Reference to the CMA of NERL RP3 price controls: CAA response to NERL's Statement of Case

CAP 1870

[RP3 reference CAA document 004]

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Executive summary

Introduction

1. In this submission we respond to the main points raised by NERL in its Statement of Case (SoC) as provided to the CMA on 28 November 2019. We focus on NERL's main paper and a small number of the key supporting documents that provide important new information. Our commentary seeks to explain how NERL's arguments and evidence should be understood in the light of the wider context for the RP3 review, our statutory duties under the Transport Act 2000 and the public interest. We deal with the most important points in this summary, with sections 1 to 9 of this paper providing further detail and covering the full range of issues raised by NERL.

Overview of the main issues raised by NERL and our response

2. NERL's key concerns about our final decisions for RP3 are described in the foreword and introduction to its SoC (and in general address areas similar to those identified in our initial submission[1]). In summary, NERL's key concerns[2] with our final decisions as they relate to its main price control are:

   a) insufficient allowance for the financial resources to achieve the major technology and airspace modernisation change programmes at the same time as maintaining appropriately high standards of operational resilience, service and performance;

   b) the imposition of disproportionate burdens on the business through the imposition of new governance incentives which are neither necessary, justified nor likely to deliver better outcomes; and

   c) not allowing NERL to earn a rate of return that adequately reflects the cost of capital for an efficient air navigation service provider (ANSP) over the RP3 period.

3. We find it difficult to reconcile the concerns expressed by NERL with a broad assessment of our final decisions for RP3. In relation to airspace modernisation we allowed NERL's forecasts of capital expenditure in full and made it clear that all efficiently incurred capital expenditure would be added to its Regulatory Asset Base (RAB). We also allowed all NERL's forecasts of a significant increase in

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1 CAP 1857 Reference to the Competition and Markets Authority of the NERL RP3 price controls [RP3 reference CAA document 002]

2 NERL, SoC, paragraph 3

operating costs for its main business over the first three years of RP3 and assumed only modest efficiency gains thereafter. In estimating its cost of capital, we have used an equity beta value of one and so its prospective shareholders rewards have been calculated on the basis of a typical quoted company, which is generous given NERL is a relatively low risk monopoly business with significant regulatory protections against key business risks.

4. NERL also expressed concerns with respect to our final decisions on its Oceanic price control (which makes up about 7% of its price control revenues in RP3). These matters are dealt with in section 8 of this paper.

5. Bearing the above in mind we remain of the view that the modest efficiency challenges for NERL and full allowances for airspace modernisation included in our final decisions for RP3 are in the public interest and are consistent with our statutory duties, including our primary duty to maintain high standards of safety in the provision of air traffic services. We explain our position in more detail below and in the following sections of this paper.

Overarching importance of safety

6. We agree with NERL on the progress made on safety since NERL's creation in 2001 including that Airprox incidents have fallen from an average of 4 category A and B incidents per year to an average of zero category A and B incidents per year.[3] We are also strongly of the view that an efficiently managed business, deploying its resources on the basis of a transparent assessment of options and the clear prioritisation of spending, will be best placed to maintain safety standards. In the light of this, and the modest nature of the operating efficiencies identified in our final decisions and the full protection for capital expenditure offered by the regulatory framework, we regard our final decisions as entirely consistent with our primary duty to maintain high standards of safety. Bearing the above in mind we reject the suggestion made by NERL that we have given undue weight to our customer (airspace user) and efficiency duties compared to our safety duty.[4]

7. The regulatory allowances and treatment of expenditures in our final decisions are relatively generous but in any case, an effective management team will always prioritise a high standard of safety irrespective of regulatory allowances. If there were to be any substantive new requirements that would involve levels of expenditure above those envisaged in our final decisions (and given the magnitude of the cost increases we have allowed this seems highly unlikely) it is for NERL to reprioritise its spending to address these issues, provided this does not jeopardise its service delivery. If this is not practicable then it would be for

[3] NERL, SoC, page 9

[4] NERL, SoC, paragraph 143

shareholders to fund these costs until an appropriate regulatory treatment can be agreed.

Importance of the cost of capital

8. The different assumptions on the cost of capital are the most material difference between our final decisions and NERL's revised business plan (RBP). Chapter 13 of NERL's submission deals with the cost of capital in detail. Key to NERL's arguments is that the differences in assumptions on the cost of capital (and the cost of equity in particular) are implausibly large when compared to the assumptions made in setting NERL's RP2 price control in 2014 – because total market return (TMR) has not reduced significantly and/or the systematic risk faced by investors from investing in NERL's business has not fallen.

9. We have approached our assessment of the cost of capital on the basis of our statutory duties, including to protect users, to have regard to NERL's financeability and to promote economy and efficiency. This led us to conduct a wide-ranging assessment of the evidence currently available, including looking at longer-term historical trends as well current and forward-looking market evidence. We did not conduct our review using the assumptions made in RP2 as a base or starting point.

10. This is important in the context of the TMR where there has been an accumulation of evidence that suggests taking a more balanced approach to the assessment of evidence, including giving appropriate weight to current and forward-looking evidence as well as the more traditional analysis of historical returns. Therefore, we are not suggesting that the TMR has fallen by a fixed amount between 2014 and 2019, but rather the balance of evidence is now different, and it is appropriate to reconsider and recalibrate estimates of the TMR on this basis.

11. Similarly, in respect of asset and equity betas we took a fresh look at the evidence on beta values during the RP3 review – including the information that had recently become available for estimating equity betas directly from a listed ANSP. While we note our estimate of equity beta of 1 is somewhat below the 1.1 assumption made in setting NERL's RP2 price control it remains generous to NERL's shareholders. In particular it rewards investment in NERL on the same basis as the average equity investment in the market as a whole when NERL has very extensive protection from business risks, including:

    - it has a monopoly over the provision of en route air traffic services in the UK;
    - the costs of its defined benefit pension scheme are subject to cost pass-through arrangements;
    - it benefits from traffic risk sharing arrangements;

- the regulatory framework allows for the cost pass-through of all efficient capital expenditure; and
- the price control review process provides for the periodic resetting of its revenue allowances and the opportunity to take account of the latest information on cost drivers.

12. Bearing all of the above in mind it is clear there is no reasonable basis for NERL's suggestions that our approach to estimating the cost of capital is inconsistent with our financeability duty and produces an estimate of the cost of capital too low to reasonably incentivise investment. We remain of the view that the estimate for NERL's cost of capital in our final decisions is consistent with the public interest. We set out our response to NERL's arguments on the cost of capital in more detail in section 9.

Wider considerations

13. Not only do NERL's concerns about shareholder returns inappropriately colour its evidence on the cost of capital but they also appear to have a chilling effect on NERL's approach to a wide range of issues. We note that in describing issues relating to the cost of capital NERL suggests that *"setting the allowed rate of return at the right level allows NERL to recover its costs in full, including the efficient cost of raising finance"*.[5] In contrast we view shareholder returns as the reward for a business that stretches itself to meet efficiency targets and deliver for its customers across a full range of circumstances – not an entitlement for delivering a business plan that is based on significant increases in costs and the softening of service standards.

Airspace modernisation and wider governance

14. We understand the challenges of airspace modernisation and have made significant allowances for both operating and capital costs to facilitate airspace modernisation. We have also accepted the arguments put forward by NERL to make an allowance for the increased level of airspace change in the calibration of its capacity and quality of service targets. We note that effectively managing change is central to the requirements of an efficiently managed business, and in this context the allowances we have made look relatively generous to NERL and its shareholders.

15. In these circumstances, NERL's customers and the users of its services can reasonably expect governance and incentive arrangements that protect them from a failure to deliver by NERL. We accept that these arrangements – and the delivery incentive in particular – have the potential to create downsides for NERL, but only if it fails to deliver its part in airspace modernisation. The

[5] NERL, SoC, paragraph 41

incentives provide essential protections for airspace users given the important role NERL has in airspace modernisation and its failure to deliver and account for changes in its plans during the RP2 period. Furthermore, we are surprised that NERL is opposing additional governance arrangements that would give its users a greater role in decision-making, given that its customers will be well placed to help inform what services and investments are needed for NERL to most effectively meet the reasonable needs of users.

16. We set out our response to NERL's arguments on airspace modernisation and capital expenditure governance in more detail in sections 3 and 7.

Allowances for operating costs and capital expenditure

17. In relation to operating costs we note that our final decisions involved an approximate 2% reduction in operating costs compared to NERL's RBP. Even after our assumptions on efficiency, our projection of operating costs in 2024 (the last year of the RP3 control) is 15% higher in real terms than NERL's spending in 2017. There also appears to be scope for wide-ranging efficiency improvements by NERL – including in relation to its non-staff costs and non-operational staffing levels.

18. In the light of the above it appears there is no reasonable basis for NERL to suggest that with a 2% reduction in its RBP operating costs it *"would be unable to provide the headcount built into its business plan with the CAA's RP3 Decision, which would create risks to ongoing safety improvements, resilience and other aspects of operational performance"*.[6] In addition to the modest nature of the efficiency target, NERL's suggestions are counter to the established basis of the economic regulation of private sector monopolies. It is for management to strive to meet reasonably stretching efficiency targets while also delivering a safe and high-quality service and if in this context NERL is unable to meet efficiency targets, then shareholders should fund the shortfall. It is not for NERL's management to plan on the basis of taking risks with resilience or operational performance and they should not suggest that they might operate the business on this basis. We also note NERL's references to safety and while we have confidence that NERL's management team will remain appropriately focused on safety, the drafting of the SoC appears to create some unnecessary ambiguity with respect to these matters.

19. Bearing in mind our relatively generous operating cost allowances we suspect that NERL's narrative about the possible detriment from our assumptions is a response to shareholder pressure on NERL to deliver significant levels of outperformance. We strongly suggest that the softening of efficiency targets in this context would not be in the public interest and we are also of the view that

6 NERL, SoC, paragraph 15

appropriate targets and incentives on the quality of service and the delivery of airspace modernisation are appropriate to discourage NERL from inappropriately saving costs at the expense of its customers and the users of its services. Our response to NERL's arguments on operating costs are dealt with in more detail in section 5, quality of service incentives in section 4 and delivery incentives in section 7.

20. We also do not understand the points that NERL is making about our assumptions on its wider capital programme. While we made an overall 7 per cent reduction in its forecast of capital expendiure, the regulatory pass-through treatment of capital expenditure ensures that all efficient spending can be added to NERL's RAB and the costs recovered by NERL through its monopoly charges. We also tested the financeability of NERL's activities using a range of assumptions, which included scenarios with capital expenditure at the level envisaged in its RBP. Therefore, if NERL can demonstrate the efficiency of its spending it will be able to recover the associated level of costs and there can be no question of this approach jeopardising the public interest. We set out our response to NERL's arguments on capital expenditure in more detail in section 7.

NERL processes for customer consultation and finalising its business plan

21. More broadly we are surprised by the way NERL has characterised the process for finalising its business plan and its conduct during the price control review process. We note what NERL says in the foreword to its SoC that "*despite considerable efforts to bridge the gap between these approaches a compromise could not be reached*".[7] However, NERL's position in its SoC is almost identical to its RBP which in turn was almost identical to the initial business plan it produced in early 2018. Given this, it is not evident that it has made any meaningful efforts to compromise, nor has it revisited its plans in any meaningful way despite detailed feedback from stakeholders that it should do so, and nor has it produced evidence of real stretch or the efficiency targets that we would expect to see in a high-quality business plan.

22. NERL also makes numerous references to its customer consultation processes in its main SoC submission and repeatedly suggests that its approach to these matters justifies its RBP. We welcome the efforts NERL made to consult with its customers and other stakeholders but note that on the key building blocks of its price controls NERL failed to reach agreement with its customers,[8] including in relation to:

7 NERL, SoC, page 10

8 See the conclusions of RP3 Customer Consultation Working Group, Report of the Co-Chairs

- resource levels and operating costs;
- pension costs;
- assumptions on the scope for future productivity gains;
- capital expenditure costs; and
- the Oceanic price control.

Scope for outperformance

23. We have explained above our approach to establishing the modest efficiency targets in our final decisions and the allowances we have set to provide NERL the flexibility to play its full part in airspace modernisation. Consistent with this approach an effective management team could deliver its part in airspace modernisation and may also outperform our baseline assumptions on operating costs and quality of service. We also note that NERL says it has *" had to impose what we consider to be short term measures to hold back as many demands as possible on costs on a short-term basis, but avoiding measures which we believe will have irreversible effects on the viability of delivering NERL's RBP in RP3"*.[9] This indicates NERL is already targeting cost levels below its RBP and reinforces our view that NERL is seeking to argue for assumptions on costs and incentives that would allow it to claw back from its customers the reductions that we have made in setting its cost of capital and allowed returns between our RP2 and RP3 final decisions.

Decision-making framework and the public interest test

24. In chapter 3 of its SoC, NERL suggests that in our initial submission we had put forward an approach to this inquiry that indicated "*an inappropriate degree of restraint on the CMA's discretion in the context of a price control re-determination*". We invite the CMA to conclude that NERL has incorrectly characterised the procedure under s.12 of the Transport Act 2000 (TA 2000) in its SoC.[10] Similar to the regime examined by the High Court in *R. v Director General of Telecommunications Ex p. Cellcom Ltd* [1999] E.C.C. 314 ("ex p. Cellcom"), the TA 2000 does not envisage the CMA stepping into the CAA's regulatory role. This is clear from our responsibility to consider any CMA report following an investigation pursuant to s.12 and determine whether any modifications to licence conditions should be made (s.14(2) TA 2000).

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9 NERL, SoC, paragraph 39

10 NERL, SoC, paragraph 147

25. NERL seeks[11] to rely on the approach of the CMA in the *Bristol Water* decision.[12] This in fact supports our case, namely that the role of the CMA is to *review* the price control set by the regulator and consider whether it was right. In particular, at paragraph 3.18 the CMA noted that "*we decided that our approach should build on, but not be unduly constrained by, the analysis already carried out by Ofwat and Bristol Water. We also considered it important that our approach should form part of a coherent overall price control framework for Bristol Water, when taken together with other aspects of Ofwat's wholesale price control determinations for Bristol Water that we accepted for our determination*".

26. Further, in a number of places, NERL's criticism of our final decisions amount to a rationality challenge (see, for example, at SoC paragraphs 146 and 366). It is well-established that there is a high threshold for such a challenge, which will be particularly the case in the regulatory context of this referral.[13]

Other matters

27. NERL has raised a wide range of issues in its SoC (including some of limited materiality) and identified no areas where it expects to outperform its business plan assumptions. For completeness we deal with the main issues raised by NERL in the following sections and for convenience we address these issues in the same order as the 13 main chapters in NERL's SoC:

- section 1: background and context (SoC chapter 3)
- section 2: traffic forecasts (SoC chapter 4)
- section 3: Airspace Change Organising Group (SoC chapter 5)
- section 4: service quality and environmental targets (SoC chapters 6 and 7)
- section 5: operating costs and non-regulated revenue (SoC chapters 8 and 9)
- section 6: pension costs (SoC chapter 10)
- section 7: capital expenditure, incentives and governance (SoC chapter 11)
- section 8: Oceanic price control (SoC chapter 12)

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11 NERL, SoC, paragraph 180

12 *Bristol Water plc. A reference under section 12(3)(a) of the Water Industry Act 1991*. Report', October ('CMA (2015)'), available at https://assets.publishing.service.gov.uk/media/56279924ed915d194b000001/Bristol_Water_plc_final_determination.pdf.

13 See *ex p Cellcom*, pp.331-332 and 334-335 at [26]-[27] and [33] per Lightman J; and more recently *R. (on the application of Gwynt-y-Mor Offshore Wind Farm Ltd) v Gas and Electricity Markets Authority* [2019] EWHC 654 (Admin) at [87]-[89] and [158] per May J.

- section 9: cost of capital (SoC chapter 13).

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Section 1
Background and context

Chapter 3 of NERL's SoC covers what it describes as background and context. While many of these issues are picked up in more detail under the subsequent section headings (and we address them there), there are certain issues that are not captured there that require a response. We have concerns with:

- the way NERL characterises its role during RP2 and its failure to properly acknowledge its shortcomings in consulting with its customers and under delivery of important components of airspace modernisation during RP2;
- the suggestion that its business plan has largely been agreed by its customers, when in fact its customers have contested a wide range of the assumptions and deliverables that NERL included in its business plan;
- the incorrect assertion that NERL makes that we gave improper weight to our consumer duty in reaching our final decisions; and
- NERL's inappropriate characterisation of the redetermination process.

Introduction

1.1 The points highlighted are largely dealt with either in our Executive summary above or our original notice of reference and initial submission.[14] In this section we simply reference where the CMA can find our rebuttals of the points made by NERL in relation to:

- NERL's track record of consultation and delivery over RP2;
- its suggestion that customers have agreed its RBP;
- the suggestion made by NERL that we have given too much weight to protect consumers; and
- NERL's inappropriate characterisation of the redetermination process.

[14] NATS (En Route) Plc, Notice of Reference: Determination of price controls for the period 1 January 2020 to 31 December 2024 [RP3 reference CAA document 001] and CAP 1857 – Reference to the Competition and Markets Authority of the NERL RP3 price controls [RP3 reference CAA document 002]

The main points raised by NERL

Experience of RP2

1.2 NERL's commentary on its experience during RP2 fails to properly acknowledge two crucial factors – its failure to consult properly with customers (airspace users) on changes to its investment programme and the non-delivery of important elements of airspace modernisation. Our views are explained more fully in our initial submission, see in particular paragraphs 1.29, 2.61 and 2.62.

Customer consultation

1.3 NERL's suggestion that its business plan has 'broad customer agreement' does not appear to be accurate – see paragraph 22 in the Executive summary for further information.

Application of our statutory duties

1.4 NERL incorrectly asserts that we have misapplied our statutory duties. Paragraphs 6 and 7 in the Executive summary explain that we have taken the overarching importance of safety and our primary duty with respect to these matters fully into account in making our final decisions.

The redetermination process

1.5 We explain in paragraphs 24 to 26 in the Executive summary our view that NERL has mischaracterised the decision-making framework and the application of the public interest test in the redetermination process.

Section 2

Traffic forecasts

Chapter 4 of NERL's SoC discusses issues relating to the traffic forecast. Our main concerns with the views expressed are:

- NERL proposes to use its own traffic forecast as opposed to the STATFOR forecast that we used in our final decisions. Historically NERL's forecasts have been less reliable than STATFOR and NERL's forecasts uses assumptions that are not reliable. On this basis we conclude that the use of NERL's forecasts would not be in the public interest.;
- NERL misrepresent our rationale for using the STATFOR forecast by stating that it was due to the independence of STATFOR when in fact this was only a secondary consideration. Our primary rationale was that STATFOR's forecast has been more accurate in 2019 to date, and we also have concerns with the assumptions used in the NERL forecast.; and
- it appears the comparisons NERL makes between its forecasts and those of STATFOR are not on a like-for-like basis and may be misleading.

Nonetheless, the CMA may wish to consider the use of an updated forecast for the RP3 period and we understand that a revised forecast will be available from STATFOR in February 2020.

Introduction

2.1 In our final decisions, we considered both NERL's traffic forecast and the forecast from Eurocontrol's Statistics and Forecasting service (STATFOR) and decided to use STATFOR's forecast.

2.2 NERL's SoC makes two broad suggestions that we disagree with:

- it claims that we used the STATFOR forecast because of its independence and that it is 'consistent with Europe'.[15] However, these reasons were secondary and the main reason was that STATFOR has been more accurate in forecasting traffic in 2019 than NERL, and we also have significant concerns with assumptions that NERL uses in its forecasts; and

15 NERL, SoC, table 2, p.49

- it suggests that NERL's forecast is more robust than STATFOR's.[16]

2.3 We address these points below but agree with NERL that the CMA could take advantage of the updated traffic forecasts for RP3 in its redetermination as there have been material changes to the baseline and forecast drivers since the STATFOR February 2019 and NERL May 2019 forecasts. Nonetheless, if the CMA chooses to adopt an updated traffic forecast, it should also consider the impact of any changes in volumes on NERL's costs.

2.4 We also note the limited materiality of the difference in the previous forecasts – the STATFOR February 2019 forecast is 0.9% higher than NERL's May 2019 forecast for total service units.

The advantages of the STATFOR's traffic forecast

2.5 NERL says that we used the STATFOR forecast because of its independence and consistency with Europe. However, we were clear in our final decisions that the main reason was because the STAFOR forecasts was its greater accuracy in forecasting traffic for 2019. As discussed below, service unit levels at the start of RP3 will likely be 2% to 3% above the NERL forecast. The considerable underestimate of traffic in 2019 to date by the NERL's forecasting model suggests it would not form a reliable basis for a redetermination of NERL's price control and its use would not be in the public interest.

2.6 Both STATFOR and NERL forecasts have underpredicted growth in service units in 2019 to date, due to the particularly north-about location of North Atlantic tracks during 2019, which have led to longer distances flown by North Atlantic traffic. However, STATFOR has had a considerably smaller forecast error. Actual service unit growth in 2019 has been 3.4%[17] compared to STATFOR's forecast of 1.8% and NERL's forecast of 0.9%.

2.7 NERL notes in its SoC that, on the advice of the Met Office, the positioning of the jet stream should revert to a 5-year average.[18] NERL's forecast assumes that this is achieved by 2020 from a peak in northerly tracks in 2018.[19] We do not disagree that North Atlantic tracks are at a peak and are more likely than not to return to normal levels eventually, but there is no evidence that this will happen as soon as 2020.

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16 NERL, SoC, paragraph 183

17 Billings data obtained from Eurocontrol Central Route Charges Office (CRCO)

18 NERL, SoC, paragraph 173

19 Traffic Support Pack, (SOC011), p.30

2.8 Actual flight growth in 2019 has been 1.3%.[20] This is halfway between NERL's forecast (0.9%) and STATFOR's forecast (1.7%). However, we note that there has been downwards pressure on flights growth recently due to (i) the failure of Thomas Cook[21]; and (ii) UK GDP forecasts have been reduced recently. The fact that NERL's forecast growth is still lower than the actual suggests that its forecast is much less robust. Had these two events not happened, the actual figure would have likely been much closer to the STATFOR forecasts and the underlying STATFOR forecast appears more accurate and reliable.

2.9 Additionally, we note that in its SoC, NERL appears to make comparisons between the historical accuracy of the NERL and STATFOR forecasts that are not on a like-for-like basis and may be misleading. For example, NERL compares STATFOR's 2014 forecast with NERL's 2012 forecast.[22] A more appropriate comparison would have been NERL's forecast for RP2 from 2014. Moreover, NERL presents figures for the February 2019 STATFOR forecast that appear to be inconsistent with those published by STATFOR.[23]

The assumptions used by NERL in making its forecasts

2.10 We set out our concerns relating to the assumptions used in the NERL forecast in our final decisions and do not repeat this analysis in detail but note that the assumptions supporting NERL's modelling do not appear to be subject to rigorous independent peer review or verification. We have particular concerns about the assumptions on aircraft weight as explained further below.

2.11 Heathrow and Gatwick airports will both be constrained in RP3 and we would naturally expect to see growth in aircraft sizes at these airports as airlines respond to constraints on runway capacity. The DfT model on which NERL's forecast is based features a dynamic aircraft size module which, all other things being equal, will lead to a gradual move to bigger aircraft sizes at runway constrained airports. Unless NERL has disabled this functionality, NERL's passenger and flight forecasts will likely incorporate increased aircraft sizes in

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[20] IFR flight data obtained from Eurocontrol Network Manager
We note Service units have grown faster than flights because of the continuing trend in increasing weight factors observed in recent years, as well as increasing average distances flown. This pattern is also observed across Europe too, e.g. see page iii in EUROCONTROL's 'Seven-Year Forecast February 2019' https://www.eurocontrol.int/sites/default/files/2019-03/eurocontrol-7-year-forecast-february-2019-main-report.pdf

[21] Thomas Cook accounted for approximately 1% and 2% in winter and summer months respectively for both flights and service units. The failure of Thomas Cook will likely reduce flights and service units by 0.3% in 2019.

[22] NERL, SoC, figure 1, p.52

[23] Traffic Support Pack, (SOC011), P.19-21

the allocation of passengers. However, it appears NERL does not go on to adopt this assumption in its service unit forecast. This can be seen by the NERL forecast having identical flight and service unit growth from 2021 onwards. Historically, service unit growth has exceeded that of flights and with average maximum take-off weight (MTOW) increasing by 19% between 2002 and 2018 for the UK as a whole.[24]

2.12 While NERL puts forward the valid argument that the end of production of the A380 and retirement of B747s will reduce average weight,[25] these are used on a relatively small number of long-haul routes. Therefore, the increase in aircraft size at Heathrow and Gatwick airports as a result of runway constraints is likely to more than offset this.

2.13 STATFOR assumes some weight growth based on historical data for the UK. This captures some but not all of the effect of increased aircraft sizes at constrained airports – and represents a better basis for forecasting.

Updated traffic forecasts

2.14 We agree with NERL that the CMA should use an updated forecast in any redetermination. Both STATFOR and NERL should seek to take into account a number of factors in updating their forecasts, including (i) the loss of Thomas Cook; (ii) the lower GDP growth forecasts and (iii) forecast errors to date. Nonetheless, NERL may have an incentive to provide a lower forecast in its forecast update, to the extent that it believes this forecast will be used for any redetermination.

2.15 If the CMA chooses to adopt an updated traffic forecast, it should also consider the impact of any changes in volumes on NERL's costs.

2.16 We also note that EU performance regulation for RP3 requires that service unit forecasts be based on actual distance flown, rather than distances on a flight planned basis.[26] While such a forecast was not available when we made our final decisions, provisional work done by STATFOR suggested the impact in respect of the UK would be negligible. STATFOR's updated 'M3' forecast will be calculated on an actual distance flown basis. We believe that any updated forecast for RP3 that the CMA may use in any redetermination should be on an actual distance flown basis, consistent with the EU performance regulation.

24 Eurocontrol Service Units Dashboard – Average MTOW per flight (Index), reference year 2002, country UK

25 Traffic Support Pack, (SOC011), p.38

26 Seven-year forecast of flight movements and service units - annex 4, Eurocontrol, February 2019

Section 3

Airspace Change Organising Group (ACOG)

It is common ground between CAA and NERL that it is in the public interest to modernise the design of UK airspace and that this is reflected in government policy. Chapter 5 of NERL's SoC addresses the proposed roles and functions of NERL to establish, maintain and manage the Airspace Change Organising Group (ACOG), to write the airspace change masterplan for the UK (starting with a masterplan for changes in Southern England) and to design a programme management plan for its delivery to facilitate delivery of that modernisation.

It is our view (as well as that of the Department for Transport) that it is in the public interest for NERL to apply its expertise and experience in fulfilling the roles envisaged as the licensed monopoly provider of UK en route air traffic control services. NERL is uniquely placed to play a central role in delivering this programme, and it is important that it is held accountable for delivering the aspects of airspace modernisation that it is responsible for. However, we seek only to hold NERL to account for fulfilling its roles to the best of its ability within the landscape and framework within which it operates, including the policy landscape and levers available to it.

The main areas of disagreement between NERL and CAA relate to the status and funding of ACOG and accountability for the delivery of the airspace change masterplan.

Government policy, and the associated CAA strategy, to modernise UK airspace are not in scope of this reference. The issue in scope is the terms of the proposed licence condition imposed, in the public interest, to support that policy and strategy. In reaching its conclusions on these issues, the CMA will necessarily need to focus on those elements that fall within the NERL RP3 price control and associated licence modifications. In our view, if NERL's roles change as a consequence of the determination of our reference then necessarily the costs allowed will also change.

NERL and the CAA continue to discuss constructively the terms of the proposed licence condition on airspace modernisation and will inform the CMA in the event that we reach an agreed position and this element of the reference can be withdrawn.

Part 1 - Overview of airspace modernisation and the role of ACOG

3.1 Our comments on chapter 5 of NERL's SoC, in respect of ACOG, are quite detailed. To provide context, Part 1 of this section provides a high-level overview of airspace modernisation and how the role of ACOG fits in.

3.2 The UK Government has a public policy objective that the UK airspace should be modernised so that it can accommodate increasing volumes and types of aircraft safely and expeditiously (see Green Paper for its forthcoming Aviation Strategy).[27] It has directed the CAA to create an airspace modernisation strategy and plan to deliver this policy. This strategy was created, consulted on and published in 2018.[28]

3.3 One of the 15 initiatives to deliver this strategy and one of the most significant is the re-design of the UK's airspace structures – the roads in the sky that have not been fundamentally re-designed for many decades. Ownership for the design of these specific routes is split mainly between airports (for routes close to airports) and NERL (for upper airspace routes connecting airports and lower airspace in the London area).

3.4 To achieve this re-design, we need a single plan (the "airspace masterplan") that identifies all the places in which airspace design changes are required and the inter-dependencies between them. This coordinated plan is needed so that we and the Department for Transport (DfT) can take decisions about what changes are required in the best interests of the overall aviation network and the wider public, and not just in the interests of one individual airport or air navigation service provider. Together with DfT, we co-commissioned[29] NERL to prepare this airspace masterplan and reflected this commission in the proposed licence condition. NERL is, in our view, the appropriate body to undertake this activity. As the monopoly provider of air traffic services for UK en route and at some London airport approach services, airspace modernisation is a fundamental requirement of NERL's licensed activities. As such, it is the closest body in UK aviation to that of a network operator. Moreover, because of its role as the planner and deliverer of such UK en route and complex terminal air traffic services NERL holds the technical skills required to fulfil the role.

3.5 Given the large number of parties involved in contributing to the masterplan, including up to 17 airports and NERL itself for the upper and lower London airspace, we have asked NERL to put in place some additional governance and support arrangements for the creation of the masterplan. This is in the form of the Airspace Change Organising Group (ACOG). This group will operate as a unit within NERL but with an additional layer of governance (a Steering Committee) to guide it to act impartially and to facilitate the production of a

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

28 CAP 1711: Airspace Modernisation Strategy

29 Joint DfT-CAA commission letter dated 2 November 2018. Terms of the commission were published in December 2018 in Chapter 6 Paragraph 6.6 onwards of CAA's CAP 1711: Airspace Modernisation Strategy

masterplan that is in the interests of the whole airspace network and its stakeholders, and the wider public.

3.6 Within the framework set by this masterplan, we expect each airport wanting or needing to make an airspace design change, and NERL, to take forward those individual changes in accordance with the regulatory design process we have established. In the event that an individual airport chooses not to take forward an airspace design change that has wider network or stakeholder benefits, the Government is proposing to put in place a legislative power to enable that stakeholder to be directed to make the change or for another stakeholder such as NERL to prepare all or part of the proposal in order that the inter-related changes identified within the masterplan are kept on track. Whilst the proposed legislation is going through the parliamentary process we have proposed including in NERL's licence a provision that allows us (if necessary in the public interest) to instruct NERL to prepare all or part of any proposal. This is in the interests of ensuring there is a mechanism in place for delivering airspace design changes that are in the wider public interest.

Part 2 – Response to NERL's SoC

Introduction

3.7 DfT, CAA, NERL and the wider industry agree on the importance of airspace modernisation and that NERL has a key role to play in supporting elements of its delivery.

3.8 In our RP3 final decision, we introduced a new licence condition setting out the roles NERL should play. These were based on various trilateral discussions between the DfT, CAA and NERL and bilateral discussions between CAA and NERL. These discussions led to the initial 'commissioning' letter from the DfT and CAA (as airspace modernisation co-sponsors) to NERL, which made clear NERL's commissioned roles would be enshrined in a licence condition. NERL reflected these roles in its RP3 business plan.

3.9 Important components of the NERL role include:

1. the establishment, maintenance and management of an airspace change organising group (ACOG);
2. writing an airspace change masterplan with input from individual airports which will need to make airspace design changes to achieve airspace modernisation; and
3. delivering the airspace changes in the airspace for which NERL is the provider of UK en route air traffic control services.

3.10 In recognition of these roles, our final decisions included:

- NERL's full airspace programme capex;
- £15m of opex for the creation and management of the ACOG; and
- an Opex Flexibility Fund (OFF), that provides a contingency fund to, predominantly, support airspace modernisation related activities.

3.11 In its SoC, and in separate correspondence with us, NERL sets out its concerns and issues in relation to ACOG and the associated licence condition. This section responds to those areas where we disagree with or wish to clarify NERL's characterisation of the issues, in particular it covers:

- the status and funding of ACOG within NERL; and
- delivery of the airspace change masterplan.

3.12 The Government's policy and CAA strategy of UK airspace modernisation is not in scope of the CMA's investigation. The reference to the CMA is limited to whether the imposition of all or part of the proposed licence condition 10a is in the public interest and justified.

3.13 We note that if NERL does not take on the roles and activities envisaged in the licence modification and associated commissioning letter, we would expect there to be a corresponding reduction in the associated cost allowances provided for in the final decisions. To be specific, we mean that if NERL stopped writing the masterplan, the associated cost allowances would not be required. We do not mean that we would necessarily impose a penalty if NERL wrote the masterplan to the best of its ability, but encountered problems with getting the plan accepted by us when we reviewed it.

Status and funding of ACOG

3.14 We do not agree with the description in NERL's SoC of ACOG as an 'independent' organisation.[30] We agreed that it would be an impartial unit within NERL. It was also agreed between the CAA and NERL that ACOG should consider interests other than those of NERL. For this reason the impartial unit would sit behind information barriers and be overseen and guided by a Steering Committee (whose members comprise the airports within scope of the commissioned masterplan). ACOG's output will ultimately be assessed and accepted (or not) by the airspace modernisation co-sponsors – the DfT and the CAA. However in corporate law terms ACOG and its employees are accountable to, and the responsibility of, the directors of NERL.

30 NERL, SOC, paragraph 192

3.15 The SoC incorrectly implies the RP2 FAS Facilitation Fund (FFF), is a body of the CAA.[31] The FFF is a mechanism attached to the cost base of, and administered by, NERL. Decisions to approve expenditure on specific projects from the FFF are under the direction of an 'Investment Board', with funding decisions made by industry representatives – we do not have a decision-making role.

3.16 The SoC incorrectly states that we did not make an allowance for ACOG funding in our RP3 draft proposals because the associated work was too uncertain.[32] This is a mischaracterisation and was not the case.[33] It was our view at the time, that as NERL had identified £15m in its business plan for the establishment of ACOG, as well as writing and coordinating delivery of the masterplan,[34] it had included this work and its role as part of its opex proposals. As such, when making our draft proposals on opex efficiency we excluded the ACOG £15m from the opex efficiency challenge to allow this cost in full.

Delivery of the airspace change masterplan

3.17 The modernisation of airspace is achieved by making a number of separate but necessarily interlinked and co-dependant changes to airspace design. In the UK changes to airspace design are developed and proposed by the body responsible for that airspace (either airport operator or ANSP (such as NERL)).

3.18 Delivery of airspace modernisation is a significant task and will take many years. As such it is necessary to prioritise and focus in the near term on the issues that are most urgent and will have most impact. However, as far as practicable, this must be in the context of ensuring future opportunities are not overly constrained by decisions today.

3.19 It is agreed by all parties that such planning cannot be done by any one body in isolation – hence the need to establish some means of coordinating the individual bodies responsible for designing the relevant volumes of airspace.

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31 NERL, SoC, paragraph 195

32 NERL, SoC, paragraph 197

33 NERL, SoC, paragraph 197 also incorrectly summarises the rationale for and function of the AMS Support Fund. The CAA component of the UK determined costs for RP3 does include a ring-fenced £10m to finance an AMS Support Fund that third parties (excluding NERL) can apply to for financial support in the delivery of airspace modernisation activities. This is separate from our own airspace modernisation related costs, which are included in our cost base, but not funded from the £10m fund. The AMS Support Fund is analogous to the 'Small Gaps' component of the RP2 FFF and is described in the CAA Decision Document, CAP1830

34 NERL's business plan, chapter 3 page 28 and chapter 7 page 57 (26 October 2018). NB in the busines plan the ACOG function is referred to by its former title AMOG

3.20 Recognising government policy that increased airspace capacity in the south east of the UK is the current priority[35] and likely to have the largest network impact, the design of a masterplan for the Southern England was commissioned first, with a commission in respect of the rest of the UK to follow. It has always been the case that ACOG would at some point be required to produce a masterplan for the rest of the UK. NERL has been aware of that from the outset, we therefore do not agree with NERL's articulation of the task of creating a UK masterplan in the SoC.[36]

3.21 It is not clear from the SoC, whether NERL has misunderstood some of the tasks proposed for it in the draft airspace modernisation licence condition or whether it is now seeking to reject them. In particular, the SoC highlights two main issues, which NERL fails to distinguish between.[37]

3.22 The first issue is whether or not NERL is required under the licence condition to write a masterplan irrespective of the quality and quantity of participation by the (up to) 17 airports in scope of the masterplan for Southern England.

3.23 The answer to this is yes. However, in assessing NERL's performance in producing the masterplan, we would expect to take account of nature of the participation of airports in the process and the extent and nature of NERL's engagement with airports to secure their successful participation. Nevertheless, a masterplan must still be produced. The fact that NERL must produce a masterplan irrespective of the amount of participation of the other airports acts as an incentive to those other airports to participate to ensure that their own interests are properly represented and taken into account as the plan is written. It has been recognised by NERL at least since the 2018 co-commission letter that NERL has to produce the masterplan no matter how much other bodies participate – as evidenced by the fact the commission letter asks NERL to identify the degree of commitment offered by each party. As set out above, NERL's role as the monopoly provider of air traffic services for UK en route and at some London airport approach services, means airspace modernisation is a fundamental requirement of NERL's licensed activities. As such, it is the closest body in UK aviation to that of a network operator. Moreover, because of its role as the planner and deliverer of such UK en route and complex terminal air traffic services NERL uniquely holds the information and technical skills required to fulfil the role. No airport, nor the CAA, has such skills and experience.

3.24 The second issue is whether or not NERL is responsible under the licence condition for delivering any of the individual airspace changes identified in that

[35] See Airports National Policy Statement 5 June 2018 https://www.gov.uk/government/publications/airports-national-policy-statement

[36] Paragraph 198 of the SoC

[37] Paragraph 200 of the SoC

masterplan. (By delivering, we mean preparing and submitting to the CAA for a decision in accordance with our airspace change process, known as CAP1616.)

3.25 The answer is that under the licence condition NERL is required to prepare and submit in the first instance only the necessary changes to the airspace which NERL is responsible for as identified in the masterplan. This is en route and some key portions of terminal airspace such as the London Terminal Manoeuvring Area. Airports will need to bring forward airspace design changes for their local airspace.

3.26 However, the draft licence condition 10a (paragraph 8) does give the CAA the power, if we choose to exercise it, to require NERL to prepare all or part of another stakeholder's proposal in order that the interrelated changes identified within the masterplan are kept on track. In exercising this power, we would fully envisage consulting NERL and other stakeholders before doing so, and take into account any reasoned and evidenced arguments presented.

3.27 NERL is correct that this draft licence condition duplicates to some extent the powers being sought in the Air Traffic Management and Drones Bill. Under the proposed powers in the Bill, the Secretary of State will be able to require an airport or ANSP to prepare and submit an airspace change both in the airspace they are responsible for and in the airspace for which another body is responsible. The policy intention is that once written, due to the complexity of the interrelatedness of the proposed airspace changes identified in the masterplan, the overall plan can only be successfully delivered if the various participants bring forward their changes at the time envisaged by the programme plan in the masterplan.[38]

3.28 The policy intention behind the provision in the draft licence condition (paragraph 8) was that in the absence of those powers (i.e. while waiting for them to go through the Parliamentary process) it would be in the best interests of the public if NERL's licence included this contingent condition in order to keep the masterplan on track. Further, the condition would incentivise the other bodies to work on and bring forward their own airspace change proposals in accordance with the timing in the programme plan within the masterplan. If they did not, there would be the possibility that NERL could be required to develop the change instead, and the initial body would have less influence over the design and the benefits it could achieve.

[38] Consultation Response on Legislation for Enforcing the Development of Airspace Change proposals https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/841247/consultation-response-on-legislation-for-enforcing-the-development-of-airspace-change-proposals.pdf

3.29 If the government policy intention to bring forward the Bill changes or if the Bill is passed and the Act in force, we will reconsider this sub-paragraph of the NERL licence in that context and, if applicable, propose a suitable amendment.

3.30 We consider that NERL, as the monopoly provider of air traffic services for UK en route and at some London airports approach services, holds the necessary technical skills to comply with this contingent condition. The condition would only be applied if it was necessary for us to require NERL to work on all or part of a design change proposal in the public interest, in other words to work towards airspace modernisation to benefit the wider UK airspace network and its users. NERL already has experience in developing airspace change proposals in airspace for which other bodies are responsible.

3.31 If the contingent licence condition was in force and exercised, we would not expect that work to be financed out of the £15m of opex ringfenced for the creation and management of the ACOG, rather we would consider it reasonable for NERL to seek to meet its efficient costs from the Opex Flexibility Fund[39] and capex mechanisms envisaged in RP3.

3.32 It is not clear from the SoC whether NERL holds the opinion that we intend for NERL to write the masterplan and prepare and submit all the required airspace change proposals set out within it.[40] For the avoidance of doubt, we would expect NERL to develop airspace design proposals for the airspace it operates in any event, but only ask NERL to deliver changes outside the airspace it operates where we felt it necessary to maintain the critical path for the implementation of the masterplan. We intend for NERL's impartial unit ACOG to write the masterplan with (where possible) participation of the relevant airports. ACOG will also coordinate delivery by providing programme management functions to allow relevant entities – including airports and NERL – to deliver the airspace change proposals set out in masterplan.

3.33 The SoC asserts that there are a number of inconsistencies between the draft licence condition and what NERL says it has agreed with the airspace modernisation co-sponsors.[41] We have addressed these above, and will conclude this section with a direct response on each bullet point in which NERL raises these inconsistencies:

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39 CAP 1830 - UK RP3 Decision Document, paragraphs 9.30 and 9.46. CAP 1830a - Appendices, paragraphs I23 and I38

40 NERL, SoC, paragraph 200

41 NERL, SoC, paragraph 201

- Bullet 1: We do not agree that the conflict identified exists. As addressed above, this is dealt with by the information barriers, the ACOG Steering Committee and co-sponsor governance and ultimate decision-making function.
- Bullet 2: NERL appears to have conflated the roles of writing the masterplan and a preparing programme for its delivery, with actual delivery by the relevant stakeholders of the individual airspace change proposals within the plan.
- Bullet 3: We do not agree that the licence condition expands the geographical scope of masterplan it is required to write. It has always been the case that the plan would encompass the whole of the UK (see in this regard NERL's business plan chapter 3 page 28 and chapter 7 page 57). The commission asked NERL to prioritise a plan for the southern UK for the reasons and government policy set out above. We therefore disagree with NERL that a requirement to write a plan for the whole of the UK in due course, is not included in the opex allowance of £15m for ACOG. If NERL is required to bring forward an airspace change proposal in airspace for which another body is responsible, we consider that it would be appropriate to for it to seek to meet its efficiently incurred costs from the OFF and capex mechanisms as appropriate.
- Bullet 4: The issue of and rationale for replicating powers in planned primary legislation is set out above.
- Bullet 5: We recognise that if NERL were to be asked to bring forward an airspace change proposal relating to airspace for which another body is responsible this would bring additional challenges as compared to preparing their own airspace change proposal. The proposed primary legislation addresses this by including a power to require the airport to cooperate. However, the licence condition methodology is, as we have set out, an interim measure included in the public interest to so far as possible keep the masterplan process and airspace modernisation on track. NERL's licence cannot mandate airports to cooperate. While we recognise the additional challenges of bringing forward an airspace design change for airspace for which NERL is not the operator, we are confident that NERL has the technical expertise and experience to do so if necessary, and could secure access to the local community engagement skills required. Moreover, we consider that other stakeholders will be incentivised to cooperate in the knowledge that if they fail to do so, NERL would intervene and they will reduce their opportunities to shape the outcome.

- Bullet 6: We note that NERL states they are engaged with the DfT and parliamentary process on the proposed ATM and Drones Bill. We note that the issues raised by NERL were known and understood before the DfT introduced the Bill in the House of Lords. We note of course that under a new administration the Bill may not be reintroduced, or may be reintroduced in a different form. We also note of course that the Bill may be amended before passing or may not pass. However, in the absence of any of these changes, it is our view that the contents of the Bill remain government policy and accordingly paragraph 8 of the draft licence condition remains in the public interest.

3.34 We agree with NERL’s analysis that the draft licence condition is requiring NERL to carry out a state function. This is analogous to NERL being required by licence to carry out monopoly en route air traffic control services and a number of other related state functions.

3.35 NERL and the CAA continue to constructively discuss the terms of the proposed licence condition on airspace modernisation and will inform the CMA in the event that we reach agreement on this element of the reference, with a view to varying the reference accordingly.

Section 4

Service quality and environmental (3Di) targets

Chapters 6 and 7 of the NERL SoC address capacity service quality and environmental (3Di) targets, and the associated incentives. Our main points and concerns with the views expressed are:

- in reaching our RP3 decisions, we have taken due account of the strategic and operational context for RP3 based on the information available. We set relatively generous service quality targets and low powered incentives in order to provide NERL with the flexibility to pursue airspace and technology modernisation, which is in the longer-term public interest.
- NERL's SoC seeks to absolve itself of any meaningful stretch in terms of targets and this would inappropriately jeopardise the interests of NERL's customers and the users of its services; and
- we consider such an approach would be contrary to our statutory duties and the public interest.

Introduction

4.1 NERL has raised a number of issues of varying levels of detail and materiality relating to capacity and environmental (3Di) targets. We have sought to focus on the most material, or where NERL has incorrectly characterised our position. This section addresses the following issues:

- the level of challenge embedded in the capacity and 3Di targets, given the RP3 context;
- the relative strength and impact of the associated financial incentives and exemptions;
- interactions with reference values under the EU performance scheme; and
- the relationship between achieving targets and compliance with the NERL licence.

Level of challenge

Capacity

4.2 The SoC says that we have set overly stretching service quality targets for RP3 and this means that NERL will not meet targets in four out of the five years of RP3 and might incur penalties as a result.

4.3 In developing our draft proposals for consultation, we considered that NERL's historical performance suggested that it should be capable of lower levels of delay than targeted in RP1 and RP2. However, after taking into account airspace user agreement to NERL's business plan proposal, the need to implement a significant airspace modernisation programme through RP3 and forecast traffic growth, we proposed targets in line with the RP2 targets.

Figure 4.1: NERL C1 and C2 performance 2012 to 2019

Mins of ATFM delay per flight	**2012**	**2013**	**2014**	**2105**	**2016**	**2017**	**2018**	**2019**
EU target	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
UK C1 target[42]	0.31	0.26	0.26	0.22	0.23	0.23	0.23	0.23
UK C1 actual	0.07	0.13	0.06	0.08	0.30	0.16	0.28	**0.21*
Out (under) performance	0.24	0.13	0.20	0.14	(0.07)	0.07	(0.05)	*0.02
UK C2 target	0.16	0.21	0.21	0.18	0.18	0.18	0.18	0.18
UK C2 actual	0.03	0.09	0.04	0.08	0.21	0.10	0.21	**0.15-0.17*
Out (under) performance	0.14	0.12	0.17	0.10	(0.03)	0.08	(0.03)	**0.03-0.01*

Source: CAA and NERL

*forecast performance based on NERL 2020 Service and Investment Plan draft for customer consultation (30 Oct 2019)

4.4 NERL's proposal to maintain RP2 target levels (which the table above shows it has regularly outperformed), together with the creation of a new 'special event transition delay allowance' exemption mechanism, was:

- not sufficiently challenging for NERL, based on its historical performance, especially as delay for major transitions would be excluded;

[42] For RP2 (2015-2019) C1 targets were set at the UK-Ireland Functional Airspace Block (FAB) level. The C1 targets for the FAB are 0.25 in 2015, and 0.26 from 2016-2019. The table shows the UK proportion of the FAB target.

- not necessarily consistent with the EU performance regulation, because the proposed special event transition delay exemption mechanism would apply to both C1 and C2 metrics and NERL did not demonstrate how the new transition exemption process would be consistent with the EU legal framework; and
- not consistent with our duties to promote users interests and efficiency. Care must be taken with transition exemption allowances so as not to inappropriately undermine overall consumer protection. This is particularly important in the context of RP3 where the weakening of the RP2 targets could lead to a worse level of service for consumers and real detriment. NERL's target levels and new transition exemption proposal did not take account of the fact that users will experience the actual delays, regardless of target and penalty arrangements.

4.5 The capacity targets in our final decisions were less challenging than our draft proposals, allowing the flexibility for NERL to incur more delay while it delivered its airspace and technology programmes in support of airspace modernisation. We also increased the *ex ante* allowance of exemption days under the existing exemption mechanism – see paragraph 4.14 below.

4.6 The CMA should note that airspace users suggested that we could apply more ambitious delay targets, but in the light of the challenges of airspace modernisation we consider our final decisions to be in the public interest.

Environment

4.7 We recognise the importance of not inappropriately constraining the evolution of the environmental 3Di metric if important new information emerges, but there are also benefits in maintaining a broadly consistent approach over time. NERL's business plan sought to make significant amendments to the metric by excluding factors it considered outside its direct control and its SoC makes similar points. However, while we acknowledge that not all such factors will be in NERL's direct control (such as adverse weather), we consider that NERL is the organisation best placed to mitigate the impact of such factors on airspace users. It is therefore consistent with our duties and in the public interest that those factors remain part of the metric used to asses NERL overall 3Di performance.

4.8 We do not agree with NERL's characterisation of strong airline support for the 3Di proposals set out in its business plan. In the Customer Consultation Working Group report, airspace users only agreed with the NERL 3Di proposals with the caveat that there was further discussion between users and NERL on the proposed exclusions and level of ambition for the 3Di target. In responding to our draft proposals in respect of 3Di, airspace users were supportive of the proposed level of ambition we had set (or thought it should be more ambitious) and supported the decision not to allow most of the exclusions proposed by NERL.

For these reasons, as set out in our final decisions, we consider the approach we have adopted for RP3 to be both appropriate and consistent with our duties[43] and in the public interest.

Incentives and exemptions

Capacity

4.9 NERL's business plan proposed significant reductions in the strength of its capacity incentives, reducing the overall value at risk from 1% (in RP2) to 0.5% of revenue. Furthermore, it proposed a new 'special event transition delay allowance' that it would apply to all four capacity metrics.[44] It proposed that the level of allowed special event transition delay would be agreed with airspace users on a case by case basis, in advance of each major transition/deployment activity, but would not have an *ex ante* allowance set as part of the price control. NERL proposed that this replaced the existing exemption days allowance applicable only to the 'domestic' C3 and C4 metrics – i.e. those in addition to the C1 and C2 mandated under the EU performance regulation – for which an *ex ante* allowance is set in the price control.

4.10 We considered the low power incentives, combined with the special event transition delay mechanism – which would exempt applicable delay from being subject to the incentives – would be inadequate to protect airspace users' interests, and may not be consistent with the EU performance regulation. NERL's proposal appeared not to acknowledge that airspace users would still experience the delay, even if part of the delay was exempt from the measures of performance and incentives.

4.11 In response to our draft proposals (which increased the value at risk to 1.5% bonus and 2.25% penalty compared to RP2), NERL proposed that we either remove the C2 financial incentive altogether or reduce the values at risk to RP2 levels.

4.12 In our final decisions, we sought to recognise the potential impact of the NERL's transition programmes, which – if delivered – will provide the potential for productivity gains that both NERL and airspace users will benefit from later in RP3 and beyond. In order to strike a balance in meeting our duties to promote efficiency, and further the interests of airspace users, in our final decisions we

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43 NERL, SoC, paragraph 242 states that the CMA should take account of the 'Environmental Duty' as set out in para 152 f). We note that the Secretary of State has issued no guidance in respect of environmental objectives under section 2 of the Transport Act 2000 (see para 1.16, CAP 1857 [RP3 reference CAA document 002]).

44 As set out in chapter 4 of our final decisions (CAP 1830), we considered NERL's special event transition delay allowance to be inconsistent with the EU performance regulation in respect of C1 and C2 metrics.

decided to build in flexibility for programme delivery and the associated impact on the application of incentives. We:

- increased the target, to allow greater delay and therefore the point at which incentives would bite;
- reduced the power of incentives, so as not discourage planned deployments, in the event they were triggered; and
- offered NERL opportunity to allocate the levels of allowed delay in each year to align with its programme and minimise potential for incurring penalties. NERL declined to engage, on the basis that would incur penalty regardless.[45] We remain willing to engage with NERL, if it wishes to reconsider its position.

4.13 We note that while there are no additional exemption provisions for the C2 target,[46] we have applied the lowest value at risk for penalty of 0.25% of determined costs. For C3 and C4 targets, where the value at risk is greater, we increased the number of exemptions days available.

4.14 Since 2011 there has been a delay exemption mechanism for the C3 and C4 domestic targets. For RP3, we have increased the number of days permitted. Delays incurred on days notified in advance of planned transitions under this exemption mechanisms are excluded from the calculation of incentives for C3 and C4. RP1 allowed up to 40 exemptions days; for RP2 this was increased to 75 exemption days; while the RP3 decision allows 100 exemption days. We therefore consider that there is already significant protection from being penalised for delay resulting from major transitions in RP3.

4.15 Overall airspace users supported the principle of higher power (and asymmetric) incentives to hold NERL to account for day to day service delivery, but recognising the longer-term benefits from airspace modernisation, we considered it was in the public interest to take the approach set out in our final decisions.

Environment

4.16 There have been financial incentives on the 3Di metric since its inception. Through RP1 and RP2, we have progressively tightened the deadband around the 3Di target, as the industry experience of the metric has developed. Nevertheless, in the seven full years[47] of operation of 3Di to date, NERL has

45 Email from NERL to CAA on 10 July 2019

46 The C2 target already allows for causes of delay outside the control of the ANSP to be excluded from the metric, in accordance with the EU performance regulation

47 NERL's Q3 2019 Operational Performance Report shows 3Di performance at September 2019 remains within the deadband. Furthermore, NERL's 2020 Service and Investment Plan (SIP20) (draft for customer

remained inside the deadband and neither incurred a penalty, nor received a bonus.

4.17 NERL's business plan proposal was to seek to exclude factors from counting towards the target and halve the strength of the incentive. In combination, we did not consider this approach was in airspace users' interests and our final decisions did not allow the exclusions. However, we did accept the lower power incentives for 3Di, and adopted a lower overall value at risk for RP3, compared to RP2, from 1% of en route revenue to 0.5% of en route determined costs.

Incentive context

4.18 The table below, taken from our final decisions,[48] summarises the financial incentives for NERL performance on capacity and environment in RP3, and compares them to the incentives in RP2 and its draft proposals.

Figure 4.2: Summary of RP3 service quality financial

Term	RP2 (% of revenue)		RP3 (% of determined costs) CAA draft proposals		RP3 (% of determined costs) CAA final decisions	
	Maximum bonus	Maximum penalty	Maximum bonus	Maximum penalty	Maximum bonus	Maximum penalty
C2	0.25%	-0.25%	0.5%	-0.75%	0.05%	-0.25%
C3	0.75%	-0.50%	1%	-1%	0.25%	-0.75%
C4	N/A	-0.25%	N/A	-0.50%	N/A	-0.25%
3Di	1%	-1%	1%	-1%	0.50%	-0.50%
Total	2%	-2%	2.50%[49]	-3.25%	0.80%	-1.75%

Source: CAA

4.19 Taking the service quality and 3Di incentives together, we acknowledge the reduction in strength, with the overall value at risk decreasing between RP2 and RP3. We consider the lower strength incentives, along with relatively generous targets, to be appropriate in RP3 in the context of creating flexibility to support airspace modernisation and are, for this reference period, therefore in the public interest.

consultation published on 30 October 2019) forecasts that NERL will remain within the deadband by the end of the year and RP2

48 CAA Decision Document CAP 1830, chapter 4, page 53

49 2.5% overall maximum bonus comprising: 0.5% (of a possible 2%) for the mandatory C2 bonus; and 2% (of a possible 2%) for additional aggregate C3, C4 and 3Di bonuses

4.20 To provide context from other UK economic regulated sectors which apply service quality incentives, summarised below are examples for water and Heathrow airport.

Water

4.21 Similar to NERL, water companies in England and Wales are also subject to service quality targets and incentives. Under Ofwat's PR19 financial models three 'fast-track' companies (Severn Trent, South West and United Utilities) have received their Final Determinations for PR19. Each company had to report a plausible high and low scenario in terms of service quality performance, and estimate the implied financial impacts of those scenarios. Below, those impacts are expressed as a percentage of each company's total wholesale revenue. It can be seen that the downsides range between -5.2% to -6.7% of wholesale revenue, which are significantly greater than that for NERL.

Figure 4.3: The financial impact of service quality incentives as a % of wholesale revenue

	Upside	Downside
Severn Trent	3.7%	-6.7%
South West	3.2%	-5.2%
United Utilities	3.5%	-6.7%

Source: CAA analysis of Ofwat's financial models for PR19

Heathrow

4.22 Similar to NERL, Heathrow Airport Limited (HAL) is also subject to service quality targets and incentives. For Q6, the current control, across of all HAL's service quality incentives, the maximum bonus achievable by HAL equates to 1.4% of total airport charges, while the maximum penalty equates to 7.0%. Again, the potential penalties are much greater than NERL would be exposed to on the basis of our final decisions.[50]

EU reference values

4.23 NERL's SoC says that we have misapplied European Commission 'guidance'[51] in basing our C1 and C2 capacity targets on the EU reference values in our final decisions. The reference values represent the nominal allocation of the EU-wide target to each Member State by the Eurocontrol Network Manager in order to achieve the EU-wide target. Reference values are determined using a method

50 This is based on a review of Heathrow's Q6 licence. https://www.caa.co.uk/cap1151

51 NERL, SoC, paragraphs 204, 222 and 223

agreed between the Network Manager and ATM stakeholders, including ANSPs, through a collaborative decision-making process. We agree with the SoC analysis that reference values are not binding, and also that our business plan guidance to NERL established that our decisions would be guided by our statutory duties. We stand by these observations and, can clearly demonstrate we have taken this approach in respect of our decisions, including for horizontal flight efficiency targets ('KEA'),[52] which are less challenging than the reference values proposed by the Network Manager.

4.24 For the C1 and C2 delay targets, we originally proposed more ambitious targets, but in our final decisions moderated them further to take account of NERL's airspace modernisation activities and stakeholder feedback – including NERL's proposal that we, "*Increase the C2 target to the maximum amount allowed by the EU-wide targets and/or interaction with the NOP*".[53]

4.25 The Network Operations Plan (NOP) is produced by the Network Manager and contains both the exposition of EU-wide targets as Member State reference values, alongside Network Manager delay forecasts, based on ANSPs' (including NERL's) capacity plans. As mentioned above, the NOP is agreed with ATM stakeholders through a collaborative decision-making process.

4.26 For our final decisions, we adopted C1 and C2 targets based on the implied overall level of delay minutes based associated with UK reference values, but re-profiling when the delay can be incurred to better reflect our understanding of NERL's planned major transitions. We note that the UK reference values could be considered generous when compared to the Network Manager's delay forecasts for the UK, based on NERL's own capacity plans, contained in the NOP, which imply NERL has scope to outperform the reference values.

4.27 We, therefore, do not agree that we have misapplied European Commission 'guidance' in adopting KEA or capacity targets. We have not adopted C1 and C2 targets because they are broadly consistent with the reference values, rather we consider the reference values to be a credible input, alongside other information. Consistent with our duties, we have adopted targets we consider will further the interests of users in receipt of an economic and efficient air traffic service from a monopoly provider that has consistently outperformed in previous periods. Our targets apply a moderate level of challenge, recognising the significant

52 Our horizontal flight efficiency targets are summarised in Table 1 of the Executive Summary and discussed in chapter 3 of CAA Decision Document CAP 1830

53 Chapter 6, last bullet in text box on page 27 of NERL's response to CAP1758: Draft UK reference period 3 performance plan proposals (12 April 2019)

transformation planned in RP3, intended to deliver benefits for airspace users, NERL and the wider ATM network.

Target compliance and the licence

4.28 It would appear from a number of statements in NERL's SoC[54] that it considers that our capacity targets are too challenging and that there is a risk that if it does not meet them, it could be subject to investigation for licence breach under the Transport Act 2000 (TA 2000). For the avoidance of doubt, our Oberon investigation related to whether NERL had breached the conditions of its licence. Specifically, whether it had taken reasonable steps to meet demand and whether it had unduly preferred or discriminated in the provision of its services. The investigation was triggered in accordance with the relevant provisions of the TA 2000 and did not relate to whether NERL had met its capacity (or other) performance targets.

54 NERL, SoC, paragraphs 115 to 118, and paragraph 221

Section 5

Operating costs and non-regulated revenue

Chapters 8 and 9 of the NERL SoC address our final decisions relating to operating costs and non-regulated revenue. NERL has also provided a new report by Economic Insight (EI) that criticises some aspects of our decisions. Our main points and concerns with the views expressed are:

- we have neither misunderstood the past evidence on NERL's performance, nor set unreasonable targets for RP3. We are strongly of the view that we have set modest efficiency targets and made full allowance for the need to secure airspace modernisation;
- we do not accept NERL's criticisms of the bottom-up cost analysis provided for us by Steer;
- more generally NERL fails to address our final decisions as relating to RP3 as a whole, instead focussing inappropriately on individual years; and
- we note a tendency by NERL to be selective with both its arguments and use of evidence: 2017 is a good base year to perform comparisons with other ANSPs while being an unreasonable base year from which to measure efficiencies because it was unsustainable; costs relating to non-regulated revenues are fixed if the prospect is to reduce revenues, but variable if revenues are to increase (a suggestion we have not made); and to ignore its track record of outperformance in RP2.

Introduction

5.1 We consider much that is raised in NERL's submission repeats points raised in its initial and revised business plans (IBP and RBP) and in its response to our draft proposals.

5.2 However, NERL has also submitted a new consultant's report from EI[55] (referred to hereafter as the EI Opex Report), which comments on some of the bottom up evidence we considered in our final decisions and reiterates and reinforces some of the top down comparisons presented by NERL in its RBP.

55 Economic Insights (2019) Independent Review of Evidence on Operating Cost Efficiency: A Report for NATS

5.3 Part 1 of this section addresses key points on operating costs and non-regulated revenues raised by NERL in its response to our submission to the CMA. We deal with operating costs and non-regulated revenue together as it is important to make consistent assumptions on these items given that they are combined together in the single till calculations used to set NERL's price control. Part 2 directly addresses the bottom up and top down points raised by EI.

Part 1 – NERL's SoC

5.4 In this section we respond to the following specific propositions that feature in NERL's SoC:

- CAA has misrepresented or misunderstood NERL's past efficiency improvements and has wrongly focused on 2017 as a base year;
- CAA has failed to take into account efficiencies already built into NERL's plan;
- CAA's proposal goes beyond the 1.9% EU-wide cost efficiency target;
- historical outperformance referred to by CAA had ceased before the end of RP2;
- the specific efficiency improvement expected by CAA in 2023 and 2024 is unachievable; and
- the cost savings expected of NERL in conjunction with its forecast reduction in non-regulated revenues are unachievable because these services are derived largely from the same resources that provide regulated services and these costs are essentially fixed.

5.5 We would emphasise that in coming to our final decisions on opex we relied on a range of evidence and formed a balanced judgement on a reasonably, but not unduly, stretching opex target for RP3, taking into account all the evidence we have seen, including NERL's representations. We took into careful consideration our responsibility, on behalf of airspace users, to present NERL with reasonably stretching targets to improve cost performance in the medium term, while not putting at risk the important programme of airspace modernisation and technological transformation in the next few years.

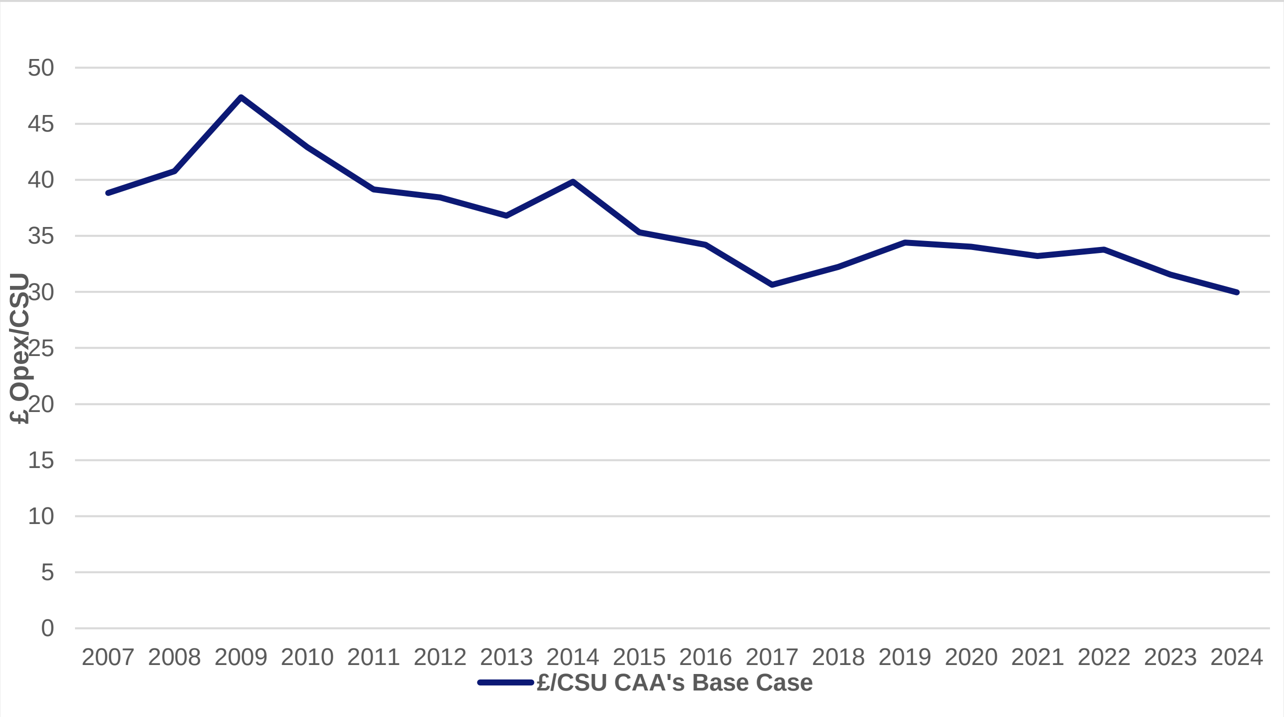
5.6 We suggest that NERL's claim that their plan already includes challenging efficiency targets would surprise most airspace users for whom it would be reasonable to interpret "efficiency improvements" as delivering lower costs for the same or improved level of service quality. NERL's plan offered higher costs (absolutely and in unit costs terms) over RP3 compared to the years immediately preceding it, while requesting performance targets somewhat less stringent than in RP2. This was despite demonstrating that it could already significantly outperform those targets during the early years of RP2.

5.7 Our judgement over the appropriate level of costs to allow in RP3, combined with appropriate service quality targets was a difficult one. We did not implement more stringent performance targets that our evidence suggested might be achievable, in favour of a level of determined costs intended to facilitate urgently needed modernisation that had not been delivered in RP2.

5.8 We fully support the need for airspace modernisation and remain convinced that ultimately “technological transformation” will deliver cost savings and service improvements for users in the medium and longer-term. Our final decisions are intended to allow NERL the resources to achieve this transformation while setting it a reasonable challenge by the end of RP3 that it should be on track with delivering those cost and service improvements.

5.9 The chart below shows the progress of NERL’s unit operating costs up to and including our projection for RP3. It illustrates the extent to which we have accepted the increase in NERL’s unit opex at the end of RP2 and the start of RP3 and that, to allow resources for airspace modernisation, the expected pace of efficiency improvement over RP3 as a whole is modest.

Figure 5.1: Opex per CSU in 2007-2024 (£, 2017 prices)



Source: CAA (*NERL’s regulatory accounts up to and including 2018. NERL’s financial model for 2019 and CAA decision for 2020-2024 inclusive.)*

Past efficiency improvements

5.10 We do not accept that we have either misunderstood or misrepresented the scope of NERL's past efficiency improvements, nor misused this information in our final decisions. Evidence of past efficiency achievements is of particular relevance in coming to a balanced decision about the scope for future improvements. But at no point did we base judgements on a mechanistic assumption that past improvements could automatically be repeated.

5.11 Various points in NERL's response suggest that we have been misled by the scale of immediately post-privatisation savings, which are not repeatable, or that we have relied on an arbitrary consideration of the period 2007 to 2017. Neither of these suggestions is correct.

5.12 Savings made in the first few years after privatisation played no part in our considerations and received no mention in our draft proposals or final decisions.

5.13 As regards our attention on 2007 to 2017 and our use of 2017 as a reference year, we have a number of points to make.

5.14 The years from 2007 onward represented a sustained period of year-on-year cost reduction for NERL, culminating in 2017, the last full year of available cost and financial data at the start of our planning for RP3. Thus, neither attention on the overall period nor the choice of 2017 as a reference year can be described as arbitrary. We note that the cost reductions were achieved despite significant traffic fluctuations year-on-year during that period, which included both the global financial crisis and the subsequent economic recovery. Further, 2017 was a year of cost savings and relatively rapid traffic growth and over this period there have been other years exhibiting cost savings and relatively rapid traffic growth, which were nevertheless followed by more cost savings in the subsequent year.

5.15 It would seem NERL would like the CMA to focus on 2019 as a base year for the assessment of efficiency targets. There is some logic in this, given that it is the last year before RP3 commences. But there are a number of serious drawbacks with this proposal. First, final audited figures for 2019 are not actually available. It is unusual and unsatisfactory to base regulatory decisions on base years for which final figures are not confirmed and the estimates of which are at the discretion of the regulated entity.

5.16 Second, and more importantly, basing efficiency estimates on 2019 has the effect of disregarding the 20% real increase in opex that occurs from 2017 to 2019. Year-on-year cost increases may have a legitimate explanation, but from the point of view of the airspace user, efficiencies have to represent actual cost savings.

5.17 In setting reasonably stretching targets for NERL it is our view that phrases and programmes like "technological transformation" and "strategic improvement" must, over a reasonable time frame, translate into tangible efficiencies for end users. This is consistent with the approach we adopted in our final decisions.

5.18 Finally, NERL has criticised us for focussing on unit cost measured based on Chargeable Service Units (CSUs), rather than simple traffic movements. We do not accept the logic of this argument. While noting that some costs may be more closely correlated with traffic, NERL charges users on the basis of CSUs, therefore using CSUs as the basic metric against which we measure efficiency has a clear logic, and benefit for end users. Furthermore, while differences between CSU and traffic growth may lead to marginally different calculations of efficiency for a given level of costs, we have considered forward-looking efficiency on a CSU basis consistent with our backward-looking evidence, which means there has been no reason to anticipate a distortion in the absolute level of determined costs in our final decisions.

Efficiencies already built into NERL's plan

5.19 We note that NERL's RBP purported to contain £70m of "unsecured" efficiencies, which we take to mean cost savings for which the precise actions to achieve them have not yet been identified. Furthermore, EI's Opex Report contains a new calculation claiming that NERL's figures included real efficiencies of 6.3%. We do not accept either of these pieces of analysis.

5.20 NERL's RBP presented forecasts for opex that rose in absolute terms by 5% from 2019 to 2022 (after a 20% rise from 2017 to 2019) and showed modest falls thereafter. Proposed unit costs per CSU in 2024 were still 5% above 2017 in real terms. In this light it is clear that the efficiencies in NERL's plan, measured in cost reductions passed on to customers, were at best extremely modest.

5.21 Given the lack of detailed support for NERL's actual case, its figure of £70m is neither meaningful or helpful in determining the actual scope for efficiency.

5.22 As regards EI's estimated figure of 6.3% efficiency, this is a new estimate, which on inspection appears to largely result from an assumption that real wages increased by 5.9% over the same time. We note simply that this makes the estimate somewhat circular – the efficiency is approximately whatever is assumed to be the real wage increase. We also comment that it is a reasonable assumption, commonly used by regulators, to assume that real wage growth will be offset by productivity gains, and given the relatively high levels of NERL's average staff costs there is an argument that future productivity gains should more than offset real wage growth.

5.23 Finally, NERL raises a number of detailed objections to our targets based on obstacles to further efficiencies, including redundancy costs and high levels of unionisation. We note that these are factors not special to RP3, so see no reason to especially consider them as factors suggesting the rate of efficiency improvement should slow down. In particular, in a period of growth, redundancy costs would appear to be of less relevance in achieving efficiencies, which relate more to finding ways to hire fewer new people than ways to reduce existing resources.

EU-wide cost efficiency target

5.24 Our view is that EU-wide efficiency targets are not a binding cap on the challenge we set to NERL. Our duties require us to set reasonably challenging efficiency targets, based on what we consider is achievable for NERL, for the benefit of airspace users, always bearing in mind our primary duty to maintain a high level of the safety of the service and our secondary duties, including to secure that NERL will not find it difficult to finance its licensed activities. Our final decisions do this, balancing it with the need to secure airspace modernisation during RP3.

5.25 While we are aware that NERL's costs compare relatively favourably up to 2017 with a subset of other European ANSPs, for reasons set out in Part 2 of this section we do not consider these comparisons to be definitive nor do these comparisons imply very much about the scope for efficiency at NERL relative to the EU-wide target.

5.26 We reiterate that in order to facilitate airspace modernisation it is our view that the efficiency savings asked of NERL in our final decisions are modest. Indeed, it is debateable whether those savings do exceed the EU-wide targets of 1.9%.

5.27 In our final decisions we estimate unit opex for 2024 at £29.96 per CSU, compared with £30.15 in 2017. Thus, our target amounts to a reduction in unit costs of 0.6% in total over seven years or around 0.1% p.a. Compared to 2019, on which NERL would like the CMA to focus, the reduction to 2024 is 12.9%, which equates to c.2.7% p.a. However, as well as disregarding the 14% unit cost increase that occurs from 2017 to 2019, this figure also disregards the five-year nature of our determination and the increases in opex permitted to 2022. We estimate that over RP3 as a whole our final decisions deliver an average cost per CSU which is 5.5% lower than the 2019 average. This is equivalent to an average reduction of 1.9% p.a., in line with the EU-wide target.

Historical outperformance

5.28 NERL questions the fact that we took into account historical opex outperformance as one of the factors in reaching our final decisions. The basis of their challenge appears to be to accept that there was indeed significant outperformance historically.

5.29 In response to this we first repeat that this was simply one of many pieces of information we took into account in reaching a balanced judgement on RP3. We did not disregard NERL's projections rising costs in the second half of RP2, indeed, we allowed NERL's opex projections in full up to and including 2022.

5.30 Repeated historical outperformance is relevant as it can be indicative of a tendency for regulated companies to understate the potential for cost savings in regulatory reviews, thereby taking advantage of the information asymmetry between the regulator and the company.

5.31 Moreover, we consider NERL's case for spending in RP2 is inconsistent with evidence it presents elsewhere. NERL has stressed that unexpected traffic growth in RP2 is one of the reasons why costs have risen. We have accepted that in our final decisions. However, we note that total opex over RP2 was still, approximately in line with our RP2 decision, notwithstanding the traffic growth. The implication is that, had traffic grown as anticipated at RP2, NERL would again have significantly outperformed its regulatory allowance. So, notwithstanding NERL's argument, we consider RP2 fits within the historical pattern of NERL outperforming our opex determinations.

Expected efficiencies in 2023 and 2024

5.32 NERL and its advisers have pointed to the opex figures in our final decisions for 2023 and 2024, suggesting they are unrealistic and unachievable. This position appears to show a misunderstanding of how incentive regulation works and mischaracterises the nature of our final decisions.

5.33 Specifically, we have set a five-year price control for NERL, with a total opex allowance for the whole period. The opex figure in our decisions for any one year is of passing significance, but of limited relevance compared to the total as a whole.

5.34 The CMA will be aware that in our draft proposals we set NERL a more stringent challenge for 2020-2022, but after further consideration, we decided to increase NERL's determined operating costs in our final decisions. For simplicity, we decided to do this by allowing NERL's projections in full to 2022 but maintaining our projections for 2023 and 2024. We consider this struck the right balance between facilitating airspace modernisation and setting NERL an appropriate efficiency challenge over RP3 as a whole. It was open to us to smooth this adjustment over the whole period, but we chose not to do so for simplicity. We also considered that NERL was more likely to secure efficiencies towards the end of RP3 when new technology should have come into operation.

5.35 The rate of change of opex from 2022 to 2024 in our final decisions is therefore of no particular relevance. What is of relevance is the allowance for RP3 as a whole, and our expectation that by 2024 NERL will have made reasonable progress in delivering efficiencies to airspace users in terms of reasonable cost savings. It is open to NERL to pursue greater efficiency savings from the outset, and indeed we have every expectation they will seek to outperform our allowances in the first three years. This is how incentive regulation is intended to operate.

Non-regulated revenue

5.36 In both NERL's IBP and RBP it projected a fall in annual non-regulated revenues from £115m to £91m. While being concerned that this projection reflected a lack of ambition on NERL's part, our primary worry was that NERL's non-regulated revenues and cost forecasts were inconsistent.

5.37 In NERL's plans there was a lack of evidence showing that it intended to make cost savings to reflect its forecast decline in its non-regulated business. Given the way single till regulation works, we considered it essential that this decline be matched by a reasonable challenge to reduce operating costs.

5.38 In our final decisions we accepted NERL's revenue forecast, while retaining some concerns, but reduced operating costs by £24m (over five years) reflecting our estimate of a reasonable cost saving to go hand in hand with the fall in revenue.

5.39 In NERL's SoC it appears to be arguing from contradictory positions. On the one hand it argues that the costs of providing these non-regulated services are largely fixed, because they are incurred in common with the costs of regulated services. We think this shows a fundamental misunderstanding of the difference between common and fixed costs. Accepting that many costs may be incurred in common, it is nevertheless the case that reduced non-regulated activity should free up capacity internally, which should be redeployed to handle regulated services. In a growing market this means that a decline in non-regulated services should allow NERL to reduce the growth in its general cost base. It us up to NERL to maintain sufficient operational flexibility to make this happen.

5.40 On the other hand, NERL also argues that to increase non-regulated *profit* by £49m it would have to increase revenue by c.£500m, at an average margin of 10%.[56] So here NERL is arguing that costs are *not* fixed (because its services are "saturated". If this is really the case, then our decision on non-regulated revenues has been particularly generous to NERL because the projected decline in revenues would allow NERL to make much more substantial cost savings than we have allowed for.

[56] Noting in passing that these figures refer to our draft proposals rather than our final decisions and misrepresent that as well. In our draft proposals we did not challenge NERL to raise non-regulated revenues by £49m over RP3. We expressed the view that £49m more could be contributed to the single till through a combination of higher non-regulated revenues and cost savings

Part 2 – Response to new opinions provided by EI

5.41 Over and above the issues addressed in Part 1 above, the EI Opex Report raises two new criticisms of our final decisions on opex:

- we have relied on flawed evidence from our advisers (specifically Steer) relating to its bottom-up appraisal of NERL's operating costs; and
- we have failed to take into account top-down evidence as presented by NERL which shows NERL is already at or near the efficiency frontier.

5.42 We respond to both points below.

Bottom-up analysis

5.43 We start by noting that the report from Steer referred to by EI[57] was, as we have made clear, only one part of the evidence we took into account in reaching our final decisions on NERL's determined costs. Nevertheless, we reject the suggestion that the Steer report is flawed or unsupported by evidence.

5.44 Steer's approach to the bottom-up assessment of the operating cost projections provided by NERL was to undertake an evidence-based, independent assessment. Its report provided full transparency about the assumptions made and the foundation of them.

5.45 In contrast, a similar evidence base was not included in NERL's IBP and was only partially addressed by the time of its RBP, often as a response to challenge by our advisers.

ATCOs

5.46 Despite suggestions to the contrary, Steer's estimates for ATCO headcount were supported by evidence. The rationale for their ATCO forecasts is set out in paragraph 6.26 of their Final Report to the CAA on "NERL's forward looking capital programme and expenditure efficiency" in RP3 (Steer's Final Report). The results are replicated in Table 7 of the EI report for NERL (in paragraph 3.2.3.1 on page 34), split by the following categories:

- RP2 operational gap (called "Catch-up" in Steer's Final Report);
- Traffic growth;
- Heathrow third runway;
- Benefits from DSESAR; and

[57] Steer (2019), NERL's Forward Looking Capital Programme and Expenditure Efficiency, Final Report, February 2019

- Additional resilience.

5.47 These are addressed in turn below.

- **RP2 operational gap/catch-up.** Steer's analysis was based on actual 2017 data (the latest full year available at the time), which was considered a robust starting point. In 2017, NERL's delay performance was within target. This is important as it gave no indication of a need for any catch-up in resourcing. However, recognising that there was an overtime equivalent of 23 FTE staff used in the year, Steer proposed a range of 0 to +23 FTE staff increase.
- **Traffic growth.** EI states that the relationship between traffic and ATCO numbers is "not straightforward". While this is true, it does not invalidate the principle of using an elasticity of staff costs to levels of activity (for NERL, traffic volumes handled), which is observed across many industries. Steer identified evidence in support of this principle, including its own regression analysis across European ANSPs (described from paragraph 5.80 of its Final Report) and as reported both by the CAA and Eurocontrol's Performance Review Unit (PRU). Steer's analysis led to a range for the increase of FTEs in RP3 due to traffic growth of between +47 to +61, i.e. not dissimilar to NERL's own estimate of +57 FTEs.
- **Heathrow third runway.** Given the likely development of a third runway at Heathrow airport will be no earlier than 2026, even allowing for a two to three-year training period for ATCOs, there did not appear to be a need to include increases in ATCO staff headcount during RP3 (2020-24).
- **DSESAR benefits.** EI states that the source for Steer's efficiency benefits of 2% to 3% (above NERL's own estimate of 2%) is unclear. However, Steer references the Proposal on the Pilot Common Project of the SESAR Joint Undertaking (JU), which identified an efficiency gain of 12% for the implementation of SESAR.[58] While recognising that this full 12% would not be achieved during RP3, Steer identified a number of supplementary pieces of evidence in support of the proposition that some of the gains should be achieved. These include:

58 Footnote on p34 of the Proposal on the content of a Pilot Common Project, SESAR Joint Undertaking, 6 May 2013, https://ec.europa.eu/transport/sites/transport/files/modes/air/consultations/doc/2014-01-31-sesar/sju1.pdf

  - The fact that a capital project of several hundred million pounds could not be justified if significant productivity benefits were not achieved. This is the expectation of other stakeholders, and their perception from previous discussions with NERL referenced below, and communicated to Steer.
  - NERL stated, in a workshop on 23 August 2018, that the new SESAR technology would deliver additional capacity for ATCOs to handle flights (rather than reduce ATCO numbers). However, this statement is logically equivalent to saying that more ATCOs would have been needed in the absence of SESAR, hence SESAR does in fact provide productivity benefits. However, this productivity benefit has not been recognised in NERL's ATCO projections.
  - Consistent with this, NERL also recognised, in a presentation to airline stakeholders as part of the consultation process, that the introduction of particular elements of SESAR (iTEC and iFACTS) would increase the capacity of ATCOs to handle flights.
- **Additional resilience.** Steer projected a range of staff requirements for additional resilience during RP3 from zero (on the basis that in the 2017 base year, NERL's delay performance was within target) to the same 3% allowance used by NERL in its own projections (but on the lower base of ATCOs predicted by Steer, hence +29 instead of +36 FTEs).

Trainee ATCOs (TATCs)

5.48 EI states that Steer's suggested reductions in headcount for additional operational ATCOs (a range of -7.5% to -30%) is inconsistent with Steer's projections for ATCO headcount (as discussed above, with a range of -3% to -10% compared to NERL's forecast). This represents a misunderstanding of Steer's analysis, which refers to the reduction in the number of new validations of trainee ATCOs during RP3; there is no need for this reduction to be the same as the reduction in the total requirement for operational ATCOs. In fact, if the total ATCO requirement falls, it should be expected that the fall in the number of new ATCOs being trained as TATCs (the "feedstock" for the overall ATCO numbers) would fall by a larger percentage.

5.49 EI also states that the Steer provides "*no basis for the implied assumption that there is a one-to-one linkage between the headcount for TATC and operational ATCOs in the same year*". This is a misunderstanding, as Steer did not make this assumption. Steer's assumptions for the two to three-year training period are explicitly stated in its Final Report (paragraph 6.37).

5.50 Steer developed a model of the number of total operational ATCOs during RP3, based on NERL's own assumptions on "new validations" of ATCOs as well as staff transfers, retirements and other losses (as provided to Steer on 13 June

2018). Steer then estimated the reduction in new validations compared to NERL's assumptions (i.e. in the number of trainees qualifying as new ATCOs) required to achieve Steer's ATCO requirement projections (at the top and bottom end of Steer's forecast range). It was this model that led to the estimated range of -7.5% to -30% for ATCO trainee (TATC) headcount reductions compared to NERL's projections, in a manner consistent with Steer's projected range for the total number of ATCOs in each year of RP3.

ATSAs

5.51 EI states that it has concerns about Steer's approach to estimating the requirement for three categories of ATSA staff (operational ATSAs, those supporting ATCO training and simulation and others). In our view Steer's work provides a clear rationale for each of these.

- **Operational ATSAs.** It is anticipated that the introduction of new technology will reduce the need for these ATSA roles supporting operational ATCOs, as set out in paragraph 6.53 of Steer's Final Report. Based on this, Steer assumed a range of reductions in ATSA headcount of between -5 and -10 FTE p.a., i.e. between half and all of the rate achieved during RP2. These assumptions were assessed as reasonable given that more radical technological changes (i.e. DSESAR) are being introduced in RP3 than was the case in RP2.
- **ATSAs supporting training and simulation.** Steer assumed reductions in these ATSAs consistent with its proposed reductions in ATCO trainees (TATCs). EI claims that this is inconsistent with Steer's assumptions on TATC numbers, but this is not the case because, as noted above, EI has misinterpreted Steer's ATCO trainee analysis.
- **ATSAs supporting technology change.** While accepting that the increase in ATSAs in this category planned up to 2020 to support the change programme is reasonable, Steer assessed that NERL has not taken the opportunity to reduce these numbers again at a sufficient rate, once the implementation programme is underway.

5.52 EI also states that Steer's benchmarking of ATSA salaries is "simplistic". However, Steer's analysis is supported by solid evidence showing that salaries are high in relation to comparator roles. This is confirmed by separate analysis by NERA, in a report commissioned by NERL itself, which notes the high level of ATSA pay compared to market rates.[59]

[59] *Staff Operating Expenditure for Air Traffic Control*, NERA report prepared for NERL, 21 March 2018, second bullet on p2 of Executive Summary, available at: https://www.caa.co.uk/uploadedFiles/CAA/Content/Accordion/Standard_Content/Commercial/Airspace/Air

Management Support Grade (MSG) and Personal Contract Grade (PCG) staff

5.53 EI expressed concerns in respect of Steer's analysis of projected staff numbers for MSG and PCG staff. The starting point for Steer's analysis was that the number of "head office" staff (to which these groups largely correspond) can be compared to the number of operational staff as an indicator of management efficiency. In addition, the rate at which these head office staff increase, in relation to the overall level of activity of the organisation (effectively an "elasticity" to volume growth) can also be considered as a measure of the effectiveness with which an organisation achieves economies of scale as it expands.

5.54 Steer's benchmarking identified that NERL has:

- A high proportion of head office staff compared to other major aviation industry organisations, including both ANSPs and airports (at 18% of total staff FTEs compared to a range of 4% to 15% at the benchmarked organisations[60]); and
- The elasticity of head office staff to volume growth projected by NERL during RP3 was 90% (i.e. head office FTEs increasing nearly directly in proportion to traffic growth), compared to only 20% at the benchmarks for which this data was available.

5.55 While we accept that the benchmarks for the elasticity to volume analysis were airports, this reflects the relatively poor public availability of such data. Nevertheless, we are advised by Steer that elasticities for the growth of head office staff at large organisations are typically close to values such as the 20% seen at the benchmarks used, while the 90% value projected for NERL is an outlier.

5.56 The elasticities used in Steer's projections (ranges of 25%-75% for MSGs and 20%-50% for PCGs) reflect this analysis, with the lower end of the ranges being at least as generous as generally seen for such staff groups and the higher end being a multiple of this.

5.57 While we have responded in detail to the comments on Steer's report, we would reiterate that the Steer report was only one part of the evidence we considered in reaching our views on an appropriate efficiency challenge for NERL's opex. In addition, it is for NERL to make specific decisions about how to run its business within the overall revenue allowance in the price control, so the analysis Steer did about specific efficiency opportunities are examples to inform a judgement.

_Traffic_Control/NERA%20report%20on%20NERL's%20staff%20opex%20(21.03.18).pdf

60 See Figure 6.14 of Steer's Final Report, p75

Top-down evidence

5.58 We reject the suggestion by NERL (repeated by EI) that we disregarded comparative evidence provided by NERL that purports to show that NERL is performing as well as could be expected on costs, based on comparisons with four (or six) other large European ANSPs.

5.59 We did not disregard this evidence. As explained below we consider these comparisons to be inconclusive at best and of little value from regulator's point of view in setting reasonably challenging efficiency targets for NERL.

Introduction

5.60 Appendix J of NERL's RBP included a comparative benchmarking analysis of NERL's costs (and charges) against a group of four large European ANSPs (France, Germany, Spain and Italy). EI's Opex Report extends NERL's Appendix J analysis by including two additional comparator ANSPs (Switzerland and Austria), which is consistent with the set of comparators to NERL used in Eurocontrol's "ATM Cost Effectiveness Dashboard".

5.61 Both Appendix J and EI's Opex Report benchmarking analysis are based on relatively simple performance indicators that are sourced from the PRU's 2016 and 2017 ACE benchmarking reports, respectively.

5.62 The analyses presented in Appendix J and in EI's Opex Report show that NATS performs relatively favourably within the comparator groups selected. However, we consider these findings of limited relevance to assess NERL's performance for the following reasons:

- We note that NERL argues that it's targets should be attenuated because of its good cost performance based on comparisons of 2017 data (while elsewhere NERL argues that 2017 was an unsustainable year and that it was necessary for costs to rise).
- Noting that NERL's costs rose significantly on an absolute and unit cost basis from 2017 to 2019 we note there is lack of evidence linking NERL's performance in 2019 with NATS performance in 2017, and specifically it does not present relevant equivalent comparator data for 2019.
- Setting this aside and focussing on 2017, it is unclear to us whether the comparators selected by NERL are appropriate. Or that the appearance that NERL does reasonably well against these comparators is sufficient for us to conclude that NERL has limited scope to be more efficient. We further note that in NERL's own analysis it typically performs close to the line indicating only average performance for European ANSPs.

- Noting that other factors such as complexity of airspace are relevant we do not think such a simple comparator is a fair assessment of NERL, but by the same argument, neither can reasonable or good performance on the basis of a limited selection of simple comparators be taken as compelling evidence of efficient performance.
- When a broader comparator set is considered there is mixed evidence on NERL's performance. Our view, at present, is there is no definitive analysis of the relative performance of ANSPs or their scope for efficiency improvement.

5.63 We discuss each of these reasons further below.

There is lack of evidence linking NERL's performance in 2019 with NATS performance in 2016 and 2017

5.64 The analyses presented in Appendix J and in EI's Opex Report assess the performance of NERL by comparing the performance of NATS (which includes NERL) up to 2016 and 2017, respectively. We have two main concerns about this approach.

- First, neither NERL nor EI have provided evidence to show how NATS and NERL's performances are related. NATS encompasses terminal ANS and other services, not covered by our regulations as well as the en route services offered by NERL. While we would expect that a relationship exists, no evidence was provided to prove the extent of such relationship. Moreover, no evidence was provided to show that a similar relationship exists for the other ANSPs in the comparator group. Without knowing the effect of these relationships, it is difficult to infer the relative performance of ANSPs that provide en route services from the relative performance of ANSPs that provide both en route and terminal services. Furthermore, on a Europe-wide basis it is well known that there are cost allocation issues with the comparative data which limits the ability of regulators to perform consistent comparisons.
- Second, the analyses presented do not provide evidence of the relationship between NATS's performance in 2017 and in 2019. This is of particular concern given that NERL's operating costs per CSU rose by 20% in real terms between 2017 and 2019. In the absence of equivalent comparator data from the PRB we do not know what effect this has had on NERL's comparative ranking.

It is unclear whether the comparator group is relevant

5.65 Top-down benchmarking of ANSPs' costs is a complex process with many factors potentially affecting the relative costs of different ANSPs, including, but not limited to, scale and airspace complexity.[61] A robust benchmarking analysis should first identify which factors are relevant, and then take those factors into account. This would ensure that apparent differences in performance are not driven by differences in those factors outside the control of the ANSPs.

5.66 To account for these factors, a commonly used approach consists in restricting the benchmarking analysis to a subgroup of comparator ANSPs which can be considered "similar" according to certain factors. Given that the results of such analysis will depend on the performance of the comparators, it is important that these comparators are chosen accurately. Furthermore, because costs are affected by multiple factors comparators may be similar in one dimension (e.g. airspace complexity) but quite dissimilar in another (e.g. traffic seasonality). This means there is no unique and correct subset of ANSPs that can be used for simple performance comparison.

5.67 Nevertheless, both NERL and EI have adopted this simple approach and compared NATS' performance with the performance of four or six European ANSPs, respectively, without engaging with the wider complexity of performing such simple comparisons.

5.68 These ANSPs are considered to share some of NATS' characteristics, for example in terms of size and airspace complexity. However, we have concerns regarding the appropriateness of some of these comparators selected for assessing NATS' performance. We explain our concerns related to size and airspace complexity below.

5.69 Firstly, while it is natural to contemplate the importance of economies of scale in activities that have a network element to them, such as air traffic control, there appear to be limited evidence regarding the presence of such economies. For example, Adler et al. (2018) performed a statistical test as to whether its Data Envelopment Analysis (DEA) benchmarking model supported economies of scale in the provision of en route services in Europe, and the hypothesis was rejected.

5.70 NERL's consultant Trax also states that despite continued traffic growth, larger European ANSPs have not faced increasing economies of scale. If there are no economies of scale, then size should not be considered amongst the factors that impact unit costs differently for different ANSPs. Therefore, it would not be appropriate to limit the comparators for NERL only to large ANSPs.

61 For more examples, see the discussion on factors affecting performance summarised in Section 2.2 of PRU's 2017 ACE benchmarking report

5.71 Secondly, while there is evidence that airspace complexity impacts costs,[62] there appear to be differences between both the complexity of the comparator ANSPs selected by NERL and EI, and the complexity of different parts of NERL.

5.72 Figure 5.2 shows the complexity scores of the European ANSPs in 2016 according to PRU data. As can be seen from the chart, there are some ANSPs, such as MUAC, Belgocontrol, and LVNL that are not included in the comparator groups but that are more similar in terms of complexity than some of the ANSPs included in the comparator groups, such as ENAV and ENAIRE. Therefore, the comparators used by NERL and EI might not be appropriate in terms of this specific characteristic.

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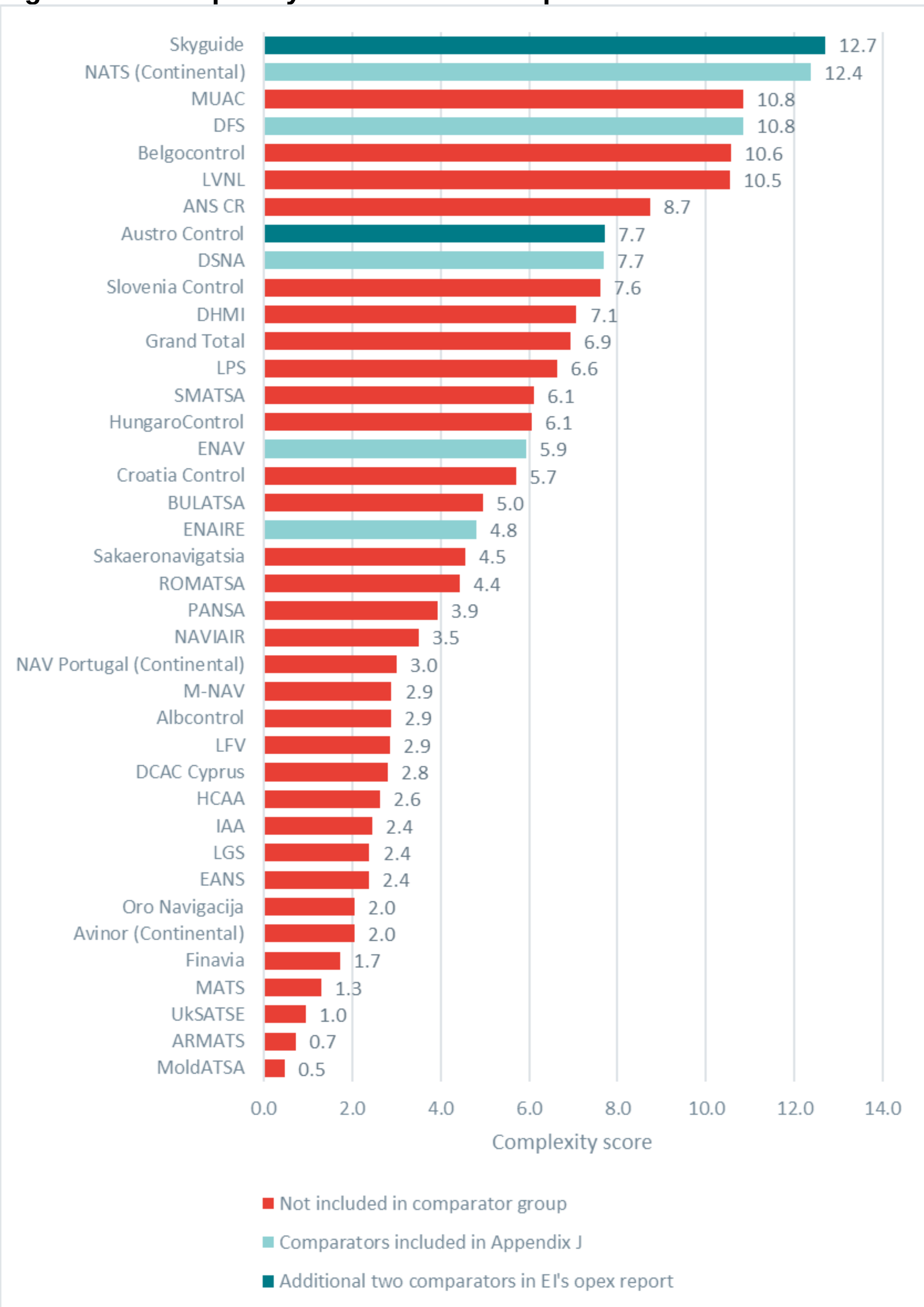
62 For example, see Adler et al. (2018), p. 23, and Trax (2019), p. 7

Figure 5.2: Complexity of ANSPs in Europe

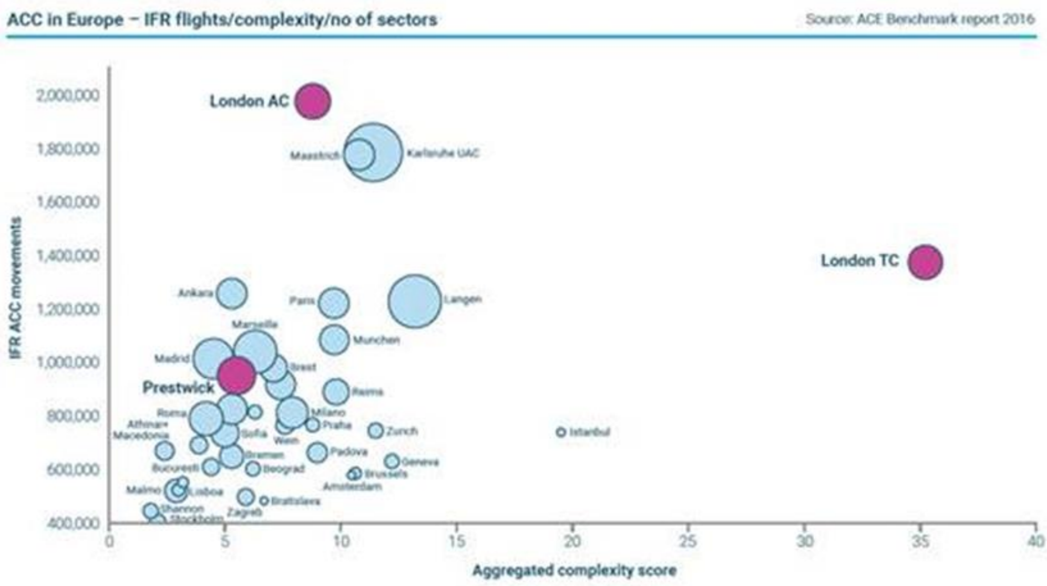


Source: PRU data portal, 2016 complexity score

5.73 Further to this point, Figure 5.3 shows the complexity of the European Area Control Centres (ACCs) against traffic volumes and number of sectors. The chart is taken from NERL's Appendix J. As can be seen from the chart, there are considerable differences between the three UK ACCs. Therefore, there may not be a simple comparator for NERL as a whole.

5.74 Overall, we are not satisfied that the comparator groups used by NERL and EI are appropriate to assess NERL's performance.

Figure 5.3: Complexity of ACCs in Europe



Source: NERL RBP Appendix J

There is mixed evidence on NERL's 2017 performance compared to other European ANSPs

5.75 Given the uncertainty surrounding the appropriateness of the comparator group selected by NERL and EI, we consider useful to assess NERL's performance against the performance of all other European ANSPs using two pieces of evidence that were presented to us.

5.76 Firstly, we assessed the evidence provided by NERL in its Appendix J. This evidence shows that NATS' costs are higher than the average costs across all European ANSPs for five out of the six simple financial indicators presented by NERL, and marginally lower than the average for the remaining financial indicator.

5.77 Secondly, we considered the scope of efficiency savings estimated by Adler et al. (2018) in their benchmarking analysis. Adler at al. (2018) estimated potential for efficiency savings using two different benchmarking techniques (DEA and Stochastic Frontier Analysis (SFA)), which take into account interactions between different inputs and outputs and also external factors affecting costs. Adler et al. (2018) have found that NERL has potential to reduce its operating and capital costs between 1% and 15%, depending on the model used. The higher figure is drawn from the SFA analysis which is more commonly used for regulatory benchmarking than DEA, because of its ability to parametrise the impact of external factors on relative performance.

5.78 We note that this analysis is indicative rather than a definitive assessment of relative performance of European ANSPs. Nevertheless, we concluded that there is mixed evidence on NERL's relative performance compared to other European ANSPs and some reasonable expectation that performance improvement is possible.

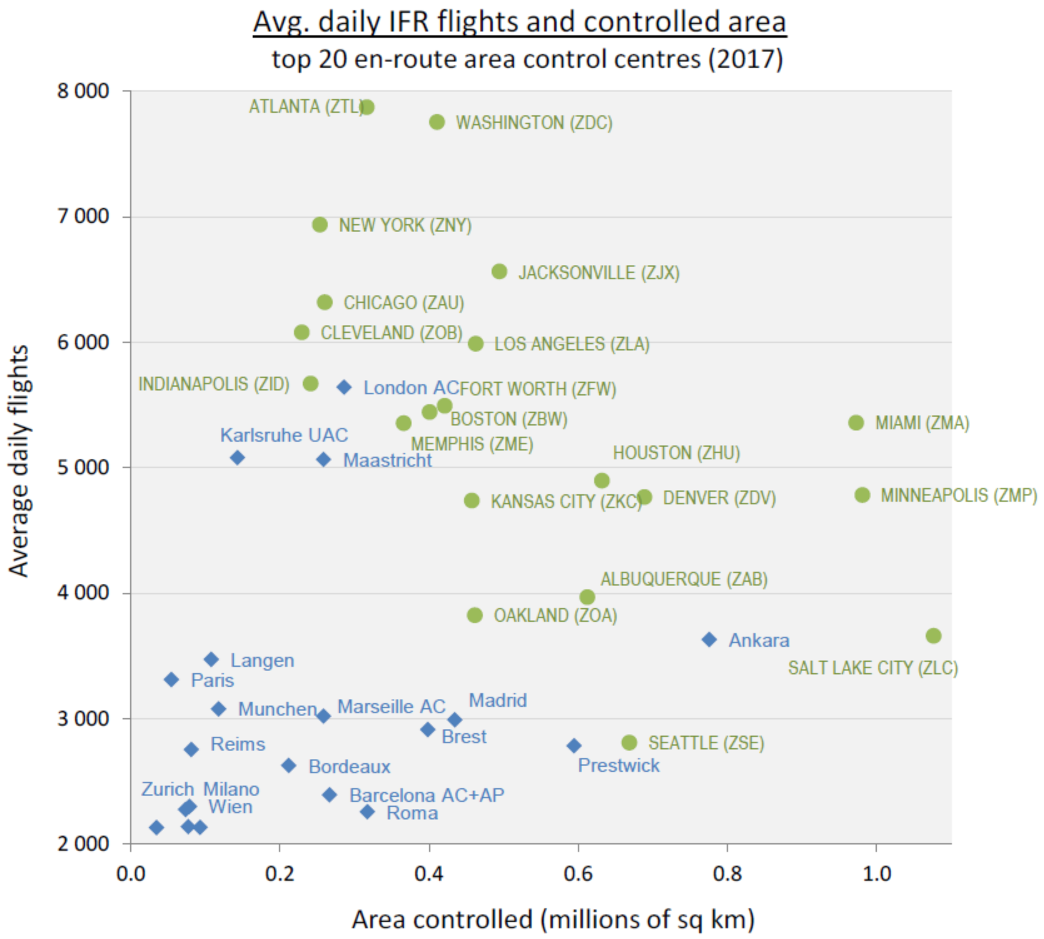
European ANSPs may not represent the limit of efficiency to which NERL could be expected to aspire

5.79 We note that the analysis presented to us so far relies on European data alone. However, there are alternative data sources to the ACE database, such as the CANSO database, which covers wider geographic areas and may include other comparator ANSPs at least as relevant as those in Europe when it comes to fully assessing the scope for efficiency improvements which NERL may be able to achieve. For example, the PRU's US-EU benchmarking analysis[63] found that, overall, the US ANSP performs better than European ANSPs. The same analysis also showed that the UK ACCs are more similar to the US ACCs than the European ACCs in terms of scale and controlled area (see Figure 5.4).

5.80 While there are some material differences in ANSPs across the globe, and international comparisons often present a challenge in terms of creating a consistent and comparable dataset, there are also significant commonalities in how ANSPs operate and the functions they perform. So, if international evidence indicates that ANSPs can be significantly more cost efficient than those we observe in Europe, it is not clear why that evidence should be disregarded. It is possible that NERL performs reasonably well in comparison to the other large European ANSPs. But if those ANSPs themselves are not particularly efficient then the comparison is of limited value to assess the scope of NERL's future efficiency improvements.

[63] Eurocontrol (2019), *2017 Comparison of Air Traffic Management-Related Operational Performance U.S./Europe*

Figure 5.4: Average daily flights vs area controlled – US-EU ACCs



Source: PRU's US-EU performance report

Section 6

Pension costs

Chapter 10 of the NERL SoC sets out issues relating to pension costs. Our main points and concerns with the views expressed by NERL are:

- Defined benefit (DB) pension costs should not be increased to the levels in the business plan, as proposed by NERL.
- Our efficiency adjustment to the DB deficit repair costs does not conflict with GAD's advice, as claimed by NERL, but instead reflects a reasonable assessment of advice from GAD, the relatively low risks associated with NERL's DB scheme, our concerns around the treatment of any future funding surplus, as well as the potential benefits from a stronger covenant from the regulatory policy statement (RPS).
- The efficiency adjustment was a judgement about the amount customers should fund upfront. The pension pass-through mechanism provides protection if the actual efficient DB deficit repair costs and ongoing employer contributions are higher than the allowed costs as a result of the actual financial market conditions that are outside NERL control and after all reasonable mitigations. We do not agree with the concerns that NERL has expressed about the protections offered by the pass-through arrangements.
- Our allowances for pension costs, the efficiency adjustment and the RPS are all in the public interest and consistent with our duties to protect users, encourage efficiency and take account of financeability.

Introduction

6.1 Chapter 10 of the NERL SoC discusses pensions costs. In this section we respond to the points raised by NERL, but focus on new arguments and evidence where these have not already been considered in our final decisions. We address the following issues:

- the efficiency adjustment to DB pension costs (including matters relating to advice from the Government Actuary's Department (GAD), how we dealt with changes in market conditions and issues around the possibility of a trapped surplus);
- the pass-through mechanism for DB pension costs; and

- defined contribution (DC) pension costs.

Efficiency adjustment to defined benefit pension costs

Advice from GAD and our efficiency adjustment

6.2 NERL has said that our advisers, GAD, endorsed the reasonableness of NERL's costs and the forecasts in its business plan and that our final decisions (including our efficiency adjustment) conflicted with GAD's assessment.

6.3 This is incorrect. We do not consider that GAD's review endorsed NERL's costs and we concluded from GAD's review and other relevant information that NERL's pension costs assumptions were not sufficiently stretching. In particular, it is important to note:

- GAD's finding that the NERL's DB and DC pension schemes are more generous than typical UK private sector pension schemes;[64]
- GAD's finding that the actuarial assumptions used to calculate the DB pension costs in NERL's RP3 business plan are within a broadly reasonable range compared to wider practice in other DB pension schemes, but the recovery period and discount rate assumptions are lower than the 75th and 95th percentiles for the benchmark sample of pension schemes. GAD highlighted that the CAA may wish to consider whether the level of prudence in the assumptions supporting the DB scheme valuation is optimal;
- there are strong protections in place from the pension cost pass-through and from NERL being a low risk regulated monopoly business, which support a lower level of prudence in the assumptions supporting the its DB scheme valuation compared to the average UK DB scheme; and
- comments from airline users that the "*Pension provision is continually changing throughout the UK and the airlines believe NERL is well behind the curve on this*."[65]

64 GAD, Analysis of pension costs for NATS (En Route) plc, report for CAA, September 2018

65 RP3 Customer Consultation Working Group, Report of the Co-Chairs, page 32

6.4 We asked GAD to review the pensions section in NERL's SoC and we include its response below.

GAD's response to NERL's comments, December 2019:

"In paragraph 341 of NERL's submission they state that GAD has endorsed the reasonableness of NERL's pension costs. In our view that is slightly misleading without including details on the context of our review. Our review compared NERL's pension arrangements against publicly available information on wider pensions practice, and whilst concluding that NERL's pension costs were within a reasonable range compared to wider practice, we also stated that "Such comparisons do not take into account factors which affect particular industries, sponsoring employers or pension schemes in isolation, and are provided as a guide only" (paragraph 1.33 of our paper) and "it is recognised that a "one-size fits all" approach is not appropriate" (paragraph 1.34 of our paper).

In paragraph 363 of NERL's submission they state that the judgement underlying that decision conflicts with the assessment of both its own advisers, which we have taken to mean GAD. It is important to note that the purpose of our review was to assist the CAA in understanding the factors affecting NERL's pension costs and the extent to which the funding approach is consistent with that of other UK private sector defined benefit pension schemes. It does not provide a view on what pension costs should or should not be allowed within the CAA's RP3 decision. For instance paragraph 1.34 of our paper states that "This review must not be interpreted as advising that a particular approach is necessarily inappropriate", (or by extension, that it is appropriate). Therefore the CAA's judgement does not conflict with our assessment as we have not considered what decisions should be made regarding allowable pension costs in RP3."

Market conditions and trapped surplus

6.5 The efficiency adjustment in our final decisions also reflected the possibility of a surplus arising at the next pensions valuation for 2020 and a lack of information from NERL around how the risk of a trapped surplus would be managed in the interests of customers.

6.6 NERL's statement that we have ignored evidence of recent market movements and in effect projected an improved position in financial market conditions is incorrect.

6.7 We reduced the efficiency adjustment between draft proposals and final decisions to reflect the new market evidence that NERL provided in the 2018 annual update to the 2017 valuation that the likelihood of a surplus in RP3 had reduced. However, we did not conclude that the reasonable possibility of a surplus has gone. GAD highlighted the inherent volatility of financial markets, meaning the funding position is highly uncertain and difficult to predict. We also noted that the 2017 valuation assumptions and 2018 update did not include the potential benefit from the RPS, which could increase the likelihood of a surplus.

6.8 We remained concerned that NERL had provided no response or new evidence to demonstrate how the risk of a trapped surplus and the DB scheme costs more generally would be managed in the interests of customers in future. The additional information we did receive from NERL actually led to further concerns on this issue:

- GAD viewed the ‘Guiding Principles for Long-Term Planning’ document as appearing to suggest that priority will be given to utilise a surplus by de-risking the investment strategy rather than reducing employer contributions,[66] where de-risking could lead to a reduction in the discount rate, which would be expected to increase the employer contribution rate but reduce the likelihood of a deficit re-emerging. We are not aware this approach has been discussed with airline users, nor demonstrated to be in customers’ interest; and
- GAD found that the guiding principles that NERL has agreed with the Trustees makes no direct reference to how the risk of a trapped surplus would be managed in the interest of customers.

6.9 NERL has suggested that we should address our concerns on the DB scheme surplus directly with Trustees through the RPS. We do not consider this to be sufficient. As set out in our final decisions, we plan to use the RPS to reinforce our commitment to stand behind NERL's covenant to honour its pension commitments, where based on efficient costs, where our allowances would derive from valuation assumptions that reflect the low risk nature of NERL’s business and continuation of the pension cost pass-through. The RPS will not set out NERL’s plans to manage pension costs and the risk of a trapped surplus in the interest of customers.

6.10 NERL has raised a concern that our efficiency adjustment will adversely affect the Trustees’ confidence in our support for ongoing pension costs, requiring a more prudent approach. We consider that this should be mitigated by the RPS, which is intended to provide additional confidence to the Trustees.

Pension cost pass-through

6.11 NERL suggests that we have misunderstood the legal effect of the pension pass-through mechanism through under the EU performance regulation, which may

66 GAD, Review of further evidence provided by NERL, report for CAA, June 2019

prevent the pass-through of the £18 million efficiency adjustment. This is a new comment that NERL has not raised previously and as explained below we do not accept the suggestions put forward by NERL.

6.12 We consider that NERL's description of the pension cost pass-through does not accurately reflect the operation of the EU legislation in this area. The key judgement which the CAA must make relates to what are "[un]foreseeable market conditions", which will need to be assessed on a case-by-case basis. In our final decisions, the efficiency adjustment we proposed reflected a judgement about what amount customers should fund upfront during RP3 and we have not made any independent economic assumptions at this stage about financial market conditions or what the efficient costs will be following the 2020 valuation. The actual financial market conditions in RP3 and the resulting DB ongoing contributions and deficit repair payments resulting from the next valuation in 2020 are not known and hence are unforeseeable. As a result, we consider that "unforeseen and significant changes" to costs efficiently incurred by NERL, which arise from the such unforeseeable financial market conditions (as opposed to factors within NERL control, such as salaries and staff levels) at the 2020 valuation, should be eligible for the pension cost pass-through under the EU performance regulation.

6.13 Our approach is also supported by the precedent at RP2 (2015-2019), which has been accepted by the Performance Review Unit which supports the European Commission. The determined costs for DB pensions were based on the cash contributions agreed between NERL and Trustees following their 2012 valuation and with a 10% reduction applied by the CAA to those contributions in 2018 and 2019. This 10% reduction reflected a cost challenge where the level of contributions required was based on a future valuation and uncertain, similar to RP3. Financial market conditions deteriorated between the 2012 and 2015 valuations, leading to a higher schedule of contributions agreed between NERL and the Trustees. In 2018, the DB pension cost pass-through of £12.2 million reflected the difference between these higher cash contributions and the determined costs set at RP2, reflecting the cost increase that was outside NERL control, after removing the impact of controllable cost increases and cost mitigations. NERL's description of the pension cost pass-through mechanism appears to contradict this approach, as it would imply for 2018 that the costs that NERL forecast at the 2012 valuation that were removed in the 10% reduction could not be justified or recoverable under the same mechanism.

Defined contribution pension costs

6.14 In addition to DB pension costs, NERL has also proposed that defined contribution (DC) pension costs should be restated in line with opex. We understand NERL's request to be a purely mechanical adjustment, though we consider the CMA may also want to bear in mind:

- NERL and airspace users did not agree a position on DC pensions during customer engagement. Airspace users wanted us to go further in assuming lower levels of DC costs, in line with those typically seen in the private sector; and
- GAD identified that the contribution rate (15%) was higher than might be considered typical, with FTSE100 companies on average paying around 10% of pensionable pay.

Section 7

Capital expenditure, incentives and governance

Chapter 11 of NERL's SoC discusses issues relating to capex. In our view, the substantive points of difference between us and NERL are as follows:

- NERL claims that our proposed changes are a move from *ex post* to *ex ante* regulation. This is incorrect. Our approach is still *ex post* and we have always been clear that that we will allow all capex spending provided that it satisfies our governance proposals, including that it is efficiently incurred.
- NERL claims that our capex allowance will not be enough for it to deliver all of its investment programme. Similar to the above, this is unfounded because we will allow all efficiently incurred capex spending provided that it satisfies the governance proposals.
- NERL claims that our proposals will be costly and burdensome to implement. However, as NERL also says, it already carries out a large amount of this work internally. It should therefore not be especially costly or burdensome to share this with stakeholders and to engage more, and it is appropriate given the size of NERL's capex programme.

We are surprised and disappointed that NERL is opposing additional governance arrangements that would give its users a greater role in decision-making, given that its customers will be well placed to help inform what services and investments are needed for NERL to most effectively meet the reasonable needs.

We consider our proposals are in the public interest because they provide for enhanced governance and incentive arrangements for NERL's capital programme, which are particularly important in the context of NERL playing its full part in delivering airspace modernisation. All efficiently incurred capex will be allowed into NERL's RAB, provided that it satisfies our governance proposals and efficiency tests, and airspace users will have greater transparency over NERL's plans.

Introduction

7.1 In our initial submission, we provided a clear summary of our proposals on capital expenditure (capex) governance from our final decisions. We highlighted that these proposals were necessary based on the unsatisfactory experience in RP2 where NERL significantly changed its capex programme, spending more and delivering less benefits to airspace users, without engaging satisfactorily with airspace users or wider stakeholders.

7.2 In NERL's SoC, it made the following main points on capex/capex governance that we disagree with:

- NERL claims our proposed changes are a move from *ex post* to *ex ante* regulation;
- NERL claims our capex allowance will not be enough for it to deliver all of its programme;
- NERL claims that our proposals will be costly and burdensome to implement and criticises our proposals for a delivery incentive; and
- NERL also made a number of comments that we disagree with about the Steer Helios report that we commissioned to assess the efficiency of NERL's capex programme.

7.3 We are surprised by the first two points. We have always been clear how our proposals would work, and this is the first time that NERL has described them as a move towards *ex ante* regulation, or that we would not allow its programme in full. In our view, these two points are related, so we discuss them together below.

7.4 We also note that NERL appears to be ignoring why we are proposing to introduce our proposed changes in the first place. Further changes to its programme and delays must be avoided in RP3 – except where agreed through a robust governance process – especially given the pressing need to implement airspace modernisation. For this reason, we believe that our proposals are reasonable and appropriate given the size and importance of NERL's proposed capex programme.

7.5 More generally, we were disappointed by NERL's response to our proposals for greater engagement with airspace users. As a statutory monopoly, it is even more important that NERL should embrace offering a truly meaningful role for its users to input into investment decisions. This is because NERL does not face the same incentives to take into account its airspace users' views and requirements that companies operating in competitive markets would face. Providing a truly meaningful opportunity for users to input into investment decisions is not a constraint on flexibility of decision-making, but rather an opportunity for NERL to make better decisions that better reflect its users' needs.

Allowed capex spending and incentives

7.6 NERL has claimed that our capex allowance will not be enough for it to deliver its programme in full. It also describes our proposals as a move from *ex post* regulation to *ex ante* regulation. These two points are incorrect. As we have stated in our working note on our governance policy development, our final decisions, and most recently in our initial submission, we will allow all capex spending that passes our governance processes, including that it is efficiently incurred. As a reminder of our proposals, which are described in more detail in our initial submission, we are proposing three capex incentive mechanisms:

- An overall delivery incentive designed to encourage timely delivery:
  - This focuses on whether NERL meets project milestones. Clearly, by definition, this incentive is *ex post* as it is carried out after projects are delivered.
  - Also, we will not force NERL to deliver a project that turns out to be no longer required, or if circumstances arise such that the project should be rescoped into something different. However, this will need to be communicated to, and agreed with, airspace users in an appropriate manner.
- An ex post efficiency review that will consider NERL's RP2 capex and in due course RP3 capex.
  - Whereas the incentive above focuses on whether NERL delivered the benefits of its projects in a timely way, this incentive focuses on whether that delivery was efficient. Before RP4, we will commission an independent review of the cost efficiency of NERL's RP2 capex and early RP3 capex. Due to the timing of the RP reviews, we would review the efficiency of late RP3 capex at RP5, rather than RP4. If the review identifies any expenditure as inefficient, we may decide to disallow some or all of the inefficient spend. This could be implemented by a downwards adjustment to NERL's starting RAB for RP4 (or RP5 for late RP3 capex). By definition, this is an *ex post* review.
- An information incentive designed to ensure NERL provides stakeholders an appropriate level of detail as part of its engagement on its capex.
  - In the event of any capex overspend during RP3, we will assess the quality of the information that NERL provided to airspace users as the project was developing. If NERL has failed to appropriately explain or justify the overspend to airspace users, we will impose a penalty whereby, NERL will only remunerated at the cost of new debt rather than the full WACC on the level of the overspend. Similarly, by definition, this is an *ex post* review.

7.7 Given the above, our approach clearly remains an *ex post* approach, and there is therefore no reason for NERL to believe that it will not be allowed to deliver its programme in full. NERL commented that if it had known about these capex incentives while it was producing its business plan it would have added an extra £150m to its programme. However, as our incentives do not change the *ex post* regulation, we see no reason why the capex amount should be changed from our final decisions. As noted in our final decisions, we will carry out annual reviews of NERL's capex performance, such that our final decisions on the incentives above will likely not be a surprise to NERL later on in RP3, and they will provide an opportunity for NERL to address concerns during RP3 and so should reduce rather than enhance risks.

7.8 We also do not accept NERL's suggestion that the delivery incentive will create the unintended consequences set out in NERL's SoC[67]. In particular, in making judgements on the application of the delivery incentive we will have full regard to the over-arching importance and safety and would expect NERL to pause and/or delay the implementation of new systems if it identifies a genuine risk to safety.

7.9 NERL also commented that we have not allowed enough opex for it to carry out its capex programme. However, we have allowed additional opex for this, see paragraph 5.25 of our final decisions.

Cost/burden of implementing improved governance arrangements

7.10 NERL has commented that our proposals will be costly and burdensome to implement. However, as NERL mentions itself, it actually already carries out a large volume of work internally which could be shared with us and airspace users:

- In document SOC094, NERL notes that it already produces business plans, cost benefit estimates and programme closure reports. It also has gate process reviews, and has commissioned independent value for money assessments.
- NERL commented that it has improved its internal processes during RP2, including introducing a 'Portfolio/Programme/Project Office' (P3O). And in document SOC077, it has described the governance mechanisms that it had for approving investment decisions at various levels of spend.

7.11 However, NERL does not routinely share this information with us or airspace users. This is despite us saying that sight of business cases would give us and customers greater assurance of cost efficiency. If NERL is already carrying out work of this kind, then sharing it with us and airspace users cannot be especially costly or burdensome.

7.12 It is concerning for us that NERL's principal response to proposals to provide more meaningful opportunities for its users to engage and influence investment

[67] NERL, SoC, para 458

decisions is that they would be costly and burdensome. NERL should be embracing the opportunity to involve its users more fully in investment decisions because ultimately that provides an opportunity to make better decisions.

7.13 In terms of how NERL engages with stakeholders, we note that it also misrepresented the “5-stage process” that we described in our final decisions. We were clear that this process *could* be used by NERL but it is not mandatory. We said that it was NERL’s responsibility to take ownership of its processes and to ensure that it engages proactively and positively with its customers. We note that Heathrow Airport engages with its customers in more detail than we are setting out for NERL and it still remains accountable for its investment. If airspace users and NERL cannot agree on specific investment projects, there is scope for the parties to seek our view.

7.14 Economic Insight comments that NERL does not approve of our plans to enhance the role of the Independent Reviewer (IR). It says that it is doubtful that the IR will be well placed to evaluate and advise on technical matters, such as capex efficiency. However, we note that the IR will be made up of multiple individuals with a mix of skills to ensure that the role will be fulfilled. The IR will also have an important role in providing information within RP3 that will inform in our *ex post* assessments.

7.15 We do note that NERL’s capex programme largely relates to specialist IT projects, which are intangible in nature and challenging for airspace users to engage with. However, in our view, this is largely irrelevant. Many other companies also have capex programmes that are mainly specialist IT projects. In fact, it is precisely for these reasons that NERL should be engaging more with airspace users and wider stakeholders to give them greater comfort on the plans. The IR will also play a role in providing information that will enable airspace users to reach a view on such projects.

Steer Helios report

7.16 NERL commented that the Steer Helios report that we commissioned to assess the efficiency of NERL’s capex plan was very high level, and that Helios (who led the review of the capex programme) had failed to produce any impact assessment of its proposed reductions.

7.17 However, we note that the details in NERL’s business plan were so high level, that such an assessment was simply not possible. For example, the DSESAR programme, valued at £299 million, was summarised by NERL in only 5 pages. Similarly, Helios described NERL’s proposed £80 million TC Foursight project as an “*envelope without specific deliverables*” and that the “*requirements on this tool are not defined*”. Helios also noted there was “*self-evident uncertainty* *around the programme, as it has already been moved in and out of RP3 investment plans over the past 2-3 years.*"

7.18 Helios' overall concerns with NERL's business plan capex programme, which it considers are still valid, are that while NERL's plan gives a qualitative description of the RP3 programme, it does not allow:

- traceability of quantitative benefits at sub-programme level;
- testing of whether the benefits proposed are appropriate or underplayed;
- testing that the costs proposed are efficient; and
- understanding of programmatic risks and their impact.

7.19 We agree with these points. And for the reasons described above, we believe that our proposals offer appropriate protections to airspace users, are in line with our statutory duties and are in the public interest.

Section 8
Oceanic price control

Chapter 12 of the NERL SoC deals with matters relating to the Oceanic price control.

The main points and issues of concern covered in this section are:

- CAA and NERL are in agreement that net benefits should come from NERL adopting the ADS-B service. Our differences relate to the cost allowances used to set the Oceanic price control;
- our view is that NERL has buyer power in relation to the ADS-B services and we consider that there is scope for efficiencies to be made across the business, as there has been in previous price control periods. Given that our assumptions on efficiency are reasonable, NERL's suggestions that its Oceanic activities will require cross subsidy appear to be misplaced; and
- a full financeability assessment is something best undertaken at the level of the Licenced entity (NERL), but in any case we have allowed an appropriate cost of capital in setting the Oceanic price control and so these activities should be reasonably financeable.

An effective management team should be able to deliver the modest efficiency assumptions that have been set for this business. We therefore remain of the view that our final decisions for NERL's Oceanic price control are in the public interest and are consistent with our statutory duties.

Introduction

8.1 This section deals with issues relating to the Oceanic price control. Much of NERL's SoC focusses on the introduction of the ADS-B satellite-based technology service. We support NERL's proposals to introduce this new service on the basis that we expect that its introduction should result in a net benefit for airspace users. Our final decisions were based on this technology being successfully deployed during the period of the new Oceanic price control.

8.2 NERL's concerns are therefore not about the introduction of the ADS-B service but are focused on the cost allowances we have made in setting the Oceanic price control. We address these matters below and in particular NERL's concerns with:

- the determination of the appropriate data costs for the ADS-B service;

- the wider efficiency assumptions that we have applied to the costs associated with the Oceanic services; and
- our approach to assessing financeability.

Technology update – the ADS-B service

8.3 NERL challenges the application of the 5% efficiency target to the data charges for the ADS-B service. It does this on the basis that it says that it has no control over the level of charge that it pays. NERL goes on to claim that, if the costs are not allowed in full, it may be forced to cancel the contract for the service and this could have implications for safety. In contrast, we continue to consider that the efficiency target is reasonable.

8.4 As NERL recognises, Aireon is the monopoly provider of the ADS-B service.[68] If NERL's characterisation that ANSPs have no control over the level of these charges is correct, then there is a risk that Aireon will charge monopoly prices to the ANSPs. Any costs we allow would then be recovered from airspace users. Because the investment in Aireon is made by NSL (rather than NERL), any shareholder returns it makes from this investment will not go into the single till. As a consequence, if it turns out that the costs that we allow are above the efficient competitive level, NATS' shareholders will benefit from this error at the expense of NERL's customers. This would not be consistent with our duty to further the interests of users or the public interest.

8.5 The risk that contract prices are set above a competitive level may be exacerbated by the contract that NSL has with Aireon. NERL makes reference to a contract clause[69] that means that ANSP's can object to more favourable trading terms being given to any other ANSPs. While we have not seen the contract to understand exactly how it has been framed, it appears to be an example of a so-called "most favoured nation" (MFN) clause. This may increase the cost to Aireon of cutting prices, which could make price cuts less likely. This is something that we consider needs further investigation and we will therefore separately be writing to NERL to ask for a copy of this contract.

8.6 NERL's answer to these concerns about the risks of monopoly pricing seems to rely on the Euroconsult report,[70] and the comfort it considers that it provides on the question of whether the pricing is fair and returns are commensurate with the level of investment and risk faced by Aireon. It is difficult for us to assess this

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68 NERL, SoC, paragraph 496

69 NERL, SoC, paragraph 5

70 Euroconsult Independent Assessment of Aireon LLC and Iridium Communications Inc, 30 September 2016 (SOCO24).

work, given the information asymmetries between us and Aireon and the lack of benchmark comparators. We also know that airspace users continued to have concerns about this work following the workshop NERL ran to review the Euroconsult assessment of Aireon in August 2018.[71]

8.7 Instead, in contrast to the picture it tries to paint in the SoC,[72] we believe that NERL has significant buyer power to negotiate more favourable data charges. As NERL sets out in the SoC, it can terminate the contract that it has with Aireon[73] seemingly without penalty. If NERL were to do this, as well as losing the revenue Aireon would have expected to receive from NERL, it would also lose revenue it would have expected from other ANSPs who services border NERL's region, such as NavCanada.[74] This would potentially put NERL in a relatively strong negotiating position with Aireon.

8.8 We therefore believe that our proposal to apply a 5% efficiency target to the data charges is in the public interest given NERL's buyer power and the risk that, absent intervention, monopoly prices could be passed through to airspace users while still benefiting NERL shareholders.

8.9 NERL is saying that its response to this could be to terminate the contract with Aireon, and suggests that if it does so, we will need to consider our position with regard to the priority of the Safety Duty. An effective management team should be able to deliver the modest efficiency assumptions that have been set for this business and if the business is unable to meet these targets this is a matter for shareholders. It is not appropriate for NERL to threaten actions which might impact on safety and it should not do so. We therefore remain of the view that our final decisions for the Oceanic price control are in the public interest and are consistent with our statutory duties – including to maintain high standards of safety in the provision of air traffic services.

Other cost efficiencies

8.10 As well as objecting to the 5% efficiency target applied to ADS-B data charges, NERL also objects to other efficiency assumptions that we applied to the Oceanic business, largely because it considers them to be "*unsupported*".[75] A number of the reasons for the differences are addressed in other sections (such

71 SOC072 "Workshop to review Euroconsult Assessment of Aireon" (non-NDA version), 15th August 2018 p3.

72 This can be seen in the NERL SoC, for example paragraphs 498 and 50

73 NERL, SoC, paragraph 522

74 NERL, SoC, paragraph 519

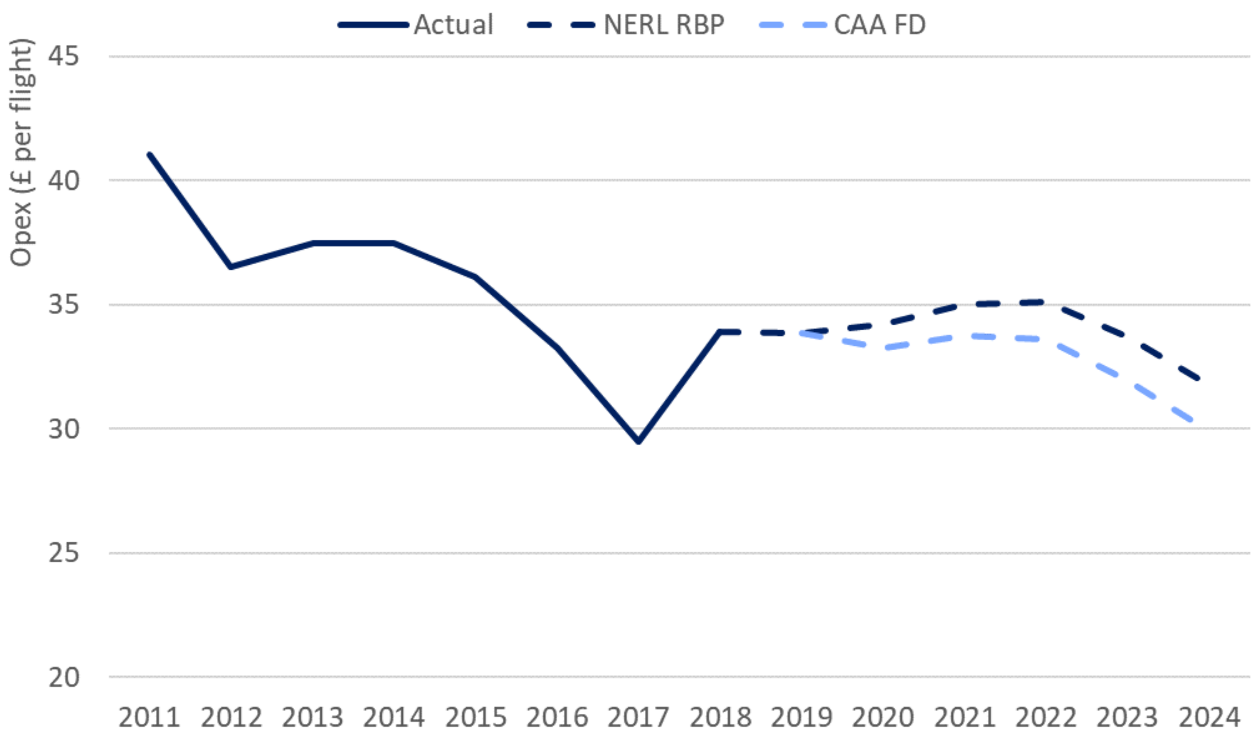
75 NERL, SoC, paragraph 481

as the impact of WACC). The two that we discuss here relate to our assumptions about operating costs and capex costs.

8.11 Whereas NERL considers that all of the costs it has put forward should be allowed, our assessment is that efficiencies are possible, as has been the case in previous control periods. This is illustrated in the Figure below. This shows that operating costs per flight have been falling over CP3[76] and RP2 at a rate equivalent to a constant annual efficiency improvement of about 4.9% per year. This represents outperformance compared to the level of costs that were determined as part of the previous price control settlements. In addition, total actual costs in 2017 were 5.9% lower than the level of determined costs in RP2, despite much higher outturn traffic levels.[77]

8.12 However, despite these efficiencies, NERL is forecasting that opex costs will start to rise from approximately the end of RP2 till year 2022. We can also see that the opex efficiency target that we have proposed for RP3 does not exceed the levels of cost that had already been achieved by 2017.

Figure 8.1: Oceanic operating costs per flight in CP3, RP2 & RP3



Source: CAA

[76] Prior to the EU performance scheme, NERL price controls were set over 'Control Periods (CP). The performance scheme introduced the term Reference Periods (RP). CP3 ran from 2011 to 2014, whereas RP1 covered only 2012 to 2014. While the EU regulation does not apply to NERL's Oceanic business, in the interests of consistency, we have adopted the use of the term RPs since 2015 for all NERL regulation

[77] CAA draft proposals (February 2019) Table 11.1 p.110

8.13 We have therefore applied modest efficiency stretch factors to these costs, in line with decisions made elsewhere for the en route business. We felt that these were appropriate for the following reasons:

- shared costs make up around half of the Oceanic operating cost base and therefore it makes sense that the targets are commensurate;
- undertaking a study specifically on the Oceanic business for the costs that are not shared was felt to be disproportionate to the value of these services, given that the Oceanic service is a relatively small part of NERL's business, constituting about 4% of NERL's total costs and revenues in RP2;
- we considered it appropriate to apply the efficiency savings to every year of RP3 (rather than only the last two years, as we did for the en route services) because of the different situation each business faced with respect to airspace modernisation. The reversal of en route opex adjustments between draft proposals and final decisions was driven by the significant changes associated with airspace modernisation during RP3 for that business. We did not consider these applied to Oceanic business, given the investment that was undertaken in RP2 and allowed in RP3 capex to enable and prepare for the implementation of ADS-B service; and.
- the efficiency assumptions are in line with historical levels of outperformance.

Relationship between the Oceanic and en route businesses

8.14 NERL appears to suggest that a financeability assessment should be carried out of each separate business unit, including Oceanic. We note that this is not a point we are aware that NERL has raised before and this may also explain why its own financial model is not set up in a way to facilitate such an assessment.

8.15 Our view is that a full financeability assessment is something to be undertaken at the level of the licenced entity, which needs to be supported by debt and/or equity financing, rather than focus on individual activities or business units. Nonetheless, we have allowed an appropriate cost of capital in setting the Oceanic price control and so its activities should in any case be reasonably financeable. We regard this approach as consistent with our statutory duties and the public interest.

Section 9

Cost of capital

Chapter 13 of the NERL SoC deals with issues relating to the cost of capital. The allowed cost of capital (WACC) is the largest driver of differences between NERL's position and the CAA's position on RP3. Within the subject of allowed WACC, Total Market Return and Asset Beta are the two most important factors. Our main points are:

- We approached RP3 as a fresh exercise to determine the appropriate allowed WACC for NERL.
- We did not start with our RP2 estimate and adjust for proportionate changes in related economic variables. We do not consider that this would provide the correct baseline for RP3.
- We consider the balance of evidence has changed since RP2, leading to an allowed WACC that should be significantly lower in RP3 than we set at RP2, taking into account the available evidence. This is materially different to NERL's business plan.
- Our estimates for total market returns are in line with recent analysis on the cost of equity for the UK Regulators Network as well as the evidence presented by UK utility regulators in their most recent consultations and determination documents.
- We have set an equity beta of one. We consider in principle that this appears to be generous and that it is unlikely that NERL would have an equity beta higher than the market average given NERL is a statutory monopoly with significant regulatory protections against key business risks.
- We do not consider that NERL's proposed allowed WACC is in the interest of customers as it exaggerates NERL's WACC and places too much weight on unnecessary support for NERL's financeability, and on this basis is also not in the public interest.

On "aiming up"

- We understand NERL to be asking the CMA to consider 'aiming up' in its determination of the allowed WACC (SoC paragraph 602).
- NERL made a similar point in its response to our draft proposals, which we responded to in our final decisions, explaining that we did not consider it was appropriate to aim up.
- Our approach was to set the allowed WACC based on a reasonable estimate of NERL's efficient cost of capital taking account of all the available evidence. This included adjusting the debt and equity beta upwards for our final decisions based on further evidence provided by NERL.
- We do not consider that an explicit adjustment to aim up in setting the allowed WACC is necessary for financeability and such an approach would not be in the public interest.

Introduction

9.1 NERL have made a number of criticisms of our determination of allowed WACC for RP3. In addition, NERL's advisers (Economic Insight – EI) have also raised a number of specific criticisms of the approaches adopted by NERL and by the CAA. It will be for the CMA to consider these issues as a whole.

9.2 In the rest of this section we provide a summary of the points of issue and explain our position in light of NERL or its adviser's criticisms. For simplicity of comparison we group the arguments by parameter in the same manner as NERL. As set out in our final decisions, it is important to note that while we have considered these individual parameters, we have also made an overall judgement about the appropriate allowed WACC. In making this judgement, we considered stakeholder views, and recent consultations and decisions from other UK regulators, while recognising the differences in the risks that NERL faces. This overall judgement was important to avoid placing undue reliance on individual parameters that require judgement.

9.3 While NERL draw heavily on the EI report for their SoC, and the EI report was produced for these proceedings, some of the points have been made previously by NERL during the price control determination process. Where possible, this section focuses on the new evidence and arguments presented and refers back to our previous publications where NERL or EI re-present substantially the same arguments NERL has made before.

Total Market Return (TMR)

NERL position

9.4 NERL's main new claim on total market return (TMR) is that the RP3 estimated TMR when compared to the RP2 TMR implies an implausibly large and rapid reduction in equity returns and productivity that is also inconsistent with the CAA's more stretching efficiency targets for NERL. In addition to these new articulated points NERL also reiterate two criticisms from its response to our draft proposals. These are that the holding period and predictability of returns adjustments are excessive, and that the CAA's use of a hybrid RPI/CPI historical inflation series understates real returns.

CAA position

Overall approach

9.5 The process and methodology for setting TMR should not be unduly constrained by the exercise undertaken five years ago for RP2. Financial market conditions have changed since the RP2 decision and new evidence is available on both historical and forward-looking returns.

9.6 The UK Regulators Network (UKRN) report on estimating the cost of capital for implementation of price controls provides new perspectives and insights on the estimation of TMR.[78] PwC reports for CAA over the period 2017-2019 reviewed market evidence on lower forward-looking equity returns in the current low interest rate environment. These reports provided updated estimates of historical *ex post* and *ex ante* equity returns. We have also observed commentary from the investment community who continue to be downbeat about the prospective equity returns; for example, recently from UBS – "*Returns for the most part are likely to be much lower than in the last decade – we expect 4%–6% nominal returns per year in developed markets in local currency terms.*"[79] This evidence informed our decision to undertake a comprehensive review of TMR for RP3. On the balance of accumulated evidence we consider that our approach is a reasonable one.

9.7 Our decision was not merely an exercise in updating the RP2 TMR estimate. Our RP3 TMR decision was based on a comprehensive review of the latest market evidence, regulatory insight and academic insight in this area.

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78 Professor Wright et al. Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018

79 UBS, Year Ahead 2020 – UBS House View, The Year of Choices, The Decade of Transformation, November 2019

9.8 For RP3 we adopted methodologies and assumptions based on this latest evidence. There are differences between these and the methodologies and assumptions we used at RP2. EI noted the differences between the CAA's RP2 and RP3 methodologies in their paper "Review of the Evidence on the WACC". EI concluded that in their view the points of issue that drive the difference between the TMR in RP2 and RP3 had not *"been objectively resolved one way or another."*[80] EI did not conclude that the RP2 methodology was superior to the RP3 methodology.

9.9 Given our approach, NERL's suggestion that our determination implies implausible changes in equity returns and productivity from RP2 are unfounded. Our RP3 determination does not estimate or assume particular changes in economic conditions from RP2 to RP3, as we consider the current range of evidence rather than starting from the RP2 level and considering changes.

9.10 The difference in TMR estimates from our RP2 decision to our RP3 decision also does not (as NERL and EI state) infer a CAA view on the changes in the outlook for the UK economy between RP2 and RP3, or that we have now taken a 'short term' view. Instead, it reflects refinements to the methodologies applied by the CAA, as well as other UK regulators, and the updated evidence base, which includes an updated range for long-run average historical returns in the UKRN cost of equity report and forward-looking estimates from modelling and published surveys.

Benchmarks for TMR

9.11 In our draft proposals and final decisions, we set out that our point estimate from TMR is supported by *ex post* historical returns as well as the wider evidence base that we considered on forward-looking evidence from ex ante estimates, dividend discount models, market-to-asset ratios analysis and survey evidence.[81] Figure 9.1 below provides a wide range of benchmarks for TMR estimation. These align well to our estimate but NERL's estimates lie outside most sources of evidence, so do not appear to be supported by the range of available evidence.

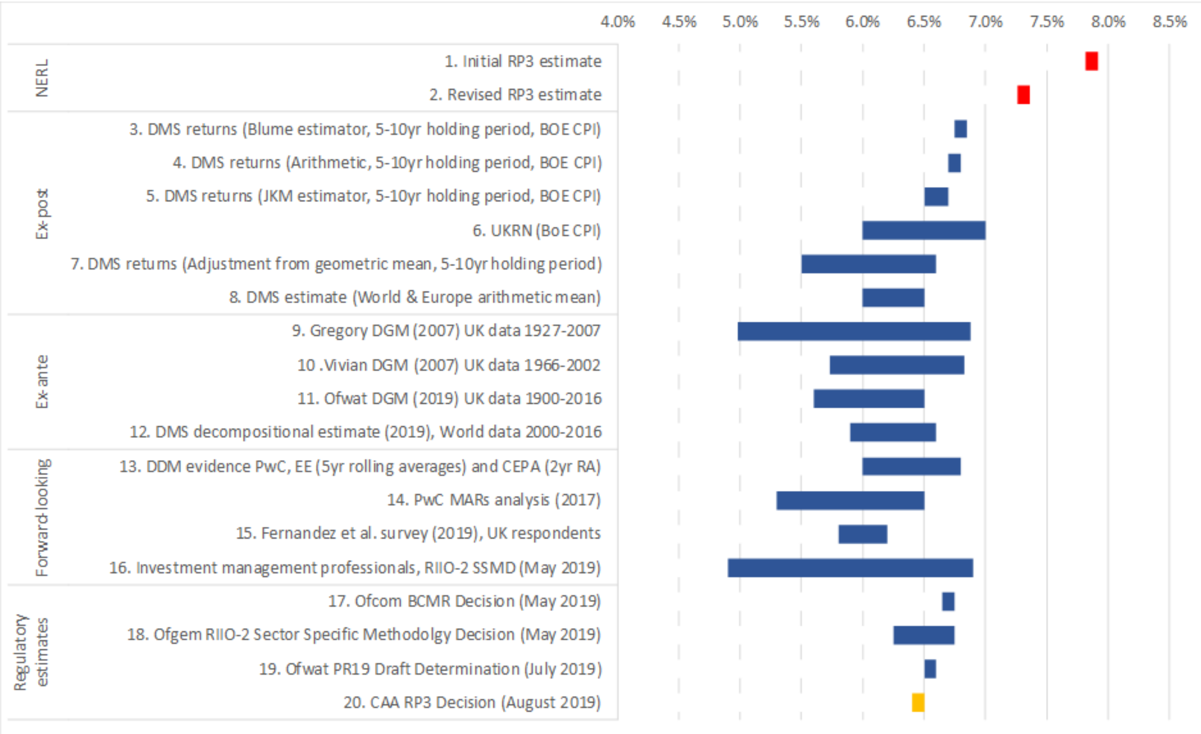
9.12 Figure 9.1 shows the most recent regulatory estimates available, including those by Ofgem and Ofwat. We note that Ofwat's PR19 Draft Determination from July 2019 proposes a TMR (real RPI) of 5.47% which is very similar to our own point

80 Economic Insight, November 2019, Review of the evidence on the WACC at RP3, Page 46

81 *Ex ante* estimates of TMR are based on adjusting historical equity returns to remove the impact of events that are unlikely to be repeated in future. Dividend discount models combine assumptions about dividend growth with the price and dividend yield to estimate TMR. Market-to-asset ratios analysis estimates TMR from the premium of the market valuation of regulatory equity over its face value. Survey evidence provides financial practitioners' views on forward-looking TMR.

estimate. EI ignore the more recent regulatory estimates from Ofgem and Ofwat in their review of the available evidence on the basis that they consider them to be "*irrelevant*".[82] We do not think it is correct to exclude this data from consideration and including it clearly shows that our estimate is in line with the most recent regulatory estimates by these UK regulators.

Figure 9.1: PwC summary of Total Market Return estimates, real-CPIH



Source: PwC analysis of published sources

Note: The CAA (Feb 2019) and NERL assumptions have had a CPIH-RPI wedge of 1.0% applied using the Fisher Equation for cross comparability

RPI/CPI historical inflation series

9.13 We have been clear in our draft proposals and final decisions that we consider our approach to the issue of using historical inflation series for calculating the TMR is appropriate for calculating an unbiased estimate of the RPI-deflated TMR. This approach is also consistent with the approaches used by Ofwat, Ofgem and Ofwat. Our position is set out in:

- Appendices to Draft UK Reference Period 3 Performance Plan proposals,[83] paragraphs D20-D24

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82 Economic Insight, Assurance review and assessment of the evidence on the WACC at RP3, A report for NATS, November 2019, page 54

83 CAP 1758A Appendices to Draft UK Reference Period 3 Performance Plan proposals – for consultation

- UK RP3 CAA Decision Document: Appendices,[84] paragraphs E33-E51

Holding period adjustment

9.14 We have been clear in our draft proposals and final decisions that we consider our approach to the issue holding period adjustment produces appropriate estimates of TMR. It also aligns with the recommendations set out in the UKRN report on estimating the cost of capital.[85] Our position is set out in:

- Appendices to Draft UK Reference Period 3 Performance Plan proposals, paragraphs D25-D29
- UK RP3 CAA Decision Document: Appendices, paragraphs E33-E51

Asset Beta

NERL position

9.15 NERL claim that the RP3 estimated asset beta when compared to the RP2 asset beta implies a reduction in systematic risk that NERL feel is unjustified.

9.16 NERL criticise the CAA's asset beta estimation for not including a number of adjustments in the comparator analysis to account for differences between NERL and comparator companies, and for using domestic equity indices for the purposes of comparing stock market returns and asset returns.

9.17 EI raise some specific points about the time periods used to estimate asset betas.

CAA position

The implied change in risk from RP2 to RP3

9.18 There are a number of factors which can influence the estimate of NERL's beta, including changes in the risk profile of NERL but also NERL's relative positioning in the wider market environment and improvements in beta estimation techniques. Our decision was not merely an exercise in updating the RP2 equity beta estimate, it was based on a comprehensive review of the latest market evidence available.

9.19 Given that the RP3 estimate partially reflects the availability of improved beta estimation techniques (e.g. ENAV is now available as an observable publicly traded comparator) the change in beta should not be interpreted solely as our estimate of the change in the true risk of NERL from RP2 to RP3.

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84 CAP 1830a UK RP3 Decision Document: Appendices

85 Professor Wright et al. Estimating the cost of capital for implementation of price controls by UK Regulators, March 2018

9.20 In addition to considering the appropriate asset beta for RP3, we have considered whether the resulting estimates for the equity beta are consistent with NERL being a monopoly with significant regulatory protections around specific business risks. We provide further details on this below.

Use of comparators and appropriate adjustments

9.21 Our comparator analysis uses higher risk utilities as a lower bound reference point, UK airports as an upper bound reference point and a comparison with ENAV, the publicly traded Italian ANSP (to which we make some adjustments to improve comparability with NERL).

9.22 We consider that it is reasonable to use utilities as a lower bound reference point and the European Commission's ANSP report (2014) stated "*that revenue and cost risks for ANSPs are broadly similar as for electricity, gas and water utilities*".[86] This reflects that NERL and UK regulated utilities have some common risk features, such as being largely statutory monopolies under UK RAB-based regulation. Furthermore, our lower bound is not informed by purely regulated utilities, which have unlevered betas below 0.3.[87] Our lower bound is informed by Europe Economics' analysis of the betas of a mix of higher-risk utilities that have a share of non-regulated revenues.

9.23 Similarly, we consider that it is appropriate to use UK airports as an upper bound reference point. This is supported by the European Commission's ANSP report (2014) which stated that "*the risks faced by ANSPs are likely to be lower than for airport operators*".[88]

9.24 We disagree with EI that the ENAV beta data was insufficiently mature to give a sense overall of how stable ENAV's beta is over time. This has failed to note that, in the period since Europe Economics estimated ENAV's beta to inform our final decisions, there has been stability in the evolution of the 2-year series, with the average of the domestic and European betas being identical to its end-April 2019 value. This is shown in Figures 9.2 to 9.4.

9.25 NERL's suggestion that there are differences between ENAV and NERL is correct. The analysis of our consultants Europe Economics has considered the points raised by NERL and made explicit adjustments for differences in

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86 Paragraph 5.44 https://ec.europa.eu/transport/sites/transport/files/modes/air/single_european_sky/doc/2014_03_25_final-report-cost-of_capital-and-pensions-v2-25march2014.pdf

87 e.g. Ofwat's draft determinations unlevered beta was 0.29 - https://www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-draft-determinations-Cost-of-capital-technical-appendix.pdf, p5

88 Paragraph 5.44 https://ec.europa.eu/transport/sites/transport/files/modes/air/single_european_sky/doc/2014_03_25_final-report-cost-of_capital-and-pensions-v2-25march2014.pdf

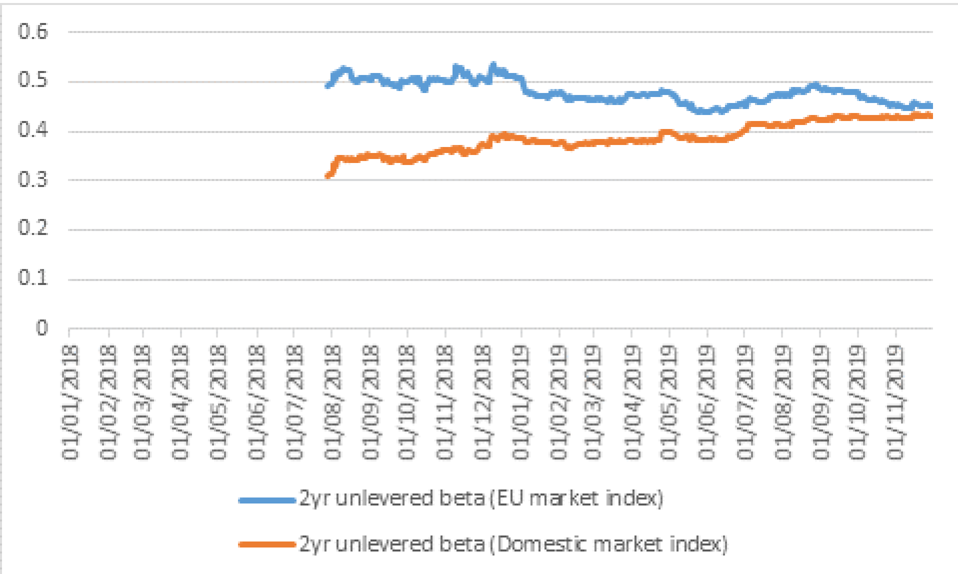
operational gearing when comparing ENAV and NERL, as well as considering both local and European indices. On the evidence NERL provided on the risks of terminal versus en route services, Europe Economics did not consider this was sufficient to change its central approach. Europe Economics did provide an alternative, 'no adjustment' version of the beta range, which was in line with its central approach.

Figure 9.2: Updated unlevered betas for ENAV

Index	2-years unlevered beta (29/04/2019)	2-years unlevered beta (29/11/2019)	1-year unlevered beta (29/04/2019)	1-year unlevered beta (29/11/2019)
Domestic	0.40	0.43	0.39	0.37
European	0.48	0.45	0.37	0.33

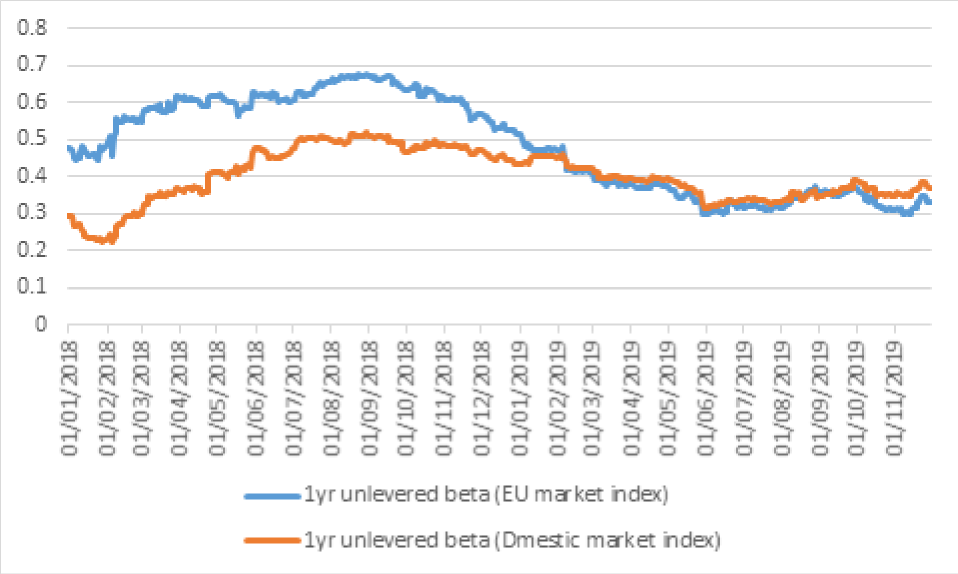
Source: Analysis by Europe Economics, December 2019

Figure 9.3: Updated 2yr unlevered betas for ENAV



Source: Analysis by Europe Economics, December 2019

Figure 9.4: Updated 1yr unlevered betas for ENAV



Source: Analysis by Europe Economics, December 2019

Use of EU wide vs local indices

9.26 We set out in our final decisions that we consider that it is appropriate to place some weight on both EU wide and local indices for the estimation of beta.[89] We consider that this balanced approach of putting weight on multiple estimates is reasonable given the possible estimation error and difficulties in identifying comparators.

9.27 In their advice to us on betas for NERL and Heathrow Airport Limited respectively, Europe Economics and PwC have set out other reasons why they consider it to be reasonable to place some weight on betas estimated using local indices,[90] including consistency with applying a domestic equity risk premium and consistency with past UK regulatory determinations by CAA and the other UK regulators. PwC also considers that ‘home bias’ (tendency to invest in domestic equities or bonds despite the benefits of international diversification) would suggest some weight should be given to using domestic indices, and we have seen recent evidence that suggests home bias for equity and debt markets is still significant in European equity and bond markets.[91]

9.28 We also note that the evolution in betas for ENAV, set out in Figures 9.2 to 9.4 above, has led to a convergence in the beta estimates for EU wide and domestic

89 UK RP3 CAA Decision Document: Appendices paragraphs E113, 134

90 Europe Economics, Comments on NERA/NERL critiques of Europe Economics’ WACC analysis, June 2019. PwC, Estimating the cost of capital for H7 – Response to stakeholder views, February 2019

91 European Commission, ‘Commission Staff Working Document on the Movement of Capital and the Freedom of Payments’, April 2018

indices, so the sensitivity of the beta to a different weighting may be relatively small. We also note that the convergence is around levels significantly lower than assumed by NERL in its response to our draft proposals.

Operational leverage

9.29 ENAV is the closest listed comparator to NERL and operates in the same sector. As set out in our final decisions,[92] we accept that operational leverage can affect the asset beta and so there is a clear need to adjust for this, which Europe Economics had done in its analysis that informed our final decision. NERL has noted that making this adjustment is not a straightforward exercise, but has not provided alternative adjustments for us to consider and Economic Insight concludes that Europe Economics' methodology for adjusting ENAV's beta for operational leverage is broadly appropriate.[93]

9.30 For the utility and airport comparators, which are not as comparable to NERL as ENAV, Europe Economics has considered that there are other differences in addition to operating leverage that should be considered, for example NERL's pension arrangements, which leave it with relatively low pension risks. Instead of adjusting these comparators for operational leverage only, Europe Economics has considered the unadjusted figures and made an in the round assessment of the point estimate within the range with knowledge of the differences between comparators. We considered that this approach was reasonable.

Overall sense-check on equity beta

9.31 We have set an equity beta of 1 for RP3 and consider that in principle that it is unlikely that NERL would have an equity beta of more than 1.

9.32 The broader equity market contains firms in predominantly competitive markets without regulated prices or pensions protections. Such firms are exposed to a broad range of price, volume, technology and policy risks. Therefore, overall we expect NERL to be less risky than the market average given it is a regulated monopoly and has a substantial degree of protection in relation to cost recovery in general and pensions costs in particular.

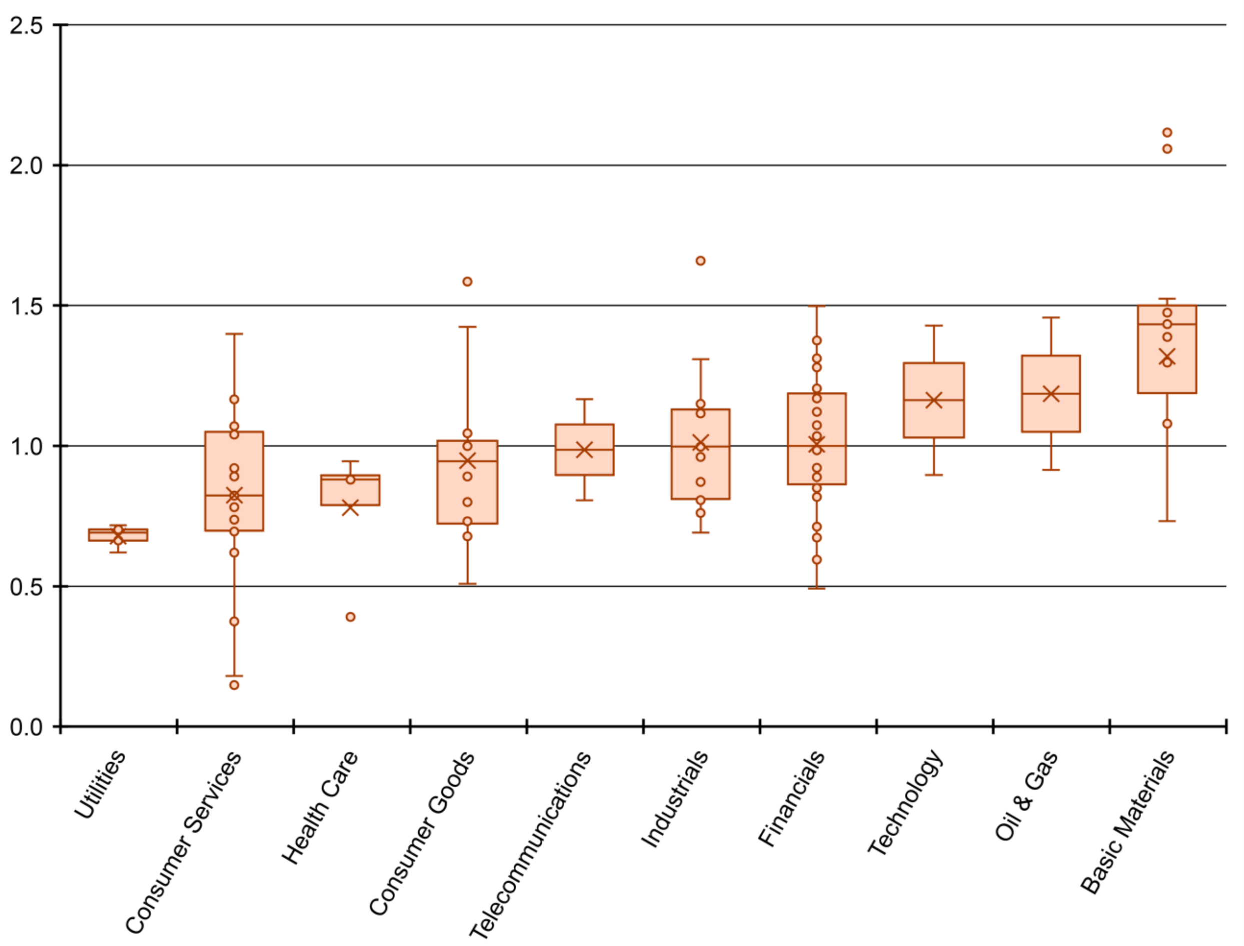
9.33 As a sense check, NERL's estimated equity beta of 1.35 would put NERL at the top end of beta risk for FTSE100 companies. For example, the only sector with a comparable equity beta is 'Basic Materials', as shown in Figure 9.5 below, which is exposed to development, extraction, volume, pricing and political risks in the UK and internationally. IAG and Easyjet operate in the same sector as NERL,

92 UK RP3 CAA Decision Document: Appendices paragraphs E123, 134

93 Economic Insight, Assurance review and assessment of the evidence on the WACC at RP3, A report for NATS, November 2019, page 71

with greater exposure to international air travel demand, but have equity betas around 0.6-0.7.

Figure 9.5: Equity betas of FTSE 100 companies



Source: Refinitiv and PwC analysis

Note: Contains 100/101 constituents as the beta for Royal Dutch Shell PLC is only included once (two share classes). A beta of 1.00 was input for M&G PLC as the beta data was missing from Refinitiv. The box and whisker diagram is produced using an inclusive mean. All 'box' statistics (mean, median, interquartile ranges) include outlier data (defined as 1.5x above or below the interquartile range), however these are not included in the 'whiskers' (minimum and maximum points). A beta of -0.05 for Polymetal International PLC is not shown on the graph (below X-axis) but is included in the 'box' statistics for Basic Materials.

The risk-free rate

NERL position

9.34 In their response to our draft proposals NERL agreed with the CAA's position on the risk-free rate stating that "*the CAA's approach and proposals are not* *unreasonable*".[94] In its SoC, NERL criticises the CAA for using data on indexed linked gilts rather than nominal gilts to estimate the risk-free rate.

CAA position

9.35 We estimated a risk-free rate as part of our decision. However, given our position that the appropriate equity beta is 1, the allowed WACC is not too sensitive to the assumed risk-free rate.

9.36 Our estimation of the risk-free rate was based on indexed linked gilts. This is in line with CMA precedent from Bristol Water and NIE decisions where the CMA focused on index linked gilts to estimate the risk-free rate. We have reflected the actual and forecast reductions in the market yields of index-linked debt, in line with the recommendation of the UKRN cost of capital report.

9.37 Caution is needed in placing any weight on nominal gilt yields. Nominal gilt yields are likely to embed an inflation risk premium in the cost of equity calculation. It would not be appropriate to include such an inflation risk premium under the regulatory framework where inflation risk is passed to customers. In its draft determinations for PR19, Ofwat concluded from its analysis that the inflation risk premium in nominal gilts is the most plausible factor driving the difference in the risk-free rate when derived using nominal and index-linked gilts.[95]

9.38 Current market evidence shows index-linked gilts have tracked lower than in our final decision. Since our final decisions, 10-year index-linked gilt spot rates have fallen from -2.2% in April 2019 to -2.4% in November 2019, and the derived rates for mid-RP3 have fallen from -1.9% to -2.3% over the same period.[96] This suggests that the risk-free rate could be lower than the -1.7% figure used in our final decisions.

Debt Beta

NERL position

9.39 NERL's view is that the debt beta should be 0.05 (relying on 'direct method' analysis by Professor Zalewska) and that the CAA has placed too much weight on evidence using 'indirect methods'. EI also raise a number of specific technical criticisms relating to the estimation of debt beta by the CAA.

94 NERL's response to CAP1758: Draft UK reference period 3 performance plan proposals.' NERL (April 2019); page 57

95 Ofwat, PR19 draft determinations: Cost of capital technical appendix, July 2019, page 23

96 CAA analysis of index-linked gilt yields from the Bank of England

CAA position

9.40 As set out in our final decisions,[97] we have formed a view that a debt beta of 0.1 is appropriate. This was based on considering both direct (or econometric) and indirect (or decomposition) evidence and is in line with regulatory precedent which has until recently been between zero and 0.1. However, the most recent regulatory precedents are higher (Ofwat's PR19 Draft Determination used an assumption of 0.125 and Ofgem's RIIO-2 sector specific methodology used debt beta range of 0.10 to 0.15, with a point estimate of 0.125).

9.41 NERL's argument for a lower debt beta draws heavily on the research of Professor Zalewska which is used as a source for an econometric estimate of the debt beta of zero. However, we are of the view that caution should be exercised when drawing on these results. As identified by Europe Economics, this econometric work implies that the beta on *all* investment-grade corporate debt is zero, meaning that the credit spread is entirely attributable to default and other risks (e.g. liquidity risk) and none to systematic risk. This seems inconsistent with the debt being investment-grade, with academic studies (which decompose credit spreads unto default risk, systematic risks and other risk components)[98] and with regulatory precedent. Updated empirical analysis from PwC on the debt beta for investment-grade debt[99] shows that debt betas have averaged around 0.05-0.10 since 2007 and since 2018 has been around 0.2 to 0.25.

9.42 EI suggest a variety of adjustments to the indirect estimates produced by Europe Economics. However, Europe Economics consider such adjustments to be appropriate as sensitivities and not as a base case. Europe Economics reported sensitivities on the probability of default and do not consider it to be obvious that the correct probability of default is calculated using a mean rather than a median value, though note the impact is not material, changing the debt beta by 1bp. Even with a number of EI's preferred assumptions, the indirect method still produces estimates that exceed the debt beta that we have used for the RP3 decision.

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97 UK RP3 CAA Decision Document: Appendices, paragraphs E124-E131 an E137-E139

98 For example, Elton et al, 'Explaining the rate spread on corporate bonds', The Journal of Finance, February 2001; and Bank of England, 'Decomposing corporate bond spreads', Quarterly Bulletin 2007 Q4

99 PwC has used monthly data on iBoxx non-financial A and BBB indices regressed against the FTSE All Share. The estimate is based on the average of the A and BBB indices

Cost of debt

NERL position

9.43 In their response to our draft proposals, NERL accepted our decision to exclude an adjustment for the licence termination period.[100] NERL has now raised this issue again, stating that we have understated the costs of new debt because we did not adjust debt costs for the license termination period. NERL also states that we have understated issuance and liquidity costs and compares the RP3 allowed cost of debt to the allowed cost of debt for water companies in the PR19 draft determinations.

CAA position

9.44 In estimating the cost of new debt as part of our final decisions, we considered the view taken by Ofwat as part of its PR19 draft determination, and, where appropriate, have reflected this in our estimation of NERL's cost of new debt. In doing so, we have noted that differences in our approach relative to Ofwat's largely relate to the fact that we have placed additional weight on NERL's current debt yield. We have made what in our view are appropriate adjustments, such as excluding the notice period premium.

9.45 We stated in our draft proposals that we expected that the strong regulatory protections in place mean that NERL debt holders should not require an additional notice period premium for raising new debt. NERL accepted this in response to our draft proposals, noting that "*In this context we accept the CAA's approach to not including the premium in the cost of debt estimate.*"[101]

9.46 We reached this view based on the fact that it is within our duties to provide a framework for managing financing risks, including those associated with raising debt, such that the probability that NERL's licence is not extended is low. It is therefore not necessary to incorporate an additional notice period premium in the cost of capital.

9.47 With regards to the allowance for issuance and liquidity costs, we reiterate that the view we have taken in our final decisions is consistent with recent regulatory precedent.

9.48 In its advice to us for RP3, Europe Economics has considered the view taken by Ofwat at PR19 on the debt and issuance costs, noting that it would expect that

100 NERL's response to CAP1758: Draft UK Reference Period 3 Performance Plan proposals.' NERL (April 2019); page 66

101 NERL's response to CAP1758: Draft UK Reference Period 3 Performance Plan proposals.' NERL (April 2019); page 66

NERL would face lower issuance and liquidity costs relative to water companies, in part given that NERL's current credit rating is higher relative to that assumed by Ofwat at a "*comfortable investment grade*".[102]

9.49 Our estimate of these costs of 10bps is above Europe Economics' recommendation, and is in line with the allowance set by other regulators, including:

- Ofwat in its draft determination for PR19;[103]
- Ofcom, as part of its business connectivity market review (in line with the CMA's determination for Bristol Water in 2015);[104] and
- PwC's advice to the CAA in relation to the H7 price control for HAL.[105]

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[102] Europe Economics (December 2018), Components of the Cost of Capital for NERL, sections 6.2 and 6.3

[103] Ofwat (July 2019), PR19 Draft Determinations: Cost of capital technical appendix, section 4.4

[104] Ofcom (19 December 2018), Business connectivity market review, para. A21.93

[105] PwC (November 2017), estimating the cost of capital for H7, p 31