Dublin Airport Security Efficiency Study: Supporting Evidence for the 2026 Draft Determination

Irish Aviation Authority

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MAIN REPORT

Important notice

Contents

1. PURPOSE AND CONTEXT

1.1. Purpose of this report

This report provides supporting technical evidence for the Security element of CEPA's *Dublin Airport Opex Efficiency Study: 2027–2031*. It explains the security efficiency work undertaken by CEPA, Think Research and Hades Consulting for the Irish Aviation Authority (IAA), summarises the main findings from that work, and sets out how the evidence informed CEPA's assessment of efficient Security operating expenditure.

The formal assessment of Dublin Airport's efficient opex is set out in the opex efficiency report. This report should not be read as an alternative determination of efficient costs. Its purpose is to explain the evidence base that sits behind our draft forecast of efficient Security opex.

1.2. Context for the security efficiency study

The security operation at Dublin Airport changed materially during the current regulatory period. Dublin Airport rolled out C3 computed tomography screening technology and body-scanning equipment across passenger and cabin-bag screening, while also adapting operating procedures, training requirements and lane staffing arrangements. These changes were introduced in a live airport environment and affected both operational performance and the resources required to deliver the security service.

The operating environment also changed in other respects. Passenger volumes recovered strongly after the pandemic, passenger presentation patterns evolved, and security processes were affected by changes in divestment requirements and by the bedding-in of new screening technology.

The IAA therefore commissioned a more detailed review of Dublin Airport's security operation to inform the opex assessment. The work has focused on the evidence needed to assess whether Dublin Airport's Security cost base and forward-looking staffing assumptions were efficient. It considers both the operational pressures faced by Dublin Airport and the scope for targeted efficiency improvements.

The study has been undertaken to support the wider opex efficiency assessment. The evidence in this package should therefore be read as supporting analysis that explains the basis for CEPA's judgement, rather than as a separate operational audit or standalone cost determination.

1.3. How the evidence package is organised

The evidence package is organised around this short covering report and three technical annexes. Table 1.1 summarises the role of each component of the evidence package.

Table 1.1: Structure of the security efficiency evidence package

Component	Role in the evidence package
Cover report: Dublin Airport Security Efficiency Study: Supporting Evidence for the 2026 Draft Determination	Provides the overall narrative. It explains the purpose of the security efficiency work, summarises the key findings, sets out how the evidence informed the Security opex assessment, and guides readers through the annexes.
Annex A: Security efficiency assessment	Provides the main technical efficiency assessment. It brings together the qualitative process review, quantitative performance analysis, lane-opening analysis, roster-efficiency analysis and implications for resourcing. The underlying report was commissioned to assess Dublin Airport's security operation, with particular focus on in-lane security processes in Terminals 1 and 2.

Component	Role in the evidence package
Annex B: Airport security benchmarking	Provides an external cross-check on Dublin Airport's security performance. It benchmarks planning, throughput, productivity and queue performance using operational data from 12 airport terminals.
Annex C: Security process efficiency: ConOps and process maps	Provides detailed process-mapping evidence. It describes the security concept of operations, passenger and hand-baggage flows, staff roles, infrastructure and process dependencies.

Source: CEPA and Think Research

2. SCOPE AND EVIDENCE BASE

This security efficiency study has focused on the evidence most relevant to assessing efficient Security opex at Dublin Airport. It was not intended to be a full operational audit of all airport security activity. The work concentrated on the areas where staffing requirements, passenger processing and service outcomes are most directly affected by operational efficiency: central search, lane deployment, throughput, rostering and the practical operation of new screening technology.

2.1. Operational scope

The main focus of the study was the passenger and cabin-bag screening process in Terminal 1 and Terminal 2. This is the largest and most operationally variable part of the Security cost category, and the area where efficient resourcing depends most heavily on passenger presentation, lane configuration, technology performance and queue standards.

The work did not assess compliance with aviation security screening requirements. The analysis assumes that Dublin Airport and the benchmarking comparator airports must operate in compliance with the relevant aviation security regimes. The focus is on efficiency, service performance and resourcing within that compliance framework.

2.2. Evidence used in the operational assessment

The study drew on operational data, site observations and engagement with Dublin Airport's security teams. The main technical assessment analysed 2024 and 2025 operational data covering passenger volumes, forecast and actual passenger presentation by 15-minute interval, planned and actual lane openings, staffing levels, overtime, rosters, lane configurations, technology, image throughput and queue lengths. It also included an on-site visit in July 2025 and discussions with Dublin Airport's security management and operations teams.

This evidence supported three forms of analysis. First, it allowed CEPA and Think Research to assess how the security operation performed during a period of material operational change. Second, it allowed comparison between planned and actual deployment, including whether lane openings and rosters were aligned with demand. Third, it helped identify data limitations that affect the precision of any efficiency assessment.

2.3. Process evidence

The process review provided the operational context for the quantitative analysis. The ConOps and process maps describe passenger and hand-baggage flows through central search, the roles involved in each step, and the interaction between passengers, staff, technology and lane infrastructure. The process maps cover the baseline passenger journey from entry to reconciliation, as well as exception processes such as families, high-risk hand baggage, LAG exemptions, PRM and wheelchair users, and passengers opting out of body scanners.

This evidence was used to understand where operational bottlenecks can arise. It also provided context for interpreting the quantitative data, particularly where queue performance could not be explained by passenger volumes or lane openings alone.

2.4. Benchmarking evidence

Benchmarking was used as an external cross-check. The benchmarking report compares Dublin Airport with anonymised comparator airport terminals across four areas: planning, throughput, productivity and queues. The analysis used operational data from 12 airport terminals for a busy summer month, although not every terminal provided all data required for every indicator. Comparator identities are anonymised under the confidentiality arrangements for the study.

2.5. Data limitations

The study identified material limitations in the available data. Some key variables were missing, inconsistent across sources or unavailable at the granularity required for detailed operational modelling. In particular, the security assessment identified limitations around lane-level passenger throughput, the reconciliation of lane-opening datasets, and differences between Dublin Airport and IAA queue-length data.

These limitations shaped how the evidence was used. Where the data supported firm conclusions, the findings were reflected directly in the Security assessment. Where the data was less complete, the analysis was used to identify efficiency opportunities, operational risks and areas for further evidence.

3. SECURITY OPERATION CONTEXT

Security required a more detailed assessment than most other opex categories because efficient costs are shaped by several factors. The number of staff required depends on how passengers present across the day, the configuration and throughput of screening lanes, regulatory requirements, the number of images generated per passenger, queue standards, manual-search requirements, rostering patterns, and resilience needs.

3.1. Security is a multi-stage passenger process

The central search process can be summarised as five linked stages: entry, divestment, scanning, manual search and reconciliation. Each stage can affect the throughput of the whole lane. For example, passengers who are unclear on divestment requirements may generate additional alarms or searches, while congestion at manual search or reconciliation can create knock-on effects that reduce overall lane flow.

The process evidence shows that efficiency is therefore not determined by scanner throughput alone. It depends on the interaction between passengers, staff, technology and infrastructure. The figure below summarises the central search process.

Figure 3.1: Summary of the central search process

Source: CEPA and Think Research

3.2. Dublin Airport was bedding in new security technology

Dublin Airport's security operation changed materially during 2024 and 2025. The rollout of C3 computed tomography scanners and full body scanners was one of the most significant operational changes to the screening process in recent years. It affected staff training, image analysis, passenger behaviour, lane processes and the balance of activity between bag screening and passenger screening.

The technology transition also took place alongside changes in passenger divestment requirements and the treatment of liquids, aerosols and gels (LAGs).[1] Such changes can affect passenger behaviour at the divestment stage and the frequency of manual searches. The study therefore treats 2025 as a more relevant indicator of the current operating model than earlier years, while recognising that some aspects of the new process were still in transition or bedding in.

The introduction of new technology does not automatically reduce staffing requirements in the short term. C3 scanners may support higher throughput once processes mature, but they also require trained image-review capacity and effective lane management. Full body scanners have lower throughput than the walk through metal detectors they replaced, change the flow of the passenger-screening stage, and can increase the importance of manual body-search availability.

3.3. Passenger presentation and terminal configuration affect efficient staffing

Efficient Security staffing depends on the pattern of demand within the day and across terminals. Passenger volumes, peakiness, the reliability of passenger forecasts and the mix of passenger types all affect how many lanes need to be open and how many staff need to be available. Families, passengers with reduced mobility, passengers

[1] The most consequential change took place in Autumn 2025, when LAGs could be retained in passenger bags rather than separately scanned.

unfamiliar with the technology and passengers with exception-screening requirements can all affect lane flow in ways that are not captured by annual passenger totals.

Terminal configuration also matters. The supporting process review found that security lane configurations vary across Dublin Airport, particularly in Terminal 1, while Terminal 2 has a more consistent configuration. Different lane configurations can create different operational constraints, including at divestment, manual search and reconciliation.

These operational features explain why our opex efficiency study models central search using terminal-specific passenger presentation profiles, throughput assumptions and staffing-per-lane assumptions.

3.4. The context supports a balanced efficiency assessment

The evidence we have gathered does not indicate broad baseline inefficiency. At the same time, the process review and operational analysis identify targeted opportunities to improve throughput, passenger preparation, lane management, data quality and resilience planning. The main opex report therefore uses the current operating model as a broadly appropriate starting point for our forecast of efficient Security opex.

4. SUMMARY OF FINDINGS: PROCESS EFFICIENCY

The process review identifies targeted efficiency opportunities in Dublin Airport's security operation. The findings included: clearer passenger preparation, better management of divestment and manual search, more active lane flow management, and improved advance information for passengers with additional requirements. These findings informed the opex assessment as evidence of potential process improvement, but we do not propose to use them as a separate standalone quantified staffing reduction, in addition to the throughput improvements we already assume in the draft forecast.

Annex C provides the detailed ConOps and process-map evidence. Annex A summarises how those process findings sit alongside the wider quantitative, lane-opening and roster-efficiency analysis.

4.1. Passenger preparation is a key practical efficiency lever

The process review found that passenger preparation and divestment have a material effect on lane flow. Passengers who are unclear about Dublin Airport's security requirements can occupy divestment positions for longer, generate additional CT or body-scanner alerts, and create avoidable manual searches. This is particularly relevant where passengers are adapting to new screening technology, or where requirements differ from those at other airports.

The main practical opportunity is clearer and repeated communication of airport-specific divestment requirements. Annex C identifies several points in the passenger journey where this can be reinforced, including before passengers reach the lane, at the front of the lane queue, during divestment and immediately before body scanning. The purpose is not to add process complexity, but to reduce avoidable manual interventions downstream.

This finding is relevant to the opex assessment because it points to a way of improving effective throughput without assuming that higher passenger volumes must always be met through additional permanent staffing.

4.2. Manual search and reconciliation can constrain effective lane throughput

The process maps show that lane performance can be constrained after the initial scanning stage. Manual bag search, manual body search and bag reconciliation can all create knock-on effects if they do not keep pace with passenger and tray flow. In particular, the process review identifies the risk of backlogs where bags awaiting manual search extend back towards the scanning process, and the risk of passengers repacking at or near the exit roller bed rather than moving into the reconciliation area.

These findings are important because they show that scanner capacity is not the only determinant of lane performance. A lane may have sufficient CT scanning capability, but still underperform if manual search capacity, reconciliation space or passenger flow is not managed effectively. Annex C provides the detailed process maps and operational observations supporting this finding.

For the opex assessment, this evidence supports a cautious interpretation of throughput assumptions. Where planned lane throughput is not achieved in practice, the gap may reflect operational bedding-in, staff experience, passenger behaviour, manual search load, lane layout or reconciliation constraints. It should not automatically be interpreted as evidence that the operation needs more lanes or more staff in all periods.

4.3. Lane flow management can help convert capacity into throughput

The process review identifies queue managers, hosts, divestors and lane troubleshooters as important to converting theoretical lane capacity into actual passenger throughput. These roles help direct passengers, balance queues, reinforce divestment requirements, clear trays, support manual search pinch points and keep reconciliation areas moving. Annex C provides the detailed role descriptions and process-map evidence.

The role of the lane troubleshooter is particularly relevant. Annex C suggests that more active deployment of this role during busy periods may help address bottlenecks in manual search and reconciliation.

This process review does not identify obvious inefficiency in lane staffing, but it indicates that better lane-flow management could help improve effective throughput within the existing operating model.

4.4. Exception processes require better advance information and routing

Annex C maps several exception processes, including families with small children, passengers with reduced mobility or wheelchair users, liquids, aerosols and gels exemptions, passengers opting out of body scanners, and high-risk hand baggage. These processes can require more staff time, more space, or more complex sequencing than the baseline passenger journey.

The process review identifies advance information as an important efficiency lever. Where passengers have additional screening requirements, earlier communication between airlines, assistance providers and security teams could allow Dublin Airport to prepare the appropriate lane, staff or equipment before the passenger reaches central search. Annex C also identifies potential benefits from routing some passenger groups to lanes better suited to their needs.

The opex implication is that complexity should be managed through better planning and flow management where possible, rather than treated only as a requirement for broad additional baseline resourcing. Some additional resource may still be required at peaks or for resilience, but the process evidence supports a more targeted approach.

4.5. The process findings support targeted improvement, not a standalone opex adjustment

The process evidence supports three conclusions for the Security opex assessment.

- **Dublin Airport's security operation has genuine operational complexity.** Efficient costs depend on passenger behaviour, screening technology, manual search requirements, lane configuration and live flow management.
- **There are identifiable process opportunities.** Clearer passenger communication, better lane balancing, more active management of manual search and reconciliation, and better advance information for passengers with additional requirements could improve effective throughput.
- **The evidence does not support a material baseline efficiency adjustment.** The process findings are best used to inform judgement on efficient throughput, resilience and future improvement potential. They help explain why CEPA's assessment recognises current operational pressures while not accepting that all forward-looking cost increases proposed by Dublin Airport are required.

5. SUMMARY OF FINDINGS: QUANTITATIVE PEROFRMANCE, LANE OPENING AND ROSTERING

Annex A provides the detailed quantitative, lane-opening and roster-efficiency analysis. This section summarises the findings that are most relevant to the Security opex assessment. The key conclusion is that Dublin Airport's security operation improved in some important respects during 2025, but the evidence also identifies potentially avoidable planning and throughput issues that affect efficient resourcing.

5.1. Queue performance improved in 2025, but remained operationally variable

Dublin Airport experienced fewer periods of high queueing in 2025 than in 2024. The improvement was visible in both terminals, although high queueing remained more common in Terminal 1 than Terminal 2. Annex A also shows that high queues often occurred when lanes were close to capacity, but not always during the highest passenger-demand periods.

This distinction is important for the opex assessment. It suggests that queue performance is not explained by passenger volumes alone. Operational factors such as lane readiness, staff deployment, images per passenger, manual search activity and passenger presentation can all influence whether a period of demand converts into a queue. The regression analysis in Annex A supports this interpretation: the available variables explained only around 41% of queue-length variation, leaving a material share of queue behaviour unexplained by the recorded data.

5.2. Lane-opening analysis indicates a gap between planned and achieved throughput

Annex A uses a lane-opening model to test how the number of lanes recorded as open compares with the number of lanes implied by passenger volumes, images per passenger and throughput assumptions.

Using planned throughput, the analysis indicates that the number of lanes open generally exceeded the estimated operational requirement, with the difference more pronounced in Terminal 1, in summer months and around some midday periods. This should not be interpreted as a direct finding that Dublin Airport was over-resourced. The result is sensitive to the throughput assumption used in the model.

When Annex A uses the actual throughput evidence provided by Dublin Airport for 2025, the estimated lane requirement moves closer to the number of lanes open. In some periods, the modelled requirement exceeds the recorded number of lanes open. This points to a central issue for the assessment: achieved throughput appears to be materially below planned throughput in a number of lanes. Annex A reports actual average throughput between 10% and 42% below planned throughput across different lanes.

Our benchmarking evidence presented in Annex B suggests that there is a gap between planned and actual throughput at other terminals, but that it is possible to achieve the levels of throughput being planned by Dublin Airport.

5.3. Rostering improved, but with a tighter operating margin

The roster-efficiency analysis suggests that Dublin Airport's revised rostering approach improved the alignment between staff supply and operational demand during 2025. Overtime was lower in 2025 than in 2024 and was more evenly distributed through the year. Annex A links this to the move away from flexible and seasonal rostering towards more stable, non-seasonal roster patterns.

The analysis also shows a trade-off. The overall mismatch between staff available and staff required reduced between 2024 and 2025, but this was accompanied by more frequent shortfall periods. Annex A estimates an average efficiency gap of 14% for the comparable 2024 period and 6.5% for 2025. This suggests a more efficient use of staff overall, but with less surplus capacity to absorb demand variation.

The evidence shows that there is a link between the assumed level of roster efficiency and the level of resilience within a security operation. The evidence also informed our proposal to apply a roster coverage (or roster inefficiency) adjustment of 12% for the upcoming determination period – a slight reduction on 2024 levels.

5.4. Forecasting accuracy is a key operational lever

Annex A identifies passenger-demand forecasting and planning accuracy as a recurring source of operational mismatch. Planned demand diverged from actual demand at several points in the day, with particular issues around midday in the roster-efficiency analysis. The analysis also found that actual demand aligned more closely with the roster than planned demand did, suggesting that operational decisions were already compensating for some forecasting limitations.

This finding is relevant because inaccurate forecasts can create both over- and under-resourcing. Over-forecasting can lead to surplus staff or more lanes open than required. Under-forecasting can lead to reactive lane openings and queues forming before additional capacity is available. Improving the accuracy and timing of passenger presentation forecasts could reduce the need for buffer staffing and improve queue performance.

6. BENCHMARKING EVIDENCE

Annex B provides an external cross-check on Dublin Airport's security performance. It compares passenger and hand-baggage screening across 12 anonymised airport terminals, using indicators for planning, throughput, productivity and queues. The benchmarking was used to test whether the operational findings for Dublin Airport were plausible in a wider airport context. It was not used as a mechanistic basis for setting the Security opex allowance.

6.1. The benchmarking evidence is informative but should be interpreted carefully

The benchmarking sample provides useful comparative evidence, but the results are not directly equivalent to a controlled efficiency frontier. Airport terminals differ in layout, passenger mix, screening technology, body-scanner-to-CT ratios, staffing models, queue measurement and the extent to which new technology had been fully embedded when data was provided.

The benchmarking report therefore treats the results as a snapshot of relative performance in a busy summer month. Not all terminals provided all data required, so complete comparisons were not available for every indicator. Some comparator operations also still used a mixture of C3 technology and legacy screening systems during the data period.

6.2. Planning evidence points to forecast and intra-day volatility challenges

The planning benchmarks suggest that Dublin Airport's passenger forecasting was less accurate than most comparator terminals for which data was available. Our benchmarking ranks Dublin Airport Terminal 2 sixth and Terminal 1 seventh out of a sample of nine terminals for passenger forecasting accuracy. It also identifies different biases between the two terminals: Terminal 1 showed a small tendency to over-forecast, while Terminal 2 showed a stronger tendency to under-forecast.

The images-per-passenger evidence is more mixed. Dublin Airport's day-to-day images-per-passenger variability appears less volatile than the comparator sample, but its intra-day, hour-to-hour variability was higher than any comparator. This finding has informed our approach to assessing the resilience of our forecast to variation in images-per-passenger.

6.3. Throughput evidence shows different constraints in Terminal 1 and Terminal 2

The throughput evidence is mixed across terminals and technologies. For Terminal 1, peak-hour body-scanner throughput was the lowest and least stable in the sample, while CT scanner throughput performed relatively well. This imbalance suggests that body-scanner performance may be a binding constraint in Terminal 1, rather than CT scanner capacity alone.

Terminal 2 performed more strongly at peak times. It ranked fourth out of 11 terminals for peak-hour body-scanner throughput and fifth for peak-hour CT scanner throughput, with particularly strong CT scanner stability. However, Terminal 2's all-hours body-scanner performance was weaker relative to its peak-hour performance.

This distinction is relevant to the opex assessment. The evidence does not support a single conclusion that Dublin Airport's security operation is either uniformly strong or uniformly weak. It points instead to specific operational constraints, particularly around body-scanner performance and stability in some settings. It also suggests that while body-scanner throughput appears to be an important operational constraint at Terminal 1, there is potential to improve body-scanner throughput.

6.4. Productivity benchmarking supports the use of Dublin Airport's current operating assumptions

The productivity evidence is based on a smaller sample than the planning and throughput benchmarks because fewer terminals provided comparable staffing data. Within that limited sample, Dublin Airport's planned productivity was high. Terminal 1 and Terminal 2 had the joint highest planned productivity, measured as passengers per hour per staff hour deployed on lanes. Achieved productivity was lower than plan, with a 30% shortfall in Terminal 1 and a 16% shortfall in Terminal 2. Even so, Terminal 2 had the highest realised productivity in the sample and Terminal 1 ranked third.

This finding has informed our decision not to apply a material baseline efficiency adjustment.

6.5. Queue benchmarking is a service-quality cross-check, not a ranking tool

Queue benchmarking is less reliable than productivity benchmarking because airports define and measure queues differently. For that reason, we do not use queue-time benchmarking to rank Dublin Airport against comparator airports.

Annex B nevertheless provides useful context. During the sample period, Dublin Airport met its queue target. Its average queues were higher than the other terminals in the sample, with Terminal 1 higher than Terminal 2, but maximum queues at two other terminals were higher than Dublin Airport's maximum queues. The benchmarking report cautions that these comparisons should be viewed carefully because of measurement differences.

7. HOW THE EVIDENCE INFORMED THE SECURITY OPEX ASSESSMENT

The evidence package informed the Security opex assessment by helping calibrate the assumptions used in our Security efficiency model, and provided evidence for judging Dublin Airport's proposed uplifts against Need, Additionality and Efficiency.

7.1. The evidence supported using the current operating model as the starting point

The evidence does not support a broad baseline efficiency reduction to Dublin Airport's 2025 Security operation. Dublin Airport's 2025 central search productivity was comparatively strong in the available benchmarking sample, with Terminal 2 showing the highest achieved productivity and Terminal 1 sitting around the middle of the comparator range. The main opex report also states that Dublin Airport's 2025 central search operation does not show clear evidence of baseline inefficiency.

7.2. The evidence informed specific modelling assumptions

The security evidence informed several assumptions in the main opex report.

- **Throughput.** We propose adopting the same throughput assumptions as proposed by Dublin Airport within its regulatory proposition. While these are higher than Dublin Airport's 2025 achieved levels, we consider them achievable based on the benchmarking in Annex C. Our proposed throughput assumptions reflect the view that 2025 was still a transition year for C3 operation and that throughput should improve as staff experience, passenger familiarity, lane processes and operational management mature. We also recognise that body-scanner throughput was an operational constraint in 2025, particularly at Terminal 1, but expect improvement over the forecast period.
- **Staffing per lane.** Benchmarking evidence supports Dublin Airport's staffing templates as broadly reasonable given its lane configuration and operating model. This means the assessment does not impose an unsupported reduction to staff per open lane, but instead focuses on whether the number of lane-hours and associated resilience uplift are justified.
- **FTE conversion.** We apply a 28% non-availability allowance and a 12% roster coverage allowance. The roster allowance recognises that fixed rosters cannot perfectly match variable demand, while also reflecting the expectation that Dublin Airport now has better tools and operational data to support more efficient rostering.
- **Resilience.** The evidence supported a specific resilience allowance, but not Dublin Airport's proposed N+1 adjustment. CEPA's Monte Carlo analysis applies variation to passenger presentation, images per passenger and throughput, and includes additional resource where the model identifies material queue-target risk. This produces a targeted resilience allowance of approximately 23 FTEs per year, rather than a standing uplift equivalent to one additional lane across the operation.

7.3. The evidence informed the treatment of Dublin Airport's proposed uplifts

The table below summarises how the main evidence areas informed the Security opex assessment.

Table 7.1: How the security evidence informed the opex assessment

Evidence area	What the evidence showed	How it informed the Security opex assessment
Operational transition	Dublin Airport was bedding in C3 and body-scanning technology during 2024 and 2025. This affected staffing, passenger behaviour, lane processes, throughput and operational management.	We placed greater weight on the current operating model and forward-looking operational requirements than on a mechanical comparison with the CEPA 2022 forecast. We also conclude that there is scope for further productivity improvements over the determination period.
Process efficiency	Annex C identifies practical efficiency opportunities around passenger preparation, divestment, manual search, reconciliation, lane troubleshooting and advance information for passengers with additional requirements.	We treated these as targeted process-improvement opportunities, to support the throughput assumptions proposed by Dublin Airport and adopted in our forecast.
Queue and productivity evidence	Dublin Airport's 2025 productivity evidence was generally favourable, and queue performance did not indicate a service-quality failure against the relevant target.	We did not apply a broad baseline inefficiency adjustment to central search. The current operation is used as the starting point, subject to forecast productivity improvement and resilience testing.
Lane-opening and throughput evidence	Annex A identifies gaps between planned and achieved throughput, and differences between modelled lane requirements and recorded lane openings. The results are sensitive to the throughput assumption used.	We used a bottom-up model with throughput assumptions that are challenging but achievable.
Rostering evidence	Annex A suggests that rostering improved in 2025, with lower overtime and a lower overall mismatch between staff available and staff required, but also with more shortfall periods.	We applied a 12% roster coverage allowance and a separate resilience assessment, slightly lower than the level of roster inefficiency in 2014 (but higher than the roster inefficiency in 2015, which we considered unsustainably low).

Source: CEPA and Think Research

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