

UK RP3 CAA Decision Document

CAP 1830

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Executive Summary

Context

1. NATS (En Route) plc, known as NERL, is the monopoly provider of en route and certain approach air traffic services in the UK. NERL is subject to economic regulation, which is designed to protect the users of its services and prevent NERL from exploiting its monopoly power.
2. NERL is currently regulated under the European Union Single European Sky performance scheme and the UK Transport Act 2000 and economic licence. The performance scheme provides for the setting of targets and incentives in four key performance areas – safety, capacity, environment and cost efficiency – over five-year regulatory cycles/reference periods.
3. Reference Period 2 (RP2) ends on 31 December 2019. Reference Period 3 (RP3) will run from 1 January 2020 to 31 December 2024. For RP3 we have developed final decisions and a performance plan and targets consistent with EU-wide targets set by the European Commission. Our final decisions also establish cost and service quality measures for NERL's Oceanic regulated activities, which are outside the scope of the performance scheme. We intend to give effect to both our UK and Oceanic decisions through modifications to NERL's economic licence. The performance scheme has a broader scope – as well as safety, service and efficiency targets for NERL, it encompasses cost efficiency targets for the Met Office, the CAA and the Department for Transport for certain activities associated with airspace management and oversight.
4. The Transport Act 2000 sets out duties on both NERL and the CAA. Section 8 of the Act places a duty on NERL, as the licence holder, to provide a safe system for air traffic services. NERL has stated that its main responsibility is to manage and maintain the safety of its operation. Section 2 of the Act sets out our primary duty, to exercise our functions so as to maintain a high standard of safety in the provision of air traffic services. We consider that our decisions on the performance plan and the Oceanic price control will not compromise NERL's ability to maintain the safety of air traffic services. The EU regulations also emphasise the importance of safety.
5. A key strategic driver for NERL in RP3 is to support the implementation of the UK's Airspace Modernisation Strategy, which is intended to deliver a once in a generation upgrade to modernise critical national infrastructure and deliver a broad range of benefits in all key performance areas and more widely. We consider this national strategic objective is fundamental to furthering the interests of airspace users and therefore a key priority for RP3. Nonetheless, the systems

that users have already funded over RP2 and the further systems and airspace changes that NERL plan to implement and coordinate over the RP3 should allow both for airspace modernisation and significant improvements in NERL's operational performance. We expect NERL to be able to deliver significant operational efficiencies during the latter stages of the RP3 period and for the RP4 period. We are expecting that users further share in the benefits of these efficiencies at the RP4 review.

6. NERL will need to respond flexibly to the challenges of RP3 and remain accountable for continuing to deliver its service to a high standard, in order to justify the revenue it receives as the monopoly service provider. NERL's customers place a high value on a safe and reliable service, and we will continue to monitor and enforce NERL's licence obligations on this basis.
7. If, in due course, NERL accepts our final decisions, including the performance plan and the associated licence modifications that give effect to this plan, it should only do so on the basis that it is taking responsibility and accountability for providing an appropriately high quality of service to airlines and their passengers. In practice, this means NERL meeting all its statutory duties and obligations with respect to service quality, which involve providing a high quality (but not necessarily uniform) experience for the users of its services. We will also hold NERL accountable for fully discharging its key role in the delivery of airspace modernisation and all aspects of its performance plan. Nonetheless, NERL's focus in delivering these outcomes and outputs should always be in the context of its over-riding obligations to maintain and/or improve safety.
8. On the other hand, if NERL were not to accept our final decisions on the above matters, we would expect to make a reference to the Competition and Markets Authority for them to investigate and report on whether our decisions for NERL operate against the public interest or may be expected to do so, and if so, whether this could be remedied or prevented by modifying our decisions.
9. In these final decisions we have provided for various flexibility measures to allow NERL to respond to the uncertainties in RP3 and play a leading role in the delivery of airspace modernisation. If there are changes in wider circumstances such that there is evidence that this flexibility is not sufficient to allow efficient delivery by NERL in a way consistent with the interests of users, we would review and seek to revise our decisions and performance plan, as appropriate.
10. Our final decisions follow a programme of consultation and engagement with interested stakeholders including NERL and airspace users. In February 2019 we consulted on draft proposals and stakeholder feedback was mixed. NERL and employee representatives said that our efficiency proposals were too ambitious and would have an impact on NERL's ability to deliver both its day to day service, while maintaining systems resilience and play its role in airspace modernisation. Airspace users were largely supportive of our UK en route

proposals but objected to our proposal to allow NERL to implement satellite-based surveillance service for the North Atlantic due to concerns about NERL's forecasts of costs and whether the costs might exceed the benefits of these arrangements. A summary of stakeholder feedback to our draft proposals, with references to where we have addressed this in our final decisions, will be published as CAP 1830c in September 2019.

Our approach to setting NERL's price control

11. Historically NERL has delivered strong performance and been able to achieve efficiencies while delivering a high level of service. In making proposals for the RP3 period, we have assumed that NERL will continue to be able to make efficiency savings in line with historical performance over the medium term. We have also recognised the importance of NERL continuing to deliver its ongoing airspace and technology programme to deliver airspace modernisation, as this should enable very significant longer term benefits and efficiencies.
12. We recognise the significant change and uncertainty ahead in RP3. We consider that NERL's high level plans to upgrade its legacy technology system and for airspace modernisation are both important and desirable for UK aviation, and have provided important strategic context for the development of the UK performance plan. We have considered how to facilitate the successful delivery of these high level plans as part of our final decisions and sought to ensure there are mechanisms that will allow flexibility (and provide appropriate protection to users) to support these changes. We have also allowed for cost increases at the end of RP2, as well as NERL's forecast operating costs for the first part of RP3, which should provide a strong basis for airspace modernisation work that will take place through RP3 and allow NERL to deliver a more resilient service. Notwithstanding these cost increases, these final decisions should mean that the average level of unit rate for NERL's services across RP2 falls by 22% for RP3.

Governance and delivery

13. Recognising NERL's privileged position as a monopoly provider of nationally vital services, and the need to earn the confidence of all relevant stakeholders, as part of our final decisions we have sought to reinforce governance arrangements around NERL's customer engagement and capital expenditure plans. RP3 provides an opportunity for NERL and airspace users to take more ownership of the programme and establish a robust process for meaningful engagement on important decisions on capital expenditure.
14. Bearing in mind the cost allowances we have made as part of these final decisions and our inclusion of flexibility mechanisms, airspace users can reasonably expect that NERL plays its full part in driving forward UK airspace modernisation and delivers its full programme effectively and efficiently. To further the interests of users with respect to these matters we have decided to

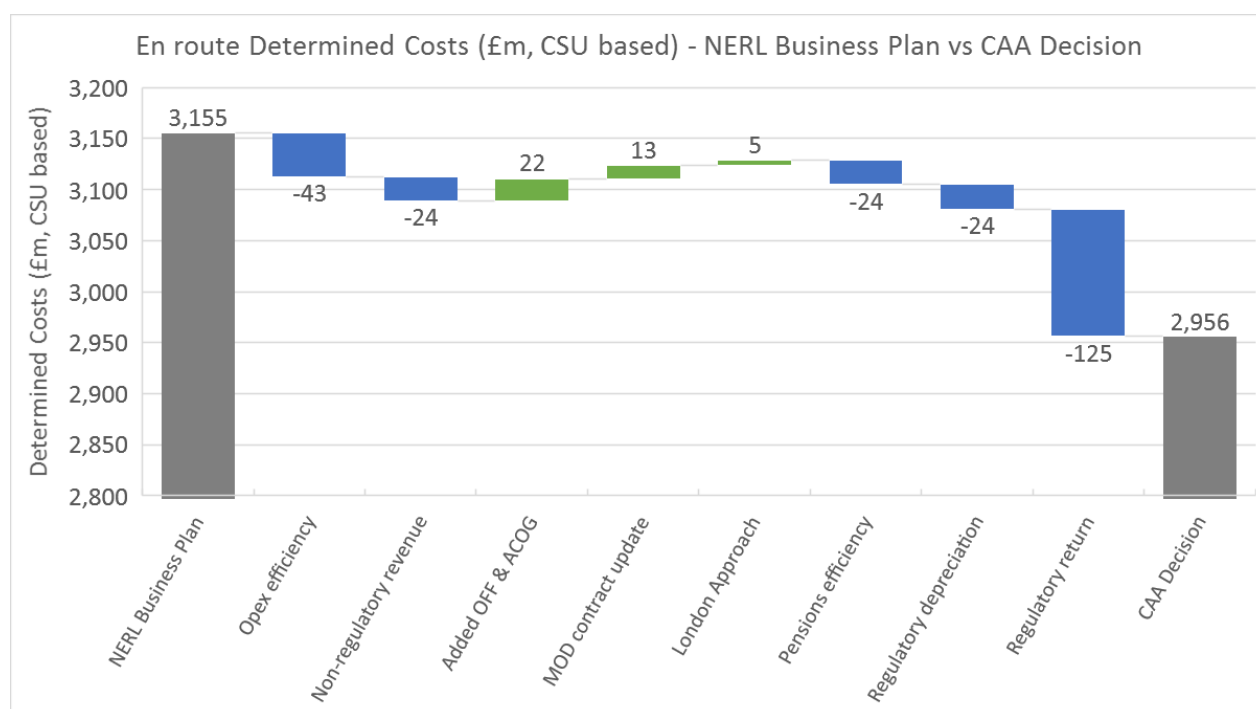
introduce a new financial incentive on NERL's delivery of its capital expenditure programme and support for airspace modernisation. We will carry out a broad assessment of NERL's capital expenditure delivery, supplemented by a focus on the delivery of specific milestones for programmes or projects that lead to important outcomes, linked to airspace modernisation, that benefit users. This assessment will be reasonably flexible and the intention is not that NERL mechanistically delivers programmes that have become uneconomic because of changing circumstances, but we will assess whether it has effectively delivered (to the fullest extent practical and desirable) the programmes necessary to facilitate airspace modernisation. If NERL does not effectively deliver this programme we will look to make a reduction to their revenue in RP4, or a downward adjustment to its RP4 regulatory asset base, of up to £36 million.¹

NERL's costs

15. As well as NERL's RP3 business plan, in coming to our proposals we have considered a range of evidence and inputs including:
 - historical analysis/trends (top down analysis);
 - independent in-depth consultant studies (bottom up analysis);
 - the results of NERL's customer consultation process, including the Co-Chairs' Report and bilateral meetings with airspace users;
 - the EU targets adopted by the European Commission; and
 - our own stakeholder consultation process on our draft proposals.
16. NERL's UK en route activities account for the largest component of UK Determined Costs, which are addressed in chapter 5. The chart below² illustrates the main impacts of our final decisions on NERL's Determined Costs, compared with NERL's business plan.

¹ Unless otherwise stated, all financial figures throughout the document are in £2017 CPI prices

² The chart shows Determined Costs on a CSU basis. The performance regulation establishes unit costs using Total Service Units, which includes military and exempt flights which are funded separately. Where we express Determined Costs on a TSU basis for the performance regulation, we make an adjustment to Determined Costs of £33m to account for the difference in CSUs and TSUs. This means Determined Unit Costs are neutral on a CSU and TSU basis. See chapter 6 for further details.



Source: CAA

17. **Operating costs.** NERL's operating costs will be £43 million lower than NERL's projections in RP3 overall (this compares to £71 million in our draft proposals). We have allowed additional operating costs to provide more flexibility and ensure NERL has sufficient resources to effectively deliver its planned RP3 programme, in particular its role airspace modernisation. We have accepted NERL's forecast that its operating costs will increase by about 21% in the last two years of RP2 as well as its forecast operating costs for the first three years of RP3.
18. **Non-regulatory revenue.** We have reduced our forecast increase in non-regulatory revenue to £24 million (this compares to £49 million in our draft proposals) and applied this to operating costs. We have also updated non-regulatory revenue for the Ministry of Defence contract, changes in London Approach due to our operating cost proposals and the addition of Biggin Hill to the London Approach service. We have made these changes to reduce the risk that the forecast reductions in NERL's non-regulated activities will reduce the resources available to deliver airspace change.
19. **ACOG and OFF.** To provide additional flexibility to support NERL's programme delivery, in particular where there remain elements of uncertainty of what might be required, or where it is necessary for them to provide more detail, we have added a further £7 million to the Opex Flexibility Fund (OFF), increasing it from £35 million in our draft proposals, to £42 million. We expect the fund to be utilised primarily to support NERL's airspace modernisation activities and will be subject to a stakeholder governance and escalation process. We have also added £15 million over RP3 for the establishment and running of the Airspace

Change Organising Group (ACOG) function (our draft proposals had not provided funding for these arrangements).

20. **Pensions.** We have reduced by half, to £18 million, the adjustment we made in our draft proposals to NERL's forecast of pension deficit repayments. This reflects the new evidence that NERL has provided on its pension position at the end of March 2019 that suggests that the likelihood of a surplus arising in RP3 has reduced. We have also made changes associated with our adjustments to operating costs. Ultimately, customers will only fund the actual pension deficit repayments made, as the regulatory framework provides for a passthrough where differences between actual and forecast deficit levels arise as a result of changes in financial market conditions.
21. **Capital expenditure/depreciation.** We have made no changes to our draft proposals in respect of capital expenditure, maintaining the allowance at £667 million (about £50 million below NERL's business plan) reflecting our view that NERL can realise capital expenditure efficiencies over RP3 but continue to deliver its full business plan programme. Our assumptions on capital expenditure drive about a third of the £24 million reduction in regulatory depreciation, with the remainder being a result of changes to inflation forecasts. We note that we are retaining the cost pass-through arrangements for capital expenditure and so if it is necessary for NERL to spend more than we have allowed then additional allowances for efficient costs will be made at RP4.
22. **Regulatory return.** Our final decision uses a real pre-tax Weighted Average Cost of Capital of 2.91%, compared to 2.84% in our draft proposals and 5.07% in NERL's business plan. The slight increase in our final decision is due to updates to our estimates of NERL's debt beta for new information. Our lower cost of capital, compared to NERL's business plan, drives the single largest reduction (£125 million) in Determined Costs.
23. The **overall impact** of our changes is to reduce NERL's Determined Costs by £200 million compared to their business plan (£100 million less than our draft proposals). The additional flexibility created will enable NERL to play its role in airspace modernisation; results in average Determined Unit Costs of £45.46, compared to £49.85 in NERL's business plan; is consistent with the EU cost efficiency target; and provides for lower prices over the period, which in real terms will be an average of 22% lower in RP3 compared to RP2. Nonetheless, we will hold NERL fully accountable for playing a leading role in the delivery of airspace change and providing high quality services consistent with its licence and Transport Act obligations.

Interdependencies

24. We are clear that safety must always be protected and that air traffic will be constrained where necessary to ensure this. NERL's operations are, and should

continue to be safe in RP3, because the current levels of operational safety, NERL's effective safety management of change and the existence of appropriate safety governance mechanisms. Our safety specialists have undertaken an interdependencies assessment and are assured that there are appropriately robust regulatory measures and processes in place such that safety will not be compromised by our decisions on the other key performance areas.

25. In respect of interdependencies between service quality and costs we have sought to make appropriate efficiency assumptions while also providing strong support for the delivery of airspace modernisation, and further airspace users' interests. We have allowed all the capital expenditure NERL has requested for its role in airspace modernisation (£115 million) and ringfenced other airspace modernisation-specific operating costs (£42 million for the NERL Opex Flexibility Fund and £15 million for the Airspace Change Organising Group) from our efficiency challenge. With respect to wider costs we have also proposed costs increases in our own airspace-related costs to ensure we are equipped to fulfil our own airspace modernisation related duties and functions.
26. We have also sought to ensure that we maintain as much flexibility as practicable (within the constraints of the legal frameworks) by designing mechanisms that will support delivery of airspace modernisation. In addition to the Opex Flexibility Fund, we also proposed to establish an airspace modernisation support fund within the CAA cost allowances of £10 million (see chapter 6 on CAA costs and chapter 9 on uncertainty mechanisms). For both funds, expenditure will be subject to enhanced governance arrangements and, where not utilised, the funds will be returned to airspace users in the future.
27. We have assessed whether NERL will be able to finance its activities on the basis of our decisions on its performance plan for RP3 and tested the impact of plausible downside scenarios. These assessments suggest that our decisions on RP3 are consistent with our statutory duty to ensure that NERL should not find it unduly difficult to finance its activities. On this basis there should not be a constraint on NERL financing efficient investment, including to support airspace modernisation. See chapter 7 for further information on these matters.
28. In determining our approach to capacity and flight efficiency targets, we have taken account of the EU-wide targets, the outcomes of the consultation programme between NERL and their customers, the reference values provided by the Eurocontrol Network Manager, historical performance and stakeholder responses to our own consultation activities – all in the context of providing sufficient flexibility to support airspace modernisation.

Summary of other key aspects of our decisions

29. Our final decisions, along with our supporting rationale, are set out in individual chapters covering each key performance area. Additional detailed supporting

information is provided in the appendices. A high-level summary of our key proposals is provided below.

Safety

30. The performance regulation establishes a single safety Key Performance Indicator (KPI) for RP3:
- The minimum level of the effectiveness of safety management (EoSM) to be achieved by air navigation service providers certified to provide air traffic services. This KPI measures the level of implementation of the following safety management objectives: (a) safety policy and objectives; (b) safety risk management; (c) safety assurance; (d) safety promotion; (e) safety culture.*
31. The UK target is that by the end of 2024, NERL must achieve as a minimum at least Level C in the safety management objectives ‘safety culture’, ‘safety policy and objectives’, ‘safety assurance’, ‘safety promotion’; and at least Level D in the safety management objective ‘safety risk management’ for Effectiveness of Safety Management. This decision is consistent with the EU-wide targets.
32. NERL has also stated it would set more challenging internal safety targets. We support NERL including these steps as part of its business plan. See chapter 2 for more detail on safety in the context of the performance scheme.

Environment

33. The performance regulation prescribes one environmental KPI for RP3 – the horizontal en route flight efficiency of the actual trajectory, referred to as KEA. Our KEA target assumes NERL will match historical performance for the first three years of RP3 but will be able to deliver greater levels of performance with the implementation of free route airspace later in the period. Consistent with the approach we adopted at RP2, we have not proposed a financial incentive for KEA as NERL’s contribution to flight efficiency is better captured by the additional KPI discussed below.

Table 1: KEA target

	RP2					RP3				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
UK actual	3.93%	4.38%	4.15%	4.08%						
EC reference value				4.08%		3.53%	3.39%	3.25%	3.25%	3.25%
RP3 final target				4.08%	4.05%	4.06%	4.05%	4.04%	3.88%	3.72%
No financial incentive										

Source: CAA

34. The regulation also allows for the establishment of additional environmental KPIs. Since RP1 (2012) the UK has set a target for a domestic environment KPI that considers both vertical and horizontal flight (in)efficiency, referred to as 3Di. We have applied the expected efficiency from performance data to date for 2019, rather than using RP2 target values. This reflects a modest performance improvement against targeted RP2 performance. As with RP2, we have established a financial incentive for 3Di, albeit at lower levels than our draft proposals. See chapter 3 for details on environment.

Table 2: 3Di target

	RP2					RP3				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
UK actual	29.5	29.7	29.0	28.6	N/A					
RP2 target/draft proposal ³	29.1	28.6	28.3	27.5	27.1	26.8	26.5	26.2	25.9	25.6
RP3 final target						27.8	27.5	27.3	27.0	26.7
Maximum penalty 0.5% of Determined Costs; maximum bonus 0.5% of Determined Costs										

Source: CAA

Capacity

35. The EU framework prescribes one en route capacity KPI for RP3 – the average minutes of en route air traffic flow management delay attributable to air navigation services, referred to as C1. This target can be adjusted for certain categories of delay when applying a financial incentive, with this adjusted target determined as a fixed percentage of C1 and referred to as C2. Consistent with RP2 we have applied a financial incentive to C2.

Table 3: Proposed ATFM minutes of delay per flight target

³ The par value for RP2 has been adjusted downwards by 0.6 to reflect the exclusion of various types of non-revenue flights.

ATFM delay minutes/flight	RP2					RP3				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
C1 RP2 target/draft proposal	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
C1 NOP reference values						0.34	0.34	0.30	0.26	0.27
C1 target						0.26	0.32	0.32	0.30	0.32
C2 actual	0.04	0.21	0.10	0.21	N/A					
C2 RP2 target/draft proposal	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
C2 target						0.20	0.25	0.25	0.23	0.25
Maximum penalty 0.25% of Determined Costs; maximum bonus 0.05% of Determined Costs										

Source: CAA

36. In our final decision we have re-profiled C1 (and derived targets) to better reflect expected delays as a result of NERL's planned airspace/technology programmes. The re-profiling is neutral in terms of total number of allowed minutes delay over RP3.
37. The regulation also allows for the establishment of additional capacity KPIs. We have set two additional capacity targets, referred to as C3 and C4, designed to focus on specific elements of delay that are important to users – the time of day and duration of delays, as well as significant systems outages. See chapter 4.

Oceanic activities

38. In addition to our main conclusions, our decisions for NERL's Oceanic regulated activities, which are not in scope of the performance scheme, remain broadly the same as in our draft proposals. We have retained our approach to building blocks and the satellite-based surveillance data charge and updated for latest traffic forecasts. These are addressed in chapter 11.

Overall level of Determined Costs

39. Chapter 6 sets out our overall UK Determined Costs and Determined Unit Cost target. Our UK cost efficiency target final decision is an average reduction of Determined Unit Cost of 3.5% per year. This compares to the Performance Review Body's proposed EU-wide cost efficiency target of an average 4.1% reduction of Determined Unit Cost per year, and the finally adopted EU-wide cost

efficiency target of an average 1.9% reduction in Determined Unit Cost per year.⁴ Our proposed UK Determined Costs include £86 million of flexibility and support funds, the use of which are subject to additional governance and which if not utilised will be returned to airspace users in future reference periods.

Table 4: Proposed UK's Determined Costs for RP3

2017 prices £m	2019 Base	2020	2021	2022	2023	2024	CAGR 2019 to 2024
NERL	626.3	637.4	609.7	610.3	569.8	561.3	-2.2%
MET	25.5	29.1	27.8	28.6	31.1	30.7	3.8%
NSA & DFT	64.0	66.2	66.9	66.7	66.6	66.8	0.9%
UK	715.7	732.7	704.4	705.5	667.6	658.8	-1.6%

Source: CAA calculations. Determined Costs are shown on a TSU basis so include an uplift of £33m for MOD and exempt flights

Table 5: UK Determined Unit Cost (DUC) target

2017 prices £m	2019 Base	2020	2021	2022	2023	2024	CAGR 2019 to 2024
NERL	50.47	50.39	47.30	46.29	42.51	41.23	-4.0%
MET	2.05	2.30	2.16	2.17	2.32	2.26	1.9%
NSA & DFT	5.15	5.24	5.19	5.06	4.97	4.91	-1.0%
UK	57.68	57.93	54.64	53.52	49.80	48.39	-3.5%

Source: CAA calculations

Next steps

40. The performance regulation requires that Member States adopt draft national performance plans and submit them to the European Commission three months before the start of the Reference Period. Alongside our final decisions document, we have completed the performance plan template. We will publish both on our website and send to the DfT by 1 September 2019.

⁴ COMMISSION IMPLEMENTING DECISION (EU) 2019/903 of 29 May 2019 setting the Union-wide performance targets for the air traffic management network for the third reference period starting on 1 January 2020 and ending on 31 December 2024

41. It is for the DfT to consider the performance plan and make a submission to the European Commission on these matters by 1 October 2019.
42. The European Commission has until 1 November 2019 to verify that the performance plan contains the required information; and a further four months (until 1 March 2020) to assess all Member States' plans and reach a decision.
43. Our decision in respect of NERL's Oceanic activities is not in scope of the performance regulation or UK performance plan – no further EU or DfT assessment or decision is required.
44. If NERL accepts our decisions, it is with the commitment that it is taking responsibility and accountability for delivering its plan in full and providing a high quality of service to airlines and their passengers. If NERL does not accept our decisions, we expect to make a reference to Competition and Markets Authority in respect of section 12 of the Transport Act 2000.
45. We set out in Appendix H draft licence modifications to implement our decisions. Subject to any reference, we will conduct statutory consultation on our proposed modifications before the end of the year.

Chapter 1

Introduction and background

Purpose of this document

- 1.1 This document sets out the CAA's final decisions in respect of the economic regulation of NATS (En Route) plc, referred to as NERL, for the period January 2020 to December 2024 – Reference Period 3 (RP3). It contains targets, incentives and associated requirements for NERL, that will form the basis of the price controls for their “En route (UK) Area” and “En route (Oceanic) Area” activities under their air traffic services licence, issued by the Secretary of State, under the Transport Act 2000 (‘the Transport Act’).
- 1.2 The decisions are consistent with and applicable to the NERL components of the UK performance plan, required under EU's Single European Sky (SES) performance scheme for air navigation services (ANS) for RP3 – the detailed requirements of which are contained in the RP3 performance and charging regulation (the ‘performance regulation’).⁵ This document provides supplementary information to the accompanying UK performance plan, which we have prepared in our role as the UK national supervisory authority (NSA) under the EU's SES legislation.
- 1.3 The European and domestic regulatory framework, including our statutory duties, and scope of the performance plan are set out in Appendix B.
- 1.4 We note that this decision covers all of NERL's regulated activities, including the Oceanic service. While this is not in scope of the SES performance framework and is regulated under the Transport Act, the regulatory periods are aligned and (where appropriate) we have made similar assumptions in setting the Oceanic and UK en route price controls.

UK context and assumptions

Airspace modernisation

- 1.5 In addition to our European and domestic statutory duties, the key strategic consideration in making our final decisions for the performance plan for RP3 is airspace modernisation. In February 2017 the Government set out its strategic rationale for modernising airspace, and the consequences of not doing so. We

⁵ Commission Implementing Regulation (EU) 2019/317 of 11 February 2019 laying down a performance and charging scheme in the single European sky and repealing Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013.

expect airspace modernisation to deliver major benefits, through the introduction of technology that will allow: more efficient flight paths that can increase capacity; an approach to establishing flight paths that takes into account the advantages of reducing noise for local communities; more carbon efficient routes and reduced delays for passengers. For instance, we would expect to see a large reduction in planes queueing in holding stacks over the UK, with any remaining stacks operating at higher altitudes.

- 1.6 Airspace modernisation is being delivered by the aviation industry. In our business plan guidance to NERL,⁶ we were clear that as the licensed monopoly provider of (air traffic) services that are of national importance NERL would have a key role in supporting the development and implementation of airspace modernisation. The DfT and the CAA have committed to co-sponsor airspace modernisation to support this delivery, including through setting the overall strategy and governance for the programme.
- 1.7 In October 2017, the Government tasked the CAA with a key oversight role for airspace modernisation. Consistent with our role as specialist aviation regulator and our statutory responsibilities, we are required to prepare and maintain a coordinated strategy and plan for the use of UK airspace for air navigation up to 2040, including for the modernisation of the use of such airspace.
- 1.8 The Government confirmed its support and objectives for the modernisation of UK airspace in its December 2018 Green Paper,⁷ which was published in preparation for its forthcoming Aviation Strategy. Alongside this, in December 2018, we published our UK Airspace Modernisation Strategy (AMS),⁸ setting out the detailed initiatives that industry must deliver to achieve the objectives envisaged in current government policy. We also committed to setting up a new governance structure and a CAA oversight team to monitor industry delivery.
- 1.9 As part of our strategy and plan, the DfT and CAA (as co-sponsors of airspace modernisation) commissioned NERL to begin to develop a co-ordinated implementation plan for airspace changes (or airspace change masterplan) in the south of the UK, and to create a co-ordination group (now known as the Airspace Change Organising Group (ACOG)) to lead the airspace change implementation plan.
- 1.10 In our draft proposals we stated our intention underpin these requirements with an obligation on NERL through its licence, as part of the wider package of licence modifications implementing the UK's RP3 performance plan.

⁶ [CAP 1625](#) - Guidance for NERL in preparing its business plan for Reference Period 3 (January 2018)

⁷ <https://www.gov.uk/government/consultations/a-new-aviation-strategy-for-the-uk-call-for-evidence>

⁸ [CAP 1711](#) - Airspace Modernisation Strategy (December 2018)

- 1.11 Our final RP3 decisions maintain this requirement. Appendix H contains a draft new licence condition, setting out our expectations of NERL in respect of airspace modernisation. This will help NERL to understand what the airspace modernisation co-sponsors expect of it and will help clarify how it is accountable for delivery. Not only will it provide formal mechanisms and powers to support our oversight of NERL's role in airspace modernisation, it will also clearly signal and set out NERL's responsibilities to other stakeholders.
- 1.12 The draft condition requires NERL to establish, maintain and manage ACOG, and create and maintain a masterplan for airspace changes in Southern England, in line with requirements or guidance provided by the co-sponsors and taking into account the expertise of airport operators and views of stakeholders. It also requires NERL to prepare and submit changes to airspace design and airspace change proposals (ACPs) we instruct them to, and, where necessary, assist other stakeholders with preparing and submitting ACPs.
- 1.13 Under the current regulatory and policy framework, there is no way of compelling sponsors to prepare an ACP and to submit it to the CAA for a decision. This means that when airspace modernisation is needed across a number of airports to restructure and rationalise the airspace they use, there is no way of ensuring that each airspace change sponsor will make the changes identified as necessary. Where there are interdependencies between changes, this may delay modernisation. The DfT considered this issue after consulting on policy proposals in its Aviation Strategy Green Paper and a policy decision is expected later this year.

Brexit

- 1.14 As we prepare our final decisions and the performance plan, it is not clear what the nature of the UK's future relationship with the EU will be. Our approach and conclusions were developed on the basis that the SES performance framework would continue to apply to the UK on the 1 January 2020. If no future arrangements are established before the end of 2019, the economic regulation of NERL will default to the Transport Act. Under both the EU and domestic regulatory frameworks the substantive requirements are similar – we produce a price control and service quality targets that go towards achieving the strategic outcomes established in CAP 1511,⁹ and these need to be in place by 1 January 2020. If a 'no-deal' Brexit does occur, our final decisions and associated licence modifications would stand, regardless of the status of the performance plan. We will continue to monitor the status and development of future of EU-UK aviation

⁹ [CAP 1511](#) - Strategic outcomes for the economic regulation of NERL 2020-2024: discussion document (April 2017).

arrangements and how they relate to our final decisions as we approach the start of RP3, and seek to make changes where appropriate.

Traffic assumptions

- 1.15 Our draft proposals were based on the STATFOR¹⁰ October 2018 base case medium-term forecasts for en route traffic, although we said that we would consider updated forecasts, alongside stakeholder consultation responses in coming to our final conclusions.
- 1.16 Airlines expressed broad support for our proposal to use the STATFOR base-case traffic for RP2. NERL, PCS and Prospect considered the NERL forecast more accurate and raised concerns with using the (higher) STATFOR forecast.
- 1.17 There have been several developments around traffic forecasts since our draft proposals were published, including:
- NERL issued an updated December 2018 forecast, and submitted it with its consultation response;
 - STATFOR published its February 2019 medium-term forecast;
 - NERL issued an update to its December 2018 forecast, dated May 2019;
 - STATFOR published its May 2019 short-term forecast (covering only the first year of RP3); and
 - Eurocontrol's Central Route Charges Office (CRCO), responsible for billing en route charges, issued a short-term forecast based on STATFOR's May 2019 release. This contained updates for changes in the way the distance factor, which underpins the TSU forecast,¹¹ is calculated in accordance with the new requirement in the performance regulation for RP3.
- 1.18 The NERL (May 2019) and STATFOR (February 2019) forecasts are not significantly different, with NERL's flights forecast 1.0% above STATFOR's for the RP3 period, and NERL's TSU forecast 0.9% below that of STATFOR. We have considered the advantages and disadvantages of each forecast with the intention of using the one that is more plausible. A high-level comparison is provided in Appendix C.
- 1.19 Table 1.1 compares the NERL (May 2019) and STATFOR (February 2019) forecasts. All else being equal, in a capacity-constrained environment as expected for the UK in RP3, the NERL model would be expected to produce

¹⁰ A team within Eurocontrol that provides statistics and forecasting services.

¹¹ Calculation of Total Service Units is covered in Annex VIII of the Performance Regulation. En route service units are the product of the distance factor and the weight factor. Unlike RP2, the distance factor from RP3 will be based on actual route flown rather than planned.

higher traffic forecasts. However, for RP3 as a whole, STATFOR's forecast for TSU is 0.9% higher than NERL's forecast.

Table 1.1: Comparison of NERL and STATFOR traffic forecast

	Source	2018 A	2019	2020	2021	2022	2023	2024	RP3
Overall UK flights (000)	STATFOR	2,558	2,600	2,649	2,685	2,737	2,771	2,802	13,645
	NERL	2,558	2,581	2,630	2,693	2,760	2,827	2,866	13,776
TSU (000)	STATFOR	12,194	12,408	12,648	12,891	13,183	13,406	13,615	65,743
	NERL	12,194	12,299	12,391	12,701	13,043	13,380	13,636	65,150

Source: NERL and STATFOR

Note: To enable like-for-like comparisons between NERL and STATFOR forecasts, the NERL forecasts presented have been derived by applying NERL forecast traffic growth to the STATFOR 2018 actuals data – see Appendix C.

1.20 In summary, the main factors considered in our analysis of both forecasts are:

- the treatment of excess demand when airports become constrained;
- the 2019 starting point which represents the baseline for the 2020-2024 forecast, and how actual growth compares to assumptions;
- assumptions used for calculating the distance factor, including the positioning of the jet stream over the North Atlantic which significantly influences distances flown by transatlantic flights;
- method and assumptions used for calculating the aircraft weight factor, including how aircraft weight growth has been taken into account;
- economic assumptions underpinning the forecasts, including GDP forecasts and the impact of Brexit; and
- the change in method for calculating the distance factor, to reflect that RP3 is based on actual distances whereas RP2 was based on planned distances.

1.21 When taking these factors into account, we considered STATFOR's forecast to be the better one to use, particularly because of the greater accuracy to date. The independence of STATFOR was an additional factor we took into account.

1.22 To the extent that actual traffic varies from forecasts, there are in-built mechanisms in the performance framework to share traffic risk and the associated costs and benefits between NERL and airspace users.¹² If the

¹² See chapter 9 – Uncertainty mechanisms

variance triggers alert mechanism thresholds, NSAs may review the performance plans and, where appropriate, propose new targets.

- 1.23 Our final decision is to use the STATFOR February 2019 base-case forecast.

Process

Process to date

- 1.24 Following publication of a discussion document on our strategic outcomes for NERL for RP3,¹³ we consulted on¹⁴ and then published business plan guidance¹⁵ to NERL in January 2018, setting out our expectations for NERL's RP3 business plan and consultation with its customers.
- 1.25 NERL shared an initial business plan with airspace users in April 2018, which it followed with a programme of customer consultation on its proposals, from May to September 2018. At the end of the programme, the Co-Chairs of the Customer Consultation Working Group (CCWG) submitted a report on their conclusions.¹⁶ NERL published a revised RP3 business plan at the end of October 2018.¹⁷
- 1.26 In addition to our own analysis and assessment, we commissioned a number of consultancy studies to provide independent in-depth analysis and advice on certain issues, to inform our draft proposals and final decisions. These studies are published on our [website](#):
- Components of cost of capital – Europe Economics
 - Comments on NERA/NERL critiques of cost of capital analysis – Europe Economics
 - Responses to stakeholder comments on cost of capital - PwC
 - Operating and capital costs – Steer/Helios
 - Pensions – the Government Actuary's Department (GAD)
 - Review of further evidence provided by NERL - GAD

¹³ [CAP 1511](#) - Strategic outcomes for the economic regulation of NERL 2020-2024: discussion document (April 2017)

¹⁴ [CAP 1593](#) - Guidance for NERL in preparing its business plan for Reference Period 3: Consultation document (September 2017)

¹⁵ [CAP 1625](#) - Guidance for NERL in preparing its business plan for Reference Period 3 (January 2018)

¹⁶ RP3 Customer Consultation Working Group [Report of the Co-Chairs](#) (October 2018)

¹⁷ NERL [RP3 business plan](#) 2020-2024 (October 2018) and [appendices](#)

- Cost allocation and non-regulated revenue – Cambridge Economic Policy Associates (CEPA)
 - Financial model assurance for draft proposals – Grant Thornton
 - Updated financial model assurance for final proposals – Grant Thornton
 - Review of Service and Investment Plan (SIP) process – Chase Partners
- 1.27 In addition to the NERL-focussed process, the Met Office has developed and consulted on its RP3 business plan proposals, which was supported by a stakeholder consultation meeting in September 2018.¹⁸
- 1.28 We published our draft performance plan proposals in February 2019. We undertook an eight-week consultation period, which included bilateral and multilateral meetings with stakeholders.
- 1.29 At the end of the consultation period we received ten written submissions from stakeholders. These are published on our [website](#). A summary of stakeholder feedback to our draft proposals, with references to where we have addressed this in our final decisions, will be published in due course.
- 1.30 As previously stated, a key strategic consideration for the development of our RP3 decisions has been to support the AMS. The strategy and associated policy was developed through 2017 and 2018, before a process of public engagement ahead of being finalised and published in December 2018.¹⁹ We have taken account of the development of the strategy as we have developed our RP3 decisions.

EU targets

- 1.31 The performance regulation requires that national targets are consistent with EU-wide targets. The European Commission (the Commission) adopted the RP3 Union-wide performance targets on 29 May 2019.²⁰
- 1.32 As the Commission's EU targets were not available at the time we published our draft proposals for consultation, where possible we have used the PRB's EU target proposals to provide context for our draft decisions.

¹⁸ <https://www.metoffice.gov.uk/aviation/our-responsibilities-to-aviation>

¹⁹ [CAP 1711](#) – Airspace Modernisation Strategy (December 2018)

²⁰ [COMMISSION IMPLEMENTING DECISION \(EU\) 2019/903](#) of 29 May 2019 setting the Union-wide performance targets for the air traffic management network for the third reference period starting on 1 January 2020 and ending on 31 December 2024

NERL licence modifications

- 1.33 To give effect to the NERL UK and Oceanic final decisions under the Transport Act, it is necessary to modify a number of conditions contained in the NERL licence. Table 1.2 below lists the key conditions we propose to modify to implement our RP3 decisions. Associated draft modifications are set out in Appendix H.

Table 1.2

Condition	Modification
10	Service and Investment Plan Independent reviewer Capital expenditure delivery incentive
10a	New condition on airspace modernisation
21	UK en route price control, including determined costs, service quality targets and incentives
21a	London Approach price control
22	Oceanic price control

- 1.34 To give effect to the licence modifications, the Transport Act requires that NERL must give their consent and we must conduct a 28-day statutory consultation. If NERL does not consent, we expect to make a reference to the Competition and Markets Authority (CMA).
- 1.35 If we wish to change the targets contained in the performance plan as a result of a reference to the CMA, we may (in conjunction with the DfT) seek to revise our targets under Article 18 of the performance regulation.

Structure of this document

- 1.36 The remainder of this document is structured as follows:
- Chapters 2, 3 and 4 set out our final decisions for NERL's outputs in respect of Safety, Environment and Capacity, including – where appropriate – financial incentives;
 - Chapter 5 explains our efficiency challenge for NERL's en route Determined Costs and Chapter 6 sets out our final decisions on the overall UK cost efficiency target, as well as DfT, MET and CAA Determined Costs;
 - Chapter 7 discusses financeability issues, including our approach to the RAB, regulatory depreciation and NERL's cost of capital, which are key revenue building blocks in the calculation of NERL's price control;

- Chapter 8 sets out our final decisions for the London Approach service, including the scope of the London Approach charge;
- Chapter 9 sets out our approach to addressing uncertainty during RP3, including traffic and costs risk sharing, as well as funds and regulatory mechanisms to support airspace modernisation;
- Chapter 10 addresses terminal ANS; and
- Chapter 11 sets out our final decisions for the Oceanic price control.

- 1.37 Appendices providing detailed supporting information, are provided in a separate document – [CAP 1830a](#).
- 1.38 Unless otherwise stated, all financial figures throughout the document are stated in 2017 CPI prices.

Chapter 2

Safety

Our final decisions reflect the overriding importance of safety and:

- NERL shall meet fully the EU-wide safety targets:
- Level C in the safety management objectives 'safety culture', 'safety policy and objectives', 'safety assurance' and 'safety promotion'; and
- Level D in the safety management objective 'safety risk management'.
- NERL should also establish the more ambitious internal aspirational safety targets as discussed in its RP3 business plan.

Introduction

- 2.1 Safety is the overriding objective under the performance scheme and Member States must have regard to safety when developing performance plans.
- 2.2 Section 8 of the Transport Act also places duties on NERL including to ensure that a safe system for the provision of authorised air traffic services in respect of a licensed area is provided, developed and maintained. We have a primary duty under section 2 of the Transport Act to exercise our functions so as to maintain a high standard of safety in the provision of air traffic services. We consider that our performance plan decisions meet this duty and enable NERL to continue to maintain a safe service.
- 2.3 This chapter:
- summarises the approach to aviation safety in the UK;
 - sets out the requirements under the performance regulation regarding safety, including the KPI against which NERL's safety performance will be monitored and the EU-wide targets;
 - summarises our draft proposals and stakeholder responses for the safety KPI; and
 - sets out our final conclusions and decision on the RP3 safety KPI target and the additional indicators against which NERL's safety performance will be monitored in RP3.

UK approach to safety

- 2.4 The UK's State Safety Programme (SSP)²¹ is developed by the CAA, in conjunction with the DfT, the Air Accidents Investigation Branch, the Ministry of Defence (MoD) and Air Safety Support International. This is in accordance with the International Civil Aviation Organisation (ICAO) requirement for the UK to put in place an SSP to regulate and oversee the UK's aviation system. The SSP sets out the UK's approach to aviation safety, with the following objectives:

No accidents involving commercial air transport that result in serious injuries or fatalities. No serious injuries or fatalities to third parties as a result of aviation activities.

- 2.5 The UK aims to achieve this through State safety objectives that:

- protect people from aviation safety risks;
- reinforce the UK position as a global leader in aviation safety; and
- positively influence aviation safety through collaborative working with the UK's international partners.

- 2.6 The DfT is in the process of developing a new Aviation Strategy. The SSP is a key component of this, and it will be updated to reflect this evolving strategy. The DfT has agreed that the coordination of the UK SSP should be undertaken by the CAA.

- 2.7 Post Brexit, the stated preference of the UK Government and the CAA is that the UK remains part of the European Aviation Safety Agency (EASA) aviation safety system. While this remains our position, we are preparing for the possibility of a no-deal Brexit, under which we would recognise EASA certificates, approvals and licences for use in the UK aviation system and on UK-registered aircraft at least for a period of up to two years following Brexit.

SES requirements

- 2.8 The performance regulation requires targets to be set for ANSPs at national level against one KPI, Effectiveness of Safety Management (EoSM).²² The EoSM KPI is measured by the level of implementation of the following management objectives by the ANSP:

- a. safety policy and objectives;

²¹ <https://www.caa.co.uk/Safety-initiatives-and-resources/How-we-regulate/State-safety-programme/Introduction/About-the-programme/>

²² Annex 1, section 2, 1.1 of the performance regulation

- b. safety risk management;
- c. safety assurance;
- d. safety promotion; and
- e. safety culture.

- 2.9 Achievement of the safety management objectives is measured by verified responses to questionnaires. For each question, the response should indicate the level of implementation of each objective, characterising the level of performance of the respective organisation.
- 2.10 The approach to EoSM for RP3 has been modified from RP2, in effect amending the notional target levels and effectiveness scores. The Commission has noted that the framework in RP3 is more stringent than in RP2 which is reflected in the approach taken to setting the RP3 EU-wide targets.²³
- 2.11 The Commission has also noted that it has entrusted EASA to update compliance and guidance material to monitor and ensure the correct implementation of the safety indicators.

CAA draft proposals and stakeholder feedback

- 2.12 Our draft proposals set out our intention to set a UK EoSM target that was consistent with the EU-wide targets, which had not been adopted at the time of publishing our draft proposals. This was also the approach set out in NERL's RP3 business plan.
- 2.13 The adopted EU-wide targets for the RP3 safety KPI, to be achieved by the end of 2024, are:²⁴
- At least Level C in the safety management objectives 'safety culture', 'safety policy and objectives', 'safety assurance' and 'safety promotion'; and
 - At least Level D in the safety management objective 'safety risk management'.
- 2.14 NERL agreed with the proposal to adopt EU-wide targets at national level.
- 2.15 IAG noted that it was appropriate for NERL to develop and implement internal aspirational safety targets that exceed those set by the EU.

²³ Commission Implementing Decision (EU) 2019/903 of 29 May 2019, para (10)

²⁴ Commission Implementing Decision (EU) 2019/903 of 29 May 2019, Article 2

CAA final conclusions

- 2.16 Our final decision is to adopt RP3 EoSM targets consistent with the EU-wide targets - specifically that by 2024, NERL shall achieve at least level C in the safety management objectives 'safety culture', 'safety policy and objectives', 'safety assurance' and 'safety promotion'; and level D for the 'safety risk management' objective. This is also the approach proposed in NERL's RP3 business plan. Given NERL's strong historical performance, we expect them to achieve the EU-wide target.
- 2.17 NERL's RP3 business plan notes it will also set internal safety targets at a more detailed level. We support the inclusion of this initiative as part of NERL's business plan and will continue to monitor progress through oversight by our Safety and Airspace Regulation Group (SARG). We also expect that NERL will report on its safety performance through the Service and Investment Plan (SIP) process and the Condition 11 service standards reporting requirements under its licence.

Indicators for monitoring

- 2.18 In addition to the KPI, there are five safety indicators for monitoring under the performance scheme during RP3:
- The rate of runway incursions at airports located in a Member State.
 - The rate of separation minima infringements within the airspace of all controlling air traffic services unit in a Member State.
 - The rate of runway incursions at an airport calculated as the total number of runway incursions with any contribution from air traffic services (ATS) or Communication, Navigation and Surveillance (CNS) services with a safety impact that occurred at that airport.
 - The rate of separation minima infringements within the airspace where the ANSP provides ATS, calculated as the total number of separation minima infringements with any contribution from ATS or CNS services with a safety impact.
 - Where applicable, the use of automated safety data recording systems by ANSPs as a component of their safety risk management framework.
- 2.19 We will continue to monitor and report annually to the Commission on these indicators.

Chapter 3

Environment

Our final decisions reflect the importance of environmental performance to users:

- For RP3, we have set a KEA flight efficiency target on the basis of continuing improvements in NERL's performance.
- We have set the 3Di efficiency target on a similar basis but moderated the financial incentives associated with this metric to address concerns about the proper functioning of this incentive.
- We support the proposals in NERL's business plan for it to better deal with the noise experienced by overflown communities.

Introduction

- 3.1 The performance scheme assesses environmental performance in terms of flight efficiency, as a proxy for carbon emissions. Flight efficiency can be improved in the short-term through the decisions that air traffic controllers make, such as tactically providing direct routings. In the long-term, more sustained improvements can be achieved through changes in airspace design and airspace modernisation that provide more efficient flight trajectories.
- 3.2 Although air transport has a significant impact on the environment in terms of carbon emissions and noise, the difference that NERL can make to these externalities by changing the way it provides its services is more limited. However, we expect NERL to take accountability for mitigating the environmental impacts of the services it provides, to the extent it is reasonable and practicable. Improved environmental performance and flight efficiency were recognised as a priority for airspace users in NERL's customer consultation process – along with the benefits of reduced emissions. More efficient flights also reduce fuel burn for airlines and costs for consumers.
- 3.3 This chapter:
- sets out the requirements under the performance regulation regarding environmental performance;
 - sets out our draft proposals for the environmental KPI and additional 3Di metric, including the financial incentive that will be applied to NERL's 3Di performance;
 - summarises stakeholder feedback and updates on developments subsequent to publication of our draft proposals;

- sets out our conclusions and final decision on environmental metrics that will be targeted and monitored in RP3; and
- discusses noise in the context of NERL's performance in RP3.

SES requirements and the KEA indicator

- 3.4 The performance regulation environment KPI is the horizontal en route flight efficiency of the actual trajectory (KEA). The target is applied at the local (national) level. KEA is defined as:
- a comparison between the length of the en route part of the actual trajectory derived from surveillance data and the achieved distance in local airspace, summed over Instrument Flight Rules (IFR) flights within or traversing the local airspace;
 - the 'en route part' refers to the distance flown outside a circle of 40 nautical miles diameter around the origin and destination airports; and
 - where a flight departs from or arrives at an airport outside the local airspace, the entry or exit points of the local airspace are used for the calculation of this indicator;
 - the indicator is calculated for the whole calendar year and for each year of the reference period, excluding the ten highest and ten lowest daily values.
- 3.5 Performance plans may contain financial incentives, with a view to encouraging better performance. In respect of the environment, the performance regulation allows flexibility in the design and application of incentives.

CAA draft proposals and subsequent developments

- 3.6 Consistent with our approach to RP2 we proposed to not apply a financial incentive on KEA, but instead to apply one to the 3Di metric (discussed below).
- 3.7 The EU-wide target for KEA and the associated (national) reference values were not available when we published our draft proposals. These are now available²⁵ and are the average horizontal en route flight efficiency of the actual trajectory (measured as average additional distance flown compared to the great circle distance) and shall not exceed the following percentages: 2.53 % in 2020, 2.47 % in 2021, 2.40 % in 2022, 2.40 % in 2023 and 2.40 % in 2024.
- 3.8 In March 2019 we asked NERL to develop a proposal for KEA, mindful of the expected EU target.
- 3.9 NERL's proposals considered the relationship between traffic level and KEA to estimate future performance. Their analysis concluded that traffic growth would

²⁵ Commission Implementing Decision (EU) 2019/903 of 29 May 2019, Article 3

generate a continuous increase in inefficiency throughout RP3. The proposed targets appeared to be solely based on the increasing traffic forecast and the proposal did not refer to the implementation of Free Route Airspace (FRA) or other investments or interdependencies that may affect KEA.

- 3.10 Taking account of the limited time between the availability of the Member State reference values and the need to make our final decision, we sent a working note to stakeholders seeking feedback on proposed UK KEA targets.²⁶

Stakeholder feedback

- 3.11 We received two responses to the working note on KEA, from NERL and Virgin Atlantic.
- 3.12 NERL welcomed our proposal to base the proposed target on domestic KEA scores but still considered them challenging, in particular the Network Manager (NM)-estimated improvement rate following FRA implementation. NERL also set out its concerns with the EU-wide target, including:
- the RP3 starting point, which assumed that the EU will reach its RP2 targets (which it has not);
 - the NM's structural assessment of how airspace changes will affect KEA;
 - the possible overlap in NM's assumptions of airspace changes. NERL considers the majority of these will be delivered by end of RP2 and questions the steep improvement rate in RP3; and
 - that the NM's proposal assumes no constraints due to military activity.
- 3.13 Virgin Atlantic made no specific comments on our KEA proposal but asked us to consider whether a read-across between the 3Di metric and KEA could be established to enable all stakeholders to make a link between the UK and European efficiency measures.
- 3.14 Although no specific proposals were made on KEA in our draft proposal, Ryanair did make a general remark in its consultation response that it considered the adopted EU targets unambitious and considered that FRA and other SESAR funded projects mean NERL should achieve improved efficiency levels in RP3.

CAA final conclusions

- 3.15 The NM estimated the FRA roll-out to generate a 4% year on year improvement at the start of RP3 until 2022. However, as set out in NERL's business plan and consistent with legally binding deadlines, full FRA will only be operational in the

²⁶ This is published on our [website](#).

UK from winter 2021/22. We therefore propose to apply this expected improvement to 2023 and 2024.

3.16 We consider that NERL's proposed KEA target does not represent a sufficiently challenging target as it appears to focus on traffic growth and does not take account of the implementation of FRA. Our final decision is to set the target based on historical national trends (of around 0.2% improvement year on year) for the first three years of RP3 after which a step-change is expected (of around 4% improvement year on year) to account for the full roll out of FRA (as discussed above).

3.17 Our final decision on the RP3 KEA targets are set out in the table 3.1 below:

Table 3.1: CAA final decision on target KEA performance in RP3

	RP2					RP3				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
UK actual	3.93%	4.38%	4.15%	4.08%	N/A	N/A	N/A	N/A	N/A	N/A
NERL proposal					4.18%	4.23%	4.25%	4.27%	4.29%	4.30%
EC reference value				4.08%	N/A	3.53%	3.39%	3.25%	3.25%	3.25%
CAA final decision				4.08%	4.05%	4.06%	4.05%	4.04%	3.88%	3.72%

Source: CAA

3.18 We do not intend to apply a financial incentive on KEA but will do so on the 3Di metric (discussed below). We will continue to report annually to the Commission on KEA performance.

3.19 We also acknowledge the request from Virgin Atlantic to establish a link between KEA and 3Di. It is not clear that this is practicable given the differences in these metrics, but we will continue to engage with the EU and encourage further improvements in the KEA metric.

Additional UK indicator – 3Di

3.20 The performance regulation allows NSAs to implement additional environmental KPIs. Consistent with our approach to RP1 and RP2, we have set a target for an additional domestic environmental KPI that encompasses both vertical and horizontal flight (in)efficiency, referred to as 3Di.

3.21 At an operational level, 3Di encourages NERL to provide efficient routing both horizontally and vertically, in the climb, cruise and descent phases of flight. It also incentivises NERL to work with other ANSPs to provide as direct as possible 'point to point' flights from beyond and through UK airspace. At a more strategic level, it encourages NERL to consider airspace redesign to promote fuel efficient

(direct) routes too. The more efficient the routes NERL provides, the lower their three-dimensional inefficiency (3Di) score.

CAA draft proposals

- 3.22 In its RP3 business plan NERL proposed to continue to use the 3Di metric as the main measure against which its environmental performance is assessed in RP3, with KEA retained for monitoring purposes only. This approach was supported by airspace users in the CCWG Co-Chairs' Report.
- 3.23 NERL's RP3 business plan included a 3Di target range for RP3 consistent with the RP2 targets, after making a series of adjustments:
- exclusion of training, positioning, surveillance, calibration flights and other non-revenue flights;
 - exclusion of diversions due to runway closure;
 - including vertical cut-offs: removing data below 7,000 feet for arrivals and 9,000 feet for departures;
 - including exemptions of up to 10 days where 3Di is significantly influenced by factors that NERL considers are outside of its control (such as air traffic control strikes in other countries, activation of abnormally large military exercises, severe thunderstorms);
 - adjustments to base data to neutralise the impact of changes to the volume of airspace or accuracy of data used for 3Di; and
 - modulated targets if traffic levels markedly diverge from the base traffic forecast.
- 3.24 Our draft proposals allowed only the first of these adjustments on the basis that such flights may have a disproportionately large impact on the 3Di score and do not typically seek to maximise flight efficiency. We considered that the remaining adjustments may sanitise the 3Di metric of any real insights into how NERL performs on flight efficiency given real operational and business constraints. The adjustments could also result in a disconnect between NERL's score in a year and users' experience in that year.
- 3.25 We proposed the following targets and incentive deadbands for the 3Di metric in RP3:

Table 3.2: CAA's draft proposal for 3Di targets and deadbands

	RP2 (recalculated for model changes)					RP3				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
NERL performance	29.5	29.7	29.0	28.6 ²⁷	N/A	N/A	N/A	N/A	N/A	N/A
Par value ²⁸	29.1	28.6	28.3	27.5	27.1	26.8	26.5	26.2	25.9	25.6
Lower bound of deadband	N/A	N/A	N/A	N/A	N/A	25.5	25.2	24.9	24.6	24.3
Upper bound of deadband	N/A	N/A	N/A	N/A	N/A	28.1	27.8	27.5	27.2	26.9

Source: CAA

3.26 We proposed a 1.0% improvement in 3Di target values relative to the previous year based on:

- a review of NERL's 3Di performance in RP2 (with the 3Di metric recalculated to exclude non-revenue flights);²⁹ and
- the latest traffic forecast available at the time and the operational improvements set out in NERL's RP3 business plan that are expected to improve flight efficiency, including airspace modernisation and the deployment of SES ATM Research (SESAR) technologies.

3.27 This translated to approximately a 0.3 reduction in the par value annually. We also proposed a deadband of +/-5% for RP3, as in RP2. Beyond the deadband, the incentive will follow a smooth sliding scale until +/-25% of the target (narrowed down from 28% in RP2) at which point maximum financial bonus or penalty (0.5% of Determined Costs) will apply.

Stakeholder feedback

3.28 NERL considered our proposed 3Di targets were unachievable and identified a number of concerns, including that we had not allowed the adjustments they have proposed, difficulties of maintenance of RP2 level targets (in light of increasing traffic) and that airspace design change programmes would not deliver improvements until late in RP3. It stated that the RP3 start point for the

²⁷ The 2018 figure in the draft proposals of 28.7 was based on data to the end of October 2018. The actual 2018 performance was 28.6, once adjusted downwards by 0.6 (see footnote below).

²⁸ The par value for RP2 as well as NERL's actual performance have been adjusted downwards by 0.6 to reflect the exclusion of various types of non-revenue flights.

²⁹ Note that since the proposed change to the calculation of 3Di would only apply from the start of RP3, it has no impact on how NERL's performance in RP2 is assessed.

1% improvement should be based on actual performance at the end of RP2, i.e. the latest 2019 estimate, rather than RP2 targets.

- 3.29 In respect of the proposed adjustments we had not accepted, NERL stressed the importance of the vertical cut-off and considered that to not allow this contradicted UK Government policy which prioritises noise impact over fuel efficiency below 7,000 ft. They also pointed to airspace user support to exclude from the 3Di metric factors NERL identified as being outside of its control.
- 3.30 NERL also said that we had not justified the narrowing of the sliding scale from 28% to 25%.
- 3.31 The airline community generally supported our draft proposals and expressed disagreement with NERL's proposed adjustments.
- 3.32 IAG supported the continuation of the 3Di metric and noted it preferable to the KEA measure. However, it raised concerns with NERL's business plan proposal to maintain the target at RP2 levels given that NERL underperformed but kept within the bounds of the incentive scheme. IAG welcomed our proposals to disallow NERL's proposed adjustments to the metric. IAG also opposed bonuses in principle and considered that a fair return is sufficient for meeting targets.
- 3.33 Ryanair agreed that the 3Di metric is suitable for measuring environmental efficiency in UK airspace but considered the targets could be more ambitious given maturity of the metric and FRA provisions. It proposed a target for RP3 that followed an improvement rate calculated from 2015 actuals to the 2019 target, resulting in a 2024 target of 25.3 vs. our proposal of 25.6. Ryanair also suggested the bonus pot should be reduced to 0.5% of Determined Costs and the penalty maintained at 1%.
- 3.34 Prospect urged us to review the adjustments to the metric proposed by NERL to ensure the metric did not become irrelevant and demotivating to operational staff. It gave a number of examples to illustrate its concerns, including the high workload situations that are experienced by staff during severe weather events when flights diverted for safety reasons should not count against the 3Di metric.
- 3.35 PCS broadly agreed with our approach to the 3Di metric and welcomed the exclusion of certain types of flight. However, it considered the remaining adjustments should also be adopted, especially with regards to diversions and exceptional events where staff should prioritise safety over flight efficiency.

CAA final conclusions

- 3.36 We welcome the continued support from stakeholders to focus incentivising environmental performance on the UK-specific 3Di metric, as a measure of assessing flight efficiency in UK airspace.

Adjustments

- 3.37 Although airspace users voiced tentative support for refinements at the time of NERL's customer consultation, these were conditional on their involvement in the process of defining such refinements, which we understand did not take place based on user responses to our consultation which opposed adjustments.
- 3.38 We maintain our draft proposals position on the various adjustments to the 3Di metric proposed by NERL. While NERL may not have direct control over certain factors that influence the 3Di score, we consider it is important that NERL continues to consider flight efficiency in responding to these factors.
- 3.39 We consider that the value to airspace users of the 3Di metric above the KEA is its vertical component and the fact that it is a gate-to-gate metric. Excluding the vertical cut off adjustment means the score is more representative of airlines' actual experience. We also have full confidence in NERL staff prioritising safety at all times and especially in unexpected and complex situations (such as runway closures or extreme weather events).

Incentives

- 3.40 Given stakeholders concerns about our approach to calculating the metric, we propose to reduce the strength of the incentive scheme. The potential for bonus and penalty will be capped at +/-0.5% of Determined Costs, reduced from +/-1% in our draft proposals.
- 3.41 We propose to maintain the draft proposal of narrowing the sliding scale for the incentive from 28% to 25%, at which point maximum bonus or penalty will be reached. This was proposed given the changing basis of calculation of the 'pot' of the incentive from a percentage of revenues in RP2 to a percentage of Determined Costs in RP3. With the latter being historically lower than the former, we consider maintaining 1% efficiency improvement along with tightening of the incentive sliding scale would make the strength of the incentive more consistent between the periods. Further information on the calculation of the 3Di incentive rate is set out in Appendix D.

Improvement rate

- 3.42 We maintain that the 1% improvement rate on the previous year's performance set out in our draft proposals is an appropriate rate for NERL to aim for. NERL succeeded in maintaining this improvement throughout RP2, despite considerably higher outturn traffic.
- 3.43 To establish the starting point for the RP3 target, and as suggested by NERL, we have taken into account Q1 and Q2 2019 data made available in NERL's quarterly reports. This indicated that NERL's year-to-date 2019 performance was 28.1 (once adjusted for the exclusion of non-revenue flights). We consider it

appropriate to review the starting point used in our draft proposal and apply the 1% improvement rate to the latest available 2019 data.

- 3.44 The final RP3 targets and incentive deadband values for 3Di are illustrated in the table below.

Table 3.3: CAA's final decision for 3Di targets and deadbands

	RP2 (recalculated for model changes)					RP3				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
NERL performance ³⁰	29.5	29.7	29.0	28.6	28.1 ³⁰	N/A	N/A	N/A	N/A	N/A
Par value ³¹	29.1	28.6	28.3	27.5	27.1	27.8	27.5	27.3	27.0	26.7
Lower bound of deadband	N/A	N/A	N/A	N/A	N/A	26.4	26.2	25.9	25.6	25.4
Upper bound of deadband	N/A	N/A	N/A	N/A	N/A	29.2	28.9	28.6	28.3	28.1

Source: CAA

Management of changes and the annual review of the 3Di model

- 3.45 NERL will be required to maintain a consistent method for calculation and the input measurements that affect the value of the 3Di value throughout RP3 and any further measurement or method changes NERL wishes to make to the model in RP3 should not be incorporated into the regulatory reporting.
- 3.46 Where unavoidable changes to the input measurements occur as a by-product of operational developments (for example, changes to the radar processing data) and these cannot be implemented in a manner that allows for parallel reporting, we expect to be fully informed of such changes prior to implementation.
- 3.47 The annual review process tests whether the model that was used to set the RP3 targets remains sufficiently representative of NERL's operating environment and is a suitable basis for the incentive.
- 3.48 The financial incentive on 3Di does not apply in a year in which the test 3Di model has failed. If the test 3Di model fails in two consecutive years, the 3Di incentive will automatically be withdrawn for the remainder of RP3.

³⁰ Based on Q1-Q2 data

³¹ NERL's actual performance as well as the par value for RP2 have been adjusted downwards by 0.6 to reflect the exclusion of various types of non-revenue flights and allow comparability with RP3 targets

- 3.49 Details of the annual review are contained in the 3Di Annual Review Protocol.³² These will be revised ahead of RP3 to reflect the adjustment to the metric for non-revenue flights and will set out the process for unavoidable changes to the input measurements which occur as a by-product of operational developments (discussed above). The Protocol will form part of our statutory consultation on NERL licence modifications.

Indicators for monitoring

- 3.50 The performance regulation requires the monitoring of a number of environmental indicators:³³
- horizontal en route flight efficiency of the last filed flight plan (KEP) – applicable at the European Network Management level and not considered further in this document;
 - horizontal en route flight efficiency of the shortest constrained trajectory;
 - additional time in the taxi-out phase;
 - additional time in terminal airspace; and
 - share of arrivals applying Continuous Descent Operations (CDO).
- 3.51 We will continue to monitor and report annually to the Commission on these indicators.
- 3.52 The performance regulation also requires the monitoring of the ratio of the number of arrivals performing a CDO from a reference point at a height above ground defined by the NSA, and the total number of arrivals. The Eurocontrol Performance Review Commission has proposed harmonised monitoring of CDO from 7,000 feet. The UK Arrivals Code of Practice³⁴ establishes 5,500 feet above aerodrome level for monitoring of CDOs.
- 3.53 In our draft proposals we set out our intention to define the CDO monitoring threshold as 5,500 feet above aerodrome level, consistent with the definition from the Arrivals Code of Practice, as this will avoid flights being recorded as non-CDO due to any level segments that might occur as a result of the 6,000 feet transition altitude (TA) or routine holding at flight level 70 (FL70) in the London airport holding stacks.

³² RP2 3Di Protocol is available on the CAA website under NERL's Licence and can be accessed here: <http://www.caa.co.uk/WorkArea/DownloadAsset.aspx?id=4294974171>

³³ Annex I, section 2, 2.2 of the performance regulation

³⁴ [Noise from Arriving Aircraft: An Industry Code of Practice](#). The Arrivals Code of Practice is a voluntary Code of Practice that has been compiled by a group representing airlines, air traffic control, airports, the CAA and DfT (November 2006)

- 3.54 Following feedback from IATA that we should consider adopting the harmonised threshold applied by Eurocontrol, and mindful of the benefits of benchmarking, we consider it appropriate to measure the rate of CDOs from the pan-European threshold of 7,000 feet, in addition to the UK-specific threshold of 5,500 feet. The comparison of the two metrics over time will also allow monitoring of the impact of TA or routine holding.

Noise

- 3.55 There are important interactions between flight efficiency and the noise impacts on overflown communities. For example, departure routes from several UK airports are fixed up to 4,000 feet in order to minimise the noise impact and this may constrain the extent to which flight efficiency could be maximised at lower heights.
- 3.56 We set out our expectations for NERL's RP3 business plan with regard to noise and the trade-off between flight efficiency and minimising noise impact, stating that NERL should expect to abide by existing and emerging DfT policy and CAA requirements on noise, including in relation to airspace design, the redistribution of air traffic and any new requirements from the DfT's Aviation Strategy.³⁵ We also indicated that NERL should expect to take account of noise in designing their operational activities (within the framework of safety, policy and process requirements) and to work with wider stakeholders as part of the UK airspace design and implementation masterplan, in support of our AMS, to identify opportunities to mitigate noise impacts.
- 3.57 In its RP3 business plan NERL said it would:
- work collaboratively with local airports and airlines to mitigate the impacts of noise on communities, recognising difficult trade-offs between reducing noise and operational efficiency and the commercial interests of airlines;
 - develop new data and processes to analyse noise mitigation options when making changes to procedures or airspace; and
 - expand its community engagement strategy.
- 3.58 We support NERL's proposals in relation to these matters and, in the context of the AMS, will monitor their progress. While we do not make any specific proposals in respect of noise as part of the performance plan, we note that NERL has been asked to reflect noise reduction in our joint (with DfT) commission for an airspace change masterplan.

³⁵ [Letter](#) from Paul Smith, CAA to Martin Rolfe, NATS (25 September 2018)

Chapter 4

Capacity

The availability of sufficient airspace capacity is very important to users as shortages of capacity can cause delays. Airspace capacity is measured and NERL is incentivised in terms of delays. The final decisions which follow:

- adopt average targets for the C1 to C3 capacity metrics consistent with targets published by the EU in May 2019 but reprofile between years to better support the introduction of systems necessary to allow airspace change;
- have reduced the bonuses available to NERL under the incentive arrangements given the concerns expressed by stakeholders about the operation of these arrangements; and
- increased the number of transition days available to NERL from 75 to 100 to support airspace modernisation.

Introduction

- 4.1 The performance scheme measures airspace capacity by the delays incurred by aircraft using en route ANS. While users prefer experiencing fewer and shorter delays, there is a level of “efficient delay” beyond which the cost of reducing delays is likely to exceed the value that users place on avoiding delay.
- 4.2 It is NERL’s responsibility to deliver a quality service in line with airspace users’ reasonable expectations. We expect that NERL will continue to perform in RP3 in the context of increased pressure on its performance from rising traffic and planned system and airspace changes. In the medium-term some of the programmes that NERL is expected to deliver in RP3 should result in improved capacity, particularly in Southern England. However, any changes to NERL’s operational systems will require very careful planning and mitigations to ensure safety and an appropriate level of service continuity.
- 4.3 This chapter:
- sets out the requirements under the performance regulation regarding capacity;
 - summarises our draft proposals for the RP3 capacity metrics and incentives;
 - summarises stakeholder feedback and updates on developments subsequent to the publication of our draft proposals; and

- sets out our final decisions on these matters.

Detailed information on the capacity KPIs and incentives can be found in Appendix D.

- 4.4 Capacity and resilience with regards to NERL's London Approach service is discussed in chapter 8.

SES requirements

- 4.5 The capacity KPI is the average minutes of en route air traffic flow management (ATFM) delay per flight attributable to ANS, calculated as follows:³⁶
- the en route ATFM delay is the delay calculated by the Network Manager, expressed as the difference between the estimated take-off time and the calculated take-off time allocated by the NM;
 - the indicator covers all IFR flights traversing the local airspace and all ATFM delay causes, excluding exceptional events; and
 - the indicator is calculated on the basis of calendar years for each year of the reference period.

We refer to this KPI as C1. The target is set at the national level.³⁷

- 4.6 The performance regulation also requires that Member States establish financial incentives for ANSP capacity performance. In the setting of financial incentives, the performance regulation allows for adjustments to be made to C1 (which is based on all causes of ATFM delay) to account for only ANSP-attributable delay.³⁸ Consistent with our approach to RP2, we refer to this adjusted metric as C2. The C2 measure is effectively a par value established on the basis of the C1 target that underlines the EU-mandated capacity incentive mechanism.
- 4.7 Financial incentives for capacity may be asymmetric, with the percentage cap on the value of penalties and bonuses to be determined by NSAs in advance of the reference period. While the performance regulation does not set a cap on the level of penalties on C2, they must be at least equal to the potential for bonuses. The performance regulation also allows the C2 target value to be modulated for variations in traffic.
- 4.8 The performance regulation also allows Member States to adopt additional indicators where these encourage ANSPs to achieve a high level of

³⁶ Annex I, section 1, 3.1 of the performance regulation

³⁷ In RP2 C1 is established at the FAB level. This is no longer a requirement under the performance regulation and the UK and Ireland have agreed to prepare national performance plans for RP3.

³⁸ These causes are ATC capacity (C), ATC routings (R), ATC staffing (S), ATC equipment (T), airspace management (M) and Special Event (P), as set out in the [Eurocontrol, ATFCM Users Manual](#)

performance. When aggregated with any financial incentive on the environment KPI, the incentive value of any additional capacity measures may have a maximum bonus value of 2% of Determined Costs and a maximum penalty value of 4% of Determined Costs.

CAA draft proposals

- 4.9 The CCWG Co-Chairs' Report noted that airlines generally supported NERL's RP3 business plan proposal to maintain the capacity targets for RP3 at the same levels as for RP2, with NERL providing more transparent and robust information on the impact of service improvements on costs.

C1 target

- 4.10 The EU-wide capacity target had not yet been adopted at the time of our draft proposals, but we considered there was value in proposing to maintain the C1 target (on all causes of delay) at the level targeted in RP2 of 0.23 minutes of delay per flight, as agreed between NERL and airlines during customer consultation.

C2 target and incentive

- 4.11 In its RP3 business plan NERL proposed that it would continue to target C2 performance at the same level as RP2 (an average level of ANSP-attributable ATFM delay of 0.18 minutes per flight), with the addition of a new special event transition delay mechanism that would exclude specified delays associated with technical transitions. This was also discussed and agreed in the CCWG Co-Chair's Report.
- 4.12 Our analysis of NERL's historical delay performance suggested NERL could achieve more ambitious C2 performance. However, taking into account airspace user agreement to NERL's proposal, the need to implement a significant airspace modernisation programme through RP3 and forecast traffic growth, our draft proposals maintained the target levels proposed by NERL of 0.18 minutes per flight.
- 4.13 Our draft proposals also introduced a modulation mechanism for C2 to account for significant changes in traffic as well as revisions to the reference value contained in the Network Operations Plan (NOP). Given new requirements under the RP3 performance regulation for symmetric deadbands around targets, our draft proposals included a +/-15% deadband and consequential changes to the sliding scale for the incentive.
- 4.14 We also proposed a moderate increase to the strength of the incentive and noted that: