: none"> Compared with 2019 HAL's masterplan. 	<ul style="list-style-type: none"> Constructability risk. Avoid moving M25. 	<ul style="list-style-type: none"> Only qualitative evaluation.

Source: HWL, Steer

Optioneering Process

- 2.11 The HWL proposal document sets out a narrative describing the advantages and disadvantages of the proposal in relation to the ANPS requirements and HAL's 2019 masterplan. Within this, the only elements developed through an explicit option analysis are the runway length and runway location alternatives.
- 2.12 For most other aspects leading to the option put forward in HWL proposal, the document does not provide detailed optioneering analysis. While some references are made to alternative options that have been considered, the focus is largely on describing the characteristics of the option put forward in the proposal rather than setting out the underlying decision-making process.
- 2.13 The table below summarises HWL's assessment of the option put forward in their proposal for the runway length and location component of it.

Table 2.2: Optioneering for runway length and location

Assessment Criteria	HAL 2019 masterplan (3,500m)	Arora 2017 consultation response (3,200m) ²	HWL runway option (2,800m)
Flights/aircraft that can take-off from the new runway	99.3%	98.6%	95.7%
Noise (contour area at 57 dB)	111.4 km	111.0 km (107.3 km with updated aircraft 2030)	Similar to Arora 2017
Population affected by noise	261,200	268,300 (257,900 with updated aircraft 2030)	Similar to Arora 2017
Air quality	NA	NA	Operational benefit over SW London Waterbodies SAP and Ramsar. M25 is not affected

² Referred to as 3,100m length runway in Heathrow West: Proposal for the Expansion of Heathrow Airport Final Report (31 July 2025) Appendix A: Runway Assessment

Assessment Criteria	HAL 2019 masterplan (3,500m)	Arora 2017 consultation response (3,200m) ²	HWL runway option (2,800m)
Land acquisition	NA	NA	43Ha less area than ANPS
Constructability risk	NA	NA	Delivered within the target timeframe, more manageable and cost-effective solution.

Source: HWL, Steer

- 2.14 Across the document, including the sections comparing the HWL proposal with previous schemes, the recommended runway solution is presented as the best option, which provides the balance across several key factors: reduced costs, streamlined construction processes, and savings in land acquisition. These are considered in parallel with the potential impacts on communities located to the east of the new runway.
- 2.15 Our assessment of HWL’s masterplan optioneering criteria and process is summarised in the box below:

In the proposal, the optioneering criteria and process is largely focused on the location and length of the runway, with limited consideration of other major infrastructure elements such as terminal area configuration, satellite terminal, apron layouts, and surface access by road and rail.

To enable a clearer differentiation between options, the assessment criteria should be relevant, measurable, and consistently applied. Some suggestions of the criteria and KPIs that can be included in the assessment are following:

- **Community impacts:** environmental effects, including population affected by noise and air pollution along future time horizons.
- **Surface access:** modal split with specific targets for public transport from rail and road, road congestion, convenience of access.
- **Demand and capacity:** analysis of passenger and aircraft movement capacity and related service parameters.
- **Operational management:** integration with air traffic control and ongoing airport operations.
- **Safety:** including obstacle clearance, bird strike risks, and related hazards.
- **Efficiency:** overall cost-effectiveness.
- **Programme duration:** including dependencies on external enablers.
- **Delivery risks:** from construction challenges to operational integration and material availability.

Opportunities to undertake more complex evaluations combining multiple factors are not explored. For instance, intramodality objectives could have

been tested through scenarios involving both different runway locations and the introduction of a new terminal processor (terminal building which interfaces with the non-restricted area and usually includes at least the check-in, security and baggage reclaim areas) or satellite between runways.

Other areas where additional option development could have been valuable include:

- **Terminal area:** airline strategy assumptions, distribution of facilities, and the potential role of a new processor between the northern runways; assessment of alternative satellite terminal locations.
- **Surface access:** public transport connections by rail, underground, and road, including dependencies on third-party enablers such as train service provision or river crossings.

The document does present comparisons between HWL’s proposal and HAL 2019 masterplan and the ANPS, though these are mostly qualitative and with limited quantitative analysis. More detailed evaluation would strengthen the decision-making process. For example, a structured comparison between constructing the runway over the M25 versus the M4, including implications and potential solutions.

Overall, we note the **absence of a comprehensive optioneering analysis** demonstrating how the option put forward in the 2025 proposal was selected in comparison with other schemes.

Option put forward in HWL’s 2025 proposal

2.16 The option identified is HWL’s proposal is presented as the outcome of an optioneering process that draws on HAL’s masterplan 2019, as well as schemes derived from the ANPS and other previous studies.

2.17 The following section sets out only those elements that are described and compared against other schemes in HWL’s proposal. Topics not subject to comparison, such as Green Infrastructure, are excluded from the table. Each field is completed with the advantages and disadvantages highlighted by HWL in their narrative.

Table 2.3: Option HWL put forward in their 2025 proposal – Advantages and disadvantages

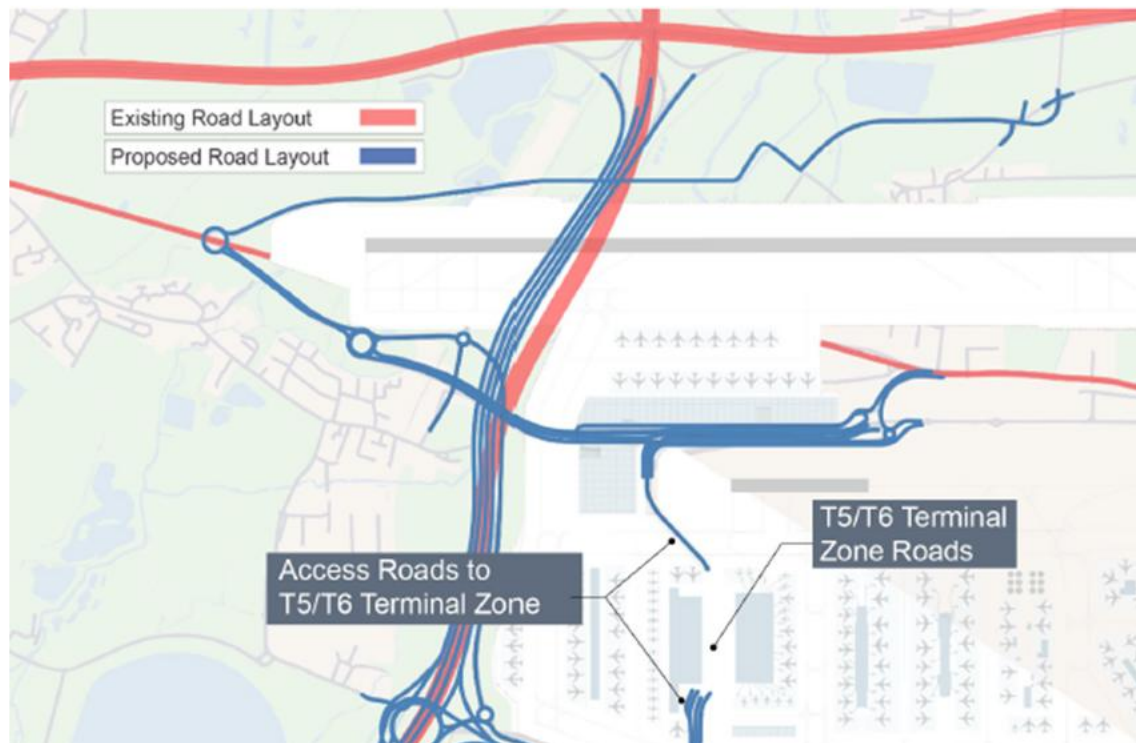
Element	HWL’s 2025 option	Main advantages	Main disadvantages
Runway	2.8 km. Not impacting M25. Impacting M4 Spur.	Reduction of construction risk, land acquisition and cost.	Increase of noise impact on eastern communities and runway capacity penalties.
Aprons	Three aprons. 52 Narrow Body Equivalent stands at T6.	Efficiency in the number of stands.	Not identified.

Terminals	One terminal building and satellite connected by bridge in the same campus.	Enhanced airline connectivity, passenger convenience and cost.	Not identified.
Surface access	Dual northern and southern road accesses to T5 / T6 terminal area.	Resiliency, operational efficiency and higher reduction in car use by 2040.	Not identified.
Car parks	New Southern and Central Car Parks with future parking provision distributed.	Efficiency of investment (smaller number of parking lots) and sustainability.	Not identified.
River diversions	River diversions in four different areas or sections.	Better flood relief and environmental benefits and safety (reduction of bird strike).	Not identified.

Source: HWL, Steer

2.18 We note that some road scheme images in HWL’s proposal show the runway over the M25, suggesting that these may have been prepared before the decision to place the 2.8 km runway further east. An example is provided below.

Figure 2.2: HWL's proposed road access scheme - Runway over M25



Source: HWL July 2025 Expansion Proposal, p. 5-19

2.19 Our technical assessment of HWL’s selection of the option they put forward in their 2025 proposal is summarised in the box below:

The runway is the most developed element within the optioneering process. HWL’s proposal highlights the benefits of a 2.8 km runway and presents these as outweighing the disadvantages. However, **further analysis is required to validate the conclusions provided in the proposal for selecting the option put forward in HWL’s proposal.** Key areas for improvement include:

- **Traffic and airline strategy:** traffic scenarios and a high-level flight programme should be developed to assess airline strategies. For example, the introduction of long-haul flights with narrowbody aircraft could alter the distribution of widebody/narrowbody ratios across runways and affect future scheduling.
- **Aircraft data:** the noise analysis relies on traffic data as early as 2015, originally prepared for Arora’s 2017 response to the DfT’s NPS Consultation. Calculations have not been updated to reflect re-engined aircraft such as the A320/A321neo or B737 MAX, nor the actual performance of newer widebodies such as the A350 or B787. The lack of updated data might lead to wrong conclusions.
- **Population data:** population figures and other relevant datasets should be updated to 2025 levels to ensure accuracy, and new forecast for noise contours and impact on the community should be developed.
- **3D and topographical evaluation:** modelling should include topography, runway slopes, and the M4 Spur tunnel to confirm assumptions such as the lack of impact on the M25 and compliance with OLS requirements.
- **Terminal and apron options:** while terminal and apron feasibility are addressed in subsequent sections, options for a terminal area between the new runway and the existing Northern Runway should have been considered, at least as a satellite facility, if not a full terminal. This would address significant taxiing distances from Apron Location 3 to existing terminal areas and challenges at Apron Location 2.
- **Surface access and car parking strategy:** the treatment of surface access and car parks lacks detail, particularly in relation to the disadvantages and justification for reduced parking provision. Some road scheme images still show the runway over the M25, suggesting that these may have been prepared before the decision to place the 2.8 km runway further east.
- **Runway length scenarios:** definition of Take Off Runway Available (TORA) and full length should be complemented with wind and temperature scenarios to assess the real value of runway length.
- **Comparison of runway locations:** further work is needed on the relative benefits and risks (including programme and cost) of constructing the runway over the M4 Spur versus the M25.

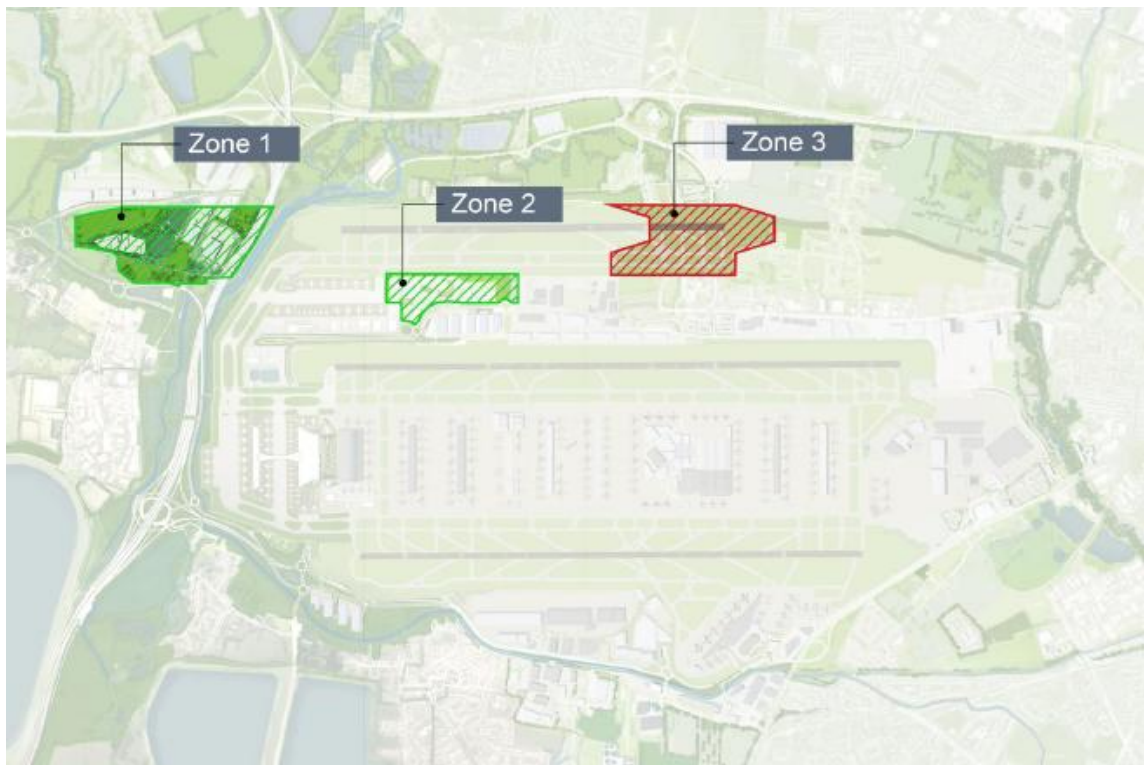
- **Aircraft movement capacity:** a robust and detailed analysis is needed on how traffic will be split among the three runways, including taxiing arrangements depending on airline, terminals and origin–destination strategies. This is a core disadvantage of the current proposal (alongside noise impacts) but could be mitigated through additional enhancements, such as a terminal area between the new runway and the existing Northern Runway.

3 Airport scheme design

Land acquisition

- 3.1 The proposal from HWL changes the land acquisition locations to those that are defined in 2018 ANPS Annex A boundary resulting in a proposed reduction of the total area of land acquisition required by circa 43ha.
- 3.2 The following diagram provided by HWL outlines the key differences. These differences, which are grouped in zones, are explained below.

Figure 3.1: HWL’s land acquisition proposal compared with HAL’s proposal



Source: HWL July 2025 Expansion Proposal, p. 5-38

- **Zone 1:** Includes approximately 64 ha of land located west of M25. Includes the M25 right-of-way that would not be required for HWL’s proposed development’s since the new runway does not extend west of the M25.
- **Zone 2:** Includes approximately 24 ha of land located immediately east of the northern remote aircraft parking apron that would not be required for HWL’s proposed development since it does not include a northern remote satellite building in this location.

- **Zone 3:** includes approximately 45 ha of land located immediately east of the ANPS eastern runway end boundary that would be required for HWL’s proposed development since the eastern end the new 2,800 metres Northwest Runway extends approximately 900 metres farther east than the ANPS boundary. This additional area contains 260 homes.
- 3.3 HWL’s proposal mentions that the existing waste treatment facility (Lakeside Energy from Waste and Aggregate Industries plant) in Zone 1 will need to be removed, as this has an impact on the Obstacle Limitation Surfaces (OLS). The proposed new location for this facility, which is an important piece of local infrastructure in terms of waste disposal and energy provision, has not been identified.
- 3.4 Within the HWL proposal, an alternative proposal for relocating the new runway further north is suggested, to avoid the relocation of the waste treatment facility.
- 3.5 In its response to the SoS’s request for further information, submitted in November 2025, HWL provided additional information on the properties impacted by the scheme. HWL has identified a total of 1,610 properties located within the development boundary. Of these, it is currently anticipated that a minimum of 1,114 properties will be required for compulsory purchase to enable delivery of the scheme. In addition, a further 234 properties may also be required subject to the outcomes of the ongoing design development process.
- 3.6 Our feasibility assessment of HWL’s strategy for land acquisition is summarised in the box below:

The land acquisition proposal requires additional land purchase to the east of the new runway, and avoids acquisition to the west of the M25, as well as land adjacent to the Bath Road. It is suggested that land acquisition to the east will affect approximately 260 more homes, which will need to be acquired.

The HWL proposal does not clearly identify the strategy for the Lakeside Energy from Waste and Aggregate Industries plant. Currently, this facility processes over 450,000 tonnes of residual waste per year, generating 306GWh of power. The loss of this facility, if not provided elsewhere, would have a significant impact on the surrounding local areas.

The land acquisition details provided within the HWL proposal do not consider the impact on any voluntary purchase zone in the surrounding area.

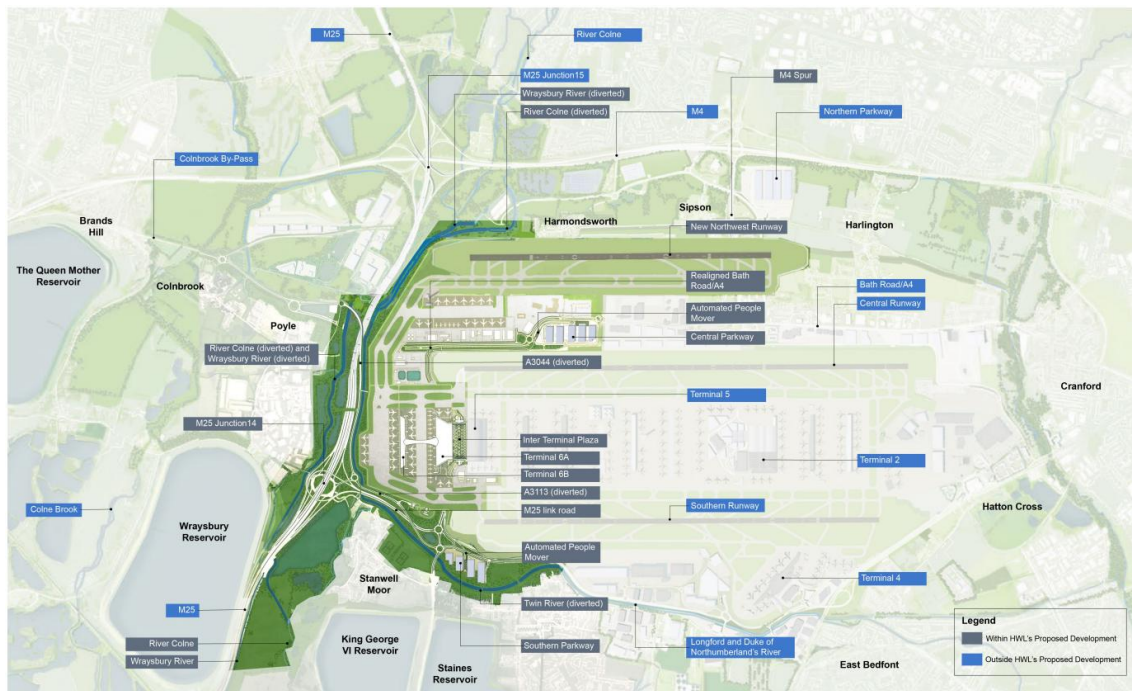
The HWL proposal has not considered the impact of land acquisition on the wider context of the programme, and this will need careful consideration to allow construction works to commence.

Land acquisition has been reviewed in the context of the delivery of the final infrastructure, and hence no information has been provided with regards to any land that is required for temporary works that may be offered back following the completion of the works.

Runway length and location

- 3.7 HWL proposes the construction of a new Northwest Runway, with 2,800 metres in length, located entirely east of the M25 motorway, and positioned 1,035 metres north of Heathrow’s existing Northern Runway. This location enables fully independent operations, in accordance with international safety standards, and avoids the need for complex engineering works such as bridging over the M25. The proponent claims that the proposed three-runway system is designed to support at least 769,420 annual Air Transport Movements (ATMs) and that the new runway is intended to be operational by 2035, in line with Government targets.

Figure 3.2: HWL’s proposed development

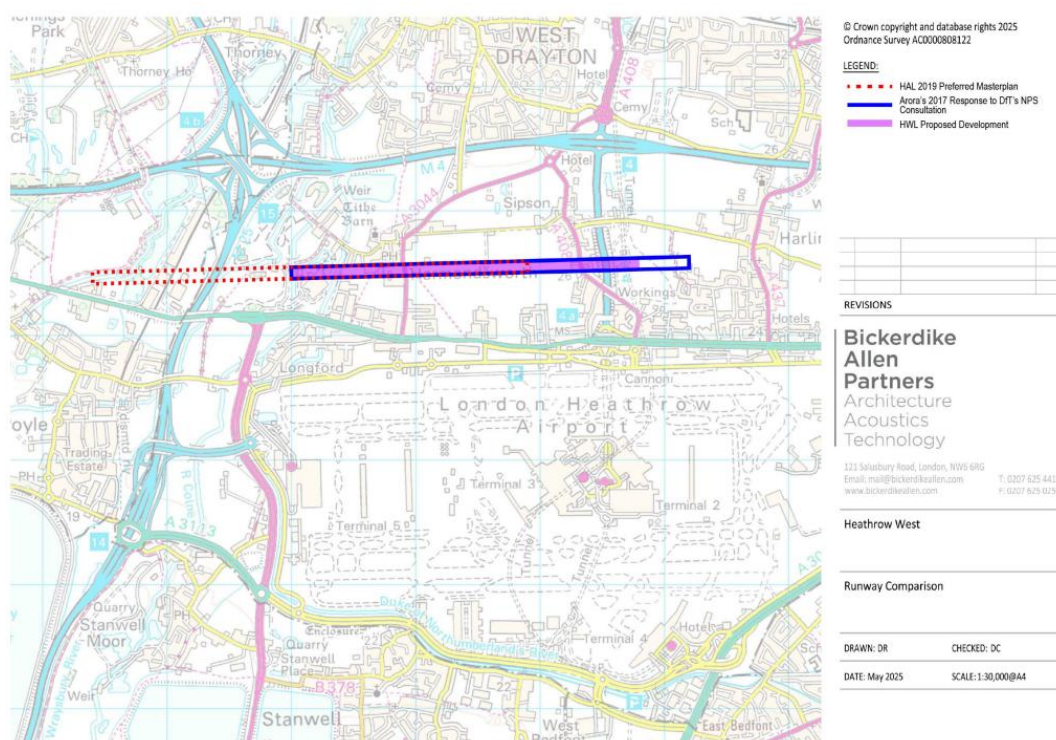


Source: HWL July 2025 Expansion Proposal, p. 5-5

- 3.8 The western end of the runway is situated approximately 500 metres east of the M25, while the eastern end extends 900 metres beyond the boundary defined in the 2018 ANPS, requiring a crossing over the M4 Spur and additional land acquisition. According to HWL, the proposed runway length and location significantly reduce construction complexity and disruption compared to the ANPS prescribed scheme.
- 3.9 The methodology adopted by HWL for determining the optimal runway length is based on an operational analysis conducted by IAG and its consultants. This analysis, grounded in actual aircraft performance data, concluded that a 2,800 metres runway can accommodate 100% of landings, 100% of narrow-body take-offs, and 89% of wide-body take-offs. The remaining ~ 14 daily wide-body departures would be allocated to Heathrow’s two existing longer runways, ensuring full operational flexibility and resilience across the three-runway system.

- 3.10 HWL’s optioneering process explored various runway lengths, with the 2,800 metres option identified as the solution put forward in their 2025 proposal based on its ability to meet operational requirements while aiming to reduce environmental impacts, community disruption and capital expenditure.
- 3.11 HWL presents a comparative analysis of three runway options based on noise impact levels: one option corresponding to HAL’s 2019 masterplan (with a runway length of 3,500 metres), another option based on Arora’s 2017 response to the ANPS Consultation (with a runway length of 3,200 m), and a third option representing HWL’s proposed development (with a runway length of 2,800 m). The analysis concludes that the 3,200 metres runway option results in less impact than the 3,500 metres alternative, while the 2,800 metres option is expected to have a similar impact to the 3,200 metres configuration.

Figure 3.3: Relative locations of the three runways options presented by HWL



Source: HWL July 2025 Expansion Proposal, p. 12-34

- 3.12 The runway is integrated into a broader airfield layout that includes a dual taxiway system, remote and pier-served aircraft aprons, and a new T6 terminal complex. According to HWL, the airfield design supports efficient aircraft circulation and aligns with Heathrow’s future operating modes, enabling simultaneous arrivals and departures and supporting the airport’s noise-respite policy.
- 3.13 In addition to the runway length, HWL proposes Runway End Safety Areas (RESAs) extending 300 metres beyond each runway end. To accommodate for these extensions, as well as the installation of navigational aids and the perimeter fence, HWL proposes a 500-metre separation east of the M25. The illustration below shows the existing RESAs of the existing runways at Heathrow.

Figure 3.4: Heathrow's Runway End Safety Areas

Source: Google Earth, Steer

- 3.14 Our feasibility assessment of the option put forward in HWL’s 2025 proposal for runway length and location is summarised in the box below:

HWL has submitted a proposal for a new northwest runway that deviates from the scheme set out in the Airports National Policy Statement (ANPS) of 2018, particularly with respect to runway length and location. The documentation outlines HWL’s justification for a 2,800-metre runway situated entirely to the east of the M25 motorway, supported by a qualitative and quantitative assessment. Nevertheless, the analysis omits key information, which restricts a comprehensive assessment of the proposal’s technical adequacy.

Runway location: The description of the optioneering process for runway location lacks the necessary level of detail. The only optioneering process outlined consists of a comparison of noise levels among HAL’s 2019 proposal, Arora’s 2017 response to the ANPS consultation, and the current proposal. Additionally, there is a brief mention of the possibility of shifting the new runway 350 metres north to avoid relocating the Lakeside Energy-from-Waste Plant due to its conflict with the OLS. Moving the runway further north will conflict with an English heritage site and a cemetery. The proponent has not disclosed what could be a new location for the waste treatment facility.

Obstacle Limitation Surfaces (OLS): The proposal suggests that OLS analysis has been conducted; however, the documentation provided lacks detail. We recommend that a comprehensive OLS analysis is presented, clearly identifying the presence, location, and nature of each obstacle. This step is particularly important given that, according to the Aeronautical Information Publication (AIP), the current OLS for the existing runways already include various obstacles.

Separation between runways: The proposed third runway is 1,035 metres from the existing Northern Runway, meeting international criteria for independent operations. This spacing is deemed adequate to support fully autonomous runway usage, enabling concurrent take-offs and landings with reduced aircraft

separation requirements. Such separation is a key enabler for increasing runway throughput and overall airfield capacity.

Length of the runway: The proposed runway length of 2,800 metres is notably shorter than the existing two runways at the airport (3,700 metres, 3,900 metres³). HWL supports this proposal based on findings from an analysis conducted by IAG and their consultants, which focused on the current British Airways fleet operating at Heathrow. These findings have been extrapolated to the operations of other airlines at the airport. According to their assessment, a 2,800-metre runway would impact approximately 14 daily wide-body flights, which would need to take off from one of the other two runways. We recommend that the proponent undertakes an independent assessment of the technical capabilities of the new runway and provides a more comprehensive and transparent explanation of the methodology used to determine the suitability of a 2,800-metre length runway. Within the runway design, HWL includes Run End Safety Areas of 300 metres in length, which we assess are consistent with international design standards (ICAO), albeit the appropriate dimensions will be subject to a detailed study.

Width of the runway: The documentation does not provide any reference to the runway width. As a result, it is unclear whether the width of the runway and its shoulders meet the requirements for Code F aircraft (e.g. A380) operations. We recommend that this information is explicitly included.

Overall, it is recommended that the proponent provides further detail regarding the proposal and the issues outlined above. The current information provided omits specific assumptions and critical information necessary for a thorough understanding and evaluation of the proposal.

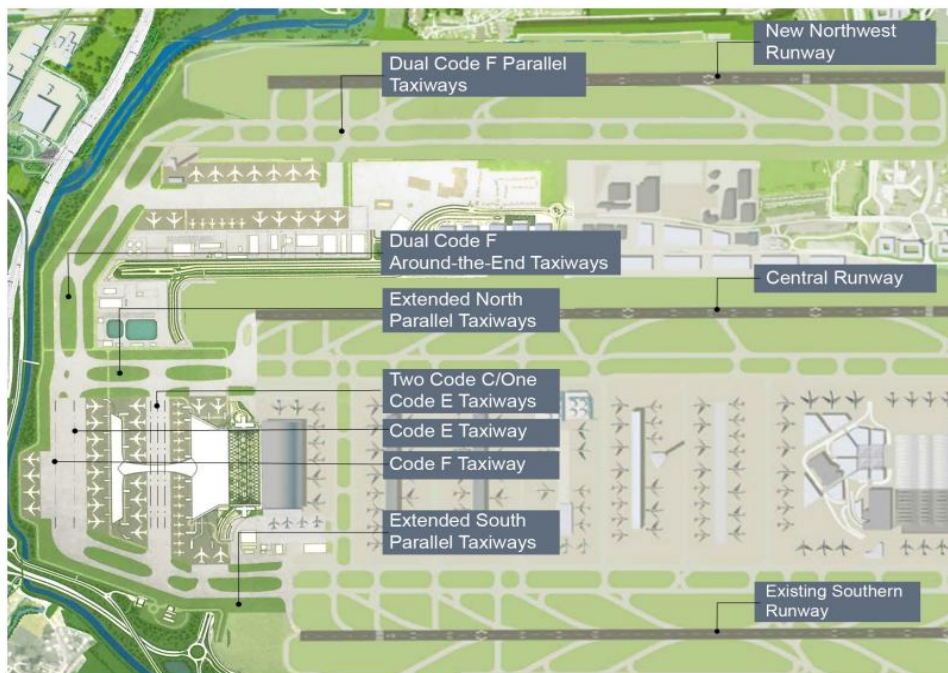
We consider that a robust runway options assessment should include two steps. The first step should be assessing the required runway length independently from its proposed location. This assessment should be grounded in clearly defined and up-to-date assumptions regarding expected flight schedules, aircraft types expected to operate from the new runway over the coming decades, prevailing meteorological conditions, and future airspace configurations involving three runways, among other relevant factors. The second step should be evaluating potential locations by balancing investment requirements, impacts on road access—particularly the choice between affecting either the M4 Spur or the M25—and the noise impact on current and projected population distributions over the next years.

³ Runway physical dimensions: 3,658 metres, 3,901 metres. Source: <https://www.aurora.nats.co.uk/htmlAIP/Publications/2025-10-02-AIRAC/html/eAIP/EG-AD-2.EGLL-en-GB.html#EGLL-AD-2.24>

Airfield configuration

- 3.15 HWL’s expansion proposal includes a purpose-built taxiway system designed to integrate the proposed 2,800 metres North Runway with the existing airfield infrastructure. The system comprises new taxiway links that connect the runway with the new T6 terminal and the broader airport’s taxiway network. The layout incorporates dual taxiways adjacent to pier-served stands (i.e. contact stands), north-south through-taxiways west of the new terminal complex, and access routes to remote stands.
- 3.16 The connection of the new runway (and its parallel taxiways) with the aircraft parking stands and with the rest of the airfield is concentrated in the West, as most of the length of the runway runs parallel to a landside area.

Figure 3.5: HWL’s taxiway system



Source: HWL July 2025 Expansion Proposal, p. 5-9

- 3.17 To further enhance the airfield efficiency, HWL proposes a Western Bypass Taxiway for Code F aircraft, located west of the T6 terminal complex, and dual Around-the-End Taxiways. These taxiways provide north-south connectivity, enabling aircraft to transition between the new runway and existing terminals.
- 3.18 In addition to the taxiway system, HWL’s proposal includes a total of 52 aircraft parking positions equivalent to Code C (Narrow Body Equivalent, NBE), distributed across pier-served and remote aprons in the T6 complex. Many of these stands are configured under a Multiple Aircraft Ramp System (MARS), allowing flexible accommodation of Code C, E, and F aircraft⁴ depending on operational demand.

⁴ Aircraft examples for each Code of stand: Code C (e.g. A320, B737), Code E (e.g. A330, B787), Code F (e.g. A380)

Moreover, a remote apron with 34 NBE stands is proposed between the northern runways for aircraft staging. This area may incorporate crew ready rooms, line maintenance, ground handling and catering services.

- 3.19 Our feasibility assessment of HWL’s option put forward in their 2025 proposal for the airfield configuration is summarised in the box below:

The conceptual design appears to align with ICAO Code F operational requirements and incorporates essential infrastructure to support the proposed 2,800 metres North Runway and the new Terminal 6. However, the submission lacks specific technical details. There is no evidence of an optioneering process having been undertaken to explore or compare alternative design solutions.

Each of the main elements of the airfield configuration is examined individually:

Rapid Exit Taxiways (RETs): The proposal includes multiple Rapid Exit Taxiways (RETs) along the new runway; however, no supporting analysis has been provided regarding the anticipated aircraft fleet mix, projected runway occupancy times, or the outcomes of any runway simulation studies. Such data would be necessary to validate the suitability of the RETs’ positioning and dimensions.

Taxiways: The proposal includes a parallel taxiway network connecting the new runway with T6 and the existing airfield. The single connection of the runway (and parallel taxiways) through the West with the rest of the airfield might create bottlenecks and reduce the operational capability. No quantitative data, detailed aircraft circulation routes or simulation outputs are provided to evaluate possible bottlenecks during peak operations or compare different taxiway layouts. To support a more robust evaluation of the proposed taxiway system, it would be necessary to include detailed aircraft circulation routes between aprons and runways. Additionally, any coordination with or endorsement from Air Traffic Services (ATS) regarding the proposed strategy should be clearly documented.

Western bypass taxiways: The western-most Code E and F taxiways are intended to serve as a bypass route for aircraft transitioning between terminals and runways. While the concept is operationally sound, the interaction between pushback manoeuvres from adjacent stands and through-traffic on the bypass taxiways warrants further analysis. The documentation does not address whether pushbacks will encroach upon the bypass taxiways or whether mitigation strategies – such as pushbacks into adjacent lanes prior to taxiway access – have been considered. Additional simulation studies are recommended to evaluate taxiway congestion risks and to explore alternative layouts that may improve operational resilience.

Aircraft parking stands: The documentation does not include references of expected aircraft demand, fleet composition, flight schedules, or stand occupation times, which are essential parameters for estimating stand

requirements. As a result, the proposed total number of stands and their allocation between the western and northern apron lacks substantiation. Furthermore, it would be advisable to evaluate other critical airside components, such as designated Ground Support Equipment (GSE) parking areas, service roads, and boarding zones for airside shuttle buses.

Terminal area

Terminal area capacity

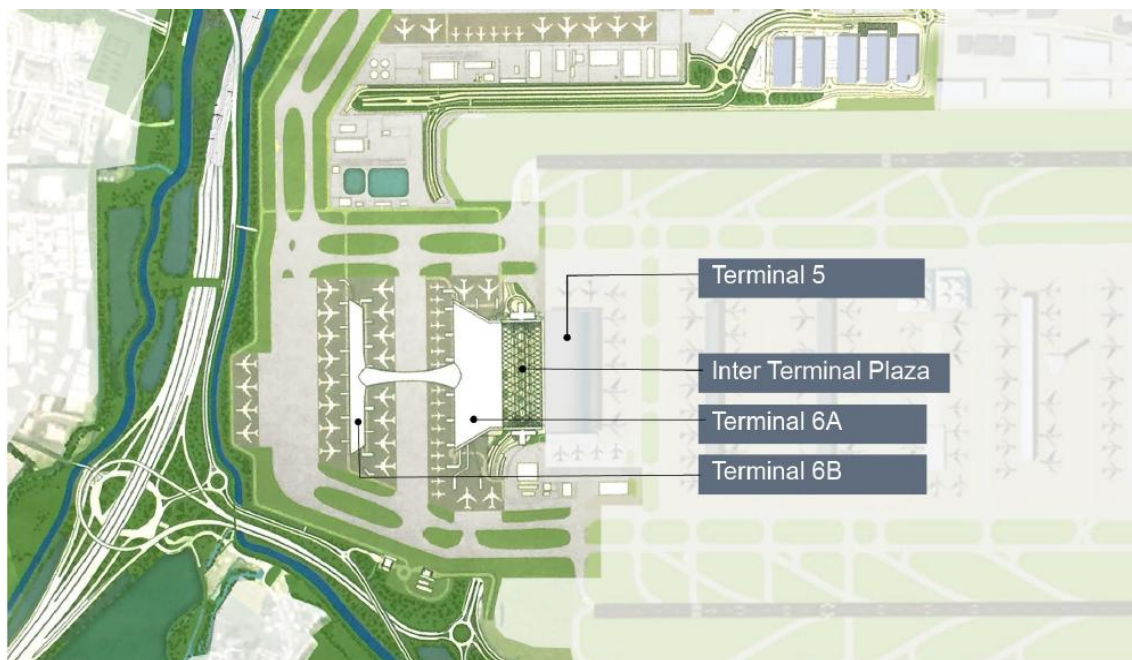
- 3.20 Heathrow Airport currently handles over 80 million passengers per annum (mppa) across its four operational terminals (T2, T3, T4, and T5), operating close to capacity. The sustained growth in demand has placed significant pressure on terminal processing capacity, gate availability, and transfer connectivity.
- 3.21 In this context, HWL’s proposal expansion concept introduces a new Terminal 6 (T6) as part of West Terminal Campus, conceived as an integrated operational system with the existing Terminal 5 (T5) to accommodate the future traffic generated by the new third runway.
- 3.22 The Terminal 6 complex is designed to provide an incremental 40 mppa of capacity and consists of two principal elements:
- T6A: a processing terminal containing all major passenger-processing functions and designed to accommodate 25 mppa; and
 - T6B: a satellite building, which provides capacity of roughly 15 mppa, connected to T6A via an enclosed pedestrian bridge spanning above a taxiway.
- 3.23 To support the proposed capacity, HWL based its stand provision on a planning ratio provided by IAG, which assumes that each Code C aircraft position, equivalent to one Narrow-Body Equivalent (NBE) stand, can accommodate approximately 800,000 passengers annually. Using this ratio, HWL determined that around 50 Code C NBE stands would be required to support the target throughput of 40 mppa for the new proposed terminals. The resulting apron layout includes a total of 52 Code C NBE positions, providing 2 operational contingency positions to improve resilience during stand closures or irregular operations.
- 3.24 The apron layout for Terminal 6 proposed by HWL incorporates positions across the pier-served (i.e. contact stands) concourses of T6A and T6B, as well as the remote apron located west of T6B, enabling flexible accommodation of Code C, Code E, and Code F aircraft in various combinations. Under the maximum narrow-body equivalent (NBE) configuration, the apron is designed to accommodate 46 pier-served and 6 remote Code C positions, totaling 52 active stands. Under the maximum Code E configuration, the apron is designed to accommodate 8 Code C and 28 Code E positions on the piers, supplemented by 4 remote Code E stands, totaling 40 active positions. Finally, under the maximum Code F configuration, the apron could accommodate 10 Code C, 24 Code E and 2 Code F pier-served

positions and 4 remote code E stands, resulting again in a total of 40 stand positions.

- 3.25 HWL’s proposal aligns with the broader modernisation of the Central Terminal Area (CTA) proposed by HAL, centred on the expansion of Terminal 2 (T2) to raise its capacity from 20 mppa to over 50 mppa. This will be achieved through the extension of T2A, the delivery of new satellites T2C and T2D, and the progressive decommissioning of Terminal 3 (T3). The creation of the T5/T6 West Campus and the CTA modernisation programme is expected to follow an alliance-based terminal use, with a total capacity of 135 mppa by 2054.

Terminal area location

Figure 3.6: HWL’s proposed terminal area development



Source: HWL July 2025 Expansion Proposal, p. 5-12

- 3.26 According to HWL’s proposal, the new Terminal 6 (T6) is located within the western development zone of the airport, directly adjoining Terminal 5 (T5) to form the integrated West Terminal Campus. HWL indicates that this location was selected to support its objectives of delivering a cost-effective, scalable, and sustainable expansion. The proposed new terminal is located within Heathrow’s existing western boundary.
- 3.27 HWL describes the location of T6 between the existing Northern Runway (09L/27R) and the existing Southern Runway (09R/27L) as the optimal location for providing a balanced runway access and minimising taxiing distances. The proposal notes that this location allows direct connectivity to all the runways through the taxiway system, facilitating efficient aircraft stand allocation, apron circulation, and gate utilisation. The airfield geometry is intended to optimise operational flows and support Heathrow’s hub operations within the three-runway configuration.
- 3.28 HWL further notes that the western location of the new terminal provides advantages in terms of land use and integration with existing facilities. The

proposal maintains that the West Terminal Campus preserves existing landside assets such as surface car parks, support buildings, and maintenance facilities. The proposed layout allows continued use of existing access routes and seeks to minimise new land acquisition requirements.

Functional analysis

- 3.29 According to HWL’s proposal, the West Terminal Campus will be delivered in two phases, beginning with the construction of T6A, followed approximately four years later by the commissioning of T6B. Throughout the phased implementation, T5 and T6A are expected to operate in a coordinated manner. The proposal assumes that HAL will undertake announced expansions of the Central Terminal Area involving T2 and T3.
- 3.30 Terminal 6 has been designed by HWL to operate as a stand-alone facility and also as an integrated hub, providing maximum flexibility, operational redundancy, and scalability to accommodate varying airline and passenger demand scenarios.
- As a stand-alone facility, T6A operates as a self-sufficient terminal, capable of independently processing origin/destination and connecting (i.e. transfer) passengers without relying on other Heathrow infrastructure. The T6B satellite building enhances this functionality by providing additional gate capacity.
 - As an integrated hub, T6 operates as an extension of Terminal 5, forming a unified hub with shared operational capabilities. Under this configuration, Terminal 5 is expected to primarily support long-haul intercontinental services, principally operated by British Airways and Iberia, while Terminal 6 is expected to accommodate domestic short and medium-haul operations.
- 3.31 According to HWL’s proposal, the connecting infrastructure of the new Terminal 6 is designed to ensure a fully secure connectivity within Heathrow’s terminals. Passengers and baggage transfers between T6 and T5 are proposed to take place entirely within a secure post-screening airside area, allowing for direct connections between terminals without going through landside areas or additional screening processes. Transfers between T6 and the other terminals (T2, T3, and T4) are assumed to follow the existing strategy used for connections between T5 and these terminals.
- 3.32 From an airside operational perspective, the West Terminal Campus will benefit from a central position between the existing Northern Runway (09L/27R), the new runway, and the existing Southern Runway (09R/27L), allowing symmetrical runway access and balanced taxiing distances.
- 3.33 An illustration of the proposed West Terminal Campus is presented below.

Figure 3.7: HWL’s proposed terminal area development (illustration)

Source: HWL July 2025 Expansion Proposal, p. 5-13

Terminal landside facilities

- 3.34 HWL’s proposal defines a landside access and connectivity framework designed to integrate the new Terminal 6 (T6) and the existing Terminal 5 (T5) within a multimodal transport network, converging into the West Terminal Campus. The surface access strategy relies on a core network of existing rail services which together form the Public Transport Hub serving the West Terminal Campus. The integration of these services allows for direct, high-frequency connections between the airport, Central London, and regional destinations.
- 3.35 Under HWL’s proposal, the Inter-Terminal Plaza (ITP) is conceived as the primary landside interface integrating multimodal transport infrastructure and passenger services, including a newly configured Public Transport Hub. The ITP will function as a distribution node, facilitating connectivity for passengers and staff. According to HWL’s proposal, the ITP’s integration with rail and underground services (Heathrow Express, Elizabeth Line, and Piccadilly Line) further enables seamless mode interchange.
- 3.36 HWL’s proposed development includes the provision of around 33,000 new car parking spaces, distributed across the Central Parkway, Southern Parkway, and the Inter-Terminal Plaza). These facilities will be connected to the terminal area via an Automated People Mover (APM) system (also called Track Transit System, TTS) and additional travel routes. Once passengers arrive at the ITP, they will access the terminals using the same strategy currently implemented at Terminal 5.

Terminal building size

- 3.37 HWL’s proposal defines a new Terminal 6 (T6) designed to accommodate a total throughput capacity of approximately 40 mppa at full build-out. In the first phase, the T6A processor terminal will provide capacity for 25 mppa, while the T6B satellite building (connected through an enclosed pedestrian bridge linking both facilities) will be developed in a subsequent phase, accommodating 15 mppa.
- 3.38 According to HWL, the design of the new terminal is based on a Functional Brief that defines required functions and associated quantitative parameters such as the number of contact aircraft parking stands. The resulting configuration delivers a total gross floor area of approximately 440,000 square metres, distributed between T6A and T6B, and structured to optimise spatial efficiency while ensuring passenger comfort and operational adaptability.
- 3.39 The T6A terminal building, the main processing facility, has a floor area of approximately 340,000 square metres, distributed across four principal above-ground levels, with two basement levels and a partial mezzanine. The basement levels accommodate baggage handling, utility, and mechanical plant areas, while the main levels house departures check-in, security screening, departure lounge, immigration, and arrivals processing halls. The spatial design supports efficient vertical circulation and segregated passenger flows for departures and arrivals.
- 3.40 The T6B satellite building provides airside gate infrastructure, with a floor area of approximately 100,000 square metres distributed across three main levels, including a full basement and partial mezzanine. The floor area includes the area of the connecting sky bridge. Excluding the bridge, the satellite’s floor area is approximately 90,000 square metres.
- 3.41 Our feasibility assessment of the option that HWL put forward in their 2025 proposal for terminal area is summarised in the box below:

HWL’s proposed development outlines the addition of 40 mppa of terminal capacity. This growth will be supported through the phased construction of Terminal 6A and its satellite, Terminal 6B.

Each of the key components of the terminal area is reviewed sequentially.

Terminal capacity: HWL’s proposal outlines a phased development for the new Terminal 6. The first phase would focus on T6A, while the second would introduce the additional satellite T6B, forming a unified operational complex. However, the proposal does not include any supporting demand analysis or provide evidence of how the stated capacities were derived. There is also no reference to busy-hour passenger modelling, peak-flow assessments or assumed flight schedules, all of which are essential for validating the terminal’s operational performance and required capacity.

Terminal location: There is a lack of options analysis for the location of the additional terminal capacity. The proposer does not provide an assessment of the potential benefits of a satellite facility between the new runway and existing Northern Runway. Additionally, the location of T6 brings inherent risks

related to its accessibility. The surface access strategy builds upon Heathrow’s existing multimodal transport infrastructure, integrating rail and underground services through a central Inter-Terminal Plaza (ITP). This spatial consolidation could increase the likelihood of landside congestion and create a single point of failure, particularly during peak demand periods or in the event of service disruptions.

Terminal functional analysis: The terminal complex is designed to operate either as a stand-alone facility or as part of an integrated hub system with Terminal 5 and the other existing terminals. Despite the conceptual consistency of the design, the proposal does not include a detailed operational analysis of transfer movements between terminals, either for passengers or for baggage.

Terminal size: The resulting configuration delivers a total gross floor area of approximately 440,000 square metres, distributed between T6A and T6B. The design achieves a floor area-to-capacity ratio of approximately 11,000 square metres per mppa, consistent with international benchmarks established by leading global hub airports such as Hong Kong, Schiphol, and Beijing. To support a more detailed assessment, it is recommended that the documentation include the footprint of each terminal level and processing areas, allowing for a clearer understanding of spatial distribution across the different areas.

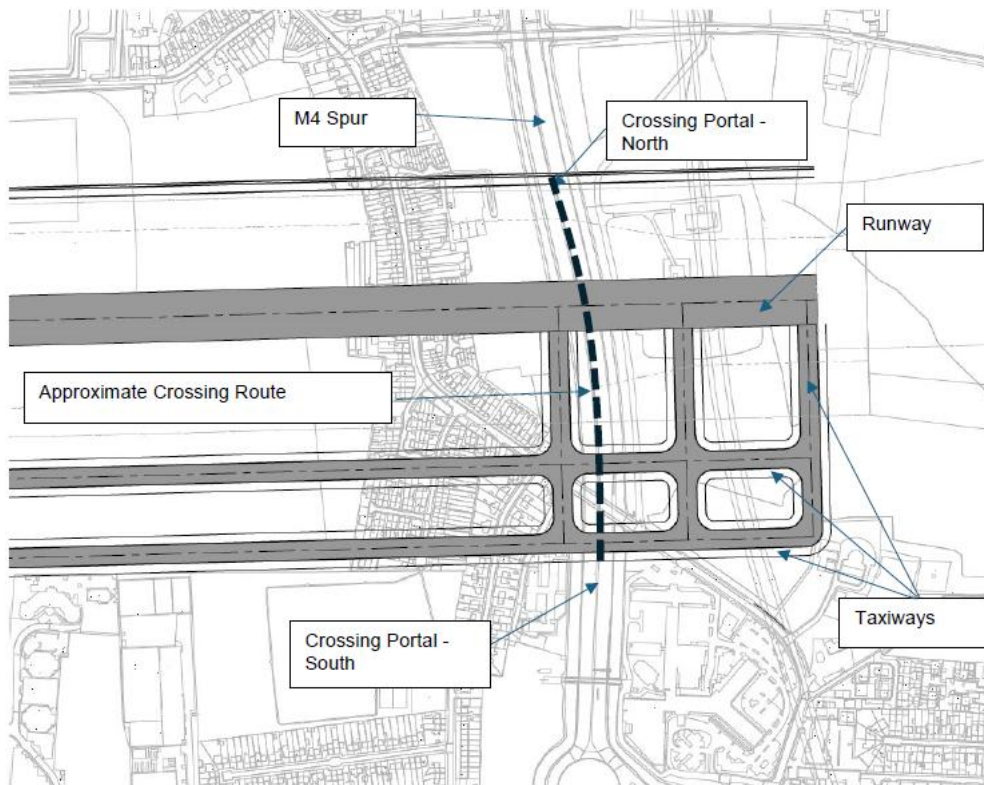
Surface Access

- 3.42 The proposed West Terminal Campus will include Terminals 5, T6A, and T6B. T6B will be linked to T6A via a pedestrian bridge. An Inter Terminal Plaza (ITP) will serve as a central hub (between T5 and T6A), featuring passenger drop-off zones and parking facilities. Within the ITP, a new Public Transport Hub will offer connections to rail, London Underground, coach, and bus services.

During construction

- 3.43 In its response to the SoS’s request for further information, submitted in November 2025, HWL provided additional information on how their proposed construction strategy is designed to minimise unnecessary disruption during construction. HWL states that each road will continue to serve its essential function at all phases of construction, no public road segment will be closed to traffic until traffic has been diverted to a convenient alternative road, whether the alternative road is a temporary or permanent component of the road scheme, and road construction will be conducted “offline”, where possible without impacting traffic movements on existing roads.
- 3.44 HWL proposes placing the third runway east of the M25, which avoids realigning the M25 but means the runway will cross the M4 Spur.
- 3.45 The figure below illustrates the proposed site of the airfield, including the runway's intersection with the M4 Spur. According to the airfield specifications, the combined corridor width for the runway and taxiways at this crossing point is 480 metres.

Figure 3.8: HWL Proposed Conceptual Location of M4 Spur Crossing



Source: HWL November 2025 response to SoS request for additional information, p.8-18

- 3.46 The M4 Spur tunnel would be constructed on a similar horizontal alignment to the existing carriageway, substantially to the west of the existing rail tunnels serving Heathrow. It is not expected that the proposed road tunnel will directly affect the rail tunnels, given the distance between the tunnels and the M4 Spur. However, with the information that we have had access to we are not able to assess the impact that the runway or earthworks may have on the rail tunnels.
- 3.47 The new tunnel will be constructed by creating a temporary northbound carriageway offline, west of the current alignment to divert traffic while construction begins on the 3 northbound carriages of the tunnel. Once completed, construction will begin on the 4 southbound carriages of the tunnel and traffic will be re-routed once the tunnel is completed.

Roads

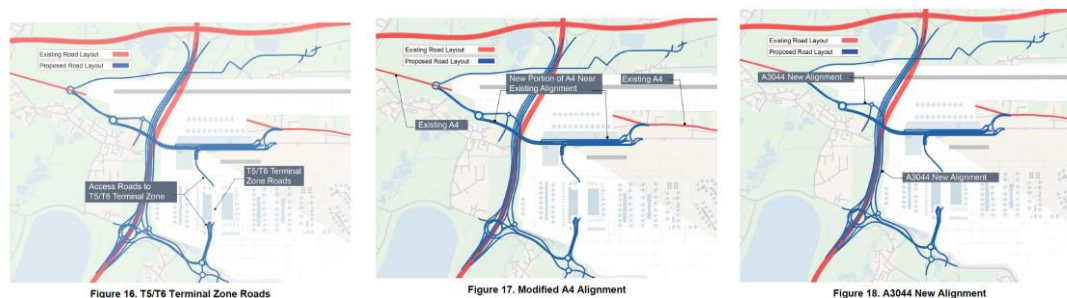
- 3.48 The HWL proposed access strategy is defined by its key principle of providing two access points to the West Terminal Campus.
- 3.49 The road access network changes proposed by HWL are:
- **A4:** A connection via a tunnel under the M25 is proposed.
 - **Junction 14:** Modifications are proposed for a new access configuration, while Junction 14A is proposed to be repurposed as a pedestrian park and its functionality to be added to Junction 14 at a level above.
 - **M4 Spur:** A tunnel under the new runway is required for the M4 Spur.

- **A3044:** A new alignment is proposed as a north–south distributor road parallel to and east of the M25
- **A3113:** The eastern section is proposed to be re-designated as part of the A3044 due to realignment.

3.50 HWL’s proposal avoids the need to bridge the runway over the M25 and the realignment of M25, by reducing the length of the new runway from 3,500m to 2,800m and locating it east of the M25.

3.51 The proposed access roadway network is shown on the figures below.

Figure 3.9: HWL’s proposed access roadway



Source: HWL July 2025 Expansion Proposal, pp. 5-19-20

3.52 Public Transport Accessibility Level (PTAL) is a measure of how well a location is served by public transport, rated on a scale from 0 (Poor) to 6 (Excellent). The proposal states that Terminal 5 currently has a PTAL score of 4 (Good access) and that the target is to achieve a score of 6 to enhance sustainable access to the airport.

3.53 The proposal states that HWL anticipates that their Surface Access Strategy will result in 51% of passengers using public transport by 2030 and 57% by 2040. It also states that staff will reduce car use by 37 % by 2030 and 53% by 2040. These targets are aligned with the 2018 ANPS requirements.

Table 3.1: HWL’s targets for Heathrow mode share

Mode share in 2040	Passengers	Staff
Car (including car sharing)	18%	23%
Taxi	25%	0%
Rail	18%	9%
Underground	19%	16%
Bus / Coach	20%	41%
Active	0%	11%
Total	100%	100%
Total public transport (rail, underground, bus/coach)	57%	66%

Source: HWL, Steer

3.54 In the surface access modelling work that HWL has undertaken, they have included development impacts with significant adverse impacts on bus services,

minor adverse effects on rail capacity, and moderate to major highway delays during AM and PM peak periods. While these are early-stage findings, HWL acknowledges that a full Transport Assessment will be prepared as part of the DCO submission. The study will ensure appropriate mitigation measures are part of the proposal to support the projected surface access demand.

Car parking

- 3.55 HWL’s car parking strategy assumes that the airport will be able to provide a total of 67,000 car parking spaces (33,000 new spaces plus the existing spaces) based on their expected demand of passengers and staff. The Central Parkway proposed car parking spaces are 18,000. The Southern Parkway will provide 10,000 spaces and the Inter-Terminal Plaza parking (replacing the current T5 multi-storey car park) will provide 3,500 spaces. We note that the sum of the new car parking spaces of the different facilities named by HWL in the proposal do not add up to the total 33,000 spaces also mentioned in the proposal.
- 3.56 HWL’s Heathrow West Surface Access Strategy proposes an Automated People Mover (APM) connecting the new Central and Southern car parking areas to the ITP, located between Terminals 5 and 6. HWL states that the APM is designed to handle both passengers and staff members, with a peak demand of 500 passengers and 1,000 staff per hour, offering 2–4-minute transit times. The proponent also suggests that the APM could be extended to the Central Terminal Area in the future.
- 3.57 The proposal states that cycling parking facilities will be available at new surface access hubs.
- 3.58 A single, consolidated car hire facility will be located within the Central Parkway, serving all the airport.
- 3.59 Car parking on local roads will be managed by introducing and extending Controlled Parking Zone (CPZ) restrictions. Designated parking bays will control where parking occurs and who can use them, while double yellow lines will be implemented (particularly on residential roads) to prevent inappropriate parking. The extent of CPZ measures will be subject to a separate consultation process with the local community.
- 3.60 To meet the ANPS target of reducing staff car trips by 50% by 2040, HWL proposes a substantial reduction in staff car parking. Aligning with HAL’s strategy, HWL plans to retain no more than 11,600 staff car parking spaces by 2040, including approximately 9,800 spaces related to terminal operations and 1,800 for non-terminal uses.
- 3.61 HWL also proposes an access fee like the one in HAL’s 2019 Preferred Masterplan. All vehicles accessing the airport will be subject to a fee, set at a level intended to discourage car trips while maintaining Heathrow’s competitiveness. Additional charges may apply depending on the type of trip undertaken.

Railway

- 3.62 Rail services at the proposed Public Transport Hub consist of Heathrow Express, Elizabeth Line and Piccadilly Line, with planned expected upgrades to rolling stock and service frequency. The proposal also assumes HS2 to be operational by 2030, linking Birmingham - Old Oak Common - Central London.
- 3.63 While the proposal includes the possibility of providing access to the West Terminal Campus for the Western Rail Link and Southern Rail Link, it states that these services are not essential for the efficient operation of Terminal 6.
- 3.64 Our feasibility assessment of the surface access option that HWL put forward in their 2025 proposal is summarised in the box below:

Access to West Terminal Campus: The proposed two-point access strategy is designed to distribute traffic demand across multiple entry routes, thereby increasing resilience to the operations and shortening travel distances.

Road network: The proposed network allows general access to the airport from major corridors, M4, M25 and A4, via two primary entry points: the M4 Spur and the A3113 (re-designated as A3044). This configuration is expected to improve route choice flexibility and resilience. The proposed layout removes Junction 14A and includes two adjacent roundabouts in proximity to the West Terminal Campus South access point. This configuration raises a potential risk for congestion and disruption of the operations, particularly during peak traffic periods. Proposed layout and distances should be validated through detailed microsimulation modelling to confirm that queuing does not compromise operational performance.

Car parking: The scheme includes the development of two large car parking facilities (Central Parkway and Southern Parkway). According to HWL, these car parks will be connected to the West Terminal Campus with Automated People Movers. These facilities are completed by the capacity provided in the Inter-Terminal Plaza parking.

Rail connectivity: Although the proposal includes the assumption that the current rail services at the airport (Heathrow Express, Elizabeth Line, Piccadilly Line) will increase their capacity, it is unclear how and when this is going to be materialised. HWL states that the implementation of the Western Rail Link and the Southern Rail Link is not essential for efficient operations of Terminal 6.

Active mobility: We recommend including active mobility strategy maps showing proposed pedestrian paths and cycling infrastructure.

Mode share: HWL proposes to meet the public transport targets included in the 2018 ANPS, albeit it is unclear how these are going to be achieved as there is no evidence of the calculations that can drive that outcome. Updated and complete modelling should be undertaken to redefine realistic targets.

4 Operability and Capacity

- 4.1 The documentation that HWL provided outlines the projected operational performance parameters and associated capacity thresholds underpinning the proposed development. The main infrastructure components for a high-level capacity assessment are described below.
- 4.2 **Runway capacity:** HWL estimates that the implementation of a third runway – measuring 2,800 metres in length and located 1,035 metres from the existing Northern Runway – will facilitate independent operations in line with international safety protocols. This configuration, according to HWL, is expected to accommodate up to 260,000 additional air traffic movements (ATMs) annually. In the November 2025 submission to the DfT, HWL increases the capacity estimates to 289,420 ATMs per annum (assuming the existing cap on the two runways of 480,000 ATMs per annum), or 769,420 ATMs per annum for the total runway system.
- 4.3 **Stand capacity:** The documentation identifies a static requirement of 52 NBE aircraft parking stands surrounding T6, plus additional 34 NBE stands in the northern remote apron. However, it does not include a dynamic analysis of stand capacity, nor does it provide insights on how stand availability may fluctuate under varying operational conditions, peak demand periods, or different aircraft mix scenarios.
- 4.4 **Passenger terminal capacity:** The proposed Terminal 6, comprising T6A and T6B, with a total GFA of 440,000 square metres, is expected to accommodate 40 mppa, according to HWL; 25 mppa at T6A and 15 mppa at T6B.

Capacity phasing

- 4.5 HWL’s proposal outlines a staged development strategy aimed at progressively increasing Heathrow’s passenger and aircraft handling capacity while maintaining operational continuity throughout the construction period. The phasing plan supports the long-term transition to a three-runway system and aims to optimise hub performance.
- 4.6 By 2035, Heathrow Airport is projected to accommodate approximately 85 mppa and 740,000 ATMs. At this stage, HWL assumes that the three runways will be fully operational. Terminal infrastructure will comprise current operations at Terminal 2 (including terminals T2A and T2B), Terminal 3, Terminal 4, and Terminal 5 (including terminals T5A, T5B and T5C). T6A is scheduled for early 2036, marking its integration into the West Terminal Campus.

- 4.7 Between 2036 and 2040, Heathrow’s passenger handling capacity is projected to increase from 110 mppa to 135 mppa, while ATMs remain stable at 740,000. This growth is primarily driven by the full activation of Terminal 6, with T6A contributing an initial 25 mppa and T6B entering operational service in early 2040 and adding a further 15 mppa capacity.
- 4.8 From 2040 onward, HWL expect that Heathrow will reach its full design capacity of 135 mppa and 740,000 ATMs, supported by the complete deployment of terminal infrastructure and satellite buildings.

Capacity analysis

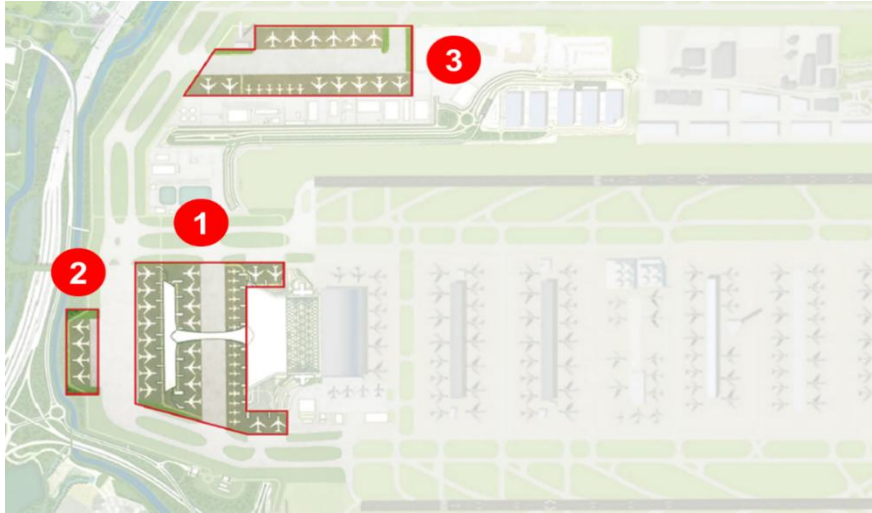
- 4.9 An airport’s runway capacity is measured using several methods and factoring multiple variables, including meteorological data, aircraft type, obstacles, noise or other restrictions. In absence of this information, we can only undertake a high-level assessment for the annual air traffic movements (ATMs).
- 4.10 Heathrow operates under an annual ATMs cap of 480,000 that was imposed to mitigate the noise impact in the surrounding community. This annual cap implies that Heathrow only reaches a maximum of 92 ATMs per hour⁵ for the two-runway system, has a night curfew, and operates in segregated mode (i.e. arrivals and departures operate from different runways) for most of the operating hours. As an example, Gatwick Airport operates with one runway and reaches 55 ATMs per hour⁶, which implies 20% more operations than each of the runways at Heathrow.
- 4.11 With the current two-runway system, Heathrow could reach 528,000 ATMs per annum if there was no cap. This is assuming less than 50 ATMs per hour per runway (or 100 ATMs per hour for the runway system).
- 4.12 The addition of a third runway could theoretically provide a capacity of 792,000 ATMs per annum (or 312,000 additional ATMs per annum), assuming that the new runway is capable of operating independently from the existing runways and could accommodate all types of aircraft.
- 4.13 HWL’s latest capacity estimations indicate that the three-runway system, including a 2,800 metres runway, could handle 769,420 ATMs per annum. They claim that the shorter length of the new runway penalises the annual throughput in 5,110 ATMs, which implies that the “unconstrained” capacity would be 774,530 ATMs per annum. This number is just 2% different from our own estimations.
- 4.14 The calculation of the number of ATMs per annum that a shorter runway will have in the context of Heathrow Airport requires a long-term forecast of the flight schedules indicating the arriving and departing times of the flights, the type of aircraft, the destination, the terminal that the aircraft will be operating from, and noise respite restrictions.

⁵ [Heathrow Airport Limited](#)

⁶ [TR020005-001850-10.7 Capacity and Operations Summary Paper.pdf](#)

- 4.15 To accommodate the projected increase in demand, HWL’s proposal includes three distinct aircraft parking stand areas across the west part of the airport, as illustrated in the figure below.

Figure 4.1: HWL’s proposed aprons



Source: HWL July 2025 Expansion Proposal, p. 5-10

- 4.16 **Apron Location 1:** This apron zone comprises pier-served stands (i.e. contact stands) located adjacent to the terminals T6A and T6B, totalling 46 stands in the Maximum Code C configuration and 36 stands in both Code E and Code F configurations.
- 4.17 **Apron Location 2:** Located west of the new north-south taxiway and T6B, these remote stands are designed to absorb overflow demand and support flexible aircraft scheduling. HWL proposes a total of 6 remote stands, all used in the Maximum Code C configuration. In the Maximum Code E and Code F configurations, 4 of these are reconfigured for wide-body aircraft.
- 4.18 **Apron Location 3:** Located north of the West Terminal Campus, this apron area is designated for non-active remote stands used for long-term parking, overnight stays, or irregular operations. This apron includes 34 remote stands for Code C aircraft in the Maximum Code C configuration, and 17 stands for Code E aircraft in the Maximum Code E configuration. All are configured as MARS positions, allowing flexible combinations for Code C and Code E aircraft.
- 4.19 The high-level data used to assess aircraft stand requirements for the proposed expansion is presented in the table below. A simplified calculation has been undertaken to estimate the number of passengers utilising aircraft parking stands in 2025, and to evaluate the stand provision proposed by HWL using the Narrow Body Equivalent (NBE) methodology. For this analysis, we have only considered Apron 1 and Apron 2, as these areas are designated to accommodate the operational demand generated by Terminal 6.
- 4.20 Apron 3, while included in the overall masterplan, is primarily intended for overnight stays, long-term parking, and non-passenger operations, and has therefore been excluded from this analysis. The resulting stand demand

calculation reflects the active apron areas directly supporting passenger throughput and provides a basis for evaluating whether the proposed number and type of stands are sufficient to meet the forecasted terminal capacity of 40 mppa.

- 4.21 A capacity assessment of aircraft parking stands, based on Heathrow’s current infrastructure and performance and the projected capacity for the T6 complex, is presented below.

Table 4.1: Aircraft parking stand capacity

	T2A/B (2025)	T3 (2025)	T4 (2025)	T5A/B/C (2025)	Total (2025)	T6 Aprons 1,2	T6 Aprons 1,2,3
Narrow Body (NB) stands	8	4	4	19	35	52	86
Wide Body (WB) stands	16	27	29	42	114	0	0
MARS (2NB or 1WB) stands	15	4	2	7	28	0	0
Maximum number of stands	54	39	37	75	205	52	86
Passengers (mppa)	20	19.5	9	33.5	82	40	40
mppa per Maximum number of stands	0.37	0.50	0.24	0.45	0.40	0.77	0.47

Source: HWL, Steer

- 4.22 An assessment of terminal capacity has also been conducted through a high-level analysis of the forecasted processing capacity of T6A plus T6B, as disclosed by HWL. The analysis concludes that the proponent implicitly assumes a capacity ratio of 11,000 square metres per million passengers.
- 4.23 Our feasibility assessment of the operability and capacity option that HWL put forward in their 2025 proposal is summarised in the box below:

Runway capacity: HWL has stated that the addition of a 2,800-metre runway is anticipated to enable a total airport capacity of 769,420 air traffic movements (ATMs) per year. However, no supporting information has been provided regarding the aircraft fleet mix or operational procedures used to derive this estimate. At a high level, this capacity does not appear achievable because it is equivalent to a three-runway system without restrictions. The penalisation for having a runway that is not capable of accommodating all flights needs to be properly assessed using future flight schedules. A more detailed assessment should be undertaken to evaluate the system’s capacity balance, taking into consideration key factors such as meteorological conditions, aircraft types, airspace limitations, operational restrictions, and airfield congestion. We cannot confirm that the proposed runway design can accommodate the capacity that HWL claims.

Aircraft parking stand capacity: HWL’s proposal does not include a thorough justification for the proposed number of stands, as it lacks supporting analysis to demonstrate how the stand capacity corresponds with the forecasted air

traffic movements and aircraft fleet composition. The calculated implied capacity ratio of 0.77 mppa per stand is 54% higher than the maximum performance that Heathrow is achieving nowadays at a terminal level, and 93% higher than the average performance of the airport. With the addition of Apron 3 for day operations, the ratio moves to 0.47 mppa per stand, which is still higher than the current performance and would require an adjustment to factor for the lower efficiency of remote stands. This suggests that additional aircraft parking stand capacity – and potentially more land – may be required to accommodate the projected growth in demand.

The intended use of Apron 3 for overnight aircraft parking or other functions may need to be reconsidered and adapted to serve as remote boarding stands supporting Terminal 6 operations. It is uncertain how passengers would access this apron, as no airside tunnels have been identified in HWL's scheme to connect the West Terminal Campus with Apron 3.

We recommended that the proposal includes an assessment of dynamic stand capacity. This should account for variations in aircraft types, turnaround durations, and scheduling patterns throughout the operational day. The analysis should be based on an indicative flight schedule, incorporating peak hour distributions, aircraft size classifications, and operational factors such as towing requirements and the use of remote stands. Such an assessment would also support the validation of apron layout efficiency and confirm that the proposed infrastructure can accommodate the forecasted demand under both typical and peak operating conditions.

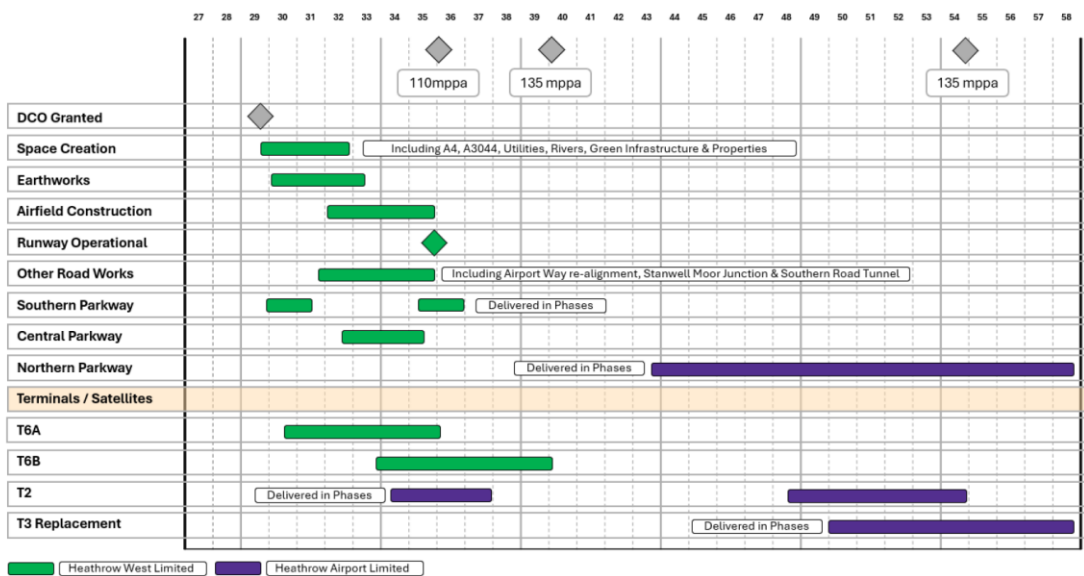
Terminal capacity: The calculation of the high-level capacity ratio of 11,000 square metres per million passengers suggests an adequate level of terminal space for new terminal complex. However, the proposed HWL's plan should provide peak-hour and busy-hour passenger forecasts alongside the capacity sizing of each of the terminal processing areas.

5 Expected timelines and Deliverability

Overall timelines

- 5.1 HWL’s proposal outlines a single timeline which considers key activities commencing in January 2026, and concluding in 2058, a period of 33 years. The timeline includes a milestone for the new runway operation to commence which is shown to be planned for the end of Q4 2035, which is a period of just under 10 years from the commencement of initial activities. The initial activities relate to the works related to get to the DCO approval which is estimated to be obtained by July 2029.
- 5.2 The following figure is provided within HWL’s proposal to outline the overall construction timeline and key activities and milestones for the construction activities for the full expansion of Heathrow Airport, including those works to be undertaken by HWL in relation to the new runway and those expected to be undertaken by HAL in relation to the existing infrastructure. HWL proposed infrastructure developments take place between 2029 and 2040.

Figure 5.1: Estimated construction timeline

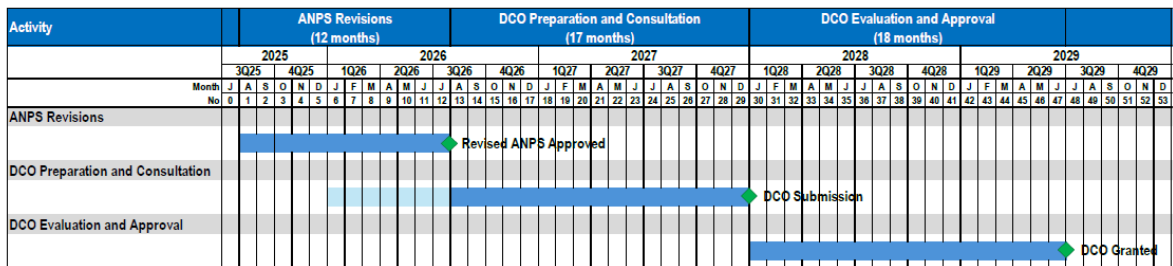


Source: HWL July 2025 Expansion Proposal, p. 6-3

Development Consent Order and Statutory consultation

- 5.3 HWL’s timeline for the Development Consent Order (DCO) process follows the steps outlined in the “The process for Nationally Significant Infrastructure Projects (NSIPs)” with a consultation period in advance of the DCO submission. The DCO process will require further design work to be undertaken prior to the consultation period, and HWL consider this to commence in January 2026 and last for 24 months alongside the DCO consultation up to the DCO submission.
- 5.4 The consultation period has been outlined to commence in Q3 2026 and conclude with the DCO submission at the end of 2027.
- 5.5 The consultation period commencement is linked directly to the Airport National Policy Statement (ANPS) revision approval which is estimated from the start in Q3 2025 and conclude in Q3 2026.
- 5.6 The DCO evaluation and approval period commences in Q1 2028, with an 18-month duration concluding with the DCO being granted in July 2029.
- 5.7 Based on the HWL timeline, DCO approval would take three years to be obtained from the point in which the revised ANPS is approved.

Figure 5.2: Indicative timeline to meet Government’s target DCO approval date



Source: HWL July 2025 Expansion Proposal, p. 6-13

Construction timeline

- 5.8 The construction works are outlined to commence in Q3 2029 with an overall period of more than six years considered for the runway to be operational, targeting the end of 2035. This period includes time allowance for space creation, earthworks and operational readiness (commonly known as ORAT, Operational Readiness and Transfer).
- 5.9 The estimated construction works durations are summarised in the table below.

Table 5.1: Construction works timeline

	Duration	Dates
New runway (including space creation, earthworks and ORAT)	75 months	Oct 2029 – Dec 2035
T6A (including ORAT)	69 months	May 2030 – Jan 2036

	Duration	Dates
T6B (including ORAT)	75 months	Nov 2033 – Jan 2040
Southern Parkway Phase 1	20 months	Dec 2029 – Jul 2031
Central Parkway	37 months	Jul 2032 – Aug 2035
Southern Parkway Phase 2	20 months	Jun 2035 – Jan 2037

Source: HWL

Deliverability

- 5.10 The construction timeline presented as part of the HWL proposal considers the breakdown of activities into three main groups:
- **“Space Creation”** which is assumed to include enabling works / earthwork elements including the relocation of the M4 Spur.
 - **“Airfield Construction”** which includes the construction of the third runway, taxiways; and
 - **“Terminals Satellites”** which focuses on works related to the terminal buildings.
- 5.11 The construction activities commencement is linked directly to the DCO approval, and no construction activities are proposed in advance of this milestone.
- 5.12 Overlaps and high-level sequencing of works for the various construction activities are considered, as well as phasing of the works.
- 5.13 Our assessment of the expected timelines and deliverability is summarised in the box below:

Baseline: HWL’s proposal for the Heathrow Expansion has been developed using a Q3 2025 baseline. This milestone has not commenced at the time of writing this report, hence the risk of not achieving the 2035 target date for the new runway opening without an additional optimisation of the plan.

Overall timeline: The DCO approval is assumed to be granted in mid-2029. The construction timeline for the completion of the runway has a duration of more than six years. The construction works are planned to commence only after the DCO has been approved (July 2029), and this suggest that any delays during this process would have an impact on the target delivery date. The overall duration of the programme starting in August 2025 and finishing in December 2035 with the opening of the new runway is 125 months.

Design development: HWL’s proposal does not provide information on design activities to develop an updated scheme aside from a 7-month period prior to the DCO preparation and consultation commencement. We assess that this period will need to be increased based on the degree of development of the current proposal. If the revised ANPS includes a very different scheme than the proposed one, the work required for the new design will also take longer. We

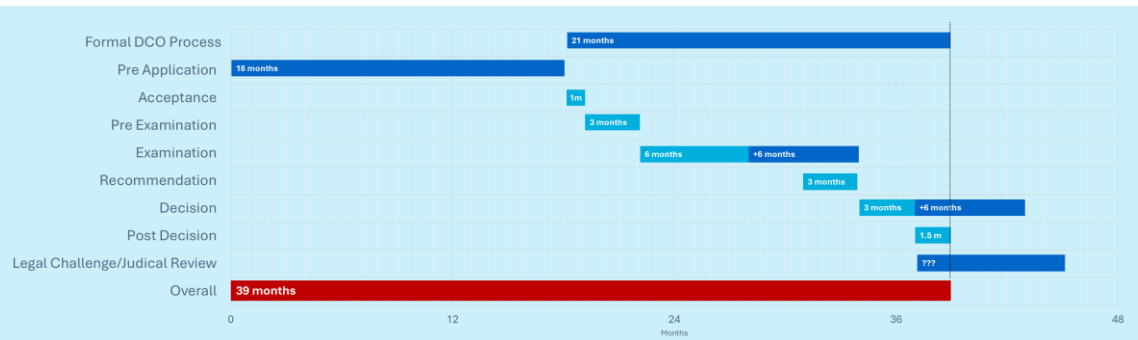
assume that the detail design work will be undertaken in parallel to the DCO Evaluation and Approval process.

Timeline structure and critical path: HWL’s timeline implies that the key sequence of activities for a critical path is: (1) revised ANPS approval, (2) DCO approval, and (3) commencement of construction works. The details on the sequence, timing and durations of key activities such as compulsory purchase orders, M4 Spur diversion and impacts on wider utilities diversions have not been included in the documentation, making it difficult to ascertain key risks that may impact the deliverability of the project.

Revised ANPS: On 22 October 2025, the Government advised that it had launched a review of the ANPS and committed to publish a revised ANPS by the end of 2026 with consultation on amendments by July 2026. This date is six months later than the one envisaged by HWL, which implies that the overall timeline would need to be delayed by six months. In the same announcement, the Government made commitments to shorten the approval processes to enable a shorter development programme for the expansion of Heathrow. We have not factored these potential reductions in timescales in our analysis.

DCO process: The assumed durations of the DCO process aligns with the periods set out in the UK Government’s guidance for Nationally Significant Infrastructure Projects (NSIPs) – typically 15-18 months for the main examination and decision stage (i.e. after the submission of the DCO). The HWL DCO timeline is from Q3 2026 to Q3 2029 (35 months) and includes an evaluation and approval period of 18 months. HWL’s time allowance to obtain the DCO approval is aligned with the Government’s guidance, however we recommend that an additional time allowance should be considered for this critical phase of the programme. Experience from recent comparable projects suggests that longer durations are more likely. For example, the Luton Airport DCO took around 28 months to complete, which is significantly above the 18-month time allowance. Given the complexity of Heathrow’s expansion plan, a longer duration than 18 months would be a more plausible assumption.

We provide below an estimation for Heathrow’s expansion DCO process, starting from the Pre Application stage (or Preparation and Consultation) and ending with the Post Decision milestone (or Approval granted). We estimate the overall duration in 39 months (18 months for the Pre-Application stage and 21 months for formal DCO process), reflecting more realistic timeframes for each stage based on recent experience. This compares with the 35 months that are assumed by HWL. Although we note that HWL contemplates 7 additional months for preparation work before the revised ANPS is approved, we assess that this work cannot be accounted for Pre-Application stage.



Source: Steer

Compulsory purchases: The construction works are envisaged to commence immediately after the DCO is approved, however time allowance for compulsory purchases of land has not been identified. The time required for compulsory purchases will likely impact the sequence of the “space creation” activities and will probably have an impact on the overall programme duration. This increases the risk for the delivery, with specific delays to land acquisition, which might potentially have a significant impact on enabling and construction works.

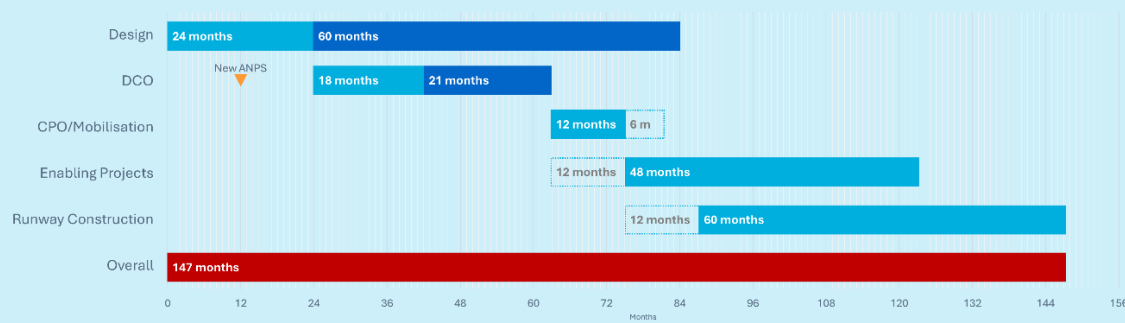
Construction: Benchmarking against comparable aviation infrastructure projects indicates that the duration of key work packages in HWL’s proposal are reasonable. In particular, the construction of Dublin Airport’s North Runway took approximately three years (2019-2022), hence the four-year time allowance (including operational readiness but excluding space creation and earthworks) provided in HWL’s proposal for the construction of the new runway provides some potential headroom. The new T6A terminal construction is estimated to last for 5.5 years, and the T6B for 6 years, which are similar construction durations to Heathrow’s Terminal 2 (2009-2014).

Operational readiness: The current schedule includes provisions for the operational readiness of the new runway and the other major infrastructure developments (e.g. terminals, car parks). We are aligned with the twelve months that are allocated for ensuring a safe and coordinated activation of the new runway, including interfaces with air traffic control and existing airfield operations. We assess the time included for the operational readiness of the terminal buildings could be slightly shortened.

Supply chain capacity: The overlap between Heathrow expansion and other major infrastructure programmes, notably HS2 (expected completion in 2033), is likely to place additional pressure on the UK construction market. Competing demand for specialist labour, materials, and equipment could increase costs and extend procurement lead times. Early engagement with the supply chain would be necessary to test delivery assumptions and develop mitigation measures.

Proposed timeline: A detailed timeline has not been presented at this stage by HWL, however key activities and dates are highlighted, to form the basis of their proposal. To test the robustness of HWL’s assumptions, we undertook a high-

level assessment to incorporate some of the above technical observations, including additional design time, and allowances for compulsory purchase order (CPO) negotiations. The resulting timeline is presented below and shows a total duration of 147 months (12 years and 3 months) up to the opening of the new runway. This is an increase of 27 months from the 120 months outlined in the HWL timeline for the runway opening.



Source: Steer

Considering that the new ANPS will be published in December 2026 (as stated by the Government), the opening of the new runway by the Government’s target of December 2035 is ambitious. Steer’s independent estimations of the work that HWL would need to undertake, including land acquisition and further design works, suggests that it is possible that the opening of the third runway could happen at a later date, potentially by March 2038.

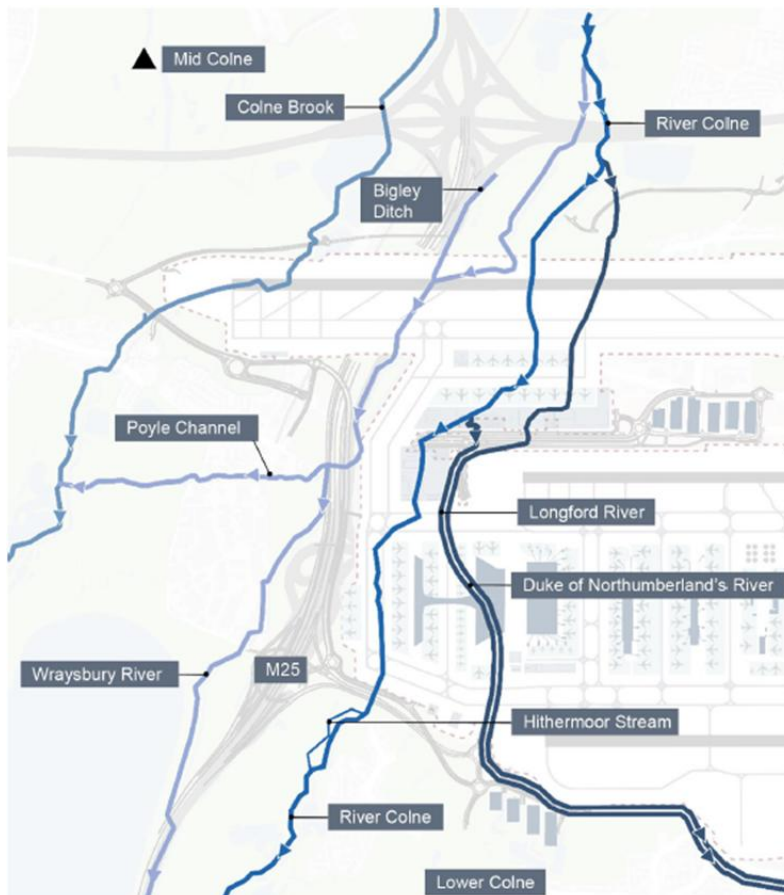
6 Sustainability

Direct and indirect impacts

During construction

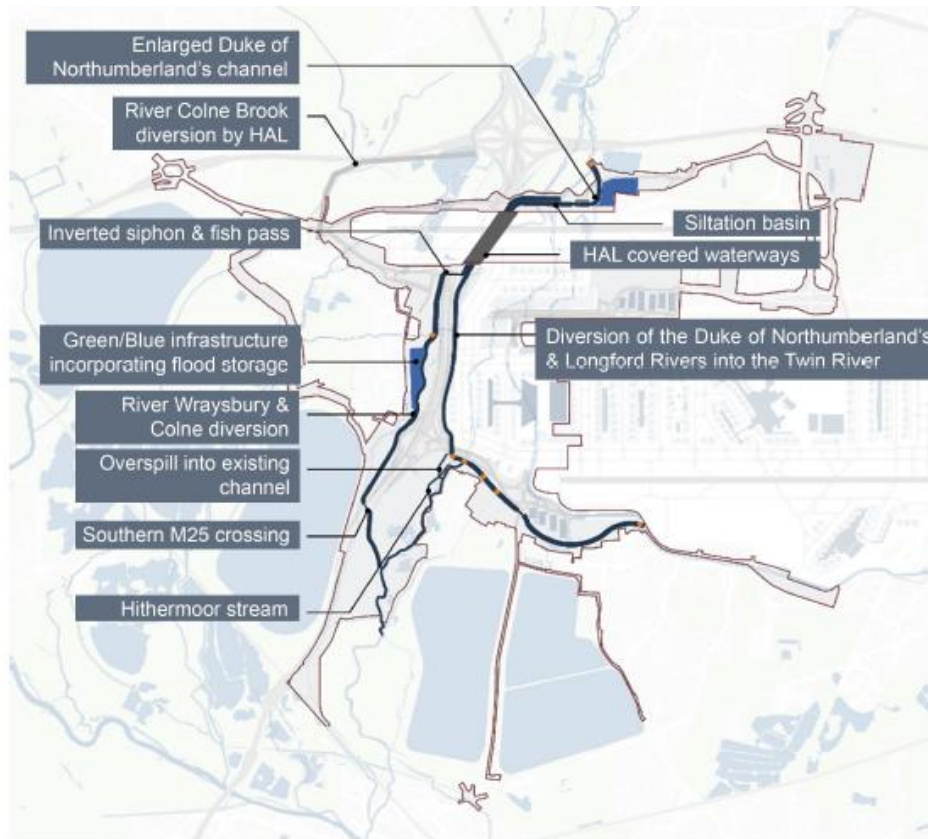
- 6.1 Concerning direct impacts, HWL’s proposal requires significant land clearance, including the diversion of four rivers (Colne, Wraysbury, Bigley Ditch and Duke of Northumberland’s River) and the removal of existing infrastructure. These works will temporarily affect local ecosystems and Green Belt land. To mitigate these effects, HWL has included in their plans measures such as river restoration, creation of naturalised channels, and the development of green infrastructure buffers. The figures below illustrate the current rivers in the affected area and the proposed river diversions.

Figure 6.1: Existing rivers within Heathrow West Development Area



Source: HWL July 2025 Expansion Proposal, p. 5-21

Figure 6.2: Summary of river diversion solution



Source: HWL July 2025 Expansion Proposal, p. 5-29

- 6.2 River diversions present risks to hydrology and flood resilience. HWL’s strategy incorporates additional flood storage, climate change allowances and ecological enhancements to maintain water quality and biodiversity.
- 6.3 All hydraulic structures are designed to accommodate flood events with a 1% Annual Exceedance Probability (AEP), including allowances for climate change, in line with Environment Agency guidance. The design ensures fish passage, mitigates bird strike risk through targeted netting (especially along the Twin River), and maintains downstream flow regimes under dry weather conditions.
- 6.4 Elevated noise levels from heavy machinery and construction traffic will affect nearby communities, including Colnbrook and Stanwell Moor. HWL’s Code of Construction Practice includes noise barriers, restricted working hours, and continuous monitoring to reduce disturbance.
- 6.5 Construction activities will also generate dust and particulate matter, while heavy goods vehicle movements could increase NO₂ and PM levels. HWL plans to minimise these impacts through a temporary railhead, designed to transport up to 80% of bulk materials by rail, reducing reliance on road transport.
- 6.6 The construction phase will result in substantial embodied carbon emissions. HWL proposes mitigation through modular construction, off-site fabrication, low-carbon materials, and prioritisation of rail over road logistics.

During operation

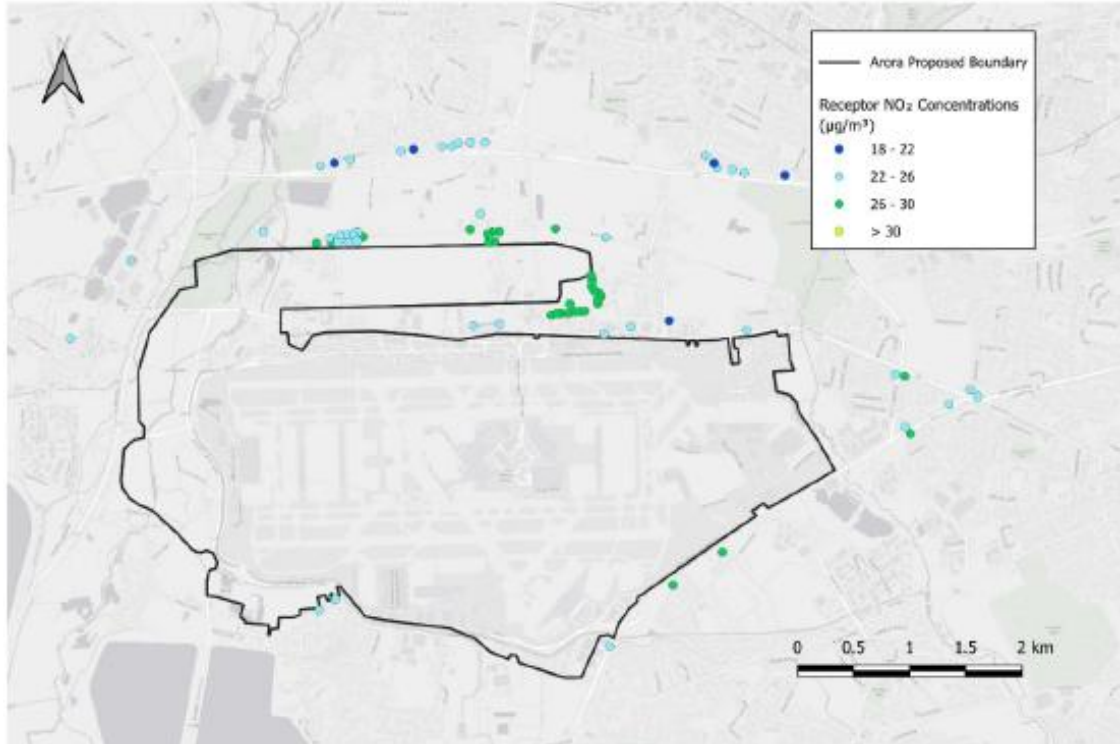
- 6.7 Regarding direct impact during operation, increased aircraft movements and associated ground operations will elevate NO₂ and particulate emissions. HWL’s modelling shows that NO₂ levels will remain below legal thresholds at all human health receptors. Road traffic emissions remain a concern, although HWL’s Surface Access Strategy targets a 55% public transport mode share by 2040, supported by the new Public Transport Hub.
- 6.8 Additional runway operations will increase airborne noise exposure, though HWL anticipates compliance with current or tighter limits due to quieter aircraft and redesigned airspace. Ground noise will be mitigated through efficient taxiway layouts and fixed electrical ground power to reduce auxiliary engine use.
- 6.9 Despite mitigation measures, such as net-zero energy buildings, renewable energy systems, and infrastructure for sustainable aviation fuels, the project will have a major adverse impact on UK carbon budgets, consistent with the 2018 Airports National Policy Statement (ANPS) findings.
- 6.10 Regarding indirect impacts, according to HWL’s proposal, approximately 260 homes will be affected east of the proposed new runway. HWL plans compensation schemes, a Legacy Housing Fund and enhanced green buffers to reduce social disruption. New public parks and cycle routes aim to offset community severance.

Air and noise pollution

- 6.11 HWL identifies air quality and noise as critical environmental constraints that must be addressed in parallel with operational and economic objectives. Both factors are considered essential to ensure compliance with national and international environmental standards.
- 6.12 The air pollution assessment within HWL’s proposal evaluates the potential impacts of the expansion project on both human receptors (residents and workers in the vicinity of the airport) and ecological receptors (sensitive habitats and species). The pollutants of primary concern for human health are nitrogen dioxide (NO₂) and particulate matter (PM), while for ecological receptors, the focus is on oxides of nitrogen (NO_x) and nitrogen deposition, which can adversely affect vegetation.
- 6.13 HWL identifies several activities associated with the proposed development that could influence air quality:
- Construction-related emissions (dust, machinery, vehicle movements);
 - Increased aircraft operations; and
 - Increased surface traffic during the operational phase.
- 6.14 Historical data from Heathrow indicates that road traffic is the dominant contributor to air pollution at receptor locations outside the airport boundary. To support its assessment, HWL commissioned Cambridge Environmental Research Consultants (CERC) in 2017 to conduct an air quality analysis. This study used the

AMEC 2014 air quality assessment for HAL’s 2019 Preferred Masterplan as a baseline. CERC’s analysis estimated changes in annual average NO₂ concentrations resulting from HWL’s proposed modifications to HAL’s masterplan. Importantly, the analysis concluded that these modifications did not result in exceedances of the legal limit of 40 µg/m³ for annual average NO₂ concentrations at locations of relevant exposure.

Figure 6.3: Estimated 2030 average annual NO₂ concentrations



Source : HWL July 2025 Expansion Proposal, p. 10-5

- 6.15 HWL also commissioned a sensitivity analysis to compare its proposal with HAL’s 2019 Masterplan. This analysis, aligned with the 2018 EIA Scoping Report, considered both operational and construction phase impacts on human health and ecological receptors. The analysis concluded that:
- Operational human health impacts are expected to be similar to those of HAL’s proposal;
 - Construction phase impacts are likely to be lower for HWL’s proposal due to a reduced construction footprint and avoidance of major roadworks (e.g. M25 realignment); and
 - Ecological impacts during both phases may be less severe under HWL’s proposal, particularly for designated sites such as the Southwest London Waterbodies SPA and Ramsar site, which benefit from the absence of nearby road realignments.
- 6.16 The proposal outlines a comprehensive set of mitigation strategies aimed at reducing air pollution impacts during both construction and operation. These measures are embedded within the design and planning framework of the project

and reflect best practice in environmental management, stakeholder engagement and regulatory compliance.

- 6.17 A key component of the mitigation strategy is HWL’s Surface Access Strategy (SAS), which is designed to reduce reliance on private vehicles and promote sustainable transport modes.
- 6.18 The SAS includes the following measures:
- **Rail Strategy:** HWL proposes to enhance the attractiveness of rail travel by integrating smart ticketing systems and promoting rail ticket options through airline websites and mobile applications. This aims to shift passenger behaviour towards lower-emission transport modes.
 - **Active Travel Infrastructure:** The development includes new cycling routes connecting the West Terminal Campus, along with dedicated cycle parking, pedestrian footways and crossings. Initiatives such as walking and cycling buddy schemes and the promotion of the Cycle to Work Scheme are intended to encourage active commuting among airport staff and passengers.
 - **Car Parking Strategy:** HWL will implement a need-based parking system with capped capacity and differentiated access charges. The consolidation of airport car parking facilities is intended to reduce land take and discourage unnecessary car use.
 - **Travel Planning:** Employers and staff will be encouraged to adopt personal travel plans that prioritise sustainable transport options. This measure supports behavioural change and complements infrastructure improvements.
 - **Taxi and Private Hire Vehicle Strategy:** HWL plans to consolidate taxi feeder parks and Authorised Vehicle Areas (AVAs) and to match drop-offs with pick-ups to reduce empty vehicle trips. Incentives such as reduced fares may be offered to passengers who opt for shared or low-emission transport services.
- 6.19 In addition to these SAS-related measures, HWL has included further mitigation into the project design, as summarised below:
- The terminal layout avoids the need for remote satellite buildings, thereby reducing internal transport distances and associated emissions.
 - HWL commits to operating a fully electric airside vehicle fleet by 2035.
 - Fuel infrastructure will be designed to accommodate the distribution of Sustainable Aviation Fuels (SAFs), which offer significantly lower lifecycle greenhouse gas emissions compared to conventional jet fuels.
 - A Code of Construction Practice will be implemented to manage and mitigate air quality impacts during the construction phase, including dust suppression and emissions control.
 - A dedicated freight strategy will minimise vehicular trips to the terminals and promote the use of electric vehicles between the proposed consolidation centre and terminal facilities.
- 6.20 Regarding the noise assessment, HWL’s proposal addresses both the construction and operational phases of the expansion, focusing on the potential impacts of noise on the surrounding communities and sensitive receptors. The

assessment is based on preliminary modelling and expert consultancy input, and it aligns with UK Aviation Noise Policy, which aims to avoid significant adverse effects on health and quality of life. The analysis considers multiple sources of noise, including the following:

- Airborne aircraft noise (during take-off and landing);
- Ground-based aircraft noise (taxiing, engine run-up);
- Road traffic noise (from local and strategic networks);
- Railway noise; and
- Noise from industrial, leisure and commercial activities.

6.21 HWL commissioned Bickerdike Allen Partners consultants to undertake an initial appraisal of the noise effects of an option for the new runway. Specialist noise modelling software was used to simulate operational noise levels⁷. A comprehensive noise survey is planned to validate and refine the models. This survey will include monitoring at various sensitive receptors within the study area.

6.22 Construction activities are expected to generate noise impacts, particularly in residential areas such as Colnbrook, Stanwell Moor, and Longford. These effects are anticipated to be mitigated through the following initiatives:

- A Code of Construction Practice, which will include noise control measures;
- Site-specific noise controls and operational restrictions; and
- Property policies offering compensation and insulation, where appropriate.

6.23 The operational phase will introduce new noise sources associated with increased aircraft movements and expanded infrastructure. Preliminary modelling indicates that:

- Airborne aircraft noise levels will be similar to those predicted for HAL's 2019 Preferred Masterplan, given comparable traffic volumes;
- The area of exposure (based on LAeq,16h) is estimated to be between 101–111 km² by 2050, consistent across both schemes;
- Differences in noise levels between HWL proposal and HAL 2019 Preferred Masterplan are minor and generally not perceptible;
- Noise increases to the east of the airport (e.g. Osterley Park, Brentford) are expected to be small (typically <1 dB);
- Noise reductions to the west (e.g. north of Datchet) are also modest, with some areas experiencing up to 3 dB reductions; and
- The population exposed to noise levels above 57 dB LAeq,16h is approximately 3% higher under HWL's proposal compared to HAL's.

6.24 HWL proposes a range of embedded mitigation strategies to manage noise impacts:

- Optimised taxiway design to reduce taxi times and associated ground noise emissions;

⁷ Noise from individual aircraft movements (e.g. Airbus A320neo, Boeing 777) was modelled using FAA's AEDT software, with route assumptions based on 2015 Airports Commission methodology.

- Retention of the A4 road alignment, minimising traffic noise near sensitive receptors;
 - Landscaping and green infrastructure, including bunds and acoustic barriers, to provide passive noise attenuation;
 - Strategic road design to maximise separation between traffic corridors and residential areas;
 - Noise insulation and compensation policies for affected properties, to be developed in consultation with stakeholders;
- 6.25 To further address noise impacts, HWL commits to conduct a comprehensive noise survey across sensitive receptors, to update noise models with refined data for both construction and operational phases, to assess construction traffic noise and vibration, to evaluate potential health effects associated with noise exposure, to collaborate with stakeholders such as the Heathrow Strategic Planning Group (HSPG) and Public Health England to refine mitigation strategies, and to update the Code of Construction Practice to include detailed noise control measures.

Carbon emissions

- 6.26 HWL’s proposal addresses carbon emissions within the framework of the UK’s legal obligations under the Climate Change Act 2008, including the 2050 Net-Zero target. HWL presents a Sustainability Strategy that integrates carbon mitigation across the full lifecycle of the proposed development, from construction through operation.
- 6.27 The proposal is underpinned by a Sustainability Strategy that aims to deliver net-zero carbon emissions from all buildings within the Heathrow West development. This strategy is structured around minimising energy demand, eliminating fossil fuel combustion, and maximising the use of renewable and low-carbon technologies. HWL’s design philosophy is informed by climate change projections extending to the year 2100 and ensuring that infrastructure is resilient to future energy loads and environmental conditions.
- 6.28 A central component of the strategy is the proposed centralised energy centre, which will operate exclusively on grid-supplied electricity. This approach leverages the ongoing decarbonisation of the UK’s energy grid and removes reliance on fossil fuels. The energy centre will incorporate scalable and adaptable systems, including renewable heat pump technologies such as groundwater and air source heat pumps. These systems are designed to provide efficient, low-emission heating and cooling across the terminal campus.
- 6.29 Architectural and engineering design measures further support HWL’s decarbonisation objectives. The use of advanced active façades, including high-performance double and triple glazing, will optimise natural daylight and thermal performance, reducing the need for artificial lighting and mechanical heating. Building Energy Management Systems (BEMS) will be deployed to monitor and optimise energy use in real time and heat recovery systems will be integrated to reduce operational energy consumption.

- 6.30 In terms of construction-phase emissions, HWL proposes a series of mitigation measures aimed at reducing embodied carbon. These include the use of low-carbon construction materials sourced locally, the prioritisation of rail transport for bulk materials via a temporary railhead north of Staines Moor (expected to handle up to 80% of deliveries), and the implementation of greywater and rainwater harvesting systems to reduce water-related energy demand. A Code of Construction Practice will be adopted to manage emissions from construction plant and vehicles, ensuring compliance with best practice standards.
- 6.31 Operationally, HWL commits to full electrification of airside vehicle fleets by 2035 and the installation of infrastructure to support the distribution and use of Sustainable Aviation Fuels (SAFs). Aircraft parking stands will be equipped with fixed electrical ground power systems, allowing aircraft to shut down auxiliary power units and, thereby, reduce localised emissions.
- 6.32 Despite these extensive mitigation efforts, HWL acknowledges that the expansion will result in a major adverse impact in terms of carbon and greenhouse gas emissions, particularly due to increased aircraft movements. This conclusion aligns with the Appraisal of Sustainability undertaken for the 2018 Airports National Policy Statement (ANPS), which similarly found that expanding Heathrow would significantly affect the UK's carbon budget.
- 6.33 Further work is planned by HWL to quantify emissions from all construction activities, incorporate emissions from aircraft operations on the new runway and assess the compatibility of the proposal with the UK's 2050 carbon reduction targets.

Impacts on the community health, wellbeing and quality of life

- 6.34 HWL's proposal acknowledges the complex and multifaceted nature of community impacts arising from large-scale infrastructure development. HWL adopts a structured and evidence-based approach to assess how its proposed development may affect the health, wellbeing, and quality of life of residents in the surrounding areas, both during construction and operation.
- 6.35 The assessment is embedded within the Preliminary Environmental Information Report (PEIR) and draws upon multiple environmental disciplines, including air quality, noise, biodiversity, and water. These factors are recognised as key determinants of public health and are evaluated in an integrated manner to understand cumulative and synergistic effects.
- 6.36 To ensure spatial relevance and analytical rigour, HWL defines six distinct study areas, including a Primary Impact Inner Study Area (for direct effects), a Cumulative Effects Inner Study Area and a Core Study Area encompassing the 11 local authorities most affected by Heathrow's current and future operations. Additional regional and national context areas are also considered to capture broader socio-economic and environmental dynamics.

- 6.37 The proposal aligns with the 2018 Airports National Policy Statement (ANPS), which mandates that expansion must be accompanied by a robust package of measures to mitigate environmental and community impacts. HWL references specific ANPS provisions that call for job creation, compensation for displaced residents, noise insulation, and investment in the community. These policy requirements are reflected in HWL’s mitigation strategy.
- 6.38 Mitigation measures are designed to avoid or minimise adverse impacts wherever possible. Where avoidance is not feasible, HWL proposes compensation mechanisms, including financial support and tailored property policies. Health, wellbeing and quality of life considerations have been central to the development of these measures. Key mitigation measures include:
- A draft Temporary Workforce Accommodation Strategy, which aims to prevent disruption in local housing markets due to non-resident construction workers;
 - A Code of Construction Practice, which will address noise, dust, lighting and other environmental nuisances during construction;
 - A proposed Legacy Housing Fund, which HWL is willing to explore with stakeholders to support long-term community resilience; and
 - Property Policies to address both physical displacement and environmental degradation (e.g. increased noise exposure).
- 6.39 The proposal also incorporates equality and health impact assessments to ensure that vulnerable populations are not disproportionately affected.
- 6.40 In terms of next steps, HWL commits to further engagement with stakeholders, including the Heathrow Strategic Planning Group (HSPG) and Public Health England. The Environmental Statement will include updated baseline data, refined modelling and detailed analysis of likely significant effects, including those related to flight operations on the new runway.

Surface access

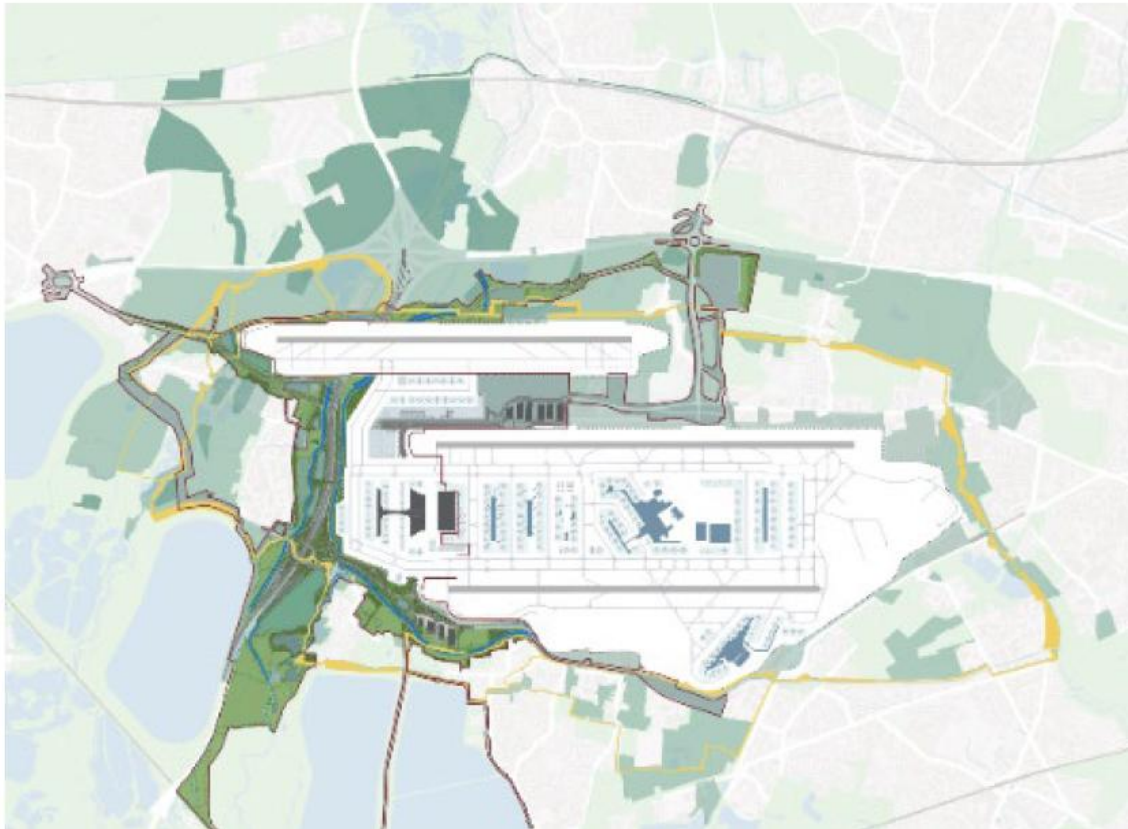
- 6.41 The HWL expansion proposal places significant emphasis on the environmental performance of its Surface Access Strategy (SAS), recognising that transport infrastructure is a key determinant of air quality, carbon emissions and community wellbeing. HWL’s SAS is designed to meet and exceed the modal share targets set out in the 2018 Airports National Policy Statement (ANPS), while minimising environmental impacts and enhancing accessibility for passengers, staff and local communities.
- 6.42 The ANPS sets specific targets for surface access: by 2030, at least 50% of passenger journeys to the airport should be made by public transport, increasing to 55% by 2040. Additionally, staff car trips should be reduced by 25% by 2030 and by 50% by 2040. HWL’s SAS is structured to deliver these outcomes through a combination of infrastructure design, behavioural incentives and integration with existing and future transport networks.
- 6.43 From an environmental perspective, the SAS is built around the principle of Public Transport First. The proposal includes a new multi-modal Public Transport Hub

located between Terminals 5 and 6, which will connect rail, London Underground, coach and bus services. This hub is designed to reduce reliance on private vehicles, thereby lowering emissions and improving air quality. The hub also incorporates inclusive design principles to ensure accessibility for all users, including those with reduced mobility.

- 6.44 HWL’s strategy also includes enhancements to active travel infrastructure. New cycling and walking routes are proposed, particularly along the diverted rivers and green corridors, which will serve both airport users and local residents. These routes are intended to provide safe, attractive alternatives to car travel and contribute to long-term reductions in transport-related emissions.
- 6.45 In terms of road infrastructure, HWL’s proposal seeks to minimise disruption and environmental harm by retaining the existing alignment of the A4 and avoiding major realignments of the M25. By limiting the scale of road construction, HWL reduces the risk of air quality deterioration and ecological disturbance, particularly in sensitive areas such as the southwest London Waterbodies Ramsar and SPA sites.
- 6.46 The car parking strategy is also environmentally optimised in HWL’s plans. HWL proposes strategic locations for new car parking facilities to intercept traffic early in the journey to the airport and minimise vehicle movements within the airport perimeter. Controlled Parking Zones (CPZs) and demand-based pricing mechanisms are planned to discourage unnecessary car use and manage local traffic impacts.
- 6.47 Futureproofing is another key element of HWL’s SAS. The proposal anticipates shifts in mobility patterns, including increased automation, reduced car ownership and the rise of Mobility as a Service (MaaS).
- 6.48 In its response to the SoS’s request for further information, submitted in November 2025, HWL provided additional information on traffic modelling to assess the baseline traffic flows surrounding Heathrow Airport. Between 2016 and 2025, traffic on the M25 has increased by 3.3% southbound and decreased by 10% northbound. On the M4 Spur, traffic is recorded to have decreased in both directions between 2016 and 2025.
- 6.49 This increase in traffic on the west of Heathrow Airport shows the increasing pressure the M25 currently faces. Further pressure on the M25 will be brought with the construction and operation of the new infrastructure on the West.

Green Infrastructure

- 6.50 HWL’s expansion proposal integrates green infrastructure as a central element of its environmental and design strategy. The approach reflects a commitment to ecological enhancement, climate resilience, and community wellbeing. The map below illustrates the Green infrastructure plan.

Figure 6.4: Green infrastructure plan

Source: HWL July 2025 Expansion Proposal, p. 5-30

- 6.51 HWL proposal outlines a landscape-led masterplan that incorporates a network of blue and green buffers, designed to mitigate environmental impacts and enhance biodiversity. These buffers include restored river corridors, native planting schemes, and multifunctional green spaces that serve ecological, recreational, and visual functions. The restoration of diverted rivers is a key feature, with HWL committing to work closely with the Environment Agency to ensure hydrological integrity and ecological connectivity.
- 6.52 Green infrastructure is also used to support noise and air quality mitigation, with vegetated bunds and tree planting acting as natural barriers. These elements are strategically placed to shield sensitive receptors and improve microclimatic conditions around the terminal and runway areas.
- 6.53 HWL’s proposal also includes enhanced pedestrian and cycling infrastructure, integrated into the green corridors to promote active travel and reduce reliance on motorised transport. These routes are designed to connect with local networks, improving accessibility for airport staff and neighbouring communities.
- 6.54 HWL’s design philosophy emphasises low-impact development, with a reduced construction footprint and protection of green belt land. The green infrastructure strategy supports this by embedding ecological value into the built environment and ensuring that landscape interventions contribute to long-term environmental resilience.

6.55 Our feasibility assessment of HWL’s proposed sustainability strategy is summarised in the box below:

Air Quality: HWL’s air quality assessment is methodologically sound, using established modelling tools and comparative baselines. The proposal demonstrates compliance with legal NO₂ thresholds and outlines embedded mitigation measures such as electrification of fleets and avoidance of major roadworks. However, the analysis lacks detailed quantification of particulate matter (PM) and cumulative traffic-related emissions during peak operational years. Ecological impacts are addressed, particularly in relation to Ramsar and SPA sites.

Noise pollution: Aircraft noise modelling is robust, with AEDT simulations showing minor differences between HWL’s proposal and HAL’s 2019 Masterplan. HWL’s runway length and location scheme results in a 3% increase in population exposed to >57 dB LAeq,16h. Mitigation measures are proposed, including acoustic barriers and insulation.

Carbon emissions: HWL’s commitment to net-zero carbon buildings is a clear strength, supported by a centralised energy centre, renewable heat technologies, and sustainable aviation fuel infrastructure. The scheme avoids fossil fuel combustion and leverages grid decarbonisation. Nonetheless, the proposal concedes that aviation emissions will result in a major adverse impact.

Community Health, wellbeing and quality of life: The proposal adopts a multi-scalar and interdisciplinary approach to community impacts, defining six study areas and integrating health and equality assessments. HWL claims its alignment with 2018 ANPS requirements for compensation, housing support, and stakeholder engagement. Initiatives such as the Legacy Housing Fund and Temporary Workforce Accommodation Strategy reflect awareness of indirect socio-economic pressures. The proposal reflects a commitment to delivering a socially responsible expansion that balances infrastructure growth with the protection and enhancement of local quality of life.

Surface access: HWL’s Surface Access Strategy prioritises public transport, active travel, and future mobility trends, and avoids disruptive motorway works. The Public Transport Hub is designed to be integrated in the West Terminal Campus, and the car parking strategy is designed to reduce road traffic around the airport. The strategy is aligned with national policy objectives and reflects a forward-looking approach to infrastructure development in the context of climate and environmental challenges, although the supporting evidence shows an increase in traffic on the M25 which has not been considered in the surface access strategy design.

Green infrastructure: The proposal integrates green infrastructure as a core component of its environmental strategy. HWL adopts a landscape-led approach, incorporating blue and green buffers, restored river corridors, and

native planting schemes. These elements serve ecological, recreational, and mitigation functions, supporting biodiversity, noise attenuation, and air quality improvement. The inclusion of active travel routes within green corridors enhances connectivity and promotes low-emission mobility.

In general, HWL’s expansion proposal presents a technically robust and environmentally conscious plan, albeit lacking the evidence to support core assumptions, mainly related to noise impact and surface access. The scheme explains the benefits of not undertaking works on the M25, but it does not provide a road traffic analysis to support the required changes to the road infrastructure. HWL positions itself as a lower-impact, more sustainable scheme, with a reduced construction footprint and a design philosophy that prioritises mitigation, resilience and alignment with the 2018 ANPS. To validate the conclusions stated by HWL, we would need new or updated studies on aircraft and engine types, population exposure, affected households, river diversions, flood risk, water quality plans, waste management plans, road traffic demand, and public transport targets for passengers and staff.

7 Stakeholder engagement

Introduction

- 7.1 This chapter presents the technical assessment of stakeholder engagement undertaken by Heathrow West Limited (HWL) as part of their proposal for a third runway. It evaluates the breadth and depth of stakeholder identification, the quality and timing of engagement activities, the extent to which stakeholder feedback has informed the proposals, and the degree of support or concern expressed by key stakeholder groups.
- 7.2 The assessment is primarily based on information provided by HWL in its submitted materials, supported by additional information provided to the CAA.

Stakeholder identification

- 7.3 HWL identified airline operators as its primary stakeholders. The submission indicates that engagement was focused on major carriers operating at Heathrow, reflecting the central role of airlines in shaping demand and funding considerations for any expansion proposal.
- 7.4 Other stakeholders that are mentioned in the proposal are the community, airport users, and public authorities.
- 7.5 In its response to the SoS's request for further information, submitted in November 2025, HWL provided additional information on the stakeholder engagement it has held between 2019 to date, including Highways England, Transport for London, Network Rail, and Department for Transport. These sessions have included the introduction of the scheme as well as the proposal for the ANSP update.

Engagement strategy and activities

- 7.6 Based on the information provided, HWL appears to have focused its engagement on discussions with key airlines to explore privately funded alternatives for Heathrow's expansion. These discussions were reportedly intended to inform the design of proposals that better reflect airline and passenger needs and to test potential models for introducing competition in the delivery of expansion infrastructure.
- 7.7 For the development of their Surface Access Strategy, HWL states that the input from different user groups has been taken into account, including disabled people at a national and local level.

- 7.8 During the request for further clarification, HWL also indicated that it had engaged with other stakeholders such as National Highways and Network Rail.
- 7.9 As part of the steps that HWL plans to take towards the DCO submission, there are stakeholder engagement initiatives which include local planning authorities, Natural England, Heathrow Strategic Planning Group, Environment Agency, and Public Health England.

Airline engagement

- 7.10 HWL stated that it engaged with a number of major airlines at Heathrow, including American Airlines, British Airways, the International Airlines Group (IAG), and Virgin Atlantic. According to HWL, these discussions considered opportunities to develop alternative, privately funded solutions for capacity expansion. HWL also reported that airlines consulted expressed general support for competition in the provision of expansion infrastructure and raised concerns about whether HAL could deliver an efficient and affordable scheme within the existing regulatory framework.
- 7.11 It is remarkable that HWL have provided an assessment of the length and capacity of the runway only based on the inputs and analysis provided by IAG. Notwithstanding the fact that IAG currently holds around half of the flight slots at Heathrow, there are 80 airlines operating at the airport⁸.
- 7.12 Our assessment of stakeholder engagement is summarised in the box below:

HWL has mainly provided evidence of stakeholder engagement with airlines and, more particularly, with IAG. We assess that, although gathering inputs and feedback from the largest airline group currently operating at Heathrow is important, views from other airlines is also key to provide non-biased conclusions on very critical design aspects such as the length of the runway and the operational capabilities of the new infrastructure.

HWL has had initial engagement with key stakeholders such as Highways England, Transport for London, Network Rail, and Department for Transport.

Engagement with other stakeholders, including airport users, the community surrounding the airport, and public authorities, is mentioned in HWL's plans, but it does not provide evidence of the information that was received nor how this information was incorporated into the proposed scheme.

HWL suggests future engagement with a broader spectrum of stakeholders, which we fully endorse.

We assess that the definition of an optimal airport expansion scheme can only be undertaken after an in-depth consultation process with all stakeholders, which has not been done by HWL at this stage. We also recommend following a structured approach for factoring the stakeholder engagement in the

⁸ [HAHL_ARA_2024.pdf](#)

development of the scheme such as: Stakeholder Identification, Engagement Strategy, Engagement Activities, Feedback Integration, Endorsements and Outcomes, and Transparency and Reporting.

8 Conclusions, Risks, and Recommendations

Conclusions

8.1 Based on our initial technical assessment of HWL’s 2025 proposal, we have outlined the following conclusions.

Table 8.1: Initial technical assessment conclusions of HWL’s proposal

Area	Initial technical assessment conclusions
Optioneering	<ul style="list-style-type: none"> Absence of a comprehensive optioneering analysis demonstrating how the option put forward in HWL’s 2025 proposal was selected in comparison with other schemes. The runway is the most developed element within the optioneering process. HWL’s proposal highlights the benefits of a 2.8 km runway and presents these as outweighing the disadvantages. However, further analysis is required to validate the conclusions provided in the proposal for selecting the option put forward.
Airport scheme design	<ul style="list-style-type: none"> The land acquisition proposal requires additional land purchase to the east of the new runway, and avoids acquisition to the west of the M25, as well as land adjacent to the Bath Road. It is suggested that land acquisition to the east will affect approximately 260 more homes, which will need to be acquired. The relocation of certain facilities is not clearly defined. The separation of the new runway with the existing North Runway is sufficient to enable independent operations. The proposal suggests that the Obstacle Limitation Surfaces analysis has been conducted; however, the documentation provided requires further development. The proposed runway length of 2,800 metres is notably shorter than the existing two runways at the airport (3,700 metres, 3,900 metres). HWL supports this proposal based on findings from an analysis conducted by IAG and their consultants, which focused on the current British Airways fleet operating at Heathrow. They conclude that the impact of having a shorter runway is approximately 14 daily wide-body flights. The conceptual design of the airfield appears to align with ICAO Code F (e.g. A380) operational requirements. However, no quantitative data, detailed aircraft circulation routes or simulation outputs are provided to evaluate possible bottlenecks during peak operations or compare different taxiway layouts.

Area	Initial technical assessment conclusions
	<ul style="list-style-type: none"> • The single connection of the new runway (and parallel taxiways) through the West with the rest of the airfield might create bottlenecks and reduce the operational capability. • The documentation does not include references of expected aircraft demand, fleet composition, flight schedules, or stand occupation times to understand the aircraft parking stand proposal. • The development outlines the addition of 40 mppa of terminal capacity, to be provided between T6A (main terminal processor) and T6B (satellite building connected via a walkway with T6A), and located west of T5. A total floor area of 440,000 square metres is proposed. • The proposer does not provide an assessment of the potential benefits of a satellite facility between the new runway and the existing Northern Runway. • The proposed two-point access strategy to the West Terminal Campus is designed to distribute traffic demand across multiple entry routes, thereby increasing resilience to the operations and shortening travel distances. • The proposed road network allows general access to the airport from major corridors, M4, M25 and A4, via two primary entry points: the M4 Spur and the A3113. • The proposed changes to the M25 junctions and South access to the West Terminal Campus might create road congestion. • The scheme includes the development of two large car parking facilities (Central Parkway and Southern Parkway). According to HWL, these car parks will be connected to the West Terminal Campus with Automated People Movers. • Although the proposal includes the assumption that the current rail services at the airport (Heathrow Express, Elizabeth Line, Piccadilly Line) will increase their capacity, it is unclear how and when this is going to be materialised. HWL states that the implementation of the Western Rail Link and the Southern Rail Link is not essential for efficient operations of Terminal 6.
<p>Operability and Capacity</p>	<ul style="list-style-type: none"> • We cannot confirm that the proposed runway design can accommodate the aircraft movements capacity that HWL claims. • HWL’s proposal does not include a thorough justification for the proposed number of stands, as it lacks supporting analysis to demonstrate how the stand capacity corresponds with the forecasted air traffic movements and aircraft fleet composition. • The calculation of the high-level capacity ratio of 11,000 square metres per million passengers suggests an adequate level of terminal space for new terminal complex. However, the proposed HWL’s plan should provide peak-hour and busy-hour passenger forecasts alongside the capacity sizing of each of the terminal processing areas.
<p>Expected timelines and Deliverability</p>	<ul style="list-style-type: none"> • Steer’s independent assessment for delivering the new runway provides a duration of 147 months (12 years and 3 months). This is an increase of 27 months from the 120 months outlined in the HWL timeline for the runway opening. • Considering that Government will consult on any amendments to the ANPS by July 2026 and complete the review process by the

Area	Initial technical assessment conclusions
	<p>end of 2026, the opening of the new runway by the Government’s target of December 2035 is feasible but ambitious. Steer’s independent estimations of the work that HWL would need to undertake, including land acquisition and further design works, suggest that it is possible that the opening of the third runway could happen at a later date, potentially by March 2038.</p>
Sustainability	<ul style="list-style-type: none"> • HWL’s air quality assessment is methodologically sound, using established modelling tools and comparative baselines. The proposal demonstrates compliance with legal NO₂ thresholds and outlines embedded mitigation measures. • Aircraft noise modelling is robust, with AEDT simulations showing minor differences between HWL’s proposal and HAL’s 2019 Masterplan. HWL’s runway length and location scheme results in a 3% increase in population exposed to >57 dB LAeq,16h. Mitigation measures are proposed, including acoustic barriers and insulation. • The plan to reduce carbon emissions is well presented. • The proposal adopts a multi-scalar and interdisciplinary approach to community impacts, integrating health and equality assessments. • The surface access strategy sets high expectations, although it does not provide the supporting evidence to validate the road traffic demand around the airport (and its potential congestions), nor how to achieve the public transport targets in the plan.
Stakeholder engagement	<ul style="list-style-type: none"> • HWL has mainly provided evidence of stakeholder engagement with IAG. We assess that, although gathering inputs and feedback from the largest airline group currently operating at Heathrow is important, HWL would benefit from further engagement with airlines beyond IAG to provide non-biased conclusions on very critical design aspects such as the length of the runway and the operational capabilities of the new infrastructure. • Engagement with other stakeholders, including airport users and public authorities, is mentioned in HWL’s proposal, but it does not provide evidence of the information that was received nor how this information was incorporated into the proposed scheme. • HWL suggests future engagement with a broader spectrum of stakeholders, which we fully endorse. • We assess that the definition of an optimal airport expansion scheme can only be undertaken after an in-depth consultation process with all stakeholders, which has not been done by HWL at this stage.

Source: Steer

Risks

8.2 Based on our initial technical assessment of HWL’s proposal, we have identified the following risks.

Table 8.2: Risks identified through the initial technical assessment of HWL’s proposal

Area	Risks
Optioneering	<ul style="list-style-type: none"> • Until a proper optioneering process is carried out, there is a risk of not developing the optimal option. • The conclusions of the length and location of the runway might not properly address the operability and noise impact criteria. • Some of the data that is needed to analyse the masterplan options might be outdated and might derive to taking wrong assessments. • The lack of clarity on the future rail schemes to connect Heathrow jeopardises the ability to assess the masterplan options appropriately and conditions the whole surface access strategy and sustainability plans.
Airport scheme design	<ul style="list-style-type: none"> • An inaccurate assessment of the runway length requirement could lead to material impacts in the cost, capacity, resilience and noise affection of the new scheme. • There could be severe congestion issues in the airfield design, limiting the number of operations and reducing resilience. • The concentration of all the additional passengers that the expansion will bring in the west side of the airport could increase the likelihood of landside congestion and create a single point of failure which will impact most of the airport operations, particularly during peak demand periods or in the event of service disruptions. • With the increase in road traffic generated by the expansion of the airport (plus the non-airport traffic) there is a very high risk of increased road congestion at several sections around the airport. • Risk of future increases in rail services capacity or new rail links not materialising and putting pressure on the road system.
Operability and Capacity	<ul style="list-style-type: none"> • The capacity of the new runway might not be capable of handling the additional capacity estimated by HWL. • The number of aircraft parking stands in the plan might not be sufficient to accommodate all the ATMs and passengers in the forecast. • The amount of bus operations to serve remote stands could be a safety and an airfield capacity risk during certain periods of the forecast.
Expected timelines and Deliverability	<ul style="list-style-type: none"> • The delivery of the programme implies several important risks that can materially impact the timescales such as publication of the updated ANPS, approval of the DCO including legal challenges, land acquisition, construction, and operational readiness. • The current programme also has a risk of overlap of the DCO approval with the next government general election. • The overlap between Heathrow expansion and other major infrastructure programmes, notably HS2 (expected completion in 2033), is likely to place additional pressure on the UK construction market.
Sustainability	<ul style="list-style-type: none"> • The assessment of the noise impact of the additional aircraft operations will be critical to seek support from the community.

Area	Risks
	<ul style="list-style-type: none"> The uncertainty around new rail schemes connecting Heathrow creates a risk on the mode shift targets for public transport and carbon emissions.
Stakeholder engagement	<ul style="list-style-type: none"> The views of all key stakeholders have not been captured in the proposal, nor have been addressed in the airport scheme option put forward in HWL’s 2025 proposal. Some key public authorities have not been consulted.

Source: Steer

Recommendations

8.3 Based on our initial technical assessment of HWL’s proposal, we suggest a series of recommendations for further development of HWL’s proposal to ensure the plan is feasible, operational, and deliverable.

Table 8.3: Recommendations for further development of HWL’s proposal

Area	Recommendations
Optioneering	<ul style="list-style-type: none"> Develop a full optioneering exercise for, at least, the new runway and the terminal buildings. Further analysis is required to validate the conclusions provided in the proposal for selecting the option HWL put forward in their 2025 proposal. Key areas for improvement include: <ul style="list-style-type: none"> Traffic and airline strategy: traffic scenarios and a high-level flight programme should be developed to assess airline strategies. For example, the introduction of long-haul flights with narrowbody aircraft could alter the distribution of widebody/narrowbody ratios across runways and affect future scheduling. Aircraft data: the noise analysis relies on traffic data as early as 2015, originally prepared for Arora’s 2017 response to the DfT’s NPS Consultation. Calculations have not been updated to reflect re-engined aircraft such as the A320/A321neo or B737 MAX, nor the actual performance of newer widebodies such as the A350 or B787. The lack of updated data might lead to wrong conclusions. Population data: population figures and other relevant datasets should be updated to 2025 levels to ensure accuracy, and new forecast for noise contours and impact on the community should be developed. 3D and topographical evaluation: modelling should include topography, runway slopes, and the M4 Spur tunnel to confirm assumptions such as the lack of impact on the M25 and compliance with OLS requirements. Terminal and apron options: while terminal and apron feasibility are addressed in subsequent sections, options for a terminal area between the new runway and the existing Northern Runway should have been considered, at least as a satellite facility, if not a full terminal. This would address significant taxiing distances from Apron Location 3 to existing terminal areas and challenges at Apron Location 2. Surface access and car parking strategy: the treatment of surface access and car parks lacks detail, particularly in relation to the disadvantages and justification for reduced parking provision.

	<p>Some road scheme images still show the runway over the M25, suggesting that these may have been prepared before the decision to place the 2.8 km runway further east.</p> <ul style="list-style-type: none"> – Runway length scenarios: definition of Take Off Runway Available (TORA) and full length should be complemented with wind and temperature scenarios to assess the real value of runway length. – Comparison of runway locations: further work is needed on the relative benefits and risks (including programme and cost) of constructing the runway over the M4 Spur versus the M25. – Aircraft movement capacity: a robust and detailed analysis is needed on how traffic will be split among the three runways, including taxiing arrangements depending on airline, terminals and origin–destination strategies. This is a core disadvantage of the current proposal (alongside noise impacts) but could be mitigated through additional enhancements, such as a terminal area between the new runway and the existing Northern Runway.
<p>Airport scheme design</p>	<ul style="list-style-type: none"> • The land acquisition plan needs to be updated. • The relocation of the critical facilities needs to be defined. • The Obstacle Limitation Surfaces analysis should be provided. • We recommend that the proponent undertakes an independent assessment of the technical capabilities of the new runway and provides a more comprehensive and transparent explanation of the methodology used to determine the suitability of a 2,800-metre length runway. • We consider that a robust runway options assessment should include two steps. The first step should be assessing the required runway length independently from its proposed location. • Supporting analysis to undertake a proper airfield assessment should be provided including the anticipated aircraft fleet mix, flight schedules, projected runway occupancy times, stand occupation times, terminal allocation, and outcomes of runway and airfield simulation studies. • The alternative of having a satellite building between the new runway and the existing Northern Runway should be analysed. • A detailed road traffic simulation should be undertaken, factoring both airport and non-airport related traffic, and considering all mode access to airport users. • The future increases in the capacity of the existing rail services to Heathrow should clarified.
<p>Operability and Capacity</p>	<ul style="list-style-type: none"> • The capacity of the new runway should be assessed independently and with a detailed analysis. • Together of the airfield modelling work, a detailed aircraft parking stand assessment should be undertaken. We recommended that the proposal includes an assessment of dynamic stand capacity. This should account for variations in aircraft types, turnaround durations, and scheduling patterns throughout the operational day. The analysis should be based on an indicative flight schedule, incorporating peak hour distributions, aircraft size classifications, and operational factors such as towing requirements and the use of remote stands. • HWL’s plan should provide peak-hour and busy-hour passenger forecasts alongside the capacity sizing of each of the terminal processing areas. • There needs to be analysis on the volume of passengers that will be boarding the aircraft through a boarding gate (using a contact stand)

	versus remote operations (using remote stands and requiring bus services) throughout the forecast.
Expected timelines and Deliverability	<ul style="list-style-type: none"> • A revised programme schedule should be developed, aligning it with the expected publication date of the revised ANPS and providing additional time allowances for further design work and land acquisition.
Sustainability	<ul style="list-style-type: none"> • Updated noise impact analysis should be undertaken consistent with the updated future aircraft specifications, flight schedules and allocation of aircraft among the runways. • Updated carbon emissions forecast should be provided, considering both airport activities and additional road traffic. • Factoring the expected rail capacity at the airport, and the road traffic around the airport, an updated surface access strategy and modelling should be undertaken, and new targets should be set. • The potential of new rail schemes connecting Heathrow should be consulted with the DfT.
Stakeholder engagement	<ul style="list-style-type: none"> • We recommend following a structured approach for factoring the stakeholder engagement in the development of the scheme such as: Stakeholder Identification, Engagement Strategy, Engagement Activities, Feedback Integration, Endorsements and Outcomes, and Transparency and Reporting.

Source: Steer

Control Information

Prepared by

Steer
14-21 Rushworth Street
London SE1 0RB
+44 20 7910 5000
www.steergroup.com

Prepared for

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

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Author/originator

Javier Losada

Reviewer/approver

Stephen Waiwright

Other contributors

Gonzalo Velasco
Fernando Ardavin
Viral Bhavsar
Antonio Oliver del Pozo

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Appendix D – Initial cost efficiency assessment of capex expansion plans for Heathrow Airport: HAL Proposal

Final report
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Prepared by:

Steer
14-21 Rushworth Street
London SE1 0RB

+44 20 7910 5000

www.steergroup.com

Prepared for:

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

Client ref: Contract Ref. 3634

Our ref: 24949401

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The logo for Steer, featuring the word "steer" in a bold, lowercase, sans-serif font.

Contents

Glossary	i
1 Introduction	1
Overview	1
Our approach	1
Structure of this document	3
2 Assessment of HAL’s cost plan	4
Our understanding of the proponent’s information	4
Our cost assessment	12
3 Summary of the cost efficiency assessment	31
Conclusions	31
Results in CPI and TPI prices	32

Figures

Figure 1.1: CPI and TPI forecasts	3
Figure 2.1: HAL’s proposed scheme	5
Figure 2.2: HAL’s proposed roads realignment	6
Figure 2.3: HAL’s cost certainty	8
Figure 2.4: HAL’s capex phasing	12

Tables

Table 2.1: HAL’s cost breakdown (2024 prices, CPI)	8
Table 2.2: HAL capex recategorisation	10
Table 2.3: Cost assessment of HAL’s proposal – Airfield infrastructure (2024 prices, TPI)	14
Table 2.4: Cost assessment of HAL’s proposal – Passenger terminals and processing (2024 prices, TPI)	17
Table 2.5: Cost assessment of HAL’s proposal – Landside access and transport (2024 prices, TPI)	20
Table 2.6: Cost assessment of HAL’s proposal – Utilities, ancillary and support facilities (2024 prices, TPI)	24
Table 2.7: Cost assessment of HAL’s proposal – Environmental and community (2024 prices, TPI)	27
Table 2.8: Cost assessment of HAL’s proposal – Programme and risk (2024 prices, TPI)	29
Table 3.1: Cost assessment summary of HAL’s proposal (2024 prices, TPI)	31
Table 3.2: HAL - Cost assessment summary results – HAL proposal	32
Table 3.3: HAL - Cost assessment summary results (annual) – HAL proposal (2026-2040)	33
Table 3.4: HAL - Cost assessment summary results (annual) – HAL proposal (2041-2056)	34

Glossary

Acronym	Definition
ANPS	Airports National Policy Statement (2018)
ATM	Air Traffic Movement
CAA	Civil Aviation Authority
Capex	Capital expenditure / Capital investment
CPI	Consumer Price Index
dB LAeq	A-weighted Equivalent Continuous Sound Pressure Level (i.e. human perception of noise)
DCO	Development Consent Order
HAL	Heathrow Airport Limited
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
KPI	Key Performance Indicator
MARS	Multiple Aircraft Ramp System
mppa	Million passengers per annum
NB	Narrow Body Aircraft
OBR	Office for Budget Responsibility
OLS	Obstacle Limitation Surfaces
ORAT	Operational Readiness and Transfer
RESA	Runway End Safety Area
sqm	Square metres
TOGA	Take-Off Go-Around
TPI	Tender Price Index
WB	Wide Body Aircraft

Source: Steer

1 Introduction

Overview

- 1.1 This appendix forms part of the cost efficiency assessment of expansion proposals for Heathrow Airport. It provides detailed information, analyses and supporting evidence that underpin the assessment, and the conclusions presented in the Main Report. The materials included are intended to offer additional technical detail and context for specific aspects of the work.

Our approach

- 1.2 The proposals differ in terms of scope definition, cost structure and task grouping. Therefore, we have developed our own cost categorisation and have allocated the cost items of the proponent to the relevant categories.
- 1.3 We excluded from our cost assessment the activities linked to the refurbishment and expansion of existing airport facilities included in HAL's proposal under the label 'Modernising Heathrow'.
- 1.4 Subsequent to the July 2025 submission, the proponent has shared with us further information related to scope and cost breakdown. We have categorised the cost breakdown we received from the proponent according to our common cost structure based on our understanding of the information provided to us. We explain our cost categorisation of the proposal in the corresponding chapter.
- 1.5 We have categorised the capex components into the following main categories:
1. Airfield infrastructure;
 2. Passenger terminals and processing;
 3. Landside access and transport;
 4. Utilities, ancillary and support facilities;
 5. Environmental and community; and
 6. Programme and risk.
- 1.6 Each of these main cost categories have been divided into subcategories, covering the main scope of works according to the proponent's proposal. These subcategories, the proponent's scope, and our own assumptions are the basis for our quantity estimates and unit cost benchmarking.
- 1.7 The result of multiplying our quantity estimates by our unit cost benchmarks provides a new cost estimate per subcategory, which we compare against the costs provided by the proponent.

- 1.8 While the proponent might have sourced the costs from specific projects with an advanced design development level (HAL mentions that for some estimates, the maturity of the information ranges between RIBA 2+(Concept design) and RIBA 3 (Space coordination)¹), the information that we have used in this cost assessment is derived solely from the proponent’s master plan or general site drawings.
- 1.9 Based on the maturity of the master plan and the level of information currently available, the cost estimate that we provide in this assessment corresponds approximately to the early design stages of the RIBA Plan of Work, namely Stages 1 and 2 (Preparation and Brief / Concept Design). This RIBA classification reflects the early planning phase of the project, where the scope definition remains at a high-level and conceptual. As a result, the expected accuracy range that we are assuming for the Contingency and Risk management element of the capex estimate is approximately between 15% and 30%.
- 1.10 The main reference documents that we have analysed for this assessment are the following:
- Heathrow-Expanding Heathrow-Main report.pdf
 - Heathrow-ExpandingHeathrow-Appendices.pdf
 - CAA-H8-054 - EH Cost Overview 131025.pdf
- 1.11 Aside from the information included in the list above, we have received further details of the proponent’s plans through a Questions and Answers (Q&A) process coordinated by the CAA.

Cost adjustments

- 1.12 HAL’s proposal of £33bn (2024 CPI prices) includes all the key elements of the master plan.
- 1.13 We note that the proposal does not include costs for new railway schemes connecting Heathrow and we did not make allowances for such costs in our assessment. The proponent has indicated that the Western Terminal Campus development will be future proofed for any potential new rail scheme.

Price base adjustments

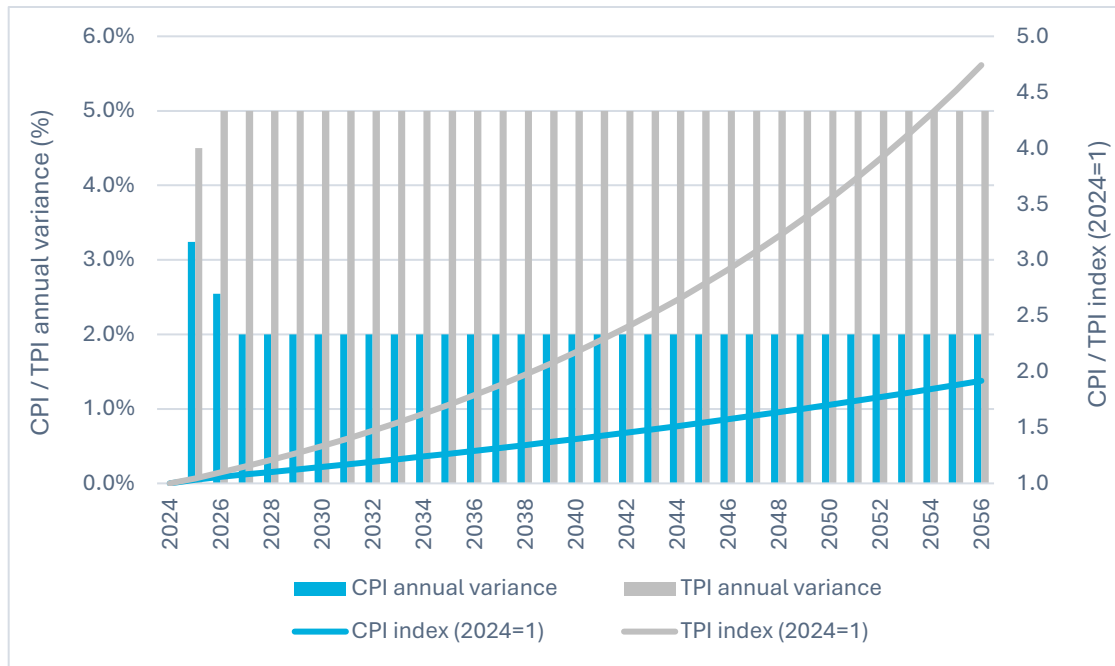
- 1.14 HAL’s cost estimate has been expressed in 2024 CPI (Consumer Price Index) prices, as clearly stated in the July 2025 proposal.
- 1.15 Given the nature of the works that we need to benchmark at this stage of the expansion project, we assess that the construction price index (i.e. TPI) is a better reference than the CPI index. TPI is the construction index standard in the UK and benchmarks are commonly presented using this index, rather than CPI. Therefore, our benchmarking exercise is presented in annual average 2024 construction prices (2024 TPI prices). For forecasts, we have used the Q2 2025 Infrastructure

¹ [How to Use RIBA 2020 Plan of Work: RIBA Design Stages Explained \[Updated\] - Urbanist Architecture - Small Architecture Company London](#)

tender price index (TPI) forecast from Turner & Townsend². This index provides annual construction costs forecast from 2025 to 2028. After that, we have assumed that the year-on-year construction cost increase in 2028 will remain constant for the following years.

- 1.16 The chart below shows the CPI forecast from the ONS and our TPI forecast. It shows that the TPI prices are forecast to be 1.6 times higher than CPI prices by 2040, and 2.5 times higher by 2056.

Figure 1.1: CPI and TPI forecasts



Source: ONS, T&T, Steer analysis

- 1.17 We have also provided a summary of our results in 2024 CPI prices to facilitate the traceability and usability of our results.

Structure of this document

- 1.18 The remainder of this document is structured as follows:
- Chapter 2 includes our assessment of HAL’s cost plan.
 - Chapter 3 provides the summary of our assessment of the cost efficiency of the proposal.

² UK market intelligence Q2 2025, Turner & Townsend.

2 Assessment of HAL’s cost plan

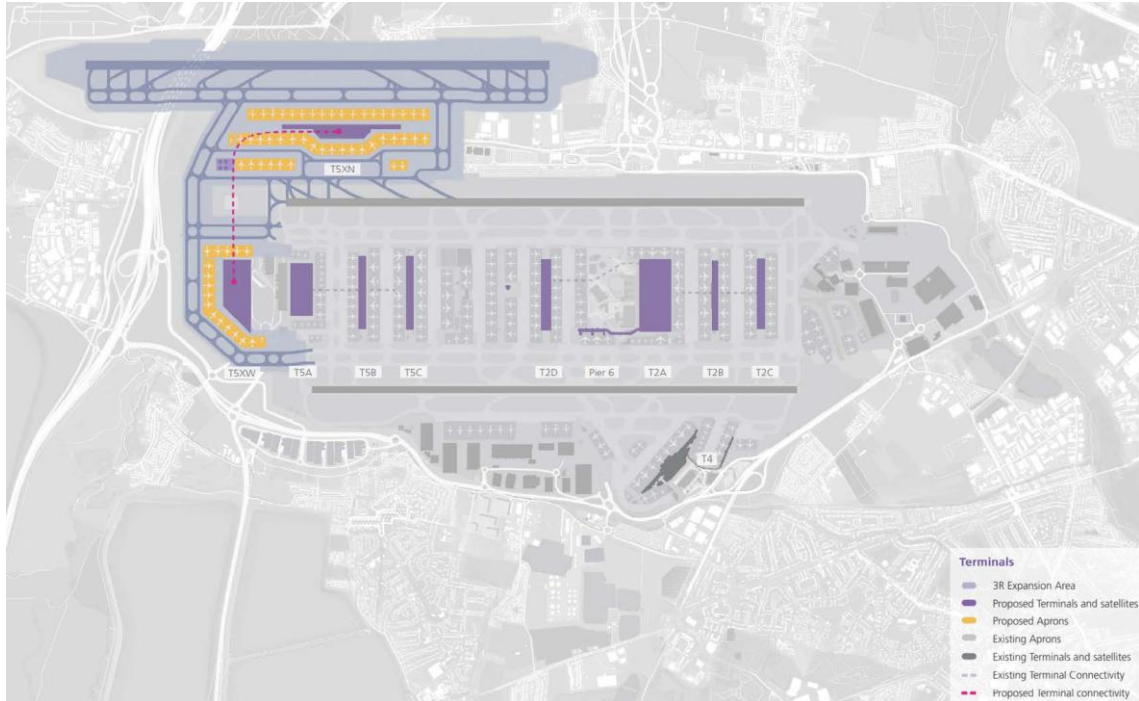
Our understanding of the proponent’s information

Scheme overview

- 2.1 Heathrow Airport Limited (HAL) propose a scheme with an estimated cost of £33 billion (2024 CPI). This cost excludes £15bn (2024 CPI) for the Modernising Heathrow programme, a programme of works to refurbish and expand existing airport facilities, which is outside the scope of this assessment.
- 2.2 HAL’s proposed scheme for Heathrow expansion features the following infrastructure and activities:
- A new 3,500 metres third runway to the Northwest of the airport enabling up to 276,000 additional ATMs each year, increasing Heathrow’s overall capacity up to approximately 756,000 ATMs annually.
 - Associated terminals, baggage systems, cargo facilities, rail and road links, as well as community and environmental mitigation measures.
 - Terminal capacity will be scalable and aligned with demand growth, reaching at least an additional 40 mppa, including a new terminal to the West of the current Terminal 5 (T5XW) and an associated satellite building to the North (T5XN). The satellite building is planned to be connected to the main terminal processor (T5XW) through a Track Transit System (TTS) (also called Automated People Mover, APM), and the associated baggage system.
 - Additional taxiways, including new Rapid Exit Taxiways (RETs) and Rapid Access Taxiways (RATs), to support the mixed mode operating model.
 - New taxiway links will integrate the third runway with the existing airfield network.
 - Additional Western Bypass Taxiways west of T5 offering an alternative north–south taxiing route.
 - Two large parkway car parks:
 - Southern Parkway with capacity for up to [REDACTED] vehicles.
 - Northern Parkway with up to [REDACTED] spaces.
 - Increase existing cargo capacity by 50% through the redevelopment and expansion of facilities located to the south of the Southern Runway. Additional freight forwarding warehouses to be built in a consolidated hub immediately south of the airport.

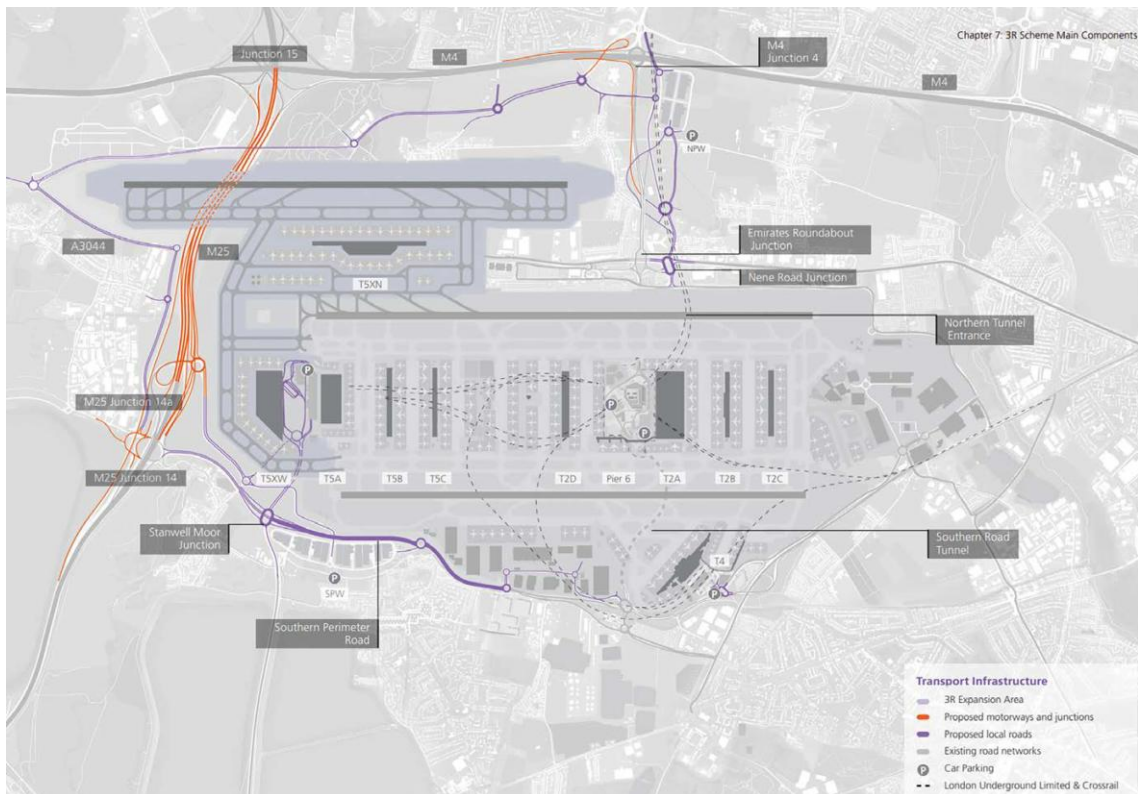
- Realignment and expansion of the M25, where the new runway crosses the existing motorway between Junctions 14 and 15. To facilitate this realignment, the M25 will need to be shifted approximately 130 metres west and lowered by up to 4.5 metres, allowing it to pass beneath the runway in a new tunnel formed of four structural boxes.

Figure 2.1: HAL's proposed scheme



Source: HAL, July 2025 submission. Figure 16, New terminal infrastructure

Figure 2.2: HAL’s proposed roads realignment



Source: HAL, July 2025 submission. Figure 17, M25 realignment

Cost assumptions

Included scope

2.3 The proposal HAL submitted in July 2025 supplemented by additional information provided to us through engagement and Q&A includes costs for the following infrastructure and activities:

- Construction of a new processing terminal T5XW for 20 mppa. We note that Gross Floor Area (GFA) is not defined in the documents we reviewed.
- T5XW apron includes 12 Wide Body (WB), and 7 Narrow Body (NB) pier served stands (i.e. contact stands).
- Construction of a new satellite terminal T5XN for 20 mppa. We note that GFA is not defined in the documents we reviewed.
- T5XN apron includes 28 WB pier served stands, 17 WB remote stands and 2 NB remote stands.
- T5XN will be connected to T5XW terminal via a Track Transit System (TTS), also called Automated People Mover (APM). The TTS length has been estimated at 1,850 metres.
- Construction of the third runway of 3,500 metres in length, width of 60 metres, which includes a 45 metres wide runway with 7.5 metres wide paved shoulders on each side.
- New taxiways to link the central and southern runways with the new runway. New Rapid Exit Taxiways (RETs) and Rapid Access Taxiways (RATs) are

provided to optimise runway capacity and accommodate the new threshold displacements and runway mixed mode operations (i.e. landing and taking-off operations).

- Two large car parks:
 - Southern Parkway with capacity for up to [REDACTED] vehicles.
 - Northern Parkway with capacity for up to [REDACTED] vehicles.
- Realignment and expansion of the M25, where the new runway crosses the existing motorway between Junctions 14 and 15.
- Diversion of several roads around the airport, including the M25 and local roads, such as the A4 and A3044, and their associated junctions.
- The Southern Perimeter Road alignment, north of the Southern Parkway, linking to the upgraded Stanwell Moor Junction.
- T5 road and landside access.

Excluded scope

2.4 HAL’s proposal excludes costs for the following activities:

- The preferred option involves discharging the wastewater into the Thames Water Sewer, pending agreement with Thames Water. In 2019, HAL stated that it was exploring the construction of a new Wastewater Treatment Plant. It is unclear from the information made available to us whether the cost of constructing the plant was included in the estimated budget and, therefore, we have assumed that such cost is not included in HAL’s cost proposal.
- New rail scheme costs are also excluded from the proponent’s cost proposal, although the rail crossover box in the Western Terminal Campus will be safeguarded to enable the addition of such new rail connections.

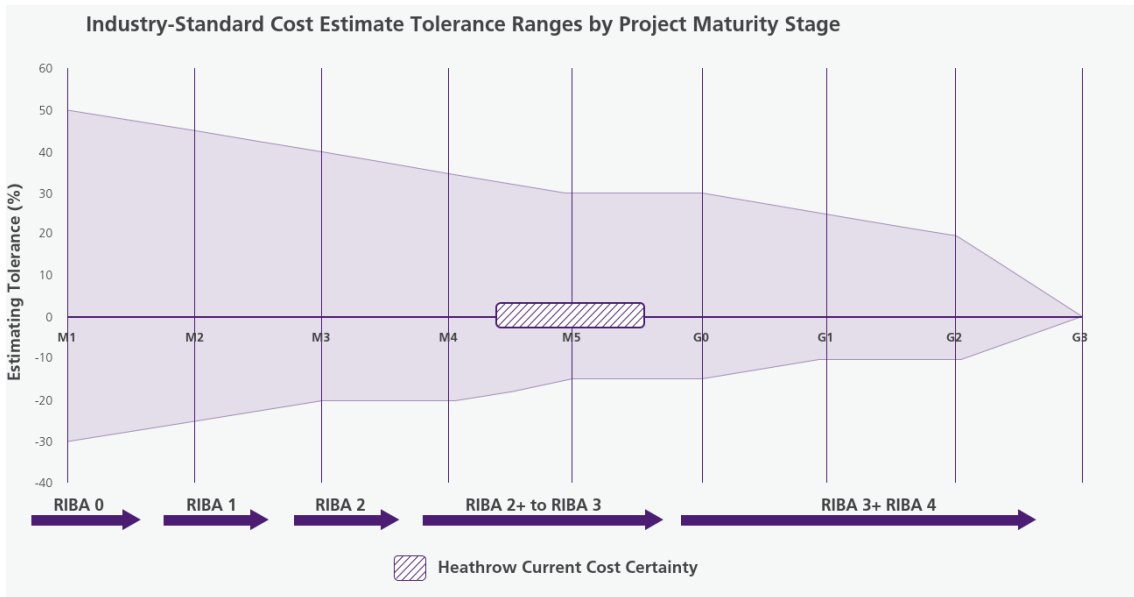
Other assumptions

2.5 The cost estimate developed by HAL is based on the following assumptions:

- Costs are expressed in real terms expressed in constant 2024 prices adjusted using Consumer Price Index (CPI).
- Based on the proposal document, HAL states that their cost base reflects component-level estimates aligned with design maturity. HAL’s proposal also states that the costs went through independent assurance from external cost consultants and quantity surveyors.

2.6 The following figure illustrates the cost certainty ranges applied by HAL across the programme.

Figure 2.3: HAL’s cost certainty



Source: HAL, July 2025 submission, Figure 23, Industry-Standard Cost estimate tolerance ranges by project maturity stage

Cost breakdown

2.7 HAL has presented in its proposal the following cost breakdown.

Table 2.1: HAL’s cost breakdown (2024 prices, CPI)

Cost item	Category description	Capex (£bn, 2024p, CPI)
Building the third runway (Includes consenting, land purchase, utilities & road diversions, earthworks, construction)	Obtain Consent covers the investment required to secure the DCO. This reflects the scale of the statutory planning process and the extensive engagement undertaken to meet legal and regulatory requirements.	█
	Procure the Space includes land acquisition, compensation, statutory levies and assumptions on residual property values. It also covers required community and mitigation measures such as noise insulation.	█
	Clear the Footprint relates to the diversion or re-provision of infrastructure displaced by the programme. This includes roads, rivers, utilities and specialist facilities. Major cost drivers include the Grondon waste treatment plant, the IRC and the M25 realignment.	█
	Create the Platform covers preparatory works that can only be completed after possession of the site is secured through clear the footprint. This includes logistics, earthworks and utility provision. The earthworks package represents a significant share of the cost of this component. Heathrow has adopted a strategy	█

Cost item	Category description	Capex (£bn, 2024p, CPI)
	of material reuse and on-site treatment to reduce cost and minimise landfill tax exposure.	
	Expand the Airfield includes construction of the runway, taxiways and associated airside infrastructure. The design has been optimised to reduce disruption during construction and support future operational efficiency, including reductions in fuel burn and taxi time.	█
	Programme Contingency provides a risk allowance across the runway cost base. This includes category-level contingencies, as well as a programme-wide allowance, consistent with best practice for a programme at this stage of design maturity.	█
	Sub - total	21
Terminal capacity associated with the runway (T5XW and T5XN)	Expand the Airfield (Aprons/Stands): Covers western aprons and stand infrastructure connected to T5X.	█
	Develop the Capacity: Encompasses the construction of T5XW and T5XN, airside and landside infrastructure, car parking, baggage systems, connectivity enhancements and supporting systems. Estimates are based on current technology assumptions but may benefit from future advances in automation and digitalisation.	█
	Sub - total	12
Total		33

Source: HAL

Capex harmonisation

- 2.8 To facilitate our assessment of efficiency of costs, we have developed a standard categorisation of capex across main capex components, which we apply to the two proposals to provide comparable results. Although this capex categorisation template was provided to HAL, the proponent chose to share with us further granularity than submitted in the proposal (and reproduced in the table above) but with different categories than those we set in our capex categorisation template.
- 2.9 We have allocated the information received from HAL according to the items and scope included in our capex categorisation template using our best technical judgement. Where we made allocation assumptions, we have expressed these in the ‘Comments’ column of the table below.
- 2.10 The following table reflects how we have categorised HAL’s capex estimate according to our capex categorisation template. The capex numbers are

presented in both CPI and TPI prices of 2024. The adjustments used to convert HAL’s costs into 2024 TPI prices are disclosed in subsequent section of this report.

Table 2.2: HAL capex recategorisation

Steer categorisation template	HAL categories	Capex (£bn, 2024, CPI)	Capex (£bn, 2024, TPI)	Comments
Total Airfield infrastructure		████	████	
New runway	Runway	████	████	Assumed 20% of item Airfield Ancillary for new runway
	Systems	████	████	
	Operational Readiness	████	████	
	Airfield Ancillary	████	████	
	Sub-total	████	████	
Taxiway system and runway access	Airfield Ancillary	████	████	Assumed 80% of item Airfield Ancillary for new runway
	Taxiways	████	████	
	Sub-total	████	████	
Aircraft stands, aprons and airside roads	Airside Roads	████	████	
	Remote Stands / Taxi lanes	████	████	
	Contact Stands / Aprons	████	████	
	Sub-total	████	████	
Total Passenger terminals and processing		████	████	
New passenger terminals	T5XW	████	████	
	T5XN	████	████	
	Sub-total	████	████	
Airside underground links	Baggage	████	████	Assumed BHS for both terminals and BHS underground link connecting them. TTS/APM cost between terminals assumed to be included in this item.
	Sub-total	████	████	
Total Landside access and transport		████	████	
Road connections	M25 Mainline	████	████	Underpass and local roads works have
	M25 Junctions	████	████	

Steer categorisation template	HAL categories	Capex (£bn, 2024, CPI)	Capex (£bn, 2024, TPI)	Comments
	Roads	████	████	been assumed to be included in these works.
	Connectivity	████	████	
	Surface access	████	████	
	Sub-total	████	████	
Car parks and internal roads	Landside Parkways	████	████	We assume that HAL has included part of the landside roads also in this cost item.
	Sub-total	████	████	
Total Utilities, ancillary and support facilities		████	████	
Ancillary aviation facilities	Airfield Utilities	████	████	
	Sub-total	████	████	
Relocation and new critical services	Displaced Uses	████	████	
	Utility Diversion	████	████	
	Sub-total	████	████	
River diversions / Major civil works	Rivers	████	████	
	Sub-total	████	████	
Cargo facilities	NA	████	████	HAL has not provided a specific cost for this item; however, it has been kept as an independent item for its identification and evaluation.
	Sub-total	████	████	
Temporary works	Logistics	████	████	Logistics for the development of works, demolitions and earthworks are considered as temporary works.
	Demolitions / Earthworks	████	████	
	Sub-total	████	████	
Total Environmental and community Cost		████	████	
Land acquisition and property compensation	Land & Property	████	████	
	Sub-total	████	████	
	Community	████	████	

Steer categorisation template	HAL categories	Capex (£bn, 2024, CPI)	Capex (£bn, 2024, TPI)	Comments
Community compensation and social programmes	Sub-total	████	████	
	Archaeology	████	████	
Specific environmental mitigations	Natural Environment	████	████	
	Sub-total	████	████	
Total Programme and risk		████	████	
Contingency and risk management	Contingency	████	████	
	Sub-total	████	████	
Development Consent Order (DCO) process	Consents	████	████	
	Sub-total	████	████	
Total		32.9	24.8	

Source: HAL, Steer. Note: There could be differences due to rounding.

Capex phasing

- 2.11 The capex plan presented by HAL shows the large majority of the spend between 2026 and 2035 (aligned with the HAL’s projection of opening the new runway in 2035). The only major investment beyond that period is the construction of T5XN in the 2050s. The chart below illustrates the capex phasing by year.

Figure 2.4: HAL's capex phasing

[Redacted]

Source: HAL, Steer

Our cost assessment

Approach

- 2.12 Given the very limited information provided by HAL, our assessment of the costs is based on a high-level and top-down benchmarking. The benchmarking source data is almost entirely confidential based on data we hold from previous airport projects in the UK and Europe, mainly.
- 2.13 The range of prices obtained through the projects considered in the benchmarking are adjusted to reflect the local construction cost in London.
- 2.14 The cost of the items defined by HAL are high-level costs estimations that cover a very extensive scope of work with great uncertainty regarding what is included in each. As described in the previous section, we have made some assumptions to allocate HAL’s costs to our standard capex categorisation template.

2.15 For our assessment of costs, we carried out some measurements based on the sketches included in the proponent's reference documents to obtain a high-level indication of quantities delivered (for example, we have estimated 22.4 km of airside roads). We recognise that quantities estimated based on sketches are not precise and, therefore, our quantities may differ from those considered by the proponent in their cost estimates. We also recognise that our assumptions about the actual location of the infrastructure elements, which is largely based on the sketches provided in the proposal, may differ from the exact location, which may have some impact on costs. We have implicitly reflected measurement uncertainty in both our low and high independent cost estimate ranges through our allowance for contingency and risk.

Areas of uncertainty and assumptions

2.16 The information from the proponent regarding quantities is very limited and, therefore, we had developed estimations based on assumptions and high-level measurements from the available information (e.g. pdf drawings and sketches included in HAL's proposal).

2.17 The assumptions that we have used are the following:

- Terminal area required based on a ratio of 12,500 sqm/mppa (in line with '*10 Arcadis - HAL Masterplan 4 Review_ Step 3& 8 – 14072020.pdf*').
- M25 mainline carriageways keeping the existing four lanes in each direction for the central corridors and expanding the side corridors from two to three lanes in each direction, facilitating the entry and exit of vehicles to Heathrow.
- Multistorey parks sizes, based on the number of spaces defined in HAL's proposal and assuming a ratio of 25 sqm per vehicle.
- Fuel storage: Based on the document '*11 Arcadis - HAL Masterplan 4 Review Step 0 -xx102019*' and HAL's proposal, four additional fuel tanks will be required. The capacity of each one has been estimated based on the assumption of 5 days storage of fuel.
- Cargo facility expansion plan has been obtained from document '*11 Arcadis - HAL Masterplan 4 Review Step 0 -xx102019*' where it is defined that the Preferred Masterplan proposes up to 206,000 sqm of additional cargo facilities to support the forecasted demand.
- For the taxiway system and runway access, the layout represented in the sketches has been considered.
- Sustainability investments are referenced across several sections of HAL's proposal, including energy, surface access, heat decarbonisation, and operational transformation. All these support the airport's pathway to net zero by 2050. We have included equivalent assumptions in our estimates.
- Green infrastructure, landscaping and environmental enhancements are costed by HAL in the rest of the environmental cost items.
- Sustainability and energy efficiency investments and strategies are not defined in the proponent's proposal. We understand that these have not been considered as an independent item of the cost estimate but rather imbedded across several infrastructure elements.

- Intermodal connections with the Southern and Northern Car Parks has capex of connectivity in the form of dedicated road infrastructure. It is assumed that rail specific infrastructure is out of scope of the capex plan.

2.18 HAL’s plans include the need for relocation and development of critical services. However, the proponent’s plans do not provide neither specific information about the proposed solution (location, required area) nor the associated cost. These critical services, and assumptions we have made, are the following:

- Alternative locations are required for: Immigration Removal Centre (IRC), Total Rail Head, Lakeside Energy from Waste facility, Aggregate Industries’ asphalt plant, British Airways’ Waterside offices, and Colnbrook railhead. We understand that the cost for the provision of these facilities are included in HAL’s overall cost estimates.
- Utilities:
 - Electricity and other utilities: The existing overhead powerlines at the western end of the new runway are to be removed and diverted underground and we understand that such costs are included in HAL’s plans.
 - Longford substation will be relocated to a site to the west of the Colnbrook rail line and north of the A3044 and HAL’s plans cost these changes.
 - Bath Road Sewer will be diverted into consolidated utility corridors along routes which will minimise effects on existing infrastructure and local communities. We understand that HAL plans account for the cost of this sewer diversion.
 - To manage the wastewater, two options are defined by HAL. The preferred option involves discharging the wastewater into the Thames Water Sewer, pending approval from Thames Water. Alternatively, the construction of a new wastewater treatment plant is also contemplated. We understand that the costs of the preferred option are considered in HAL’s cost estimate under ‘Relocation and new critical services’.

Benchmarking

2.19 Based on our benchmarking data, we have estimated a ‘low’ and a ‘high’ range cost estimate for each element included in the scope of HAL’s proposal.

2.20 The following tables provide a detailed description of our capex assessment by category and subcategory. All the capex numbers are presented in TPI prices.

Table 2.3: Cost assessment of HAL’s proposal – Airfield infrastructure (2024 prices, TPI)

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
New runway				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	A new 3,500-metre runway	A new 3,500-metre runway. Includes basic runway construction with earthworks, standard pavement layers, essential safety areas (RESA, clearway, stopway), primary drainage, basic lighting and CAT I ILS, standard markings, and minimal taxiway connections.	A new 3,500-metre runway. Covers a fully equipped CAT III runway with enhanced pavement design, extended safety areas, full drainage and stormwater systems, complete AGL and navigation aids, multiple rapid exits, advanced control systems, backup power, and full commissioning.	Division of Airfield Ancillary cost between new runway and other items can imply variations in the budget of the subcategories that are compensated in the total cost of Airfield infrastructure category
Quantity	████	900,000 sqm	900,000 sqm	
Unit rate	████	£900/sqm	£958/sqm	
Sub-total	████	£810m	£862m	
Taxiway system & runway access				
Key scope	Additional taxiways, including new Rapid Exit Taxiways (RETs) and Rapid Access Taxiways (RATs). New taxiway links will integrate the third runway with the existing airfield network. Additional Western Bypass Taxiways west of T5 offering an alternative north-south taxiing route.	Includes essential taxiway infrastructure with basic earthworks, standard pavement structure, limited parallel and rapid-exit taxiways, primary drainage, basic lighting, and standard markings and signage.	Covers a fully developed taxiway system with extensive high-speed exits, enhanced pavement design, complete drainage, full lighting and signage packages, and full Airfield Lighting Control and Monitoring System integration.	Division of Airfield Ancillary cost between new runway and other systems as roads and ancillary systems or earthworks, can imply variations in the budget of the subcategories that are compensated in the total cost of Airfield infrastructure category
Quantity	████	3,351,225 sqm	3,351,225 sqm	
Unit rate	████	£700/sqm	£1,020/sqm	

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Sub-total	████	£2,346m	£3,418m	
Aircraft stands, aprons and airside roads				
Aprons				
Key scope	<p>T5XW apron includes 12 WB, and 7 NB pier served stands (i.e. contact stands).</p> <p>T5XN apron includes 28 WB pier served stands, 17 WB remote stands and 2 NB remote stands.</p>	<p>Includes paving for aprons with both contact and remote stands, standard drainage, markings, signage, basic stand lighting, limited GSE areas, and perimeter fencing. Contact stands are provided with only essential services and minimal ground infrastructure.</p>	<p>Covers a fully equipped apron system with enhanced pavement design, full drainage and lighting systems, comprehensive GSE staging, operational access roads, advanced security and access control, and integrated perimeter infrastructure. Contact stands include full ground service installations such as PCA units, fuel pits, and 400 Hz power supply.</p>	<p>Discrepances in the scope split between this item and Taxiway system and runway access in HAL's proposal.</p> <p>Variations of the subcategories that are compensated in the total cost of Airfield infrastructure category.</p>
Quantity	████	437,134 sqm	437,134 sqm	
Unit rate	████	£684/sqm	£920/sqm	
Sub-total	████	£299m	£402m	
Airside Roads				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope		Includes basic airside service roads with standard pavement construction, minimal drainage, basic lighting, markings, and signage for ground support equipment access.	Covers fully developed airside road networks with high-strength pavement, full drainage and lighting systems, advanced signage.	Unclear information provided by HAL on the scope for this item
Quantity	████	22.4 km	22.4 km	
Unit rate	████	£3,600,000/km	£8,400,000/km	
Sub-total	████	£81m	£188m	
Sub-total Aircraft stands, aprons and airside roads	████	£380m	£590m	
Total	████	£3,535m	£4,870m	Overall HAL’s cost is close to the low end of our benchmark range, although the allocation of certain elements may differ

Source: HAL, Steer

Table 2.4: Cost assessment of HAL’s proposal – Passenger terminals and processing (2024 prices, TPI)

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
New passenger terminals				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	Terminal capacity will be scalable and aligned with demand growth, reaching at least 40 mppa, including a new terminal to the west of the current Terminal 5 (T5XW) and an associated satellite building to the north (T5XN).	Includes main terminal and satellite construction, essential passenger areas, basic vertical circulation, shell commercial spaces, and minimal systems.	Covers fully equipped terminals with multiple boarding bridges, full vertical circulation, commercial fit-out readiness, and complete systems, including advanced systems and integrated security.	The unit rate cost could vary substantially depending on the quality of the materials and space per passenger.
Quantity	████	500,000 sqm	500,000 sqm	
Unit rate	████	£9,000/sqm	£11,500/sqm	
Sub-total	████	£4,500m	£5,750m	
Airside underground links				
Automated People Mover (APM) or Track Transit System (TTS)				
Key scope	T5XN will be connected to T5XW terminal via an Automated People Mover (APM).	Includes civil works for guideway and stations, and supply of a standard driverless APM with basic vehicles, track, power, and control systems.	Covers a high-capacity, high-speed APM with advanced vehicles, complex guideway equipment, enhanced power and signaling, full automation, and integrated telecom and security systems.	
Quantity	████	1,850 metres	1,850 metres	
Unit rate	████	£192,000 /m	£228,000 /m	
Sub-total	████	£355m	£422m	
Baggage Tunnel				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	Baggage tunnel to connect the main terminal building (T5XW) with the satellite (T5XN).	Includes a standard BHS tunnel with conventional conveyor-based transport, basic utilities, and essential structural works to connect the terminal and satellite.	Covers an advanced baggage tunnel equipped with high-speed Individual Carrier Systems (ICS), full automation, enhanced controls, and complete integration with terminal baggage operations.	Automated BHS tunnel between terminals.
Quantity	████	1,850 metres	1,850 metres	
Unit rate	████	£192,000/m	£228,000/m	
Sub-total	████	£355m	£422m	
Baggage Handling System				
Key scope		Conventional conveyor-based BHS with standard screening, manual encoding, and limited automation.	Fully automated ICS or tray-based BHS with high-speed sorting, full redundancy, advanced screening, and integrated control systems.	BHS for 40 mppa (for main terminal and satellite).
Quantity	████	1	1	
Unit rate	████	£454m	£601m	
Sub-total	████	£454m	£601m	
Sub-total Airside underground links	████	£1,165m	£1,444m	APM costs not identified in HAL's proposal. We assume this item has been considered in other items within this subcategory.
Total	████	£5,665m	£7,194m	Overall HAL's cost is close to, but slightly lower than our benchmark range, although the allocation of certain elements may differ.

Source: HAL, Steer

Table 2.5: Cost assessment of HAL’s proposal – Landside access and transport (2024 prices, TPI)

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Intermodal plaza / Public transport hub				
Inter Terminal Plaza				
Key scope	████	Includes basic intermodal plaza with standard drop-off areas, bus and taxi stands, simple pedestrian connections, basic lighting, signage, and minimal security systems.	Covers a fully integrated intermodal hub with enhanced passenger facilities, direct connections to rail and underground, covered walkways, advanced wayfinding, full security and access control, and high-spec finishes.	
Quantity	████	63,750 sqm	63,750 sqm	
Unit rate	████	£5,690/sqm	£8,510/sqm	
Sub-total	████	£363m	£543m	
Station Box				
Key scope	████	Includes a basic underground station box structure with essential civil works, platforms, and minimal finishes to accommodate underground and APM services.	Covers a fully integrated station with complete architectural finishes, full MEP and safety systems, advanced passenger information and control systems.	
Quantity	████	21,250 sqm	21,250 sqm	
Unit rate	████	£3,730/sqm	£4,130/sqm	
Sub-total	████	£79m	£88m	
Hotels				
Key scope	████	Standard structure, finishes, essential MEP and HVAC systems, and basic furnishing and equipment.	Fully developed hotels with higher-quality finishes, full MEP and HVAC systems, complete FF&E, extensive public and commercial areas, and full integration with adjacent transport and terminal facilities.	We assume two hotels of 500 rooms each.
Quantity	████	50,000 sqm	50,000 sqm	
Unit rate	████	£3,890/sqm	£5,920/sqm	

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Sub-total	████	£195m	£296m	
Sub-total Intermodal plaza / Public transport hub	████	£637m	£926m	
Road connections				
Internal Roads				
Key scope	████	Includes basic internal road network with standard pavement, signage, lighting, and minimal drainage to provide essential airside and landside connectivity.	Covers a comprehensive internal road system with higher pavement standards, full drainage, lighting and signage, landscaping, utilities integration, and enhanced traffic management infrastructure.	Internal Roads for new terminals have been considered.
Quantity	████	4 km	4 km	
Unit rate	████	£6m/km	£8.4m/km	
Sub-total	████	£24m	£34m	
Conventional highway / local roads				
Key scope		Includes construction of a standard two-lane highway or local road with basic earthworks, sub-base and asphalt pavement, standard drainage, signage, markings, and lighting.	Covers a higher-specification highway with improved pavement design, full drainage and stormwater systems.	
Quantity	████	41 km	41 km	
Unit rate	████	£7.8m/km	£9.6m/km	
Sub-total	████	£320m	£394m	
Highway / Expressway (M25, M4, A4, A3044)				
Key scope	Realignment and expansion of the M25, where the new runway crosses the existing motorway	Basic highway connections and modifications with standard pavement works, junction adjustments, signage, and	Extensive expressway works including new links, major junction reconfigurations, grade-separated interchanges, full drainage, lighting, traffic management	

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
	between Junctions 14 and 15. Diversion of several roads around the airport, including the M25 and local roads, such as the A4 and A3044, and their associated junctions.	minimal drainage and lighting	systems, and utility diversions.	
Quantity	████	18 km	18 km	
Unit rate	████	£24m/km	£30m/km	
Sub-total	████	£440	£550m	
Underpass M25				
Key scope		Includes standard underpass construction with excavation, reinforced concrete structure, waterproofing, drainage, required ventilation and safety systems to meet regulations, and basic MEP installations.	Covers a more complex underpass with deeper excavation, extensive ground treatment, advanced waterproofing, full MEP and safety systems, enhanced ventilation and monitoring, and significant utility diversions.	
Quantity	████	2,091 metres	2,091 metres	
Unit rate	████	£660k/m	£1,080k/m	
Sub-total	████	£1,380m	£2,258m	
Underpass T5				
Key scope		Includes standard underpass construction with excavation, reinforced concrete structure, waterproofing, drainage, required ventilation and safety systems to meet regulations,	Covers a more complex underpass with deeper excavation, extensive ground treatment, advanced waterproofing, full MEP and safety systems, enhanced ventilation and monitoring, and	

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
		and basic MEP installations.	significant utility diversions.	
Quantity	████	1,285 metres	1,285 metres	
Unit rate	████	£165k/m	£359k/m	
Sub-total	████	£212m	£462m	
Sub-total Road connections	████	£2,375m	£3,697m	
Car parks and internal roads				
Multi – storey car parks				
Key scope	Two large parkway car parks will be developed: - Southern Parkway with capacity for up to █████ spaces. - Northern Parkway with up to █████ spaces.	Includes basic multi-storey car park structures with standard concrete frames, basic finishes, lighting, signage, drainage, and minimal access control system.	Covers fully equipped car parks with enhanced structural design, improved finishes, complete lighting and drainage, advanced access control and payment systems, and full integration with terminal access routes.	
Quantity	████ spaces	34,200 park bays	34,200 park bays	
Unit rate	████	£26k/park bay	£32k/park bay	
Sub-total	████	£889m	£1,094m	
EV charging facilities				
Key scope	████	Includes installation of EV chargers with standard charging speed, basic electrical infrastructure, and simple user interfaces and payment systems.	Higher-capacity fast or ultra-fast technology, advanced electrical infrastructure, load management, monitoring, and integrated payment and user systems.	
Quantity	████	1,800 park bays	1,800 park bays	
Unit rate	████	£7,800/park bay	£9,600/park bay	
Sub-total	████	£14m	£17m	
Sub-total Car parks and internal roads	████	£903m	£1,111m	
Total	████	£3,915m	£5,735m	Overall HAL's cost is within

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
				our benchmark range, although the allocation of certain elements may differ.

Source: HAL, Steer

Table 2.6: Cost assessment of HAL’s proposal – Utilities, ancillary and support facilities (2024 prices, TPI)

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Ancillary aviation facilities				
Aircraft maintenance hangars				
Key scope	████	Includes construction of ~34,000 m ² hangar facilities (2 WB + 2 NB bays plus support) with standard steel structure, slab, basic envelope and hangar doors, essential MEP/HVAC.	Enhanced structure and foundations, high-performance doors, full MEP/HVAC with environmental controls, bridge cranes, fixed docking systems (nose/tail/wing).	
Quantity	████	34,000 sqm	34,000 sqm	
Unit rate	████	£2,922/sqm	£3,734/sqm	
Sub-total	████	£99m	£127m	
Aviation fuel farms & hydrant systems				
Key scope	Four additional fuel tanks with 13,750 m ³ each	Includes 4 × 13,750 m ³ tanks with standard foundations, basic instrumentation, standard containment and basic automation/monitoring.	Includes 4 × 13,750 m ³ tanks with leak detection, cathodic protection, high-spec foundations, SCADA and metering, foam/water systems, and emergency power.	
Quantity	4 × 13,750 m ³	4 × 13,750 m ³	4 × 13,750 m ³	
Unit rate	████	£2,280/m ³	£2,640/m ³	
Sub-total	████	£125m	£145m	
Catering & Support services facilities				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	████	Includes basic 35,000 m ² catering and support buildings with standard structure, docks, kitchens, storage, and essential MEP.	Includes fully equipped 35,000 m ² catering and support buildings with standard structure, docks, kitchens, storage, and MEP.	
Quantity	████	35,000 sqm	35,000 sqm	
Unit rate	████	£2,623/sqm	£3,351/sqm	
Sub-total	████	£92m	£117m	
New Electrical Plant				
Key scope	████	Includes basic 60 MW electrical plant with standard transformers, switchgear, and primary distribution.	Covers fully equipped plant with redundant systems, advanced control and monitoring, backup generation, and higher resilience standards.	
Quantity	████	60 MW	60 MW	
Unit rate	████	£1.1m/MW	£2.3m/MW	
Sub-total	████	£66m	£138m	
Other Services. Cost Allocation Allowance for minor services				
Key scope	████	Allowance to cover other ancillary services.	Allowance to cover other ancillary services.	
Unit rate	████	1 % of Airfield infrastructure, Passenger terminals and processing, and Landside access and transport.	2 % of Airfield infrastructure, Passenger terminals and processing, and Landside access and transport.	
Sub-total	████	£131m	£356m	
Sub-total Ancillary aviation facilities	████	£513m	£883m	
Relocation and new critical services				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	The existing overhead powerlines at the western end of the new runway are to be removed and diverted underground. Longford substation needs to be relocated to a site to the west of the Colnbrook rail line and north of the A3044. Bath Road Sewer will be diverted into consolidated utility corridors along routes which will minimise effects on existing infrastructure and local communities.	Assumes limited relocation works with straightforward utility diversions, minimal affected services, and few temporary works or shutdown impacts.	Assumes extensive and complex relocations, multiple utility interfaces, unforeseen services, significant temporary works, and complex phasing and commissioning.	
Unit rate	██████	10% of Airfield infrastructure, Passenger terminals and processing, and Landside access and transport.	15% of Airfield infrastructure, Passenger terminals and processing, and Landside access and transport.	
Sub-total	██████	£1,311m	£2,700m	
River diversions / Major civil works				
Key scope	Several rivers and smaller tributaries need to be realigned	Involves a predominantly open, lined channel with standard civil works, waterproofing, and erosion protection, with simple crossings and outfalls.	Assumes a more complex solution combining open channel sections with substantial closed culvert or tunnel segments, involving greater depth, utility conflicts, challenging ground conditions, and more extensive temporary works.	
Quantity	██████	12,500 metres	12,500 metres	
Unit rate	██████	£16,200/m	£25,200/m	
Sub-total	██████	£202m	£315m	

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Cargo facilities				
Key scope	Increase existing cargo capacity by 50%	Includes construction of cargo facilities designed for 6 t/m ² load capacity with standard structure, basic handling equipment, storage areas, and essential MEP and safety systems.	Covers extensive temporary infrastructure including large-scale compounds, complex logistics areas, extensive temporary roads, and significant enabling and demolition works.	
Quantity	██████	206,000 sqm	206,000 sqm	
Unit rate	██████	£1,572/sqm	£1,740/sqm	
Sub-total	██████	£324m	£358m	
Temporary works				
Key scope	██████	Includes basic temporary works such as standard site compounds, worker accommodation, simple temporary access roads, minimal enabling works, and straightforward demolition and site clearance.	Covers extensive temporary infrastructure including large-scale compounds, complex logistics areas, extensive temporary roads, and significant enabling and demolition works.	
Unit rate	██████	8% of all of costs above	10% of all of the costs above	
Sub-total	██████	£1,237m	£2,203m	
Total	██████	£3,589m	£6,429m	Overall HAL's cost is within the benchmark range, although the allocation of certain elements may differ

Source: HAL, Steer

Table 2.7: Cost assessment of HAL's proposal – Environmental and community (2024 prices, TPI)

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Land acquisition and property compensation				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	████	Reflects standard land acquisition costs based on the assumed mix of residential, industrial/ logistics, and agricultural areas, with typical compensation and transaction costs.	Includes additional allowances for higher compensation, legal expenses, potential litigation, and other risks associated with compulsory purchase processes.	
Quantity	████	395 ha	395 ha	
Unit rate	████	£10.2m/ha	£12.3m/ha	
Sub-total	████	£4,032m	£4,848m	
Community compensation and social programmes				
Key scope	Community compensation including relocation of Harmondsworth Primary School, Heathrow Special Needs Centre and Community allotments at Stanwell Moor, Moor Lane and Pinglestone.	Community compensation including relocation of Harmondsworth Primary School, Heathrow Special Needs Centre and Community allotments at Stanwell Moor, Moor Lane and Pinglestone.	Community compensation including relocation of Harmondsworth Primary School, Heathrow Special Needs Centre and Community allotments at Stanwell Moor, Moor Lane and Pinglestone.	
Unit rate	████	5% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	6% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	████	£835m	£1,454m	
Specific environmental mitigations				

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	████	Includes standard environmental measures such as basic air quality monitoring, standard noise barriers, and limited wildlife relocation or community mitigation actions.	Covers comprehensive mitigation programmes with advanced air quality and monitoring, extensive wildlife relocation, large-scale noise control solutions, and broader community impact initiatives.	
Unit rate	████	2% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	3.5% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	████	£334m	£848m	
Total	████	£5,202m	£7,150m	Overall HAL's cost is below our benchmark range

Source: HAL, Steer

Table 2.8: Cost assessment of HAL's proposal – Programme and risk (2024 prices, TPI)

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Contingency and risk management				
Key scope	████	Includes standard contingencies for minor scope changes, moderate inflation, basic risk allowances, and standard insurance and contractual provisions.	Covers higher contingencies for significant scope growth, higher technical and programme uncertainties, broader insurance coverage, and a larger management reserve.	

Cost item	HAL	Steer low range benchmark	Steer high range benchmark	Comments
Unit rate	████	15% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	30% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	████	£2,506m	£7,269m	
Development Consent Order (DCO) process				
Key scope	████	Includes standard legal and regulatory work required to obtain the DCO, with limited stakeholder engagement and documentation.	Covers extensive legal processes, complex regulatory approvals, broad stakeholder consultation, detailed environmental assessments, and potential challenges or revisions.	
Unit rate	████	1% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	3% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	████	£167m	£727m	
Total	████	£2,673m	£7,996m	Overall HAL's cost is below our benchmark range

Source: HAL, Steer

3 Summary of the cost efficiency assessment

Conclusions

- 3.1 The following table includes a summary of our capex benchmarking assessment, followed by an explanation of the key conclusions.

Table 3.1: Cost assessment summary of HAL’s proposal (2024 prices, TPI)

Capex category	HAL cost (£bn)	Steer low range benchmark (£bn)	Steer high range benchmark (£bn)	RAG
Airfield infrastructure	█	3.5	4.9	In range
Passenger terminals and processors	█	5.7	7.2	Low
Landside access and transport	█	3.9	5.7	In range
Utilities, ancillary and support facilities	█	3.6	6.4	In range
Environmental and community	█	5.2	7.1	Low
Programme and risk	█	2.7	8.0	Low
Total	24.8	24.6	39.4	In range

Source: HAL, Steer

- 3.2 **Airfield infrastructure:** HAL’s estimate is close to the low range of the benchmark. There are some differences at the subcategory level between HAL and the benchmarks, mainly due to the lack of granular information. There is a large discrepancy in the subcategory ‘Aircraft stands, aprons and airside roads’, which needs to be investigated further.
- 3.3 **Passenger terminals and processor:** HAL’s estimate is close to the lower end of the benchmark range, although the subcategories included in ‘Airside underground links’ require further information.
- 3.4 **Landside access and transport:** HAL’s estimate is at the lower end of the cost benchmark. The scope of the works for the external road connections needs to be further detailed, and it might be underestimated.

- 3.5 Utilities, ancillary and support facilities: Although there is lack of detail in HAL’s information for the costs estimates of each major activity within this category, the overall amount is within the benchmark range.
- 3.6 Environmental and community: The subcategory ‘Land acquisition and compensation’ presents a large difference between HAL’s estimates and the benchmark range. The cost of this element will need to be calculated by undertaking a bottom-up exercise at the specific locations.
- 3.7 Programme and risk: HAL’s implied cost is 12% of all of the categories above except for ‘Environmental and community’. Compared with our benchmark range of 16% to 33% (including DCO costs), the Programme and risk cost category assumed for HAL is low. As HAL explains in their methodology, each of the capex elements already include an allowance for risk of 26%, which varies depending on their level of estimation maturity. Due to the differences in estimation methodologies, we assess that the capex estimates should also be compared at a total level and, on that basis, we assess that the overall risk allocation included in HAL’s estimate could be reasonable.
- 3.8 Total capex estimate proposed by HAL is inside the benchmarking range.

Results in CPI and TPI prices

- 3.9 In order to facilitate the traceability and usability of the results, we provide in the tables below the capex estimates in the original prices (2024 CPI prices) and in 2024 TPI prices.

Table 3.2: HAL - Cost assessment summary results – HAL proposal

Price base	HAL	Steer low range benchmark [vs. HAL]	Steer high range benchmark [vs. HAL]
2024 CPI prices	£33.0 bn	£32.7 bn [-1%]	£52.4 bn [+59%]
2024 TPI prices	£24.8 bn	£24.6 bn [-1%]	£39.4 bn [+59%]

Source: HAL, Steer

Table 3.3: HAL - Cost assessment summary results (annual) – HAL proposal (2026-2040)

	Prices	Total 2026-2056	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
HAL Proposal (original amount)	£bn, 2024 CPI	33.0	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, 2024 CPI	32.7	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, 2024 CPI	52.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conversion factor from 2024 CPI to Nominal			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HAL Proposal	£bn, Nominal	42.8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, Nominal	42.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, Nominal	67.9	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conversion factor from Nominal to 2024 TPI			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HAL Proposal	£bn, 2024 TPI	24.8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, 2024 TPI	24.6	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, 2024 TPI	39.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Source: HAL, Steer

Table 3.4: HAL - Cost assessment summary results (annual) – HAL proposal (2041-2056)

	Prices	Total 2026-2056	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056
HAL Proposal (original amount)	£bn, 2024 CPI	33.0	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, 2024 CPI	32.7	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, 2024 CPI	52.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conversion factor from 2024 CPI to Nominal prices			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HAL Proposal	£bn, Nominal	42.8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, Nominal	42.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, Nominal	67.9	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conversion factor from Nominal to 2024 TPI			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HAL Proposal	£bn, 2024 TPI	24.8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, 2024 TPI	24.6	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, 2024 TPI	39.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Source: HAL, Steer

Control Information

Prepared by

Steer
14-21 Rushworth Street
London SE1 0RB
+44 20 7910 5000
www.steergroup.com

Prepared for

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

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Author/originator

Gonzalo Velasco

Reviewer/approver

Stephen Wainwright

Other contributors

Jorge Fernandez
Valeria del Pilar Rosillo
Miguel Varas de Dios
Martin Lavrilloux
Fernando Ardavin

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Final report
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Appendix E – Initial cost efficiency assessment of capex expansion plans for Heathrow Airport: HWL Proposal

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Prepared by:

Steer
14-21 Rushworth Street
London SE1 0RB

+44 20 7910 5000

www.steergroup.com

Prepared for:

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

Client ref: Contract Ref. 3634

Our ref: 24949401

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The logo for Steer, featuring the word "steer" in a bold, lowercase, sans-serif font.

Contents

Glossary	i
1 Introduction	1
Overview	1
Our approach	1
Structure of this document	3
2 Assessment of HWL’s cost plan	4
Our understanding of the proponent’s information	4
Our cost assessment	10
3 Summary of the cost efficiency assessment	28
Conclusions	28
Results in CPI and TPI prices	29

Figures

Figure 1.1: CPI and TPI forecasts	3
Figure 2.1: HWL’s proposed scheme	5
Figure 2.2: HWL’s capex phasing	10
Figure 2.3: HWL’s proposed scheme – Surface Access Strategy	12

Tables

Table 2.1: HWL cost breakdown (Q4 2024 prices)	7
Table 2.2: HWL capex recategorisation	8
Table 2.3: Cost assessment of HWL’s proposal – Airfield infrastructure (2024 prices, TPI)	13
Table 2.4: Cost assessment of HWL’s proposal – Passenger terminals and processing (2024 prices, TPI)	15
Table 2.5: Cost assessment of HWL’s proposal – Landside access and transport (2024 prices, TPI)	16
Table 2.6: Cost assessment of HWL’s proposal – Utilities, ancillary and support facilities (2024 prices, TPI)	21
Table 2.7: Cost assessment of HWL’s proposal – Environmental and community (2024 prices, TPI)	24
Table 2.8: Cost assessment of HWL’s proposal – Programme and risk (2024 prices, TPI)	25
Table 3.1: Cost assessment summary of HWL’s proposal (2024 prices, TPI)	28
Table 3.2: HWL - Cost assessment summary results – HWL proposal	29
Table 3.3: HWL - Cost assessment summary results (annual) – HWL proposal (2026-2040)	30

Glossary

Acronym	Definition
ADRM	Airport Development Reference Manual
ANPS	Airports National Policy Statement
Arora	Arora Group
ATM	Air Traffic Movement
ATRS	Automated Tray Return System
BHS	Baggage Handling System
CAA	Civil Aviation Authority
Capex	Capital expenditure / Capital investment
CPI	Consumer Price Index
EBS	Early Baggage Storage
HAL	Heathrow Airport Limited
HWL	Heathrow West Limited, wholly owned subsidiary of Arora Group
IATA	International Air Transport Association
ICC	International Construction Costs
mppa	Million passengers per annum
NB	Narrow Body aircraft
ONS	Office for National Statistics
OSS	One Stop Security
SLAs	Service Level Agreements
sqm	Square metres
TPI	Tender Price Indices/Index
WACC	Weighted Average Cost of Capital
WB	Wide Body aircraft

Source: Steer

1 Introduction

Overview

- 1.1 This appendix forms part of the cost efficiency assessment of expansion proposals for Heathrow Airport. It provides detailed information, analyses and supporting evidence that underpin the assessment, and the conclusions presented in the Main Report. The materials included are intended to offer additional technical detail and context for specific aspects of the work.

Our approach

- 1.2 The proposals under review differ in terms of scope definition, cost structure and task grouping. Therefore, we have developed our own cost categorisation and have allocated the cost items of the proponent to the relevant categories.
- 1.3 Subsequent to the July 2025 submission, the proponent has shared with us further information related to scope and cost breakdown. We have categorised the cost breakdown we received from the proponent according to our common cost structure based on our understanding of the information provided to us. We explain our cost categorisation in the corresponding chapter.
- 1.4 We have categorised the capex components into the following main categories:
1. Airfield infrastructure;
 2. Passenger terminals and processing;
 3. Landside access and transport;
 4. Utilities, ancillary and support facilities;
 5. Environmental and community; and
 6. Programme and risk.
- 1.5 Each of these main cost categories have been divided into subcategories, covering the main scope of works according to the proponent's proposal. These subcategories, the proponent's scope, and our own assumptions are the basis for our quantity estimates and unit cost benchmarking.
- 1.6 The result of multiplying our quantity estimates by our unit cost benchmarks provides a new cost estimate per subcategory, which we compare against the costs provided by the proponent.
- 1.7 Based on the maturity of the master plan and the level of information currently available, the cost estimate that we provide in this assessment corresponds approximately to the early design stages of the RIBA Plan of Work, namely Stages 1 and 2 (Preparation and Brief / Concept Design). This RIBA classification reflects

the early planning phase of the project, where the scope definition remains at a high-level and conceptual. As a result, the expected accuracy range that we are assuming for the Contingency and risk management element of the capex estimate is approximately between 15% and 30%.

- 1.8 The main reference documents that we have analysed for this assessment are the following:
- Arora Group.pdf
 - 25.10.14 HW 2800 RWY [CAA].pdf
 - caa-Heathrow expansion capex template_for_HWL.xlsx
- 1.9 Aside from the information included in the list above, we have received further details of the proponent's plans through a Questions and Answers (Q&A) process coordinated by the CAA.

Cost adjustments

- 1.10 HWL stated in their proposal submitted to DfT in July 2025 that the costs when land acquisition was not included resulted in the [REDACTED] (Q4 2024 TPI prices) cost of their proposal. Through engagement and Q&A, HWL indicated to us that their estimate of costs with land acquisition would be in the range of [REDACTED] (Q4 2024 TPI prices). We therefore adjusted the overall cost of HWL to include the cost of land acquisition.
- 1.11 We note that the proposal does not include costs for new railway schemes connecting Heathrow and we did not make allowances for such costs in our assessment. The proponent has indicated that the Western Terminal Campus development will be future proofed for any potential new rail scheme.

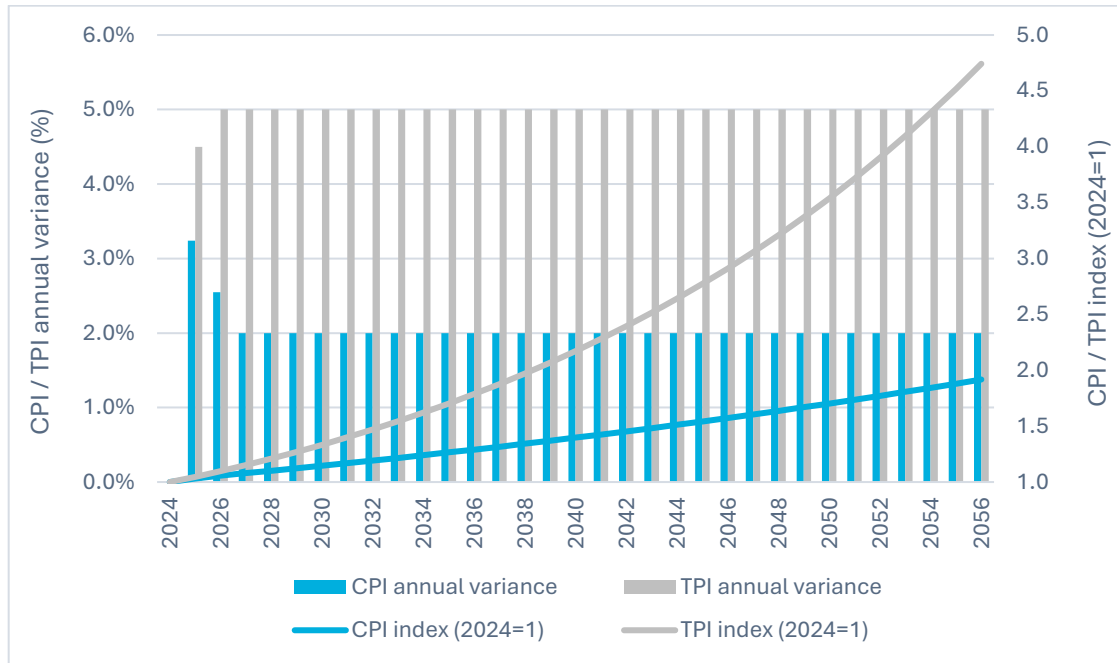
Price base adjustments

- 1.12 HWL's cost estimate has been expressed in Q4 2024 prices, which was later clarified to be TPI (Tender Price Index) prices.
- 1.13 Given the nature of the works that we need to benchmark at this stage of the expansion project, we assess that the construction price index (i.e. TPI) is a better reference than the CPI index. TPI is the construction index standard in the UK and benchmarks are commonly presented using this index, rather than CPI. Therefore, our benchmarking exercise is presented in annual average 2024 construction prices (2024 TPI prices). For forecasts, we have used the Q2 2025 Infrastructure tender price index (TPI) forecast from Turner & Townsend¹. This index provides annual construction costs forecast from 2025 to 2028. After that, we have assumed that the year-on-year construction cost increase in 2028 will remain constant for the following years.

¹ UK market intelligence Q2 2025, Turner & Townsend.

1.14 The chart below shows the CPI forecast from the ONS and our TPI forecast. It shows that the TPI prices are forecast to be 1.6 times higher than CPI prices by 2040, and 2.5 times higher by 2056.

Figure 1.1: CPI and TPI forecasts



Source: ONS, T&T, Steer analysis

1.15 We have also provided a summary of our results in 2024 CPI prices to facilitate the traceability and usability of our results.

Structure of this document

1.16 The remainder of this document is structured as follows:

- Chapter 2 includes our assessment of HWL’s cost plan.
- Chapter 3 provides the summary of our assessment of the cost efficiency of the proposal.

2 Assessment of HWL’s cost plan

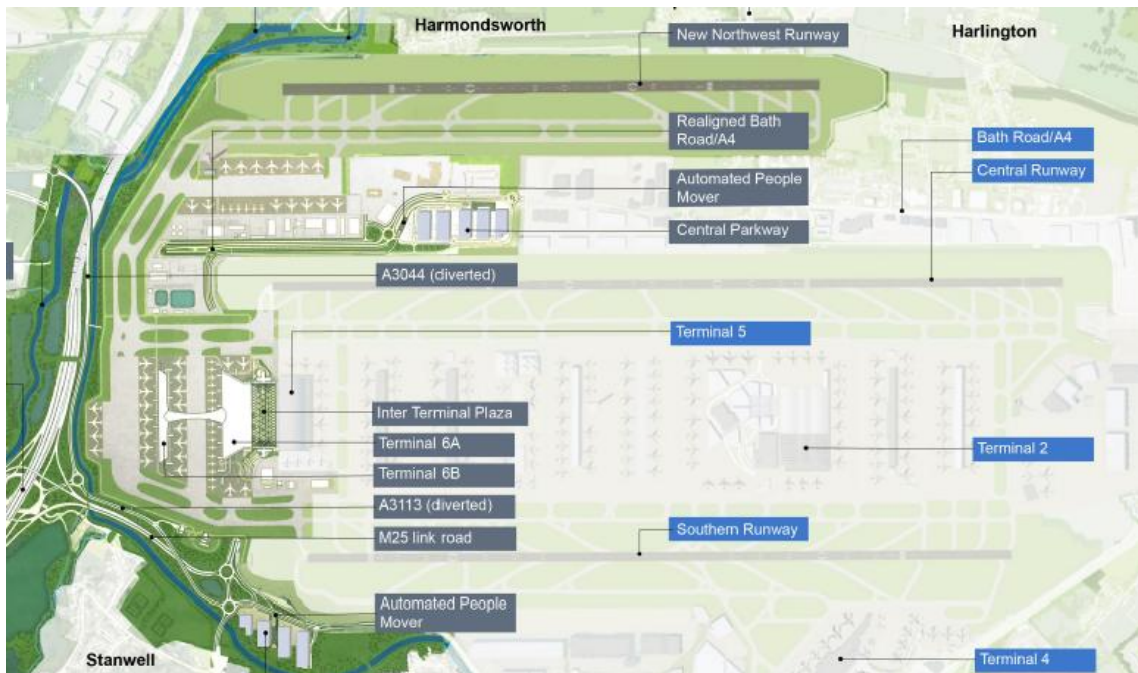
Our understanding of the proponent’s information

Scheme overview

- 2.1 Heathrow West Limited (HWL) propose a scheme which estimate at [REDACTED] (Q4 2024 prices), which features the following key elements:
- A new 2,800-metre northwest runway, capable of accommodating at least 260,000 annual air traffic movements, located entirely east of the M25 motorway, along with supporting taxiways and aircraft parking aprons, including both contact and remote stands.
 - A new passenger terminal building named Terminal 6 (T6), designed to handle up to 40 million passengers per annum, consisting of the main terminal building T6A and its satellite building T6B.
 - Key facilities associated with T6, including a pedestrian bridge connecting T6A and T6B, an Inter-Terminal Plaza (ITP) shared with Terminal 5, two new hotels, a Public Transport Hub allowing rail system extensions, and landside road access for Terminals T5 and T6.
 - New car parking facilities with a total capacity exceeding 67,000 spaces (including 33,000 new spaces), distributed across the ITP, Central Parkway, and Southern Parkway, connected to the ITP via automated people movers, along with additional active travel routes (pedestrian and cycling).
 - Upgrades to surface access, including realignment of public roads and maintenance works to maintain local connectivity.
 - River diversions, undertaken to clear the project site and provide ecological and flood prevention enhancements.
 - Green infrastructure, including landscaping, recreational, and ecological improvements.
 - New operational facilities for the airport and airlines, supporting increased flight activities related to the new northwest runway and replacing any displaced facilities.
 - Ancillary and utility facilities, including utility systems, airside roads, and aviation fuel supply systems.
 - Aviation fuel system facilities.
- 2.2 Land acquisition is excluded from HWL’s proposal submitted in July 2025. Based on further information provided by HWL, we understand that their estimate is

between [REDACTED] and [REDACTED]. For this assessment we have assumed a cost of [REDACTED] in Q4 2024 TPI prices.

Figure 2.1: HWL’s proposed scheme



Source: HWL, July 2025 submission. Figure 3. HWL’s Proposed Development

Cost assumptions

Included scope

2.3 The proposal from HWL includes costs for the following infrastructure and activities:

- New 2,800m Northwest Runway and parallel taxiway system.
- Aprons and taxiway network to connect the existing airfield with the proposed new runway, including:
 - WB Contact Stands: 20 in Apron 1.
 - NB Contact Stands: 16 in Apron 1.
 - WB Remote Stands: 4 in Apron 2 and 14 in Apron 3.
 - NB Remote Stands: 6 in Apron 3.
- Construction of a new processing Terminal T6A for +25 mppa which features a Gross Floor Area (GFA) of 340,000 sqm on four main levels with two basement levels and a partial mezzanine level.
- Construction of a new Satellite Terminal T6B (including the pedestrian bridge) for +15 mppa which features a GFA of 100,000 sqm on three main levels, with one full basement level and a partial mezzanine level. The floor area of T6B not including the sky bridge is approximately 90,000 square meters.
- New Inter Terminal Plaza (ITP) providing landside access to the existing T5 and the new T6.

- Car parking to provide 33,000 new spaces (Central Parkway, Southern Parkway, and ITP).
- Automated People Mover (APM) (also called Track Transit System (TTS)) connection for the Central and Southern Parkways with the ITP.
- Fire station (associated with the new runway).
- Hotels – two new hotels, each designed with 500 rooms.
- Surface access for the new terminal area.
- Environmental compensation and mitigation, including noise mitigation.
- Logistics and Temporary Facilities.
- General logistics items.

Excluded scope

2.4 The proposal from HWL excludes costs for the following infrastructure and activities:

- Land acquisition: The proposal defines that, according to their development, the area requirements are lower than the requirements included in the 2018 Airports National Policy Statement (ANPS) by 43 ha. However, the cost for land acquisition is excluded from HWL’s proposal submitted in July 2025. Based on further information provided by HWL, we understand that their estimate is between [REDACTED] and [REDACTED]. For this assessment we have assumed a cost of [REDACTED] in Q4 2024 TPI prices.
- Expansion of M25.
- Works in the existing Central Terminal Area, any works associated with T3 and any works associated with the extension of T2.
- APM connectivity between T5 and T2, and T5 and T6. Provision of busses in the event of APM failure.
- Baggage connectivity between T5 and T2.
- Lakeside Energy-from-Waste plant reprovision and, potentially, other critical infrastructure that needs to be relocated.
- Remote Hubs / Logistics Centres.
- New control tower.
- Reprovision of Sofitel Hotel capacity during construction works.
- Provision of busses as backup solution should the APMs cannot be developed.
- Surface access projects other than those specifically referred to in the individual cost estimates.
- Rivers pumping station(s), if required.
- Unknown major services/utilities diversions other than those specifically identified under surface access (e.g. for roads realignments).
- Asbestos related works.
- Community Infrastructure Levy.

Other assumptions

2.5 The cost estimate developed by HWL is based on the following assumptions:

- Costs are expressed in real construction prices, constant terms, referenced to Q4 2024 adjusted used an average of TPI and ONS – infrastructure price indices.
- Adjustments for Optimism Bias are excluded.
- Value-added tax is excluded.
- Specialist legal fees have not been included.

Cost breakdown

2.6 HWL has presented in its proposal the following cost breakdown. The total amount of [REDACTED] (Q4 2024 construction prices) initially disclosed excludes the land acquisition (and related) costs of [REDACTED]. The sum of both amounts equals £23.9bn (Q4 2024 prices construction prices).

Table 2.1: HWL cost breakdown (Q4 2024 prices)

Cost item	Capex (£m, Q4 2024)
Site Wide	[REDACTED]
Utilities	[REDACTED]
Airfield Infrastructure	[REDACTED]
Terminal Complex	[REDACTED]
Aviation Support Facilities	[REDACTED]
Maintenance and Cargo	[REDACTED]
Landside	[REDACTED]
External Infrastructure	[REDACTED]
Development Costs	[REDACTED]
Professional Fees	[REDACTED]
Risk & Contingency	[REDACTED]
Total (excl. land acquisition)	[REDACTED]
Land acquisition	[REDACTED]
Total	23,878

Source: HWL, Steer

Capex harmonisation

- 2.7 To facilitate our assessment of efficiency of costs, we have developed a standard categorisation of capex across the main capex components, which we apply to the two proposals to provide comparable results. Upon request, HWL shared their capex estimate in a format that was close to the capex categorisation template that we created for the analysis.
- 2.8 The information received from HWL has been adapted according to the items and scope included in our capex categorisation template.
- 2.9 HWL’s cost estimate has been expressed in Q4 2024 prices, which was later clarified to be TPI (Tender Price Index) prices.

2.10 The following table reflects how HWL’s capex estimate has been categorised using our standard categorisation template. The capex numbers are presented in both Q4 2024 and 2024 (i.e. average of the year) prices, both linked to TPI.

Table 2.2: HWL capex recategorisation

Standard template	HWL categories	Capex (£bn, Q4 2024, TPI)	Capex (£bn, 2024, TPI)	Comments
Total Airfield infrastructure		████	████	
New runway	New runway	████	████	
	Sub-total	████	████	
Taxiway system and runway access	Taxiway system and runway access:	████	████	
	Sub-total	████	████	
Aircraft stands, aprons and airside roads	Airside Roads	████	████	Includes provision for tunnels for airside roads
	Sub-total	████	████	
Total Passenger terminals and processing		████	████	
New passenger terminals	New passenger terminals	████	████	
	Sub-total	████	████	
Airside underground links	Airside underground links	████	████	Assumed that includes BHS tunnel and BHS
	Sub-total	████	████	
Total Landside access and transport		████	████	
Intermodal plaza / Public transport hub	Intermodal plaza / Public transport hub	████	████	Several items have been grouped under this category
	Station Box	████	████	
	Hotels	████	████	
	Conference Centre	████	████	
	Listed building decants	████	████	
	Sub-total	████	████	
Road connections	Road connections	████	████	
	Sub-total	████	████	
Car parks and internal roads	Landside Parkways	████	████	Includes the APM systems connecting the remote car parks with the Inter Terminal Plaza
	Sub-total	████	████	

Standard template	HWL categories	Capex (£bn, Q4 2024, TPI)	Capex (£bn, 2024, TPI)	Comments
Total Utilities, ancillary and support facilities		████	████	
Ancillary aviation facilities	Airfield Utilities	████	████	
	Sub-total	████	████	
Relocation and new critical services	Relocation and new critical services	████	████	
	Sub-total	████	████	
River diversions / Major civil works	River diversions	████	████	
	Sub-total	████	████	
Cargo facilities	Cargo building west	████	████	No detailed information provided
	Sub-total	████	████	
Temporary works	Temporary works	████	████	Archaeology is included in this category
	Archaeology	████	████	
	Sub-total	████	████	
Total Environmental and community		████	████	
Green infrastructure, landscaping and environmental enhancements	Green infrastructure	████	████	HWL's costs based on Jacobs Cost and Commercial Viability Report dated 30 June 2015
	Sub-total	████	████	
Land acquisition and property compensation	Land acquisition	████	████	Clarification provided by HWL. We assume the upper end of the range provided
	Sub-total	████	████	
Community compensation and social programmes	Community	████	████	HWL's costs based on Jacobs Cost and Commercial Viability Report dated 30 June 2015
	Sub-total	████	████	
Sustainability and energy efficiency investments	Sustainability	████	████	HWL's costs based on Jacobs Cost and Commercial Viability Report dated 30 June 2015
	Sub-total	████	████	
	Environmental mitigations	████	████	HWL's costs based on Jacobs Cost and

Standard template	HWL categories	Capex (£bn, Q4 2024, TPI)	Capex (£bn, 2024, TPI)	Comments
Specific environmental mitigations	Sub-total	[Redacted]	[Redacted]	Commercial Viability Report dated 30 June 2015
Total Programme and risk		[Redacted]	[Redacted]	
Contingency and risk management	Contingency and risk	[Redacted]	[Redacted]	For comparison purposes, these three items have been grouped under this category
	Sub-total	[Redacted]	[Redacted]	
Development Consent Order (DCO) process	Consents	[Redacted]	[Redacted]	
	Sub-total	[Redacted]	[Redacted]	
Professional Fees	Professional Fees	[Redacted]	[Redacted]	
	Sub-total	[Redacted]	[Redacted]	
Total		23.9	23.7	

Source: HWL, Steer. Note: There could be differences due to rounding.

Capex phasing

- 2.11 The plan presented by HWL includes all the expansion capex between 2029 and 2040, as presented in the chart below.

Figure 2.2: HWL's capex phasing

[Redacted]

Source: HWL, Steer

Our cost assessment

Approach

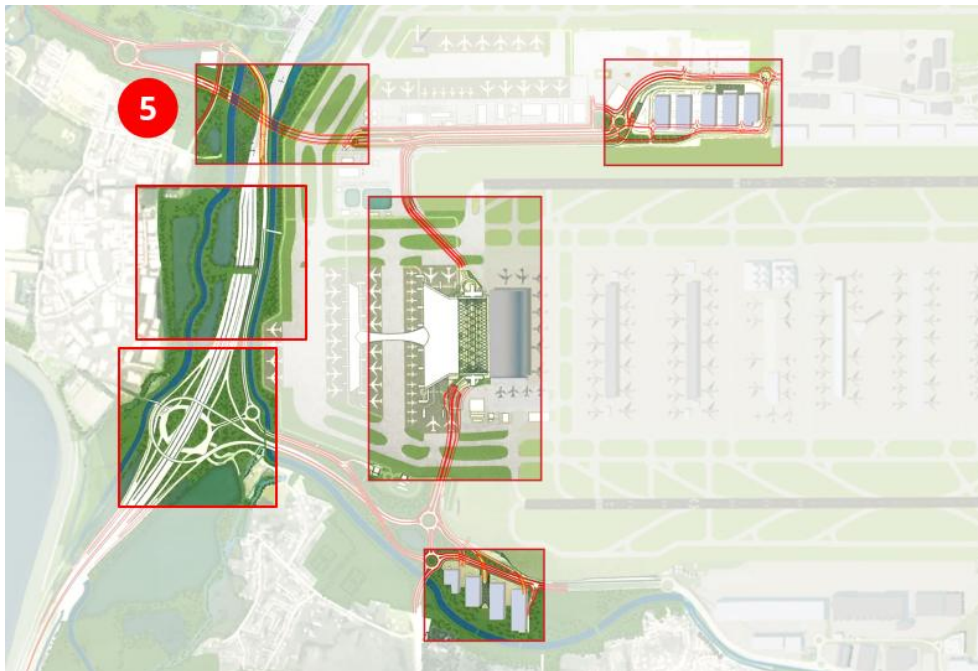
- 2.12 Given the very limited information provided by HWL, our assessment of the costs is based on a high-level and top-down benchmarking. The benchmarking source data is almost entirely confidential based on data we hold from previous airport projects in the UK and Europe, mainly.
- 2.13 The range of prices obtained through the projects considered in the benchmarking are adjusted to reflect the local construction cost of London.
- 2.14 The cost of the items defined by HWL are high-level costs estimations that cover a very extensive scope of work with great uncertainty regarding what is included in each. As described in the previous section, we have made some assumptions to allocate HWL's costs to our standard capex categorisation template.
- 2.15 For our assessment of costs, we carried out some measurements based on the sketches included in the proponent's reference documents to obtain a high-level indication of quantities delivered (for example, we have estimated 580 metres of baggage tunnel connecting the main terminal and the satellite). We recognise that quantities estimated based on sketches are not precise and, therefore, our

quantities may differ from those considered by the proponent in their cost estimates. We also recognise that our assumptions about the actual location of the infrastructure elements, which is largely based on the sketches provided in the proposal, may differ from the exact location, which may have some impact on costs. We have implicitly reflected measurement uncertainty in both our low and high independent cost estimate ranges through our allowances for contingency and risk.

Areas of uncertainty and assumptions

- 2.16 The information from the proponent regarding quantities is very limited and, therefore, we had developed estimations based on assumptions and high-level measurements from the available information (e.g. pdf drawings and sketches included in HWL’s proposal).
- 2.17 The assumptions that we have used are the following:
- Taxiways: A total area of 2,680,980 sqm is estimated.
 - Tunnels: An estimated total length of 3,170 metres.
 - Length of APM connection of the Central and Southern Parkways with the ITP is not provided. The following lengths have been estimated:
 - ITP - Southern Parkway and ITP - Central Parkway: 2,835 metres
 - BHS tunnel connection T6A and T6B: 580 metres.
 - ITP: A total of 42,500 sqm has been considered, including the areas for the proposed new hotels.
 - Station Box: It is indicated that it is located within the ITP, but the area is not mentioned. We have considered a station box of 21,250 sqm located in the ITP.
 - Road Connections: The internal roads are considered to have 12 kilometres and the external roads 16 kilometres for the highways and 41 kilometres for the conventional roads. As an example, these measurements have been sourced from the illustration below.

Figure 2.3: HWL’s proposed scheme – Surface Access Strategy



Source: HWL, October 2025 presentation to CAA, page 33

- **New Facilities:** The total estimated cost for the Fire Station, Petrol Station, Parking, Washing Facility, Storage Facilities, Commercial Facilities, Fuel Farm, Logistics Centre, Maintenance Facility, etc. are indicated; however, no surface area, location, or quantifiable information is provided. For these facilities, we have assumed a standard unit rate for a development of this type of airport facilities.
- **Electrical vehicles charges:** 5% of car parking spaces has been considered to be provided with the equipment.
- **Fuel farm:** 4 fuel tanks of 13,750 m³ each has been assumed.
- **For the taxiway system and runway access,** the layout represented in the sketches has been considered. Although HWL’s scheme appears not to include earthworks and grading for the runways, safety areas, taxiways, and associated safety zones, we have factored that in our cost estimates.
- **Cargo facilities:** The item is included for Maintenance and Cargo; however, its scope is not defined, and the assigned cost seems low for a cargo expansion activity. Contrary to HWL’s plans, we are assuming 206,000 sqm of additional cargo facilities to support the expected cargo activity expansion.
- **ITP is designed to include hotels and the station box,** however assigned areas to each function are not defined. We have made our own assumptions for these facilities, as explained in the benchmarking analysis below.
- **Land acquisition:** We have used an estimate of [REDACTED] for this purpose.
- **Baggage Tunnel:** We assume that a BHS tunnel connection between T6A and T6B is included in the ‘Airside underground links’ item.
- **Sustainability and energy efficiency investments and strategies** are not defined in proponent’s proposal. We understand that these have not been

considered as an independent item of the cost estimate but rather imbedded across several infrastructure elements.

Benchmarking

- 2.18 Based on our benchmarking data, we have estimated a ‘low’ and a ‘high’ range cost estimate for each element included in the scope of HWL’s proposal.
- 2.19 The following tables provide a detailed description of our capex assessment by category. All the capex numbers are presented in TPI prices.

Table 2.3: Cost assessment of HWL’s proposal – Airfield infrastructure (2024 prices, TPI)

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
New runway				
Key scope	A new 2,800-metre runway.	A new 2,800-metre runway. Includes basic runway construction with earthworks, standard pavement layers, essential safety areas (RESA, clearway, stopway), primary drainage, basic lighting and CAT I ILS, standard markings, and minimal taxiway connections.	A new 2,800-metre runway. Covers a fully equipped CAT III runway with enhanced pavement design, extended safety areas, full drainage and stormwater systems, complete AGL and navigation aids, multiple rapid exits, advanced control systems, backup power, and full commissioning.	
Quantity	████	840,000 sqm	840,000 sqm	
Unit rate	████	£900/sqm	£958/sqm	
Sub-total	████	£756m	£804m	
Taxiway system & runway access				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	Aprons and taxiway network to connect the existing airfield with the proposed new runway.	Includes essential taxiway infrastructure with basic earthworks, standard pavement structure, limited parallel and rapid-exit taxiways, primary drainage, basic lighting, and standard markings and signage.	Covers a fully developed taxiway system with extensive high-speed exits, enhanced pavement design, complete drainage, full lighting and signage packages, and full Airfield Lighting Control and Monitoring System integration.	We assume a full development of the taxiways system to mitigate aircraft congestion on the ground and the associated grading, earthworks and safety areas. Our scope is larger than HWL's.
Quantity	████	2,680,980 sqm	2,680,980 sqm	
Unit rate	████	£700/sqm	£1,020/sqm	
Sub-total	████	£1,877m	£2,735m	
Aircraft stands, aprons and airside roads				
Key scope	WB Contact Stands: 20. NB Contact Stands: 16. WB Remote Stands: 18. NB Remote Stands: 6.	Includes paving for aprons with both contact and remote stands, standard drainage, markings, signage, basic stand lighting, limited GSE areas, and perimeter fencing. Contact stands are provided with only essential services and minimal ground infrastructure.	Covers a fully equipped apron system with enhanced pavement design, full drainage and lighting systems, comprehensive GSE staging, operational access roads, advanced security and access control, and integrated perimeter infrastructure. Contact stands include full ground service installations such as PCA units, fuel pits, and 400 Hz power supply.	
Quantity	████	514,305 sqm	514,305 sqm	
Unit rate	████	£684/sqm	£920/sqm	
Sub-total	████	£352m	£473m	

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Total	████	£2,985m	£4,012m	We assess that HWL’s estimate might underestimate the earthworks and taxiway system that are required

Source: HWL, Steer

Table 2.4: Cost assessment of HWL’s proposal – Passenger terminals and processing (2024 prices, TPI)

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
New passenger terminals				
Key scope	Construction of a new processing Terminal T6A for +25 mppa. Construction of a new Satellite Terminal T6B (including the pedestrian bridge) for +15 mppa.	Includes core terminal and satellite construction, essential passenger areas, basic vertical circulation, shell commercial spaces, and minimal systems.	Covers fully equipped terminals with multiple boarding bridges, full vertical circulation, commercial fit-out readiness, and complete systems including advanced, and integrated security.	
Quantity	████	440,000 sqm	440,000 sqm	
Unit rate	████	£9,000/sqm	£11,500/sqm	
Sub-total	████	£3,960m	£5,060m	
Airside underground links				
Baggage Tunnel				
Key scope	BHS tunnels	Includes a standard BHS tunnel with conventional conveyor-based transport, basic utilities, and essential structural works to connect the terminal and satellite.	Covers an advanced baggage tunnel equipped with high-speed Individual Carrier Systems (ICS), full automation, enhanced controls, and complete integration with terminal baggage operations.	Assumed BHS tunnel connection between T6A and T6B
Quantity	████	580 metres	580 metres	
Unit rate	████	£192,000/m	£228,000/m	

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Sub-total	████	£111m	£132m	
Baggage Handling System				
Key scope	████	Conventional conveyor-based BHS with standard screening, manual encoding, and limited automation.	Fully automated ICS or tray-based BHS with high-speed sorting, full redundancy, advanced screening, and integrated control systems.	BHS for 40 mppa between both terminals
Quantity	████	1	1	
Unit rate	████	£454m	£601m	
Sub-total	████	£454m	£601m	
Sub-total Airside underground links	████	£566m	£733m	
Total	████	£4,526m	£5,793m	HWL's estimate is below the lower end of the range

Source: HWL, Steer

Table 2.5: Cost assessment of HWL's proposal – Landside access and transport (2024 prices, TPI)

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Intermodal plaza / Public transport hub				
Inter Terminal Plaza				
Key scope	████	Includes basic intermodal plaza with standard drop-off areas, bus and taxi stands, simple pedestrian connections, basic lighting, signage, and minimal security systems.	Covers a fully integrated intermodal hub with enhanced passenger facilities, direct connections to rail and underground, covered walkways, advanced wayfinding, full security and access control, and high-spec finishes.	
Quantity	████	63,750 sqm	63,750 sqm	
Unit rate	████	£5,690/sqm	£8,510/sqm	
Sub-total	████	£363m	£543m	
Station Box				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	████	Includes a basic underground station box structure with essential civil works, platforms, and minimal finishes to accommodate underground and APM services.	Covers a fully integrated station with complete architectural finishes, full MEP and safety systems, advanced passenger information and control systems.	
Quantity	████	21,250 sqm	21,250 sqm	
Unit rate	████	£3,730/sqm	£4,130/sqm	
Sub-total	████	£79m	£88m	
Hotels				
Key scope	Two hotels with 500 rooms each.	Standard structure, finishes, essential MEP and HVAC systems, and basic furnishing and equipment.	Fully developed hotels with higher-quality finishes, full MEP and HVAC systems, complete FF&E, extensive public and commercial areas, and full integration with adjacent transport and terminal facilities.	
Quantity	████	50,000 sqm	50,000 sqm	
Unit rate	████	£3,890/sqm	£5,920/sqm	
Sub-total	████	£195m	£296m	
Sub-total Intermodal Plaza / Public transport hub	████	£637m	£926m	
Road connections				
Internal roads				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	████	Includes basic internal road network with standard pavement, signage, lighting, and minimal drainage to provide essential airside and landside connectivity.	Higher pavement standards, full drainage, lighting and signage, landscaping, utilities integration, and enhanced traffic management infrastructure.	
Quantity	████	12 kilometres	12 kilometres	
Unit rate	████	£6.0m/km	£8.4m/km	
Sub-total	████	£72m	£101m	
Local conventional roads				
Key scope	████	Includes basic road network with standard pavement, signage, lighting, and minimal drainage to provide essential connectivity.	Higher pavement standards, full drainage, lighting and signage, landscaping, utilities integration, and enhanced traffic management infrastructure.	
Quantity	████	41 kilometres	41 kilometres	
Unit rate	████	£7.8m/km	£9.6m/km	
Sub-total	████	£320m	£394m	
Highway / Expressway (M25, M4, A4, A3044)				
Key scope	████	Basic highway connections and modifications with standard pavement works junction adjustments, signage, and minimal drainage and lighting.	Extensive expressway works including new links, major junction reconfigurations, grade-separated interchanges, full drainage, lighting, traffic management systems, and utility diversions.	
Quantity	████	16 kilometres	16 kilometres	
Unit rate	████	£24m/km	£30m/km	
Sub-total	████	£384m	£480m	
Tunnel cut & cover				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	████	Includes standard cut-and-cover tunnel construction with excavation, reinforced concrete structure, waterproofing, drainage, basic ventilation, and essential MEP and safety systems.	Cost differences are driven by the scale and complexity of the works, particularly major junction redesigns, new infrastructure, and integration with existing motorway networks.	
Quantity	████	3,170 metres	3,170 metres	
Unit rate	████	£332k/m	£574k/m	
Sub-total	████	£1,053m	£1,820m	
Sub-total Road connections	████	£1,829m	£2,795m	HWL might have underestimated the breadth and complexity of the road works.
Car parks and internal roads				
Multi – storey car parks				
Key scope	Car parking to provide 33,000 new spaces (Central Parkway, Southern Parkway, and ITP)	Includes basic multi-storey car park structures with standard concrete frames, basic finishes, lighting, signage, drainage, and minimal access control systems.	Covers fully equipped car parks with enhanced structural design, improved finishes, complete lighting and drainage, advanced access control and payment systems, and full integration with terminal access routes.	
Quantity	████	33,000 park bays	33,000 park bays	
Unit rate	████	£26k/park bay	£32k/park bay	
Sub-total	████	£858m	£1,056m	
EV charging facilities				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	████	Includes installation of EV chargers with standard charging speed, basic electrical infrastructure, and simple user interfaces and payment systems.	Higher-capacity fast or ultra-fast technology, advanced electrical infrastructure, load management, monitoring, and integrated payment and user systems.	Assumption for equipment of dedicated EV chargers for car parks
Quantity	████	1,650 park bays	1,650 park bays	
Unit rate	████	£7,800/park bay	£9,600/park bay	
Sub-total	████	£13m	£16m	
APM Car Parking				
Key scope	Automated People Mover (APM) connection for the Central and Southern Parkways with the ITP.	Includes civil works for the guideway and stations, supply of a standard driverless APM system.	Includes civil works and the supply of a high-capacity APM system with advanced vehicles, higher speed, guideway equipment, full power and substation infrastructure, and advanced signalling, automation, telecom, and security systems.	APM between car parking and ITP
Quantity	████	2,835 metres	2,835 metres	
Unit rate	████	£140k/m	£190k/m	
Sub-total	████	£397m	£539m	
Sub-Total Car parks and internal roads	████	£1,268m	£1,611m	
Total	████	£3,733m	£5,331m	HWL's proposed cost is in the range, but at the lower end, of the cost benchmark

Source: HWL, Steer

Table 2.6: Cost assessment of HWL’s proposal – Utilities, ancillary and support facilities (2024 prices, TPI)

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Ancillary aviation facilities				
Aircraft maintenance hangars				
Key scope	████	Includes construction of ~34,000 m ² hangar facilities (2 WB + 2 NB bays plus support) with standard steel structure, slab, basic envelope and hangar doors, essential MEP/HVAC.	Enhanced structure and foundations, high-performance doors, full MEP/HVAC with environmental controls, bridge cranes, fixed docking systems.	
Quantity	████	34,000 sqm	34,000 sqm	
Unit rate	████	£2,922/sqm	£3,734/sqm	
Sub-total	████	£99m	£127m	
Aviation fuel farms & hydrant systems				
Key scope	Delivery pipeline. Fuel storage facility. Underground hydrant fuelling systems at all new aircraft parking aprons.	Includes 4 × 13,750 m ³ tanks with standard foundations, basic instrumentation, standard containment and basic automation/monitoring.	Covers 4 × 13,750 m ³ tanks with leak detection, cathodic protection, high-spec foundations, SCADA and metering, foam/water systems, and emergency power.	
Quantity	4 × 13,750 m ³	4 × 13,750 m ³	4 × 13,750 m ³	
Unit rate	████	£2,280/m ³	£2,640/m ³	
Sub-total	████	£125m	£145m	
Catering & Support services facilities				
Key scope	████	Includes basic 35,000 m ² catering and support buildings with standard structure, docks, kitchens, storage, and essential MEP.	Covers fully equipped facilities with advanced kitchen and cold-chain systems, automation, specialised storage, and enhanced building services.	
Quantity	████	35,000 sqm	35,000 sqm	
Unit rate	████	£2,623/sqm	£3,351/sqm	

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Sub-total	████	£92m	£117m	
New electrical plant				
Key scope	████	Includes basic 60 MW electrical plant with standard transformers, switchgear, and primary distribution.	Covers fully equipped plant with redundant systems, advanced control and monitoring, backup generation, and higher resilience standards.	
Quantity	████	60 MW	60 MW	
Unit rate	████	£1.1m/MW	£2.3m/MW	
Sub-total	████	£66m	£138m	
Sub-total Ancillary aviation facilities	████	£383m	£527m	The benchmark includes elements that are not considered by HWL in their cost estimate.
Relocation and new critical services				
Key scope	████	Assumes limited relocation works with straightforward utility diversions, minimal affected services, and few temporary works or shutdown impacts.	Assumes extensive and complex relocations, multiple utility interfaces, unforeseen services, significant temporary works, and complex phasing and commissioning.	
Unit rate	████	10% of Airfield infrastructure, Passenger terminals and processing, and Landside access and transport.	15% of Airfield infrastructure, Passenger terminals and processing, and Landside access and transport.	
Sub-total	████	£1,124m	£2,271m	
River diversions / Major civil works				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	- Diversion of existing rivers / watercourses - Flood protection embankments, culverts and channels - Wetland/ Retention ponds - Aquatic ecosystem restoration	Involves a predominantly open, lined channel with standard civil works, waterproofing, and erosion protection, with simple crossings and outfalls.	Assumes a more complex solution combining open channel sections with substantial closed culvert or tunnel segments, involving greater depth, utility conflicts, challenging ground conditions, and more extensive temporary works.	
Quantity	████	10,200 metres	10,200 metres	
Unit rate	████	£16,200/m	£25,200/m	
Sub-total	████	£165m	£257m	
Cargo facilities				
Key scope	████	Includes construction of cargo facilities designed for 6 t/m ² load capacity with standard structure, basic handling equipment, storage areas, and essential MEP and safety systems.	Covers extensive temporary infrastructure including large-scale compounds, complex logistics areas, extensive temporary roads, and significant enabling and demolition works.	We are assuming a larger cargo facility expansion
Quantity	████	206,000 sqm	206,000 sqm	
Unit rate	████	£1,572/sqm	£1,740/sqm	
Sub-total	████	£323m	£359m	
Temporary works				
Key scope	████	Includes basic temporary works such as standard site compounds, worker accommodation, simple temporary access roads, minimal enabling works, and straightforward demolition and site clearance.	Covers extensive temporary infrastructure including large-scale compounds, complex logistics areas, extensive temporary roads, and significant enabling and demolition works.	

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Unit rate	████	8% of all the costs included above	10% of all the costs included above	
Sub-total	████	£1,059m	£1,855m	
Total	████	£3,055m	£5,268m	HWL does not include critical elements of the scope, and is below the range

Source: HWL, Steer

Table 2.7: Cost assessment of HWL’s proposal – Environmental and community (2024 prices, TPI)

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Green infrastructure, landscaping and environmental enhancements				
Key scope	████	Recreational green areas, cycle/walking routes.	Recreational green areas, cycle/walking routes.	
Unit rate	████	1% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	2% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	████	£143m	£408m	
Land acquisition and property compensation				
Key scope	Residential property buyouts (with compensation premium) and agricultural land purchase.	Residential property buyouts (with compensation premium) and agricultural land purchase.	Residential property buyouts (with compensation premium) and agricultural land purchase.	
Quantity	████	352 ha	352 ha	
Unit rate	████	£10.2m/ha	£12.3m/ha	
Sub-total	████	£3,590m	£4,317m	
Community compensation and social programmes				
Key scope	████	Contributions to the community.	Contributions to the community.	

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Unit rate	████	5% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	6% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	████	£715m	£1,224m	
Specific environmental mitigations				
Key scope	████	Includes standard environmental measures such as basic air quality monitoring, standard noise barriers, and limited wildlife relocation or community mitigation actions.	Covers comprehensive mitigation programmes with advanced air quality and monitoring, extensive wildlife relocation, large-scale noise control solutions, and broader community impact initiatives.	
Unit rate	████	2% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	3.5% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	████	£286m	£714m	
Total	████	£4,805m	£6,734m	HWL's estimate is within the benchmark range

Source: HWL, Steer

Table 2.8: Cost assessment of HWL's proposal – Programme and risk (2024 prices, TPI)

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Contingency and risk management				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Key scope	Risk on Construction. Risk on Development Costs. Risk on Professional Fees.	Includes standard contingencies for minor scope changes, moderate inflation, basic risk allowances, and standard insurance and contractual provisions.	Covers higher contingencies for significant scope growth, higher technical and programme uncertainties, broader insurance coverage, and a larger management reserve.	
Unit rate	██████	15% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	30% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	██████	£2,145m	£6,122 m	
Development Consent Order (DCO) process				
Key scope	██████	Includes standard legal and regulatory work required to obtain the DCO, with limited stakeholder engagement and documentation.	Covers extensive legal processes, complex regulatory approvals, broad stakeholder consultation, detailed environmental assessments, and potential challenges or revisions.	
Unit rate	██████	1% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	3% of Airfield infrastructure, Passenger terminals and processing, Landside access and transport, and Utilities, ancillary and support facilities.	
Sub-total	██████	£143m	£612m	
Professional Fees				

Cost item	HWL	Steer low range benchmark	Steer high range benchmark	Comments
Sub-total	██████	N/A	N/A	We assume that the Professional Fees are included in all the categories above.
Total	██████	£2,288m	£6,734m	HWL's cost is within the benchmark range.

Source: HWL, Steer

3 Summary of the cost efficiency assessment

Conclusions

- 3.1 The following table includes a summary of our capex benchmarking assessment, followed by an explanation of the key conclusions.

Table 3.1: Cost assessment summary of HWL’s proposal (2024 prices, TPI)

Capex category	HWL cost (£bn)	Steer low range benchmark (£bn)	Steer high range benchmark (£bn)	RAG
Airfield infrastructure	2.3	3.0	4.0	Low
Passenger terminals and processors	4.5	4.5	5.8	Low
Landside access and transport	3.7	3.7	5.3	In range
Utilities, ancillary and support facilities	3.1	3.1	5.3	Low
Environmental and community	4.8	4.8	6.7	In range
Programme and risk	2.3	2.3	6.7	In range
Total	23.7	21.4	33.9	In range

Source: HWL, Steer

- 3.2 **Airfield infrastructure:** We assess that HWL might have underestimated the earthworks and taxiway system that are required to develop the proposed runway and enable a flexible operability of the airfield; hence the costs are materially lower than the benchmark.
- 3.3 **Passenger terminals and processor:** HWL’s cost estimate is close to the lower end of the benchmark range.
- 3.4 **Landside access and transport:** The proposed cost estimates are in line with the benchmark range at an overall level, albeit there are differences among subcategories.
- 3.5 **Utilities, ancillary and support facilities:** We assume that HWL’s cost estimate fall short of the benchmark due to the absence of critical elements of the scope, which include ‘Ancillary aviation facilities’, and ‘Relocation and new critical services’.

- 3.6 Environmental and community: Costs are in line with benchmarks, with Land acquisition being the largest element of the category.
- 3.7 Programme and risk: HWL’s implied cost for Contingency and risk management is 25% of all of the categories above except for ‘Environmental and community’, versus a benchmark range of 15% to 30%. On top of that, HWL applies an implied 1% cost, which is also aligned with the benchmark range. Contrary to our methodology, HWL applies an additional implied 17% cost for Professional Fees. Considering that the cumulative costs over which these percentages are applied to are lower for HWL than for our own estimation, the overall Programme and risk category cost is still within the benchmark range.
- 3.8 Total capex estimate proposed by HWL is inside the benchmarking range.

Results in CPI and TPI prices

- 3.9 In order to facilitate the traceability and usability of the results, we provide in the tables below the capex estimates in 2024 CPI prices and in 2024 TPI prices.

Table 3.2: HWL - Cost assessment summary results – HWL proposal

Price base	HWL	Steer low range benchmark [vs. HWL]	Steer high range benchmark [vs. HWL]
2024 CPI prices	£30.2 bn	£27.3 bn [-10%]	£43.2 bn [+43%]
2024 TPI prices	£23.7 bn	£21.4 bn [-10%]	£33.9 bn [+43%]

Source: HWL, Steer. Note: HWL costs are inclusive of █████ (2024 Q4 TPI prices) for land acquisition, which HWL did not include in its proposal costed at █████ (Q4 2024 TPI) but provided to us as part of Q&A.

Table 3.3: HWL - Cost assessment summary results (annual) – HWL proposal (2026-2040)

	Prices	Total	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
HWL Proposal (original amount)	£bn, Q4 2024 TPI	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Adjustment for Land acquisition	£bn, Q4 2024 TPI	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HWL Proposal (adjusted)	£bn, Q4 2024 TPI	23.9	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, Q4 2024 TPI	21.6	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, Q4 2024 TPI	34.2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conversion factor from Q4 2024 TPI to 2024 TPI			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HWL Proposal (adjusted)	£bn, 2024 TPI	23.7	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, 2024 TPI	21.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, 2024 TPI	33.9	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conversion factor from 2024 TPI to Nominal			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HWL Proposal (adjusted)	£bn, Nominal	37.0	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, Nominal	33.5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, Nominal	53.0	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Conversion factor from Nominal to 2024 CPI			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
HWL Proposal (adjusted)	£bn, 2024 CPI	30.2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer low range benchmark	£bn, 2024 CPI	27.3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Steer high range benchmark	£bn, 2024 CPI	43.2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Source: HWL, Steer. Note: We have assumed that the phasing of the land acquisition capex is between 2029 and 2032.

Control Information

Prepared by

Steer
14-21 Rushworth Street
London SE1 0RB
+44 20 7910 5000
www.steergroup.com

Prepared for

Civil Aviation Authority
11 Westferry Circus,
Canary Wharf, London
E14 4HD

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Author/originator

Gonzalo Velasco

Reviewer/approver

Stephen Wainwright

Other contributors

Jorge Fernandez
Valeria del Pilar Rosillo
Miguel Varas de Dios
Martin Lavrilloux
Fernando Ardavin

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