Appendix E: Capacity

Service quality metrics help drive optimal operational decisions for the benefit of customers, for example, minimising delay in peak hours. We propose retaining the current approach, set out below, as the metrics are well understood by customers, the CAA and our operational teams.

They are also consistent with the current European performance framework, enabling comparison with other ANSPs.

Metric	Description	Inclusion	Incentive status
C1	Average En route ATFM delay per flight	All en route delays	Performance indicator only and not used for setting incentives.
C2	Average NERL attributable ATFM delay per flight	En-route delays due to: › ATC Capacity › ATC Staffing › Special Events › Airspace Management › ATC Equipment › ATC Routeing	Incentivised
C3	Weighted impact delay score	As per C2 inclusions	Incentivised
C4	Variability of daily average delays (expressed as a daily excess delay score)	As per C2 inclusions	Incentivised

Service quality metrics

The current calculation methodology for each of the metrics remains fit for purpose, as they are aligned with the Eurocontrol methodologies. However, since they are used to determine financial incentives and penalties, it is critical they are based on reliable, consistent and accurate data.

Our targets are predicated on the STATFOR October 2021 base case forecast. It may be necessary to revisit the calibration of the capacity targets in light of future forecasts. STATFOR are expected to issue updated forecasts in May and October 2022.

Delays are reviewed and validated throughout the year by a rigorous post-ops review process. This ensures that delays are attributed to the appropriate reason and location type, and therefore performance is accurately measured against each capacity metric. The delay data is adjusted via the Eurocontrol Network Manager's (NM) post-operations adjustment process, which includes regulation reattribution requests and the Enhanced NM/ANSP Network Measures (eNM measures) reattribution process. The eNM measures are strategic network routeing measures that were introduced across the European network during summer 2019 in order to remove traffic from congested areas by re-routeing or level-capping flights. As part of the process for delay reattribution, areas which received the additional traffic or experienced increased complexity would have a relative proportion of any delay reattributed to the root-cause ANSPs. The eNM measures are anticipated to evolve in line with changing capacity bottlenecks, and will continue to play an important role each summer.

Through the Network Manager forums, we will request that adjustments to reported delay are made in a more timely manner, with sufficient granularity of data to enable accurate calculation of all capacity metrics. We request support from the CAA and customers on this matter.

Proposed modifications

Exemption days

In RP3, exemption days were retained and applied to the capacity metrics to prevent NERL being penalised during delivery of planned airspace and technical transitions that had been consulted and agreed with customers.

Through this mechanism, pre-selected transition days are exempt from financial penalty under the C3 (weighted delay term) and C4 (variability term). For example, during the ExCDS Limited Operational Service (LOS) 2 transition, we declared a three-week transition and planned to use three exemptions days within that period. On all other days, any delays due to transition were subject to all delay terms.

In RP3, the CAA allocated a maximum of 100 exemption days to be used across the whole reference period for declared notified transitions, based on seven major transitions during the five year period. This was subsequently reduced to 60 exemption days for the revised three year RP3 period.

For NR23, we propose an allocation of 150 exemption days to be used over the five years given the scale of change planned in NR23 (which includes the programmes delayed as the result of Covid-19, in addition to new large scale planned airspace improvements). During NR23 there is an increased number of complex transitions compared to RP3, with 11 major transitions.

We also propose that exemption days are extended to include the C2 term, to bring this incentivised metric in line with the other incentivised metric. Not allowing exemptions for major planned changes discourages innovation and the introduction of new technologies as there could be financial risk due to short term disruption.

Traffic modulation

Under the current regulatory framework, there is a modulation mechanism for the C3 metric which adjusts the incentive thresholds in response to material deviations from the traffic forecast. This ensures that we are appropriately incentivised to deliver capacity requirements against the traffic. The trigger for modulation of the incentive thresholds is set at 4% above or below the traffic forecast for each independent year.

During 2020, when traffic was significantly lower than the forecast, the existing modulation mechanism would have resulted in negative incentive thresholds. For example, if the modulation calculation was applied during 2020 the upper and lower thresholds for C3 would have been -48 and -32 weighted seconds per flight respectively, which would clearly have been impossible to meet.

For NR23, we propose to retain the modulation mechanism for the C3 metric, including the trigger value set at +/- 4% deviation from the traffic forecast. However, we proposed to adjust the calculation methodology to avoid negative thresholds. We also propose that the modulation mechanism is applied to the C2 metric especially given the range of uncertainty in the traffic forecasts. The proposed mechanism is detailed in the table below:

	Actual traffic < 96% of forecast	Actual traffic > 104% of forecast
Upper (penalty) threshold	$Upper(1 + \frac{2(Actual - 0.96 \times Forecast)}{Forecast})$	$Upper(1 + \frac{8(Actual - 1.04 \times Forecast)}{Forecast})$

Lower (bonus) threshold	$Lower(1 + \frac{2(Actual - 0.96 \times Forecast)}{Forecast})$	$Lower(1 + \frac{8(Actual - 1.04 \times Forecast)}{Forecast})$

Traffic modulation mechanism

Our proposed traffic modulation mechanism is based on this statistical relationship between service performance and traffic. Using as an example the revised calculation for C3 in 2025, where traffic is lower than forecast, there would be an adjustment of approximately 1.3 weighted seconds per 100,000 flights for the lower (bonus) threshold and 2.1 per 100,000 flights for the upper (penalty) threshold. The modulation is greater in scenarios where traffic is higher than forecast, compared to scenarios where traffic is lower than forecast. This reflects the exponential relationship between traffic and delay.

While the traffic modulation can appropriately set incentive thresholds for a large range of variances in traffic outturn, it is not designed for traffic outturn of less than 50% of the forecast. We therefore propose a floor to the modulation at 50% of the traffic forecast, below which the incentives no longer apply. This revised mechanism prevents negative incentive threshold values from being generated.

We have calibrated the proposed mechanism against the STATFOR October 2021 base case forecast. It may be necessary to revisit the calibration for future forecasts.

The mechanism is vital, given the significant uncertainty surrounding the traffic forecasts, relative to previous price controls; it will ensure targets are set appropriately for the expected level of traffic, and will mean that NERL avoids windfall gains/losses when traffic deviates from the base forecast used to determine targets.

Proposed reopener mechanism to deal with non-NERL influences on service performance

Service performance can be influenced, to advantage or disadvantage, to a great extent by factors outside our control. The likelihood and scale of impact is hard to predict, therefore we propose a mechanism to reopen the calibration of the service performance targets and metric methodology for factors including but not limited to:

- Space: Following the Space Industry Act and linked regulations, multiple space launch operators are expected to begin operations during NR23. This will likely lead to material volumes of airspace being restricted before, during and after launch, leading to large-scale delays of commercial flights at the network level on the planned launch days
- More than 50% reduction in traffic: While the modulation mechanism is appropriate for traffic levels up to 50% lower than the forecast, it will be necessary to reassess the targets if there is a greater reduction in traffic

As the impact becomes clearer over the course of NR23, we propose to revisit the target mechanisms through the use of a 'call-in process' to present evidence of anticipated impacts on our ability to deliver the delay targets. We will consult with customers before agreeing resolutions for adjustment.

This would enable us to present evidence of the impacts of non-NERL events on our ability to deliver the service quality target and to consult with customers about solutions/adjustments. While we would aim to minimise the impact on service quality, we would seek either an adjustment to the individual flight performance levels affected, an adjustment to the total service quality performance level, or an adjustment to the service quality targets.

The trigger for the call-in process should be linked to the performance regime, for example a demonstrable change (6 months' data prior to and after change) impacting the score by half of the width of the deadband between par and upper/lower thresholds (eg an external impact causing service quality performance to change by at least 2%, if the deadband is 4%, would be called in).

NR23 targets

We have reviewed the capacity metrics for NR23 to ensure continued suitability and efficacy of the metrics and their performance schemes. This includes:

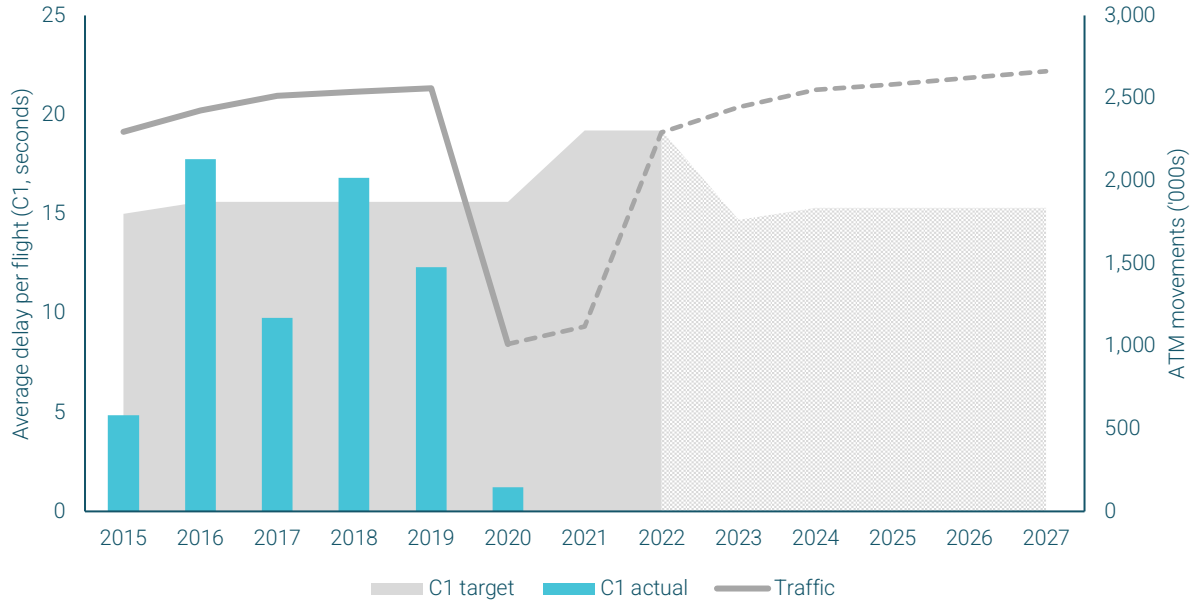
- Historic delay performance data (including the period of low traffic levels during the Covid-19 pandemic)
- Predicted delays across NR23 based on the STATFOR Oct-21 traffic forecast
- Anticipated benefits to be delivered from the capital investment programme
- Transition and training impact of delivering the capital investment programme
- Customer and CAA feedback in developing the proposals

Delay is directly impacted by volume of traffic and therefore the projections of underlying delay at the start of NR23 are low before increasing in line with the forecast traffic recovery.

Our service quality targets take account of the expected level of transition delay generated by implementation of the capital programme milestones. As the programme is refined, the number and phasing of transitions may change. This will impact forecast levels of service performance. The current programme plan assumes that DP En Route training and implementation will impact the overall level of service only during 2023 and 2024. Airspace changes are planned for all years of NR23, including West Airspace Deployment in 2023, Borders and Central in 2025 and 2026 and FASI changes from 2025 through to 2029.

C1

The projected C1 performance for all en-route delay includes weather and project transitions as well as underlying NERL-attributable delay performance. Weather delay is assumed to be consistent with historic performance, while underlying delay is correlated with traffic growth, and transition delay is driven by the capital investment programme milestones.



Proposed C1 targets

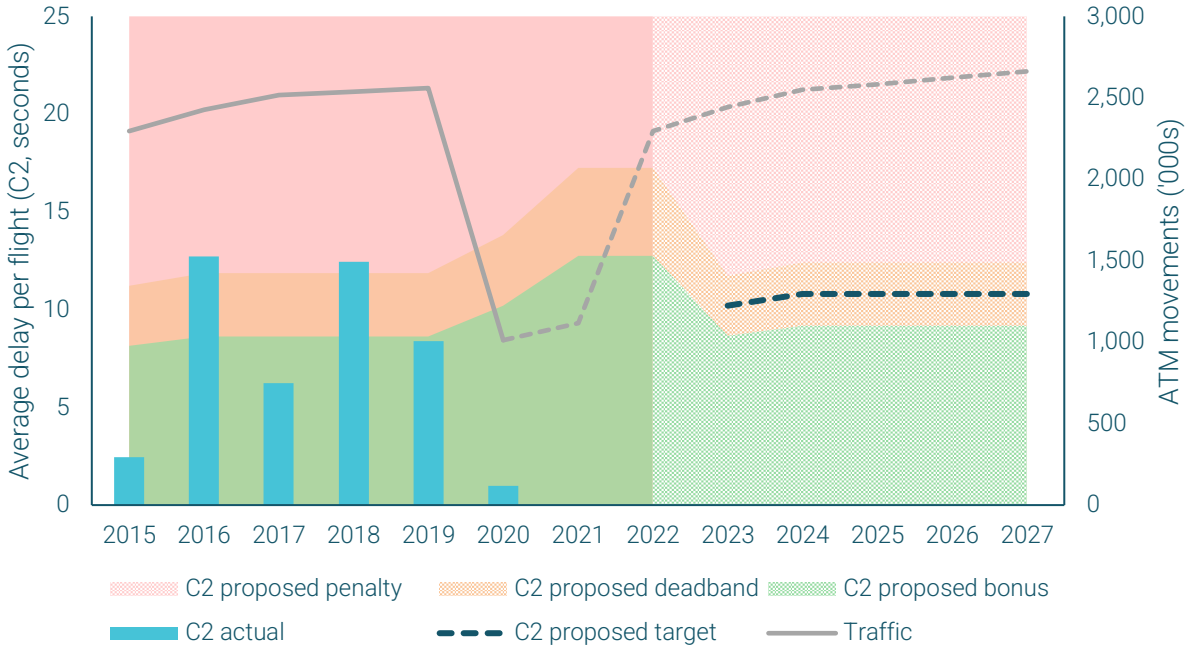
Based on the projections of levels of performance for NR23 the proposed targets are shown in the table below. The proposed targets for NR23 are better than the targets set during RP3, despite the traffic forecast to increase beyond pre-pandemic levels (RP3 targets were around 19.2 seconds for 2021 and 2022). During NR23, despite being forecast to exceed pre-pandemic levels, the traffic is not expected to reach what was forecast for the RP3 period.

Year	Target (seconds per flight)
2023	14.7
2024	15.3
2025	15.3
2026	15.3
2027	15.3

Proposed C1 targets

C2

The projected performance for C2 is dependent on a combination of the underlying delay, which includes capacity and staffing, and the transition delay. Figures are measured in average seconds of delay per flight.



Proposed C2 targets

The C2 proposed target and incentive thresholds are shown in the table below. As with the C1 term, the proposed targets for NR23 are better than the targets set during RP3, despite the traffic forecast to increase beyond pre-pandemic levels (RP3 targets were around 15 seconds for 2021 and 2022).

Year	Target	Lower (bonus) threshold	Upper (penalty) threshold
2023	10.2	8.7	11.7
2024	10.8	9.2	12.4
2025	10.8	9.2	12.4
2026	10.8	9.2	12.4
2027	10.8	9.2	12.4

Proposed C2 targets

As a baseline definition of the incentive thresholds, we propose to maintain the RP3 definition of +/-15% against the target for independent years. Under the proposed adjustment mechanism of modulation for the incentive thresholds, the bonus and penalty thresholds would be subject to change dependent on the traffic outturn against the baseline forecast. Based on the proposed modulation definition, if traffic outturn differs from the forecast by +/-4% or more, the bonus and penalty threshold would increase or decrease according to the proposed modulation calculation.

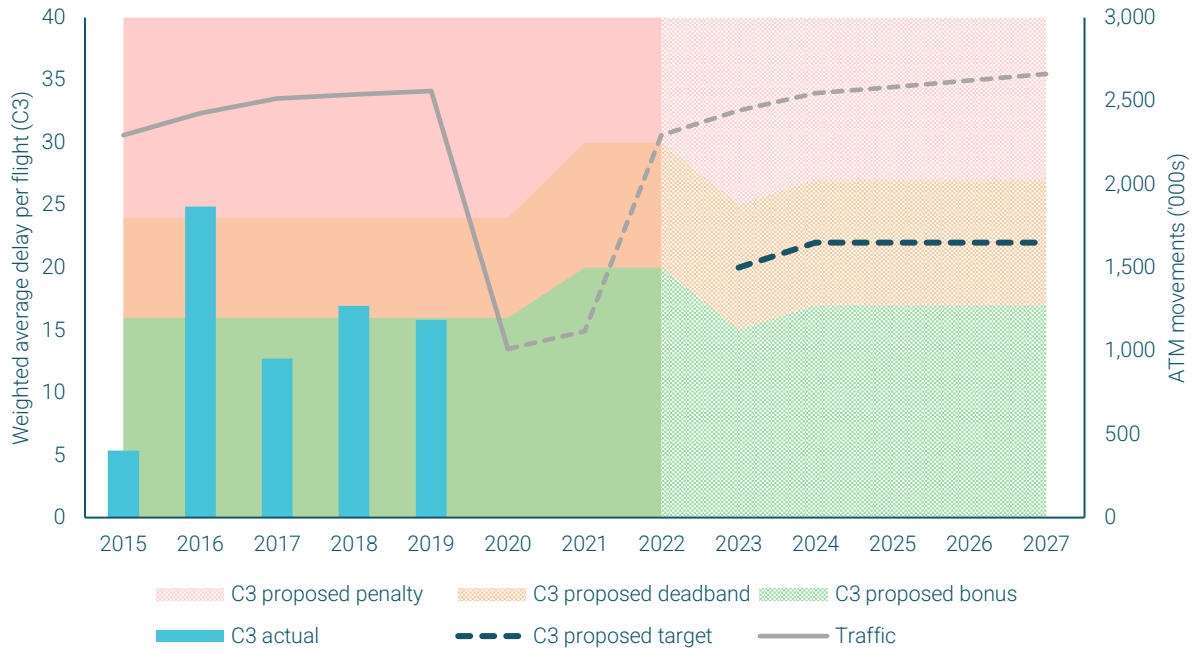
C3

C3 delay is weighted by time of day and duration of individual flight delays. The definition of the weighting bands used during RP3, as seen in the table below, is proposed to be retained during NR23. The existing mechanism helps to drive optimal decision making in minimising delay in peak periods of the day, particularly around first rotation which is important to airline customers due to the impact on the schedules for the rest of the day. As per the RP3 definition, the relationship between C2 and C3 is assumed to be a 1:2 ratio. Based on this assumption, the projection and proposed incentive thresholds are shown below. Figures are measured in average weighted seconds of delay per flight.

Delay band	Morning peak period	Evening peak period	Other times

≤ 15 mins	3	2	1
> 15 mins and ≤ 30 mins	6	3	2
> 30 mins and ≤ 60 mins	9	6	3
> 60 mins	18	9	6

C3 weightings



Proposed C3 targets

The proposed C3 target and incentive thresholds are shown in the table below. The proposed targets for NR23 are tougher than the targets set during RP3, despite the traffic forecast to increase beyond pre-pandemic levels (RP3 targets were around 25 seconds for 2021 and 2022, with bonus and penalty thresholds of 20 and 30 respectively).

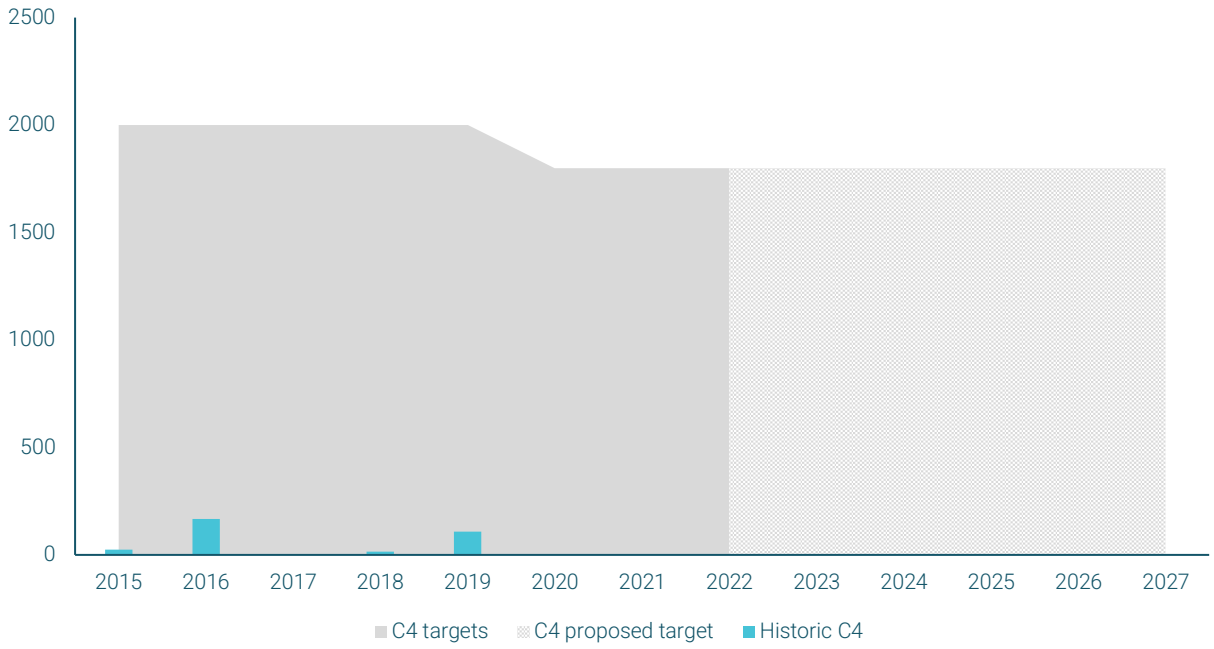
Year	Target	Bonus threshold	Penalty threshold
2023	20	15	25
2024	22	17	27
2025	22	17	27
2026	22	17	27
2027	22	17	27

Proposed C3 targets

For the C3 baseline definition of the incentive thresholds, we propose to maintain the RP3 definition of +/- 5 against the target. However, under the proposed adjustment mechanism of modulation for the incentive thresholds, the bonus and penalty thresholds would be subject to change dependent on the traffic outturn against the baseline forecast. Based on the proposed modulation definition, if traffic outturn differs from the forecast by +/-4% or more the bonus and penalty threshold would increase or decrease according to the proposed modulation calculation.

C4

The metric for C4 is the annual sum of the weighted daily excess delay score. The weighted delay scores are calculated based on daily average delay exceeding pre-determined thresholds. We proposed that these thresholds remain consistent with the RP3 definition. Due to the nature of the delay calculation for C4 there is no forward projection. We propose the targets for NR23 are continued from those set in RP3 at 1800 per year. This measure incentivises us to ensure we don't experience any major service outages which can be highly disruptive to airline customes and the travelling public. There is no bonus incentive for C4, only penalty.



Proposed C4 targets

Discounted options considered for NR23

During the review of the service performance metrics, some considerations were investigated for adjustment to the metric structures. Possible adjustments included the following:

- **Removal of C1 metric:** The C1 metric in part double-counts the delays measured and incentivised by C2. The other delays captured by this metric are external factors outside the control of NERL. This proposal was discounted as the metric is aligned with the measurement of performance at Eurcontrol and allows for comparison with other ANSPs
- **Removal of Airspace Management/Military regulation reason capture from C2 and C3:** The restriction of airspace due to military activity is outside NERL's control. While this has an impact on the delay score, this proposal was discounted to avoid complexity
- **Removal of C4 metric:** The introduction of the resilience plan under Condition 2 introduces investigation of large delays due to ATC equipment failures and therefore drives the improvements required to reduce excess delays. This proposal was also discounted to avoid complexity
- **Greater focus on arrival delay:** Feedback from the passenger survey suggests that there is a preference for focus on minimising arrival delay rather than departure delay. However, noting that a shift to metrics based on arrival times would require change across the industry, and given that the current average delay metrics are well understood, we have not proposed any specific changes for NR23

Despite considerations of these options for amendment, it was concluded that these be discounted based on meeting the customer and CAA request for simplicity. The metrics as defined are well understood by all stakeholders, are comparable across other ANSPs, and help to drive optimal operational decision making.