H7 Outcome Based Regulation mid-term review targets study

Final Report for the CAA

19 December 2024

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19th December 2024

We have pleasure in enclosing a copy of our Final Report in accordance with your instructions dated 07.08.24. This document (the Final Report) has been prepared by Grant Thornton UK LLP (Grant Thornton) for the Civil Aviation Authority [the Addressee] in connection with the contract titled H7 Outcome Based Regulation mid-term review targets study (the Purpose).

The Final Report has been prepared exclusively for the Civil Aviation Authority under the terms of our engagement. Whilst other parties may be interested in receiving a copy of the Final Report, we also stress that, to the fullest extent permitted by law, we cannot accept any responsibility whatsoever in respect of any reliance that these parties may place on our Final Report in any decisions that they may make. We do not accept any responsibility for any loss or damages arising out of the use of the Final Report by the Addressee for any purpose other than in connection with our engagement. We reiterate, therefore, that the Final Report should not be used, reproduced, or circulated to any other party in whole or in part, without our prior written consent.

The data used in the provision of our services to you and incorporated into the Final Report has been provided by third parties (especially Heathrow Airport Limited). We will not verify the accuracy or completeness of any such data. There may therefore be errors in such data which could impact on the content of the Final Report. No warranty or representation as to the accuracy or completeness of any such data or of the content of the Final Report relating to such data is given nor can any responsibility be accepted for any loss arising therefrom.

Period of our fieldwork

Our fieldwork was performed in the period between 07.08.24 and 04.10.24. We have not performed any fieldwork since 04.10.24 and, in agreement with the Addressee of the Final Report , the Final Report may not take into account matters that have arisen since then. If you have any concerns in this regard, please do not hesitate to let us know.

Scope of work and limitations

Our work focused on the areas set out in our engagement letter. The scope of our work has been limited both in terms of the areas of the business and operations which we have assessed and the extent to which we have assessed them. There may be matters, other than those noted in the Final Report, which might be relevant in the context of the Purpose and which a wider scope assessment might uncover.

Contacts

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Yours faithfully

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1. Executive Summary

Executive summary

Background

- The Civil Aviation Authority (CAA) is the economic regulator for Heathrow Airport Ltd (HAL). HAL is subject to economic regulation through periodic reviews known as 'price controls'

- HAL is subject to service quality regulation through what is known as the Outcomes Based Regulation (OBR) regime. The CAA specified the measures, metrics and targets that form OBR as part of the H7 price control and these parameters are set in Heathrow's CAA Licence

- In the H7 Final Decision, the CAA stated it would conduct a mid-term review of the OBR regime as part of its implementation and next steps

- To inform its mid-term review, the CAA has appointed Grant Thornton to carry out analysis on the appropriate level of granularity for targets on security queue measurement, covering central search, staff search, transfer search for passengers and staff, and control posts for vehicles

Scope of work

- Grant Thornton was instructed by CAA to consider the following issues:

  - The impact of assessing the performance of security queue times (covering central search, staff search, and transfer search) on a monthly versus daily basis;

  - The impact of assessing control post queuing times for current groups of control posts versus for individual control posts;

  - For each of the above, consider how targets might be adjusted to reflect any changes, distinguishing between H7 and future control periods; and

  - The impacts of harmonising security queue targets for central and transfer search

Methodology

- Our analysis is based on a full sample of raw queuing time data for central, transfer and staff search, as well as control posts, for the period between May 2023 and April 2024, obtained directly from HAL. HAL also informed us of periods during which HAL and airlines agreed to exclude data from target assessment ('exclusions') and such data was excluded from our analysis. The resulting data used for analysis therefore spanned September 2023 to April 2023

- We assessed performance against current metric definitions and target levels for this sample of data. We then assessed what performance would have been under different metric definitions and target levels (noting that the behavioural response by HAL may have been different)

- In assessing performance, we mainly considered the 'target' (as defined in the CAA Licence), below which rebates are payable by HAL

- Our analysis is based on data provided by HAL, which we have not been asked to audit or validate. However, on inspection, we have noted some discrepancies between our outputs and performance data published by HAL

Structure of the executive summary

- The next slide sets out key findings, implications for H7 and H8, and next steps

- The slide after that summarises the quantitative results from our analysis for ease of reference

Executive summary (continued)

Key findings

- HAL met the existing monthly targets for central, transfer and staff search delays for all months and terminals, other than two months for T5's central search

- For central and transfer search, HAL's performance exceeded the lower bonus threshold for most months in our sample

- A shift to daily targets would have increased the proportion of time when the delay metric is breached three-fold (in the event that targets remained unchanged). This is because there is a high degree of variability in day-to-day queue times, which gets smoothed out in monthly analysis

- The control post (CPs) target (which must be met simultaneously by all CP groups in a given month) was missed for five of the months in our sample. A shift to individual CP targets would have resulted in a failure to meet the target for six months. This is a relatively modest impact, due to the fact that particularly poor performing CPs push their respective zones into failing to meet the target

- Based on the data received from HAL, if the CAA wished to move towards more granular metrics, whilst maintaining the probability of HAL meeting targets (assuming no behavioural response), then target levels would need to change as follows:
    - Central: 95% to 94.29% (of queue times below 5 mins);
    - Transfer: 95% to 78.57% (of queue times below 10 mins);
    - Staff: 95% to 86.21% (of queue times below 10 mins); and
    - Control Posts (CPs): 95% to 94.1% (of queue times below 15 mins)

- These figures show that day-to-day variability in delay times is greatest for transfer search, which is therefore where the greatest benefit from improved performance could be had

- The harmonisation of the transfer search delay threshold from 10 to 5 minutes (in line with central search) would result in a very substantial increase in missed targets from 0% to 56.52% of months in the sample

Implications for the H7 mid-period review and for H8

- In general, a shift to more granular targets would create greater visibility over variability in performance and could focus HAL's operational effort on improving poor performing days/CPs. However, this is conditional on the causes of poor performance being within HAL's reasonable control and would depend on how HAL chose to respond to changes in incentives. So, whilst there may be a case for more granular metrics, there is uncertainty over the scale of potential consumer benefits and implementation costs. This could merit further investigation

- Based on the data reviewed, we observe that HAL has performed well in central and transfer search. Moving to more granular metrics while retaining current target levels would likely bring an increase in rebates payable and a decrease in bonuses earnable (should the level of targets and the (upper and lower) bonus thresholds remain unchanged). Alternatively, retaining the monthly measurements but raising the target and/or the (upper and lower) bonus thresholds would also bring about a similar result. We have not calculated the net financial impact of this change. However, we note that any changes would involve trade-offs and are therefore matters of CAA policy

Further considerations and next steps

- We set out a number of further considerations and possible next steps in the key findings section of the report. A key recommendation is that a validation of HAL's performance data and an audit of the calculations underpinning HAL's published performance reports be undertaken

Executive summary (continued)

Summary of quantitative results

- The table below summarises the impacts of changing the assessment regime from monthly performance to daily performance for security queue measurement (i.e. central, transfer and staff search), and from assessing the existing control posts groupings to assessing individual control posts

- The necessary adjustments refer to the changes that would be required in order to replicate the compliance (i.e. the proportion of months/days that are regarded as the target being missed) recorded for the as-is regime

- The next slide sets out another summary table with key descriptive statistics for the different search areas and measurement types

Summary of assessment regime impacts

Area	As-is regime	Alternative option	Impact of alternative option	Changes to target level to maintain similar level of performance compliance under alternative options
Central Search	Monthly target	Assessment of daily data	Under a daily metric, the target would have been missed **8%** of the time across all terminals (compared to **6.5%** under the current monthly target)	The target would need to change from **95%** of queue times under 5 minutes in the monthly regime to **94.29%** under a daily metric.
Transfer Search	Monthly target	Assessment of daily data	Under a daily metric, the target would have been missed **4.75%** of the time across all terminals (compared to **no misses** under the current monthly target)	The target would need to change from requiring **95%** of queue times to be under 10 minutes in the monthly regime to **78.57%** under a daily metric.
Staff Search	Monthly target	Assessment of daily data	Under a daily metric, the target would have been missed **9%** of the time across all terminals (compared to **no misses** under the current monthly target)	The target would need to change from requiring **95%** of queue times to be under 10 minutes in the monthly regime to **86.21%** under a daily metric.
Control Posts	CP group target	Individual CP target	Under individual control post assessment, the target would have been missed **75%** of the time for the campus as a whole (compared to **62.5%** under the existing control post grouping)	The target would need to change from requiring **95%** of queue times to be under 15 minutes under a CP group metric to **94.1%** under an individual CP metric.
Harmonisation of transfer threshold	10-minute delay threshold	5-minute delay threshold	Under a 5-minute delay threshold, the target would have been missed **56.52%** of the time (compared to **no misses** under the current 10-minute delay threshold)	N/A

Source: Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx and Campus Queue Times from HAL.xlsx

Executive summary (continued)

Summary of quantitative results (continued)

- The table below summarises the impact of alternative options on the proportion of months or days when the relevant target is missed, along with mean queuing times (across all time slices in the sample), and the range of mean queue times by month or day (as relevant for the respective option)

Summary of performance across different measures

Measure	Measurement basis of targets	Level of target	Proportion of months or days when the target is missed[2]	Mean queuing time (seconds)	Range (seconds)
Central search	Current monthly target[1]	95-5	6.5%	58[3]	41 – 73[4]
Central search	Alternative daily target	95-5	8%		20 – 121[5]
Transfer search	Current monthly target	95-10	0%	72[3]	29 – 95[4]
Transfer search	Alternative daily target	95-10	4.75%		13 – 169[5]
Staff search	Current monthly target	95-10	0%	78[3]	68 – 88[4]
Staff search	Alternative daily target	95-10	9%		38 – 137[5]
Transfer search harmonised to central search monthly target	Alternative monthly target	95-5	56.52%	N.A.	N.A.
Control post	Current 5 groups	95-15	62.5%	Highest - 321 (Southside) *[3] Lowest - 204 (CTA) *[3]	277 – 410 (Southside) 173 – 249 (CTA)
Control post	Individual	95-15	75%	Highest - 360 (CP10A) Lowest - 101 (CP10)	321 – 424 (CP10A) 77 – 123 (CP10)

Source: Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx and Campus Queue Times from HAL.xlsx
Note:

[1] The more challenging of the dual targets (see slide 11)

[2] For control posts, it is the number of months where at least 1 breach is recorded divided by the total number of months considered (e.g. suppose we only consider 8 months of data at most. Further, suppose that 1 or more control post groups/individual control posts report a breach in 4 of these months. The resulting number would be 4/8 = 50%). For security search areas (i.e. staff search, central search, transfers and harmonised transfers) it is the total number of breaches observed across all terminals for all assessed days or months divided by the total number of assessed days or months. For example, suppose that we are looking at monthly data and we assess performance for 8 months. Suppose that all months are observed for all 4 terminals; this means that there are 4*8 = 32 assessed months. Further suppose that all terminals reported 1 breach across all months. This means there are 4 breaches in total. The resulting figure will be 4/32 = 8%

[3] For monthly targets, mean queuing time is the average of the average monthly queuing times. For daily targets, mean queuing time is the average of the average daily queuing times. The results of each are equivalent as they use the same underlying data

[4] The shortest and longest average monthly queuing times

[5] The shortest and longest average daily queuing times

2. Background and scope

This study focuses on the level of granularity in security queue measurement and its implications

Background

- The Civil Aviation Authority (CAA) is the economic regulator for Heathrow Airport Ltd (HAL). In carrying out this function, the CAA has a primary duty to users and consumers of air transport services, ensuring that its decisions are in the consumers' interest

- HAL is subject to economic regulation through periodic reviews, known as a 'price control'. These reviews involve a thorough assessment of HAL's business, including the reasonable costs of delivering air transport services, efficiency evaluations, risk management in service delivery, and whether HAL's services meet consumer needs in terms of availability, continuity, and quality (referred to as 'service quality regulation')

- The figure below summarises the development of service quality regulation through various price controls implemented by the CAA

Key changes in service quality regulation since its introduction in Q3

Q4 (2003-2008)	Q5 (2008 – 2014)	Q6 (2014 -2019) & iH7 (2020-2021)	H7 (2022 -2026)
• Introduction of service quality regulation • Baseline service standards set (e.g., security queuing times, cleanliness, etc.) with monthly reporting • Service Quality Rebates (SQR) scheme payments to airlines for HAL failing to meet standards set by CAA	• Introduction of bonuses for exceptional service quality • Updated Service Quality Rebate & Bonus (SQRB) scheme introduced	• Expanded service areas to include things such as Wi-Fi provision • Start of H7 price control and initial proposals on SQRB policy changes	• Introduction of Outcome Based Regulation (OBR) and Measures, Targets & Incentives (MTI) scheme • Expanded service outcomes with measures with mix of financial and reputational incentives • Mid-term review planned to assess the H7 implementation issues including granularity of targets

Source: Grant Thornton UK LLP

Purpose of this review

- In the H7 Final Decision (FD) setting HAL's regulatory framework from 2022 to 2026, the CAA committed to a mid-term review of the OBR framework [1]. In April 2024, the CAA released the proposed scope for this review and invited stakeholder feedback [2]

- The CAA has since appointed Grant Thornton to advise on the appropriate level of granularity for targets on security queue measurement, covering central search, staff search, transfer search for passengers and staff, and control posts for vehicles

- Given this, the CAA has outlined the following requirements to be assessed for this study:

  - Security queue measurement impact: Assess the effects of measuring HAL's security queue times (for central search, staff search, and transfer search) on a monthly, daily, or other basis, with attention to how different measurement frequencies may impact target setting;

  - Control post queuing times: Analyse the impact of calculating queuing times either by current groupings or by individual control posts to determine how target adjustments may be needed under each approach, differentiating between the H7 period and future control periods;

  - Alternative measurement targets: Examine options for measurement targets that would keep the probability of HAL meeting service standards comparable to H7, focusing on service achievement rather than financial exposure. Additionally, consider potential targets for H8 that vary in difficulty; and

  - Target harmonisation for security queues: Evaluate the potential effects of aligning security queue targets between central and transfer searches.

- This study focuses on a statistical analysis of target levels and the impact of exclusions. It deliberately avoids consideration of how any changes would impact financial incentives (rebates and bonuses). The design of financial incentives under different measures, metrics or targets would require careful design and further stakeholder input. Though financial exposure is not covered here, the analysis lays a strong foundation for considering future incentive structures in H8

- The next slide outlines how OBR works, detailing key queuing measures, metrics, targets, and the annual maximum rebate and bonus

This study focuses on security queuing measures for central search, transfer search, staff search, and vehicle control posts

Overview of OBR framework

- The OBR framework is composed of four main components [3]:

  - Measures: Such as security queue times relevant to this study, this would include central passenger search; transfer passenger search; Staff search; and vehicle control posts;

  - Metrics: For central search this would include, for example, percentage of queue times measured once every 15 minutes that are less than 5 minutes, and is assessed monthly and separately for each terminal;

  - Targets: for central search a target is 95% i.e. 95% or more of queue times measured during a given month must be below 5 minutes; and

  - Incentives: can be either reputational or financial (rebates/bonuses), depending on the measure in question

- Specifically with regards to incentives, reputational incentives include the requirement for HAL to publish performance against targets. Financial incentives include:

  - Rebates on airport charges payable to airlines if performance is below the target; and

  - Bonuses payable to HAL by airlines if performance in a month exceeds the lower bonus threshold (with maximum bonus achieved if performance reaches the upper bonus threshold – though this was not considered in our analysis)

- The table to the right provides specific examples of these measures along with their corresponding metrics, targets, annual maximum rebates, and bonuses

- An important point to note is that If HAL fails to meet a service quality measure due to factors beyond its control, HAL and the airlines can agree on a period during which certain performance data (often related to service failures) is excluded from performance measurements. These agreed periods are known as "exclusions." Exclusions are defined in Annex 3 of Schedule 1 in the Heathrow licence [3], specifying situations where they apply.

- Throughout this report, "exclusions" and "exemptions" are used interchangeably. Due to the extensive use of exclusions in certain months (with sample coverage set out in more detail in Appendix C), outputs on performance should be interpreted with this in mind

Overview of OBR framework (continued)

- Additional points to note regarding the table below:

  - For central and transfer search, no rebates or bonuses are paid if performance is above the target and falls below the lower bonus threshold;

  - Rebates and bonuses are calculated as a percentage of charges income;

  - For central search, both metrics must be met to avoid a rebate; and

  - For control posts, meeting the overall monthly target requires achieving it at all control posts groups throughout the month

Relevant OBR queuing measures and their respective metrics, targets, annual maximum rebates and bonuses

Measure	Metric	Target	Lower bonus threshold	Max rebate	Max bonus
Security queue time – Central search	Percentage of queue times measured once every 15 minutes that are less than 5 minutes	95%	97%	1%	0.54%
	Percentage of queue times measured once every 15 minutes that are less than 10 minutes	99%			
Security queue time – Transfer search	Percentage of queue times measured once every 15 minutes that are less than 10 minutes	95%	97%	0.5%	0.18% (if metric above 99%)
Security queue time – Staff search	Percentage of queue times measured once every 15 minutes that are less than 10 minutes	95%	n/a	0.4%	No bonus
Control post vehicle queuing time	Percentage of vehicles at each control post group, measured as the average queue time for all vehicles in each 15-minute period, which have a waiting time of less than 15 minutes	95%	n/a	0.4%	No bonus

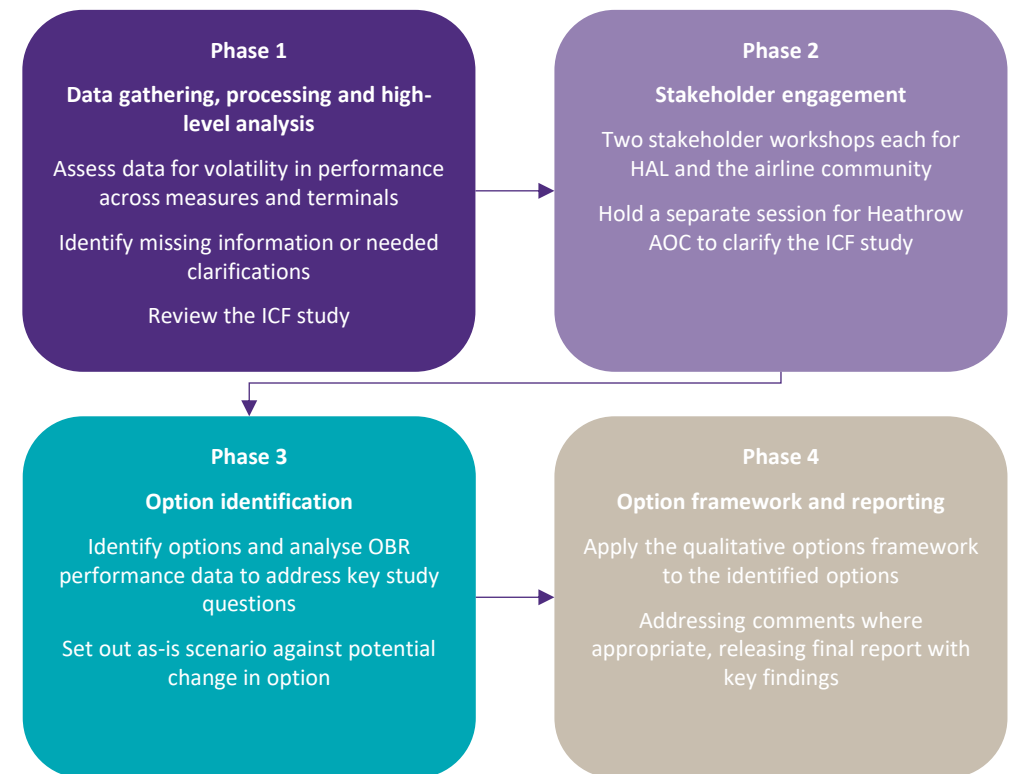Source: Grant Thornton UK LLP analysis of HAL license condition [3]

3. Approach and data used for analysis

This study was undertaken in four distinct phases

Summary description of phases

- Phase 1 involved data gathering, processing, and high-level analysis of the data initially provided to Grant Thornton by the CAA as part of an initial data request submitted to HAL by the CAA (further discussed on the next slide). This phase includes:
  - Reviewing the initial data to assess the overall degree of volatility in performance across different measures and terminals, where appropriate;
  - Identifying whether there was any missing information or clarifications required; and
  - Reviewing the ICF study commissioned by Heathrow AOC Limited on observations of security SQRB reporting
- Phase 2 involved a round of stakeholder engagement in which Grant Thornton, alongside the CAA, held two workshops for the airline community and HAL to express their perspectives on the functioning of the relevant elements of OBR to date and to gather additional evidence (further discussed in Section 4). A separate session was also held to allow Heathrow AOC to provide further clarification on the ICF study
- Phase 3 involved option identification and detailed analysis of the OBR performance data to help address the central questions set out as part of the study (this is set out further in Section 5, 6 and 7)
- Phase 4 involved applying the qualitative options framework to the identified options, considerations for H8 and reporting on the findings (Section 8 , 9 and 10)
- Throughout the study we also engaged with HAL to clarify dataset and finalise the data. The next page outlines the data received and used to produce analysis, along with any additional data requested as part of the clarifications

Four phase approach

Phase 1

Data gathering, processing and high-level analysis

Assess data for volatility in performance across measures and terminals

Identify missing information or needed clarifications

Review the ICF study

Phase 2

Stakeholder engagement

Two stakeholder workshops each for HAL and the airline community

Hold a separate session for Heathrow AOC to clarify the ICF study

Phase 3

Option identification

Identify options and analyse OBR performance data to address key study questions

Set out as-is scenario against potential change in option

Phase 4

Option framework and reporting

Apply the qualitative options framework to the identified options

Addressing comments where appropriate, releasing final report with key findings

Source: Grant Thornton UK LLP

Data was provided by HAL, with additional data supplied following a clarification process

Description of the data used

- In preparation of this study, the CAA requested data from HAL and shared it with Grant Thornton at the inception meeting. This data included raw queuing times for central search, transfer search, staff search, and control post, covering 1st January 2019 to 31st December 2019, and 1st May 2023 to 30th April 2024. The data was broken down by (set out in the table to the right):

  - Time slice. The time at which the queue time was recorded, typically every 15 minutes for the different measures;

  - Search area type. Whether it pertains to central, transfer, staff, or control post searches; and

  - Terminal. Heathrow has four terminals: Terminal 2 (T2), Terminal 3 (T3), Terminal 4 (T4), and Terminal 5 (T5). Central, transfer, and staff search times are all measured by terminal, while control post times are measured airport-wide, with individual control posts grouped together.

- As part of Phase 1, Grant Thornton identified a set of clarifications that were required for the analysis. This included:

  - Updated security and control post queue information April 2024 – July 2024;

  - Dates/times of applicable security exclusions which covers the time period of the data used for the purpose of the analysis;

  - Opening times for Control Posts (which are locally agreed by HAL and AOC) which covers the time period of the data used for the purpose of the analysis; and

  - Method used by HAL to collect data for different measurements – whether it was a manual or automated data collection process

- All the above information has been incorporated into this report's analysis, with additional data considered up to May 2024 to ensure a full two-year comparison, as agreed with the CAA

Summary of the analysis undertaken in line with the CAA's scope

- Preliminary analysis was undertaken at this stage to gain a high-level understanding of the volatility in performance across measures and terminals (where appropriate)

- Using the results of this analysis, detailed in Section 6, we also identified potential questions to ask stakeholders, which are outlined in the next section. In particular, the CAA's scope focuses on exploring:

  - Impact of measuring HAL's security queues monthly versus daily and the impact of calculating queuing times for control posts by groupings, individual posts;

  - How targets might be adjusted to reflect changes, distinguishing between H7 and future control periods; and

  - Potential impacts of harmonising security queue targets for central and transfer searches

- The next page sets out stakeholder's views from the workshops

Summary of the queuing time data used for analysis

	For Security queues	For control posts
Unit of observation	Individual passenger/staff queuing times measured in each 15 min interval on a given date	Control post queuing time for an individual vehicle at an individual control post on a given date
Time period covered	January to December 2019 May 2023 to April 2024	
Spatial granularity	By terminal	By individual control post
Variables to be included	Measure, date, time, terminal, queue time	Measure, date, time, control post code, queue time

Source: Grant Thornton UK LLP analysis

4. Stakeholder views and evidence

Stakeholder engagement

Two separate workshops for HAL and the airline community

- To understand the regulatory context around the OBR regime in H7, two separate workshops were conducted with HAL and the airline community

- A mailing list was provided to Grant Thornton by the CAA for selecting interviewees

- An open questioning approach was used in the interviews, allowing stakeholders to express their views freely while also addressing specific questions to gather evidence where further clarification was required

- A set of questions was shared with HAL and the airline community prior to each workshop. Some general questions were asked in each session, along with specific questions tailored to each. The table to the right shows the questions asked in each workshop

- The next page sets out a summary of the key thematic findings from the workshops raised by both HAL and airlines

Questions asked in workshops with HAL and airline community

Question	HAL	Airline community
Q1. Overview of the advantages (and disadvantages) of moving from monthly to daily averages for security queues, and from the current groupings to either individual or airport-wide measures for control posts.	x	x
Q2. Evidence available to support changing from the current approach (including any evidence on passenger benefits and costs/benefits for HAL/airlines, the impact of OBR targets on HAL's operational decisions, the lessons that airlines draw from the ICF study, and any other relevant material).	x	x
Q3. Views on possible intermediate options (e.g. weekly or fortnightly averages).	x	x
Q4. Views on how targets should be set if any changes are implemented (distinguishing between H7 and future control periods).	x	x
Q5. Any known issues with the quality of performance data (including any general issues, or specific issues affecting the period from May 2023) and its suitability for informing the current study.	x	x
Q6. Whether possible future changes (e.g. next generation scanners, automated queue measurement, changes to control posts, or others) have any impact on the advantages/disadvantages of the options.	x	x
Q7. Views on the potential benefits (to passengers/airlines/HAL/others) and feasibility of harmonising central and transfer search targets.	x	x
Q8. views on possible intermediate options (e.g. weekly or fortnightly averages).	x	x
Q9. Overview of HAL's approach to resourcing security queues (central, staff and transfer search, including any differences between these categories) and control posts, first in general and then whether/how this is affected by OBR targets.	x	
Q10. Explanation of observed fluctuations in performance (across terminals / control post groupings, within the day, the week, the month and across different months	x	

Source: Grant Thornton UK LLP analysis

Summary of evidence gathered

HAL

- HAL's views can be summarised as follows:

  – HAL aims for a zero-queue experience for both direct and transfer passengers, unless all available lanes are fully utilised. Queue variations are mainly due to team performance, forecast accuracy, or unexpected events;

  – HAL prides itself on accurate forecasting, meeting queue targets 95% of the time despite challenges like road disruptions. Accurate forecasts enable HAL to predict passenger arrival at security and allocate resources effectively. For transfer passengers, arrival times are influenced by factors such as aircraft schedule changes due to variable wind conditions;

  – HAL can switch staff between terminals on the day to manage demand, though this can lead to inefficiencies due to travel time and other limitations;

  – Control posts are managed by contract staff, with HAL unable to use its own staff due to outsourcing agreements, but the contracted firm has robust resources to handle seasonal variations effectively;

  – HAL raised concerns about the feasibility of daily performance targets, citing potential operational disruptions and the need for significant changes in staffing and planning, which could increase costs; and

  – HAL employs a mix of manual and automated systems to monitor queues, with data collection methods agreed upon with airlines. While adapting to new targets would require adjustments, HAL also discussed the potential impact of emerging technologies, like automated queue systems, on performance and emphasised the need for ongoing evaluations as these technologies are implemented

Airline community

- The airlines communities' views can be summarised as follows:

  – Airlines argue the study's focus is too narrow, excluding critical comparisons like monthly vs. daily averages for control post queues, and noted that CAA could request data from HAL to assess resource required for a daily target to be introduced in H7;

  – Airlines advocate for daily performance targets, believing they would ensure all passengers received a consistent level of service and better reflect passenger expectations compared to monthly evaluations;

  – Airlines stated that the work to confirm/deny whether it would require more HAL resources to manage a daily performance target was straightforward and required minimal additional time. The CAA would just need to request the required data from HAL. The airlines urged the CAA/GT to conduct this work so that the measure could be implemented within H7.

  – The ICF study shows no link between demand and performance, suggesting that variability stems from operational inefficiencies. Airlines argue that better management can achieve consistent daily performance without extra costs, noting that a daily target aligns with HAL's 'every journey better' commitment;

  – Concerns were raised about the reliability of post-May 2023 data due to HAL's security transformation programs, which resulted in some exclusions (where certain data points are removed for the purpose of assessing performance against target) being agreed. It was felt that this could have the effect of artificially inflating out-turn performance;

  – Airlines are keen on understanding how future technologies like automated queue systems and new scanners could improve performance and reduce operational costs, urging HAL to provide clarity on these impacts;

  – Consistency in service quality across central and transfer searches is crucial, with airlines emphasising the need for HAL to manage peak times effectively to avoid service discrepancies; and

  – Airlines believe control post-performance should be measured individually and daily, as delays at control posts are integral to operations and can significantly impact passengers

5. Options under consideration

Four alternative options are examined based on discussions with the CAA and stakeholder workshops

List/description of options for consideration

- Using the evidence gathered from Phases 1 and 2, and the scope set out by the CAA for this study, five options were selected for assessment. These are evaluated both quantitatively, comparing the as-is scenario (how the measure is currently assessed) against an alternative scenario (see Section 6), and qualitatively through a bespoke framework developed alongside the CAA to provide a clear and consistent basis for comparison across options

- The options considered are as follows:
  - Option 1: central search assessed at a daily level of frequency;
  - Option 2: transfer search assessed at a daily level of frequency;
  - Option 3: transfer search assessed at a monthly level of frequency with harmonisation to the central search delay metric (alternative ways of implementing this option, including under a daily metric are shown in Appendix A);
  - Option 4: staff search assessed at a daily level of frequency; and
  - Option 5: control posts assessed at a monthly level of frequency with individual control post targets (we also considered an alternative scenario, under which the target would no longer apply at campus-wide level – meaning it must be met at every group or CP in order for the target to be met in a given month. This is reported in Appendix B)

- Additional options were considered but not included in the analysis:
  - Assessing weekly and fortnightly frequency levels was considered, but not pursued due to i) stakeholder concerns that these would not provide sufficient challenge, and ii) time constraints, which led to prioritising daily frequency to provide a more focused review

List/description of options for consideration (continued)

  - For central search, HAL must meet two targets to avoid a rebate: 1) 95% of queue times measured every 15 minutes should be under 5 minutes, and 2) 99% under 10 minutes. However, for the purpose of assessing HAL's performance, we focussed on the first target as it is a more binding measure (i.e. if the first target is met, the second is also likely met) and allows easier comparison with other measures;
  - Under option 3, targets could be harmonised in the opposite manner, i.e. assessing central search on a monthly basis, aligned with the transfer search target. While this was considered, it was agreed with the CAA that it would be more appropriate to consider harmonising the target to the target in place for the majority of passengers

- The next section outlines the analysis of the various options under consideration, addressing both the results of the data under the current regime and potential alternatives, while highlighting key findings on HAL's performance across the different options

6. Analysis

Quantitative analysis of current regime and alternative options was conducted
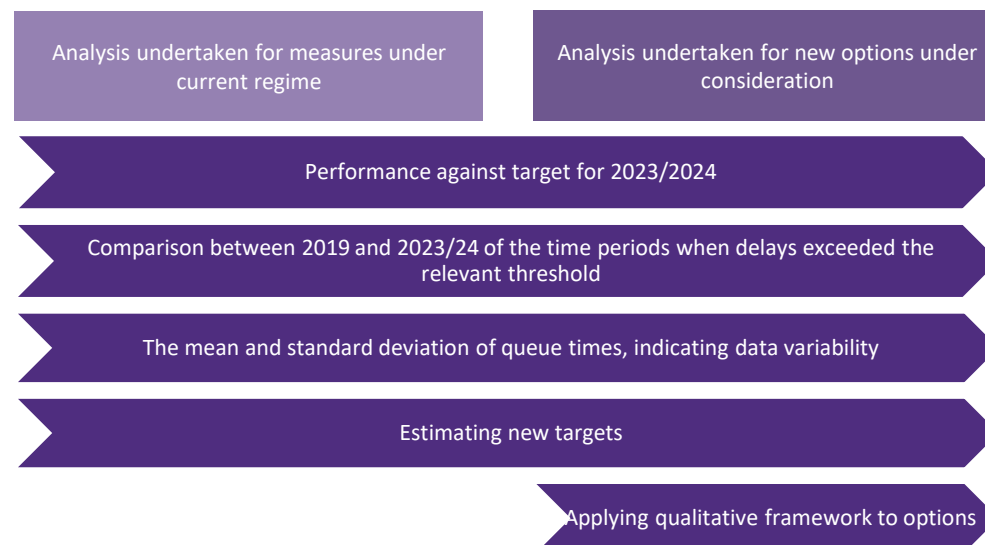
Structure of the analysis conducted

- This section is structured around the four key queuing time measures covered in this study:
  - Central (passenger) search (agree with the CAA to only look at 95-5 for simplification and is more challenging than 99-10);
  - Transfer (passenger) search;
  - Staff search; and
  - Control posts (vehicles)
- For each measure, the analysis presented includes:
  - Performance against target using 2023/24 data for both daily and monthly data, or the harmonised regime;
  - The mean and standard deviation of queue times for both daily and monthly data, indicating data variability; and
  - A comparison between 2019 and 2023/24 of the time periods when delays exceeded the relevant metric, helping to identify performance outliers
- Performance is assessed against target by month and terminal/control post group. This includes calculation of the proportion of time when the target has been missed as the key quantity of interest
- Similar analysis is then undertaken to each option under consideration, assuming no change in HAL behaviour. For central, transfer, and staff searches, we assess performance against target if the measure had been set on daily instead of monthly basis. In the case of transfer search, additional analysis is presented to explore performance under a scenario where the delay metric is set at the level used for central search. For consistency, the harmonisation results in the main report are only shown for the 95-5. Harmonisation results with respect to the 99-10 are shown in Appendix A

Structure of the analysis conducted (continued)

- For control posts, performance is determined against what the target would have been like if the target had been set on individual control posts rather than groups
- The analysis explores how HAL's performance would change under different measure definitions, given performance variability. In Section 7, new targets are calculated for each option, using the same proportion of missed targets as a proxy for maintaining equivalent risk and challenge. Section 8 provides further details on the qualitative framework
- The diagram below provides an overview of the approach that has been taken for the analysis presented in this following sections

Quantitative and qualitative assessment undertaken to support analysis

Analysis undertaken for measures under current regime	Analysis undertaken for new options under consideration

Performance against target for 2023/2024

Comparison between 2019 and 2023/24 of the time periods when delays exceeded the relevant threshold

The mean and standard deviation of queue times, indicating data variability

Estimating new targets

Applying qualitative framework to options

Source: Grant Thornton UK LLP

Characteristics of the data set and key assumptions

Characteristics of data

- The data received from HAL covered the periods from January to December 2019, and May 2023 to April 2024

- The exemptions applied to both the 2019 and 2023/24 periods resulted in a loss of data spanning May 2023 to mid-September 2023 (approximately 4.5 months) for all search areas and control posts (see page 11 for more details on how exemptions are determined within the OBR framework and Appendix D for see the effects of exceptions on performance)

- Appendix D sets out the number of breaches over time comparing exemptions absent and present. The graphs show the number of breaches per year (e.g., 2019 vs May 2023 – April 2024) as a fraction of all 15-minute periods within that year, by Terminal, control post group, or control post. This is further distinguished by samples with or without exemptions. Specifically, the subtitle 'Exemptions absent' means excluded periods classed as exclusions are removed from the sample, while 'Exemptions present' indicates these exclusions are retained

- The impact of removing exclusions on the analysis sample varied by terminal and search area. For search areas, the trimmed sample had near-complete coverage with the full sample for Terminal 3 and Terminal 4 after September 2023

- However, Terminal 2 was completely excluded from the sample when assessing Transfer Search, and Terminal 5 had relatively poor coverage following September 2023 across all search areas . Regarding control posts, there was near-perfect coverage across all posts after September 2023

- A full month-by-month breakdown of the impact of exemptions on the sample for all terminals, search areas, control posts, and control post aggregations is provided in Appendix C

- Unless otherwise stated, the results presented pertain to the sample after the removal of dates deemed as exemptions for both Campus and Security. The removal of exemptions significantly impacts the results, and this is briefly discussed when comparing the number of breaches in the 2019 sample with those in the 2023/24 period for all search areas and control posts

Assumptions

1. We have assumed all the data provided is true, fair, and accurate, and we have not audited or verified any of it;

2. Periods defined by HAL as exclusions have been removed from the analysis unless otherwise stated;

3. Control post and security times recorded as 59:59 are not actual and are excluded from the analysis. This is due to two potential reasons: either a vehicle is recorded as entering but not exiting for control posts, or the queue time exceeded 59:59 and was capped at that value in the case of security que times

4. Calendar months are assumed to align with the monthly metrics indicated in Section 4 of Heathrow's Licence;

5. Central Search is assumed to correspond to CSA in the data provided by HAL;

6. Transfer Search is assumed to correspond to Transfer in the data provided by HAL;

7. Data from HAL is assumed to reflect agreed times of day for staff search, as arranged locally between HAL and airlines;

8. Data from HAL is also assumed to cover agreed times of day for control posts, as arranged locally between HAL and airlines; and

Outcomes assessed and displayed in quantitative analysis

Graphs and Figures

Breaches as a proportion of target level of breaches (left panel)

- This graph shows the number of breaches expressed as a proportion of the number of permissible breaches that are consistent with a targeted proportion of all queue times being less than the specified time (i.e. 95% being under 5 minutes or 95% being under 10 minutes)
- For example, suppose there are 100 15-minute time periods being assessed. A target of 95% of all queue times being below 5 minutes would mean that at most 5 of the measured 100 15-minute periods would be permitted to have queue times that are greater than 5 minutes while still meeting the target (i.e. the "target level of breaches"). Therefore, 4 breaches would reflect 80% of the number of allowed breaches, and 10 breaches would represent 200% of allowed breaches

Average and standard deviation of queue time (right panel)

- This graph shows the average queue time in a given month or day. This is surrounded by a shaded region around it signifying 1 standard deviation from the average queue time

Tables

Percentage of breaches per month (left panel)

- This shows, for a given terminal, control post group or control post, the proportion of 15-minute time slices per month when the delay metric is breached for the assessed periods of 2023/24
- The "All Terminals", "All Groups" and "All Posts" columns refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals, control post groups and control posts, respectively
- The "All Months" row refers to the total number of breaches as a proportion of the total number of allowed breaches for all months

Percentage of days per month when the target is missed (right panel)

- It is the number of days in the month for which the target is missed (i.e. days where the number of 15-minute queue times in excess of the relevant delay metric are greater than the target/threshold) as a fraction of the total number of assessed days in the month
- The "All Terminals", "All Groups" and "All Posts" columns refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals, control post groups and control posts, respectively
- The "All Months" row refers to the total number of breaches as a proportion of the total number of allowed breaches for all months
- The next page sets out an illustrative example which sets out where the 100% performance level is; where the rebate target is; and where the lower level is
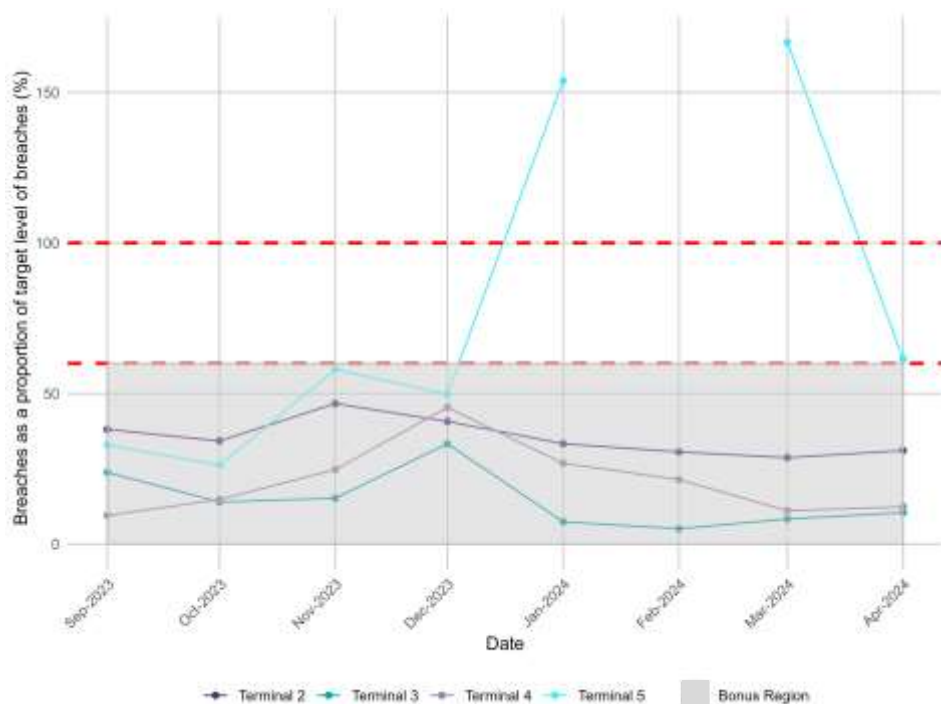
Illustration of performance figure depicting breaches as a proportion of target level of breaches
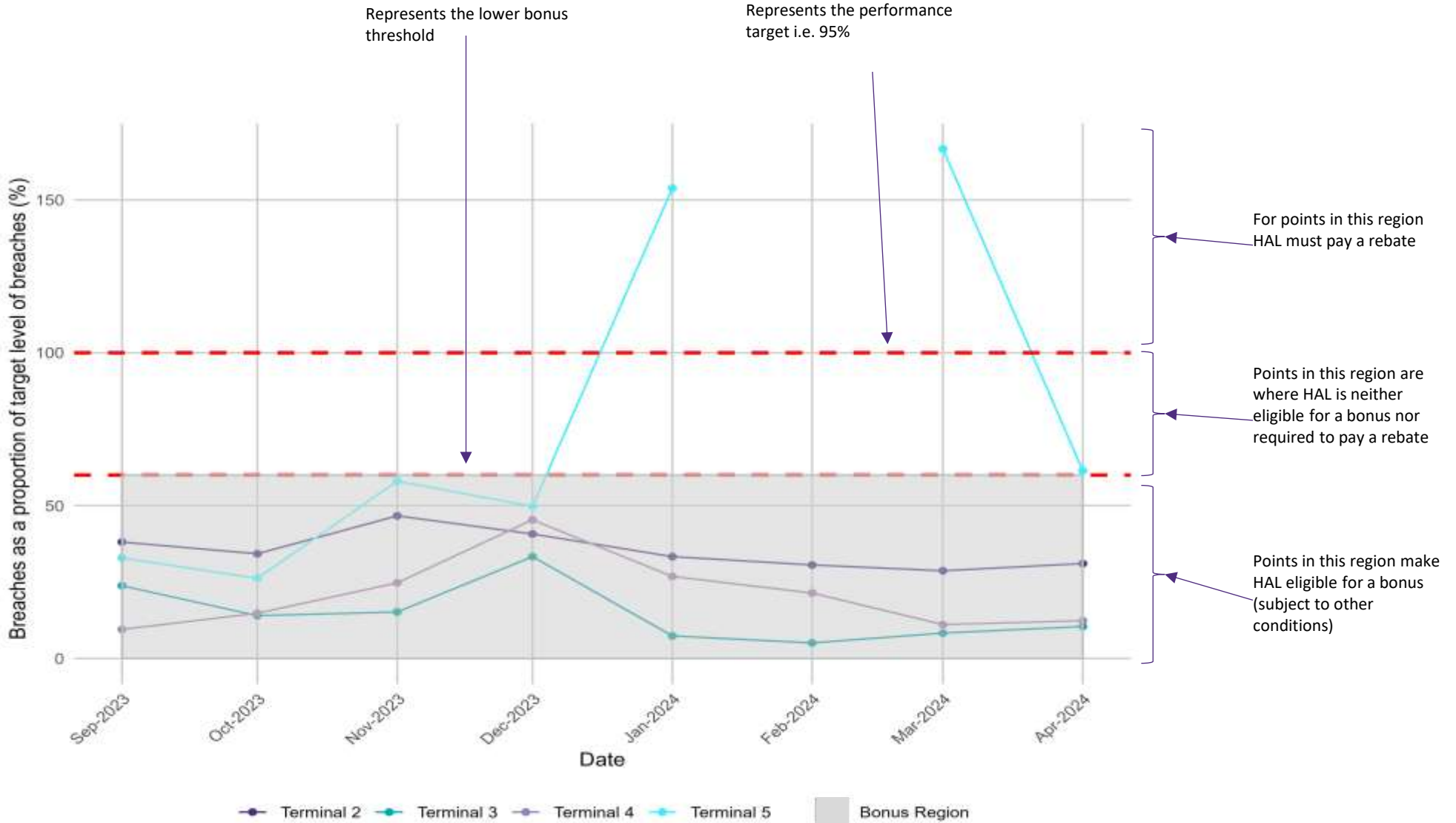
Central search – as-is

- In 2023/24, Terminal 5 missed the target in two months out of an assessed 7-month period. The remaining terminals met the target in all months, with each month's performance being within the bonus region (i.e. the % of breaches was sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region
- Across all terminals, the target was missed 6.5% of the time, with this being driven solely by Terminal 5. 90% of months were in the bonus region
- The monthly mean and standard deviation of queue delays were relatively stable. Average monthly queue time had a mean of 58 seconds and ranged between 41 and 73 seconds

Percentage of central search breaches by month by terminal in 2023 to 2024

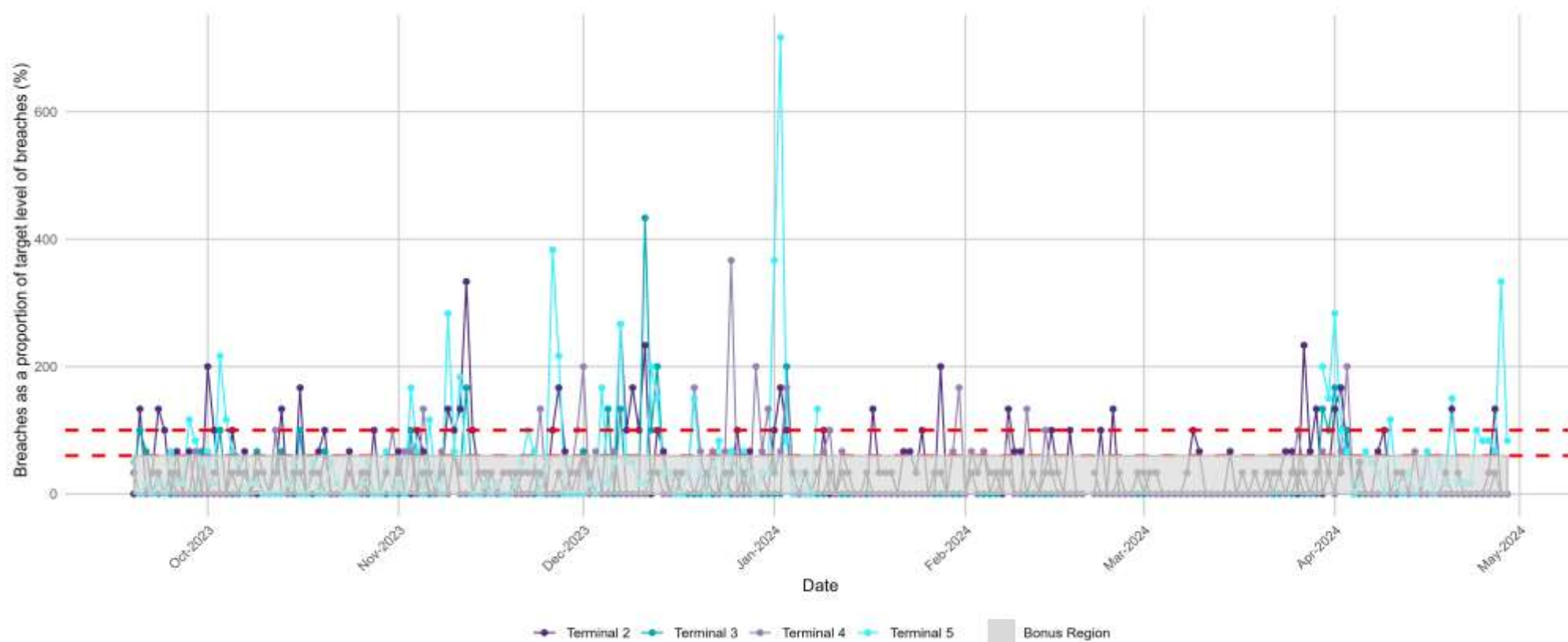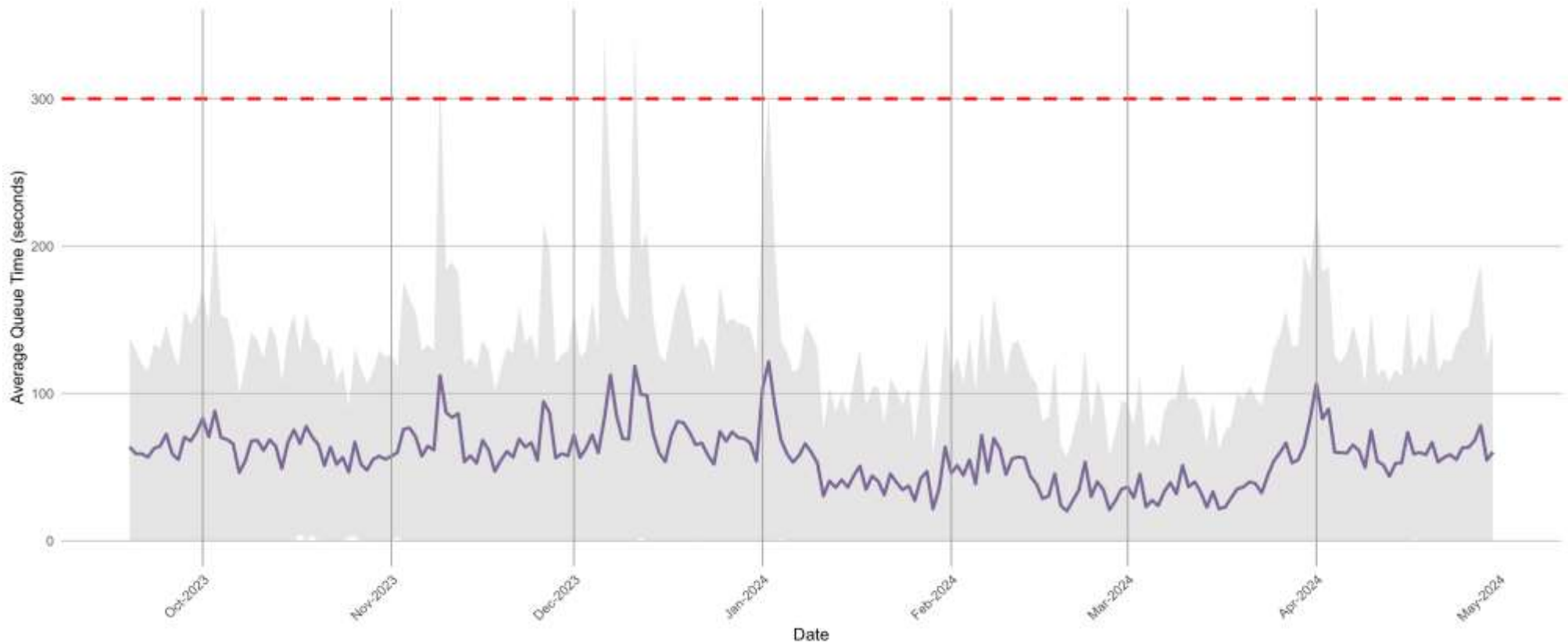Average and standard deviation of central search monthly queue times

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. The red dashed line at below the 60% line indicates the start of the bonus region, and the grey shaded area indicates the bonus region (i.e. region where the number of breaches is sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region)

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line indicates the target threshold.

Central search – daily target

- Under a daily target, the target would have been missed 8% of the time across all terminals (compared to 6.5% under the current monthly target)
- All terminals would have missed the current target in some instances. Based on average performance across the data sample, Terminal 3 was the best performer missing the target 3.5% of the time and performing within the bonus region 90.1% of the time
- Terminal 5 was the worst performer missing the target 16% of the time and performing within the bonus region 69% of the time

Percentage of central Search breaches by day by terminal in 2023 to 2024

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. The red dashed line at below the 60% line indicates the start of the bonus region, and the grey shaded area indicates the bonus region (i.e. region where the number of breaches is sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region)

Central search – daily target

- The daily mean and standard deviation of queue delays display more volatility than the monthly equivalent. Average daily queue time had a mean of 57 seconds and ranged between 20 and 121 seconds

- There is some evidence that HAL may be responding to OBR's incentive effect. For example, in the month of February 2024, queue times start comparatively high and then fall over the course of the month. The converse is true for the month of April. However, the evidence is inconclusive as similar patterns cannot be observed for other months

Average and standard deviation of central search daily queue times

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line indicates the target threshold.

Central search – summary of monthly and daily breaches

- The tables below show the proportion of 5-minute breaches per terminal at the monthly level, and the number of days per month when the target failed to be met for the assessed periods of 2023/24

- At the monthly level, Terminal 5 was the only terminal with reported missed target months (i.e. January and March 2024) and had the highest average proportion of breaches per month (i.e. 3.81%). Terminal 3 had smallest average proportion of breaches per month (i.e. 0.73%)

- At the daily level, the number of missed target days per month was highest for Terminal 5 and Terminal 2 (i.e. 23 days) and lowest for Terminal 3 (i.e. 8 days)

Percentage of central search breaches per month by terminal in 2023 to 2024

Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5	All Terminals
Sep 2023	1.90%	1.19%	0.48%	1.64%	1.36%
Oct 2023	1.71%	0.70%	0.74%	1.31%	1.15%
Nov 2023	2.33%	0.76%	1.24%	2.90%	2.00%
Dec 2023	2.03%	1.66%	2.26%	2.49%	2.17%
Jan 2024	1.66%	0.37%	1.34%	7.64%	2.02%
Feb 2024	1.53%	0.26%	1.07%		0.95%
Mar 2024	1.43%	0.42%	0.55%	7.65%	1.00%
Apr 2024	1.55%	0.52%	0.62%	3.06%	1.72%
All Months	1.8%	0.7%	1.1%	2.7%	

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: Boxes highlighted in red indicate months with breaches in excess of the target. "All Terminals" refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.

Number of central search days per month by terminal when the target failed to be met in 2023 to 2024

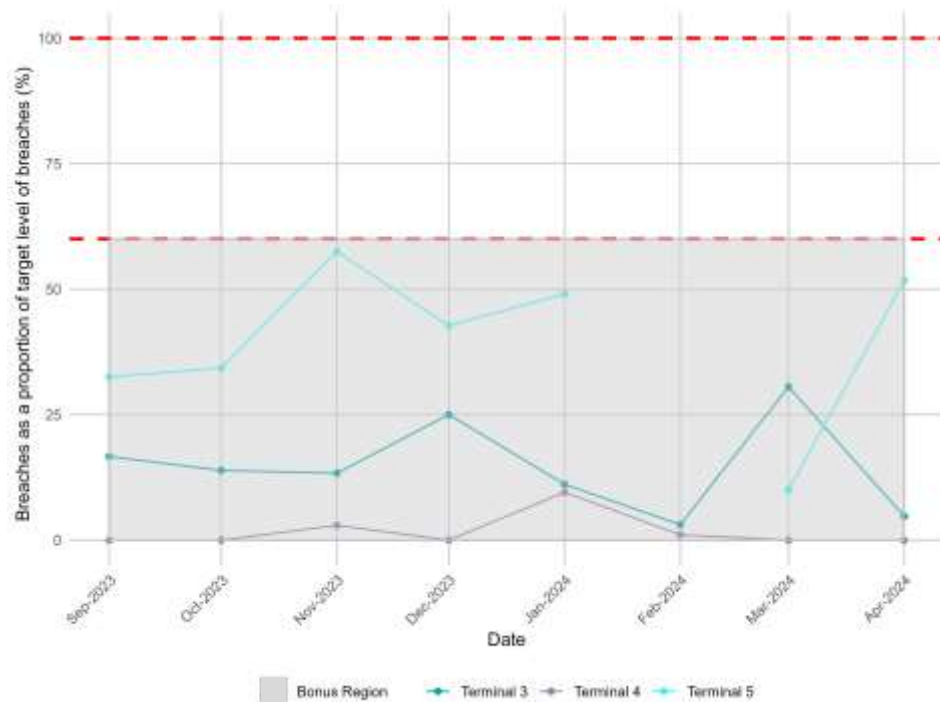| Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5	All Terminals
Sep-2023	2	0	0	1	3
Oct-2023	3	0	0	2	5
Nov-2023	4	1	2	6	13
Dec-2023	3	4	5	5	17
Jan-2024	3	1	2	3	9
Feb-2024	2	0	1		3
Mar-2024	2	1	0	2	5
Apr-2024	4	1	1	4	10
All Months	23	8	11	23	

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: "All Terminals" refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.

Transfer search – as-is

- The as-is scenario assessed the proportion of queue times measured once every 15 minutes that are greater than 10 minutes, measured at monthly frequency

- In 2023/24, all- terminals met the target in all months, with every month's performance being within the bonus region

- Notably, all the data for Terminal 2 was considered as an exemption and therefore dropped from the analysis

- The monthly mean and standard deviation of queue delays were relatively stable but dipped slightly in February 2024. Average monthly queue time had a mean of 72 seconds and ranged between 29 and 95 seconds

Percentage of transfer search breaches by month by terminal in 2023 to 2024

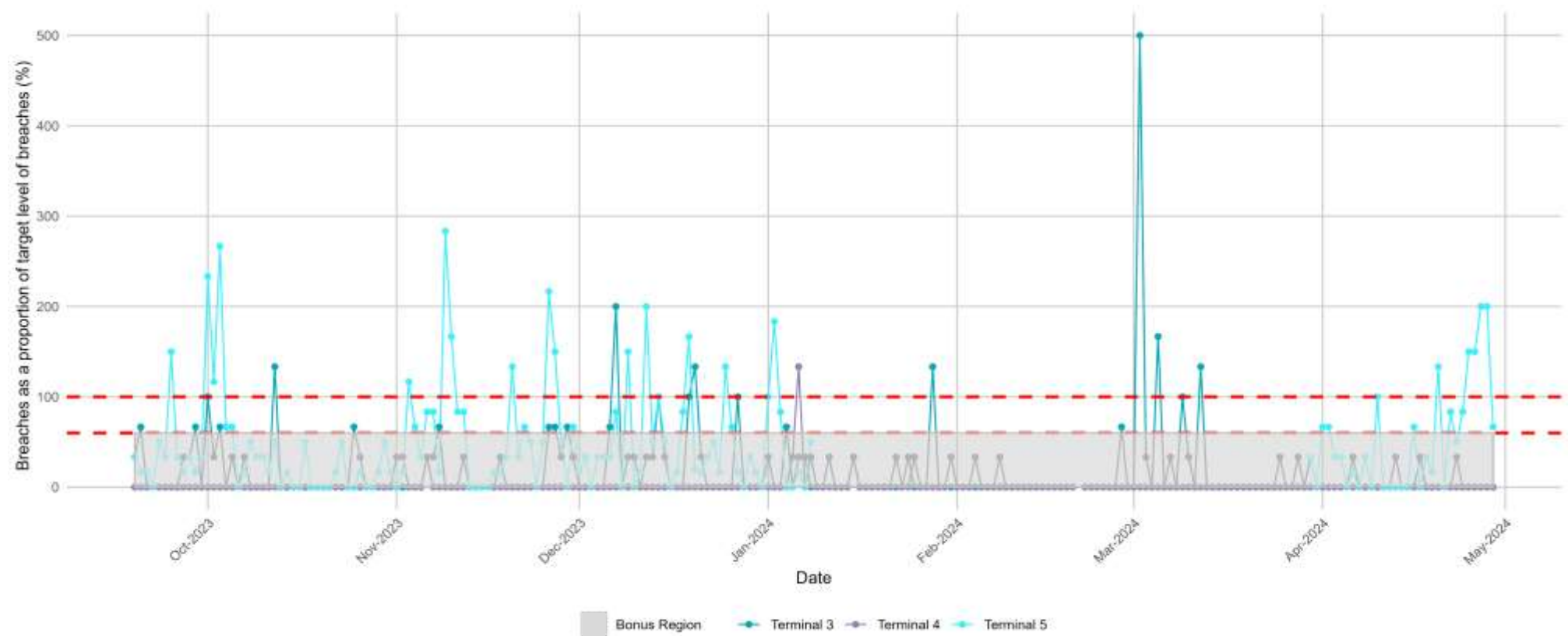Average and standard deviation of transfer search monthly queue times

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. The red dashed line at below the 60% line indicates the start of the bonus region, and the grey shaded area indicates the bonus region (i.e. region where the number of breaches is sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region)
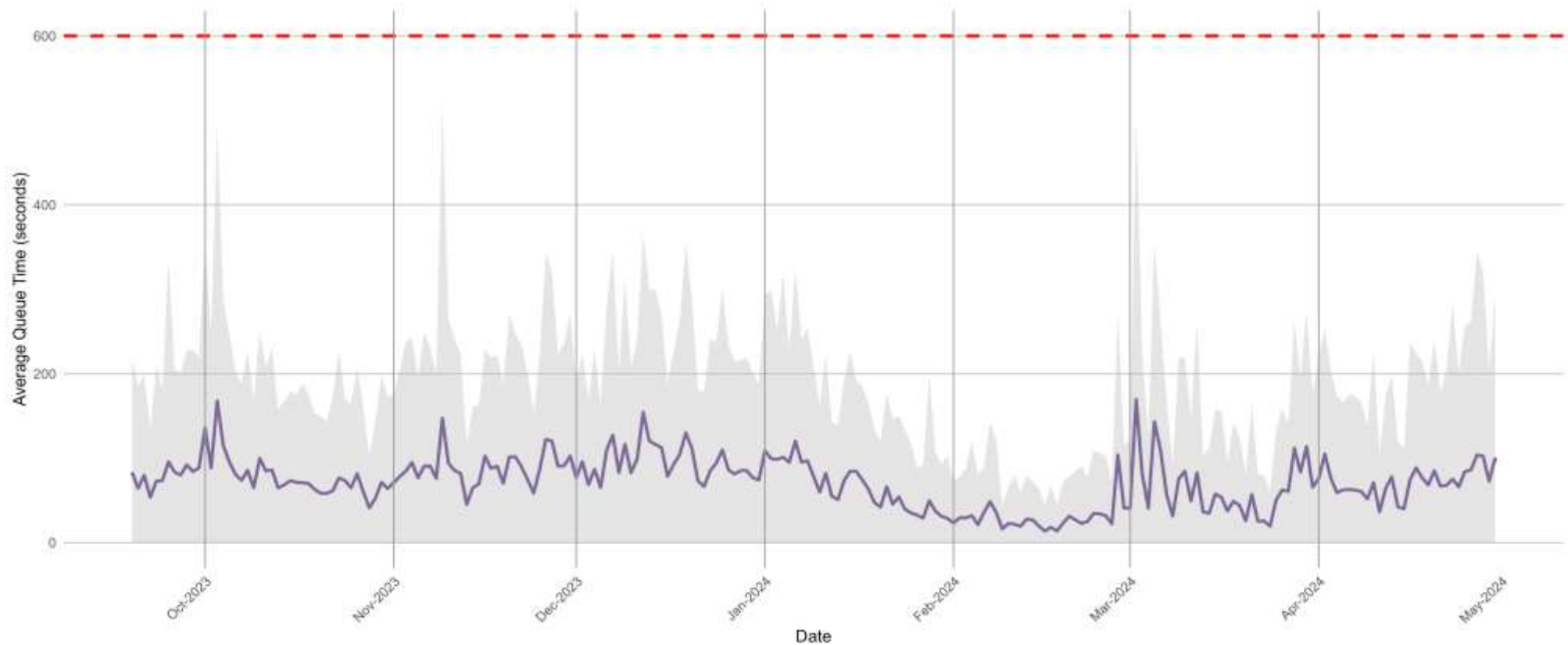
Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL.

Transfer search – daily target

- Under a daily target, the target would have been missed 4.75% of the time across all terminals (compared to no misses under the current monthly target).
- All terminals would have missed the current target in some instances. Terminal 4 was the best performer missing the target 0.44% of the time and performing within the bonus region 99.5% of the time
- Terminal 5 was the worst performer missing the target 14% of the time and performing within the bonus region 70.6% of the time

Percentage of transfer search breaches by day by terminal in 2023 to 2024

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. The red dashed line at below the 60% line indicates the start of the bonus region, and the grey shaded area indicates the bonus region (i.e. region where the number of breaches is sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region)

Transfer search – daily target

- The daily mean and standard deviation of queue delays display more volatility than the monthly equality. Average daily queue time had a mean of 71 seconds and ranged between 13 and 169 seconds

- There is some evidence that HAL may be responding to OBR's incentive effect. For example, in the months of November 2023, and February and April 2024, queue times start comparatively high and then fall over the course of the month. The converse is true for the month of May. However, the evidence is inconclusive as similar patterns cannot be observed for other months

Average and standard deviation of transfer search daily queue times

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line indicates the target threshold.

Transfer search – summary of monthly and daily breaches

- The tables below show the proportion of 10-minute breaches per terminal at the monthly-level, and the number of days per month when the target failed to be met for the assessed periods of 2023/24

- At the monthly level, no terminal reported a missed target over the sample period. Terminal 5 had the highest average proportion of breaches per month (i.e. 1.97%). Terminal 4 had smallest average proportion of breaches per month (i.e. 0.08%)

- At the daily level, the number of missed target days per month was highest for Terminal 5 (i.e. 20 days) and lowest for Terminal 4 (i.e. 1 day)

Percentage of Transfer Search breaches per month by terminal in 2023 to 2024

Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5	All Terminals
Sep 2023		0.83%	0.00%	1.62%	1.01%
Oct 2023		0.69%	0.00%	1.71%	1.02%
Nov 2023		0.67%	0.15%	2.86%	1.62%
Dec 2023		1.24%	0.00%	2.13%	1.37%
Jan 2024		0.55%	0.47%	2.43%	0.90%
Feb 2024		0.15%	0.05%		0.10%
Mar 2024		1.52%	0.00%	0.48%	0.76%
Apr 2024		0.24%	0.00%	2.59%	1.34%
All Months		0.7%	0.1%	2.2%	

Percentage of Transfer Search days per month by terminal when the target failed to be met in 2023 to 2024

| Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5	All Terminals
Sep 2023		0	0	1	1
Oct 2023		1	0	3	4
Nov 2023		0	0	6	6
Dec 2023		2	0	4	6
Jan 2024		1	1	1	3
Feb 2024		0	0		0
Mar 2024		3	0	0	3
Apr 2024		0	0	5	5
All Months		7	1	20	

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: "All Terminals" refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: "All Terminals" refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.
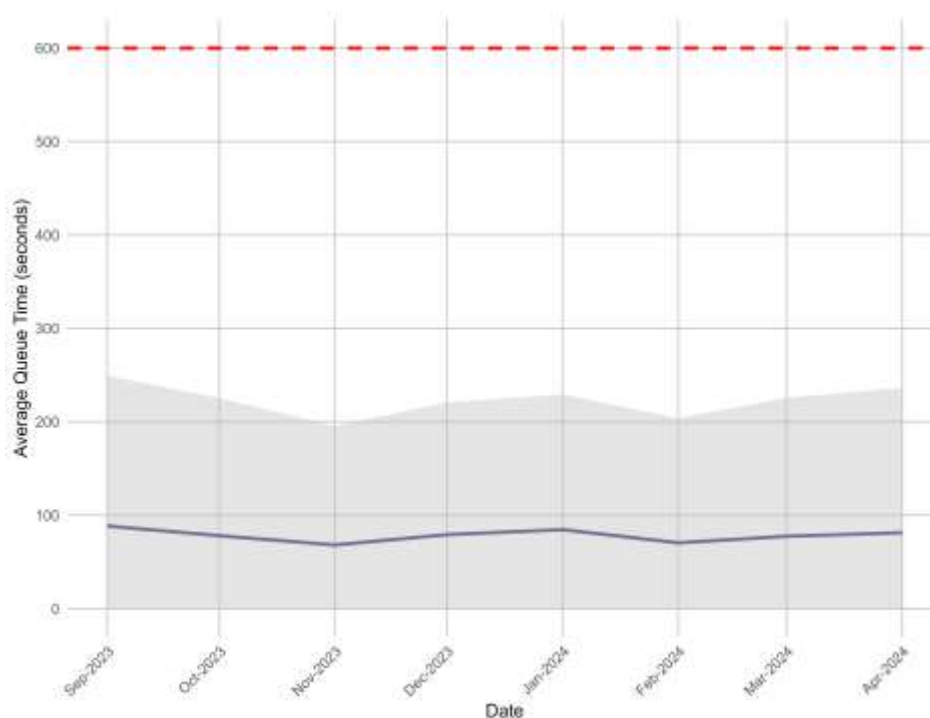
Staff search – as-is

- The as-is scenario assessed the percentage of queue times measured once every 15 minutes that are less than 10 minutes, measured at monthly frequency

- In 2023/24, all terminals met the target in all months and there were **no breaches**.

- Notably, all but two months of data for Terminal 5 were considered as an exemption and therefore dropped from the analysis

- The monthly mean and standard deviation of queue delays were relatively stable. Average monthly queue time had a mean of 78 seconds and ranged between 68 and 88 seconds

Percentage of transfer search breaches by month by terminal in 2023 to 2024

Average and standard deviation of transfer search monthly queue times
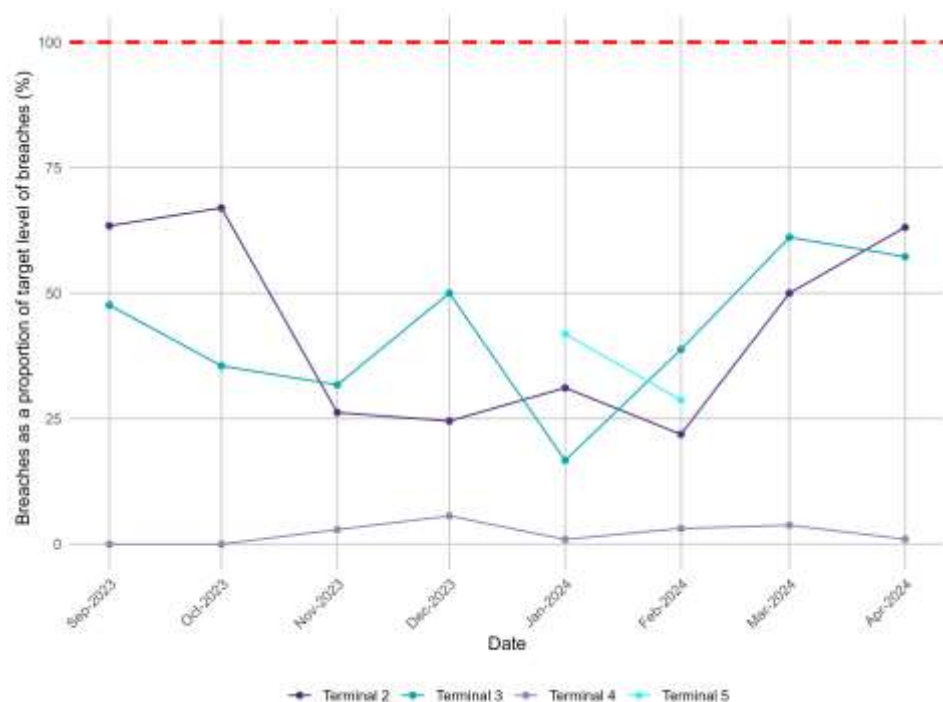
Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: The red dashed line at 100% indicates the target. There is no inclusion of a bonus region in the figure because bonuses are not payable for Staff Search.
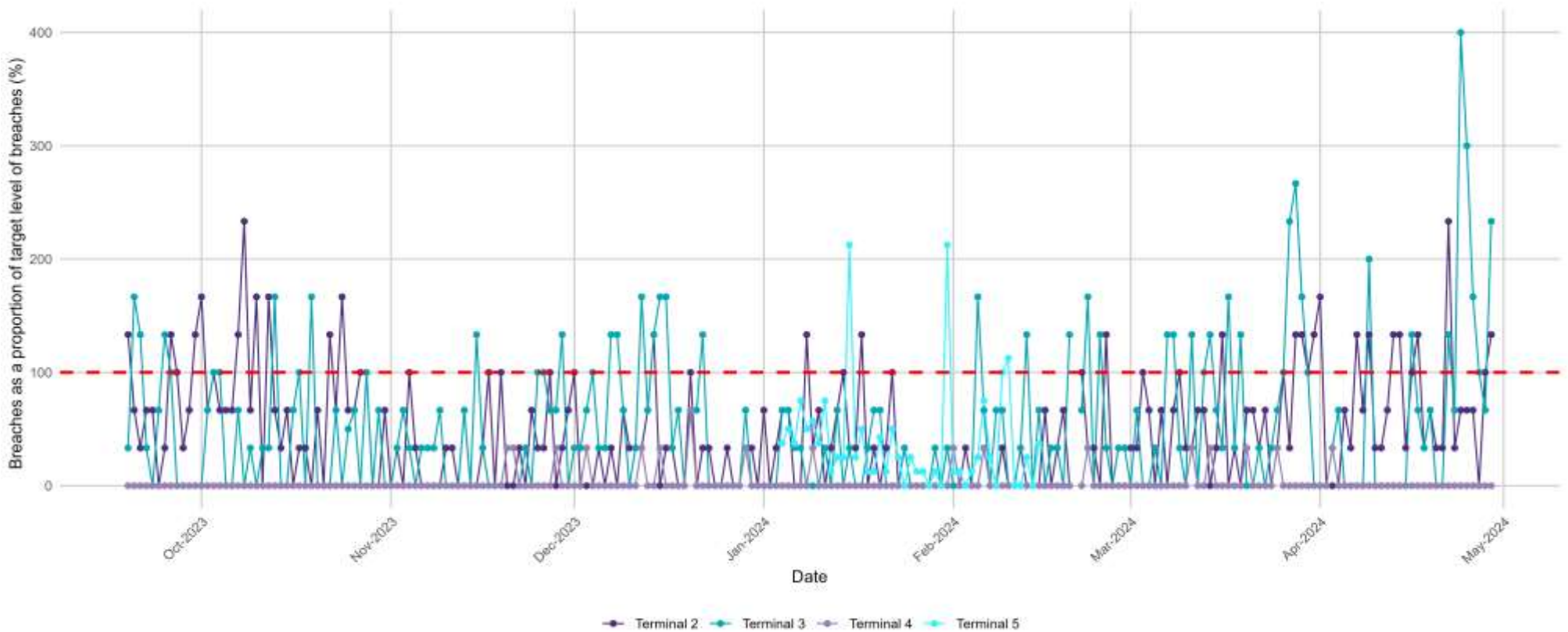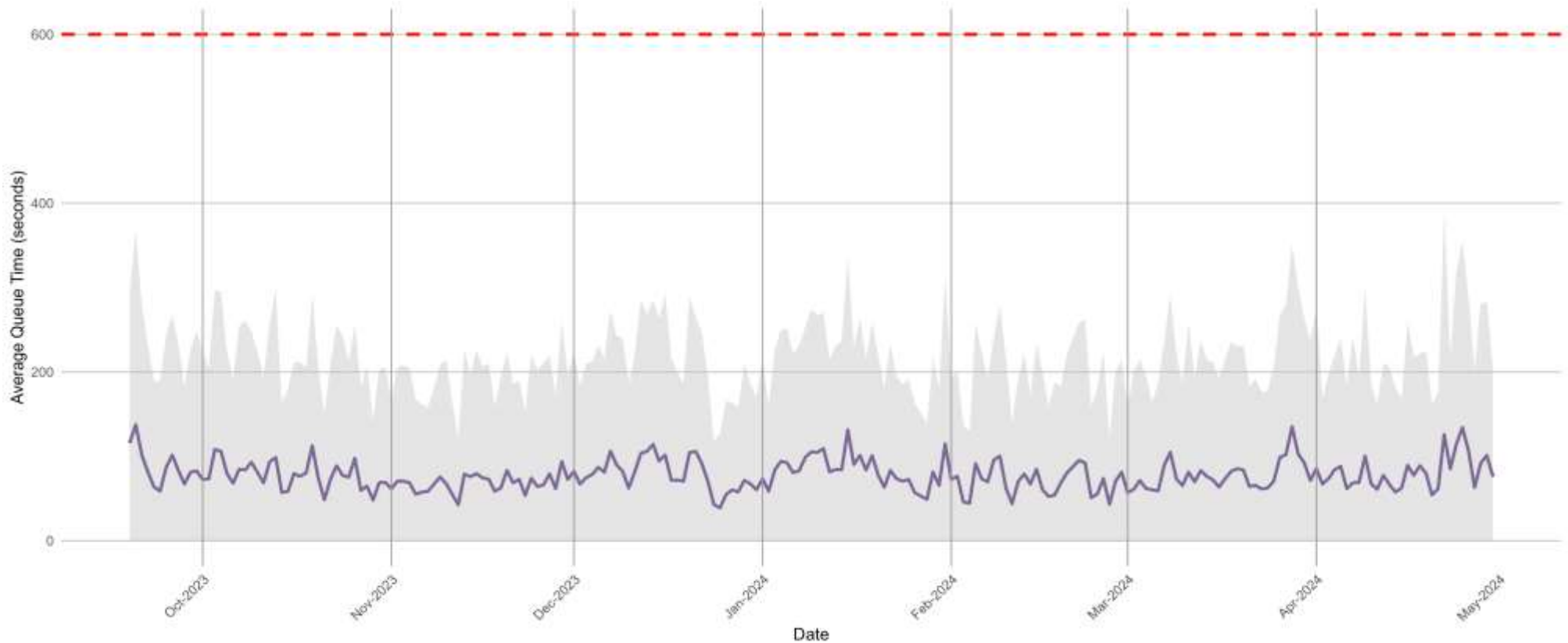
Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL.

Staff search – daily targets

- Under a daily target, the target would have been missed **9%** of the time across all terminals (compared to **no misses** under the current monthly target)

- All terminals, barring Terminal 4, would have missed the current target in some instances. Terminal 4 was the best performer with no missed targets and Terminal 3 was the worst performer missing the target **15.7%** of the time

Percentage of staff search breaches by day by terminal in 2023 to 2024

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. There is no inclusion of a bonus region in the figure because bonuses are not payable for Staff Search.

Staff search – daily targets

- The daily mean and standard deviation of queue delays display more volatility than the monthly equality, but generally appear to be more stable than the daily counterpart of Transfer Search. Average daily queue time had a mean of 77 seconds and ranged between 38 and 137 seconds
- There is no clear evidence that HAL is responding to OBR's incentive effect (in terms of poor or good performance earlier in the month corresponding, respectively, to good or poor performance later in the month). However, we would note that queue times are generally below the metric threshold over the sample period

Average and standard deviation of staff search daily queue times

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line indicates the target threshold.

Staff search – summary of monthly and daily breaches

- The tables below show the proportion of 10-minute breaches per terminal at the monthly-level, and the number of days per month when the target was missed for the assessed periods of 2023/24

- At the monthly level, no terminal reported a missed target month over the sample period. Terminal 2 had the highest average proportion of breaches per month (i.e. 2.16%). Terminal 4 had smallest average proportion of breaches per month (i.e. 0.11%)

- At the daily level, the number of missed target days per month was highest for Terminal 3 (i.e. 35 days) and lowest for Terminal 4 which notably had no missed target days

Percentage of staff search breaches per month by terminal in 2023 to 2024

Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5	All Terminals
Sep 2023	3.14%	2.38%	0.00%		1.83%
Oct 2023	3.33%	1.76%	0.00%		1.69%
Nov 2023	1.30%	1.58%	0.14%		1.01%
Dec 2023	1.22%	2.49%	0.28%		1.33%
Jan 2024	1.54%	0.83%	0.05%	2.09%	1.34%
Feb 2024	1.09%	1.94%	0.16%	1.43%	1.17%
Mar 2024	2.48%	3.04%	0.19%		1.91%
Apr 2024	3.14%	2.84%	0.05%		2.02%
All Months	**2.1%**	**2.1%**	**0.1%**	**1.9%**	

Number of staff search days per month by terminal when the target failed to be met in 2023 to 2024

| Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5	All Terminals
Sep 2023	3	3	0		6
Oct 2023	7	2	0		9
Nov 2023	0	2	0		2
Dec 2023	1	7	0		8
Jan 2024	2	0	0	2	4
Feb 2024	1	5	0	1	7
Mar 2024	4	9	0		13
Apr 2024	8	7	0		15
All Months	**26**	**35**	**0**	**3**	

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: "All Terminals" refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: "All Terminals" refers to the total number of breaches as a proportion of the total number of allowed breaches for all Terminals. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.

Transfer search – harmonised (95%-5mins, monthly)

- The 95-5 monthly scenario assessed the percentage of Transfer Search queue times measured once every 15 minutes that are less than 5 minutes, measured at monthly frequency, and with a target of 95% of queue times being less than 5 minutes

- The results are more mixed than those reported for the as-is scenario. Across all terminals, the target was missed **56.52%** of the time. Terminal 4's performance almost mirrors that seen in the as-is scenario, with no missed targets and all months within the bonus region

- However, Terminal 3 and Terminal 5 now perform much worse; Terminal 3 missed the target in all but two months (i.e. **75%** of all months have missed targets) and Terminal 5 reports every month as a missed target

Percentage of transfer search breaches by month by terminal in 2023 to 2024
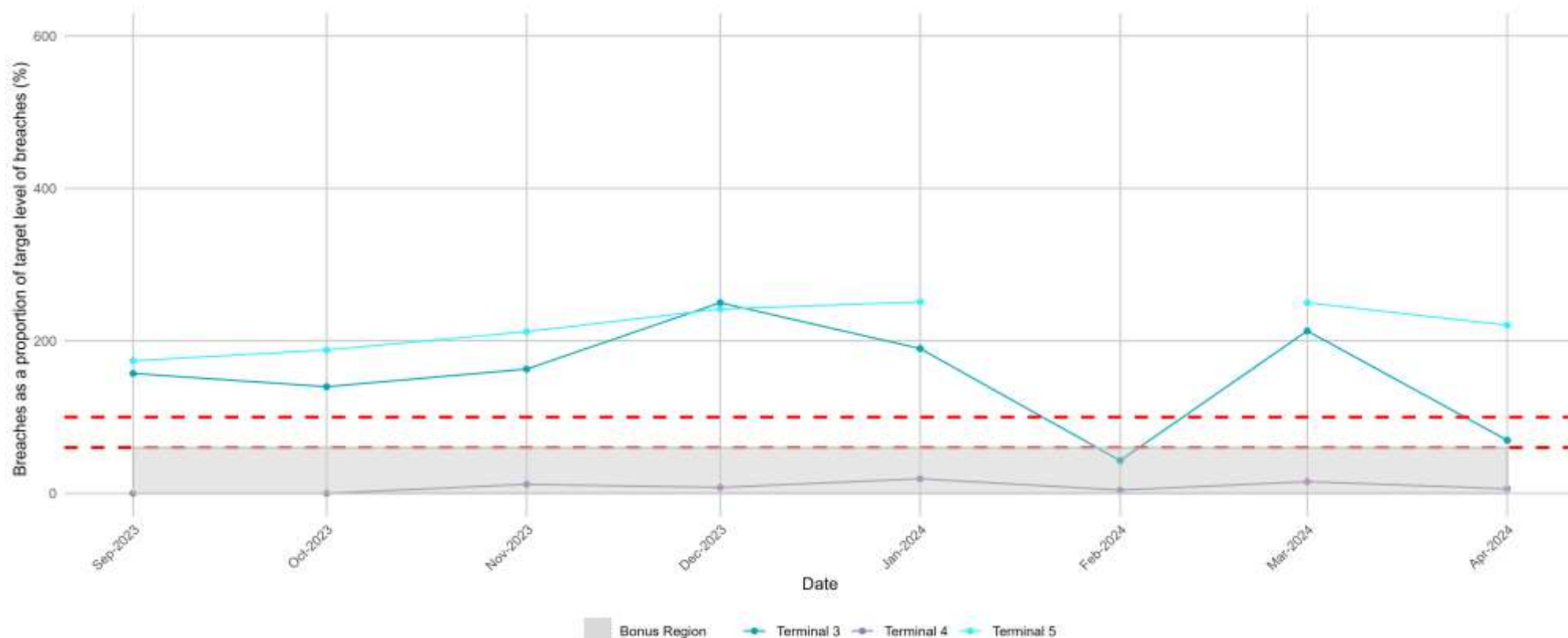
Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. The red dashed line at below the 60% line indicates the start of the bonus region, and the grey shaded area indicates the bonus region (i.e. region where the number of breaches is sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region)
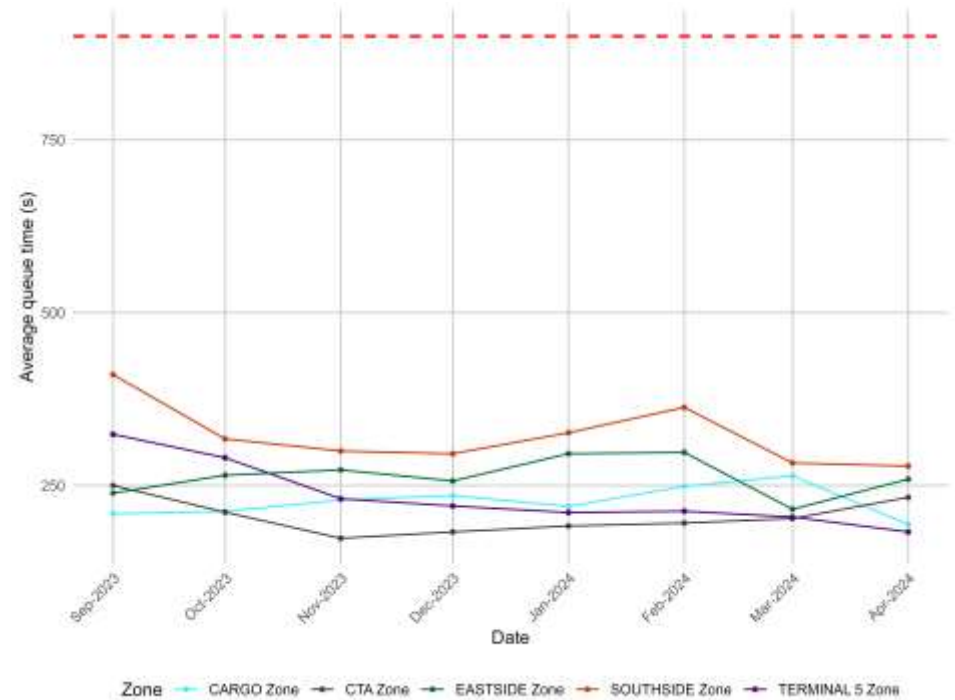
Control posts – as-is

- The as-is scenario assessed the percentage of queue times measured once every 15 minutes that are less than 15 minutes, measured at monthly frequency

- In 2023/24, all groups met the target in most months, if not all months. In particular, for Cargo and CTA groups the target was met on all months

- When looking at campus-wide performance, the overall target was not met on five months, of the eight for which data was available (i.e., **62.5%** of the time)

- The monthly mean of queue delays were relatively stable but varied between groups. Southside had the highest average monthly queue time, with a mean of 321 seconds and ranged between 277 and 410 seconds

- CTA zone had the lowest average monthly queue time, with a mean of 204 seconds and ranged between 173 and 249 seconds

Percentage of control post grouping breaches by month by control post grouping in 2023 to 2024
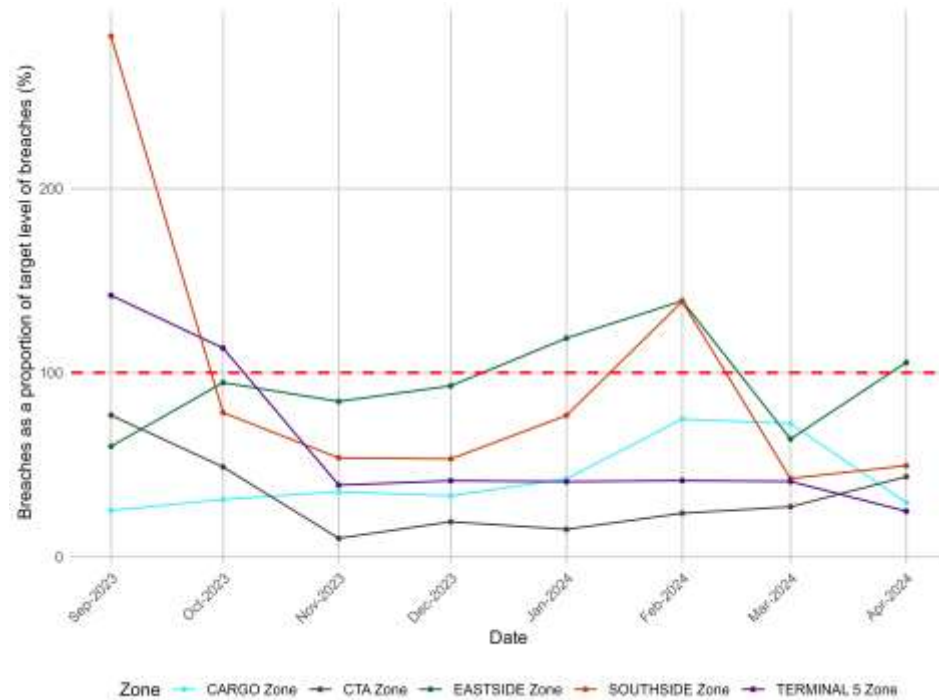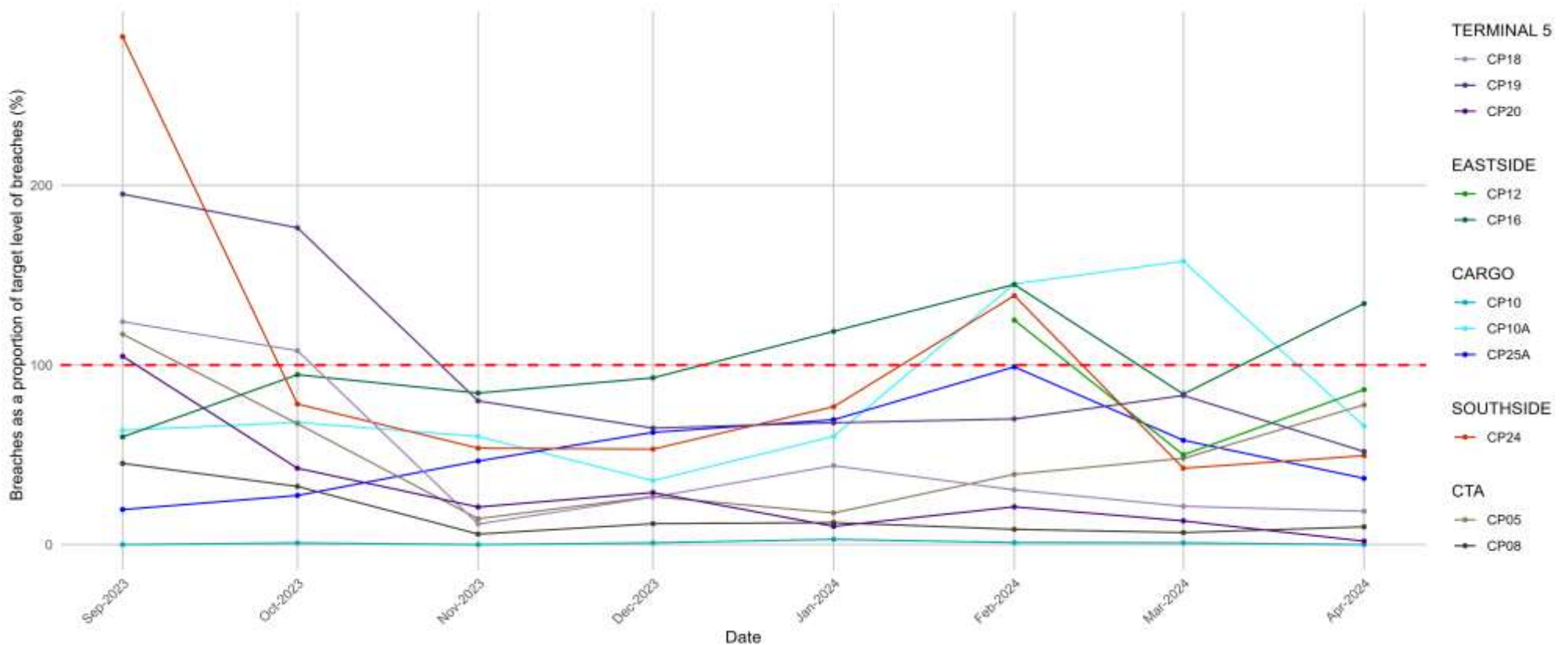
Average of control post grouping queue times

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. There is no inclusion of a bonus region in the figure because bonuses are not payable for Control Posts.

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target threshold.

Control posts – individual control post targets

- In 2023/24, all control posts met the target in the majority of, if not all, months
- All control posts had at most **37.5%** of months below the target. The target failed to be met on **16.9%** of months for individual control posts (compared to **17.5%** for the control post groups)
- When looking at performance, the overall target was not met on six months, of the eight for which data was available (i.e., **75%** of the time)
- The worst performing control post was CP16 with 3 missed target months

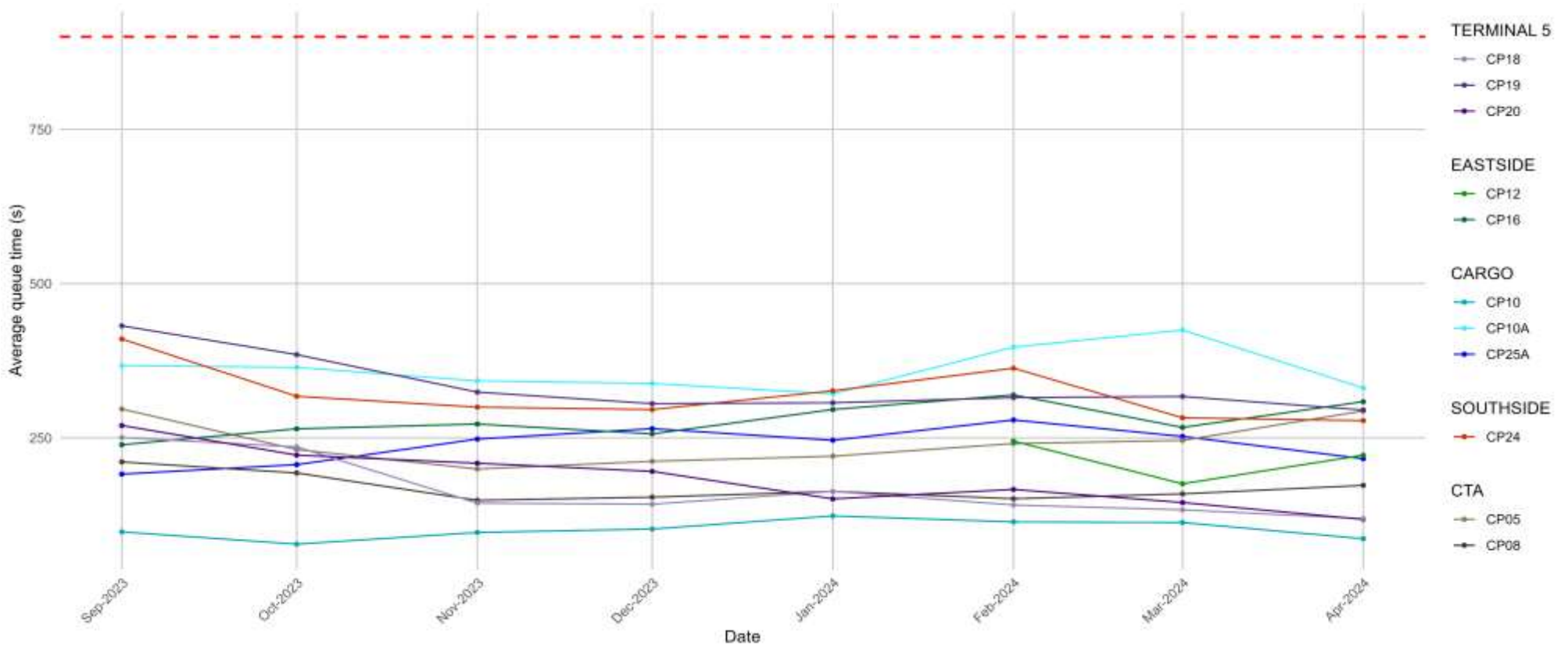Percentage of individual control post breaches by control post by group in 2023 to 2024

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. There is no inclusion of a bonus region in the figure because bonuses are not payable for Control Posts.

Control posts – individual control post targets

- The monthly mean of queue delays were relatively stable but varied with the control post
- CP10A had the highest average monthly queue time, with a mean of 360 seconds and ranged between 321 and 424 seconds
- CP10 had the lowest average monthly queue time, with a mean of 101 seconds and ranged between 77 and 123 seconds

Average of individual control post queue times

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target threshold.

Control posts as-is: summary of monthly breaches

- The table below show the proportion of 15-minute breaches per CP group at the monthly-level
- Eastside failed to meet the target on three months, Southside and Terminal 5 on two months
- Southside group had the highest average proportion of breaches per month (i.e. 4.79%). The CTA group had the smallest average proportion of breaches per month (i.e. 1.64%)

Percentage of breaches per month by group in 2023 to 2024

Month	CARGO	CTA	EASTSIDE	SOUTHSIDE	TERMINAL 5	All Groups
Sep 2023	1.26%	3.83%	2.84%	13.83%	7.05%	2.01%
Oct 2023	1.55%	2.44%	4.61%	3.91%	5.66%	1.83%
Nov 2023	1.77%	0.50%	4.13%	2.67%	1.94%	3.16%
Dec 2023	1.65%	0.95%	4.63%	2.64%	2.06%	2.12%
Jan 2024	2.12%	0.74%	5.90%	3.82%	2.04%	2.49%
Feb 2024	3.74%	1.18%	6.85%	6.87%	2.06%	1.74%
Mar 2024	3.62%	1.35%	3.17%	2.11%	2.04%	3.33%
Apr 2024	1.47%	2.16%	5.26%	2.45%	1.24%	4.82%
All Months	2.20%	1.47%	4.68%	3.91%	3.01%	

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: Boxes highlighted in red indicate months with breaches in excess of the target. "All Groups" refers to the total number of breaches as a proportion of the total number of allowed breaches for all groups. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.

Control posts – individual control post targets: summary of monthly breaches

- The table below show the proportion of 15-minute breaches per control post at the monthly-level
- At the monthly level, only 3 control posts reported no missed target months (i.e. CP8, CP10 and CP25A), while all remaining control posts reported between 1 and 3 missed target months
- CP16 had the highest average proportion of breaches per month (i.e. 4.99%). CP10 had smallest average proportion of breaches per month (i.e. 0.04%)

Percentage of breaches per month by control post in 2023 to 2024

Month	CP05	CP08	CP10	CP10A	CP12	CP16	CP18	CP19	CP20	CP24	CP25A	All CPs
Sep 2023	5.78%	2.21%	0.00%	3.15%		2.84%	6.05%	9.71%	5.14%	13.83%	0.97%	2.01%
Oct 2023	3.35%	1.61%	0.05%	3.40%		4.61%	5.39%	8.79%	2.10%	3.91%	1.36%	1.83%
Nov 2023	0.72%	0.29%	0.00%	2.99%		4.13%	0.57%	3.98%	1.04%	2.67%	2.31%	3.16%
Dec 2023	1.33%	0.58%	0.05%	1.77%		4.63%	1.31%	3.24%	1.45%	2.64%	3.10%	2.12%
Jan 2024	0.88%	0.61%	0.15%	2.98%		5.90%	2.20%	3.39%	0.51%	3.82%	3.46%	2.49%
Feb 2024	1.95%	0.42%	0.06%	7.25%	6.20%	7.12%	1.52%	3.48%	1.05%	6.87%	4.92%	1.74%
Mar 2024	2.40%	0.33%	0.05%	7.88%	2.46%	4.08%	1.06%	4.15%	0.66%	2.11%	2.89%	3.33%
Apr 2024	3.87%	0.49%	0.00%	3.24%	4.26%	6.61%	0.92%	2.58%	0.10%	2.45%	1.84%	4.82%
All Months	2.25%	0.72%	0.05%	4.12%	3.69%	5.12%	1.98%	4.50%	1.19%	3.91%	2.71%	

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: Boxes highlighted in red indicate months with breaches in excess of the target. "All CPs" refers to the total number of breaches as a proportion of the total number of allowed breaches for all Zones. "All Months" refers to the total number of breaches as a proportion of the total number of allowed breaches for all months.

7. Setting equivalent targets under different measure definitions

Further analysis has been conducted to assess HAL's performance under the current regime, alternative options, and potential revised targets

Structure of the analysis conducted

- For each measure, the following pages present the analysis, including:
  - For pages with two figures, the left graph shows monthly breach percentages for CP groupings/terminals in ascending order, while the right graph displays daily breach percentages by terminal and month for individual CPs in ascending order;
  - Pages with a single figure show daily and monthly breach percentages in ascending order, including breaches by CP groupings and individual posts; and
  - Pages on harmonisation display either monthly breach percentages for terminals under the harmonised regime or compare monthly breach percentages for terminals under both harmonised and as-is regimes
- This analysis has been presented in this way in order to:
  1. Assess HAL's performance under current targets (as-is scenario);
  2. Evaluate HAL's potential performance when changing data frequency or assessment regimes (e.g., switching from monthly to daily or harmonising central and transfer search regimes), acknowledging that potential behavioural changes may not be captured; and
  3. Determine the target to set if measurement frequency or assessment regime changes, ensuring HAL's performance remains consistent with the as-is scenario
- All three graphs display the percentage of queue times within the 5- or 10-minute threshold, sorted in ascending order for 2023-2024 data. A red dashed line marks the current 95% target; anything below this line indicates a missed target

Structure of the analysis conducted (continued)

- The revised targets are calculated under each option that would imply the same balance of risk and reward for HAL as under the current approach. The methodology employs the following steps:

Left and right graphs

- The left graph sorts monthly breach percentages for each terminal or CP grouping, with the red line indicating the target. The right graph orders daily breach percentages for each terminal or individual CP, with the red line representing the target

Solo merged graph (revised target)

- This graph is created by sorting breach percentages in ascending order and scaling the observations to percentages. In the Central Search diagram, daily observations can total up to 1460 (365 days × 4 terminals) but are typically lower due to exemptions. To scale to 100%, the observation ID is divided by 1460 (or the total number of considered days). The red dashed line represents the target. The revised target for this graph is then calculated using the following methodology:
  - HAL's performance for each target - central, transfer, and staff - is ranked across all terminals and plotted for both assessed frequencies (e.g., monthly vs. daily). For control posts, the frequency remains unchanged, with lines comparing breaches across groupings under the current regime versus individual control posts. The breach proportion under the current target is then applied to expected observations for the new option, yielding the new target and maintaining the same breach percentage as the as-is scenario. If non-integer results occur, upper and lower bounds are provided, though this is rare. This approach is used for harmonisation, with data presented monthly for both the as-is and harmonised scenarios
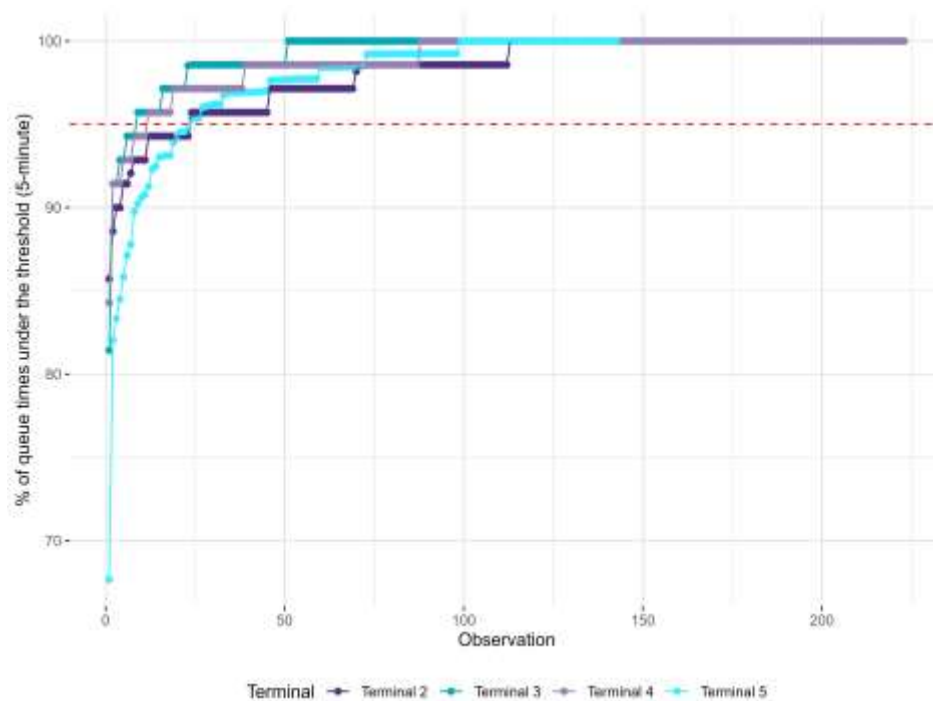
Central search

- Terminal 3 performed best with no missed target months and an average compliance rate of 99.3% per month, while Terminal 5 performed worst with 2 missed target months and an average compliance rate of 96.2% per month

- Comparatively, Terminal 3 performed best with 96.4% of days being below the delay metric and an average compliance rate of 99.2% per day, while Terminal 5 performed worst with 83.9% of days being below the delay metric and an average compliance rate of 97.3% per day

Percentage of central search breaches by month for terminals in ascending order
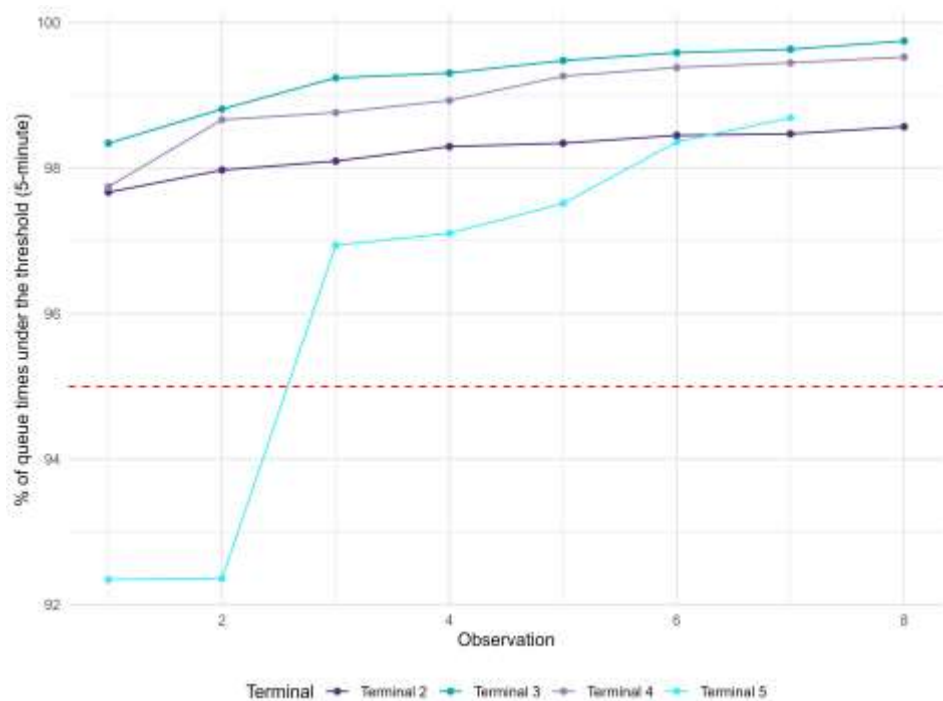
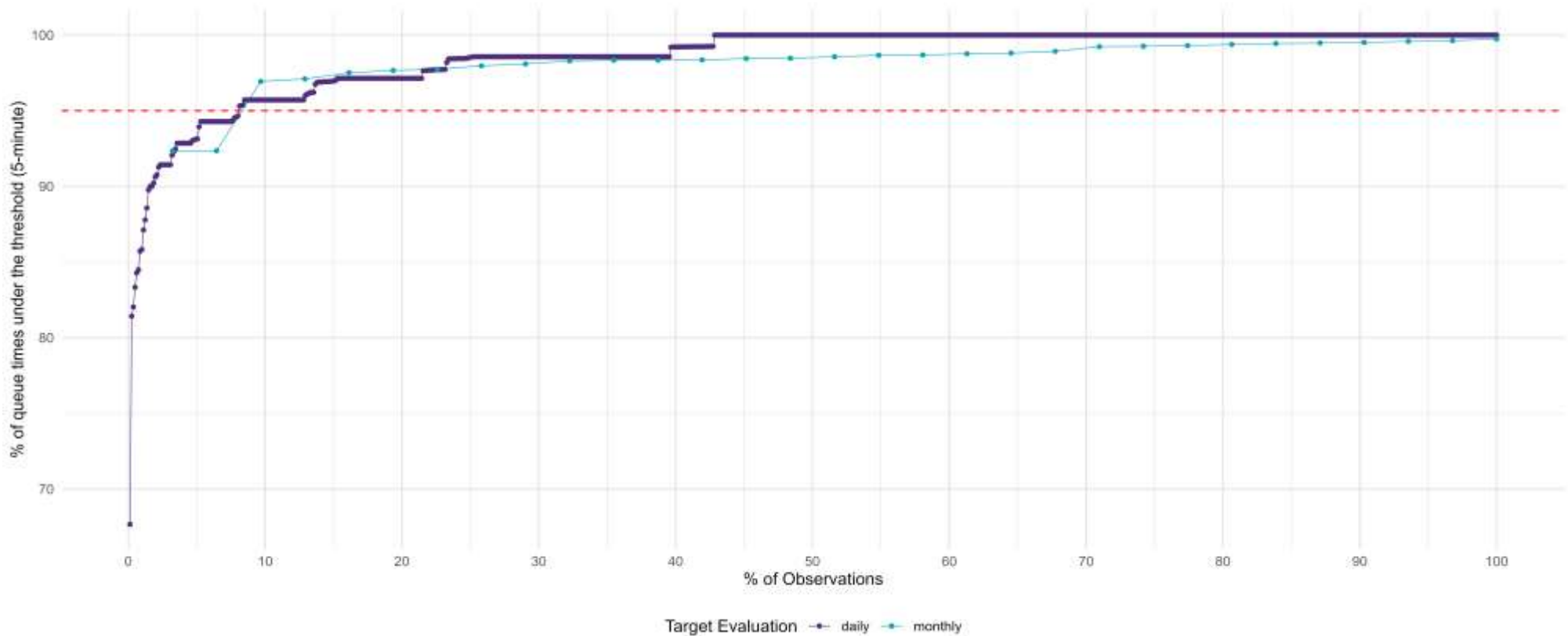Percentage of central search breaches by day for terminals in ascending order

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.
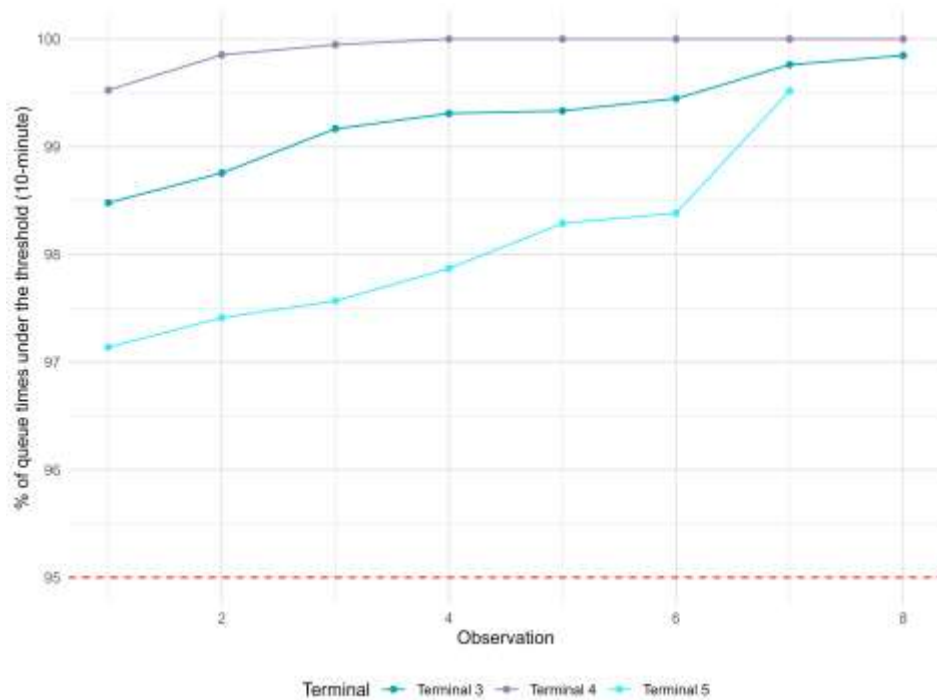
Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Central search (continued)

- In 2023/24, the monthly target of 95% (of measured queues under 5 minutes) was met 93.55% of the time
- Under a daily target, the target would have been met 92% of the time.
- The CSA target should be changed to 94.29% if the target is moved from monthly to daily to keep the same proportion of missed targets, all else constant

Percentage of central search breaches by day and month in ascending order (airport wide)

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.
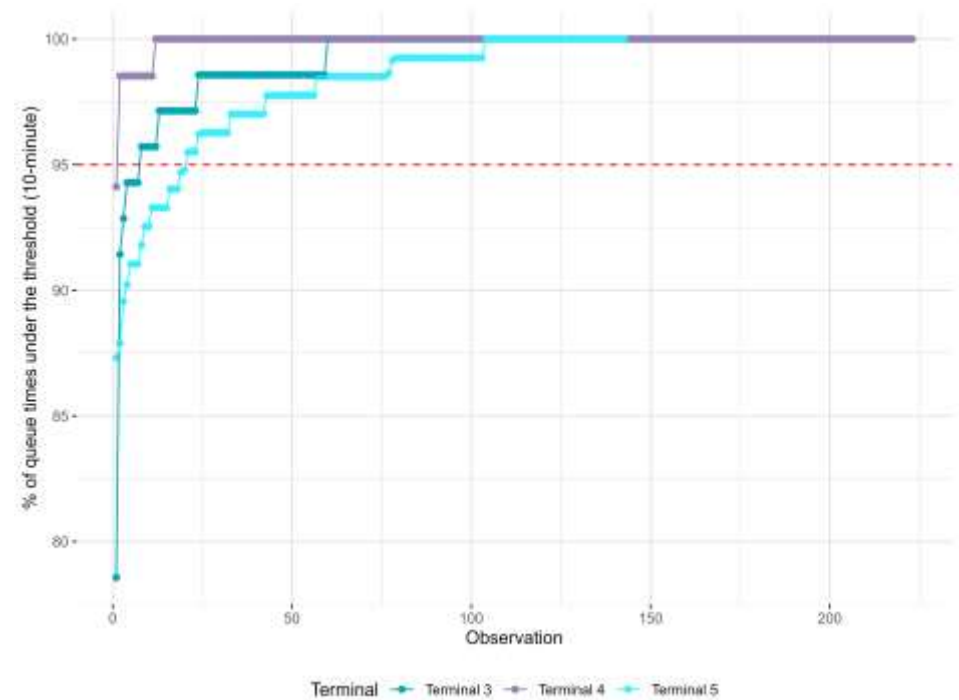
Transfer search

- Terminal 4 performed best with no missed targets and an average compliance rate of 99.9% per month, while Terminal 5 performed worst with no missed targets and an average compliance rate of 98% per month

- Comparatively, Terminal 4 performed best with 99.6% of days being below the delay metric and an average compliance rate of 99.9% per day, while Terminal 5 performed worst with 86% of days being below the delay metric and an average compliance rate of 97.7% per day

Percentage of transfer search breaches by month for terminals in ascending order

Percentage of transfer search breaches by day for terminals in ascending order
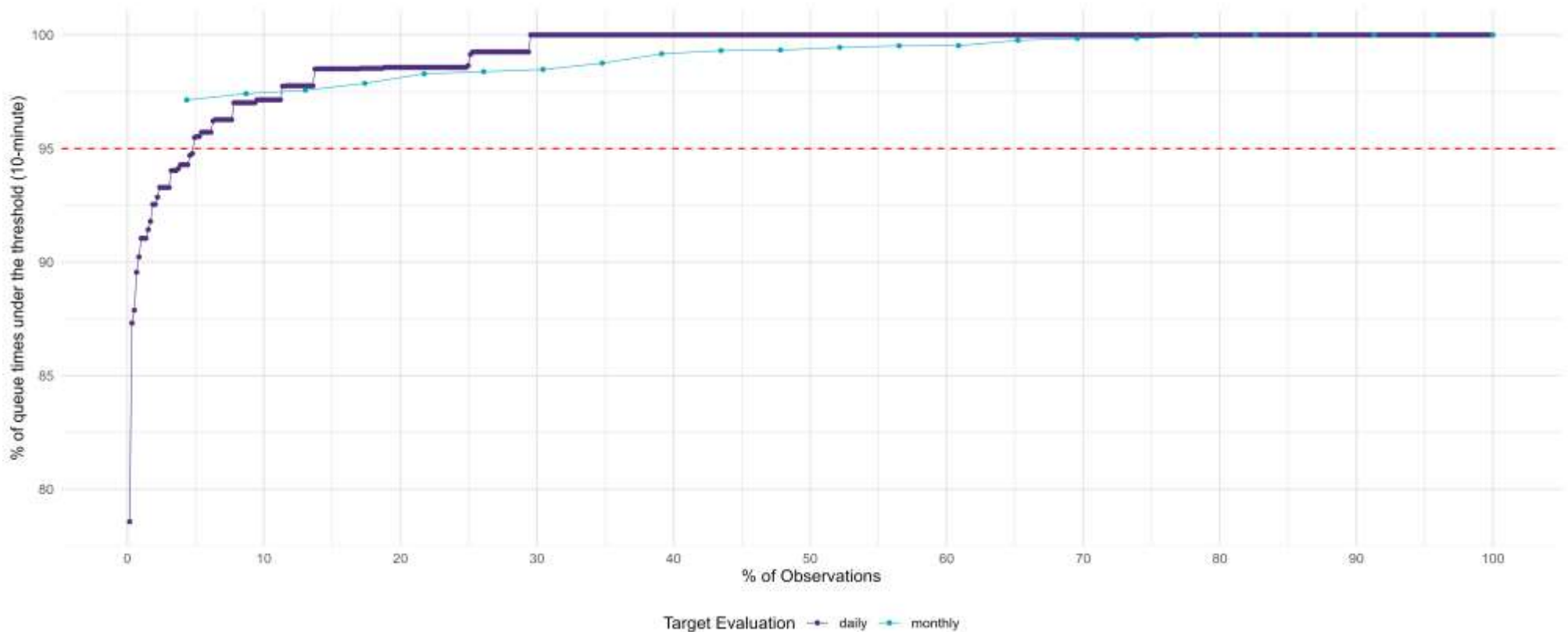

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Transfer search (continued)

- In 2023/24, the monthly target of 95% (of measured queues under 10 minutes) was met with 100% compliance
- The share of observations in the daily data that met the 95% target (of measured queues under 10 minutes) was 95.25%
- The daily target would have to be set to 78.57% in order to replicate the 100% compliance rate seen in the as-is scenario

Percentage of transfer search breaches by day and month in ascending order (airport wide)
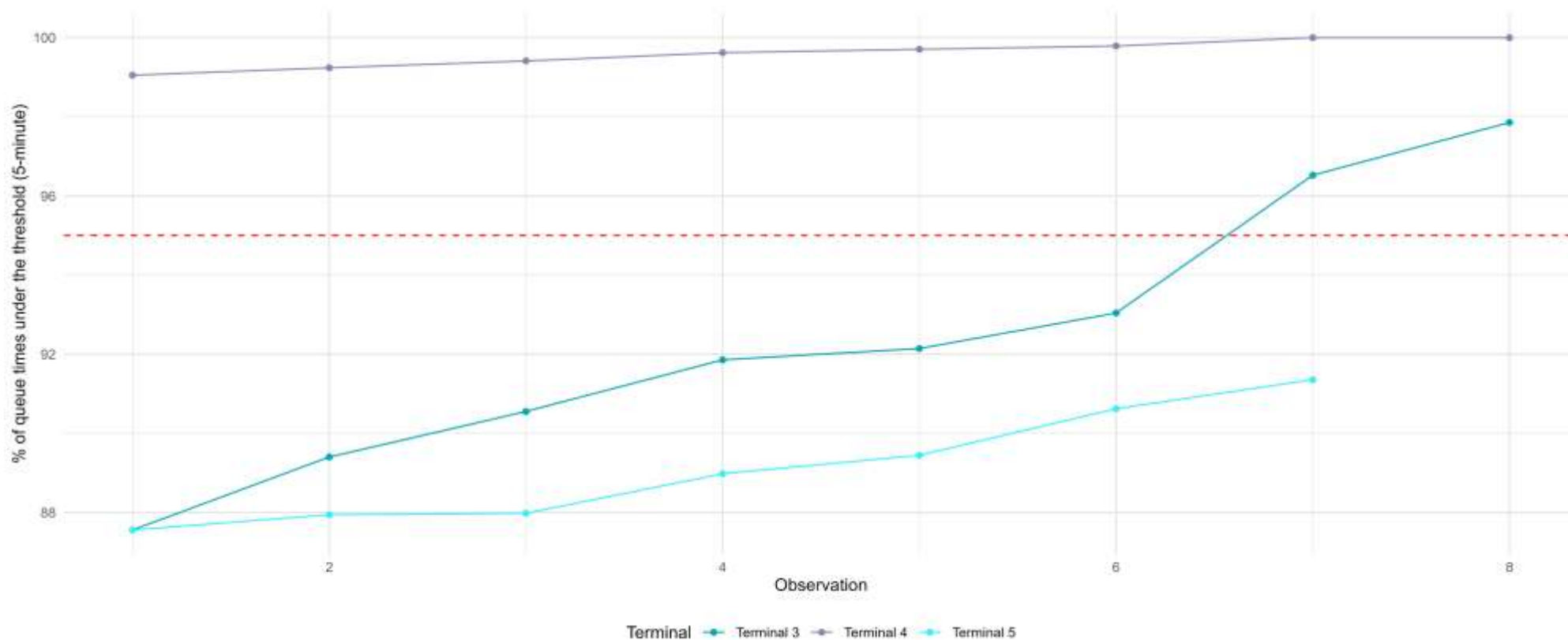

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Transfers: as-is vs harmonised (95-5, monthly)

- Terminal 4 performed best with no breaches and an average compliance rate of 99.6% per month, while Terminal 5 performed worst with every month being breached and an average compliance rate of 89.1% per month

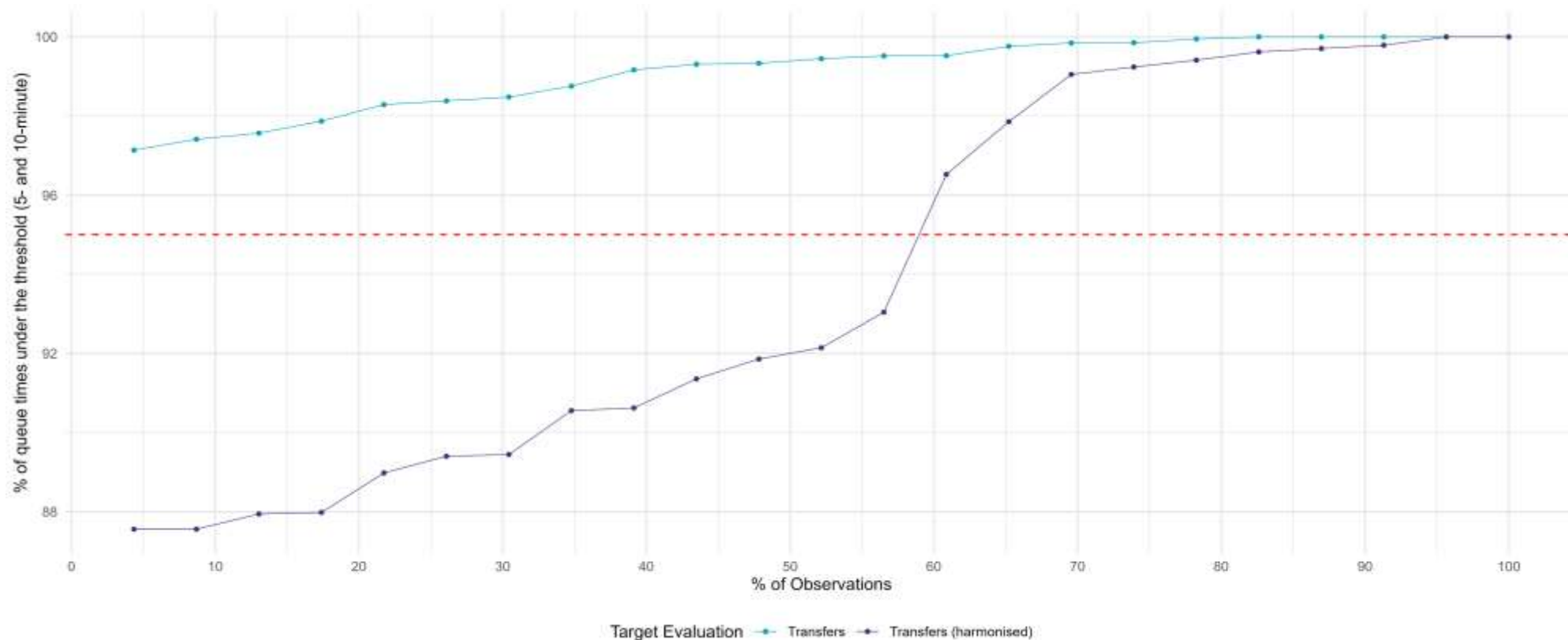**Percentage of 95-5 breaches by month for individual Terminals in ascending order**

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Transfers: as-is vs harmonised (95-5, monthly) (continued)

- In 2023/24, the share of observations that met the 95% target (of queue delays below 5-mins) was 43.48%
- The target would need to be reduced by 7.44% to a new target of 87.56% in order to replicate the 100% compliance rate seen in the as-is regime

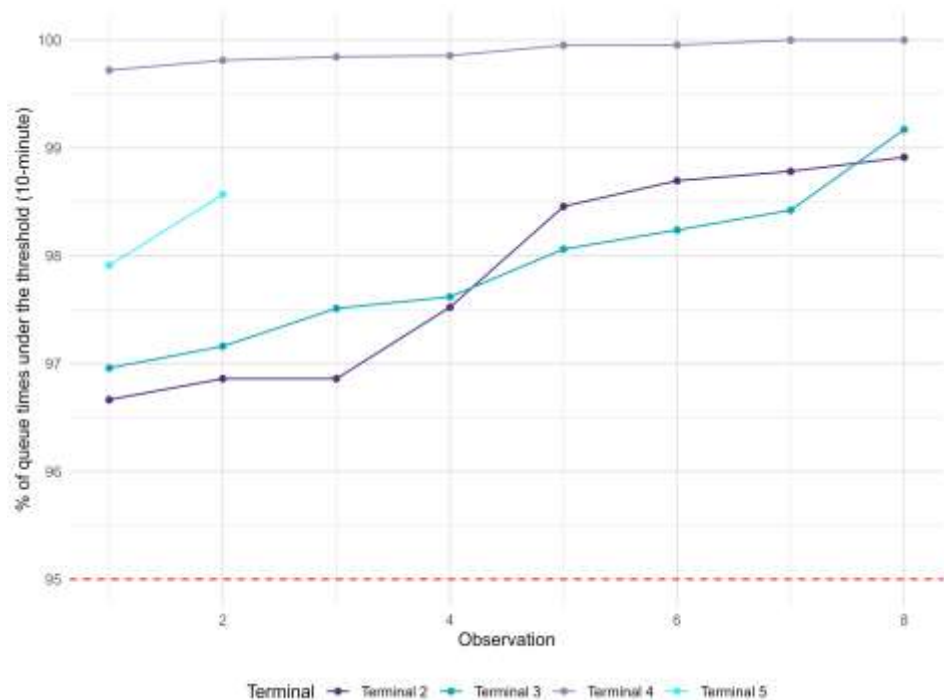Percentage of breaches by 95-5 and 95-10 for transfers in ascending order

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Staff search

- Terminal 4 performed best with no missed target months and an average compliance rate of 99.9% per month, while Terminal 2 performed worst with no missed target months and an average compliance rate of 97.8% per month

- Comparatively, Terminal 4 performed best with no missed target days and an average compliance rate of 99.9% per day, while Terminal 3 performed worst with 84.3% of days missing the target and an average compliance rate of 97.9% per day

Percentage of staff search breaches by month for terminals in ascending order

Percentage of staff search breaches by day for terminals in ascending order
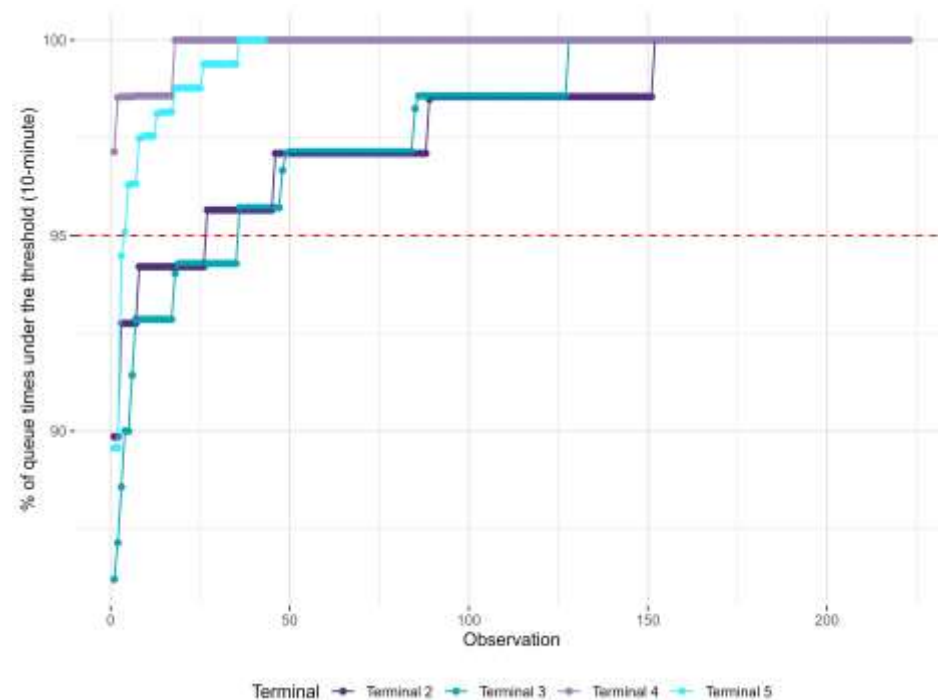
Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.
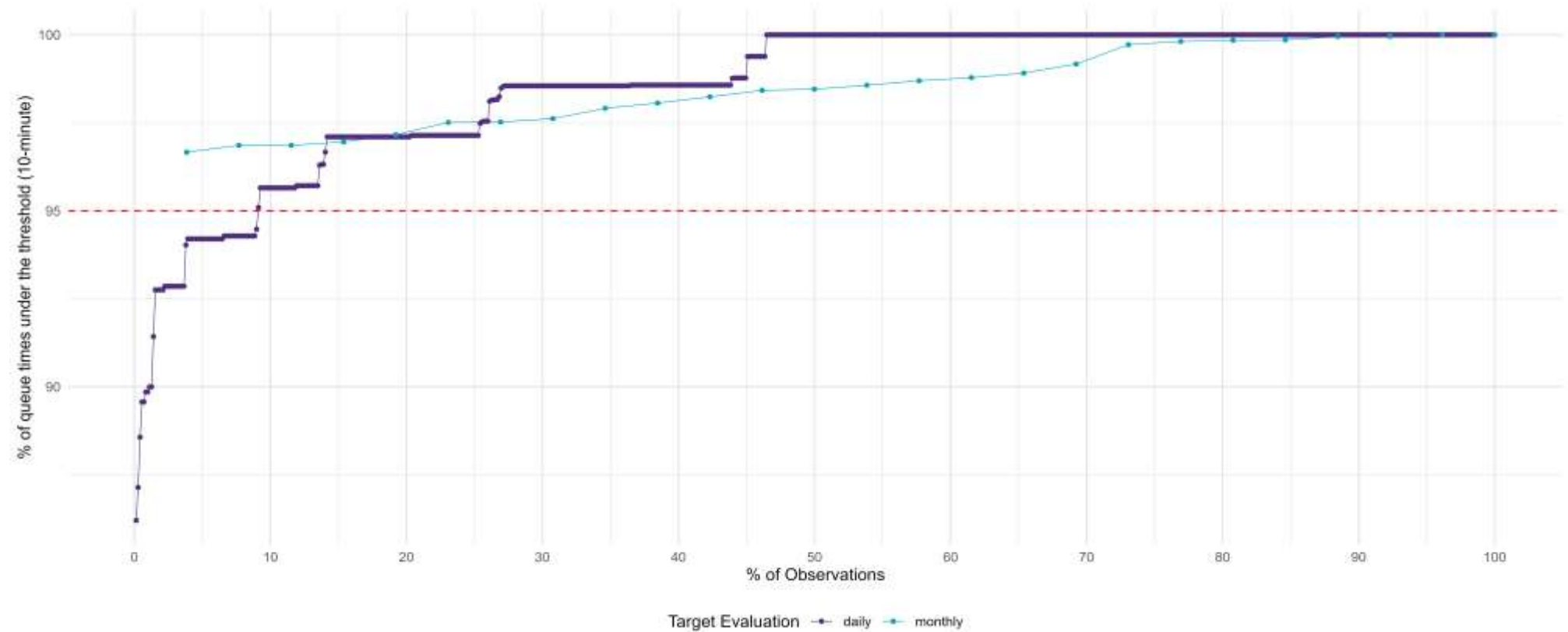
Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Staff search (continued)

- In 2023/24, the monthly target of 95% (of measured queues under 10 minutes) was met with 100% compliance
- In the daily data, the target was met 91% of the time
- The daily target threshold would need to be set to 86.21 % in order to replicate the 100% compliance rate seen in the as-is scenario

Percentage of staff search breaches by day and month in ascending order (airport wide)
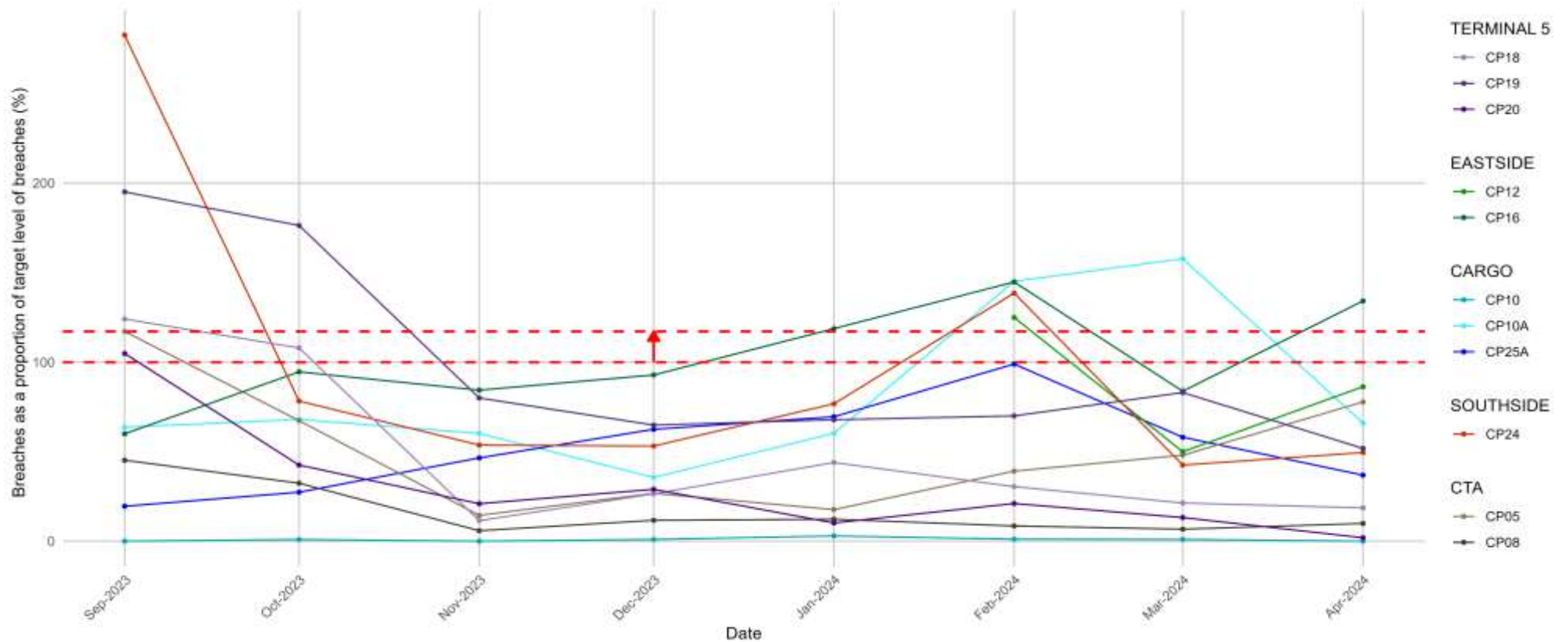

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red line indicates the target.

Control posts – level of target to apply to individual control posts

- Under an individual control post target (whereby the target would need to be met at all control posts in order for the target to be met for the campus as a whole), the target would need to be reduced from 95% to 94.1% in order to meet the current level of compliance under a CP-group target

- The new target is set by gradually reducing the level in the figure below until it is met for five months instead of six, aligning with the compliance level in the as-is scenario. The new target, shown by the higher red line and arrow, intersects the CP16 line at 94.1% in January 2024, where HAL moves from failing to meeting the target. Additional analysis is provided in Appendix B for scenarios where the target does not apply campus-wide.

Percentage of individual control post breaches by control post by group in 2023 to 2024

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. There is no inclusion of a bonus region in the figure because bonuses are not payable for Control Posts.

8. Option assessment

Option assessment overview

Option assessment overview

- This section provides an indicative summary assessment of the options under consideration

- Each option is assessed qualitatively against six criteria (definition provided in the table to the right)):

  – Consumers' interest (quality)

  – Consumers' interest (cost)

  – Balance of risk and reward

  – Proportionality

  – Resource requirements

  – Unintended consequences

- Each criterion is given a high-level rating of green, grey , amber or red, accompanied by a brief explanation of the underlying rationale

- It is important to note:

  1. There is a degree of subjectivity in these ratings and limited information on the likely impacts of the options. Therefore, ratings should be viewed as merely indicative; and

  2. Additionally, the framework's results are not meant to discard certain options or endorse others. Rather, they aim to assess the robustness of the options, enabling a comprehensive analysis within the review's time constraints to help the CAA make an informed policy decision

- The options assessment also includes a brief summary of stakeholder views and of the pros and cons of each option

Criteria within the framework used to assess each option

Criteria	Description
Consumers' interest (quality)	Whether the option would lead to improved performance
Consumers' interest (cost)	Whether the option would require additional expenditure by HAL
Balance of risk and reward	Whether the option would worsen/improve the balance of risk and reward for HAL (red/green)
Proportionality	Whether benefits exceed costs
Resource requirements	Cost of implementing the option (red=cost; green=saving)
Unintended consequences	whether the option could result in unintended consequences

Source: Grant Thornton UK LLP

Scoring against criteria

The option is likely to have a positive impact on the criterion	The option is likely to have a neutral or uncertain impact on the criterion	The option is likely to have a negative impact on the criterion

Source: Grant Thornton UK LLP

Options 1 & 2 – Central & transfer search daily targets

* Criteria assessed assuming no change in target level i.e. 95% of measured queuing times < 5 minutes for central search and 95% of measured queuing times < 10 mins for transfer search

Criteria/ Description	Explanation and scoring against criteria (if required)	
Consumers' interest (quality)	Would provide more granular performance information, which could potentially incentivise HAL to target more of its performance improvement efforts on specific low-performing days. However, we do not have evidence to show (1) that poor performance is wholly due to factors within HAL's control, (2) that performance improvements are possible within existing resources , or (3) how HAL would respond to changed incentives - so benefits are uncertain.	
Consumers' interest (cost)*	It is unclear whether HAL would be able to make performance improvements (in response to changed incentives) within existing resources.	
Balance of risk and reward*	Without a change in target, HAL would perform slightly worse under a daily measure and be required to pay more in rebate. On the other hand, rebates may become more predictable and more likely to reflect underlying performance.	
Proportionality	Given the small difference between monthly and daily performance, and lack of information on the causes of poor performance, potential benefits are uncertain whilst there being some (though likely small) implementation and on-going costs.	🟥
Resource requirements	This option would likely involve some changes to HAL's reporting, which would likely carry an upfront implementation cost. There could also be a small additional on-going cost due to an increase in reporting complexity.	🟥
Unintended consequences	Risk that smaller rebate (assuming overall financial incentive is maintained) that would apply to individual days (compared to the much larger rebate that applies to failure on a given month) would dilute financial incentives and management focus on this measure.	

Pros

In theory, potential for small improvement in consumer outcomes but unclear to what extent these would materialise in practice. There is also a risk of unintended consequences that could lead to adverse outcomes.

Cons

- Unclear whether scale of potential improvement to consumer outcomes would exceed costs.
- Would likely carry small implementation and on-going costs.
- Target may need to be slightly lowered to maintain the same expected proportion missed targets
- Option would involve more detailed regulation as target would apply to individual days.

HAL perspective
HAL expressed a preference for monthly assessments of central and transfer search, raising concerns about strong perverse incentives with daily targets. One key issue they highlighted is that if daily targets are introduced, after a few breaches for direct and transfer passengers, HAL may have already missed the target for that day. In response, this might create the incentive focus on other terminals for the remainder of the day, which could impact airlines relying on the affected terminal.

Airline perspective
In our stakeholder sessions, the airline community expressed a preference for assessing central and transfer search on a daily frequency, as it ensures all passengers receive a consistent level of service, it better reflects HAL's true performance and provides a more appropriate performance challenge.

Option 3 – Staff search daily targets

* Criteria assessed assuming no change in target level i.e. 95% of measured queuing times < 10 minutes

Criteria/ Description	Explanation and scoring against criteria (if required)	
Consumers' interest (quality)	Would provide more granular performance information, which could potentially incentivise HAL to target more of its performance improvement efforts on specific low-performing days. However, we do not have evidence to show (1) that poor performance is due to factors within HAL's control, (2) that performance improvements are possible within existing resources , or (3) how HAL would respond to changed incentives - so benefits are uncertain.	
Consumers' interest (cost)*	It is unclear whether HAL would be able to make performance improvements (in response to changed incentives) within existing resources. However, we understand that there are physical and operational constraints on staff search that make this unlikely in some terminals.	🟥
Balance of risk and reward*	Without a change in target, HAL would perform considerably worse under a daily measure and be required to pay more in rebate. On the other hand, rebates may become more predictable and more likely to reflect underlying performance.	🟥
Proportionality	There is potential for benefits to exceed costs. However, we do not have sufficient evidence to confirm that potential benefits are possible and likely to materialise.	
Resource requirements	This option would likely involve some changes to HAL's reporting systems, which would likely carry an upfront implementation cost. There could also be a small additional on-going cost due to an increase in reporting complexity.	🟥
Unintended consequences	Risk that smaller rebate that would apply to individual days (compared to the much larger rebate that applies to failure on a given month) would dilute financial incentives and management focus on this measure.	

Pros

In theory, potential for improvement in consumer outcomes but unclear to what extent these would materialise in practice. There is also a risk of unintended consequences that could lead to adverse outcomes.

Cons

- Unclear whether scale of potential improvement to consumer outcomes would exceed costs.

- Would likely carry small implementation and on-going costs.

- Target may need to be significantly reduced to maintain similar proportion of target breaches.

- Option would involve more detailed regulation.

HAL perspective

HAL expressed a preference for monthly assessments of staff search, raising concerns about strong perverse incentives with daily targets. One key issue they highlighted is that if daily targets are introduced, after a few breaches, HAL may have already missed the target for that day. In response, this might create the incentive focus on other terminals for the remainder of the day, which could impact airlines relying on the affected terminal.

Airline perspective

In our stakeholder sessions, the airline community expressed a preference for assessing staff search on a daily frequency, as it ensures all staff receive a consistent level of service, it better reflects HAL's true performance and provides a more appropriate performance challenge.

Option 4 – Harmonisation of central and transfer search target (levelling up of transfer target metric to 95% of measured queuing times < 5 minutes)

* Criteria assessed looking at the impact on transfer search.

Criteria/ Description	Explanation and scoring against criteria (if required)	
Consumers' interest (quality)	There would be a significant increase the proportion of failed targets based on current performance, which could create a strong incentive on HAL to reduce transfer search delays. However, we do not have evidence to show (1) that poor performance is due to factors within HAL's control, (2) that performance improvements are possible within existing resources, or (3) how HAL would respond to changed incentives - so benefits are uncertain.	(grey)
Consumers' interest (cost)*	It is unclear whether HAL would be able to make performance improvements (in response to changed incentives) within existing resources. However, we understand that there are physical and operational constraints on transfer search that make this unlikely.	(red)
Balance of risk and reward*	Under current performance, HAL would perform considerably worse under a more challenging delay threshold for transfer search and therefore be required to pay more in rebate.	(red)
Proportionality	There is potential for benefits to exceed costs, if the resulting financial incentive led to an improvement in performance. However, we do not have sufficient evidence to confirm that potential benefits are possible and likely to materialise.	(grey)
Resource requirements	This option would likely involve some changes to HAL's reporting systems, which would likely carry a small upfront implementation cost.	(red)
Unintended consequences	Risk that HAL is unable to respond to more challenging delay threshold (for example, due to physical constraints and unpredictability of demand profile) and chooses instead to de-prioritise transfer search performance as it is unlikely to meet the target in some months regardless of effort.	(red)

Pros

In theory, potential for improvement in consumer outcomes but unclear to what extent these would materialise in practice. There is also a risk of unintended consequences that could lead to adverse outcomes.

Cons

- Without a change in the target, option would change balance of risk and reward for HAL.

- Would likely carry small implementation cost.

HAL perspective
HAL, like with CSA, transfer, and staff search, expressed a preference for retaining the existing target (95% within 10-minutes). HAL also noted that evidence from its consumers survey indicated that wait times over 10 minutes are a tipping point for passenger satisfaction, potentially reducing discretionary purchases like duty-free shopping. HAL explained that this meant passengers are likely to perceive little difference between 5- and 10-minute waits, except in fast-track lanes.

Airline perspective
The airline community, similar to their stance on CSA, transfer, and staff search, expressed a preference for harmonising to a 99% target assessed on a daily frequency. set at the existing level for CSA,

Option 5 – Individual control post groupings

* Criteria assessed assuming no change in target level i.e. 95% of measured queuing times < 15 minutes

Criteria/ Description	Explanation and scoring against criteria (if required)	
Consumers' interest (quality)	This would provide more granular performance information, which could incentivise HAL to target more of its performance improvement efforts on low-performing control posts. This, though, could come at the expense of worsening performance on other control posts which currently experience very low delays. Moreover, we do not have evidence to show (1) that poor performance is due to factors within HAL's control, (2) that performance improvements are possible within existing resources , or (3) how HAL would respond to changed incentives - so benefits are uncertain.	(grey)
Consumers' interest (cost)*	It is unclear whether HAL would be able to make performance improvements (in response to changed incentives) within existing resources.	(grey)
Balance of risk and reward*	A shift to individual CP targets would slightly increase the proportion of individual missed targets. Rebates, as a result, may also become more predictable and more likely to reflect underlying performance.	(green)
Proportionality	There is a small difference between measured performance using groupings or individual control posts and it is unclear to what extent a change in the measure definition would drive a change in HAL performance. On the other hand, implementing the option would likely come at no, or negligible, cost.	(grey)
Resource requirements	Current reporting requires performance information from individual control posts to then be aggregated up to control post groups. Reporting directly for individual control posts could therefore require fewer data processing steps. It could also make the information easier to interpret and analyse for both HAL, the CAA and airport users. At the same time, this option could involve some changes to HAL's reporting systems and CAA's regulatory documents, which would likely carry an upfront implementation cost.	(green)
Unintended consequences	There is a risk that a move to individual control post targets and reporting reduces HAL's flexibility to deploy resources within control post groups, which could reduce overall consumer outcomes.	(red)

Pros

In theory, potential for improvement in consumer outcomes but unclear to what extent these would materialise in practice.

Cons

- Unclear how HAL would respond to new targets (given that these may be primarily reputational) and hence extent of potential improvements.

- Option could give HAL less operational flexibility.

- Option would involve more detailed regulation.

HAL perspective
During previous price controls, HAL expressed a strong preference for control post group or campus-wide targets.

Airline perspective
During previous price controls, airlines expressed a strong preference for individual control post targets.

9. H8 considerations

We have considered the implications of this analysis for the review of OBR as part of H8

HAL performance in 2023/24

- Our analysis shows that, during the period between May 2023 and April 2024, HAL has performed relatively well with respect to central, transfer and staff search

- For nearly every month, HAL has exceeded the target for all measures (meaning no rebates are payable). And in the case of central and transfer search, performance for individual terminals has frequently exceeded the lower bonus threshold (meaning HAL is entitled to bonus payments, conditional on the lowest performing terminal also falling within the bonus region)

- It is not possible to say, without further evidence, whether this high level of performance is due, for example, to HAL's efforts in response to the incentives created by OBR or to targets being set at too low a level in H7

- If H7 targets were set with the expectation that rebates and bonuses would broadly balance out (i.e. 'financial neutrality'), then out-turn performance suggests H7 targets for central, transfer and staff search were set too low. This view is reinforced by the fact that the data we have analysed represents the first year in which current OBR targets have taken effect and that regulatory determinations are typically set in the expectations entity's performance improves over time. However, it is unclear whether financial neutrality was a CAA goal in H7

Implications for H8

- Switching from monthly to daily targets for central, transfer, and staff search would make it harder for HAL to meet targets (if levels remain unchanged) while providing more detailed performance data that potentially reflects queuing time experience more closely. This shift could bring the regime closer to financial neutrality, though the analysis focuses only on rebate changes, not bonuses. The choice of metric and target level is a CAA policy decision, balancing competing objectives

Implications for H8 (continued)

- The harmonisation of transfer search target (to the more demanding level of central search, i.e. 95% of measured queuing times < 5 minutes) could be unduly punitive

- With respect to control post groupings, a change from the current groups to individual control post targets will result in a small number of service failures if the H7 targets are carried over to H8, making the case for change less clear-cut

Limitations of our analysis

- One important caveat on our analysis is that 2023/24 performance was subject to a large number of exclusions (periods of time during which HAL and airlines agree that, due to exceptional circumstances, should be excluded from the calculation of rebates and bonuses). As such, 2023/24 may not be representative of more typical years. This issue also raises the question about whether the way in which the OBR regime operates (in terms of how rebates and bonuses are payable based on the proportion of time during the year in which a given target is met) should be adjusted to deal with situations in which there are large numbers of exclusions

10. Key findings and conclusions

Key findings and conclusions

Current performance observations

- In 2023/24, HAL met the existing monthly targets for central, transfer and staff search delays, except for two months for T5 in the case of central and transfer search. A shift to daily targets would be expected to increase the proportion of time when the delay metric is breached two to three-fold (assuming no behavioural response on HAL's part)

- Performance has been more mixed for control posts (CPs), with four out of five CP groups missing targets for one or more months. Noting that the target applies at campus level the target was not met on five months

- There is a relatively high degree of variability in day-to-day queue times for central, transfer and staff search, which gets smoothed out in monthly data. There are also significant differences in average queue times for control posts within the same grouping. A shift to more granular targets would create greater visibility over this variability and could focus HAL's operational effort on improving poor performing days/control posts

- However, this finding is conditional on the causes of poor performance on individual days/CPs and whether they are within HAL's reasonable control or due to other physical/operational constraints, which was a matter outside the scope of this project. It is therefore unclear how HAL would respond to more granular targets and the extent to which this would bring benefits to consumers. This could merit further investigation

Central and transfer daily targets

- Shifting to daily targets would require reducing the 95% target to 94.29% for Central Search and 78.57% for Transfer Search, to maintain the same proportion of misses. While this offers more detailed data and potential reputational incentives for HAL, there is a lack of evidence to suggest that there are significant benefits given current performance

Harmonisation of central and transfer delay threshold

- Whilst whether to harmonise targets is a policy decision for CAA, the evidence suggests that a reduction in the delay metric from 10 to 5 minutes (consistent with central search) would take the proportion of missed targets from 0% to 56.52%. For the target to continue to be met for all months it would need to be reduced from 95% to 87.56%. We have considered other harmonisation scenarios which are reported in the Appendix A

Staff daily targets

- HAL met the staff search monthly target for every month and terminal during 2023/24. However, there is high variability in daily delays and HAL would have performed much worse against a similar target set on a daily basis (with the target being missed around 9% of the time). This disparity is starker than for central and transfer search

- To achieve the same outcome of zero failures, the target would need to be set at around 86.2%, which could be seen as out of sync with HAL's other targets

Control post zoning

- Campus-wide performance against target would have been slightly worse if the target was set for individual CPs, with the target being missed for six, rather than five, months

- The target would need to be lowered from 95% to 94.1% to maintain the same proportion of campus-wide failures

- We have considered a scenario where the campus-wide target would be replaced with control CP group- or CP-specific targets. This is reported in Appendix B and shows that the level of target compliance would remain broadly the same whether under CP group or individual CP targets

- Based on the findings of our analysis and some of the results discussed in this section, the next page presents a summary table outlining the estimated equivalent targets and how the proportion of queue times meeting the current target is calculated

Key findings and conclusions (continued)

Summary of quantitative results (continued)

- The table below summarises the estimated equivalent targets and how the proportion of queue times meeting the current target is calculated for each search area

Summary of equivalent target and estimation of queue times meeting the current target

Metric	Central search	Central search	Transfer search	Transfer search	Transfer search (harmonised to central search target level)	Staff search	Staff search	Control Post groupings	Individual Control Posts
Measurement basis of targets	Monthly	Daily	Monthly	Daily	Monthly	Monthly	Daily	Monthly	Monthly
Target	95/5	95/5	95/10	95/10	95/5	95/10	95/10	95/15	95/15
Number of measured time units [A]	31 months	812 days	23 months	589 days	23 months	26 months	712 days	8 months	8 months
Number of measured time units where a breach has occurred [B]	2 months	65 days	0 months	28 days	13 months	0 months	64 days	5 months	6 months
Proportion of time units meeting target across all terminals [1 − (B / A)]	93.55%	92%	100%	95.25%	43.48%	100%	91%	37.5%	25%
Adjusted new daily targets to bring the proportion of meeting target equivalent to that of the current proportion	N/A	94.29/5	N/A	78.57/10	87.56/5	N/A	86.21/10	N/A	94.1/15

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx and Campus Queue Times from HAL.xlsx
Note: All queuing times across terminals for central, transfer and staff search

Further considerations and next steps

Setting appropriate target levels

- Our analysis has focussed on the question of target granularity rather than whether the current targets are set at an appropriate level. We provide some indicative evidence in this respect, showing that current targets for central and transfer search have been systematically and significantly exceeded in the sample period considered, suggesting that the scheme has not been financially neutral for these measures

- The data gathered through this project could be explored further, for example to determine what a financially neutral set of targets would have looked like (whilst noting that the CAA may or may not wish to design the regime with that goal in mind)

- There could also be value in gathering additional information from stakeholders to understand the reasons behind out-turn performance levels and whether these have been due to factors within HAL's control or due to exogenous circumstances

Implications of granularity for bonus-linked targets and performance

- Related to the previous point, our analysis has focussed solely on the targets linked to rebates payable by HAL. However, central and transfer search are also subject to bonus payments to HAL if performance is sufficiently high, which has been the case for the vast majority of months, suggesting that the (upper and lower) bonus thresholds could have been set higher to encourage service excellence. The data gathered through this project could be used to understand the implications of more granular targets for the likelihood and level of bonus payments

Delay thresholds vs target levels

- The analysis considered adjusting targets based on how often a delay threshold is met to maintain HAL's risk-reward balance for the rest of H7. Alternatively, this balance could be achieved by modifying the delay threshold metrics, giving the CAA more flexibility in setting targets.

- It may be valuable to explore this dataset to identify delay threshold-target combinations that yield similar levels of performance compliance

Understanding incentive mechanisms and impact on HAL's behaviour

- It is unclear from the evidence how the options under consideration would affect HAL's behaviour, including its response to reputational incentives, ability to reduce poor performance, or the financial incentives it would face with changes in measure definitions. The potential costs or unintended consequences, such as diluted incentives from more granular tasks, are also unclear. Further understanding of the incentive mechanisms could be gained through engagement with HAL or by simulating financial outcomes under different performance scenarios.

Exclusions and sample size

- There was a high proportion of agreed exclusions between HAL and airlines during 2023/24, which significantly reduced the sample size available for our analysis

- This suggests two areas for further work: (1) extending the analysis to a larger sample to gain greater confidence in the robustness of results, which would be advisable if our work was to be used for H8; and (2) analysing how the use of exclusions is affecting the incentives created by the regime and whether this should be addressed in the way rebates and bonuses are calculated in the CAA Licence

Consistency with published performance data and audit

- We note that our analysis shows different levels of performance to those set out in HAL's publicly available performance report. Validating HAL's raw performance data against its performance reports and auditing the calculations that feed those reports was outside our scope

- Given the disparities we have identified, we would recommend that such a validation and audit exercise is undertaken

Appendices

A - Harmonisation of central and transfer search: extended analysis

A. Transfer search – harmonised (99-10, monthly)

- The 99-10 monthly scenario assessed the percentage of Transfer Search queue times measured once every 15 minutes that are less than 10 minutes, measured at monthly frequency, and with a target of 99% of queue times being less than 10 minutes

- The results are more mixed than those reported for the as-is scenario but are less poor than the 99-5 monthly harmonisation. The target would have been missed **34.78%** of the time across all terminals (compared to **no missed targets** under the as-is scenario) and performing within the bonus region **52.17%** of the time (compared to **84.6%** under the as-is scenario)

- As before, Terminal 4 reports no missed target months and all months fall within the bonus region.

- However, Terminal 3 and Terminal 5's performance are poorer than the as-is scenario but improves relative to the 99-5 monthly harmonisation. Terminal 3 now reports **25%** of months as missed target (as opposed to **75% in the 99-5**) and **37.5%** performing within the bonus region (as opposed to **12.5% in the 99-5**). Terminal 5 now reports **a single non-missed target month** in the bonus region (as opposed to all months being missed target under 99-5)

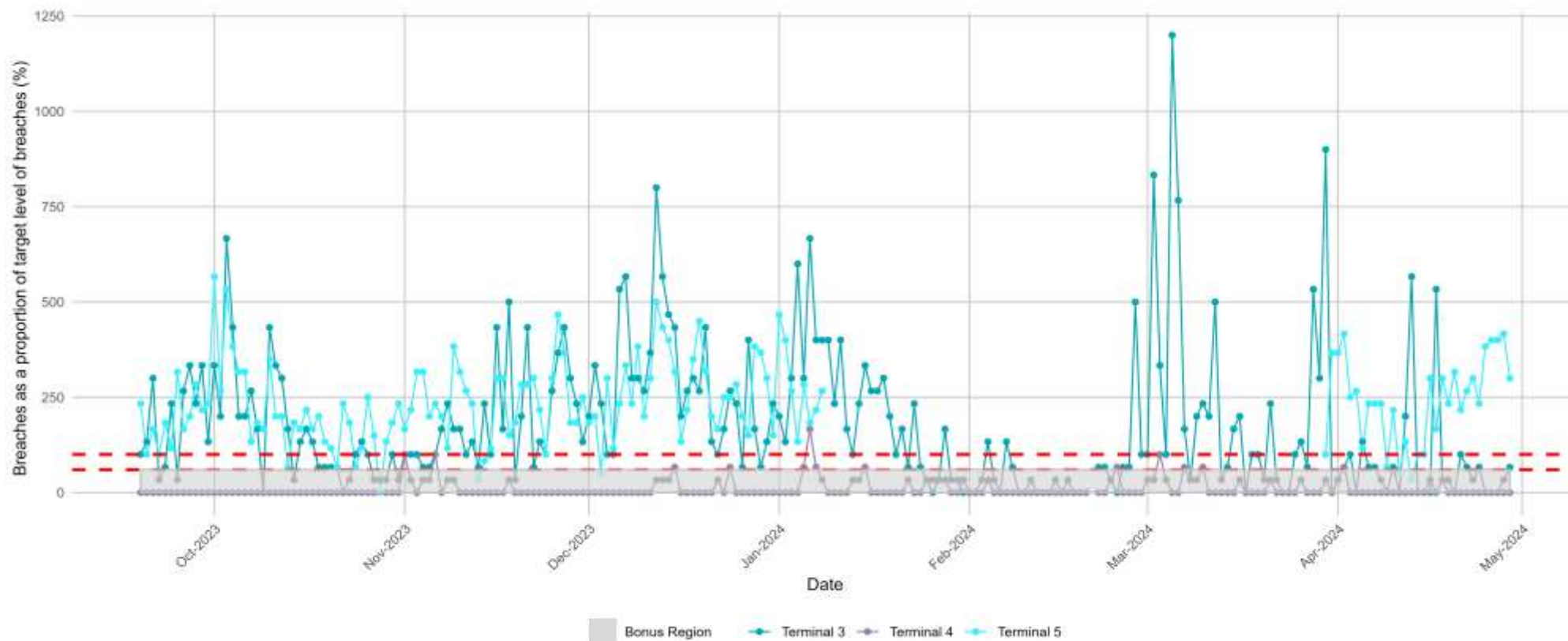**Percentage of transfer search breaches by month by terminal in 2023 to 2024**
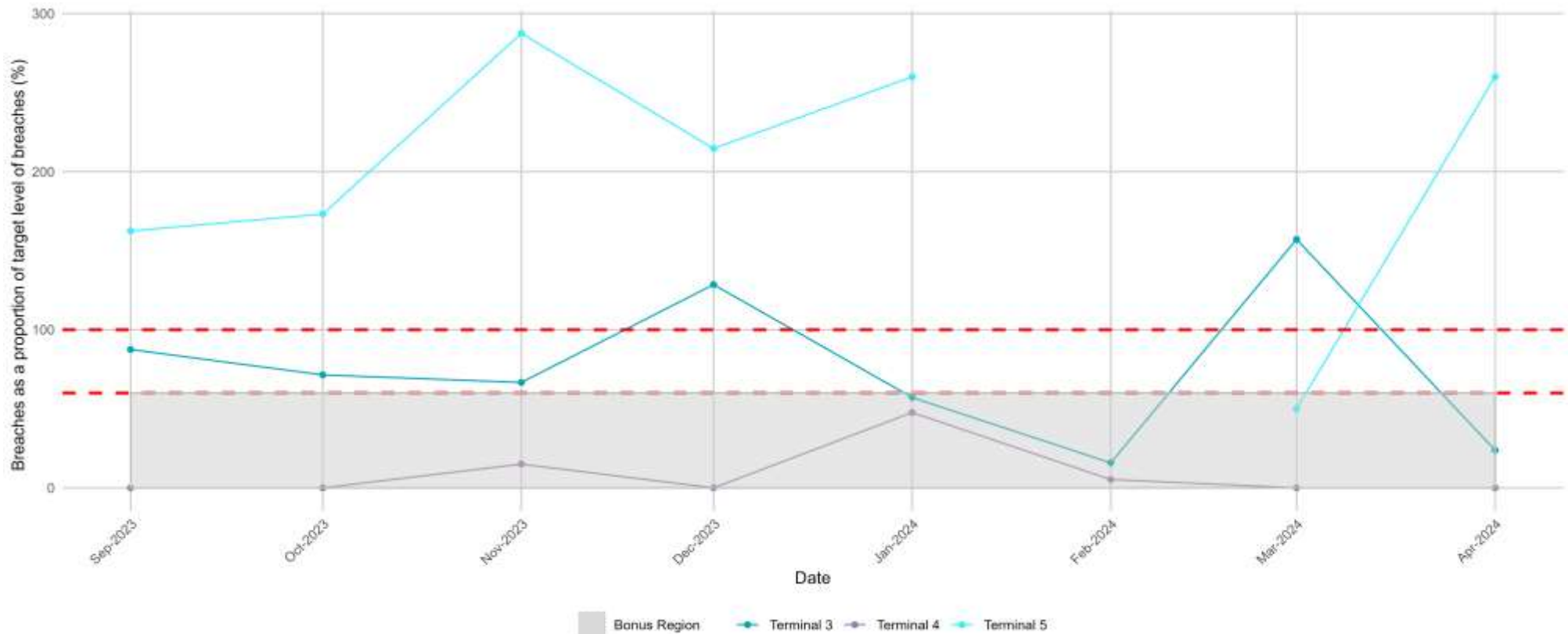
Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx

Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. The red dashed line at below the 60% line indicates the start of the bonus region, and the grey shaded area indicates the bonus region (i.e. region where the number of breaches is sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region)

A. Transfer search – harmonised (95-5, daily)

- The 95-5 daily scenario assessed the percentage of Transfer Search queue times measured once every 15 minutes that are less than 5 minutes, measured at daily frequency, and with a target of 95% of queue times being less than 5 minutes. Under a daily target, the target would have been missed **40.74%** of the time across all terminals (compared to **no missed targets** under the as-is scenario) and performing within the bonus region **46.7%** of the time (compared to **84.6%** under the as-is scenario)

- Terminal 4 was the best performer with missed targets **0.4%** of the time and performing within the bonus region **94.2%** of the time. Terminal 5 was the worst performer missing the target **88%** of the time and performing within the bonus region **3.5%** of the time

- With regards to applying the 99-10 at the daily level, requiring a 99% compliance rate at the daily level in many cases implies that the target number of breaches is equal to zero (i.e. the target expects all queue times to be below 10 minutes). A target of zero breaches means that the number of breaches as a proportion of the target is undefined (i.e. due to dividing by zero). Therefore, this is not illustrated here. Rather, the reader is referred to the distribution of the disaggregated and aggregated compliance rates later in this appendix

Percentage of transfer search breaches by month by terminal in 2023 to 2024

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 100% indicates the target. The red dashed line at below the 60% line indicates the start of the bonus region, and the grey shaded area indicates the bonus region (i.e. region where the number of breaches is sufficiently low for HAL to be eligible for bonus payments, conditional on the worst performing terminal also being within the bonus region)

Public

A. Transfers: harmonisation summary

- The table below summarises the impact of harmonising the metric and target in Transfers with the corresponding definition in CSA
- The impact of harmonisation is also assessed for both monthly and daily data
- The results show that harmonising with respect to the 95-5 is more challenging than doing so with respect to the 99-10, and that this difference is compounded when using daily data

Summary of necessary adjustments associated with proposed harmonisation regimes

	Monthly Assessment		Daily Assessment	
Proposed Regime	99-10	95-5	99-10	95-5
Target threshold in proposed regime	99% of queue times below 10 minutes in daily data	95% of queue times below 5 minutes in monthly data	99% of queue times below 10 minutes in daily data	95% of queue times below 5 minutes in daily data
Target threshold as-is	95% of queue times below 10 minutes in monthly data (i.e. 95-10)			
% of months/days that met the proposed target threshold	65.22%	43.48%	75.04%	59.25%
% of months that met as-is target threshold	100%			
Necessary threshold for proposed regime to replicate success rate in as-is regime	97.14%	87.56%	78.57%	48.57%
Required threshold adjustment	-1.86%	-7.44%	-20.43%	-46.43%

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.

A. Transfers: as-is vs harmonised (99-10, monthly)

- In 2023/24, the average proportion of queue times below the 10-minute delay metric was 99% per month. Terminal 4 performed best with no missed targets and an average compliance rate of 99.9% per month, while Terminal 5 performed worst with all but one month being a missed target and an average compliance rate of 98% per month

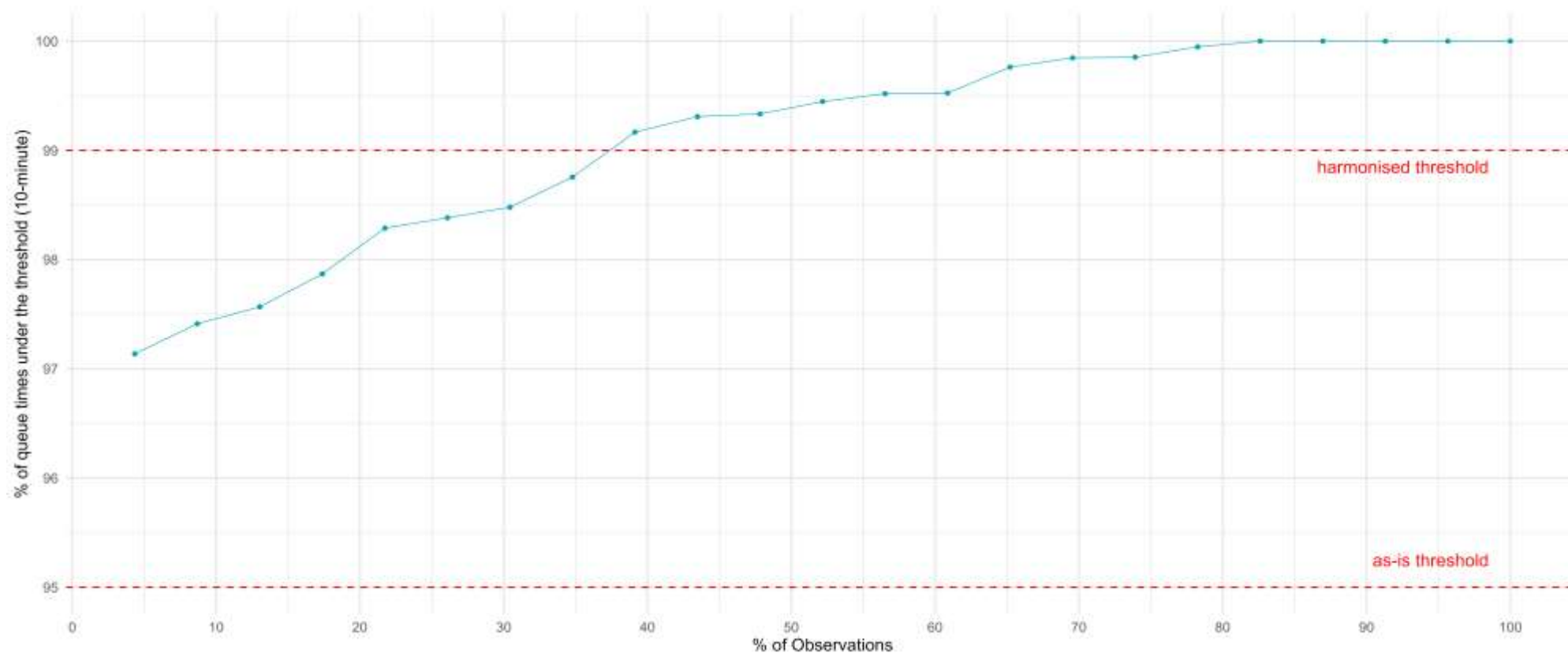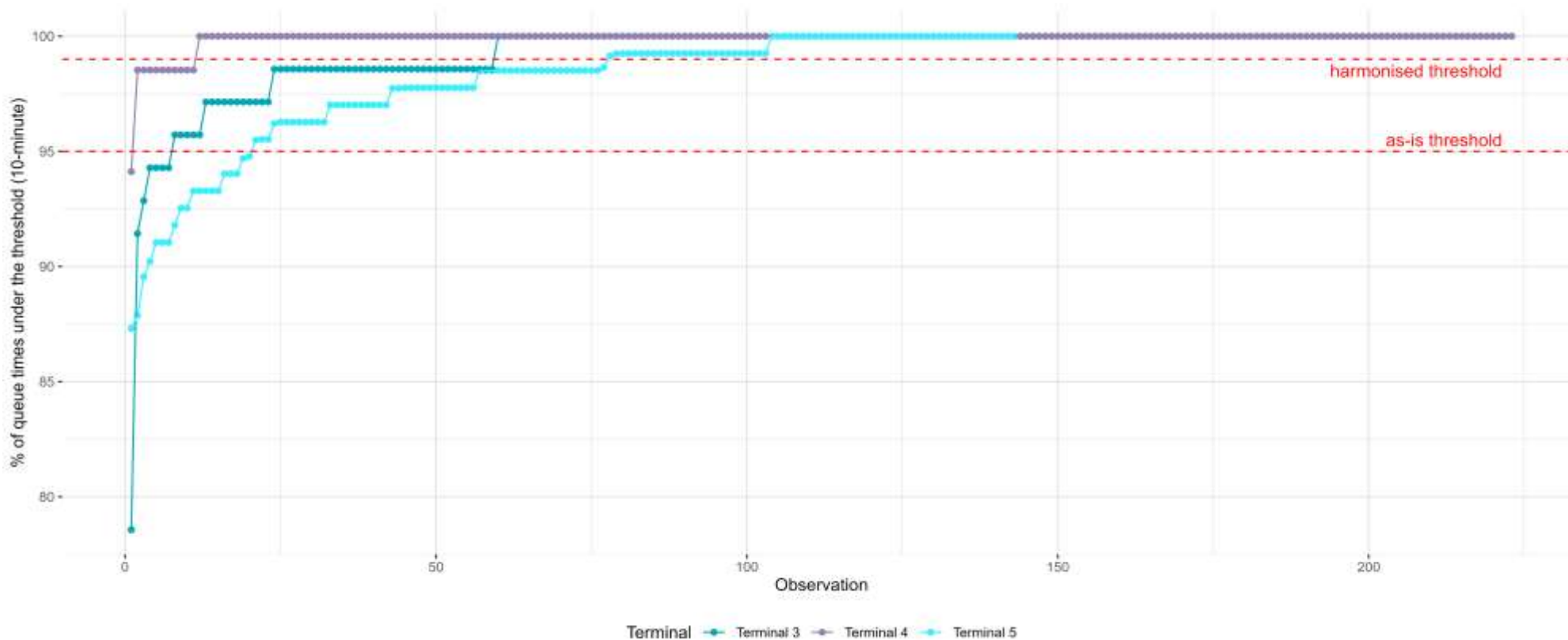**Percentage of breaches by 99-10 and 95-10 for transfers in ascending order**
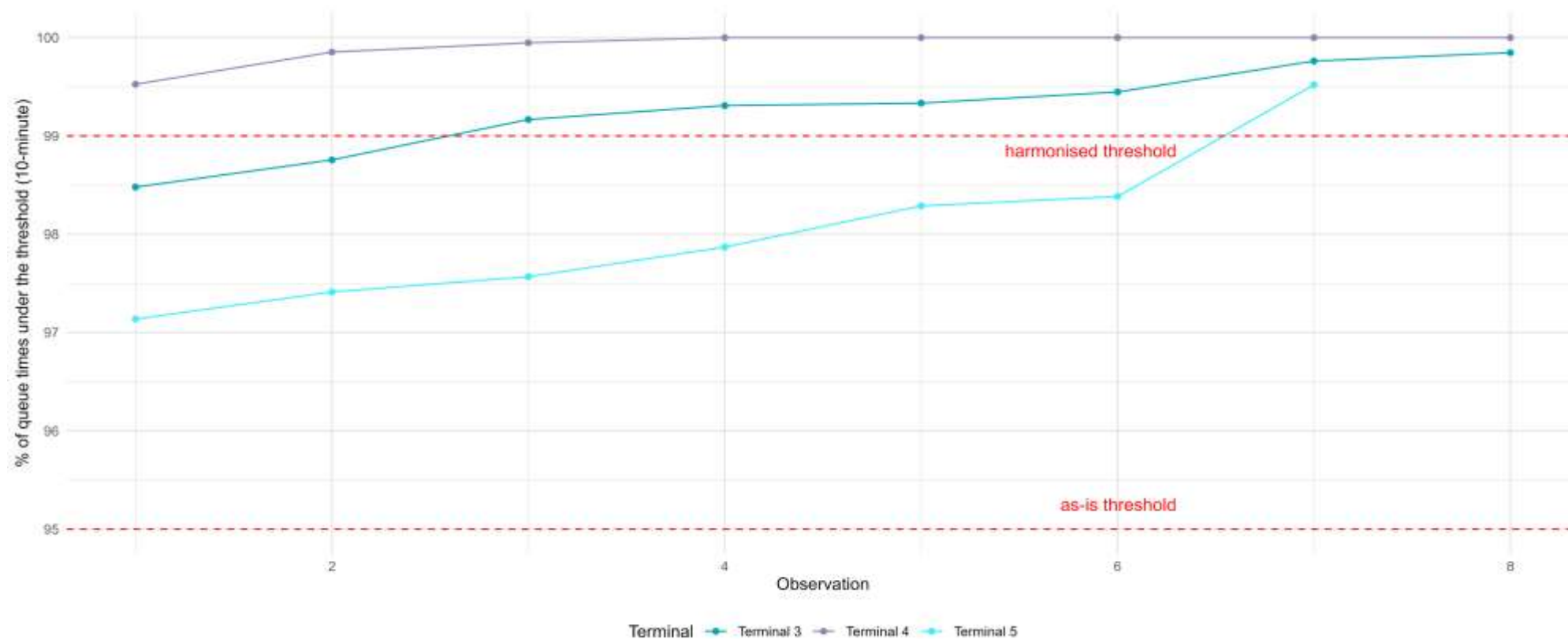
Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 95% is the as-is target. The red dashed line at 99% is the harmonised target.

A. Transfers: as-is vs harmonised (99-10, monthly)

- In 2023/24, the share of observations above the threshold of 99% was 65.22%

- Therefore, the target would need to be reduced by 1.86% to a new target of 96.27% in order to replicate the 97.14% compliance rate seen in the as-is regime

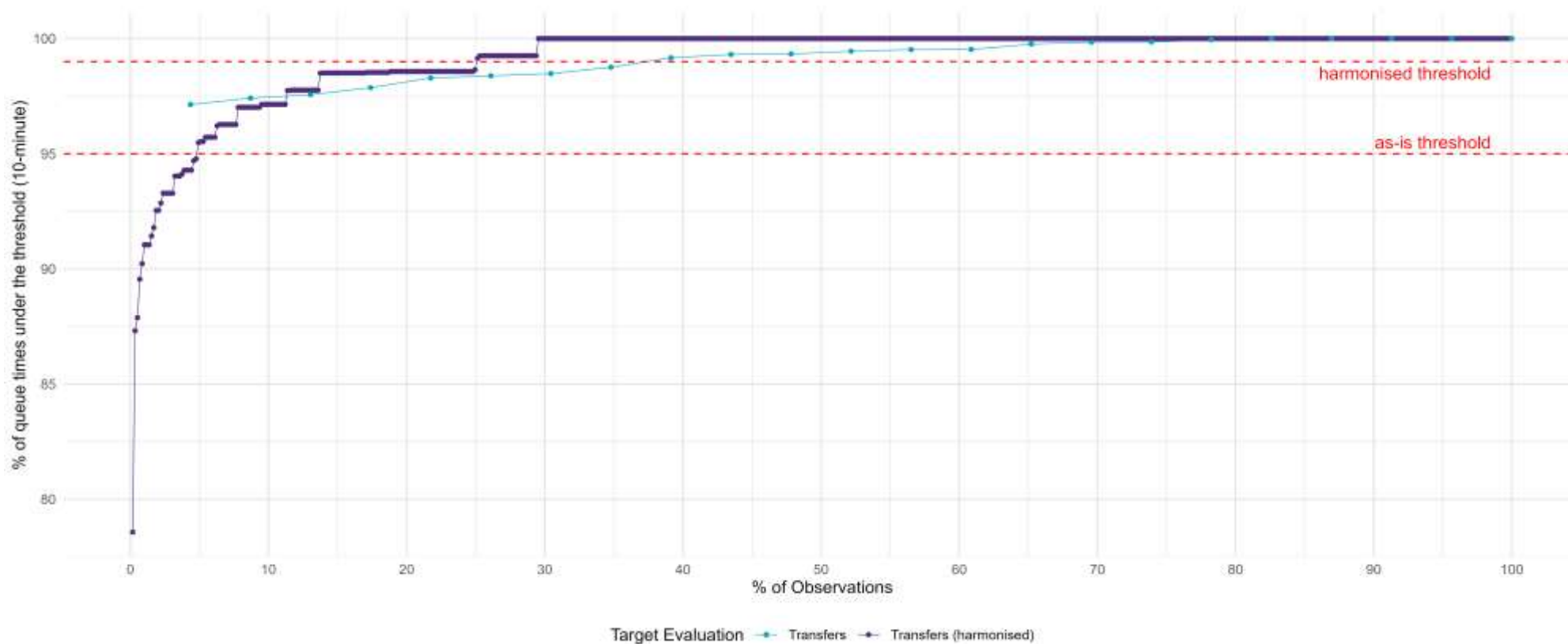**Percentage of 99-10 breaches by month for individual Terminals in ascending order**

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 95% is the as-is target. The red dashed line at 99% is the harmonised target.

A. Transfers: as-is vs harmonised (99-10, daily)

- Terminal 4 performed best with 95.1% of days meeting the target and an average compliance rate of 99.9% per day, while Terminal 5 performed worst with 46.1% of days meeting the target and an average compliance rate of 97.8% per day

Percentage of daily 10-minute breaches for individual Terminals in ascending order for as-is and harmonised threshold

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 95% is the as-is target. The red dashed line at 99% is the harmonised target.

A. Transfers: as-is vs harmonised (99-10, daily)

- In 2023/24, the share of observations above the threshold of 99% is 75.04%

- Therefore, the target would need to be reduced by 20.43% to a new target of 78.57% in order to replicate the 100% compliance rate seen in the as-is regime

Percentage of breaches by 99-10 (daily) and 95-10 (monthly) for transfers in ascending order
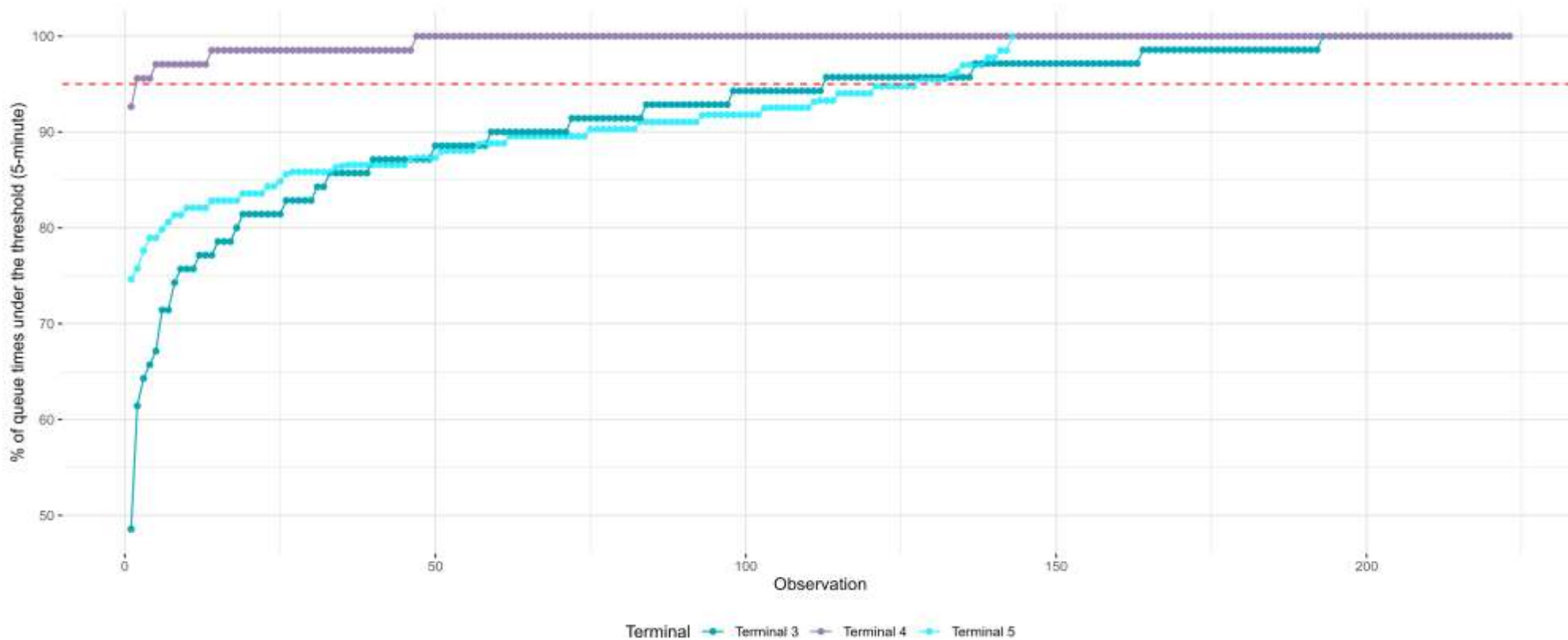

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line at 95% is the as-is target. The red dashed line at 99% is the harmonised target.

A. Transfers: as-is vs harmonised (95-5, daily)

- In 2023/24, the average proportion of queue times below the 5-minute threshold was 94.3% per day. Terminal 4 performed best with 99.6% of days meeting the target and an average compliance rate of 99.6% per day, while Terminal 5 performed worst with only 11.2% of days meeting the target and an average compliance rate of 89.3% per day

Percentage of 95-5 (daily) breaches by day for individual Terminals in ascending order
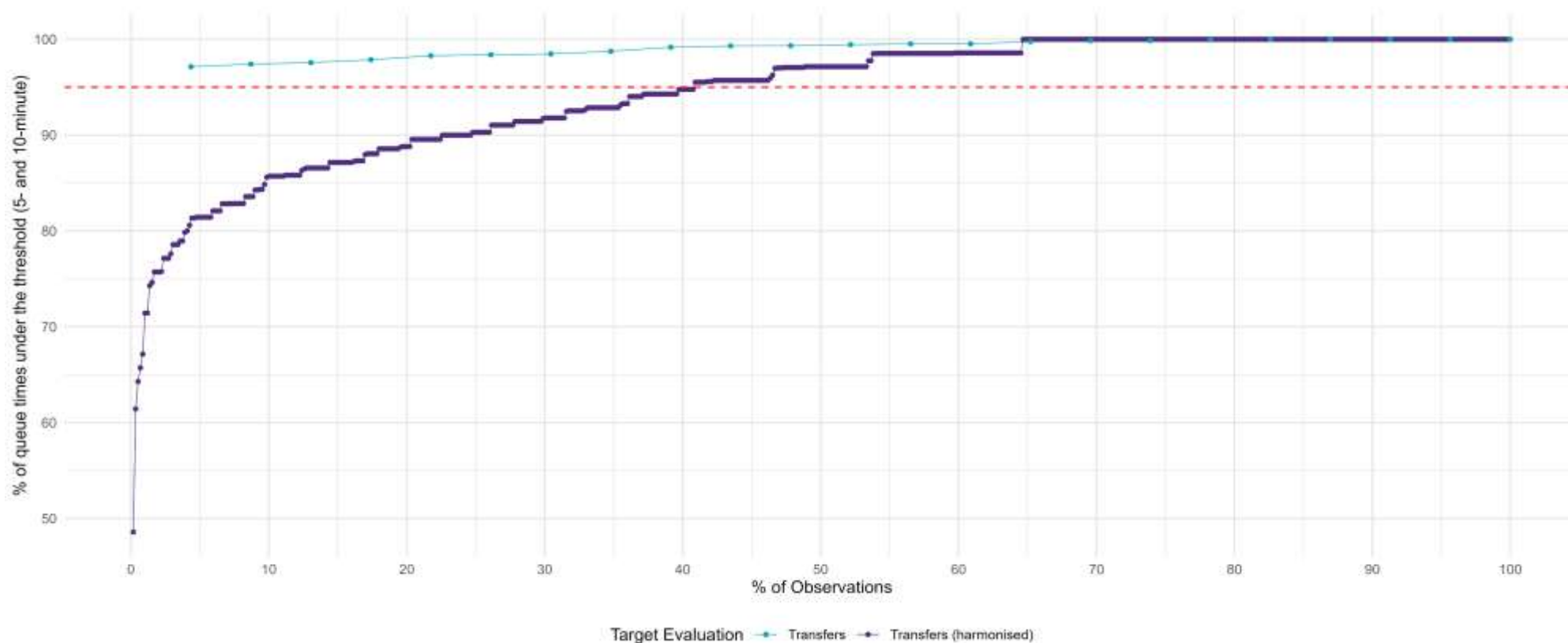

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line is the target.

A. Transfers: as-is vs harmonised (95-5, daily)

- In 2023/24, the share of observations that met the 95% target was 59.25%

- Therefore, the target would need to be reduced by 46.43% to a new target of 48.57% in order to replicate the 100% compliance rate seen in the as-is regime

Percentage of breaches by 95-5 (daily) and 95-10 (monthly) for transfers in ascending order

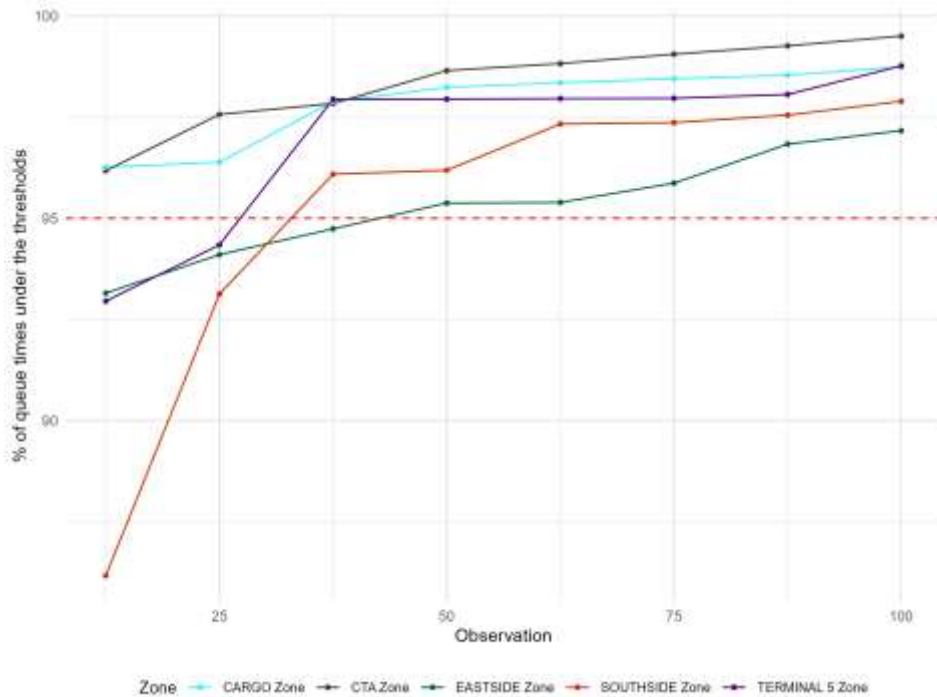Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line is the target.

B - Control post group- or CP-specific targets

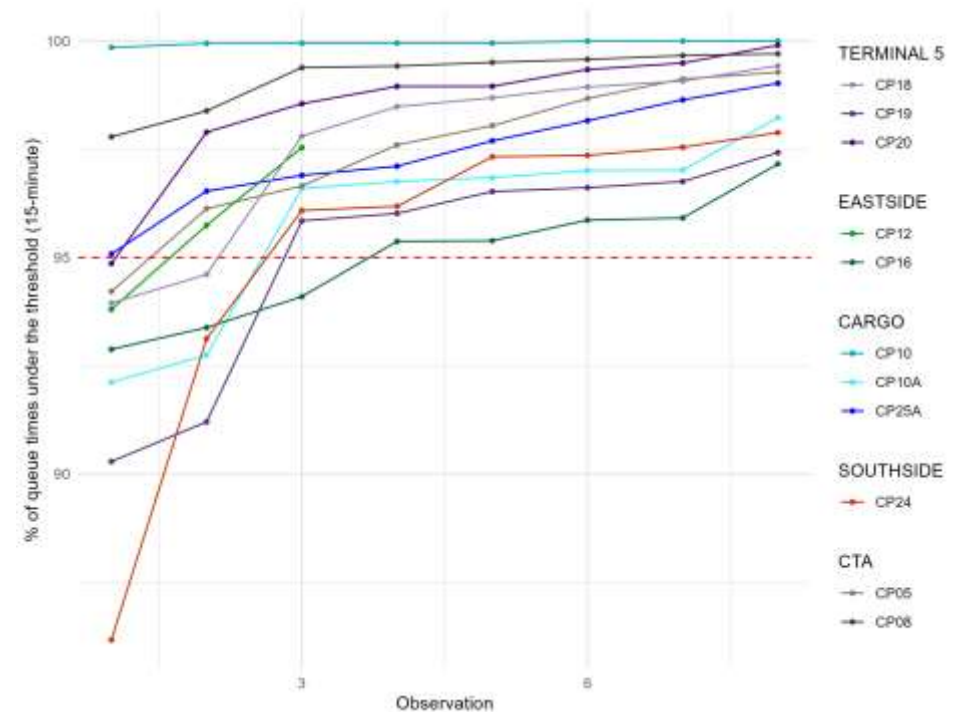# Control posts - adjusted group- or CP-specific target

- This slide shows analysis of control post zone vs individual control post-performance under a scenario in which performance for each CP zone or individual CP, in a given month, counts for one pass or failure (rather than all zones or CPs having to meet the target in a given month for the target to be met)

- In 2023/24, the average proportion of queue times below the 10-minute delay metric in the Zone grouping data was 96.7% per month. CTA Zone performed best with no missed target months and an average compliance rate of 99.9% per month, while Eastside Zone performed worst with 3 missed target months and an average compliance rate of 95.3% per month

- Comparatively, the average proportion of queue times below the 10-minute delay metric in the individual Control Post data was 97.1%. CP10 performed best with no missed target months and an average compliance rate of 99.9% per month, while CP16 performed worst with 3 missed target months and an average compliance rate of 95% per month

Percentage of control post breaches by month for groupings in ascending order

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx.
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line is the target.

**Percentage of control post breaches by month for individual control posts in ascending order**

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line is the target.

Control posts – adjusted zone- or CP-specific target

- This slide shows analysis of control post zone vs individual control post-performance under a scenario in which performance for each CP zone or individual CP, in a given month, counts for one pass or failure (rather than all zones or CPs having to meet the target in a given month for the target to be met)

- In 2023/24, the Zone grouping target of 95% (of measured queues under 15 minutes) was met with 82.5% compliance

- The share of observations above the threshold of 95% in the when assessing individual control posts was 83.13%

- Therefore, the control post target must be set to either 95.08% as an upper bound or 94.86% as a lower bound if the assessment unit is moved from zone groupings to individual control posts such that the same proportion of observations exceeds the target threshold, all else constant

Percentage of breaches by grouping and individual control posts in ascending order
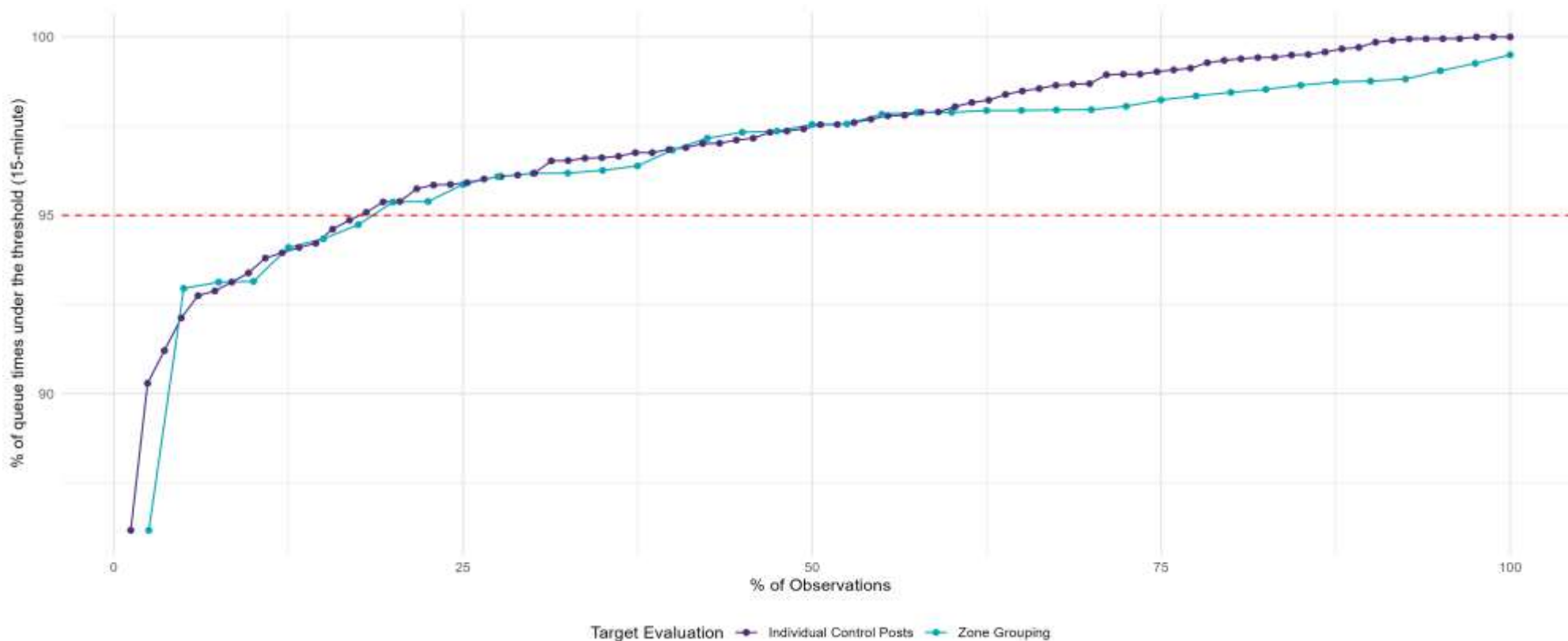
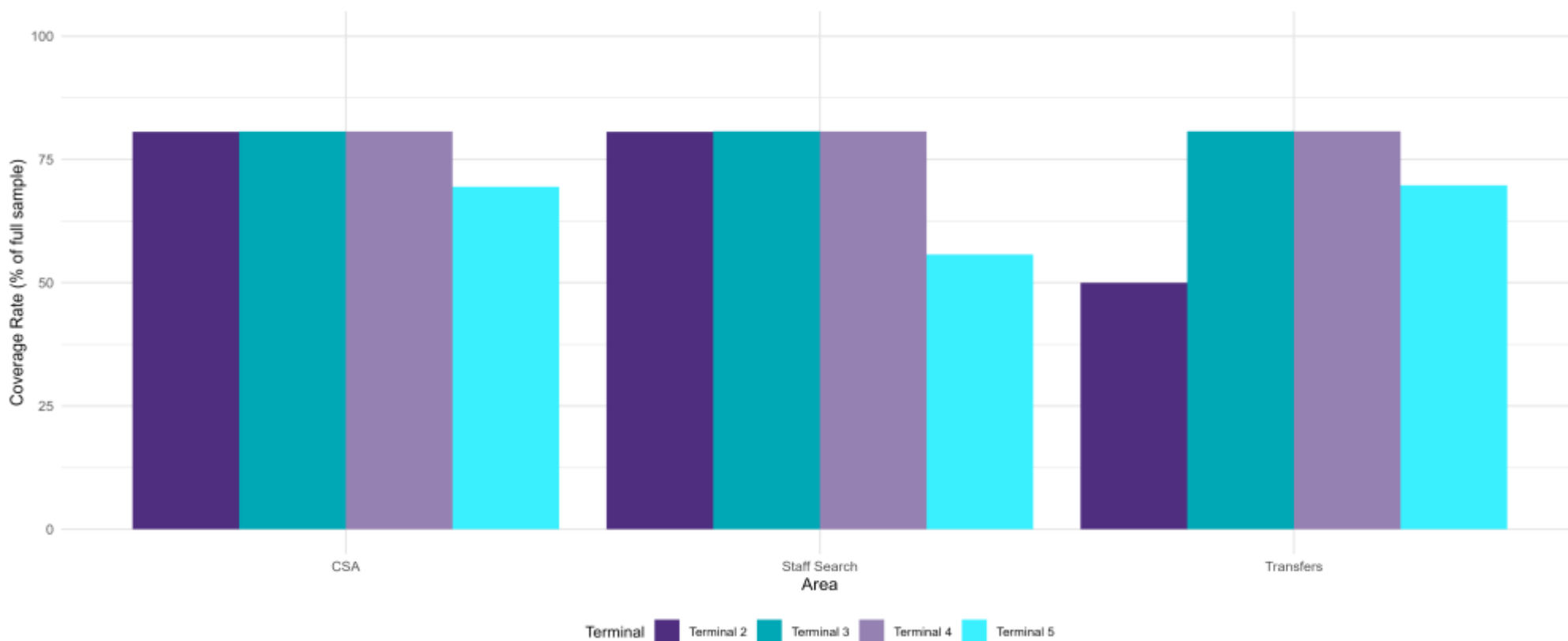Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: This graph excludes time periods classed as exemptions by HAL. The red dashed line is the target.

C - Sample coverage analysis

C. Average sample coverage by search area and terminal

- In 2023/24 sample, the removal of exclusions resulted in imperfect coverage with the full sample for all search areas and terminals
- In particular, the removal of exclusions resulted in between 20% and 50% of the 15-minute time slices in the full sample being dropped from all terminals on average

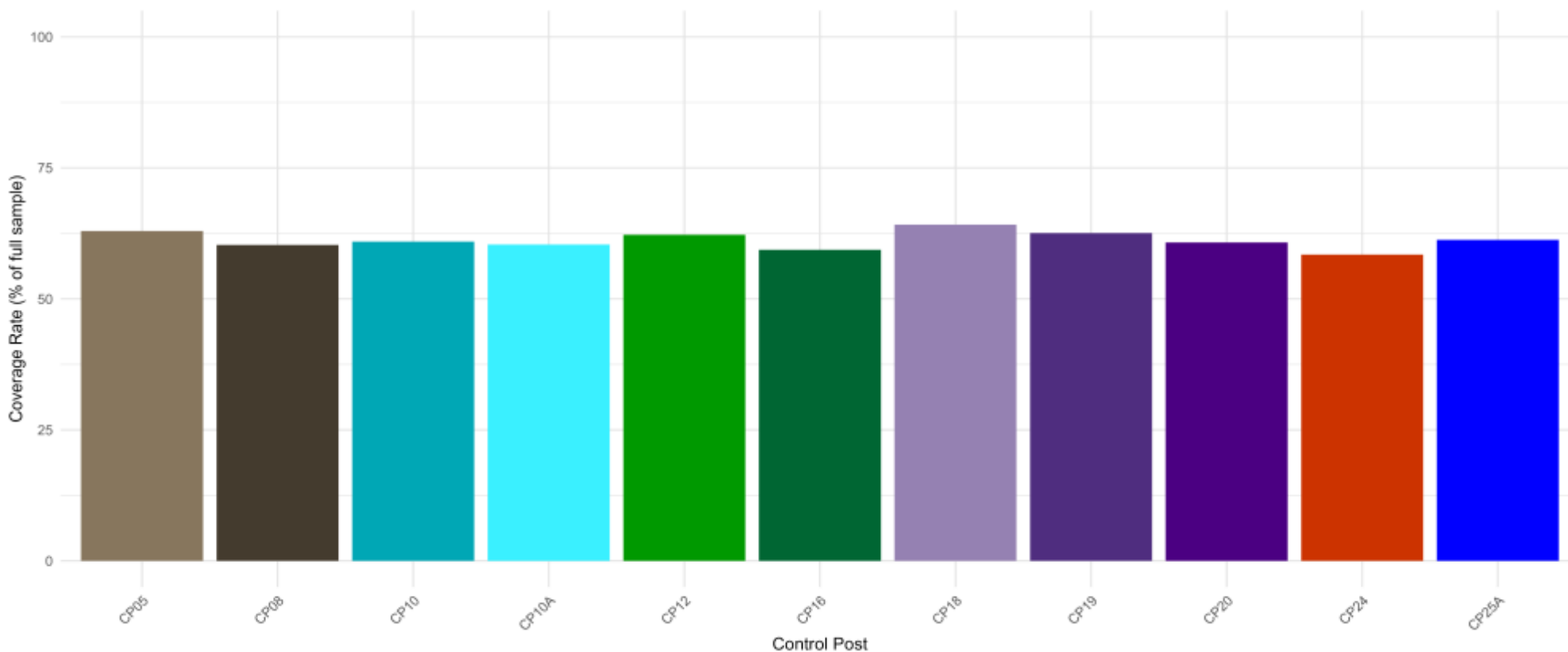**Sample coverage by search area and terminal**

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.

C. Average sample coverage by search area and terminal

- In 2023/24 sample, the removal of exclusions resulted in imperfect coverage with the full sample for all control posts
- In particular, the removal of exclusions resulted in at least 30% percent of the 15-minute time slices in the full sample being dropped from all control posts on average, with little variation in this number across control posts

Sample coverage by control post

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.

C. CSA - average sample coverage by terminal

- In 2023/24 sample, the removal of exclusions resulted in imperfect coverage for all Terminals with respect to CSA

- All Terminals had no data between May 2023 and the first half of September 2023. Following these months, coverage varied across Terminals

- Notably, Terminal 5 had no data for February 2024 and almost no data for March 2024

Coverage of trimmed sample as a % of full-sample

Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5
May-2023	0.0%	0.0%	0.0%	0.0%
Jun-2023	0.0%	0.0%	0.0%	0.0%
Jul-2023	0.0%	0.0%	0.0%	0.0%
Aug-2023	0.0%	0.0%	0.0%	0.0%
Sep-2023	40.0%	40.0%	40.0%	40.0%
Oct-2023	100.0%	99.4%	100.0%	100.0%
Nov-2023	100.0%	100.0%	100.0%	100.0%
Dec-2023	100.0%	100.0%	100.0%	100.0%
Jan-2024	100.0%	100.0%	100.0%	26.2%
Feb-2024	100.0%	100.0%	100.0%	0.0%
Mar-2024	100.0%	100.0%	100.0%	5.0%
Apr-2024	98.2%	100.0%	100.0%	100.0%

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: Blank spaces represent the data for the terminal, control post group or control post in question being absent from the full dataset. 0% entries represent the data for the terminal, control post group or control post in question being absent from the trimmed data set due to the removal of exclusions.

C. Staff Search - average sample coverage by terminal

- In 2023/24 sample, the removal of exclusions resulted in imperfect coverage for all Terminals with respect to Staff Search

- All Terminals had no data between May 2023 and the first half of September 2023. Following these months, coverage was near-complete for all terminals except Terminal 5

- Notably, Terminal 5 only had data for most of January 2024 and half of February 2024. It has no data for the remaining months (March and April 2024)

Coverage of trimmed sample as a % of full-sample

Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5
May-2023	0.0%	0.0%	0.0%	0.0%
Jun-2023	0.0%	0.0%	0.0%	0.0%
Jul-2023	0.0%	0.0%	0.0%	0.0%
Aug-2023	0.0%	0.0%	0.0%	0.0%
Sep-2023	40.0%	40.0%	40.1%	0.0%
Oct-2023	100.0%	99.4%	100.0%	0.0%
Nov-2023	100.0%	100.0%	100.0%	0.0%
Dec-2023	100.0%	100.0%	100.0%	0.0%
Jan-2024	100.0%	100.0%	100.0%	90.6%
Feb-2024	100.0%	100.0%	100.0%	53.0%
Mar-2024	100.0%	100.0%	100.0%	0.0%
Apr-2024	100.0%	100.0%	100.0%	0.0%

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: Blank spaces represent the data for the terminal, control post group or control post in question being absent from the full dataset. 0% entries represent the data for the terminal, control post group or control post in question being absent from the trimmed data set due to the removal of exclusions.

C. Transfer Search - average sample coverage by terminal

- In 2023/24 sample, the removal of exclusions resulted in imperfect coverage for all Terminals with respect to Transfer Search
- All Terminals had no data between May 2023 and the first half of September 2023. Following these months, coverage was near-complete for all terminals except Terminal 2
- Notably, Terminal 2 had no data for the entirety of the sample period. Terminal 5 had very little to no data for between January and March 2024

Coverage of trimmed sample as a % of full-sample

Month	Terminal 2	Terminal 3	Terminal 4	Terminal 5
May-2023	0.0%	0.0%	0.0%	0.0%
Jun-2023	0.0%	0.0%	0.0%	0.0%
Jul-2023	0.0%	0.0%	0.0%	0.0%
Aug-2023	0.0%	0.0%	0.0%	0.0%
Sep-2023	0.0%	40.0%	40.0%	40.0%
Oct-2023	0.0%	100.0%	100.0%	100.0%
Nov-2023	0.0%	100.0%	100.0%	100.0%
Dec-2023	0.0%	100.0%	100.0%	99.7%
Jan-2024	0.0%	100.0%	100.0%	25.8%
Feb-2024	0.0%	100.0%	100.0%	0.0%
Mar-2024	0.0%	100.0%	100.0%	5.0%
Apr-2024	0.0%	100.0%	100.0%	100.0%

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: Blank spaces represent the data for the terminal, control post group or control post in question being absent from the full dataset. 0% entries represent the data for the terminal, control post group or control post in question being absent from the trimmed data set due to the removal of exclusions.

C. Average sample coverage by Control Post group

- In 2023/24 sample, the removal of exclusions resulted in imperfect coverage for all groups with respect to Campus Security

- All groups had no data between May 2023 and much of September 2023. Following these months, coverage was near-complete for all group except Southside, which had approximately a quarter of the data removed in March 2024

Coverage of trimmed sample as a % of full-sample

Month	CARGO	CTA	EASTSIDE	SOUTHSIDE	TERMINAL 5
May-2023	0.0%	0.0%	0.0%	0.0%	0.0%
Jun-2023	0.0%	0.0%	0.0%	0.0%	0.0%
Jul-2023	0.0%	0.0%	0.0%	0.0%	0.0%
Aug-2023	0.0%	0.0%	0.0%	0.0%	0.0%
Sep-2023	39.0%	40.0%	3.05%	29.0%	41.0%
Oct-2023	100.0%	100.0%	100.0%	100.0%	100.0%
Nov-2023	100.0%	100.0%	100.0%	100.0%	100.0%
Dec-2023	100.0%	100.0%	100.0%	100.0%	100.0%
Jan-2024	100.0%	100.0%	100.0%	100.0%	100.0%
Feb-2024	100.0%	100.0%	100.0%	100.0%	100.0%
Mar-2024	100.0%	100.0%	100.0%	77.0%	100.0%
Apr-2024	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: Blank spaces represent the data for the terminal, control post group or control post in question being absent from the full dataset. 0% entries represent the data for the terminal, control post group or control post in question being absent from the trimmed data set due to the removal of exclusions.

C. Average sample coverage by Control Post

- In 2023/24 sample, the removal of exclusions resulted in imperfect coverage for all control posts with respect to Campus Security

- All groups had no data between May 2023 and much of September 2023. Following these months, coverage was near-complete for all groups except Southside, which had approximately a quarter of the data removed in March 2024

- Notably, CP12 had no data for 6 months of the sample, regardless of exclusions

Coverage of trimmed sample as a % of full-sample

Month	CP10	CP10A	CP25A	CP05	CP08	CP12	CP16	CP24	CP18	CP19	CP20	CP10
May-2023	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%
Jun-2023	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%
Jul-2023	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aug-2023	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Sep-2023	39%	39%	39%	40%	40%	35%	35%	29%	41%	41%	41%	39%
Oct-2023	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%
Nov-2023	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%
Dec-2023	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%
Jan-2024	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%
Feb-2024	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar-2024	100%	100%	100%	100%	100%	100%	100%	77%	100%	100%	100%	100%
Apr-2024	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

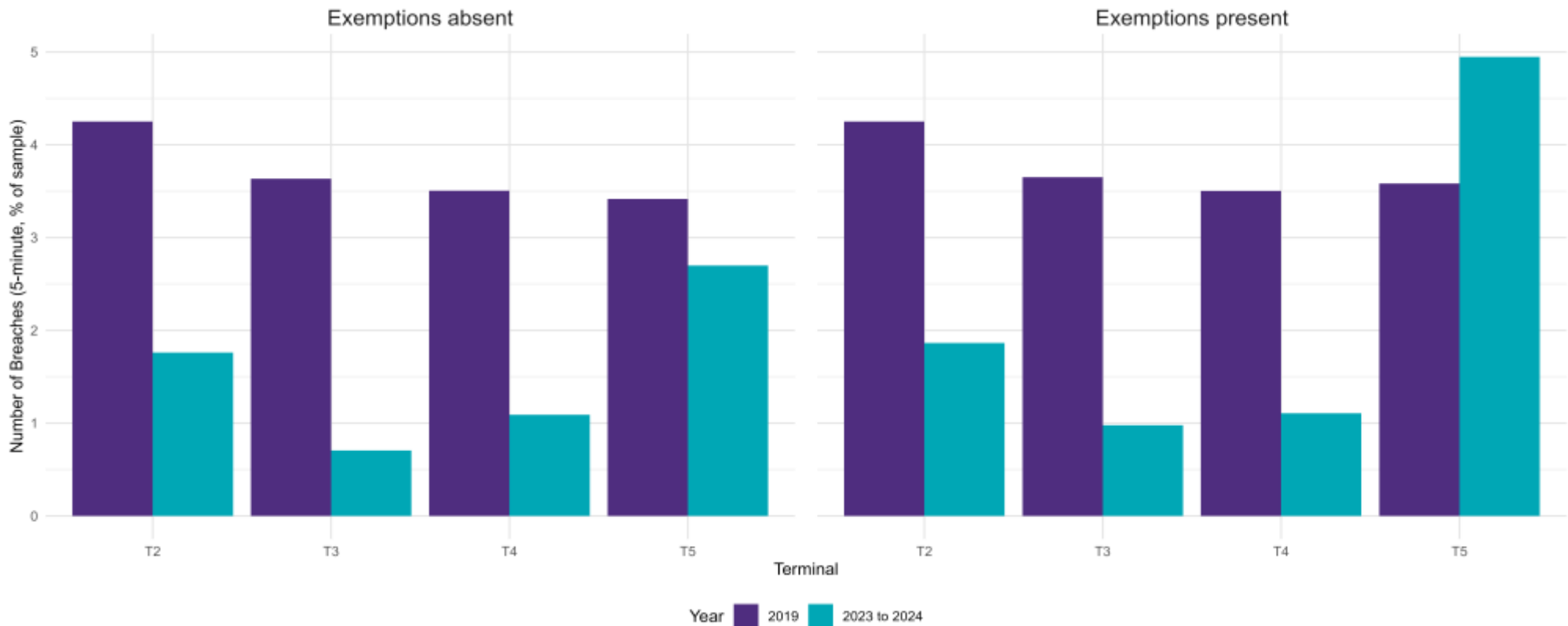Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: Blank spaces represent the data for the terminal, control post group or control post in question being absent from the full dataset. 0% entries represent the data for the terminal, control post group or control post in question being absent from the trimmed data set due to the removal of exclusions.

D – Effects of exclusions

Central search – number of breaches over time

- The figure below shows the number of breaches in a given year expressed as a fraction of all 15-minute periods within that year, by Terminal
- "Exemptions absent" means that periods classed as exclusions are removed from the sample, while "Exemptions present" signifies that exclusions are retained in the sample
- Relative to 2019, the number of queue times in excess of the 5-minute threshold (expressed as a proportion of the time periods in the sample) fell in 2023/24 for all terminals when exemptions were removed from the sample. Terminal 3 had the greatest reduction in the number of breaches (i.e. the proportion of breaches fell by 2.93%) and Terminal 5 had the lowest reduction in the number of breaches (i.e. the proportion of breaches fell by 0.7%)
- The reductions over time are more modest when exemptions are retained within the sample. Terminal 3 now reports an 2.67% reduction in the proportion of breaches and Terminal 5 reports an 1.36% increase in the proportion of breaches over time

Proportion of 15-minute intervals when queue times exceed 5-minutes, by terminal – 2019 vs 2023/24

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.

Transfer search – as-is

- Relative to 2019, the number of queue times in excess of the 10-minute threshold (expressed as a proportion of the time periods in the sample) fell in 2023/24 for all terminals when exemptions were removed from the sample (subject to data in both periods being available). Terminal 3 had the greatest reduction in the number of breaches (i.e. the proportion of breaches fell by 2.66%) and Terminal 5 had the lowest reduction in the number of breaches (i.e. the proportion of breaches fell by 0.38%)

- Terminals 2 and 5 report increases in the proportion of breaches over time when exemptions are retained within the sample (i.e. 0.43% and 0.66% increases, respectively). The changes over time for Terminal 3 and Terminal 4 are essentially unchanged

Proportion of 15-minute intervals when queue times exceed 10-minutes, by terminal – 2019 vs 2023/24
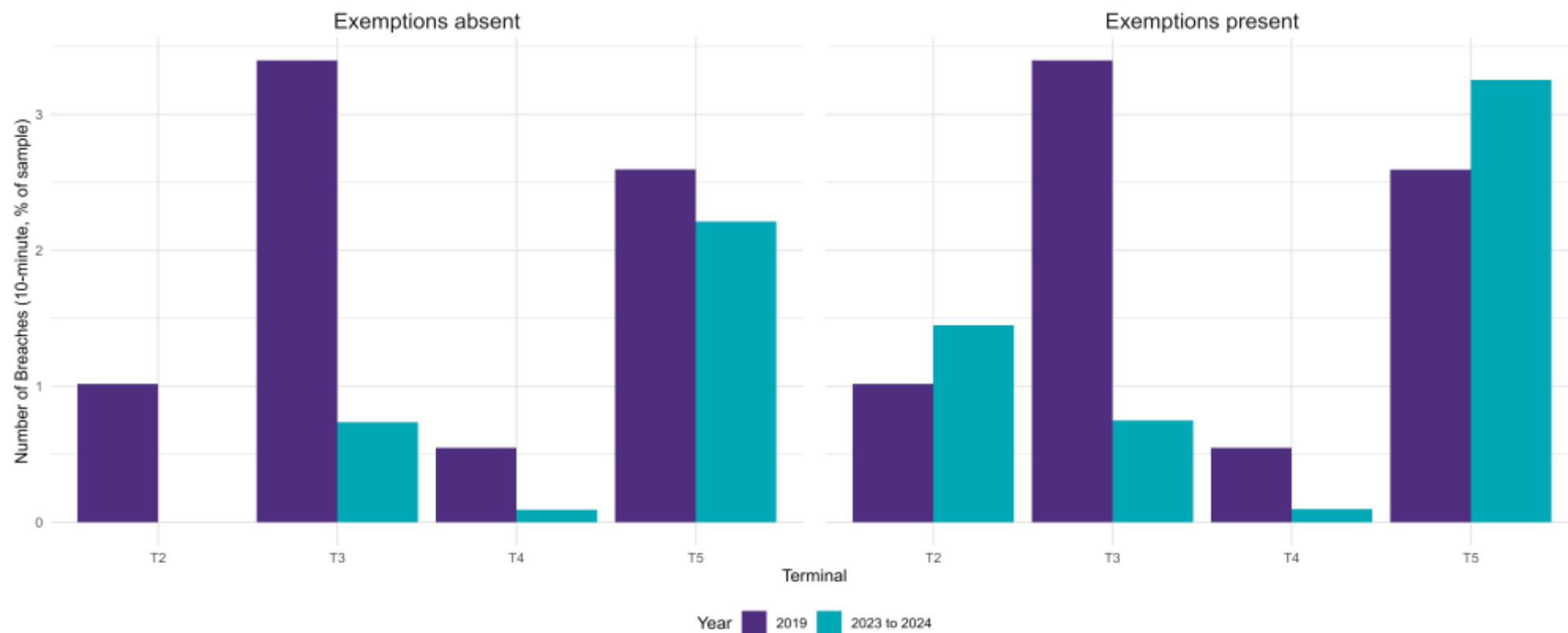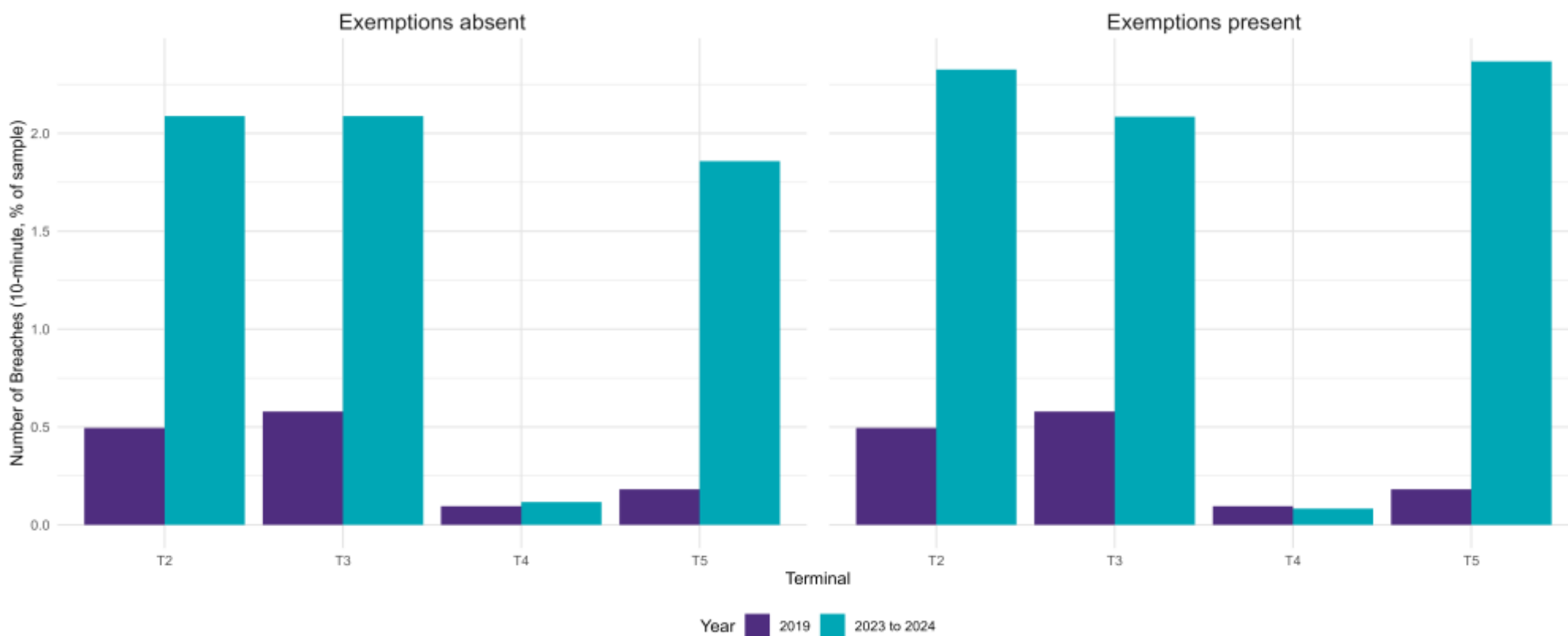

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: Terminal 2 has no data for the period "2023 to 2024" when exemptions are absent, hence the column is empty.

Staff search – as-is

- Relative to 2019, the number of queue times above the 10-minute threshold increased in 2023/24 for all terminals when exemptions were removed from the sample. Terminal 5 had the greatest increase in the number of breaches (i.e. the proportion of breaches rose by **1.67%**) and Terminal 4 had the lowest increase in the number of breaches (i.e. the proportion of breaches rose by **0.02%**)

- Retaining exemptions within the sample has a varied impact across terminals but, generally, causes increases over time to become larger. Terminal 5 now reports a **2.18%** increase in the proportion of breaches while Terminal 4 reports an **0.01%** reduction in the proportion of breaches over time

Proportion of 15-minute intervals when queue times exceed 10-minutes, by terminal – 2019 vs 2023/24
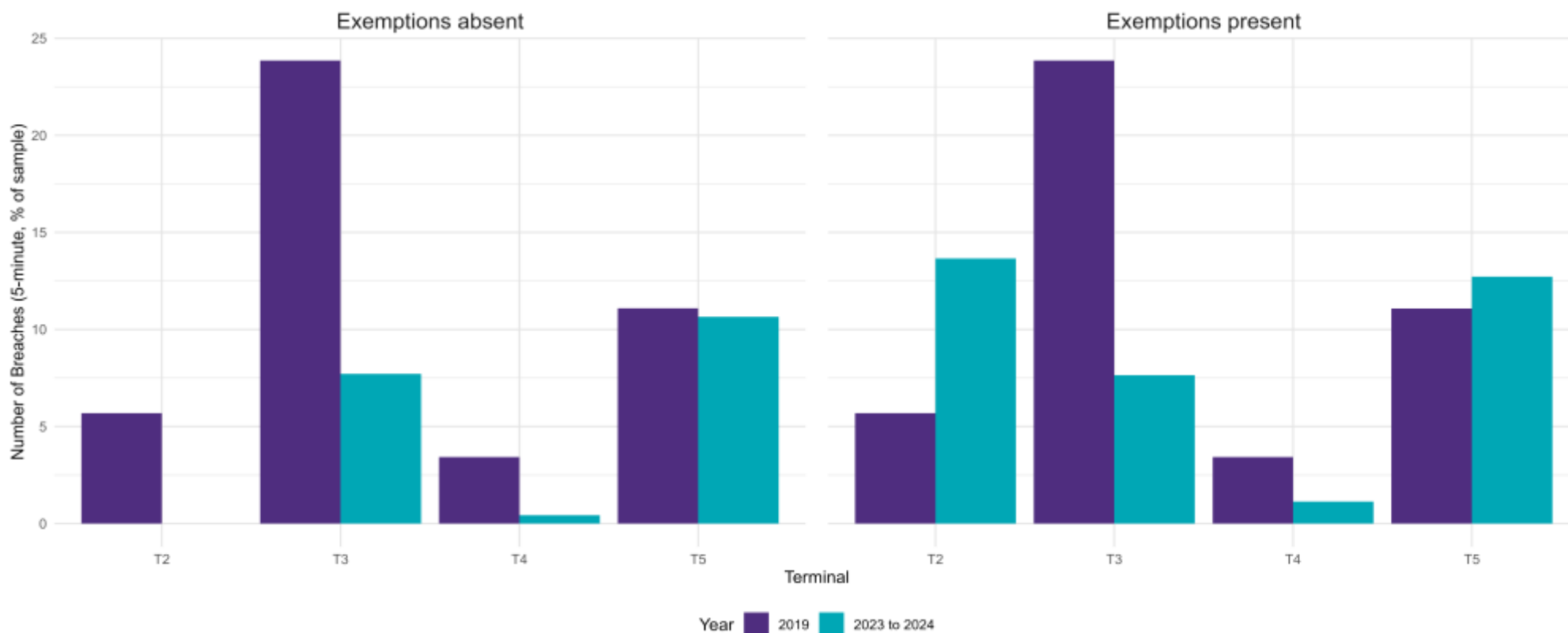

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx.

Transfer search – harmonised (95%-5mins, monthly)

- Relative to 2019, the number of queue times in excess of the 5-minute threshold (expressed as a proportion of the time periods in the sample) fell in 2023/24 for all terminals when exemptions were removed from the sample (subject to data in both periods being available)

- Terminal 3 had the greatest reduction in the number of breaches (i.e. the proportion of breaches fell by **16.13%**) and Terminal 5 had the lowest reduction in the number of breaches (i.e. the proportion of breaches fell by **0.44%**)

- Terminals 2 and 5 report increases in the proportion of breaches over time when exemptions are retained within the sample (i.e. **7.97%** and **1.63%** increases, respectively)

- The changes over time for Terminal 3 and Terminal 4 are essentially unchanged, although the reduction for Terminal 4 was slightly tempered by the presence of exemptions within the data (i.e. a **3%** reduction with exemptions absent vs a **2.3%** reduction with exemptions present)

Proportion of 15-minute intervals when queue times exceed 5-minutes, by terminal – 2019 vs 2023/24
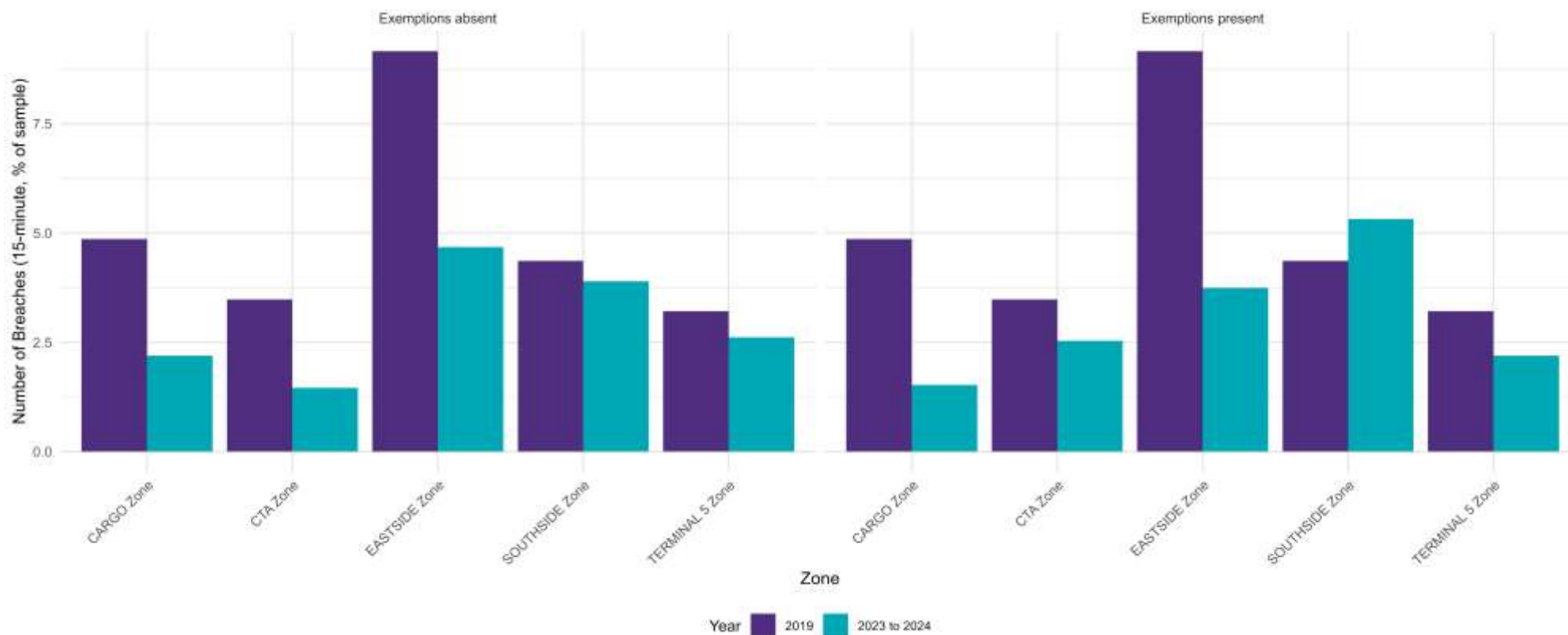

Source: Grant Thornton UK LLP analysis of Terminal Queue Times from HAL.xlsx
Note: Terminal 2 has no data for the period "2023 to 2024" when exemptions are absent, hence the column is empty.

Control posts – as-is

- Relative to 2019, the number of queue times in excess of the 15-minute threshold (expressed as a proportion of the time periods in the sample) fell in 2023/24 for all groups (when exemptions were removed from the sample). Eastside group had the greatest reduction in the number of breaches (i.e. the proportion of breaches fell by **4.48%**) and Southside group had the lowest reduction in the number of breaches (i.e. the proportion of breaches fell by **0.47%**)

- Southside group reported an increase in the proportion of breaches over time when exemptions are retained within the sample (i.e. a **0.96%** increase)

- The remaining groups still reported a decrease in the number of breaches over time when exemptions are present in the sample. Relative to the sample with exemptions removed, the reductions with exemptions present were lower in one case (i.e. CTA group) but higher in the others

Proportion of 15-minute intervals when queue times exceed 15-minutes, by control post group – 2019 vs 2023/24

Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx

Control posts – individual control post targets

- Relative to 2019, the number of queue times in excess of the 15-minute threshold (expressed as a proportion of the time periods in the sample) fell in 2023/24 for all control posts, except CP20, when exemptions were removed from the sample (where the data is available). CP10A had the greatest reduction in the number of breaches (i.e. the proportion of breaches fell by **5.9%**) and CP20 had the only reported increase in the number of breaches (i.e. the proportion of breaches fell by **0.88%**)

- Contrary to a sample excluding exemptions, CP24 recorded an increase in the proportion of breaches over time when exemptions are retained within the sample (i.e. a **0.95%** increase). CP20 recorded an increase in breaches over time in both samples.

- The remaining groups still recorded a decrease in the number of breaches over time when exemptions are present in the sample. Relative to the sample with exemptions removed, the reductions with exemptions present were lower in some cases but higher in the others

Proportion of 15-minute intervals when queue times exceed 15-minutes, by control post – 2019 vs 2023/24
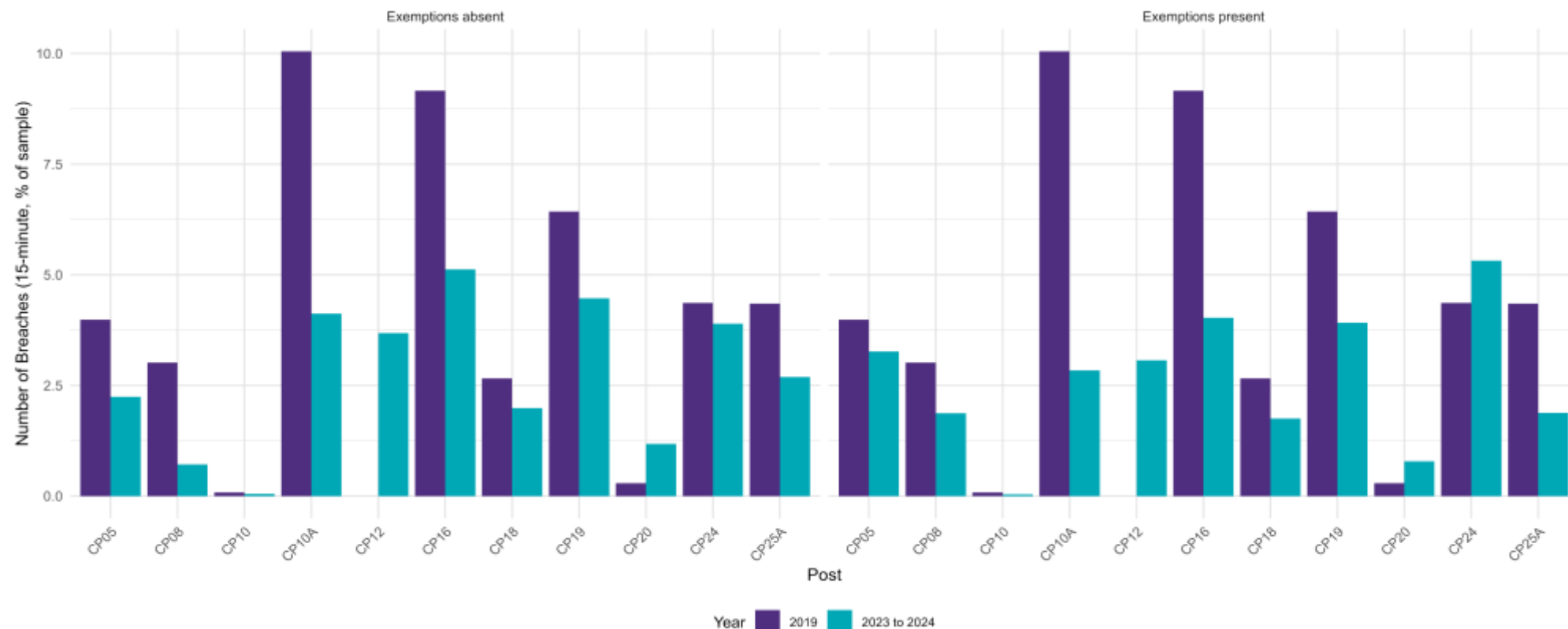
Source: Grant Thornton UK LLP analysis of Campus Queue Times from HAL.xlsx
Note: CP12 has no data for the period "2019", hence the column is empty for both "Exemptions absent" and "Exemptions present".

E - References

E. References

- [1] : Civil Aviation Authority (2023). 'Economic regulation of Heathrow Airport: H7 Final Proposals Section 1: Regulatory Framework'. CAP2524B. p.46 – [online]

- [2] : Civil Aviation Authority (2024). 'Outcome Based Regulation Mid-Term Review scope consultation'. – [online]

- [3] : Civil Aviation Authority (2024). 'Licence granted to Heathrow Airport Limited by the Civil Aviation Authority under section 15 of the Civil Aviation Act 2012 on 13 February 2014 Consolidated Version'. – [online]

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