NATS (En Route) Plc /CAA Regulatory Appeal

Provisional findings report

24 March 2020

The Competition and Markets Authority has excluded from this published version of the provisional findings report information which the inquiry group considers should be excluded having regard to the three considerations set out in section 244 of the Enterprise Act 2002 (specified information: considerations relevant to disclosure). The omissions are indicated by [✂].

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Summary

Background

1. NATS was formally separated from the Civil Aviation Authority (the CAA) by the Transport Act 2000 (TA 2000) and is a Public Private Partnership (PPP) between the UK Government, Airlines, Heathrow Airports and NATS employees. The core business of NATS is to ensure the safe separation of aircraft in UK controlled airspace through its operating subsidiary NATS (En Route) plc (NERL). NERL had revenue of £733 million in 2018/19.

2. NATS (En Route) plc (NERL) holds a licence issued by the Government under TA 2000 to provide en route air traffic service in the UK. TA 2000 also gives the CAA the role of economic regulator of NERL.

3. On 29 August 2019 the CAA published proposed modifications to NERL's licence (CAA Decision). These proposed modifications related to the economic regulation of NERL during the five years 2020 to 2024 (Reference Period 3, or RP3). NATS did not consider that the proposed modifications to the NERL licence were in the public interest and, given the difference between the CAA proposals and the NERL business plan, did not consider that they would allow NERL to provide an appropriate high level of service and operational performance whilst also delivering programmes of technology and airspace change. NERL told us that the difference in determined costs between the NERL plan and those allowed in the CAA Decision was £212 million, out of a total allowance of £2,956 million. NERL therefore rejected the CAA's proposed licence modifications and on 19 November 2019 the CAA made a reference to the Competition and Markets Authority (CMA) to report on the matters specified in the reference within a period of six months.

4. The reference requires the CMA to investigate and report on:

   a) whether or not a failure to set price controls and impose the appropriate modifications to the RP3 licence would operate against the public interest or may be expected to do so (the first reference question);

   b) if the CMA concludes that a failure to set price controls and impose conditions to NERL's licence would operate against the public interest, what modifications to the licence would remedy that adverse effect, and whether the conditions the CAA has proposed are adequate (the second reference question).

5. The matters referred to us for the purpose of this reference are:

- Condition 10 of NERL's Licence, relating to business plans, service and investment plans, periodic reports
- The Conditions relating to charge control (Charge Control Conditions):
    - Condition 21: Control of Eurocontrol Service Charges
    - Condition 21a: Control of London Approach Charges
    - Condition 22: Oceanic Charges

6. We undertook our investigation into these matters taking account of the fact that RP3 is an unusual period as NERL is undertaking a significant upgrade of technology systems to replace legacy equipment and deliver a new technical architecture, with the associated training needs. NERL will also have a key role in the airspace modernisation strategy intended to improve the efficiency of airspace management in the UK. While the CAA owns the strategy and plan, delivery (including the design of any airspace changes) is undertaken by other entities, such as airports, air navigation service providers or airspace users.

7. NERL and the CAA (together, the Parties) agree that effective delivery of both the technology upgrade and airspace modernisation are in the public interest as they will deliver significant future benefits in terms of performance and resilience. We are also mindful of the primary duty of NERL being to ensure the safety of air traffic. In assessing the correct price controls we therefore carefully consider the need to balance the benefits from delivering this modernisation program at pace, with the requirement of NERL delivering a safe and efficient business-as-usual air traffic control service over the RP3 period.

8. Most of the difference between the Parties' views on determined costs is accounted for by the allowed regulatory return. This in part reflects differing views on how much risk NERL is taking over the RP3 period.

9. During the course of our investigation, cases of Covid-19 began to appear and quickly became a pandemic. At the time of writing this report, it is clear that there will be a substantial impact on air traffic volumes and NERL operations, at least for 2020, as a result. There remains, however, considerable uncertainty about the extent and duration of this impact. Our investigation leading to our provisional findings was largely completed before the Covid-19 pandemic was established, and therefore reflects operating conditions prior to this event. We received a letter from the Parties on 20 March 2020 updating the CMA on the views of both Parties on the CMA Reference process in light of the evolving situation. We welcome views from

stakeholders on how we should take account of the impact of Covid-19 in our Final Determination. We will consult with the Parties on how the CMA Reference process should progress, following publication of our provisional findings.

Our approach to the reference

10. In addressing the reference questions, we need to consider whether the matters referred to us in the first question are against the public interest. In doing so, we are required to have regard to the duties that are imposed on the Secretary of State and the CAA by the TA 2000. These include:

    a) the primary duty to maintain a high level of safety, and

    b) secondary duties to:

        - further the interests of aircraft operators, aerodromes and end consumers where appropriate by promoting competition in the provision of air traffic services;

        - promote efficiency and economy by licence holders; and

        - secure that licence holders will not find it unduly difficult to finance activities authorised by their licences.

11. The Secretary of State and the CAA are also required to impose on licence holders the minimum restrictions which are consistent with the exercise of those functions.

12. TA 2000 requires us to conduct an investigation to decide whether the matters specified in the reference will operate against the public interest and, if so, to specify the appropriate licence modifications. We consider that we are not required to decide on judicial review grounds whether the CAA's decisions were wrong in law. Our approach, therefore, has been to build on, but not be unduly constrained by, the analysis already carried out by the CAA in its Decision. In considering the reference questions, the differences between the CAA and NERL informed but did not constrain our thinking. In the interest of proportionality, we gave appropriate weight to issues bearing in mind their likely effect on the price determination.

Whether a failure to set a price control and impose the appropriate modifications operates, or may be expected to operate, against the public interest

13. In considering the first reference question we noted that, as a result of NERL's having rejected the CAA's proposed modifications to its licence, there are currently no operative charge control conditions in NERL's licence. This is because the charge control conditions imposed for the last charge control period applied only until 31 December 2019. Thus, the consequence of NERL's rejecting the CAA's proposed modifications to these conditions for RP3 is that the conditions have ceased to have any effect. The modifications proposed by the CAA for Condition 10 to impose additional regulatory governance on NERL have no effect either.

14. Our view is that a failure by the CAA to set a price control and impose the appropriate modifications to NERL's licence to enable the CAA to exercise regulatory control over NERL in the RP3 period would clearly operate against the public interest and lead to adverse effects, including higher prices than necessary because NERL would be not be constrained when setting prices in earning profits relative to its cost of capital, potential delay and inefficiencies in implementing the Airspace Modernisation Strategy.

15. In particular, licence modifications appear necessary to ensure that the price control:

    - Allows an appropriate remuneration of NERL's investments, properly reflecting the risks to which investors are exposed;
    - Provides NERL with the financial resources to achieve airspace modernisation while maintaining reasonable pressure on the organisation to continue to deliver operational efficiencies
    - Provides appropriate performance incentives for the protection of the quality of service provided to airspace users
    - Strengthens NERL's accountability for carrying out its investment plans by putting in place appropriate incentive arrangements and encouraging NERL to develop new and improved governance arrangements
    - Provides for technological enhancements in the Oceanic service necessary to create safety benefit for this operation

Whether the effects adverse to the public interest could be remedied by modifications to the licence conditions.

16. Having concluded that an absence of a price control would operate against the public interest, we considered what modifications to the licence would remedy such adverse effects, and whether the conditions the CAA has proposed were adequate Where we have provisionally concluded that certain of the CAA's proposed modifications were not adequate to remedy the effects adverse to the public interest, we set out our view of alternative modifications by which we considered the adverse effects would be remedied or prevented.

17. We summarise below our views on each of the main elements of the price control. We then consider the price control 'in the round', including any interlinkages between the difference elements, to ensure our decisions were balanced and provided consistent incentives while ensuring NERL's financeability. We were also mindful of the need to meet the objectives to achieve airspace modernisation and technology updates, as well as the ongoing duties of NERL and the CAA.

Service Delivery Targets

18. NERL is subject to four capacity performance targets based on measurements of flight delays. In addition, NERL is subject to a '3Di' environmental target which measures environmental performance in terms of flight efficiency, as a proxy for carbon emissions. The 3Di metric is based on both vertical and horizontal flight efficiency which are influenced by flight routing decisions.

19. We provisionally conclude that these targets, reporting basis and associated incentives should be applied in line with those proposed in the CAA Decision. We have not seen sufficient evidence to persuade us that it was unrealistic for NERL to maintain good performance, even during the delivery of the airspace modernisation programme.

Traffic Forecasts

20. Traffic forecasts are used to determine the unit charges for air traffic services, and therefore the choice of forecast influences the amount NERL receives for its services and the timing of the amounts received. A traffic risk sharing mechanism then adjusts the amount received to some extent two years after the fact, if the actual traffic levels turn out to be substantially different from the forecast used to determine the charges.

21. We considered whether it was appropriate to use for regulatory purposes the STATFOR traffic forecast prepared by Eurocontrol or the traffic forecasts prepared by NERL itself. Our provisional view is that it is appropriate for the CAA to use the STATFOR forecasts. For our Final Determination we therefore intended to use the latest STATFOR forecasts that were expected to be available in March 2020. However, we note that the situation with Covid-19 may result in these not being available in time, so at this point our approach is to signal our intention to update the traffic forecasts using the STATFOR update.

Opex

22. Operating expenditure (opex) is the single largest component of NERL's price control, accounting for around 70 per cent of determined costs under the CAA Decision. NERL's revised business plan (RBP) included £2156 million of opex, to which the CAA Decision applied a £43 million reduction.

23. The Parties presented markedly different views on the level of stretch implied by the difference between the opex requirements NERL had identified in its RBP, and the opex allowance the CAA provided for in its Decision. For example:

    c) The CAA described the opex efficiency challenge in its Decision as modest, and the opex allowance as relatively generous.

    d) NERL said that the reductions in opex would result in it having many fewer controllers available to support its investment programme, and would create risks to ongoing safety improvements, resilience and other aspects of operational performance.

24. The CAA Decision provides an opex allowance that is around £43 million lower than that identified as required in NERL's RBP, a reduction of around 2%. NERL's RBP forecast an opex increase of 21% in real terms between 2017 and 2019 and identified opex requirements as increasing by around a further 5% in real terms through to 2022, before falling to a level at the end of RP3 that remained around 1% above the forecast 2019 level.

25. Given the extent of these proposed increases, we consider it important that the CAA, as the economic regulator, sought to carefully scrutinise NERL's plan and challenged the extent to which airspace users should be expected to fund the forecast increases in opex set out in NERL's RBP. We reviewed the range of evidence that the CAA took into account in its challenge to NERL's plan, in particular the extent to which airspace users might be expected to

fund forecast increases in opex. Based on that review we were not persuaded by NERL's criticisms of the CAA's assessments.

26. The CAA's decision to set an opex allowance that was lower than NERL had identified in its RBP, and the size of that reduction, necessarily involved its forming a judgement, in a strategic context where NERL has a key role to play in airspace modernisation and is part way through a major technology programme. We consider that the CAA carefully reviewed these priorities, alongside its duties to airspace users, in developing its Decision for RP3. We note, in particular, that its decision to apply a 2% reduction in opex relative to NERL's RBP sits alongside its acceptance that it was appropriate for the average opex allowance across RP3 to be around 20% higher than NERL's actual opex in 2017.

27. We consider NERL's concerns with respect to the potential operational and safety risks that might be associated with the CAA Decision to be misplaced, and to be out of line with the regulatory framework that applies.

28. We therefore provisionally conclude that the opex allowance should be applied in line with that proposed in the CAA Decision.

Capex

29. The price control sets the levels of capex allowed, and includes provisions related to the governance arrangements and incentives that apply to NERL's capex.

30. The CAA proposed an overall capex allowance for RP3 of £667 million, £48 million less than NERL's estimate in its RBP. We found the CAA's scaling down of NERL's capex forecast to be consistent with it having less confidence in the reliability of some areas of NERL's forecast spend where projects were not yet fully scoped. We consider it likely to be important that there is further engagement on and scrutiny of these projects, and their associated costs, during RP3 as NERL's plans evolve, and that the CAA Decision on the level of capex allowance is consistent with providing for this. We were satisfied, given the CAA's financeability analysis, that NERL should be able to fund capex that exceeded the allowance, should such additional spend be appropriate, providing the capex incentive arrangements are amended in the ways set out below.

31. We provisionally conclude that the capex allowance should be set in line with the CAA Decision.

32. We found NERL's concerns over developments to the capex governance arrangement to relate primarily to how the CAA's proposals might be applied

in practice, given how they might relate to the CAA's capex incentive proposals (our assessment of which is summarised below). We noted, in particular, that NERL pointed to its support for strengthening the role of the Independent Reviewer, but raised concerns over lack of clarity with respect to its remit and accountability in a context where its assessments could have material impacts. Our provisional conclusion is that the capex governance proposals included in its Decision, that strengthen the Independent Reviewer role and require quarterly SIP updates, should be applied.

33. The CAA Decision introduced three separate capex incentives: a) an efficiency incentive; b) a capex delivery incentive, and c) an information incentive.

34. As regards the efficiency incentive, we consider that the CAA Decision implies that the basis upon which the CAA would consider RAB disallowances following ex-post efficiency reviews has changed materially. However, the CAA has not codified the basis upon which it may apply a RAB disallowance to a sufficient degree, or in a sufficiently constrained manner. We consider that the scope for ex-post RAB disallowances inevitably creates a degree of regulatory uncertainty that can have adverse effects on investment incentives. This implies that particular care is typically merited when ex-post RAB disallowance arrangements are being developed or modified.

35. A licence condition that appropriately constrains the circumstances under which it might be reasonable for the CAA to disallow capex from NERL's RAB could help in addressing these concerns. However, we consider that introducing such a licence condition may not be necessary if the CAA developed a policy statement that sufficiently specified and constrained the basis upon which it would be expected to the apply a disallowance of capex, following an ex-post efficiency review. We invite submissions from the Parties on what such a policy statement should contain in order to address the limitations we have identified.

36. We provisionally conclude that the capex delivery incentive in the form proposed by the CAA would result in NERL's facing undesirable additional risks associated with uncertainty over the regulatory treatment of capex that may be captured by it. We consider that the CAA provided little clarity over how its proposed capex delivery incentive might be applied, and little guidance that might assist NERL manage the risk that it may become subject to a penalty (which could amount to the total notional equity return allowed for on NERL's planned capital programme). We considered the CAA's own comments to illustrate some of the materially different ways in which its proposed delivery incentive might be interpreted and applied, if introduced.

37. We consider that a capex delivery incentive based on the quality of NERL's engagement, and its actions related to that engagement, should be introduced, providing there was appropriate specification concerning the criteria against which the NERL's performance would be assessed, and the basis upon which the level of any penalty to be applied would be determined. We have provided our initial views on an appropriate starting point for the development of such specification and invite submissions on how these arrangements might be developed.

38. Last, we provisionally conclude that the CAA's proposed information incentive should not be introduced in RP3. We consider that any capex that may result in NERL exceeding the level provided for by its RP3 allowance should be assessed within the capex delivery incentive (amended in the manner described above), and not subject to separate incentive arrangements.

Non-regulated income

39. As well as its main air navigation service business covered by its Licence responsibilities, NERL undertakes commercial activities with a 'single till' approach where the price control assumes that a portion of NERL's overall costs are funded through non-regulated income. NERL anticipates a reduction in revenue for RP3, with associated cost reduction for non-regulated activities compared with RP2, but with many of these resources being redeployed into regulated activities. The Parties have agreed that the total non-regulated revenue for RP3 should be £446 million.

40. The CAA proposed that NERL should make additional reductions to opex of £24 million in RP3 to represent a reduction in costs previously associated with lost non-regulated revenue.

41. We provisionally conclude that no additional reduction should be made in the Determined Cost allowance for RP3 for non-regulated activities beyond that included in NERL's RBP, as we consider the appropriate efficiency reduction has already been applied to opex.

Pensions

42. NERL operates both a defined benefit (DB) pension scheme (closed to new members) and a defined contribution (DC) scheme. The DB scheme currently has a deficit and the Trustees have advised on the level of repair costs needed to manage this. The DC scheme is based on a contribution rate of around 15%. A pension pass-through mechanism exists for certain pension cost changes that are non-controllable and efficiently incurred, but the Parties disagree on the interpretation of the requirements to apply this.

43. The CAA made some 'efficiency' adjustments to NERL's pension costs projections, including £18 million for deficit repair payments and £6 million for ongoing pension costs (resulting from opex savings in the CAA Decision). The total allowance for pensions in the RP3 Decision is £392 million.

44. We provisionally conclude that pension efficiency adjustments of £21 million could be introduced, given that the pension pass-through arrangements offered protection if efficiently incurred pension costs were above the upfront allowances (due to changes in market conditions), and that the size of the efficiency adjustment of ongoing pension costs is consistent with our position on opex (ie allowing for the difference in our opex allowance compared to the CAA Decision). However, we recommend that the CAA produces improved guidance to clarify the pass-through provisions that apply, showing circumstances when determinations of future costs would and would not be subject to pass-through. The Regulatory Policy Statement (RPS) represents an opportunity for this clarification to be made, allowing the upfront pension allowance to adequately address the effects adverse to the public interest identified in response to the CAA's first question.

Oceanic

45. The Oceanic charge is imposed on North Atlantic flights and is subject to a separate charge control condition in the licence. NERL is introducing a space-based automatic dependent surveillance (ADS-B) system in RP3 to provide more accurate and timely aircraft position information for lights crossing the North Atlantic, resulting in a large increase in the price charged to users. The CAA proposed an independent review of the benefits of this service after two years, which may influence the regulatory allowance for this new Oceanic service in the final two years of the RP3 price control.

46. In its Decision, the CAA proposed a 5% 'efficiency' reduction to the ADS-B data charge paid by the airlines, to encourage more robust negotiations with the ADS-B service provider, and an 'efficiency' reduction to opex associated with the Oceanic service for each year in the price control. Overall the CAA Decision included allowances for £211 million associated with Oceanic services, which was £12 million less than in NERL's RBP.

47. We considered representations from airlines and their trade body, IATA, concerning these and wider issues concerning the Oceanic service, as well as representations from the Parties. We provisionally agreed with most of the CAA's approach to the Oceanic services, including its decision to fund the costs of ADS-B, subject to a two-year independent review. We have however provisionally proposed an adjustment, to disapply the 5% efficiency reduction made by the CAA to the ADS-B data charge, as we concluded that the scale

of the reduction was arbitrary and there was no evidence that it was achievable.

Cost of Capital

48. We received detailed representations from the Parties and third parties containing a range of views on the appropriate approach to calculate the costs of capital for NERL.

49. In this case, we have performed our own determination of the cost of capital. We started with the framework used by the CAA and NERL – the CAPM – which is commonly used in regulated sectors. We took a fresh look at each of the parameters (including the total market return, risk free rate, betas and the cost of debt), although this was done by building on the data provided by the Parties and determining our own methodology to interpret that data. In some cases, we measured alternative ways to calculate those parameters, and included additional and more up-to-date information in our assessment. We came to provisional views on suitable ranges of each parameter of the cost of capital. In particular, we have assumed a higher range for the asset beta than that assumed by the CAA.

50. We provisionally decided that it would be appropriate to assume a notional gearing of 30% and calculated a suitable range for NERL's cost of capital of 2.39% to 3.73%, compared with 2.68% in the CAA Decision and 4.21% suggested by NERL.

51. Our provisional view is that the reason for choosing ranges is that there is a fundamental uncertainty about the level of the individual parameters. We agree with the CAA that it is appropriate for a regulator to exercise judgement in choosing the WACC from the range. We have therefore provisionally decided to choose a point estimate of the WACC from this range.

52. In coming to a point estimate, we have considered the risks of setting the WACC in the top or the bottom estimate of the range. We considered possible reasons for departing from the mid-point of the range (ie whether to aim up or aim down). We provisionally concluded on balance that there was no compelling reason in this case to deviate from the mid-point of our range.

53. We therefore provisionally conclude that the modification proposed in the CAA's decision set the cost of capital below a level which properly balances its objectives in determining NERL's assumed return. Our assessment of the cost of capital to use for NERL's price control for RP3 is 3.08% vanilla, which is the mid-point of our range for the cost of capital.

Overall assessment of the price control

54. Having investigated each element of the price control in dispute, we 'stood back' from the individual elements to consider the effect of our provisional conclusions on the price control in its entirety. We are satisfied that it would be against the public interest if there were no operative price control conditions in NERL's licence, that the price control we have provisionally proposed is balanced, that there are no conflicting incentives, and that the modifications set out in our report would remedy the effects adverse to the public interest.

Next steps

55. We invite representations from the main parties and third parties on our provisional findings, and on how we should take account of the impact of Covid-19 in our Final Determination, to be received by 15 April 2020. The special reference group will then consider any additional evidence before making its final determination. The statutory deadline for sending our report on the reference questions to the CAA is 18 May 2020.

1. Introduction

1.1 Under the Transport Act 2000 (TA 2000) the Government issued a licence (the Licence) to NATS (En Route) plc (NERL) to provide en route air traffic services in the UK.[1] TA 2000 gives the Civil Aviation Authority (the CAA) the role of economic regulator of NERL.

1.2 On 29 August 2019 the CAA published its proposals for modifications to NERL's licence to give effect in the five years 2020 to 2024 (the CAA Decision). On 10 September 2019, NERL rejected the CAA's proposed licence modifications.

1.3 On 19 November 2019 the CAA made a reference to the Competition and Markets Authority (CMA). The reference requires:

> the CMA to investigate and report on whether or not a failure to set price controls and impose the appropriate modifications to the RP3 licence would operate against the public interest or may be expected to do so. …If the CMA concludes that a failure to set price controls and impose conditions to NERL's licence would operate against the public interest it must consider what modifications to said licence would remedy that adverse effect and whether the conditions the CAA has proposed are adequate.[2]

1.4 The reference required the CMA to investigate and report on the matters specified in the Reference within a period of six months beginning on 19 November 2019, unless it requests and is granted an extension by the CAA.[3].

1.5 On 25 February 2020, the CAA made a variation to the reference.[4]

1.6 The functions of the CMA with respect to this reference were carried out on behalf of the CMA by a special reference group constituted for the purpose by the Chair of the CMA.[5] The reference was conducted in accordance with the usual CMA rules of procedure.[6]

1.7 Details of the conduct of the reference are set out in appendix A. Non-confidential versions of relevant documents, including the administrative

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[1] NATS En Route plc (NERL) Licence (November 2019)
[2] Notice of reference, paragraphs 4 and 6
[3] Notice of reference
[4] Notice of Variation
[5] In accordance with the Transport Act 2000 (TA 2000), section 12(8)
[6] *CMA Rules of procedure for merger, market and special reference groups (CMA17)*

timetable and written submissions from the main parties and third parties, have been published on the CMA's webpage.[7]

1.8 This report presents our provisional findings, on which we invite comment.

1.9 **During the course of our investigation, cases of Covid-19 began to appear and quickly became a pandemic. At the time of writing this report, it is clear that there will be a substantial impact on air traffic volumes and NERL operations, at least for 2020, as a result. There remains, however, considerable uncertainty about the extent and duration of this impact. Our investigation leading to our provisional findings was largely completed before the Covid-19 pandemic was established, and therefore reflects the operating conditions prior to this event. We note the letter received on 20 March 2020 updating the CMA on the views of both Parties of the CMA Reference process in light of the evolving situation. We welcome views from stakeholders on how we should take account of the impact of Covid-19 in our Final Determination. We will consult with the Parties on how the CMA Reference process should progress, following publication of our provisional findings.**

[7] CMA case page

2. Background

2.1 We set out below a brief description of NATS and its regulated business, NERL, an industry background with relevant features of Air Traffic Control and NERL operations, an outline of the CAA's approach to RP3, and NERL's concerns with the CAA approach and decision.

The NATS Group

Overview of NATS company structure

2.2 The TA 2000[8] enabled the formal separation of NATS from the CAA in March 2001. The CAA's shareholding in NATS was first transferred to NATS Holdings Limited, a wholly owned subsidiary of the Secretary of State.[9] The Secretary of State for Transport then entered into a Public Private Partnership (PPP) with The Airline Group later that year.

2.3 The PPP created two main operating subsidiaries in NATS:[10]

a) **NERL**, which principally provides en route services and is NATS' core business. The PPP introduced economic regulation for these services which became an effective monopoly in the main body of UK controlled airspace. Revenue in 2018/19 was £733 million. Overall, NERL accounts for 80% of the NATS Group's third-party revenue and employs 77% of its staff.[11]

b) **NATS (Services) Limited (NSL)** which is not economically regulated and principally provides air traffic control (ATC) services to airports on contractual terms subject to market conditions, as well as services overseas. In contrast to NERL, NSL operates in competitive markets; NATS shareholders bear the risk of these activities.[12] Revenue in 2018/19 was £198 million.

2.4 The current ownership structure of NATS Holdings is shown in Table 2-1.

[8] In particular, Part 1 (sections 1-107) of the Transport Act 2000
[9] NERL ✂
[10] NERL ✂
[11] NERL ✂
[12] NERL ✂

Table 2-1: Ownership structure of NATS Holdings Limited

Shareholder	*% Ownership*
UK Government	49
The Airline Group Limited*	42
LHR Airports Limited (ie Heathrow Airport)	4
NATS Employee Share Trust Limited	5
Total	**100%**

Source: NATS (as of 8 November 2019) ✂
*The Airline Group Limited is 50% owned by the USS Sherwood (ie Universities Superannuation Scheme), 17% by British Airways, 13% by the Pension Protection Fund (originally owned by Monarch Airlines), 13% by easyJet, 1% by Thomas Cook Airlines (currently in liquidation), 2% by Lufthansa, 2% by Virgin Atlantic Airways and 2% by Tui Airways.

NERL

2.5 NERL's essential purpose is to ensure the safe separation of aircraft in UK controlled airspace. It provides en route services in UK controlled airspace and in the Shanwick Oceanic Control Area (the part of the North Atlantic where the UK provides services under international arrangements). In addition, NERL provides ATC to aircraft that are preparing to land at or have just departed from London's five major airports (London Approach) and to helicopters flying to oil rigs in the North Sea.

2.6 NERL provides services to NSL including radar data and engineering, support and training, and accommodation for the London City Airport remote tower. NERL also shares infrastructure at its Swanwick air traffic control centre with the UK's military, enabling the military to provide air traffic control to the Royal Air Force.[13]

2.7 A breakdown of NERL revenue by service is shown in Table 2-2.

Table 2-2 Breakdown of NERL revenue by service, 2018-2019

	Revenue (year ended 31/12/19)	*Regulatory Assets (at 31/12/18)*
NERL Services	*£m*	*£m*
UK en route ATC	596.0	976.1
London Approach Service	13.2	
Oceanic en route	29.2	40.2
Sub-total economically regulated	**638.4**	**1016.3**
Ministry of Defence	49.4	
North Sea Helicopters	8.6	
Other Services	9.8	
Intercompany services	26.8	
Total	**733.0**	**1016.3**

Source: NERL ✂

2.8 The UK en route ATC and London Approach services are subject to charge controls[14] under TA 2000 and are in scope of the EU Single European Sky (SES) Performance Scheme. The Oceanic en route service is subject to a

[13] NERL ✂
[14] Licence Conditions 21 and 21a

separate charge control[15] and not regulated by the SES Performance Scheme.

2.9 The major source of NERL's revenue is the charge for en route services in UK airspace. NERL also receives revenue from non-regulated services, including a contract to provide facilities to the UK military, control services to offshore helicopters (outsourced to NSL) and various other services.[16]

Industry background

Air traffic control (ATC)

2.10 ATC is the provision and operation of a system for monitoring and controlling aircraft, in controlled airspace for en route and around airports. This is carried out through a network of control centres, radar, navigational aids and other communication and data systems which support air traffic controllers (air traffic control officers, or ATCOs).

2.11 Different stages of flight are broadly:

a) **Airport tower services**, which cover airport ground movement and runway landing and departure clearances;

b) **Approach services**, which cover radar-based services for aircraft arriving or departing from the airfield; and

c) **En route services**.

2.12 Airspace around the world is divided by international treaty into Flight Information Regions (FIRs), each managed by a controlling authority. The CAA is the controlling authority for UK airspace and NERL operates within two FIRs: the London FIR (England and Wales) and the Scottish FIR (Scotland and Northern Ireland). NERL also provides ATC services for the Shanwick Oceanic Control Area which covers the north-east of the North Atlantic Ocean, providing Oceanic en route air traffic services for part of an aircraft's North Atlantic crossing, before handing over to the controlling authorities for North America.

2.13 To manage the airspace in a FIR, the company providing air traffic control services – often referred to as the Air Navigation Service Provider (ANSP) – will divide it into Sectors. ATCOs are allocated to Sectors to control and

[15] Licence Condition 22
[16] For further details of non-regulated services, see chapter 9

separate the aircraft flying in them. Airspace sectors can be combined and separated dynamically to deal with varying demand, and to ensure that ATCOs only ever manage a safe level of aircraft.[17]

Air traffic controllers (ATCOs)[18]

2.14 ATC service provision is reliant on specialist ATCOs, who require specific skills that can be trained to provide the competencies in the role:

a) On completion of basic training, ATCOs gain a licence rating (Area control, Approach control, or Tower control).

b) Trainee controllers then need to obtain an endorsement specific to the geographic Sector(s) or function(s) which they will operate, known as a 'validation'. Typically, it takes up to three years for a new entrant to achieve a first validation for a specific sector of en route airspace.

c) After obtaining initial validations and consolidating to gain experience, ATCOs will often undertake further training on another Sector (this typically takes a further year).

d) Once obtained, ATCO validations must be maintained to the regulatory requirements which include minimum levels of operating time to ensure ATCO competency (in practice, it is impracticable for ATCOs to hold more than two or three validations).

2.15 NERL provides this training through its own training facility, which also provides training to NSL and until recently to other ANSPs.

2.16 En route ATC operates continuously, and there must always be sufficient ATCOs available and operational across all the Airspace Sectors covered by NERL The rostering of ATCOs is complex, needing to cope with the operational requirements of variable traffic volumes across the sectors of NERL controlled airspace, UK regulations which specify the rest and working hours criteria, and the fact that ATCOs can only be valid on two or three specific Sectors.

2.17 In addition to day to day operational requirements, ATCO expertise is required to provide expert input into new airspace design and training requirements and to train controllers to achieve their validations. The roster therefore needs to release ATCOs from operations activity for these non-operational tasks.

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[17] NERL ✂
[18] NERL ✂

Recent trends in air traffic movements[19]

2.18 UK air traffic movements include commercial passenger airlines, cargo flights, business jets and the military.

2.19 Flights can be broken down into the following segments:

a) Domestic flights, accounting for around 15% flights;

b) Transatlantic and non-transatlantic arrivals and departures, accounting for 6% and 64% of flights respectively; and

c) Transatlantic and non-transatlantic overflights, accounting for 9% and 6% of flights respectively.

2.20 Historically, the growth in passenger demand for air travel has been closely correlated to the strength of the global economy and, for UK air traffic, to the UK, US and European economies in particular. Air traffic volumes have also been subject to large scale and unexpected short-term disruptions including the 9/11 terrorist attack, Icelandic volcano eruption and, more recently, the Covid-19 outbreak.

Other relevant context for RP3

2.21 A number of ongoing initiatives are particularly relevant to the consideration of RP3.

Airspace modernisation

2.22 Airspace modernisation is a package of changes intended to deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace.

2.23 The Department for Transport (DfT) develops national aviation policy and law, and ensures the UK contributes to and meets its obligations under relevant international policy and law. The DfT outlined its strategic vision for UK aviation in 2017.[20] As part of its national policy development, the DfT has made Directions[21] setting out roles and obligations for the CAA to develop and maintain a UK airspace strategy and use plan for air navigation up to

[19] NERL ✂
[20] Department for Transport and CAA (2017), *Upgrading UK Airspace: Strategic Rationale*
[21] The Civil Aviation Authority (Air Navigation) Directions 2017 form Annex D to the DfT's Air Navigation Guidance 2017. The CAA has a version which consolidates amendments made to these Directions in 2018 and 2019 on its Legislative Framework to Airspace Change page.

2040. This Airspace Modernisation Strategy (AMS) describes the roles of various parties involved in delivering the strategy.

2.24 While the CAA owns the strategy and plan for airspace modernisation, its delivery (including the design of any airspace changes) is undertaken by other entities, such as airports, air navigation service providers or airspace users.

2.25 Deploying Single European Sky ATM Research (DSESAR) is a collaborative project to overhaul European airspace and its Air Traffic Management (ATM). The programme is managed by the SESAR Joint Undertaking as a public–private partnership (PPP).

2.26 DSESAR is also a NERL programme that will deliver major technology changes within the UK in line with the overall EU programme.

Airspace Modernisation Strategy

2.27 The CAA published its Airspace Modernisation Strategy (AMS) in 2018.[22] It outlines the CAA's strategy for delivering and managing a transition to modern airspace management. It identifies 15 initiatives to deliver this, initially focusing on the period until the end of 2024 (which is also the end of RP3).

2.28 The 15 initiatives are set out in detail in the Strategy document, and delivery roles for each are identified in an Annex, Airspace Modernisation Governance.[23] This Annex noted that funding needed for initiatives requiring NERL actions should be taken into account, as relevant, in the RP3 capex and opex business plans, and the CAA's final decision.[24] It also set out that there should be a ringfenced fund in the RP3 settlement to support the Airspace Change Organising Group (ACOG, see below).[25]

2.29 Work and expenditure to deliver these initiatives will be ongoing over the RP3 period.

Airspace Change Organisation Group (ACOG)[26]

2.30 AMS will need multiple stakeholders to agree and implement changes to airspace design and use. These will include changes to the terminal route network for approaches to airports, and to the routes in higher airspace between airports and for aircraft over-flying the UK. These changes will

[22] CAA, CAP 1711, Airspace Modernisation Strategy
[23] DfT and CAA (2018), *Airspace Modernisation Governance*
[24] *Airspace Modernisation Governance*, table A1
[25] *Airspace Modernisation Governance*, paragraph A29
[26] *Airspace Modernisation Governance*, paragraphs A29-A33

require new operational approaches from multiple stakeholders, including airports, airlines and air traffic management providers.

2.31 The CAA and DfT, as the co-sponsors of the AMS, formally asked NERL to establish the ACOG. ACOG's role is to create and maintain a single coordinated implementation masterplan for airspace changes associated with the airspace development programme which looks to deliver against several of the Strategy initiatives. This masterplan will be subject to review by the CAA, in consultation with the Secretary of State, before it is accepted into the CAA's Strategy.

2.32 ACOG is overseen by a Steering Committee comprised of members drawn from industry, NERL, and up to two independent members. The Chair is appointed by NERL, CAA and DfT.

2.33 Proposed Licence obligations on NERL in relation to ACOG and airspace change delivery were a subject of disagreement between CAA and NERL at the time of the initial Reference to the CMA. On 25 February 2020 the CAA made a formal variation to the reference, removing the relevant proposed new licence condition from the scope of CMA's investigation.[27] This reflected agreement between the CAA and NERL on the relevant licence modification.

Upgrading of IT systems and technology

2.34 During the 2015-2019 price control period (RP2), NERL began a comprehensive technology and skills change programme.[28] The technology investment programme will replace legacy equipment, and deliver a new technical architecture with monitoring, communication and management tools to support airspace modernisation and other ongoing improvements in traffic management[29].

2.35 NERL's DSESAR programme, mentioned above, is a part of this overall change programme.

2.36 This technology investment is accompanied by a programme of training in the use of the new systems. As ATC is a continuous, live service, the training programme has been designed and planned, sector by sector, to enable ATCOs and other staff to train on the new systems before implementation, while maintaining full service on the existing installed technology.[30]

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[27] Notice of variation
[28] NERL ✂
[29] NERL ✂
[30] NERL ✂

2.37 NERL's business plan envisages moving from its legacy systems during RP3, but the technology and airspace upgrade programme will continue into RP4.

ADS-B

2.38 NERL and aircraft use a surveillance technology in which an aircraft determines its position via satellite navigation and periodically broadcasts it, enabling the aircraft to be tracked independent of traditional radar. This is called Automatic Dependence Surveillance System – Broadcast (ADS-B). The receivers for ADS-B signals have to date been land-based.

2.39 NERL has recently contracted with Aireon, a satellite-based data provider, for the provision of space-based ADS-B. This service has effects on the costs of Oceanic services.

Other regulatory decisions

2.40 The allowed regulatory return is a feature of all price controls. The appropriate approach to calculating the cost of capital for a regulated company is therefore relevant to all regulated sectors and companies. We received submissions from other regulators and regulated companies outside the air traffic management sector on the appropriate approach to calculating the cost of capital, and we have taken these into account as part of our review.

Regulatory environment

2.41 The air transport industry globally is governed by two types of regulation:

a) **Safety regulation**, which governs the standards of operational air transport services; and

b) **Economic regulation**, governing the market structure, access and in some cases pricing of air transport services.

2.42 All ATC services are subject to safety regulation, determined through a hierarchy of regulators.

International and supra-national regulation

International Civil Aviation Organisation

2.43 The current framework for the provision of air navigation services in UK airspace was established when the UK signed the Convention on International Civil Aviation (the 'Chicago Convention') in 1944. The Chicago Convention

established the International Civil Aviation Organisation (ICAO). As the principal international body with respect to the regulation of world aviation, ICAO develops principles and techniques of international air navigation and foster the planning and development of international air transport.[31]

Eurocontrol

2.44 Eurocontrol is an inter-governmental organisation whose key functions include working to improve the co-ordination of air traffic control systems throughout Europe. It also processes all flight plans requiring services from its member state Air Navigation Service Providers (ANSPs), and collects the charges for those flights, distributing the revenues proportionately to the ANSPs that provided ATC services for each flight.[32]

Single European Sky (SES)

2.45 In 2009 the EU high-level SES legislation[33] (first introduced in 2004) was amended and the basis for the performance scheme was introduced to improve the performance of the air traffic system in Europe, including the interoperability of technologies and systems between ATC providers. The Performance Scheme is part of the initiative which applies economic regulation at EU level to the provision of en route and terminal air navigation services. Presently, EU legislation has primacy over domestic law and therefore has a role in economically regulating NERL's UK en route activities. The EU sets top-down performance targets for a 5-year reference period for safety, cost-efficiency, capacity and the environment, and requires Member States to produce national performance plans which contribute to achieving these targets.

2.46 The Performance Review Body and the Performance Review Unit assists the European Commission (EC) and national supervisory authorities in the implementation of the performance scheme for air navigation services, including benchmarking ANSP performance across Europe.[34]

European Aviation Safety Agency (EASA)

2.47 EASA sets the EU strategy for aviation safety and monitors the implementation of standards in Member States. EASA also authorises non-EU

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[31] NERL ✂
[32] NERL ✂
[33] See EU SES Regulation
[34] NERL ✂

ANSPs.[35] NERL's future relationship with EASA will be determined by the UK's international negotiations being conducted following its exit from the European Union.

UK regulation

2.48 In addition to regulation under the SES performance scheme, NERL is regulated by the Transport Act and its Licence.

Transport Act 2000 and CAA

2.49 TA 2000 is the principal legislation governing the provision and economic regulation of air traffic services in the UK. The Secretary of State and the CAA are the principal regulators of providers of air traffic services and each is given specific responsibilities under TA 2000. The Secretary of State is responsible for the granting of licences and exemptions, while the CAA is responsible for economic regulation, licensing, and the general supervision and enforcement of the licence regime and of licence holders' statutory duties. The CAA is also responsible for the safety oversight of Air Navigation service providers, including NERL (see paragraph 3.10 to 3.12 for further details on the duties of the Secretary of State and the CAA).[36]

2.50 Each year the CAA uses its powers in sections 73 to 80 (Charges for Air Services) TA 2000 to specify the charges payable in respect of chargeable air services provided for aircraft,[37] and payable in connection with London Approach services provided in respect of five London airports.[38]

NERL's Licence

2.51 NERL's licence was issued at the time of the PPP and comprises:

a) Terms, such as licence duration and notice period; and

b) Conditions, which largely implement the CAA's regulatory regime and are variable to reflect the current regulatory settlement.

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[35] NERL ✂
[36] At time of writing, a new Transport Bill is under active consideration by Government.
[37] UK en route charges are payable to Eurocontrol as part of the arrangements under the Eurocontrol Convention and the Multilateral Agreement relating to Route Charges (Cmnd. 8662). Oceanic en route charges are payable to NERL.
[38] These airports are Heathrow, Gatwick, Stansted, City and Luton. CAA currently specifies charges for UK en route London Approach services; charges for services provided in the Shanwick Oceanic Control Area; charges for ADS-B data; and charges for services provided for North Sea helicopters.

2.52 The Licence authorises NERL to provide UK and Oceanic en route air traffic services and London Approach air traffic services exclusively for a twenty-year period from 28 March 2001. The Licence then continues to have effect until terminated by not less than 10 years' notice from the Secretary of State following consultation with the CAA.[39]

2.53 The Licence conditions can be grouped under five broad headings:

i) Service obligations

ii) Availability of resources and financial ring-fencing of the regulated business

iii) Operation of the regulated businesses

iv) Relations with the Secretary of State, the CAA, other service providers and users

v) Charge controls, establishing the detailed formulae for calculating the annual charge for UK en route, Oceanic en route and London Approach services, including the adjustments for volume risk sharing, inflation and service performance.[40]

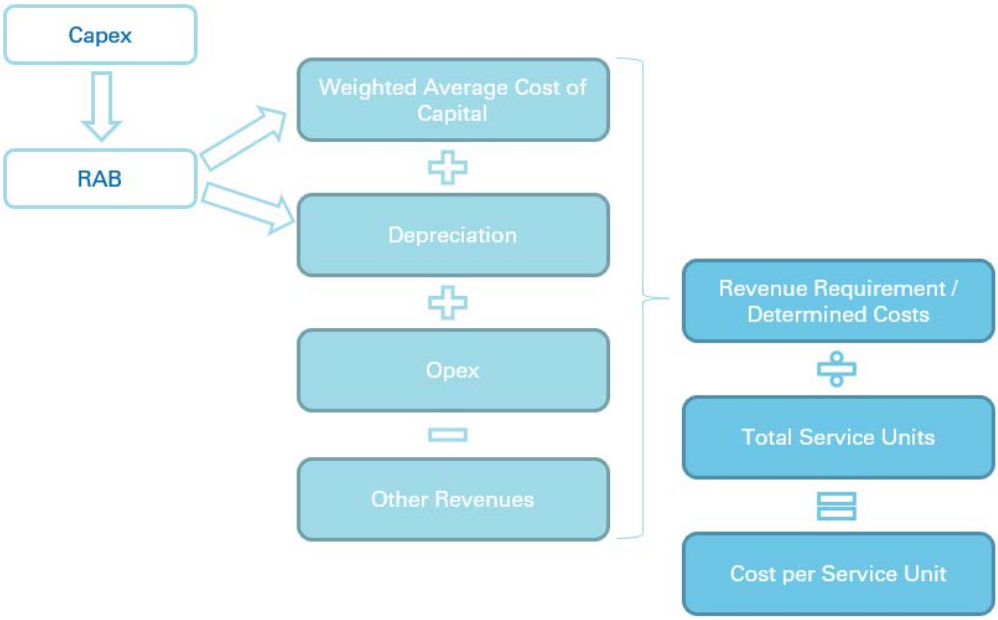
The price control

2.54 This section provides an outline of CAA's overall approach to determining NERL's price control.[41]

2.55 To determine the appropriate allowances, CAA calculated NERL's charges for RP3 on the basis of a 'building block' approach (see Figure 2-1).

[39] NERL ✂
[40] NERL ✂
[41] CAA Reference, paragraphs 2.3 to 2.6

Figure 2-1 CAA 'building blocks' approach to NERL charge control



Source: Adapted from the CAA Reference, page 25, Figure 4

2.56 Under this approach, capital expenditure is not allowed in the year that it is incurred but is added to the Regulatory Asset Base (RAB) and financed by allowances for regulatory depreciation and a rate of return on undepreciated capital. These two building blocks are then added to an allowance for operating expenditure (including an allowance for pension costs) to make up the company's overall revenue requirement. An estimate of non-regulated or other revenue is then taken into account (through a 'single till' approach) in assessing the appropriate level of regulated revenue to be recovered from regulated services.

2.57 Once the allowed revenue requirement (or determined costs) has been established, regulated charges are set on a per-unit basis. NERL's volumes are measured in terms of 'service units', a standard definition based on the weight of the aircraft and the distance it travels within the controlled airspace.

2.58 The determined unit cost (DUC) is equal to the total costs divided by the total service units (TSUs). TSUs are equal to chargeable service units (CSUs) plus the units of military and exempt flights which are funded separately. Determined costs in the CAA final decision are based on CSUs.[42]

2.59 For more details of the operation of the price control, see appendix B.

[42] The EU SES performance scheme requires the setting of an overall UK cost efficiency target based on TSUs, which is why both terms appear in the CAA Decision. Where DUCs are expressed on a TSU basis, the CAA makes an adjustment of £33 million to account for the difference between CSUs and TSUs.

RP3 price review

RP3 process

2.60 The CAA is required under the SES Performance and Charging Regulation[43] to draw up a performance plan in four key performance areas – safety, capacity, environment and cost efficiency – for each reference period of five years. The current reference period, RP3, started on 1 January 2020 and runs until 31 December 2024.

2.61 The CAA's RP3 process formally commenced in April 2017 during the RP2 price control period (2015-2019). The key stages of the RP3 process are outlined in Appendix C.

2.62 The CAA decisions for RP3 (referred to in this report as the CAA Decision) were published on 29 August 2019. The CAA Decision included proposed modifications to the charge control and requirements for business plans, service and investment plans, periodic reports in the Licence. They were rejected by NERL on 10 September 2019.

CAA approach to RP3[44]

2.63 The CAA developed its decisions for the regulation of NERL in RP3 after considering the wider strategic context for the review, the information set out in NERL's business plan, the views of a range of stakeholders (including the Customer Consultation Working Group) and the analysis and assessments provided by expert consultants and advisors.

2.64 In the CAA's view, the proposed licence modifications would:

a) allow an appropriate remuneration of NERL's investments, properly reflecting the risks to which investors are exposed;

b) provide NERL with the financial resources to achieve airspace modernisation while maintaining reasonable pressure on the organisation to continue to deliver operational efficiencies;

c) provide appropriate performance incentives for the protection of the quality of service provided to airspace users;

[44] CAA Reference, paragraphs 5 to 6

d) strengthen NERL's accountability for carrying out its investment plans by putting in place appropriate incentive arrangements and encouraging NERL to develop new and improved governance arrangements; and

e) provide for technological enhancements in the Oceanic service necessary to create safety benefits for this operation.

NERL's reasons for rejecting CAA Decision for RP3

2.65 On 10 September 2019, NERL formally rejected the CAA Decision. NERL stated that it did not consider that the proposed licence modifications as set out in the CAA Decision were in the public interest, or would allow NERL to provide an appropriately high level of service and operational performance whilst also delivering programmes of technological and airspace change.[45]

2.66 In particular, NERL considered that if the CAA Decision were to be implemented without modification, it would:

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

b) Impose disproportionate burdens on the business through the imposition of new governance incentives which NERL considered to be neither necessary, justified or likely to deliver better outcomes;

c) Threaten the delivery of the technological improvements envisaged for the Oceanic service, which in NERL's view would limit its ability to deliver safety, technological and operational benefits, to the detriment of customer interests; and

d) Not allow NERL to earn a rate of return that, in NERL's view, adequately reflected the cost of capital for an efficient air navigation service provider over the RP3 period.[46]

2.67 NERL also had some general criticisms of the CAA's approach, namely that in NERL's view:

a) The combination of interventions and defined outputs and inputs for RP3 effectively removed all of NERL's discretion as to the means by which

[45] NERL Statement of Case (NERL SoC), paragraph 2.
[46] NERL SoC, paragraph 3

NERL could deliver the RP3 business plan, and is inconsistent with the CAA's obligation to only impose on NERL the minimum restrictions that are consistent with the exercise of the CAA's functions;[47]

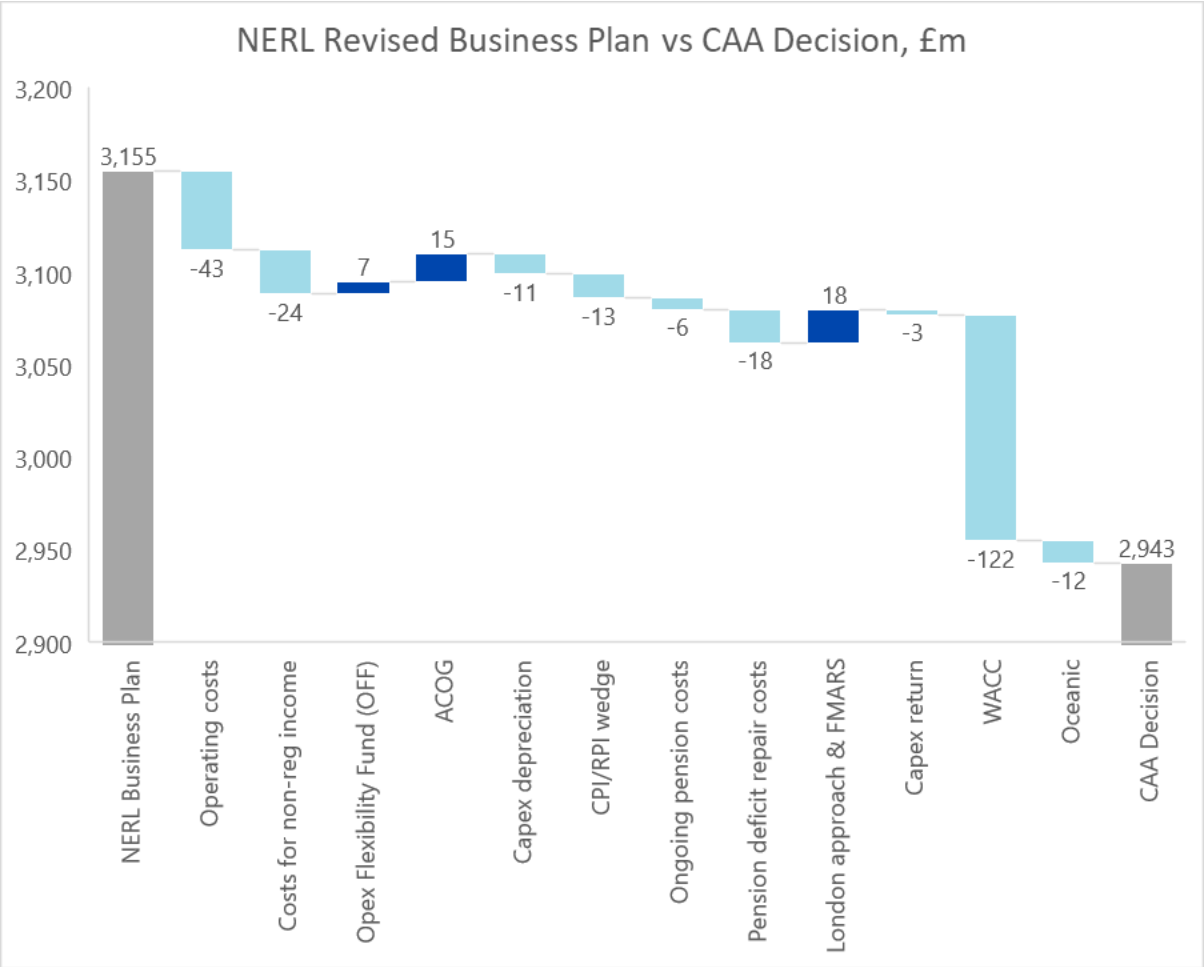
b) The CAA Decision failed to adequately take account of the interaction between Opex requirements and the capital investment programme to transform technology and airspace during RP3. NERL considered that operating within the financial and governance constraints of the CAA Decision would lead to NERL having a shortfall in resources required to deliver the capital investment programme, and a significant increase in business risk associated with the proposed incentive mechanisms;[48] and

c) NERL considered that its final business plan for RP3 (RBP) achieved a 'carefully balanced set of safety and service outcomes through an integrated application of resources while continuing to increase efficiency and deliver price reductions to customers'.[49]

2.68 Overall, NERL told us that the areas of difference between NERL and the CAA led to a difference between NERL's Revised Business Plan (RBP) and the determined costs in the CAA Decision of £212 million. See Figure 2-2 for a comparison between the determined costs in NERL's RBP and the CAA Decision for RP3.

[47] NERL SoC, paragraph 4, and Section 2(6) TA 2000
[48] NERL SoC, paragraph 5
[49] NERL SoC, paragraph 6

Figure 2-2: Comparison of Determined Costs in NERL's RBP and the CAA Decision



Source: NERL SoC and CMA analysis

Third parties

2.69 Third parties were involved in both the CAA RP3 price control process, and in the CMA investigation. Third parties making representations to the CMA included representatives of:

a) Airlines

b) Airline trade organisations (eg IATA)

c) Other organisations in the air transport industry (eg Heathrow)

d) Regulators of other sectors (eg Ofwat, Ofgem)

e) Regulated companies in different industry sectors (eg water companies, energy companies)

f) Consumer representatives (Citizens Advice)

g) Trade unions representing employees of NATS

h) NERL Pension Trustees

2.70 We have taken into account the views of third parties in the Customer Consultation Working Group (CCWG) during the RP3 process, as expressed in the report published in October 2018 by the Co-chairs of the CCWG (the Co-chairs Report).[50]

2.71 We have also considered the findings of the UK Regulators Network (UKRN) report on estimating the cost of capital for regulated companies.[51]

[50] Report of the Co-chairs of the CCWG, October 2018 (Co-chairs report)
[51] Professor Stephen Wright, Phil Burns, Professor Robin Mason and Derry Pickford (2018), *Estimating the cost of capital for implementation of price controls by UK regulators* (UKRN Reportd

3. The Reference and the Legal Framework

3.1 This chapter sets out the legal framework and our approach to our role and duties for this reference. An overview of the regulatory framework for the provision of ATC services and of NERL's licence is provided in chapter 2.

The Reference

3.2 The Secretary of State, or the CAA with the consent of the Secretary of State, has power to grant a licence to provide air traffic services. The licence enables the CAA to carry out economic regulation of the licensed activities and may state the period the licence may remain in force.

3.3 The CAA may modify the conditions of a licence if its holder consents to the modifications.[52] Such modifications may include, as in the present case, modifications to the Charge Control Conditions.

3.4 If the licence holder does not consent to the modifications, the CAA may make a reference to the CMA under section 12 TA 2000, requiring the CMA to investigate and report on:

a) whether any matters which are specified in the reference and which relate to the provision of air traffic services by or on behalf of NERL operate against the public interest, or may be expected to do so; and

b) if so, whether the effects adverse to the public interest, which the matters have, or may be expected to have, could be remedied or prevented by modifying the conditions of the licence.

3.5 If the CMA concludes that any of the matters specified in the reference would operate against the public interest, it must specify modifications to the licence that would remedy the relevant adverse effects.

3.6 The CAA made a reference to the CMA on 19 November 2019, requiring us to investigate and report on whether a failure to set price controls and impose the appropriate modifications to the RP3 licence would operate against the public interest or may be expected to do so (the first reference question). If we conclude that a failure to set price controls and impose conditions to NERL's licence would operate against the public interest, we must consider what

[52] TA 2000, section 11

modifications to the licence would remedy that adverse effect and whether the conditions the CAA has proposed are adequate (the second reference question).[53]

3.7 The CAA varied its reference on 25 February 2020[54] to exclude from the reference all matters relating to its proposed condition 10a, which sets out roles and responsibilities of NERL in respect of airspace modernisation.

3.8 The matters referred to us for the purpose of this reference are therefore:

- Condition 10 of NERL Licence, relating to business plans, service and investment plans, periodic reports
- The Conditions relating to charge control (Charge Control Conditions):
  - Condition 21: Control of Eurocontrol Service Charges
  - Condition 21a: Control of London Approach Charges
  - Condition 22: Oceanic Charges

3.9 The CAA required the CMA to consider and publish its decisions within a 6 month period, beginning with the date of the reference, unless the CMA requests from the CAA, and is granted, more time to do so, pursuant to section12A(3) of the TA 2000.

Statutory Duties

3.10 In deciding whether a matter operates, or may be expected to operate, against the public interest, the CMA must have regard to the duties imposed on the Secretary of State and the CAA in sections 1 and 2 TA 2000.[55] These duties include:

- A primary duty to maintain a high standard of safety
- Secondary duties to act in a manner best calculated
  - To further the interests of aircraft operators, aerodromes, and end consumers where appropriate by promoting competition in the provision of air traffic services;

[53] CAA reference letter, paragraphs 4 and 6.
[54] Notice of Variation
[55] TA 2000, section 12(8)

- To promote efficiency and economy by licence holders; and
- To secure that licence holders will not find it unduly difficult to finance activities authorised by their licences.

3.11 The CAA is further required to take account of any international obligations of the United Kingdom notified to it by the Secretary of State and of any guidance on environmental objectives given by the Secretary of State.

3.12 In performing their functions, the Secretary of State and the CAA are required to impose on licence holders the minimum restrictions which are consistent with the exercise of those functions.

The CMA's approach

The CAA's view

3.13 The CAA submitted that 'appropriate weight must be given to the judgments of expert regulators that are familiar with a regulated industry' and that the CMA should adopt 'an appropriate degree of restraint in relation to challenging the approach and judgments [the CAA] have taken in reaching [its] final decisions'.[56]

3.14 The CAA further submitted that 'Similar to the regime examined by the High Court in … "*ex p. Cellcom*"[57] the TA 2000 does not envisage the CMA stepping into the CAA's regulatory role. This is clear from [the CAA's] responsibility to consider any CMA report following an investigation … and determine whether any modifications to licence conditions should be made,'[58]

NERL's view

3.15 NERL submitted that:

> comparisons to the CMA's appeal jurisdiction in the telecoms and energy sectors are misleading and suggest an inappropriate degree of restraint on the CMA's discretion within the context of a redetermination. In contrast to its appeal jurisdiction in respect of those sectors, the CMA's jurisdiction in this scenario is not to determine an appeal of a decision of the CAA but to "investigate"

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[56] CAA Reference to the Competition and Markets Authority of the RP3 price controls (CAA Reference), paragraphs 1.17, 1.18
[57] *R. v DG of Telecoms, ex p. Cellcom Ltd* [1999] E.C.C. 314
[58] CAA Response to NERL's Statement of Case (CAA Response), paragraph 24

certain questions prescribed under s.12(1) TA 2000 … and "report" its conclusions on those questions in accordance with s.13 TA 2000. As such, the CMA is not concerned with "challenging the approach and judgments" of the CAA.[59]

Our approach

3.16 The statutory provisions outlined above require us to investigate whether the matters specified by the CAA in its reference operate or may be expected to operate against the public interest, not whether the CAA Decision was based on an error of fact or wrong in law, or whether the CAA failed properly to have regard to, or give appropriate weight to, any matter.

3.17 The statutory provisions also require us to specify such modifications of the conditions of the licence as we consider are needed, if we report that modifications are necessary but consider that the modifications proposed by the CAA are not the modifications which are needed.

3.18 TA 2000 therefore requires the CMA to assess different questions and make different determinations than would be made in a Judicial Review. The *Cellcom* case cited by the CAA sets out the standard of review under Judicial Review and is thus not applicable to our assessment in this case.

3.19 TA 2000 provides that, in deciding whether a decision operates, or may be expected to operate, against the public interest, we must have regard to the statutory duties imposed on the Secretary of State and the CAA. We consider however that this requirement does not mean that we are required to follow the same approach that the CAA has adopted or adopt the same methodologies.

3.20 We have taken into account the explanations the CAA provided as to how it has sought to interpret and apply its duties. But we consider that the CAA's interpretation does not prevent us from forming our own view on the appropriate approach to be adopted and weight to be attributed to those duties when we are deciding whether any matters specified in the reference may be expected to operate against the public interest and considering the formulation of any licence modifications. More generally, we consider that our approach should build on, but not be unduly constrained by, the analysis already carried out by the CAA.

3.21 In some instances, where we assessed that licence modifications would remedy the relevant adverse effects to the public interest, we also identified

[59] NERL SoC, paragraph 15.

the need for accompanying measures that interpret and clarify how these modifications should be applied in practice. We consider that these measures are both necessary and proportionate to provide NERL with a sufficient degree of certainty.

3.22 In considering the reference questions, the differences between the CAA and NERL and between their respective proposals and submissions informed our thinking. We have not, however, confined ourselves to considering only the CAA's proposals in its determination, or NERL's objections to it, nor to examining only points of differences between the CAA and NERL. In the interests of proportionality and good administration, we gave appropriate consideration to the issues according to their likely effect on the price control determination.

3.23 We have also used the best and most accurate data available to us. This means that in some cases we used data that had been updated since the CAA reached its RP3 Decision to fulfil our duty to set the appropriate level of the price control for RP3. The data used in this report (eg market data, traffic volumes) will therefore not necessarily be the same data that will be used for a) the CMA's Final Report and b) the final price control. This is particularly the case given the current Covid-19 situation and impact on traffic volumes.

4. Failure to set a price control and the public interest

Introduction

4.1 In this chapter we consider whether a failure to set a price control and impose the appropriate modifications to NERL's licence would operate against the public interest or may be expected to do so.

4.2 On 29 August 2019 the CAA proposed and published modifications to NERL's licence to implement the CAA's decision on the economic regulation of NERL for RP3,[60] and to strengthen the CAA's regulatory governance of NERL. NERL did not consent to the proposed modifications.[61]

4.3 The consequence of NERL having rejected the CAA Decision is that the licence modifications that the CAA proposed in response to NERL's business plan have not been adopted. This means that, as the Charge Control Conditions[62] in NERL's licence apply only to the years from 1 January 2015 to 31 December 2019, these conditions have ceased to have any effect. Accordingly, as from 1 January 2020, the provision of ATC services by NERL under its licence has not been subject to any price control conditions. In addition, as the licence modification proposed by the CAA to strengthen the regulatory governance of NERL was also rejected by NERL, it too has not been adopted and licence Condition 10 remains unchanged.

4.4 The CAA told us that there continued to be mechanisms in place to charge for air traffic management services during the reference. The CAA has agreed with NERL that the charges which the CAA has formally specified to apply from 1 January 2020 until relevant modifications to the licence are finalised, will be those set out in the price control in the CAA Decision for RP3. Nevertheless, there are currently no operative charge control conditions in NERL's licence.

Main Parties' views

4.5 The CAA told us that unless the licence modifications are made, the provision of air traffic services by NERL will operate against the public interest.[63]

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[60] CAA reference letter, paragraph 2
[61] NATS letter to the CAA, 10 September 2019
[62] NERL's licence, Condition 21 (Control of Eurocontrol service charges); condition 21a (Control of London Approach charges); and condition 22 (Oceanic charges)
[63] CAA Reference, paragraph 1.5

4.6 The CAA considers NERL to be a relatively low-risk business, which benefits from the significant protection of a statutory monopoly and from significant regulatory protection against the risks that could arise from traffic volumes turning out to be lower than forecast. NERL also has, in the CAA's view, protection against the financial exposure arising from its large, defined benefit pension cost, to an extent much greater than normal commercial companies. In the CAA's view, NERL's cost of capital should reflect these benefits.[64]

4.7 The CAA also considers that the regulatory arrangements on NERL to protect airspace users from NERL's failing to deliver its business plan outcomes should be stronger.[65]

4.8 The CAA told us that its aim in proposing the modifications to the conditions in NERL's licence was to subject NERL's business plans to a fair and achievable, but not excessive, cost-efficiency challenge.[66]

4.9 During the CAA hearing, the Chief Executive of the CAA explained why NERL is subject to economic regulation:

> It benefits from the significant privilege of having a statutory monopoly; it is therefore free from the usual competitive and commercial pressures faced by other businesses. Airspace users entering into controlled airspace in the UK have to accept NERL's services and pay NERL's charges. Absent an ability to exercise a choice of service provider, airspace users naturally look to the CAA, as the economic regulator, to apply an appropriate challenge for NERL to deliver good services at efficient cost and be responsive to their future needs.
>
> Hence, against the important background of ensuring that we were satisfied in NERL's ability to provide a safe service during the RP3 period, we sought to develop a package of maximum price limits and minimum service quality targets that furthers the interest of airspace users whilst ensuring NERL can finance its licence activities.[67]

4.10 NERL's submissions do not directly address whether a failure to set price controls and impose the appropriate modifications to its licence would be against the public interest. We note, however, that NERL did not challenge having charge control conditions in its licence. NERL's challenge is directed at whether the price control modifications which the CAA has proposed in

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[64] CAA Reference, paragraph 15
[65] CAA Reference, paragraph 6
[66] CAA Reference, page 22
[67] CAA ✂

response to NERL's business plan for RP3 are the modifications which are needed, having regard to the public interest requirements of TA 2000.

Our assessment

4.11 NERL has rejected the licence modifications proposed by the CAA; there is therefore no longer any basis under NERL's licence for the CAA to exercise regulatory control over NERL's RP3 business plans, or over the charges which NERL makes for its services. As explained above, this is because the relevant charge control conditions have effect only until the end of 2019.

4.12 We consider that a failure to modify licence Condition 10, so as to enable the CAA to exercise regulatory control over NERL's business plan for RP3, would not further the interests of operators and owners of aircraft, and the other persons specified in section 2(2)(a) TA 2000. We consider that such a failure would not promote efficiency and economy on the part of NERL, as required by section 2(2)(b) TA 2000.

4.13 We also consider that a failure to modify the charge control Conditions 21, 21a and 22 to enable them to apply to NERL's business plan for RP3 would not be best calculated to promote efficiency and economy on the part of NERL, to further the interests of operators and owners of aircraft, and the other persons specified in section 2(2)(a) TA 2000, or to secure that NERL will not find it unduly difficult to finance activities authorised by its licence, in accordance with section 2(2)(c) TA 2000.

4.14 More generally, a failure to set a charge control for RP3 and have appropriate regulatory control over NERL's business plans mean that NERL would not be constrained when setting prices, and NERL could choose to set prices at a level where it would earn profits materially in excess of its cost of capital. As a result, this may risk customers both paying higher prices and receiving poorer service, which would not further the interests of NERL's customers or of persons travelling in aircraft, or with rights in property carried in aircraft.

4.15 We therefore consider that licence modifications are necessary to ensure in particular that the licence:

- allows an appropriate remuneration of NERL's investments, properly reflecting the risks to which investors are exposed;
- provides NERL with the financial resources to achieve airspace modernisation while maintaining reasonable pressure on the organisation to continue to deliver operational efficiencies;

- provides appropriate performance incentives for the protection of the quality of service provided to airspace users;
- strengthens NERL's accountability for carrying out its investment plans by putting in place appropriate incentive arrangements and encouraging NERL to develop new and improved governance arrangements; and
- provides for technological enhancements in the Oceanic service necessary to create safety benefit for this operation.[68]

4.16 Further, the licence modifications the CAA suggested in its Decision for RP3 were designed to ensure that the Airspace Modernisation Program could be implemented in a timely manner and efficiently including by enhanced regulatory governance. A failure to have appropriate regulatory controls could jeopardise this.

Our provisional conclusion

4.17 For the reasons explained above, we consider that a failure by the CAA to set a price control and impose the appropriate modifications to NERL's licence to enable CAA to exercise regulatory control over NERL would operate against the public interest or may be expected to do so.

Structure of the rest of our provisional findings

4.18 If we conclude that the matters specified in the reference operate against the public interest or may be expected to do so, we are required to consider whether the effects adverse to the public interest, which the matters have, or may be expected to have, could be remedied or prevented by modifying the conditions of the licence.

4.19 We have provisionally found that a failure to set price controls and impose the appropriate modifications to NERL's licence would operate against the public interest, or may be expected do so. In the following chapters we have therefore considered whether these effects adverse to the public interest could be remedied or prevented by modifications of the licence and, if so, what modifications to the licence conditions should be made.

4.20 In reaching our provisional view on what modifications to licence conditions would be necessary – and in light of the legal framework (see chapter 3) - we

[68] CAA Reference, paragraph 6

have had regard to the approach taken by the CAA, the views of NERL and third parties on that approach and our own appreciation of the relevant evidence for the different elements of the price control.

- Chapter 5 considers service delivery and environmental targets and incentives that should be included in the Licence
- Chapter 6 considers the source for the traffic forecast we should use for the purpose of setting charges
- Chapter 7 considers operating expenditure (opex) allowances
- Chapter 8 considers capital expenditure (capex) allowances, incentives and governance
- Chapter 9 considers the level of non-regulated income that should be used when calculating the Determined Cost allowance
- Chapter 10 considers pension costs allowance
- Chapter 11 considers the Oceanic charge control
- Chapter 12 outlines our approach to calculating cost of capital for NERL
- Chapter 13 summarises our provisional findings on the individual elements of the price control and considers it ‘in the round’.

5. Service quality and environmental targets and incentives

Introduction

5.1 This chapter considers the service quality and environmental targets and incentives that should be included in the licence.[69]

5.2 NERL is subject to four service quality targets related to various measures of flight delay, referred to a C1 to C4. It faces financial incentives in the form of potential rewards or penalties with three of these targets. An environmental target and incentive is also applied based on the '3Di' metric which measures the inefficiency of the flight path.[70]

5.3 NERL submitted that the CAA's approach was not in the public interest. The context to NERL's challenge to the CAA's assumption on service delivery targets is the effect of airspace modernisation on the ability of NERL to meet its targets.[71]

5.4 We have considered whether the CAA's proposed targets are too stretching or too lenient. We have then considered whether the CAA's proposed incentives are consistent with the challenges arising from delivering airspace changes and technological improvements in the RP3 period, and whether other changes would be appropriate.

CAA Decision for RP3

Service quality targets

5.5 NERL is subject to four capacity performance targets based on measurements of flight delays. The C1 and C2 targets are EU-wide targets mandated under SES. There are two further UK-specific targets (C3 and C4). Each of C2, C3 and C4 are subject to financial incentives. [72]

5.6 The four capacity performance targets are based as follows:

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[69] There are additional KPIs for safety targets. These were not a basis of NERL's Statement of Case, nor were they raised by the CAA as points that the CMA should review further. We have not considered these safety-related KPIs further in this investigation.
[70]. See paragraph 5.10 for more details.
[71] NERL provided a case study showing an example of the impact of transitions to delay when introducing the Extended Computer Display System (ExCDS). See NERL SoC, Annex 14
[72] NERL's SoC, paragraph 210, refers to one EU target and three UK-specific targets. The CAA states in the CAA Reference, page 88, that C1 and C2 are EU targets.

(a) C1 – en route air traffic flow management (ATFM) delay per flight from all causes

(b) C2 – en route ATFM delay per flight from NERL attributable causes

(c) C3 – an impact score using weighted metrics of NERL attributable delays that captures the impact of the timing in terms of morning and evening peaks and length of delay to place more weight on long delays

(d) C4 – variability of daily average NERL attributable delays, expressed as a daily excess delay score, based on weighted delays exceeding pre-determined thresholds on a daily basis.

5.7 In RP3, the CAA set less stringent targets for NERL than in RP2, to take account of the impact of airspace modernisation. Table 5-1 indicates the targets set by the CAA for RP2 and RP3.

Table 5-1: Summary of service quality targets for delay in RP2 and RP3

			RP2					*RP3*		
	2015	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	*2024*
C1 delay per flight (mins)	0.25	0.26	0.26	0.26	0.26	0.26	0.32	0.32	0.30	0.32
C2 delay per flight (mins)	0.17	0.18	0.18	0.18	0.18	0.20	0.25	0.25	0.23	0.25
C3 impact score	20	20	20	20	20	20	25	25	23.5	25
C4 score	2,000	2,000	2,000	2,000	2,000	1,800	1,800	1,800	1,800	1,800

Source: CAA Reference to the CMA, Tables D1 to D4 on pages 89-91
Notes: C3 and C4 targets are subject to 100 exemption days in RP3, up from 75 days in RP2, and 40 days in RP1.

5.8 The CAA acknowledged that there would be more transitions arising from the complex change programme in the RP3 period. In its Decision, the CAA said that the C3 target had been re-profiled and it had increased the allowance for exemption days for the C3 and C4 targets to 100, up from 75 days in RP2. [73]

Service quality incentives

NERL is subject to financial rewards and penalties for targets C2, C3 and C4 (see

[73] CAA Decision, paragraph 4.51

5.9 Table 5-2:).

Table 5-2: Summary of financial incentives for service quality targets in RP2 and RP3

	RP2 (of revenue)		*RP3 (of determined costs)*	
	Maximum bonus	*Maximum penalty*	*Maximum bonus*	*Maximum penalty*
C1 delay per flight	n/a	n/a	n/a	n/a
C2 delay per flight	0.25%	-0.25%	0.05%	-0.25%
C3 impact score	0.75%	-0.50%	0.25%	-0.75%
C4 score	n/a	-0.25%	n/a	-0.25%
Total	1.0%	-1.0%	0.30%	-1.25%

Source: CAA Decision, page 53, table 4.5

3Di environmental target

5.10 The 3Di metric assesses environmental performance in terms of flight efficiency, as a proxy for carbon emissions. Flight routing decisions influence the level of fuel used. The 3Di metric is based on both vertical and horizontal flight (in)efficiency, and is affected by the climb, cruise and descent phases of a flight. This metric is designed to encourage more direct point to point routes. The 3Di metric is unique to the UK.

5.11 Table 5-3: indicates the 3Di targets set by the CAA for RP2 and RP3.

5.12 There is another environmental performance target in the CAA Decision, 'KEA' mandated by SES,[74] but it has no attached financial incentive under the CAA's proposed modifications and is therefore not an element of the price control. This was therefore not considered in detail in our investigation.

Table 5-3: Summary of 3Di targets in RP2 and RP3

	RP2					*RP3*				
	2015	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	*2024*
3Di target	29.1	28.6	28.3	27.5	27.1	27.8	27.5	27.3	27.0	26.7

Source: CAA Decision, page 40, table 3.3
Note: a 5% deadband applies, where no penalty or bonus is triggered

3Di incentives

5.13 NERL is subject to financial rewards and penalties for the 3Di metric (see Table 5-4).

Table 5-4: Summary of financial incentives for 3Di environment target in RP2 and RP3

	RP2 (of revenue)		*RP3 (of determined costs)*	
	Maximum bonus	*Maximum penalty*	*Maximum bonus*	*Maximum penalty*
3Di metric	1.0%	-1.0%	0.50%	-0.50%

Source: CAA Reference, page 35, figure 4.2

[74] KEA: The performance regulation environment KPI is the horizontal en route flight efficiency of the actual trajectory.

Overall financial incentives

5.14 The combined level of potential rewards and penalties from the delay and environment targets are shown below (see Table 5-5). This shows that as we move from RP2 to RP3, there is a change from symmetric to asymmetric maximum financial incentives.

Table 5-5: Overall financial incentives for service quality and environment targets in RP2 and RP3

	RP2 (of revenue)		*RP3 (of determined costs)*	
	Maximum bonus	*Maximum penalty*	*Maximum bonus*	*Maximum penalty*
Total	2.0%	-2.0%	0.80%	-1.75%

Source: CMA analysis

RP2 incentive outturns

5.15 NERL provided the CMA with details of the level of financial incentives arising in the RP2 period. Overall the net bonus position was £6.7 million (see Table 5-6).

Table 5-6: Overall financial incentives for service quality and environment targets in RP3, £m

	2015	*2016*	*2017*	*2018*	*2019*	*Total*
C1	n/a	n/a	n/a	n/a	n/a	n/a
C2	1.612	(0.367)	0.91m	(0.264)	Within deadband	1.898
C3	3.029	(0.05)	1.622	-	0.166	4.767
C4	-	-	-	-	-	-
3Di	Within deadband each year					-

Source: NERL ✂
Notes: 2017 price base, figures in brackets represent penalties, 2019 data is subject to audit, C4 is penalty only but the target was met each year.

NERL's view

5.16 NERL stated that, despite the softening of the targets and incentives by the CAA due to the airspace changes, it considered that the targets were still too stretching. NERL explained that it considered the targets were too stretching when combined with transitions for airspace and technology changes, higher projected traffic levels and what it considered to be an insufficient opex allowance. It predicted that in four out of the five years in RP3 it would be subject to financial penalties, totalling £5 million for the service delivery targets and a further £0.3 million in total reflecting penalties arising in two out of the five years for the 3Di environment target.[75] NERL said that if it missed

[75] NERL SoC, paragraph 204 and section 7.6

the targets, there would be more likelihood of reputational damage and complaints about its performance levels.[76]

5.17 NERL considered that the service delivery targets would be more realistic if they allowed for a further period of 'transitions' that would reflect the requirement to plan for the changes needed arising from the delivery of airspace change and technology transformation. The 'transitions' proposed are effectively exemptions for periods to measure delay performance related to times when new technology or airspace changes are being deployed.[77]

5.18 In its RBP, NERL requested that the number of exemption days for the C3 and C4 target be increased from 75 days in RP2 to 150 days in RP3.[78]

5.19 NERL stated that the CAA had not fully explored the opportunities to deviate from the EU regulations under SES.[79]

5.20 NERL told us that the 3Di environmental target should have been designed so that it only reflected factors under NERL's control. NERL considered that weather impacts and airspace changes made by airports below 7,000ft should not be in the metric by which NERL is measured.[80] It said that its ATCOs would not be motivated by the 3Di in its current form.[81] NERL said that it disagreed with the CAA's views that customers had supported the approach taken by the CAA.[82]

5.21 Table 5-7 summarises alternative targets for the four capacity performance measures and the 3Di environment metric, put forward by NERL in its business plan.

Table 5-7: NERL RBP proposed service quality and 3Di targets in RP3[83]

	Option 1	*Option 2*
C1 delay per flight	0.23 mins + transition allowances	0.39 mins
C2 delay per flight	0.18 mins + transition allowances	0.33 mins
C3 impact score	20 + transition allowances	150 exemption days
C4 score	2000 + transition allowances	150 exemption days
3Di	Controllable factors only 16.2-17.9 points pa	28.5 points

Source: NERL SoC, page 60, table 3, and for 3Di, page 67 table 4

[76] NERL SoC, paragraph 221
[77] NERL SoC, paragraph 209
[78] NERL SoC, Table 3, page 60
[79] NERL SoC, paragraphs 222-223
[80] NERL SoC, paragraph 237
[81] NERL SoC, paragraph 239
[82] NERL SoC, paragraph 236 and NERL Reply to CAA Response (NERL Reply), paragraph 111
[83] See Table 5-1 notes for CAA decisions on RP3 exemption and transition allowances

CAA's view

5.22 The CAA maintained the position in its Decision that the targets and incentives were important and offered protection to airspace users. It said that airspace users continued to recognise the importance of ensuring that NERL delivers a resilient and acceptable level of capacity, service and environmental performance. [84]

5.23 The CAA said that its decision on targets and incentives took account of NERL's historical performance levels, including some RP2 outperformance by NERL, and then included adjustments to reflect major changes planned in RP3. The CAA said that it was mindful to set targets and incentives that did not discourage NERL from progressing the airspace modernisation programme in RP3.

5.24 The CAA said that it had softened the targets but had to be mindful of the need for consistency, and to comply with the constraints of Eurocontrol's Network Operation Plan (NOP), relating to the C1 target. The CAA said that some of NERL's proposals, such as introducing a special event transition delay mechanism, were not consistent with or reflective of the constraints of the EU regulatory framework. [85]

5.25 The CAA said it had considered the Heathrow Airport Limited (HAL) representation that the 3Di target, encouraging direct routes for flights, may be in conflict with the Government policy requiring airspace re-design to take account of the impact on noise levels in local communities close to airports.[86] The CAA noted it had halved the strength of the 3Di incentives from RP2 to RP3, reducing this to +/- 0.50% of revenue. The CAA had decided it was in airspace users' overall interests to continue with the 3Di target in RP3, recognising the important role the aviation sector has in reducing carbon emissions.

Other evidence

5.26 IAG told us that it accepted the CAA position. In its response to the CAA's consultation on its RP3 proposals, it stated:

> We support the use and proliferation of 3Di environmental indicators, which are preferable to two-dimension approaches,

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[84] CAA Decision, paragraph 4.2, page 43
[85] CAA Reference, paragraphs D26-D29 on page 88
[86] See paragraph 5.27 below

> and encourage their rigorous application; however, [we] do not support bonus payments for meeting performance expectations. We also support the continued application of capacity KPIs, but believe these should require improvement and should not be subject to uncontrolled exemption days.[87]

5.27 IAG stated that the EU targets lacked ambition. IAG stated 'in our view, maintaining RP2 capacity targets into RP3 is conservative (at least) and arguably somewhat generous to NERL.'[88]

5.28 HAL noted the critical impact of NERL's performance on its operational performance. Its initial representation in response to the Reference focused on the need for sufficient funding for NERL rather than suggesting any specific changes to the service delivery metrics.[89] However, since its initial representation, ongoing discussions between HAL and NERL regarding the design of airspace highlighted an additional issue regarding NERL's 3Di targets. Therefore, HAL sent a further submission noting that the 3Di metric, in its view, conflicted with the Government policy on noise for over-flown communities that was a key feature of airspace re-design issues for traffic flows above airports.[90]

5.29 The CCWG Co-chairs Report, which was produced ahead of the CAA Decision, stated that airlines had no desire to see greater risk on service than the position at the time. The CCWG supported retention of the same service performance targets for C1 to C4 as in RP2. Airlines represented at the CCWG had said they wished to be involved in the detail of issues such as allowances for exemption days and exclusions for some flights within the 3Di metric if the CAA were to proceed with this approach.[91]

Our approach

5.30 In assessing the targets and associated financial incentives that should be introduced in the Licence, we have reviewed the submissions put to us. We have not sought to independently establish a separate and distinct evidence base for assessment of the associated outputs. Our analysis is intended to build on the evidence provided by the Parties, which are sector experts.

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[87] IAG Response to CAA RP3 consultation, 2019, paragraph 5
[88] IAG Response to CAA RP3 consultation, 2019, paragraph 33
[89] HAL submission, 24 December 2019
[90] HAL ✂
[91] CCWG Co-chairs Report (Co-chairs Report), pages 18-19

Our assessment

5.31 We were told by third parties as well as the CAA that maintaining service quality was particularly important to the effectiveness of NERL's role as ANSP, and that increases in delay could have a significant knock-on effect on airlines and airports. Airlines made submissions to this appeal that the consequences of delays and other service failures for the industry were significant, and that no changes were required to service quality targets in RP3.

5.32 However, we recognise that the RP3 targets need to take into account the impact of implementation of technology updates and AMS on NERL's day to day activities. The CAA's proposed modifications effectively required NERL to identify a means to offset the effects of AMS on delay. We agree that the context of investment in AMS and technology results in a greater challenge for NERL than in RP2.

5.33 We reviewed the evidence provided by NERL and it indicated that the difference between NERL's position and that of CAA was not one of principle but one of degree. Both CAA and NERL agreed that it was appropriate to relax service quality targets in RP3. NERL's challenge was on the basis that the CAA had not gone far enough, and that based on the proposed licence modifications, NERL would be unable to meet the proposed targets throughout RP3 and that the CAA's decision would result in financial penalties, which NERL estimated would be £5.3 million.

5.34 The evidence of NERL's past performance indicated that it was able to outperform the targets on average that were set during RP2. The CAA (advised by its internal experts) and IAG considered that NERL should be able to meet the targets proposed for RP3, and the CAA and IAG considered that it was possible for NERL to exceed the targets.

5.35 We carefully considered the CAA's approach, NERL's position and third-party representations. We concluded that there is no absolute way of defining the strength of incentives to be applied in setting the level of targets during airspace modernisation, and in that context the CAA's decision was reasonable. We consider that it is plausible for NERL to maintain good performance and identify opportunities to offset the potential effects of AMS. NERL did not provide sufficient evidence to persuade us that this was unrealistic. The RP3 incentives are less powerful than those used in RP2 to reflect the major change programme underway, yet they are maintained at a level that should influence NERL's decision-making and focus. In our provisional view, this should ensure that airspace users continue to receive a good standard of service from NERL and is a good balance to strike.

5.36 We note that NERL has requested more transitions to allow for disruption in implementation of technology change and AMS. However, our provisional view is that the scope of transitions requested by NERL would go too far in dampening the effectiveness of the incentives and weaken protection for airspace users. The CAA's approach to increase the number of permitted exemption days for the C3 and C4 targets is an alternative compromise. We consider that the targets, reporting basis and associated incentives are consistent with the CAA's duties. We therefore agree that the CAA had good reasons for rejecting NERL's proposals for more transitions.

5.37 Overall, we consider that the CAA has used appropriate judgement in balancing the needs of NERL and the airlines in its proposals for service delivery targets and incentives for RP3.

5.38 In respect of 3Di, NERL made an additional point that it would be exposed to uncontrollable factors under the proposed incentive. We recognise that it is good regulatory practice to focus on controllable risks, particularly where financial rewards and penalties result from the exposure. However, it is not always practicable to fully separate controllable from non-controllable risks. NERL is also exposed, for example, to volume risk, the large majority of which will be outside its control. On balance, we consider that imposing a target that combines exposure to both controllable and non-controllable risks is an appropriate approach. In that context, the decision to reduce the scale of the exposure to penalty and rewards appears sensible. We would encourage the CAA to be clear on how it sets the level of penalties and rewards such that they reflect NERL's ability to manage the risks to which it is exposed.

Our provisional conclusions

5.39 Taking the service quality and 3Di targets and incentives together, we provisionally conclude that the CAA's proposed modifications should be adopted for RP3.

5.40 We have noted in our assessment that the CAA approach taken in RP3 assumes less stretching targets and lower powered incentives than in RP2 to reflect the expected effects of AMS on performance. There is a risk of NERL being rewarded through the service quality incentives, which would be particularly inappropriate if NERL was responsible for any delay to AMS. We recommend that the CAA should consider signalling early its intentions in respect of setting targets in future price controls with potentially more powerful financial incentives. This would help NERL with planning its approach towards returning to stronger incentives and provide more certainty to airspace users.

6. Traffic forecast

Introduction

6.1 This chapter considers the source for the traffic forecast we should use for the purpose of setting charges in RP3. Traffic forecasts are an important element of the RP3 price control determinations. For the en route charge control, although traffic forecasts do not directly have an impact on allowed Determined Costs, they are used to determine the unit price chargeable to customers (the airlines).[92] Traffic forecasts also play a key role for operational planning, for example ensuring that sufficient and efficient levels of staff resources are always available. Within the Oceanic charge control, the level of traffic also has an impact on the level of revenue received from permitted data charges for the ADS-B service.

6.2 NATS receives some revenue protection from traffic volume risk through the operation of a traffic risk sharing mechanism for the en route price control, based on the European Performance and Charging Regulations.[93] The operation of these Regulations was not raised as a specific concern by NATS in its representations relating to this reference.

6.3 The Licence Charge Conditions for RP2 were based on traffic forecasts established by STATFOR.[94]

6.4 NERL also produces its own traffic forecast. The basis of the NERL model to produce traffic forecasts is the DfT aviation forecasting model.[95] NERL's approach takes account of various UK-specific factors, the most notable being the influence of the North Atlantic Jetstream which influences the distance flown by transatlantic flights within NERL's en route airspace. NERL told us that it used this forecast as the basis for its operational planning. [96]

6.5 Figure 6-1: shows that the traffic forecasts from NERL (May 2019) and STATFOR (February 2019) are not significantly different.

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[92] The unit charge paid by customers is known as TSUs – Total Service Units. The overall charges per flight are based on the distance flown and the weight of the aircraft.
[93] See appendix B for more details.
[94] STATFOR: Eurocontrol's Statistic and Forecasting Service. It produces traffic forecasts for ANSPs across Europe.
[95] NERL Statement of Case (NERL SoC), paragraph 171
[96] NERL SoC, paragraph 174 lists other UK-specific factors: local airport capacity and expansion plans, UK events, London airport passenger behaviour, and local economic conditions.

Figure 6-1: Comparison of STATFOR and NERL traffic forecasts, 2020-2024

		RP3 Totals	*Difference*
	STATFOR	13,645	
UK flights (000)	NERL	13,776	NERL 1.0% > STATFOR
	STATFOR	65,743	
TSUs (000)	NERL	65,150	NERL 0.9% < STATFOR

Source: CAA Decision, Annex C, page 13, table C.1

6.6 The CMA has also considered whether it is appropriate to use the revised traffic forecasts that are due to be published in Spring 2020 in our redetermination.

CAA Decision for RP3

6.7 The CAA Decision for RP3[97] was based on the STATFOR February 2019 forecast, which was the latest available at the time. The CAA decided against using NERL's forecast. The STATFOR traffic forecast had also been the basis of the RP2 decision and had been accepted by NERL at that time.[98]

NERL's view

6.8 NERL submitted that it was not in the public interest to use the STATFOR traffic forecast. It suggested that its own forecast was more accurate and reliable.

6.9 NERL stated that the accuracy of its traffic forecasts was superior to that of the STATFOR forecasts,[99] arguing that this was because of its additional sophistication to take account of UK specific factors, especially the full impact of the Jetstream.[100] NERL explained that the STATFOR approach to modelling the Jetstream locale overstated the assumed distance flown by transatlantic flights in en route airspace. NERL provided us with information[101] that it considered showed that, since 2010, in six out of the nine years the NERL forecast had been more accurate than the STATFOR traffic forecast. This analysis covered the period 2010-2018 and did not include information for 2019. The analysis provided by NERL was critical of various assumptions, such as projected aircraft weight increases, in the approach taken to produce the STATFOR traffic forecasts.

[97] CAA Decision, paragraphs 1.21 and 1.23
[98] NERL SoC, paragraph 178
[99] NERL SoC, paragraph 177
[100] NERL SoC, paragraph 184
[101] NERL ✂

CAA's view

6.10 The CAA told us that its overriding consideration had been the accuracy and reliability of assumptions underpinning a traffic forecast.[102] It noted that in 2019, the starting point baseline for the 2020-2024 RP3 period, the STATFOR forecast was 'more plausible' than NERL's traffic forecast, based on the January to June data available at the time.[103] The CAA noted that the two RP3 forecasts produced in 2019 were not significantly different.[104] The CAA stated that the issue of accuracy was more relevant than that of independence, responding to a comment from NERL that the CAA had appeared to have prioritised independence over accuracy. [105]

6.11 The CAA also expressed concerns at some of the assumptions used in the NERL forecast, particularly around aircraft weight.[106] The CAA provided evidence that it said showed that it had considered in detail the merits of both approaches.[107]

Other evidence

6.12 The Co-chairs Report noted that the airlines originally preferred a position where the CAA would use the STATFOR traffic forecasts as the basis of the price control.[108] However, the Co-chairs Report noted that the airlines became more sympathetic to the arguments put forward by NERL to suggest the STATFOR approach had a number of weaknesses and that the NERL model might be more accurate. After discussion at one of the workshops of the CCWG that was dedicated to the traffic issue, the Co-chairs Report noted that some airlines present at this workshop had become more supportive of use of the NERL model, having originally favoured use of STATFOR. Airlines' views were, however, mixed. There is a 'partially agreed' statement in the Co-chairs Report as the airlines did express criticism of the basis of parts of the NERL forecast (as does the CAA) and wanted NERL to have more dialogue with STATFOR to seek consistency in forecasting approaches.

6.13 IAG supported the CAA in using the STATFOR traffic forecasts, and told us that the STATFOR approach was balanced and produced realistic forecasts.[109]

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[102] CAA Response, Section 2 on page 16
[103] CAA Decision Appendices, Appendix C, paragraphs C5 and C6
[104] CAA Decision, paragraph 1.18
[105] CAA Reference, paragraph 2.2
[106] CAA Response, paragraphs 2.10 to 2.13
[107] See, for example, CAA Decision Appendix C, and paragraphs 1.15-1.23
[108] Co-chairs Report, Section 2, page 12
[109] IAG response to the CAA on the Draft Decision, paragraph 15

Our approach and assessment

6.14 We carefully considered the advantages and disadvantages put forward to support use of either the STATFOR or NERL approach. We also considered the extent to which it is possible to draw conclusions on past accuracy of forecasts to determine the likelihood that one forecast will be more accurate for RP3. NERL and the CAA both claimed and presented evidence suggesting their alternative preferred approaches were in the past more accurate.

6.15 There are a number of factors which could be relevant when considering which traffic forecast to adopt for RP3. These include accuracy and reliability of information, relative differences, materiality of impact on both NERL and its customers, the extent to which independence is relevant, and precedent set by previous approaches and by general regulatory practice. Based on the submissions to the reference, we gave greatest weight to accuracy, but also considered the role of independence, based on precedent and normal regulatory practice.

Accuracy and reliability of information

6.16 Both CAA and NERL told us that accuracy is the most important factor that they took into account in proposing their different preferred traffic forecasts.

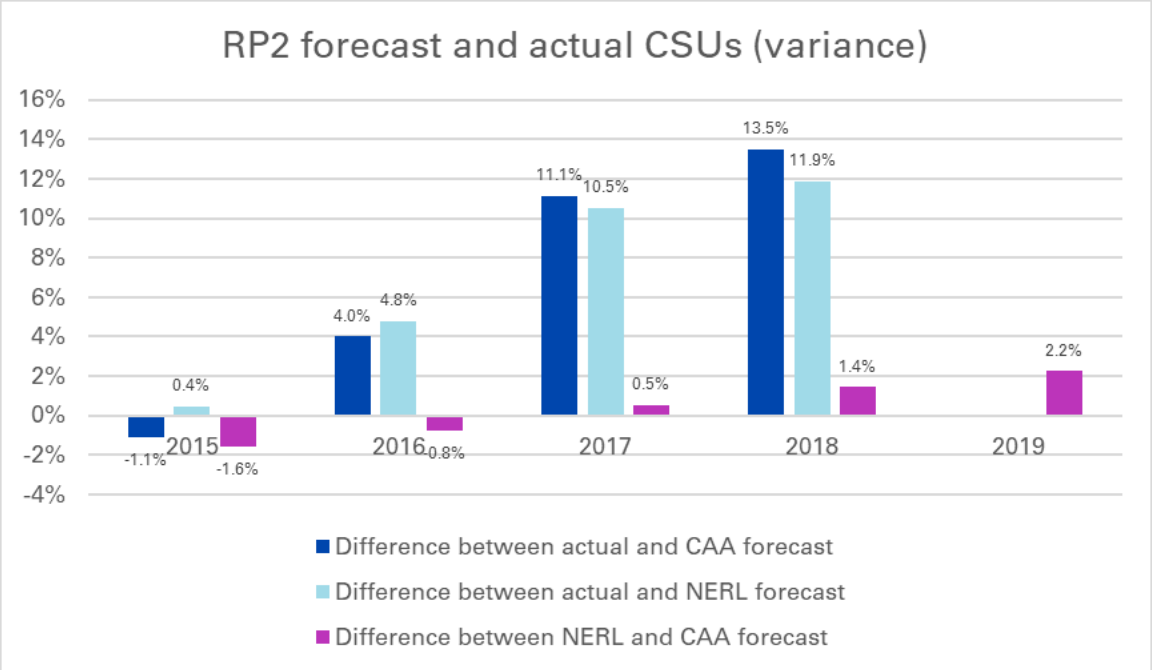
6.17 Whilst we understand that, in principle, accuracy is the most important factor, the evidence we have seen does not indicate clearly which forecast is more accurate. We summarise below our review of the two forecasts, which indicates that in practice the primary driver of material variances between the actual volumes experienced by NERL and the regulatory forecast has been real world shocks to air traffic volumes. These shocks have resulted in actual traffic levels significantly higher, or lower, than either of the forecasts. Once this is allowed for, the remaining variance due to the choice of forecast is small. We accept that small variances can nonetheless be significant to NERL given the nature of the traffic risk sharing mechanism, particularly when any underlying ‘shock’ or ‘trend’ variation is small (ie when there is little difference between the forecast and actual traffic). However, there does not appear to be any obvious systemic pattern in the remaining error – in some years the STATFOR forecast is more accurate, while in others the NERL forecast proves to be better.

6.18 NERL told us that since 2010, its forecast has turned out to be more accurate in more years than the STATFOR traffic forecasts. The CAA submitted that for both flight and TSU numbers, the STATFOR forecast was ‘more plausible’ in 2019 (based on January to October data available at the time), which was the base starting position for the RP3 period.

6.19 We consider that caution is always needed when comparing forecast numbers with actual numbers, as the data comparisons could be presented in a variety of ways. For example, the comparisons are not perfectly like-for-like, as the dates when forecasts were released often differed. However, we have reviewed the two forecasts against actuals based on the data provided. We were not convinced that the evidence from actual variance against forecast was persuasive that either set of forecasts was more accurate.

6.20 This is illustrated in Figure 6-2, which shows the gaps between actual and forecast CSUs since the forecasts used in RP2 were determined in 2013. [110] Figure 6-2 shows that neither STATFOR nor NERL was able to predict the significant increase in volume during RP2, especially in 2017 and 2018. It also reaffirms our observation that the two forecasts are not significantly different, especially within the context that actual outturns can be very different to forecasts.

Figure 6-2: RP2 forecast and actual CSU levels, showing % variances.

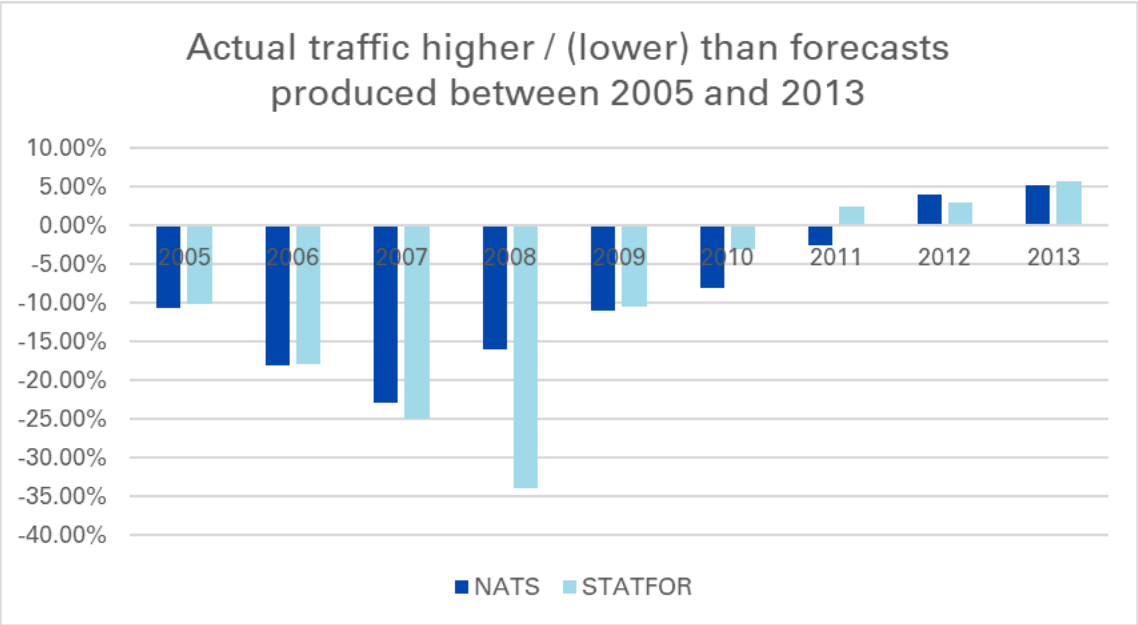


Source: CMA analysis of NERL Regulatory Accounts and NATS RFI response.

6.21 Figure 6-3, provided by NERL, indicates a similar pattern for earlier periods – with both STATFOR and NERL's forecasts materially over-forecasting volumes, due to effect of the global financial crisis. [111]

[110] CSUs: chargeable service units. This is based on the number of civil flights that are not exempt from charges (see appendix B for more detail).
[111] NERL ✂

Figure 6-3: Comparison of accuracy of STATFOR and NATS' forecasts



Source: NERL ✂

6.22 This analysis illustrates that forecasting air traffic volumes is subject to material and fundamental uncertainty, much of which cannot be forecast accurately. STATFOR's most recent forecast released in February 2019 is marginally lower (1% over RP3) than NERL's forecast. Given the scale of differences between forecast and actual in recent periods, we consider it is not plausible to say from the actual data on variance between STATFOR's and NERL's forecasts that either forecast is more accurate.

Independence

6.23 Independence was not raised as a strong concern by parties. The CAA noted it is a relevant consideration, but it clarified it was of less importance than accuracy. [112]

6.24 NERL explained that the basis of its information was credible external sources such as the DfT and the Met Office. At its hearing, NERL also explained the internal and external audit processes it follows to ensure appropriate governance is in place.[113]

6.25 Although accuracy may be the most important factor in choosing a traffic forecast measure, regulators typically are cautious about using forecasts produced by a regulated entity for its own price setting process. The CAA itself has favoured using STATFOR's forecasts in the past, and regulators are

[112] CAA ✂
[113] NERL ✂

required to have regard to the principle of regulatory consistency in the exercise of their functions.[114] The STATFOR forecasts are the basis of planning across European countries and the CAA approach is hence consistent with this.

Our provisional conclusions

6.26 Our assessment of the evidence indicates that NERL has a credible and effective forecasting mechanism. NERL has also provided some credible arguments why its forecasts include additional relevant evidence which is not taken into account in the STATFOR forecasts. However, the CAA also provided evidence in favour of STATFOR forecasts, including that the use of STATFOR is consistent with regulatory principles of being independent, of at least comparable accuracy, and also consistent with previous decisions. The CAA and IAG provided examples of why STATFOR might be a better forecasting tool.

6.27 Both the CAA and NERL provided examples of one or the other forecast might have been more accurate in the past. We reviewed the historic evidence and concluded that it did not demonstrate that either of the methodologies for forecasting was clearly better. It is clear that any forecast of future traffic levels will in practice be wrong for a range of reasons, such as the direction of the Jetstream, and other factors affecting overall demand for air transport services.

6.28 Taking all the evidence together, our provisional conclusion is that NERL's submissions and the other evidence provided do not demonstrate that the CAA's decision to use the STATFOR forecast for the purpose of the RP3 price control was wrong. The CAA's decision was ultimately a matter of judgement between two forecast options, and represented a continuation of the approach used at RP2.

6.29 We note that all parties expressing an opinion supported the use of the latest forecasts due for release in Spring 2020 rather than continuing with a Decision for RP3 based on the February 2019 traffic forecasts, before it became clear that the timing of the issuance of these forecasts would be delayed.

6.30 For our Final Determination we intend to use the STATFOR forecasts. We may use the latest forecasts that are expected to be available in late March 2020, if Eurocontrol is able to update traffic forecasts by then. We may adopt

[114] Legislative and Regulatory Reform Act 2006, section 21(2)(a)

an alternative position if it is not possible to use an updated STATFOR forecast within the timetable for this CMA reference, and are seeking views in particular on how best to update the price control for the latest forecasts for 2020 and also for the rest of the price control period. The alternative could be to instruct the CAA to use the STATFOR update when it became available.[115]

[115] See paragraph 1.9

7. Operating expenditure allowances

Introduction

7.1 In this chapter we set out our assessment of the allowance made to reflect NERL's expected operating expenditure (opex) requirements in RP3. Opex is the single largest component of NERL's price control, accounting for around 70 per cent of determined costs under the CAA Decision.[116] The opex allowance in the CAA Decision was around 2% below NERL's forecast of its overall RP3 opex requirements (excluding pension costs).[117]

7.2 In line with the approach taken to opex in the CAA Decision, and NERL's Statement of Case, our consideration of opex in this chapter excludes pension costs (which are considered in chapter 10) and depreciation (which is affected by assumed capex levels, which are considered in chapter 8). The implications for opex of forecast changes to NERL's non-regulated revenue in RP3 were also assessed separately by the Parties, and, in line with that, our assessment of cost and revenue assumptions associated with non-regulated activity is provided in chapter 9.

CAA Decision for RP3

7.3 Table 7-1 shows a comparison between NERL's view of its opex requirements for each year of RP3 as set out in its RBP, and the levels of opex assumed by the CAA in its Draft Proposals and in its Decision for RP3. Opex data is shown from 2017 as this was used as the base year for the CAA's review, and was the last year for which audited accounts information was available at the time of the CAA's Draft Proposals.[118] In line with this, NERL's RBP provided forecast figures for 2018 and 2019 (the final two years of RP2) in addition to providing its view of RP3 opex requirements.

7.4 As Table 7-1 shows, in its RBP, NERL had forecast that that its opex would increase by around 21% between 2017 and 2019, such that its 2019 opex would be £422 million. NERL's RBP showed opex continuing to increase through to 2022, such that it would then be 5% above the forecast 2019 level, and 26% above the actual 2017 level of opex. NERL forecast that its opex requirements would then reduce in the final two years of RP3 such that its opex would be £427 million in 2024, around 3% lower than NERL's forecast of its 2022 level. In line with the data shown in Table 7-1, the average annual

[116] CAA Reference,paragraph 15
[117] Unless otherwise stated, all cost figures presented in our provisional findings are in 2017 CPI prices
[118] CAA Decision, paragraph 5.8

RP3 opex requirements forecast by NERL in its RBP were around 2% higher than its forecast of 2019 opex, and around 23% higher than actual 2017 opex.

Table 7-1: Comparison of opex forecasts and proposed allowances[119]

£m, 2017 CPI prices

	RP2					*RP3*		
	2017	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	*2024*
NERL RBP	350	386	422	426	424	441	438	427
CAA Draft Proposals				421	414	426	419	404
RP3 Decision				426	424	441	419	404

Source: CAA Decision, Table 5.1 and paragraph 5.25.
Note: Opex figures exclude pensions and depreciation. Opex figures for the RP3 Decision exclude changes from the CAA's Draft Proposals related to: ACOG, an increased allowance for the Opex Flexibility Fund (OFF), and the CAA approach to NERL's non-regulated activity.

7.5 In its Draft Proposals the CAA said that while it was concerned by the increase in cost in the later years of RP2, it acknowledged that NERL needed to deal with quality of service issues, make further progress with technology change, and push forward work on airspace modernisation.[120] In line with this, in its Draft Proposals, the CAA said that it accepted NERL's forecast cost increases between 2017 and 2019, but proposed that a 2.3% per year reduction in opex/CSU[121] should be assumed from 2019, which it said was consistent with historical trends, and close to what NERL had assumed in its RBP from 2020.[122] This resulted in the opex figures shown in Table 7-1, and as shown in Table 7-2, the overall opex allowance provided for in the CAA's Draft Proposals was £71 million (3.3%) below the total assumed by NERL in its RBP.

Table 7-2: Comparison of forecast opex (excluding pensions)

	£m, 2017 CPI prices		*%*
	Total for RP3	*Difference from NERL RBP*	*Difference as a % of NERL RBP forecast*
NERL RBP	2,156		
CAA Draft Proposals	2,084	-71	3.3%
CAA Decision	2,113	-43	2.0%

Source: CAA Decision, Table 5.1 and paragraph 5.25
Note: Opex figures exclude pensions and depreciation. Opex figures for the CAA Decision exclude changes from the CAA's Draft Proposals related to: ACOG, an increased allowance for the Opex Flexibility Fund (OFF), and the CAA approach to NERL's non-regulated activity.

7.6 In its Decision for RP3, the CAA said that it recognised that the scale and importance of NERL's capital programme during RP3 will require it to have additional resilience in its staffing to train operational staff on new systems and procedures, and that bearing this in mind, it had allowed NERL's RBP opex forecasts for 2020, 2021 and 2022 in full.[123] This is shown in Table 7-1,

[119] The Opex Flexibility Fund (OFF) enables NERL, subject to CAA approval, to access funds for new requirements for operational expenditure, primarily in relation to airspace modernisation (CAA Decision, Appendix I, paragraphs I5 and I22-I25).
[120] CAA RP3 Draft Proposals, paragraph 5.23
[121] See paragraph 2.58 for explanation of CSU
[122] CAA RP3 Draft Proposals, paragraph 5.24
[123] CAA Decision, paragraph 5.25

which highlights that for 2023 and 2024 the CAA assumed the same opex allowance as had been included in its Draft Proposals.

7.7 In its RP3 Decision, the CAA made three other changes relative to its Draft Proposals that affected the opex allowance. In particular, the CAA added £7 million to increase the size of the OFF, and £15 million to provide funding for ACOG, and also deducted £24 million as a result of its non-regulated revenue assessment. These changes have been excluded from the figures shown in Table 7-1 and 7-2 (and from the opex figures presented throughout this chapter), because they are either considered elsewhere in our assessment (non-regulated revenue issues are addressed in chapter 9), or have not been presented as areas of disagreement between the Parties (ACOG funding and the increase in the size of the OFF).

7.8 As shown in Table 7-2, the overall opex allowance provided for by the AA Decision is around 2% lower than the amount identified as required in NERL's RBP (excluding pension costs).

NERL's view

7.9 NERL told us it believed its business plan struck the right combination of being both efficient and effective by delivering the right service at the right price.[124] It said that its plan had already built in an ambitious efficiency challenge,[125] and that it considered the reductions in opex proposed by the CAA to be unachievable without a reduction in outputs or service performance.[126] NERL said that its opex accounted for a much higher proportion of determined costs than was the case for other regulated networks (eg energy and water), and that its opportunities to reduce opex were limited.[127] It said that attaining a reasonable opex allowance was vital to ensuring it could provide safe and resilient air traffic control services, meet its performance targets and deliver its capital programme.[128] NERL stated that:

> Setting the right operating cost allowance is, therefore, perhaps the most important regulatory building block in order to avoid any unintended adverse consequences for other aspects of the business. It is particularly of concern for an organisation where safety is pre-eminent and our ability to pursue continuous

[124] NERL Statement of Case (NERL SoC), paragraph 243, and NERL Reply to CAA Response (CAA Response), paragraph 115
[125] NERL SoC, paragraph 243
[126] NERL Reply, paragraph 115
[127] NERL SoC, paragraphs 244 and 246
[128] NERL SoC, paragraph 246

improvement in this area could be curtailed. There is also a more fundamental question about whether the CAA's RP3 Decision strikes the right balance to support and maintain the culture, funding and appropriate levels of efficiency challenges for an ANSP that forms part of the critical national infrastructure and for whom safety is its primary deliverable.[129]

7.10 NERL said that, under the CAA Decision, it would be unable to provide the headcount built into its RBP, and that this would create risks to ongoing safety improvements, resilience and other aspects of operational performance.[130] It said the opex allowance provided for by the CAA Decision would prevent the required increase in ATCO resources, preventing the release of appropriately experienced ATCOs from the operations rooms to support its airspace and technology transformation programmes.[131]

7.11 NERL said that the CAA had not attempted in any way to assess the risks arising to customers from its decisions around opex.[132] It said that the total impact of the CAA's proposed cuts was around 12p per passenger flight, and that the relative scale of this should be weighed against the potential adverse consequences to customers from significant service disruption (if sufficient cost allowances are not made available).[133]

7.12 NERL said it considered the CAA to have overstated the scope NERL has to make efficiency savings, and that there was no transparent or explicit link between the CAA Decision and any underlying evidence.[134] NERL's criticisms of specific aspects of the CAA's opex assessment are summarised below. NERL submitted a report from Economic Insight in support of its assessments concerning opex.[135]

Historical efficiency savings

7.13 NERL said that historical efficiency savings were not a robust rationale for RP3 opex reductions.[136] It said that the CAA Decision assumed that the level of cost savings NERL had realised between 2007 and 2017 could continue at the same rate during RP3. NERL said that this ignored the fact that most of

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[129] NERL SoC, paragraph 250
[130] NERL SoC, paragraph 244
[131] NERL ✂
[132] NERL SoC, paragraph 309
[133] NERL SoC, paragraph 310
[134] NERL SoC, paragraph 284
[135] Economic Insight: independent review of evident on operating cost efficiency: A report for NATS, November 2019.
[136] NERL SoC, paragraphs 287-291

the already observed operational savings were delivered through the closure of two ATC centres, the rationalisation of a number of other sites, and two major restructuring programmes.[137] NERL said that these restructurings represented one-off rationalisations that could not be repeated without negative consequences for the level of service that NERL provides.[138] NERL said that there was 'no rationale' for the CAA to have looked at operating costs per TSU, a billing unit made up of distance and weight, as opposed to costs per flight (or another volume metric). NERL also said that the CAA's use of the 2007-17 period for its unit cost assessment was arbitrary, and that varying the choice of period would have varied the observed results.[139]

Historical outperformance

7.14 NERL said that historical outperformance was not a robust rationale for RP3 opex reductions.[140] NERL said that while it is true that it has, on average, out-performed its opex allowance over previous reference periods (by around 7% in CP2 (2006-2010) and CP3 (2011-2014)), out-performance in those periods was made possible, in part by factors such as a downturn in traffic levels. NERL said that, by contrast, it had over-spent relative to its opex allowance by around 3% in RP2 up to and including 2018, because of factors such as the reduced scope for efficiency gains, the pressures of increasing traffic flows, and the additional costs required to support its capex programme.[141]

Efficiency savings relative to NERL's RBP

7.15 NERL said that while the CAA had reflected that its 2.3% (opex per CSU) efficiency challenge was very close to the 2.2% proposed by NERL in its RBP,[142] these figures were not equivalent and related to different time periods.[143]

The Steer/Helios report

7.16 NERL considered that the Steer/Helios report, upon which the CAA had placed weight, (see paragraph 7.26 below) was fundamentally flawed in its approach, failing to adequately consider resource implications of the complexity of NERL's operation, the range of new requirements for RP3, or

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[137] NERL SoC, paragraph 287
[138] NERL SoC, paragraph 288
[139] NERL SoC, paragraphs 289-290
[140] NERL SoC, paragraphs 292-294
[141] NERL SoC, paragraphs 292-293
[142] NERL SoC, paragraph 278
[143] NERL SoC, paragraph 295

the level of service quality that customers want.[144] NERL said it had highlighted to the CAA that, in particular, the Steer/Helios model had limited ability to explain the relationship between cost and its drivers.[145]

Consistency with comparator data

7.17 NERL said the CAA Decision was not consistent with comparator data.[146] It said that the CAA had referred to a Performance Review Body (PRB) report as suggesting there was the potential for 8% cost efficiency savings in European ANSPs, but that the same PRB study found the UK to have the lowest opportunity for savings of the 'big 5' comparator group and lower than nearly all other European ANSPs.[147] Expected efficiencies in 2023 and 2024

7.18 NERL said that the CAA's rationale for imposing opex reductions in the last two years, when it had accepted the rationale for not doing so in the first three years, was unclear.[148]

CAA's view

7.19 The CAA told us it considered that much of what NERL had raised in its submissions repeated points raised in its initial and final business plans, and in response to the CAA's draft proposals.[149] The CAA told us that it was strongly of the view that it had set modest efficiency targets and had made full allowance for the need to secure airspace modernisation[150]

7.20 The CAA said that in coming to its final decisions on opex it had 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 it had seen, including NERL's representations.[151] The CAA said it took into careful consideration its 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.[152]

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[144] NERL SoC, paragraph 296
[145] NERL SoC, paragraph 297
[146] NERL SoC, paragraphs 299-304
[147] NERL SoC, paragraphs 299-300. The Performance Review Body (PRB) is an advisory body to the European Commission that assists the Commission and national supervisory authorities (including the CAA) in the implementation of the performance scheme for air navigation services.
[148] NERL SoC, paragraph 305
[149] CAA Response, paragraph 5.1
[150] CAA Response, page 39
[151] CAA Response, paragraph 5.5
[152] CAA Response, paragraph 5.5

7.21 The CAA's comments on the specific criticisms NERL made concerning the basis upon which its opex assessments was justified are summarised below.

Historical efficiency improvements

7.22 The CAA said it had neither misunderstood nor misrepresented the scope of NERL's past efficiency improvements, and had at no point based judgements on a mechanistic assumption that past improvements could automatically be repeated.[153] It said that the years from 2007 onward represented a sustained period of year-on-year cost reduction for NERL, despite significant traffic fluctuations during that period, which included the global financial crisis and the subsequent economic recovery.[154] The CAA said that neither attention on the overall period, nor the choice of 2017 – the last full year of available cost and financial data at the start of its planning for RP3 – as a reference year could be described as arbitrary.[155]

7.23 The CAA said that while some costs may be more closely correlated with traffic than with CSU levels, using CSUs as the basic metric against which it measured efficiency had a clear logic and benefit for end-users, as it was the basis upon which NERL charges end-users.[156] It said that while the difference between CSU and traffic growth may lead to marginally different efficiency results, it had no reason to anticipate a distortion in the absolute level of determined costs in its Decision as it had considered forward-looking efficiency on a CSU basis consistent with its approach to backward-looking evidence.[157]

Historical out-performance

7.24 The CAA said that repeated historical outperformance was relevant as it could 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.[158] With respect to RP2, the CAA said that it had accepted that unexpected traffic growth was one of the reasons why costs had risen, but that total opex was still approximately in line with its RP2 decision.[159] The CAA said this implied that, had traffic grown as anticipated at the time of its RP2 decision, NERL

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[153] CAA Response, paragraph 5.10
[154] CAA Response, paragraph 5.14
[155] CAA Response, paragraph 5.14
[156] CAA Response, paragraph 5.18
[157] CAA Response, paragraph 5.18
[158] CAA Response, paragraph 5.30
[159] CAA Response, paragraph 5.31

would have significantly outperformed its opex allowance, and thus that RP2 fitted within the historical pattern of NERL outperforming the CAA's opex determinations.[160]

Efficiencies already built into NERL's plan

7.25 The CAA said that given the lack of detailed support, NERL's estimate that its plan contained £70 million of unsecured efficiencies was neither meaningful nor helpful in determining the actual scope for efficiency.[161] The CAA said that it considered Economic Insight's estimate of 6.3% efficiency built into NERL's plan to be somewhat circular, as it appeared to largely result from an assumption that real wages increased by 5.9% over the same period.[162]

The Steer/Helios report

7.26 The CAA rejected the suggestion that the Steer/Helios report was flawed or unsupported by evidence.[163] The CAA said that Steer's approach to its bottom-up opex assessment had been to undertake an evidence-based independent assessment, and that its report provided full transparency about the assumptions made and the foundation of them.[164] The CAA said that, by contrast, a similar evidence base had not been included in NERL's initial business plan, and that this limitation had only been partially addressed in NERL's RBP.[165]

Use of comparator data

7.27 The CAA rejected the suggestion it had disregarded comparative evidence provided by NERL on its cost performance relative to other large European ANSPs.[166] It said it considered these comparisons to be inconclusive at best, and of little value from a regulator's point of view in setting reasonably challenging efficiency targets for NERL.[167] The CAA said:

a) There is a lack of evidence linking NERL's performance in 2019 with NATS performance in 2016 and 2017 in the European benchmarking studies pointed to by NERL (with the CAA noting in particular that NERL

[160] CAA Response, paragraph 5.31
[161] CAA Response, paragraph 5.21
[162] CAA Response, paragraph 5.22
[163] CAA Response, paragraph 5.43
[164] CAA Response, paragraph 5.44
[165] CAA Response, paragraph 5.45
[166] CAA Response, paragraph 5.58
[167] CAA Response, paragraph 5.59

had otherwise argued that 2017 was an unsustainable year, such that it had been necessary for costs to rise above 2017 levels).[168]

b) It was not satisfied that the comparator groups used by NERL (and Economic Insight) were appropriate to assess NERL's performance, in a context where top down benchmarking of ANSP costs was a complex process with many factors potentially affecting the relative costs of different ANSPs including, but not limited to, scale and airspace complexity.[169]

c) There was mixed evidence on NERL's relative performance compared to other European ANSPs and that it was reasonable to expect that some performance improvement was possible.[170]

d) European ANSPs may not represent the limit of efficiency to which NERL could be expected to aspire.[171]

Expected efficiencies in 2023 and 2024

7.28 The CAA said that the rate of change of opex from 2022 to 2024 in its Decision is of no particular relevance, as it has set a five year price control with a total opex allowance for the whole period.[172] The CAA said that it is open to NERL to pursue greater efficiency savings from the outset, with this being how incentive regulation is intended to operate.[173]

Other evidence

7.29 Submissions we received from airlines were supportive of the CAA's proposed opex allowance. For example, Airlines UK said it believed that the efficiency challenge in the CAA Decision was 'moderate and achievable',[174] and Virgin Atlantic said it could be regarded as 'low',[175] In line with this, on our call with the Co-chairs of the Customer Consultation Working Group (CCWG), the Co-chairs reported that airlines had felt that more could be done by NERL on productivity.[176]

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[168] CAA Response, paragraph 5.64
[169] CAA Response, paragraphs 5.62 and 5.65-5.74
[170] CAA Response, paragraph 5.75-5.78
[171] CAA Response, paragraph 5.79-5.80
[172] CAA Response, paragraphs 5.32-5.35
[173] CAA Response, paragraphs 5.32-5.35
[174] Airlines UK submission, 14 January 2020, page 2
[175] Virgin Atlantic, submission 1, 16 January 2020, page 3
[176] CCWG Co-chairs ✂

7.30 Prospect said that the challenges faced in RP3 meant that NERL needs 'some wriggle-room to enable it to deal with unforeseen (but inevitable) bumps in the road.'[177] Prospect said that the CAA's proposed opex reductions for 2023 and 2024 would be particularly challenging, and critically dependent on there being no delay in NERL's change programmes, and on their seamless introduction, something it said would be a first for any infrastructure project of this scale.[178]

Our approach

7.31 The Parties presented markedly different views on the implications of the reduced opex allowance (relative to the RBP) the CAA provided for in its Decision. For example:

a) The CAA described the opex efficiency challenge in its Decision as modest, and the opex allowance as relatively generous.[179]

b) NERL said the reductions in opex (relative to its RBP) would result in it having many fewer controllers available to support its investment programme,[180] and would create risks to ongoing safety improvements, resilience and other aspects of operational performance.[181]

7.32 Given this, alongside our review of the range of evidence submitted by the Parties, we requested additional information from NERL to assist our consideration of the materiality of the difference between the level of opex allowed for in the CAA's Decision, and that included within NERL's RBP. This included requests for information on NERL's actual opex spend in 2018 and 2019, and for additional information on its opex assumptions related to the planned Heathrow third runway and to its technology programme.

7.33 While we focused our attention primarily on the level of opex that should be allowed, we also considered the risk that the incentive arrangements for opex provided for by the CAA Decision might have a negative impact on the delivery of the capex plan. This was prompted, in particular, by information provided by NERL (in response to RFI2) showing the opex implications of a delay to its technology programme in latter part of RP2. This is discussed further in chapter 8 where we discuss opex/capex interactions (see 8.74 to 8.83)

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[177] Prospect submission, 10 January 2020, page 5
[178] Prospect submission, page 6
[179] CAA Response, paragraphs 18-19
[180] NERL ✂
[181] NERL SoC, paragraph 224

Our assessment

The opex allowance vs actual opex spend

7.34 As was highlighted in the summary of its views provided above, NERL told us that the CAA Decision would prevent it from delivering key aspects of its plan, with this creating risks to, among other things, safety improvements and its technology transformation programme.[182] These comments appeared to draw a direct causal link between the CAA's decision on the level of opex allowance (when determining the amounts NERL is allowed to recover from users), NERL's actual opex spend, and the levels of service that NERL will subsequently provide. The CAA argued that these suggestions were counter to the established basis of the economic regulation of private sector companies.[183] In particular, the CAA said:

> 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 other operational performance and they should not suggest that they might operate the business on this basis.[184]

7.35 We consider these CAA statements to provide a reasonable description of what the allocation of responsibilities should be in relation to the determination of NERL's opex allowance. The CAA's assessment is concerned with setting an appropriate target level of opex to use when setting NERL's Determined Unit Costs. NERL is then responsible for actual opex spend, and for delivery. NERL's shareholders will benefit (other things being equal) if its actual opex is less than the allowance and lose out if its actual opex is more than the allowance.

7.36 At its hearing, we asked NERL to explain why there appeared to be a fundamental difference of view between NERL and the CAA on this question of how the incentive arrangements were intended to operate.[185] NERL's response indicated that it did not think there was a fundamental difference in view, but drew a distinction between a situation where the company has not performed as well as it should do, and one where the company is doing

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[182] For example, NERL SoC, paragraph 15
[183] CAA Response, paragraph 18
[184] CAA Response, paragraph 18
[185] NERL ✂

everything on plan and delivering what it is supposed to, but that at the same time the shareholder return is dropping to fund that.[186] We note that this comment is in line with NERL's broader view that its business plan delivers the right service at the right price, and that the CAA Decision provides insufficient opex funding to support that plan.[187]

7.37 In practice, however, NERL's actual opex requirements during RP3 are uncertain, and will depend on a range of factors that may exhibit material changes throughout the course of RP3. We consider the significance of this for determining NERL's opex allowance below.

The relevance of uncertainty over factors that may drive NERL's opex

7.38 The relevance of uncertainty over factors that may drive NERL's opex can be illustrated by considering the relationship between the opex levels NERL had forecast for 2018 and 2019 in its RBP, and its actual opex spend in those years. In particular, we note that:[188]

a) NERL's actual opex for 2018 was £5 million (1.3%) lower than its RBP forecast.

b) NERL's provisional view of its opex spend for 2019 was £22 million (5.2%) lower than its RBP forecast.

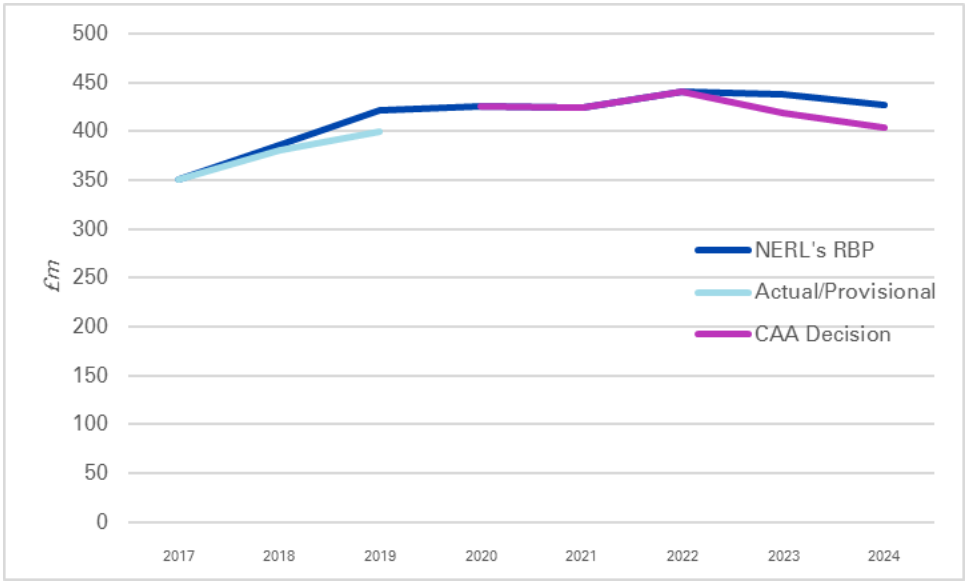
7.39 NERL told us that these differences between actual and forecast opex were driven almost entirely by changes to the timing of a significant part of its capex programme (DP En Route deployment).[189] We consider capex-opex interactions further below in chapter 8, (paragraphs 8.74 to 8.83). In our view, this example highlights the extent to which identified opex requirements can be sensitive to changes to the assumed timing of different components of NERL's plan.

7.40 Figure 7-3 compares NERL's actual opex in 2018 and 2019,[190] with the evolution of opex requirements that NERL had forecast in its RBP from 2017 (the base year used for cost assessment in the review), and the opex allowances provided for by the CAA Decision. As the graph illustrates, the ramping up of opex levels forecast by NERL as expected to occur before the start of RP3 has fallen some way short of what was assumed by NERL in its RBP. Indeed, we note that the difference between NERL's provisional view of

[186] NERL ✂
[187] For example, NERL Reply, paragraph 11
[188] Figures based on NERL ✂
[189] NERL ✂
[190] NERL provided the 2019 figure as 'provisional' ✂

its actual opex in 2019, and the forecast in its RBP for that single year (£22 million), amounts to just over 50% of the £43 million difference (shown in Table 7-2) between the opex allowance provided for by the CAA Decision and that forecast in NERL's RBP for the five years of RP3.

Figure 7-3: NERL's operating expenditure (excluding pensions): Actual/provisional for 2017-19 vs NERL RBP forecast and CAA Decision



Source: Data from Table 7-1, and from NERL ✂

7.41 The inclusion in NERL's RBP of an opex allowance related to the development of a third runway at Heathrow (HR3) provides a further illustration of uncertainty associated with how opex requirements might evolve. NERL's RBP identified a requirement for 27 additional ATCOs during RP3 in relation to HR3, with this representing 18% of the net increase in ATCOs NERL had identified as required.[191] The CAA's consultants, Steer/Helios, took a different view and considered that no provision for an increased ATCO requirement as a result of HR3 should be made in RP3.[192]

7.42 NERL told us that £9.6 million of its RBP opex allowance related to the 27 additional ATCOs it had identified as related to HR3,[193] and we note that this amount is equivalent to more than 20% of the difference between NERL's overall RBP opex forecast for RP3, and the allowance provided for by the CAA Decision. NERL said that part of the allowance it had attributed to HR3 in its RBP related, in practice, to expected additional requirements from existing Heathrow runway capacity of which it had become aware during the RP3 review.[194] While we consider this to raise some questions over the

[191] NERL SoC, Figure 7, page 77
[192] CAA Response, paragraph 5.47
[193] NERL ✂
[194] NERL ✂

appropriate basis for identifying such requirements (in a context where, for example, separate attention has already been given to the implications of forecast traffic growth), the broader issue concerning HR3 in our view is that it raises inevitable uncertainty over what may be required during this five year price control period. The uncertain nature of these requirements has been further highlighted by the recent court judgment on Heathrow expansion.[195]

Implications for our assessment of the CAA Decision

7.43 In its RBP, NERL forecast a real terms increase in opex of 21% between 2017 and 2019, followed by a further real terms increase of around 2% on average in RP3 (as shown in Table 7-1). We consider it important that the CAA, as the economic regulator, sought to carefully scrutinise and challenge the extent to which airspace users should be expected to fund these forecast increases in opex set out in NERL's RBP.

7.44 The above examples – concerning the difference between forecast and actual opex in 2018 and 2019, and the implications for NERL of the development of Heathrow's third runway – illustrate the extent to which estimates of NERL's future opex requirements can be sensitive to different assumptions concerning the timing of what NERL is expected to deliver. Given the context it faced, we would have expected NERL's opex assessments to provide a more extensive assessment of how its requirements might vary under a range of different scenarios, and to provide evidence of how it had sought to test the efficiency of proposed operational responses under those different scenarios. We would also have expected a more thorough assessment from NERL of why its opex proposals should be regarded as providing for a reasonable allocation of risks between it and airspace users.

7.45 We were surprised, however, by the relatively rigid way in which NERL appeared to treat the opex estimates in its RBP, notwithstanding the fact that NERL also separately pointed to the dynamic and evolving nature of the environment and requirements it faced. We considered NERL's view that it had developed a plan that would deliver 'the right service at the right price', to be addressing an unduly narrow question with respect to the consideration of the appropriate level of opex allowance.

7.46 In light of the above, we consider it inevitable that the determination of an appropriate allowance for RP3 opex – that is, the amount that users should be

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[195] *Plan B Earth v Secretary of State for Transport* [2020] EWCA Civ 214 (27 February 2020), which found the Government's decision to allow the expansion unlawful, because that decision had not taken the Government's climate commitments into account.

required to fund (other things equal) during RP3 - involved a considerable degree of judgement. We have focused our assessment on whether there is evidence to suggest that we should not adopt the same approach on the level of the opex allowance than the one that the CAA adopted in its Decision for RP3.

The CAA's assessment of NERL's opex allowance

7.47 We note that the CAA reached its decision on the level of NERL's opex allowance after considering a range of evidence that included

a) NERL's business plan;

b) The Steer/Helios report;

c) Historical evidence on cost and out-performance;

d) Reports from the Performance Review Body; and

e) Stakeholder views.[196]

7.48 The CAA told us that it considered this evidence in the strategic context of airspace modernisation and NERL's technology programme, and that in light of that strategic context, and the importance of NERL providing a safe and reliable service, set what it considered to be a modest efficiency challenge.[197] In particular, it set the overall allowance for opex at a level around 2% below the opex requirements identified in NERL's RBP.

7.49 We consider the CAA to have approached its opex assessment in a reasonable manner, considering a wide range of evidence. NERL presented a number of reasons why it considered the CAA's decision on opex to be insufficiently justified. As we set out below, we did not consider these points to undermine the CAA's approach.

Historical efficiency savings

7.50 We note NERL's concerns over the use of past efficiency savings to predict the scope for future savings in a context where past savings have related, to some extent, to one-off changes such as the reduction in the number of control centres. In our view, this implies that care should be taken to understand relevant contextual factors when interpreting evidence of past savings, but that such evidence can nevertheless provide relevant

[196] CAA ✂
[197] CAA ✂

information. We found nothing to indicate particular concerns with the CAA's assessment of historic efficiency savings, or that it placed undue reliance on this evidence.

7.51 We are satisfied that it was reasonable for the CAA to consider a unit cost measure based on Chargeable Service Units (CSUs). We note the evidence provided by NERL (and Economic Insight) on how the use of a unit cost measure based on traffic movements (rather than CSUs), and the consideration of different time periods, could affect the view taken of historical efficiency. However, we were persuaded that this is did not raise material concerns with respect to the CAA's overall approach.

7.52 An important consideration here is the way in which the CAA used its assessment of historical efficiency savings (alongside other evidence) to set its proposed level of opex allowance, and the implications that had for the overall level of opex challenge. That is, the CAA's approach involved accepting that the 21% real terms increase in opex forecast by NERL between 2017 and 2019, with efficiency savings then only considered against this higher forecast 2019 level of opex. By deciding to allow NERL's forecast of opex in full for the first three years of RP3, the CAA further dampened the extent to which it was applying efficiency savings in line with its view of historical evidence. In particular, as was shown in Table 7-1 and 7-2, this decision to allow NERL's forecast of opex for the first three years of RP3 reduced the difference between the CAA's and NERL's view of RP3 opex from £71 million to £43 million, a reduction of around 40%.[198]

Historical outperformance

7.53 We consider it was appropriate for the CAA to have taken account of evidence on past opex outperformance, and that evidence of relatively significant opex outperformance historically is relevant to the RP3 opex assessment. We agree with the CAA's view that repeated opex outperformance can be indicative of a tendency for regulated companies to understate the potential for cost savings in regulatory reviews, in a context where there can be a significant asymmetry of information. In our view, this evidence emphasises the importance of the CAA scrutinising NERL's plan, and of requiring adequate substantiation and justification of its identified opex requirements.

[198] In line with the approach described in paragraph 7.7, this excludes consideration of the increase in the OFF, the allowance for ACOG, and the reduction related to non-regulated revenue, in the CAA Decision.

7.54 NERL, and Economic Insight, presented NERL's opex performance in RP2 as differing significantly to that in previous periods, and pointed to significant underperformance in RP2.[199] However, one reason for opex being higher than had been allowed for in the RP2 charge control is that traffic has been higher than was forecast,[200] and we note that the additional revenue NERL received as a result of higher than forecast traffic levels in RP2 was £113 million.[201] We were not persuaded that evidence on NERL's opex performance in RP2 raises additional considerations concerning the scope for savings in RP3 that had not been sufficiently taken into account in the CAA Decision.

Efficiencies already built into NERLs' plan

7.55 We note NERL's view that its RBP already included £70 million of 'unsecured efficiencies' and so should already be regarded as providing a challenging target. However, we share the scepticism expressed by the CAA with respect to these apparent savings, which relied on being satisfied that a significantly higher cost level (than actually forecast in NERL's RBP) should be regarded as an appropriate baseline. In our view, NERL has not demonstrated why such a view should be taken.

7.56 The question of efficiencies already built into NERL's plan was also addressed in the Economic Insight report on opex that NERL submitted with its Statement of Case. The Economic Insight report estimated that NERL's RBP included efficiency savings of 6.3%. We were not satisfied that this provided a reliable assessment. We note the extent to which this estimate appears to be driven by Economic Insight's assumption of real wage increases of 5.9% over the same period, as highlighted by the CAA.[202] More broadly, though, we did not consider Economic Insight's approach of using 2019 as the base year for its assessment was appropriate.

7.57 We note that using 2019 forecast as the base year meant that no attention was given to the 21% increase in opex NERL had forecast between 2017 and 2019. In our view, consideration of this increase is highly relevant to the assessment of NERL's efficiency during RP3, because one driver of NERL's forecast opex increase was the costs of some dual running of systems as part of the transition process associated with its technology programme. This puts upward pressure on opex, but only for the period of the transition (as once the transition is complete, dual running is no longer required). This implies that

[199] NERL SoC, paragraph 292-294. Economic Insight, Independent review of operating cost efficiency, pages 31-32
[200] NERL SoC, paragraph 293
[201] NERL ✂
[202] CAA Response, paragraph 5.22

some downward pressure on opex should be expected in NERL's RBP during RP3, even in the absence of efficiency savings, through the completion of planned projects (because dual running is then no longer required). By taking forecast opex for 2019 as its starting point, the Economic Insight assessment appears to take no account of this.

The Steer/Helios report

7.58 NERL raised a number of concerns over the assessments in the Steer/Helios report, some of which were also highlighted in the Economic Insight opex report. We were not persuaded that these concerns undermined the use the CAA made of the Steer/Helios report. We note that in some areas the difference between the Steer/Helios and NERL assessments was relatively limited. For example, as shown in Economic Insight report, NERL's RBP forecast that 57 additional ATCOs would be required by the end of RP3 as a result of traffic growth, well within the range of 47 to 61 additional ATCOs identified by Steer/Helios.[203] Also, we note that while NERL made a range of criticisms of the Steer/Helios ATCO requirement assessment, NERL's forecast of ATCOs required by the end of RP3 is only one Full Time Equivalent ATCO higher than the upper end of the Steer/Helios range, if the allowance NERL identified in its RBP as associated with the Heathrow third runway is removed. That is, notwithstanding NERL's criticisms of the Steer/Helios assessment of other potential drivers of ATCO requirements, NERL's view is only just outside the range identified by Steer/Helios.

7.59 A broader issue here concerns the adequacy of the support NERL provided for why its opex forecasts were justified. The CAA has contrasted the transparency of the Steer report (in terms of assumptions used and their foundation), with the limitations it considered there to have been with NERL's business plan. We consider this to be important, because in developing a bottom-up assessment of NERL's opex projections, a report such as that provided by Steer/Helios is not developing an alternative plan. Rather, it is concerned with evaluating and challenging an existing plan. The Steer/Helios report is relevant, therefore, in our view, not simply because of the specific opex assessments it included, but also because of the limitations it identified with NERL's justifications.

7.60 We note the CAA's comment that it considered the Steer/Helios report as one part of a broader evidence base,[204] and are not persuaded that the CAA put undue weight on, or drew unreliable conclusions from, the report. In particular,

[203] Economic Insight, Independent review of operating cost efficiency, page 34
[204] CAA Response, paragraph 5.57

we note that the Steer/Helios report identified the potential for opex savings of between £57 million and £133 million, compared to NERL's RBP, and that the CAA Decision would apply a reduction (of £43 million) that is lower than the bottom end of that range.[205]

Use of comparator data

7.61 Comparative analysis can provide a highly valuable basis for assessing the efficiency of regulated businesses, and we note that Ofgem and Ofwat have devoted considerable attention to the development of benchmarking models. Given this, and the efforts that have been made to benchmark European ANSPs, we consider it important for careful attention to be given to evidence from comparative efficiency assessments. In practice, however, we were not persuaded that the CAA should have given more weight to comparisons that show NERL to perform well across European ANSPs in terms of opex efficiency in its RP3 assessment. We note the emphasis NERL itself put on the significance of its planned airspace modernisation and technology transformation programmes to its opex forecasts, and the additional challenges this raises for applying and interpreting benchmarking when determining appropriate RP3 opex levels.

Expected efficiencies in 2023 and 2024

7.62 We do not consider the relative scale of the reductions in the opex allowance provided by the CAA Decision raises a material additional issue. We agree with the CAA's comment that it has set a 5-year price control with a total opex allowance for the whole period. We were not persuaded that the profile of that allowance assumed within the period raises any material additional issues.

Our overall assessment

7.63 Having reviewed the evidence, our provisional view is that the opex allowance should be set in line with the CAA Decision for the reasons set out above.

7.64 The CAA's decision to set an opex allowance that was lower than NERL had identified as required in its RBP, and the size of that reduction, necessarily involved it forming a judgement, in a strategic context where NERL has a key role to play in airspace modernisation and is part way through a major technology programme. We are satisfied that the CAA carefully considered these priorities, alongside its duties to airspace users, in developing its RP3 Decision. We note, in particular, that its decision to apply a 2% reduction in

[205] CAA RP3 Draft Proposals, paragraph 5.12

opex relative to NERL's RBP sits alongside its acceptance that it was appropriate for the average opex allowance across RP3 to be around 20% higher than NERL's actual opex in 2017.

7.65 In line with our comments above, we consider NERL's concerns with respect to the potential operational and safety risks that might be associated with the CAA Decision to be misplaced, and to be out of line with the regulatory framework that applies. We were surprised by the relatively rigid way in which NERL appeared to treat the opex estimates in its RBP, in a context where it also pointed to the dynamic and evolving nature of the environment it faced.

7.66 While we recognise that NERL has developed its forecast in relation to a particular plan, as set out in its RBP, we consider it to be important that the assessment of the costs that users should be required to bear takes proper account of the ways in which circumstances might evolve, and the implications that may have for resulting opex requirements.

Our provisional conclusions

7.67 We provisionally conclude that NERL's opex allowance for RP3 should be set in line with the CAA Decision.

8. Capital expenditure levels and governance

Introduction

8.1 This chapter sets out our assessment of the level of capital expenditure (capex) allowance that should be provided for, the capex governance provisions and capex incentives that should be introduced in the licence. We also consider the extent to which the opex incentive arrangements may interact with NERL's approach to capex in undesirable ways.

8.2 In assessing these matters, we recognised that RP3 is an unusual period in relation to NERL's capex, as NERL is part-way through a significant technology programme which involves new systems and software being installed to replace legacy equipment. We also recognised that NERL has a key role in the airspace modernisation strategy intended to improve the efficiency of airspace management in the UK, and had identified significant capex requirements in relation to this in its RBP.

CAA Decision for RP3

The allowance for capex requirements in RP3

8.3 The CAA proposed an overall capex allowance for RP3 of £667 million, £48 million less than NERL's estimate in its RBP.[206] In its RBP, NERL had estimated capex requirements of £115 million related to airspace modernisation.[207] In its Draft Proposals, the CAA took the view that, given the importance of airspace modernisation, it should allow all of NERL's forecast airspace modernisation capex.[208] In relation to the other £600 million of capex requirements identified in NERL's plan (around half of which related to the DSESAR technology programme),[209] the CAA applied an 8% reduction.[210] In doing so, the CAA noted having considered the findings of its consultants, Steer/Helios, and the conclusions of the CCWG Co-chairs Report concerning the lack of information on options, efficiency and benefits associated with NERL's capital programme.[211]

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[206] CAA Decision, page 74, Table 5.6
[207] CAA Decision, pages 73-74
[208] CAA Decision, paragraph 5.88
[209] See paragraph 2.25 for more details of DSESAR
[210] CAA Decision, pages 73-74
[211] CAA Decision, paragraph 5.89

8.4 In its Decision, the CAA said that given the absence of new evidence from NERL, its final decision was to maintain the level of capex allowance set out in its draft proposals.[212] The CAA said that it considered this allowance sufficient for NERL to deliver its full plan.[213]

Capex governance

8.5 The role of 'Independent Reviewer' was introduced in RP2 to review the accuracy of NERL's reporting, including in the Service and Investment Plan (SIP) documents NERL was required to produce every six months, and in which NERL included details of, and progress in relation to, its capex plans.[214] The CAA Decision proposed a broader role for the Independent Reviewer for RP3 which included tracking and assessing NERL's progress in delivering its investment plan and achieving the associated benefits, and reporting on the cost efficiency of NERL's capex spend.[215] The CAA Decision also required NERL to provide quarterly SIP updates.[216]

Capex incentives

8.6 For previous price control periods, NERL's RAB had been adjusted (at the end of the period) for differences between its actual capex and the amount that had been allowed up-front, such that a form of cost pass-through applied.[217] The CAA Decision included the introduction of three separate capex incentives:

(a) A capex delivery incentive;

(b) An ex-post efficiency review; and,

(c) An information incentive.

8.7 The delivery incentive would take the form of a financial incentive related to the delivery of NERL's capex programme. It would involve a general assessment of NERL's capex delivery, supplemented by a focused review of NERL's delivery of milestones that the CAA proposed to specify in NERL's licence.[218] The CAA said it would be prepared to amend the milestones in the

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[212] CAA Decision, paragraph 5.95
[213] CAA Decision paragraph 5.95
[214] CAA Decision Appendices, Appendix I, paragraph, I16
[215] CAA Decision Appendices, Appendix I, paragraph, I16-I18
[216] CAA Decision, paragraph 5.116
[217] CAA ✂The role of efficiency reviews in this updating process is considered in our assessment of the CAA's efficiency incentive.
[218] CAA Decision, paragraph 5.110

incentive, provided there was sufficient evidence that changes in the programme would benefit users, but that its starting assumption was that NERL delivered in full its RP3 investment plan.[219] Depending on the results of the review, the delivery incentive could result in a penalty capped at £36 million (2017 CPI prices), which would take the form of a reduction in NERL's revenue or opening RAB for RP4.[220]

8.8 Under the capex efficiency incentive, in the later part of RP3 the CAA would commission an independent review, or reviews, of the cost efficiency of NERL's RP2 and early RP3 capex. If the review(s) identified any expenditure as inefficient, the CAA might decide to disallow some or all of the inefficient spend through an adjustment to NERL's opening RAB at the next charge control review.[221]

8.9 Under the information incentive, in the event of capex overspend during RP3 the CAA would assess the quality of the information that NERL provided to airspace users as the project concerned was developing.[222] If the assessment found that NERL had failed to appropriately explain or justify the overspend, that overspend would only be remunerated at the cost of debt.[223]

NERL's view

The allowance for capex requirements in RP3

8.10 NERL told us that the CAA's capex efficiency reductions were not achievable, and that the capex allowance provided for by the CAA Decision would not be sufficient to deliver its planned investment programme.[224] NERL challenged the evidential basis of the CAA's lack of confidence in NERL's assessment of its capex requirements, and expressed serious concerns with respect to the Steer/Helios report.[225] It disputed the CAA view that NERL had provided insufficient detail on its investment programme in its business plan, and said that the level of detail provided was consistent with a level previously referred to by the CAA as 'setting the bar' for future plans and reporting.[226] NERL said

[219] CAA Decision, paragraph 5.111
[220] CAA Decision, paragraph 5.109
[221] CAA Decision Appendices, Appendix I, paragraph I13
[222] CAA Decision Appendices, Appendix I, paragraph I14-I15
[223] CAA Decision Appendices, Appendix I, paragraph, I14
[224] NERL Statement of Case (NERL SoC), paragraph 373
[225] NERL SoC, paragraph 426, and 428-9
[226] NERL Reply to CAA Response (NERL Reply) paragraph 263

that it had responded to all Steer/Helios' requests for detail to support its analysis.[227]

Capex governance

8.11 NERL said that it supported enhanced governance arrangements for RP3, and had proposed, consulted on and agreed such revised arrangements with customers through the RP3 review and subsequent SIP consultation processes.[228] NERL said it was concerned that the CAA was proposing additional governance requirements beyond that which its customers had agreed, without any clear statement of the envisaged benefit or assessment of the additional burden this implied both for customers and for NERL.[229] NERL said that it did not disagree with a strengthened role for the Independent Reviewer, but that it wanted to ensure there was agreed clarity on what the role should be, and that the role is undertaken in a fair and consistent way.[230]

Capex incentives

8.12 NERL said that the CAA's new capex incentive mechanisms were not required, and would undermine, rather than further, the public interest.[231] NERL said that it is not clear how, when assessing efficiency after the event, the CAA would be able to distinguish between the benefit of hindsight, and the actual efficiency/performance risk NATS faced on a forward-looking basis.[232] It said that the capex incentive mechanisms would hand the CAA significant discretion and latitude and that, in their totality, appeared to substantially increase regulatory risk and – being penalty only – skew expected equity returns to the downside.[233]

8.13 NERL said that the inclusion of a delivery incentive mechanism would effectively drive its investment plan towards a fixed price programme, rather than one based fully on a capex pass-through mechanism.[234] NERL said that this approach would only be appropriate if the capex estimates in the investment plan were greater than 85% likelihood estimates rather than the 'most likely' estimates that were used as the basis for its RBP.[235] NERL said

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[227] NERL Reply, paragraph 263
[228] NERL Reply, paragraph 237
[229] NERL Reply, paragraph 237
[230] NERL Reply, paragraph 257
[231] NERL SoC, paragraph 373
[232] NERL SoC, paragraph 373
[233] NERL SoC, paragraph 373
[234] NERL SoC, paragraph 373
[235] NERL SoC, paragraph 373

that if it had developed its plan on a more guaranteed basis, then this would have added £150 million to its identified capex requirements.[236]

CAA's view

The allowance for capex requirements in RP3

8.14 The CAA said that NERL's view that the capex allowance provided for in its Decision would be insufficient for NERL to deliver its programme in full was incorrect.[237] It said that, as it had stated in its Decision, it will allow all capex that is efficiently incurred, provided that it satisfies the governance proposals, and that there is therefore no reason for NERL to believe that it will not be allowed to deliver its programme in full.[238]

8.15 When commenting on NERL's criticism that the Steer/Helios report's assessment of capex efficiency was very high level and did not include any impact assessment of its proposed reductions, the CAA said that the details in NERL's business plan were too high level to allow such an assessment. As an example, the CAA said that the DSESAR programme, valued at £299 million, was summarised by NERL in only five pages. The CAA also said that Steer/Helios had described NERL's proposed £80 million TC Foursight project (part of NERL's planned technology programme)[239] as an 'envelope without specific deliverables and that the 'requirements on this tool are not defined.[240]

Capex governance

8.16 The CAA said that its governance proposals should not be especially costly or burdensome for NERL, because it already carries out a large amount of the relevant work for its own purposes and that engaging more with airspace users is appropriate given the size of NERL's capex programme.[241]

Capex incentives

8.17 The CAA said that NERL's customers and the users of its services could reasonably expect governance and incentive arrangements that protected them from a failure to deliver from NERL.[242] It accepted that these

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[236] NERL SoC, paragraphs 455-457
[237] CAA Response to NERL SoC (CAA Response), paragraph 7.6
[238] CAA Response, paragraph 7.6-7.7
[239] FourSight is a tool that would enable trajectory planning.
[240] CAA Response, paragraph 7.17
[241] CAA Response, page 66
[242] CAA Response, paragraph 15

arrangements – and the delivery incentive in particular – had the potential to create downsides for NERL, but only if it failed to deliver its part in airspace modernisation.[243] The CAA said that the '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.'[244]

8.18 The CAA said that it saw no reason why prior knowledge of its capex incentives proposals would have added an extra £150 million to the capex forecasts in NERL's RBP.[245] The CAA said that carrying out annual reviews of NERL's capex performance, such that its final decisions on the capex incentives would not be a surprise to NERL later on in RP3, should reduce rather than enhance risks, as it would provide an opportunity for NERL to address concerns during the period.[246]

Other evidence

8.19 The submissions we received from airlines, and airline representative groups, on capex emphasised the importance of NERL's capex programme, including in particular for airspace modernisation, and were largely supportive of the CAA's proposed approach. For example, IAG said that, together with the airline community, it supported improvements to capex governance, and that airlines had more of a say throughout RP3.[247] Virgin Atlantic said it considered it essential that there were robust and effective capex governance arrangements in place, and that this should include financial incentives, given the importance of airspace modernisation and experience of delays and increased levels of capex in RP2.[248] Ryanair said that robust capex arrangements must be in place for RP3, and that it fully supports airline involvement and the involvement of the Independent Reviewer as proposed by the CAA.[249]

8.20 The Customer Consultation Working Group (CCWG) is a group initiated by NERL as part of its stakeholder engagement activity for the RP3 review. On our call with the Co-chairs of the CCWG, the Co-chairs reported that airlines felt that NERL's proposal for RP3 capex was effectively presented as the only option, and that they should have been provided with more fundamental

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[243] CAA Response, paragraph 15
[244] CAA Response, paragraph 15
[245] CAA Response, paragraph 7.7
[246] CAA Response, paragraph 7.7
[247] IAG ✂
[248] Virgin Atlantic submission 1, 16 January 2020, page 4
[249] Ryanair submission, 22 January 2020, page 1

options concerning the form of NERL's capex programme and spend levels.[250]

8.21 IAG noted that it is hard to predict what is going to be needed three or four years ahead, and recognised the complexity and political difficulty of the airspace modernisation NERL's plans are seeking to deliver.[251] IAG said it understood this meant there will be circumstances when NERL will have to be reacting to events (rather than controlling them), but that this uncertainty meant that it was also difficult to agree what should be paid for, and that proper consultation during the period was important.[252]

Our approach

8.22 We consider first the level at which the allowance for capex should be set. We then provide our assessment of changes to the capex governance arrangements where, as we set out below, we consider the differences in view between the CAA and NERL to be less pronounced.

8.23 We then provide our assessment of the capex efficiency incentive before assessing the capex delivery and information incentives, which we consider to share a number of characteristics. Finally, we consider opex-capex interaction issues and, in particular, the extent to which the overall opex incentive arrangements may interact with NERL's approach to capex in undesirable ways.

Our assessment

The allowance for capex requirements in RP3

8.24 The CAA said that it considered the capex allowance provided for in its Decision was sufficient for NERL to deliver its 'full plan'.[253] Our review of the evidence that underpinned the CAA's decision on the level of capex allowance revealed that a significant portion of capex savings that had been identified as potentially feasible in the Steer/Helios report resulted from assuming that a number of actions/programmes could be deferred to some extent. This was most apparent in relation to the TC FourSight programme which was included in NERL's plan, but which Steer/Helios assumed could be delayed until RP4. The assumed deferral of this single programme accounted

[250] CCWG Co-chairs ✂
[251] IAG ✂
[252] IAG ✂
[253] CAA Decision, paragraph 5.95

for £80 million, almost 60%, of the £136 million of potential savings identified by Steer/Helios (and, as we explain below, NERL now expects most of the capex associated with this project to arise in RP4).[254]

8.25 The CAA told us that areas Steer/Helios had suggested could be delayed included projects that were currently not fully scoped, such as the TC FourSight programme, and amounts for business and technical resilience.[255] It said that the amounts needed for resilience could not be determined fully in advance of the period and that it considered NERL had an incentive to overestimate rather than underestimate the amounts that may be required.[256]

8.26 We consider that this evidence shows that a materially lower level of capex allowance than had been forecast by NERL could be appropriate. However, we do not consider this implied it would be reasonable to expect NERL to be able to deliver its plan in full for the lower capex figure allowed for in the CAA Decision. We consider this to be an important distinction in a context where the CAA was proposing to introduce its ex-post efficiency incentive, as the CAA's comment that NERL should deliver its full plan for the allowance the CAA had proposed suggests that capex spend above that allowance may be viewed as inefficient.

8.27 We asked NERL, at its hearing, to comment further on what underpinned its concerns over the proposed level of the capex allowance, given a context where it could expect cost pass-through arrangements to apply to efficiently incurred capex. NERL said its concern was that by setting the allowance at less than it believed was needed, NERL would end up having to spend a lot of time explaining to customers that it did not consider the allowance to have been set at an appropriate level.[257]

8.28 However, as noted above, the CAA's scaling down of NERL's capex forecast in part reflected its view that some areas of forecast capex spend were not fully scoped with there being greater uncertainty over what may be required. For these areas there had been relatively limited opportunity for scrutiny as part of the CAA's review, and we consider the CAA's approach to have been consistent with it having less confidence in the reliability of the associated capex forecasts. We consider it likely to be important that there is further engagement on and scrutiny of these projects, and their associated costs, during RP3 as NERL's plans evolve, and that the CAA's decision on the level of capex allowance is consistent with providing for this.

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[254] NERL ✂
[255] CAA ✂
[256] CAA ✂
[257] NERL ✂

8.29 We considered information NERL provided on its current, revised view of its capex plan for RP3 to provide further support for this view. In particular, we note that under NERL's current view, £71 million of the £80 million it had identified for the TC FourSight project is assumed deferred to RP4 (broadly in line what had been assumed by Steer/Helios).[258] We note that this reduction amounts to around to 10% of NERL's RBP forecast of its total capex requirements – and is around 50% more than the £48 million reduction that the CAA proposed. NERL identified a range of other changes in its revised view of its plan, including an increase associated with delays to its DP En Route deployment. Overall, we considered the changes to further highlight the extent to which NERL's capex programme can evolve over a relatively short periods of time, and the importance of ongoing engagement with respect to the scoping and costing of that evolving programme.

8.30 An important additional question to consider in this context is the extent to which NERL could be expected to finance capex that exceeded the level of the allowance, if that had been identified as appropriate. The CAA told us that, given its financeability analysis, it was satisfied that NERL should be able to fund capex that exceeded the capex allowance provided for in the CAA Decision, should such additional spend be appropriate.[259] NERL's response to our question on this at its hearing was consistent with this CAA view.[260] However, NERL also said that the CAA's proposed capex incentives gave it reduced assurance in its ability to access additional funds beyond its capex allowance in a context where, for example, repeated short-term proof of efficiently incurred capex on ongoing programmes may be required. In light of our conclusions on the CAA's capex incentives proposals, set out in 8.34 to 8.76, and provided appropriate specification is developed concerning how the efficiency and delivery incentives should be applied, we are satisfied that adopting the level of capex allowance proposed in the CAA Decision does not raise material financeability issues.

8.31 Our provisional view is that NERL's capex allowance for RP3 should be set in line with the CAA Decision.

Capex governance

8.32 We note that NERL pointed to its support for strengthening the role of the Independent Reviewer, and for quarterly SIP reviews. Given this, we considered NERL's concerns to relate to how the CAA's proposals might be applied in practice, rather than to the substantive proposals themselves. We

[258] NERL ✂
[259] CAA ✂
[260] NERL ✂

note, in particular, that NERL's concerns over the Independent Reviewer role were identified as related to lack of clarity of remit and accountability in a context where, under the CAA's capex incentive proposals, the Independent Reviewer's assessments could have material impacts.[261] Our assessment of the capex incentives is provided below.

8.33 Our provisional view is that the role of the Independent Reviewer should be enhanced, and quarterly SIP updates should be applied required, in line with the CAA Decision.

Capex incentives

The proposed efficiency incentive

8.34 At its hearing, the CAA recognised that ex-post reviews can be difficult and that there is always a danger that a regulator starts to judge things by hindsight.[262] This echoed one of the main concerns NERL had expressed regarding the CAA's proposed efficiency incentive. We consider that scope for ex-post RAB disallowances inevitably creates a degree of regulatory uncertainty that can have adverse effects on investment incentives, and that this implies that particular care is merited when ex-post RAB disallowance arrangements are being developed or modified.

8.35 The CAA told us that it planned to consult further on its approach to ex-post reviews to clarify the approach to be applied, and said that the enhanced role it had proposed for the Independent Reviewer (within the capex governance process) should provide NERL with better and more information with opportunities for course correction.[263] It also said that any ex-post review would be guided by its statutory duties (including the duty to ensure NERL's financeability), and the principles of better regulation.[264] The CAA acknowledged that NERL would face some uncertainty over how it would apply its ex-post efficiency incentive, but pointed to its track record across a lot of issues, including similar provisions in relation to Heathrow.[265] It said that this could provide a view about how it would approach such assessments.[266]

8.36 To understand the standard the CAA considered would be appropriate to apply when evaluating whether there should be disallowance of capex from

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[261] NERL Reply, paragraph 256-261
[262] CAA ✂
[263] CAA ✂
[264] CAA ✂
[265] CAA ✂
[266] CAA ✂

NERL's RAB following an ex-post efficiency review, we asked the CAA whether a 'Demonstrably Inefficient or Wasteful Expenditure' (DIWE) test might provide an effective means of addressing the objectives that underpinned its proposal.[267] This test, which had previously been used by Ofgem, had been applied by the Competition Commission in its Northern Ireland Electricity plc redetermination, with the CC explaining its reasoning, and the prior Utility Regulator (UR) proposal it related to, as follows:[268]

> The UR proposed an 'efficient spend clause' as part of its proposals for the different elements of NIE's capex. This would allow the UR to adjust NIE's regulated revenue and RAB to prevent consumers from being exposed to costs that the UR considered inefficient—perhaps in light of analysis from the UR's proposed reporter. NIE raised concerns about the ex-post nature of the UR's proposals and the regulatory risk it would face. …
>
> Ofgem includes provisions within its price control framework to make clear that it can make financial adjustments that have the effect of 'disallowing' the company from recovery of demonstrably inefficient or wasteful costs from charges to consumers. …
>
> We considered that the Ofgem terminology of 'demonstrably inefficient or wasteful' expenditure seemed appropriate and consistent with the UR's intentions as clarified at the hearing in July 2013. Accordingly, we determined that there should be a provision within NIE's Licence conditions which enables the UR to determine adjustments to NIE's maximum regulated revenues or RAB to protect consumers from exposure to any costs that the UR has found to be demonstrably inefficient or wasteful.[269]

8.37 In responding on this point, the CAA drew our attention to its use of ex-post reviews in its regulation of Heathrow. It said that it does not specifically use the DIWE standard in that context, but that the way it had applied its ex-post reviews at Heathrow historically had some parallels to this standard.[270] The CAA noted that it had disallowed only two pieces of expenditure at Heathrow over a fifteen to twenty year period, in relation to a much bigger capex programme.[271]

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[267] CAA ✂
[268] CAA ✂
[269] Competition Commission 2014, Northern Ireland Electricity plc, Final Determination, paragraphs 5.97-5.104
[270] CAA ✂
[271] CAA ✂

8.38 While we note the CAA's comments that it had intended to consult on appropriate guidance concerning how its efficiency incentive should be applied, and on its track record, we are not persuaded that these factors provide NERL with sufficient safeguards with respect to how the CAA's efficiency incentive might be applied. In our view, this is particularly the case given a context in which the CAA has made a number of comments that implied it may have substantive concerns regarding efficiency in RP2. For example, it referred to NERL's 'failure to deliver' in RP2, and to the 'unsatisfactory experience' in RP2 with NERL 'spending more and delivering less benefits to airspace users'.[272]

8.39 Also, importantly, ex-post reviews of the efficiency of capex had already formed part of the CAA's approach to conducting NERL price reviews for many years. The CAA told us that for the reviews covering CP1 to CP3/RP1 expenditure, it had not identified any issues that made it consider whether to disallow capex from NERL's RAB.[273] The fact that the CAA proposed introducing an efficiency incentive for RP3, which it has presented as part of a new approach, strongly suggests that it intended to change its substantive approach to considering RAB adjustments based on ex-post efficiency reviews.

8.40 In this context, and given the particular care we consider is merited when ex-post RAB disallowance arrangements are being developed or modified, we consider that the CAA Decision implies that the basis upon which the CAA would consider RAB disallowances following ex-post efficiency reviews has changed materially, but that the CAA has not codified the basis upon which it may apply a RAB disallowance to a sufficient degree, or in a sufficiently constrained manner.

8.41 A licence condition that appropriately constrains the circumstances under which it might be reasonable for the CAA to find that capex should be disallowed from NERL's RAB following an ex-post efficiency review could help address these concerns. We consider that the 'Demonstrably Inefficient or Wasteful' test the Competition Commission applied in its Northern Ireland Electricity plc Redetermination[274] would satisfy this requirement.[275]

8.42 We note the CAA said that some of its most important concerns about NERL's capital programme relate to the lack of information it considers NERL to have provided on strategy optioneering, and the lack of information to support and

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[272] CAA Response, paragraphs 15 and 7.1
[273] CAA ✂
[274] Competition Commission 2014, Northern Ireland Electricity plc, Final Determination, paragraphs 5.97-5.104
[275] Competition Commission 2014, Northern Ireland Electricity plc, Final Determination, paragraphs 5.97-5.104.

justify changes to its programme.[276] The CAA said that, in this context, it considered a degree of caution is appropriate with respect to the adoption of an approach based on DIWE as it might reward NERL's failure to provide information in support of its expenditure programmes (as without such information it would be harder for the regulator to assess efficiency and so demonstrate inefficient or wasteful spending).[277]

8.43 While we recognise this point, we consider it to form part of a broader concern about the adequacy of information provision that should be addressed separately (with this being something that the delivery and information incentive proposals - considered further below – sought to assist with). Given this, we do not consider that this information provision factor should have a material bearing on the formulation of the test that should be applied when determining whether, and to what extent, capex should be disallowed from NERL's RAB.

8.44 However, we do not consider that introducing a new licence condition of the form described above would be necessary if the CAA had developed a policy statement that sufficiently specified and constrained the basis upon which it would be expected to apply a disallowance of capex, following an ex-post efficiency review. We invite submissions from the Parties on what such a policy statement should contain in order to address the limitations we have identified.

The capex delivery incentive

8.45 We consider there is insufficient clarity over how the CAA's proposed capex delivery incentive would be applied, and indeed over its underlying purpose.

8.46 The CAA said that the delivery incentive was designed to encourage timely delivery, and focused on whether NERL met project milestones.[278] The CAA Decision identified three milestones that the CAA proposed to include in NERL's licence.[279] Importantly, however, the CAA proposal recognised that circumstances might change such that it may be appropriate to rescope a project, and adjust project milestones.[280] In the CAA Decision, and in its Response, the CAA said that such rescoping would need to be communicated to, 'and agreed with' airspace users in an appropriate manner.[281]

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[276] CAA ✂
[277] CAA ✂
[278] CAA Response, paragraph 7.6
[279] CAA Decision Appendices, Appendix I, paragraph I8
[280] CAA Response, paragraph 7.6
[281] CAA Decision Appendices, Appendix I, paragraph I11, and CAA Response, paragraph 7.6

8.47 We are not satisfied that the CAA's proposed approach takes sufficient account of the circumstances that NERL may face when seeking to progress with its capex programme. In particular, NERL's ability to deliver capex projects on time may be heavily affected by factors that it has limited ability to control. For example, progress with airspace modernisation will inevitably be dependent to some extent on the actions of other parties (including airports and the UK government), and progress with aspects of NERL's technology programme may be materially affected by technical challenges that had not been anticipated during and/or factored into milestone setting. Given this context, we consider that the adoption of a milestone-based incentive would only be likely to be appropriate if a reliable basis for identifying and reflecting relevant changes in circumstances during RP3 had been developed. We are not persuaded that the CAA's proposed approach provides for this.

8.48 We consider it important that there is effective engagement with airspace users on potential changes to NERL's capex programme during RP3. However, we do not consider it appropriate that the acceptability of such changes within the CAA's proposed delivery incentive should be dependent on user agreement. We do not consider it appropriate to rely on user priorities in particular engagement processes to reflect the range of considerations that may be relevant, particularly in a context where NERL's capex programme seeks to provide a range of system improvements that are expected to have wide-ranging and long-term benefits.

8.49 We consider that the CAA has provided little clarity over how its proposed capex delivery incentive might be applied, and has provided little guidance that might assist NERL manage the risk that it may become subject to a penalty (which could amount to the total notional equity return allowed for on NERL's planned capital programme). We considered the CAA's own comments to illustrate some of the materially different ways in which its proposed delivery incentive might be interpreted and applied, if introduced. For example, in its Response, the CAA said the delivery incentive was focused on whether NERL meets project milestones, and that any rescoping of milestones would need to be communicated to, 'and agreed with' airspace users in an appropriate manner.[282] However, the concerns that the CAA expressed in its hearing appeared to relate more to the quality of NERL's engagement, than to obtaining user agreement,[283] or to NERL's meeting of project milestones *per se*.[284]

[282] CAA Response, paragraph 7.6
[283] CAA ✂
[284] CAA ✂

8.50 In line with the above, we consider that the capex delivery incentive proposed by the CAA should not be introduced.

8.51 We do, however, consider there to be a strong case for introducing financial incentives that relate to NERL's capex programme, providing it is done in a way that takes appropriate account of the circumstances faced by NERL. In particular, we consider the scale, broader significance (including of NERL's airspace modernisation and technology programmes), and evolving nature of NERL's capex plan made it appropriate for the CAA to treat engagement and accountability as priorities in its RP3 review.

8.52 NERL said that the capex incentives were not required because the governance arrangements already in place were more than sufficient to protect the public interest.[285] However, the CAA pointed to considerable user dissatisfaction with the engagement that took place in RP2,[286] and we note that this concern over the quality of NERL's engagement is consistent with evidence that we received from third parties. For example, the Co-chairs of the CCWG reported that airlines felt they did not have much choice over NERL's change in capex plans during RP2, as the engineering programmes are all interlinked.[287] The CAA told us that there had already been improvements to NERL's engagement processes during the RP3 review, but that it considered it important to provide a structure that supported further improvements.[288]

8.53 The CAA identified 'effective accountability mechanisms' as the first of its strategic outcomes for the RP3 review, and accountability was the main theme of the CAA's subsequent business plan guidance.[289] In that guidance, the CAA linked its focus on the importance of accountability to broader concerns over the likely effectiveness of different approaches to regulating a monopoly business such as NERL. For example, the CAA said that:

> Economically regulated businesses are different from the generality of businesses in that their users (and ultimately consumers) have no choice but to use their services. The regulator exists to protect those users' interests, but it does this in part by encouraging more consumer-driven behaviours within the regulated companies. Experience in other sectors indicates that a consumer-driven strategy in a regulated business can serve

[285] NERL SoC, paragraphs 373 and 469
[286] For example, CAA Reference, paragraph 11
[287] CCWG Co-chairs ✂
[288] CAA ✂
[289] CAA, Guidance for NERL in preparing its business plan for Reference Period 3, January 2018

everyone's interest and strengthen its longer term, value-enhancing business model.[290]

8.54 We note that it is common for regulators in other sectors to seek to encourage more customer-driven behaviours in a range of ways, including through the use of financial incentives.

8.55 In line with this, we have considered ways in which the CAA's proposed delivery incentive might be improved.

Our proposals

8.56 As set out above, we consider that the adoption of a milestone-based incentive would only be likely to be appropriate if a reliable basis for identifying and reflecting relevant changes in circumstances during RP3 had been developed. We recommend that the CAA considers how such arrangements might be developed in due course as part of its RP4 review, but we are not persuaded that there is currently a reliable basis for introducing a milestone-based incentive for RP3.

8.57 At its hearing, however, the CAA described how it envisaged its proposed delivery incentive being applied in a way that focussed more on the adequacy of NERL's engagement, rather than the hitting of milestones in themselves.[291] We consider that a capex delivery incentive based on the quality of NERL's engagement, and actions in response to engagement, should be introduced, provided there was appropriate specification concerning the criteria against which NERL's performance would be assessed, and the basis upon which the level of any penalty to be applied would be determined.

8.58 We set out below our initial views on what an appropriate set of assessment criteria might be, and on the broad approach that could be applied to determining the appropriate level of penalty. The below provides a starting point, and further specification of criteria and the basis upon which the level of any penalty would be set would be needed in order to provide an appropriate degree of clarity to NERL over how the incentive mechanism would be applied in practice. We welcome submissions from the Parties that provide practical suggestions for how the arrangements could be specified.

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[290] CAA, Guidance for NERL in preparing its business plan for Reference Period 3, January 2018, paragraph 2.7
[291] ✂CAA✂

Our initial view of appropriate assessment criteria

8.59 Given our consideration of the CAA's motivations for having the delivery incentive, and of the existing guidance it has provided,[292] our initial view is that the following assessment criteria may be appropriate:

(a) **Timeliness**: NERL should provide information (to users, the Independent Reviewer and the CAA) in a timely manner. This should include providing early warning and explanation of factors that may put planned delivery timelines at risk.

(b) **User-focus**: NERL should provide information in forms, and through mechanisms, that reflect user priorities and resource constraints, such that it is clear and accessible.

(c) **Proportionality:** The level of substantiation NERL provides should reflect the materiality of the change under consideration.

(d) **Optioneering**: NERL should seek to identify a range of different responses that might be adopted where practicable, and to provide opportunities for user and Independent Reviewer engagement and scrutiny of those options.

(e) **Responsiveness**: NERL should respond constructively to user and Independent Reviewer submissions, and explain clearly how it has considered and taken account of those submissions.

(f) **Mitigating/corrective actions**: NERL should take appropriate mitigating and/or corrective actions in the light of user and Independent Reviewer submissions.

8.60 This list – or a further developed version of it – could provide the basis for developing shared expectations between NERL, the CAA, the Independent Reviewer and users concerning what 'good' and 'poor' performance might look like in relation to each different area. We note, for example, that the CAA said it considered NERL's past engagement often to have included too little optioneering, and instead to have been NERL communicating a selected option with which it intended to proceed.[293] This suggests that efforts to develop shared expectations over performance assessment in this area may be particularly important. We would encourage the CAA and NERL to make

[292] For example, CAA Decision Appendices, Appendix I, paragraphs I26 – I37
[293] ✂ CAA ✂

submissions in response to our provisional findings on how progress might be made in this and each of the other areas listed above.

8.61 The list in paragraph 8.64 does not identify the delivery of defined milestones as a behaviour the incentive is seeking to directly encourage. This would make it clear that NERL's performance in terms of meeting, or missing, the defined delivery milestones would not, in and of itself, be a trigger for a penalty. Rather, delivery milestones would form a clearly defined part of the baseline against which NERL's conduct in relation to each of the above areas (a) – (f) would be assessed. As such, milestones would have a bearing on what is likely to be considered proportionate in terms of engagement, the consideration of potential options, and evidence of appropriate mitigating/corrective actions.

Our initial views on the development of guidance on how the CAA would determine the level of penalty

8.62 The CAA told us that – subject to a consultation on its approach – it would expect to:

> Take the return on equity for the project as the starting point for calculating the amount of penalty, with adjustments downwards where it is clear NERL has taken mitigating action in the face of aggravating factors.[294]

8.63 We do not consider the CAA should treat the return on equity – that is, the basis upon which the penalty cap has been set – as the starting point for assessing what level of penalty should apply in circumstances where a milestone has been missed. Rather, we consider that the starting point should be that no penalty would be applied unless justified by an identified performance failing with respect to the behaviours identified above (or a modified version of them). We would expect the determination of the level of penalty to be affected by its likely effect on NERL's future conduct, and thus on the likelihood and likely associated consequences of future failings.

8.64 Our provisional view is that this points to the determination of the level of penalty being guided by at least the following factors:

(a) The severity of the identified failing, and/or of the effects of that failing.

[294] CAA ✂

(b) Evidence on NERL's track record: for example, to what extent has the identified failing (and/or similar types of failing) recurred or persisted over time?

(c) Evidence of actions NERL has taken to address the underlying causes of the failing and to guard against their reoccurrence. This would include the extent to which NERL has adequately responded to past concerns and proposals presented by users and by the Independent Reviewer.

(d) Evidence of actions NERL took to mitigate the effects of the failing.

8.65 These factors provide an initial basis for considering when one might expect different levels of penalty to apply. In particular, we would expect a penalty at the level of the cap to be applied only when a failing that was identified as severe, had recurred or persisted, and where NERL had taken only limited actions to address underlying causes and mitigate adverse effects. In line with this, we consider a critical overriding factor when determining penalty levels to be the adequacy of NERL's responses and mitigating/corrective actions, including in relation to past identified failings.

8.66 We consider it important that the penalty assessment process takes account of where NERL is found to have performed well, such that the focus of the incentive mechanism is on encouraging desirable behaviours and is designed in such a way that progress is appropriately recognised. This would diminish the asymmetric nature of applying a penalty-only incentive to some extent, as the penalty would be set on the basis of an assessment of NERL's 'net' performance in a context where it may have performed above expectations in some areas and below expectations in others. We recommend that the CAA considers ways in which more symmetric incentive arrangements might be applied as part of its RP4 review.

8.67 As with the assessment criteria, we consider this list of factors (a) – (d) to represent an appropriate starting point and that further specification would need to be developed in order to provide an appropriate degree of clarity with respect to how the incentive mechanism would be applied. We consider that this should involve the development of a penalty evaluation methodology, and request that the CAA and NERL provide detailed submissions on what should be included in that methodology. We note that it is common for points-based methodologies to be developed in circumstances where the assessment of the appropriate level of a penalty needs to take account of performance across a number of areas.[295] We consider that an approach should be

[295] For example: Ofgem, The Electricity System Operator Reporting and Incentive Arrangements: Guidance Document, March 2018

developed that allows for an appropriate level of clarity to be provided over how the penalty assessment would be undertaken, while at the same time allowing sufficient flexibility to reflect the range of circumstances that may need to be addressed.

The level of penalty cap

8.68 Our provisional view is that a penalty cap of £36 million, as proposed by the CAA, should be applied. The CAA said this level of cap is equal to a simplified calculation of the notional equity return that NERL would earn on the RP3 capex allowance provided for by the CAA Decision.[296] The CAA said that the damage to users from systemic failures by NERL to deliver key outputs from its capex programme, including those related to airspace modernisation, could be very large, but that it had capped the level of penalty at approximately equivalent to the equity returns for NERL's capital programme in order to protect NERL's overall financeability.[297] We were satisfied that in setting this level of penalty, the CAA had taken appropriate account of relevant considerations.

The capex information incentive

8.69 We consider the CAA's proposed information incentive to be insufficiently developed, and to provide insufficient specification of how performance would be assessed and the level of any penalty that may apply determined. Given this, we consider that the proposed information incentive, in its current form, would result in NERL facing undesirable additional risks associated with uncertainty over the regulatory treatment of capex that exceeded the RP3 allowance. In a context where it may be highly beneficial for NERL to spend in excess of its capex allowance, we consider that this incentive should not be introduced in the form proposed by the CAA.

8.70 We considered whether – as with the delivery incentive – the introduction of a differently and more fully specified version of the information incentive may be appropriate. However, we are not satisfied that the introduction of an additional incentive focused only on capex spent in excess of NERL's allowance is appropriate or necessary. In particular, we consider that the capex delivery incentive should be applied in relation to all of NERL's capex, including that which is in excess of the capex allowance.

[296] CAA ✂
[297] CAA ✂

8.71 We would expect the prospect of NERL spending more than the capex allowance provided for in its price control to be a factor that affected the extent of engagement activity that was expected (such that users could understand and engage on the reasons for that difference). However, we were not persuaded that it was appropriate to apply distinct incentive arrangements of the kind the CAA has proposed to capex that exceeded the allowance.

8.72 We provisionally conclude that the CAA's proposed information incentive should not be applied in RP3. We consider that any capex that may result in NERL exceeding the level of provided for by its RP3 allowance should be assessed within the capex delivery incentive.

8.73 We considered whether there should be scope for the penalty cap for the capex delivery incentive to be increased if actual capex exceeded the allowance (in light of our provisional view that the delivery incentive should be broadened to encompass the assessment of engagement in relation to capex that exceeded NERL's allowance). However, we were satisfied that it would be appropriate to set a maximum penalty cap of £36 million (as set out in our assessment of the delivery incentive), and that providing the scope for an increase would involve introducing complexity with little obvious benefit.

Opex-capex interactions

8.74 In chapter 7 we provided our assessment of the level of the opex allowance that should be provided for in user charges. We have also considered the extent to which the overall opex incentive arrangements may interact with NERL's approach to capex in undesirable ways. While NERL did not challenge the form of these arrangements in its Statement of Case, and the CAA had not considered them directly in its Decision, we considered the factors shown below – when viewed together – to suggest that the appropriateness of the current opex incentives arrangements merited some attention as part of this investigation. In particular, we note that:

(a) Under the CAA Decision (and in line with the incentive arrangements applied in previous periods), NERL would face 100% exposure to divergences between its actual opex spend and the opex allowance provided for in the charge control, other than where pre-defined adjustments are made to reflect differences between actual and forecast traffic levels.

(b) NERL's capex programme for RP3 is assumed – by both NERL (in its RBP) and the CAA (in its Decision) - to have the effect of increasing expected opex requirements during RP3, other things being equal. For

example, NERL's RBP includes increased opex levels to allow for the costs associated with the dual running of old and new systems during the planned transition between them, in a context where NERL must continue to have effective ongoing operations on an uninterrupted basis.

8.75 This suggests that the arrangements could potentially encourage undesirable behaviours – and/or discourage desirable behaviours – as they imply that there may be circumstances where delays to some parts of the capex plan may result in material opportunities for opex savings, or for the avoidance of opex that might have been required absent the delay, that would directly benefit NERL's shareholders (at least in the short term).

8.76 Our consideration of these issues has been informed by evidence on a specific instance of a delay to NERL's capex programme that resulted in its actual 2019 opex being £22 million (around 5%) less than had been forecast in its RBP.[298] NERL said that this lower than forecast opex was driven 'nearly entirely' by changes to its DP En Route Deployment.[299] [300] NERL has provided considerable detail on the factors that resulted in the delay to DP En Route Deployment,[301] and we have identified no reason to doubt its good faith. Nevertheless, we consider the delay in DP En Route Deployment to provide a clear example of how capex-opex interactions can potentially have undesirable effects under the current arrangements. That is, a similar delay during RP3 could have a similar short-term downward effect on NERL's opex levels, relative to what would be expected in a 'no delay' alternative.

8.77 We recognise NERL's comments that it considers progressing with its technology programme to be an absolute priority, and that its shareholders do not apply pressure for it to secure opex savings through delays to that programme.[302] However, under the proposed arrangements for RP3, NERL may nevertheless face strong incentives to make such opex savings and/or avoid opex overspend that might otherwise arise. Also, NERL told us that the CAA Decision would limit its available opex, and as a result would lead to reductions in operational controllers, and reduce the number of major milestones it could deliver during RP3.[303] We note that this appears consistent with NERL viewing delays to its capex programme as a necessary and appropriate response to circumstances in which it would otherwise expect to face an opex over-spend. We consider that the capex delivery incentive, in

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[298] NERL ✂
[299] NERL ✂
[300] The DP (en route) and DP (lower) technology changes will provide a new common technology platform for the Swanwick and Prestwick centres that allows for mutual contingency. CAA Decision Appendices, Appendix I, paragraph I8
[301] ✂NERL✂
[302] NERL ✂
[303] NERL ✂

the modified form we have described above, could be expected to mitigate the delay risks identified above arising to some extent. In particular, other things being equal, such delays would be expected to increase the risk that NERL may face a penalty under the capex delivery incentive and would tend to increase what was expected of NERL within the capex governance process.

8.78 To improve the likelihood of this providing an effective means of managing the identified risk, we consider it appropriate for the evaluation of NERL's behaviour under the capex delivery incentive to explicitly include consideration of NERL's engagement on opex impacts. That is, we consider that NERL's engagement with users on risks associated with its capex plan should include explicit attention being given by NERL to identifying the opex effects that may be associated with different changes to that plan, and different options with respect to how NERL might respond.

8.79 We emphasise that we do not consider this should be regarded as limiting NERL's flexibility to respond appropriately to changes in circumstances. However, it would be appropriate for users, and the Independent Reviewer, to apply more scrutiny, and seek more extensive consideration of alternatives, in circumstances where a proposed change to NERL's capex plan would we be expected to result in a material opex saving. Including NERL's engagement concerning the likely opex effects of capex decisions within the evaluation of NERL's behaviour under the capex delivery incentive should provide a firmer basis for such scrutiny. We consider that this approach, which should increase the prominence given to opex-capex interactions during RP3, is likely to be a proportionate response to the identified risk.

8.80 We note that Ofgem and Ofwat have given extensive consideration to capex-opex interactions in a number of previous reviews, and in the light of this both apply total expenditure, or 'totex', approaches, rather than separate approaches to opex and capex. Given the different circumstances that NERL faces - including the relatively high proportion of revenue allowance accounted for by opex, and the challenges associated with defining capex-related deliverables up-front – the case for seeking to develop some form of totex approach may differ considerably from that in energy and water contexts, and would require careful consideration.

8.81 We also note that the extent to which the incentive arrangements may encourage undesirable behaviours is affected by the strength of the opex reduction incentives that are applied to NERL. Those incentives could potentially be dampened such that rather than NERL being 100% exposed to any overspend or underspend relative to the level allowed for in the charge control (subject to traffic-based adjustments), a lower percentage might be applied such that any opex saving, and/or opex overspend, was shared to

some extent with users. We note that the use of a sharing factor (rather than 100% exposure) would be consistent with the approaches that Ofgem and Ofwat apply within their totex incentive arrangements.

8.82 The implications of applying a different level of exposure to NERL's opex spend would, however, be much broader than the capex-opex interaction issue to which our comments above relates. because it would affect NERL's incentives in relation to opex savings in general, rather than simply in relation to opex that is in support of capex programmes. In line with this, we would expect such a change to be undertaken only if it had been shown to be appropriate after a thorough assessment of its potential implications.

8.83 Given the much broader nature of these questions concerning totex approaches and opex exposure levels (than our provisional conclusion), we did not consider it appropriate to consider them in depth as part of this reference. We do, however, recommend the CAA carefully reviews different ways in which capex-opex interactions might be best addressed as part of its consideration of the approach to take in RP4.

Our provisional conclusions

8.84 Our provisional conclusions on the level of capex allowance, capex governance provisions and capex incentives are as follows:

(a) The level of capex allowance should be set in line with the CAA Decision.

(b) The role for the Independent Reviewer should be enhanced, quarterly SIP updates should be required in line with the CAA Decision.

(c) A licence condition should be applied, or a CAA policy statement developed, that appropriately specifies and constrains the circumstances under which it might be reasonable for the CAA to find that capex should be disallowed from NERL's RAB following an ex-post efficiency review

(d) The capex delivery incentive proposed by the CAA should not be introduced.

(e) The introduction of a capex delivery incentive based on the quality of NERL's engagement, and its actions related to that engagement, should be introduced, providing there was appropriate specification concerning the criteria against which NERL's performance would be assessed, and the basis upon which the level of any penalty to be applied would be determined. We have provided our initial views on the form this might take, and we invite submissions from the Parties setting out more detailed options.

(f) The CAA's proposed capex information incentive should not be applied in RP3. We consider that any capex that may result in NERL exceeding the level provided for by its RP3 allowance should be assessed within the capex delivery incentive.

(g) The evaluation of NERL's behaviour under the capex delivery incentive should include consideration of how NERL has identified the opex effects that may be associated changes to its plan, and how different options under consideration would be expected to affect its opex.

9. Non-regulated income

Introduction

9.1 This chapter considers the level of non-regulated income that should be used when calculating the Determined Cost allowance for RP3.

9.2 The main business of NERL is its air navigation service business covered by its licence responsibilities. NERL also undertakes commercial activities, and the non-regulated income arising from this is relevant to this price control because a 'single till' approach is taken, whereby the price control assumes that a portion of NERL's overall costs is funded through non-regulated income. It is therefore necessary to assess the costs and revenues likely to arise from the various commercial activities[304] that NERL is expected to undertake in the RP3 period. There are five key areas of non-regulated activities that NERL undertakes:

(i) Radar service relating to the London Approach service, for six London airports;

(ii) ATC services for North Sea Helicopters

(iii) Ministry of Defence (MoD) work, the FMARS[305] contract

(iv) Income from NSL (NATS Services Ltd), relating to shared support functions such as Finance and HR

(v) Other revenue, including site services and joint EU research

9.3 In the RBP, NERL projected some reductions in revenue and some associated cost reductions in RP3 compared with RP2. The revenue reductions reflect contract re-negotiations or losses, some EU activities ending, changes in revenue reporting to comply with revised EU charging regulations, and NERL's decision to free up resources for its regulated activities. In the CAA Decision, the CAA accepted that NERL would have lower revenues in RP3 but made a different assumption of the potential cost reductions associated with the reduction in non-regulated revenue.

[304] NERL Statement of Case (SoC), pages 89-90
[305] FMARS: Future Military Area Radar Service

CAA Decision for RP3

9.4 The CAA decided that there was scope for a further £24 million of operating cost savings compared to that assumed in NERL's RBP, resulting from an expected reduction in the costs of non-regulated activities that NERL would undertake.[306] This assessment was partly informed by a report[307] from CEPA, consultants for the CAA.

9.5 The CAA Decision also reflects the CAA's final views on the strength of the justification and clarity of anticipated changes in revenues and costs for non-regulated activities put forward by NERL in its business plan for RP3. The CAA had previously made a £49 million adjustment in its Draft Decision[308], but halved this for the Final Decision, having received representations from NERL. Although NERL provided some explanation of its cost projections and its reasons for a projected reduction in non-regulated revenue, the CAA decided that the justification was not sufficiently complete to allow NERL's proposed change to price controlled revenue in full. The adjustment in the Draft Decision was positioned as an adjustment to non-regulated revenue, whereas the adjustment in the Final Decision was to opex.

NERL's view

9.6 NERL considered that it had provided the necessary evidence to explain the basis of its revenue reductions in respect of non-regulated activities, and the consequences for the increase in costs of regulated activities. It argued that the CAA chose to ignore this evidence and instead proceeded with imposing a cost reduction target that NERL felt was unachievable and hence would require undesirable further cost efficiencies made within its core regulated business.[309]

9.7 NERL provided evidence suggesting that non-regulated revenue will fall by £19 million per annum compared to the peak level in 2017. It projected a cost reduction of £8 million per annum, once account is taken of the plans to re-deploy some staff into the core regulated activities (see Table 9-1).[310]

[306] CAA Decision, paragraph 5.47, page 65.
[307] CEPA, NERL's Cost Allocation and Non-Regulatory Income Forecasts, December 2018.
[308] CAA Decision, paragraph 5.47, page 65
[309] NERL SoC, paragraphs 332-333, page 92.
[310] NERL SoC, Table 9 on page 90

Table 9-1: Summary of non-regulated income and revenue projections in RP3

	£m per year for RP3 period (2017 prices)
Revenue reduction anticipated by NERL	19
Scope of cost reductions according to NERL	12
Cost redeployment to regulated activities	4
NERL's view of the net cost change removed from plan	8
Difference between revenue and cost reduction in NERL's RBP	11
CAA's view of additional scope to reduce costs	4.8 (24 total in RP3)

Source: CMA analysis from NERL SoC, paragraph 324 and Table 9 on page 90.

9.8 NERL noted that some costs involved in serving non-regulated activities were fixed in relation to revenue changes or were shared support function costs between regulated and non-regulated activities. It said that some of these costs would not fall in line with the revenue reductions anticipated. [311] In addition, the treatment of R&D funding changed between RP2 and RP3 under the EU charging regulations from inclusion to exclusion in relation to non-regulated income.[312]

CAA's view

9.9 The CAA considered that the £24 million opex reduction for RP3 was a conservative adjustment[313] given the potential for revenue to be higher than forecast or for further cost reductions beyond NERL's projections to be achieved. To put this into context, we note that the £24 million adjustment represented around 5% of NERL's projected non-regulated income in RP3.[314] At nearly £5 million per annum, the cost reduction was around half of the £11 million difference between revenue and cost reduction[315] from NERL's projections. The CAA also commented on the lack of clarity and justification of

[311] NERL SoC, paragraph 315
[312] NERL ✂
[313] CAA Decision, paragraph 5.48
[314] NERL SoC, Table 8 on page 88. £24m / £446m = 5.4%.
[315] NERL projects revenue falling by £19 million pa, costs falling by £8 million. Hence a £11 million difference.

NERL's cost information concerning how it had accounted for the re-allocation of some operating costs to regulated activities, for example where staff had been re-deployed to this function.[316]

Other evidence

9.10 The CCWG Co-chairs Report[317] noted views from airlines that NERL had not demonstrated enough ambition and creativity to offset non-regulated revenue reductions.

9.11 In its written evidence, IAG commented that the CAA should make an adjustment to NERL's projections and expressed a view that the approach taken in the CAA Decision was probably generous to NERL and therefore an outcome with which NERL should be 'very satisfied'.[318]

Our approach and assessment

9.12 We carefully considered the projections of operating costs and revenues for non-regulated activities provided by NERL, assessing the various categories of cost associated with the single till approach. In particular, we reviewed in detail the evidence that demonstrated the extent to which costs for resources re-deployed across to regulated activities were consistent with NERL's overall plans for operating costs and capital expenditure in RP3. NERL provided further information[319] in its submissions to us for this investigation. We also issued a request for further information on this matter. The question of where costs had been reallocated to was also discussed at the hearing with NERL in February 2020.

9.13 In our view, NERL has now provided the CMA with sufficient evidence to support its view that it is likely to have lower non-regulated revenue in RP3, and that this is unlikely to be directly offset by lower costs. It has provided details showing that £4.1 million per annum of operating costs within three business areas – analytics; simulators and TTS costs; and ATC training – had been redeployed from non-regulated income generating activities to other regulated activities.[320]

9.14 We note that the CAA has separately already held NERL accountable for its insufficient justification within its business plan of its overall estimates of

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[316] CAA Decision, Paragraph 5.46
[317] CCWG Co-chairs Report, paragraph 11.7
[318] IAG response to CAA's RP3 consultation, paragraphs 52-57
[319] NERL ✂
[320] NERL ✂

operating expenditure. The CAA determined that it was appropriate to make a £43 million opex efficiency adjustment for regulated opex, and as discussed in chapter 7, we have agreed with the CAA's approach.

9.15 NERL explained why, particularly given the context of airspace modernisation, it would not be able to replicate the scale of revenue earned during RP2 as it needed to focus resources on regulated activities. NERL said that there were not significant opportunities for NERL to increase revenues further given the increases in ATCOs needed for AMS.[321] The CAA said that NERL may 'have the opportunity to increase its non-regulatory revenue and outperform our efficiency targets for RP3'.[322] In that context, we agree that incentivising additional non-regulated revenue in NERL should not be a priority during RP3, and that the £24 million would need to be made from opex savings, rather than higher revenues.

9.16 Given that we have identified where the additional operating costs resulting from the reduction in NERL's non-regulated revenue are reflected in NERL's business plan, we have concluded that imposing a further £24 million opex adjustment, as proposed by the CAA for non-regulated activities, would be double counting. The CAA has already put in place what it considered to be a sufficient efficiency challenge on the overall level of opex. We agree that it is reasonable in principle for the CAA to consider the opex efficiency scope in both the regulated and non-regulated parts of the business separately and possibly from a different bottom-up or top-down approach respectively., In practice, we were not persuaded that the CAA had sufficient evidence to increase the efficiency challenge by a further 50% (£24 million), in the absence of reasons as to why the reduction in non-regulated revenue would actually provide NERL with such a significant increase in the opportunity to make efficiencies. While we acknowledge NERL has needed several opportunities to clearly explain the basis of its opex redeployment approach, we have concluded that the explanation is now available.

9.17 We also agree with NERL that the basis of the CAA's efficiency challenge to non-regulated opex has been arbitrary. The CAA made a Draft Decision to set an efficiency challenge based on approximately half of the revenue decline, and then halved this again at the Final Decision. This does not seem a sufficiently robust approach, given that the CAA has already imposed an efficiency challenge on the same operating costs as part of its overall opex assessment.

[321] NERL SoC, paragraphs 329, 331-333
[322] CAA Decision, paragraph 5.48

Our provisional conclusions

9.18 We consider that NERL should not be expected to make further cuts of £24 million in RP3 to costs previously associated with reduced non-regulated revenue. NERL has demonstrated that the costs are needed in the regulated business to fulfil its licence obligations. We provisionally find that the £24 million of costs should be included in NERL's Determined Cost allowance for RP3. That is, there should be no additional reduction in the Determined Cost allowance for RP3 for non-regulated activities beyond that included in NERL's RBP.

10. Pensions

Introduction

10.1 This chapter considers our approach to pension costs in NERL's price control for RP3.

10.2 NERL operates a defined benefit (DB) pension scheme. The scheme is now closed to new members, but existing members who continue to work for NERL continue to participate in this final salary pension scheme. Actuarial valuations of the DB scheme show the scheme currently has a deficit and NERL's actuaries have advised on the level of repair costs needed in the long term to manage this position under the Trustees' statement of funding principles. In 2009, when the DB scheme was closed to new members, an alternative defined contribution (DC) scheme was introduced for any new starters from this date. It provides staff with a range of contribution options which NERL has assumed will require a contribution rate of around 15%.[323] NERL now has more employees in the DC scheme than in the DB scheme.[324]

10.3 A pension pass-through mechanism exists for certain pension cost changes that are non-controllable and efficiently incurred. The principle that there should be a pass-through is not in dispute, because the pass-through is specified as part of the SES framework. However, one issue which was raised in respect of the reference is whether the circumstances when these pass-through arrangements are applicable or not are sufficiently clear, and whether they offer protection to NERL's financial position if the cost of the pension scheme turns out to be higher than allowed by the CAA in the RP3 price control.

10.4 In this investigation we have therefore considered both whether the CAA's pension adjustments were appropriate and also whether the pension pass-through arrangements are clearly explained.

CAA Decision for RP3

10.5 As part of the RBP, NERL included a forecast for both ongoing pension costs and for deficit repair costs. For the period after the next pension revaluation, NERL projected an increase in the level of deficit funding. In its decision on the RP3 cost allowances, the CAA adjusted NERL's pension cost projections, taking account of evidence from the Government Actuary's Department

[323] NERL Reply to CAA Response (NERL Reply), paragraph 184
[324] Prospect submission, 10 January 2020, page 7

(GAD). Although it accepted that NERL needed to recover the cost of funding the pension deficit through charges, the CAA did not fully accept the level of pension costs proposed by NERL.

10.6 The CAA decided to apply an adjustment of £18 million to the upfront allowance for deficit repair pension costs associated with the DB scheme. The CAA's cost adjustments to NERL's projected DB pension costs were based on various reasons, including:

(a) A possibility that market conditions may be more favourable than the Trustee's assumptions and that the scheme may enter into surplus at future pension valuations. The CAA expressed concern that NERL had not explained how a potential surplus would be managed in the interest of airspace users.[325]

(b) A £20 million increase to the pension deficit appeared to be from unexpected increases in pensionable pay levels made in 2018, which would be within NERL's control.[326]

(c) The pension pass-through arrangements lead to significant protection of actual efficient pension costs being allowed and financed by airspace users in due course, even when they are not allowed upfront in the RP3 decision.[327]

10.7 The CAA applied a further £6 million cost adjustment to the ongoing costs of the DB and DC scheme.[328] The CAA's cost adjustments to NERL's projected DC pension costs were made 'in line with the efficiency adjustments to overall operating costs.'[329] We understand this to mean that, given that the CAA made an £45 million adjustment to operating costs, it assumed that there would be an associated savings of £6 million in pension costs.

10.8 As a result, the total adjustment for pensions costs was £24 million, comprising £18 million for deficit costs for the DB scheme and ongoing costs of £6 million for the DB and DC schemes(see Table 10-1). This represented half of the adjustment amount included in the Draft Decision and circa 5.7% of the pension costs that NERL anticipated spending over the 5 years in RP3.[330] [331]

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[325] CAA Decision, paragraph 5.62
[326] CAA Decision, paragraph 5.59 and paragraph 5.63
[327] CAA Decision, paragraph 5.65
[328] CAA Decision, paragraph 5.67
[329] CAA Decision, paragraph 5.67
[330] CAA Decision, paragraph 5.68
[331] £24 million/£416 million = 5.7% Source: NERL Statement of Case (NERL SoC), Table 10 on page 94. The £416 million figure includes deficit repair costs.

Table 10-1: Summary of NERL and CAA positions on pensions in RP3

	NERL	*CAA*	*Difference*
Deficit repair payments	£71m	£53m	-£18m
Ongoing pension costs	£345m	£339m	-£6m
Total	£416m	£392m	-£24m

Source: CMA analysis from NERL SoC, Table 10 on page 94

10.9 The CAA stated that the pension pass-through mechanism provided appropriate protection if the actual efficient DB deficit repair costs and ongoing employer contributions were higher than the allowed upfront costs in the CAA Decision, as a result of the actual financial market conditions that were outside of NERL's control and after reasonable steps had been taken to mitigate any additional cost pressures. The mechanism by which the pension pass-through arrangements are implemented is specified in the EU Performance Regulation[332].

10.10 The CAA said that it had agreed to progress with NERL the drafting of a Regulatory Policy Statement (RPS) pertaining to pension costs,[333] having taken legal advice and consulted with stakeholders. The CAA told us that the RPS would provide further clarity to Trustees on the regulatory treatment of pensions and would be in the long-term interests of customers. The CAA said it intended to finalise the RPS before the next scheduled full pension valuation that occurs every three years, which would be in December 2020.[334]

NERL's view

10.11 NERL said that its pension cost projections were based on the advice of the expert actuarial advisors and its Pension Trustees. It said that the CAA's approach to reduce these cost projections did not have a rational basis and that there was no basis to suggest that market conditions may improve.[335]

10.12 NERL said that the CAA and its expert advisor GAD had endorsed the approach that NERL had taken on pensions.[336] NERL's view was that the pension costs should be recovered in full as they had recognised that NERL had limited opportunities to make further efficiencies, pension reform had

[332] Commission Implementation Regulation (EU) 2019/317
[333] CAA Decision, paragraph 5.78
[334] CAA Decision, paragraph 5.78
[335] NERL Statement of Case (NERL SoC), paragraphs 338 and 363
[336] NERL SoC, paragraph 341

already been progressed and progressing further pension changes at this time would be costly and risky. NERL said it was following the advice of the Pension Trustees and that this was the correct approach to take.

10.13 NERL expressed concern that the pension pass-through mechanism may operate in a different way to how the CAA envisaged, and this may restrict the ability of NERL to obtain a cost pass-through position.[337]

10.14 NERL noted the interlinkages of pension costs to the assessment of operating costs, suggesting that the CMA should align any adjustments made.[338]

10.15 NERL re-affirmed its desire to reduce uncertainty by agreeing an RPS with the CAA and its Trustees, noting there was a greater need for this due to potential changes to the protection arising from EU regulations following Brexit.[339]

CAA's response to NERL

10.16 The CAA maintained its position that DB pension costs should not be set at the levels proposed by NERL in its business plan.

10.17 The CAA clarified the advice it had received from GAD and stated that it had taken a reasonable approach to determining an efficiency adjustment to pensions that reflected this advice.[340]

10.18 The CAA stated it was incorrect that it had ignored evidence of market conditions. It noted that it had halved the efficiency adjustment between its draft proposals and the final decision. The CAA also commented that NERL had yet to fully explain the approach it would take to protect customers should a trapped surplus arise.[341]

10.19 The CAA reiterated that it considered the pension pass-through arrangements offered protection if efficiently incurred pension costs were above the upfront allowances. It did not agree with the concerns that NERL had expressed about the working of the pass-through mechanism. The CAA clarified that the pass-through mechanism related to unforeseeable market conditions and it

[337] NERL SoC, paragraph 340, and in detail in paragraphs 364-368
[338] NERL SoC, paragraph 371
[339] NERL SoC, paragraphs 369-370
[340] CAA Reference, paragraphs 6.2-6.4
[341] CAA Reference, paragraphs 6.5-6.10

referred to the precedent at RP2 when pass-through applied after market conditions deteriorated between 2012 and 2015.[342]

10.20 In respect of ongoing pension costs, the CAA noted NERL's proposal to link these costs with the assessment of opex. However, the CAA noted that airspace users had made observations that support an efficiency adjustment for DC costs. The CAA referred to feedback from GAD that the contribution rate of 15% for DC costs is higher than typical levels for FTSE100 companies.[343]

Other evidence

10.21 The Co-chairs Report stated that airspace users felt that NERL's DC costs should be lower to bring them in line with those typically seen in the private sector. The report noted that 'pension provision is continually changing throughout the UK and airlines believe NERL is well behind the curve on this'.[344]

10.22 IAG supported the CAA's approach. It noted:

> …the stark contrast in arrangements enjoyed by NERL employees in comparison with those of NERL's customers. 'More generous' is one way of putting it – and there are doubtless many others; however, we recognise the regulatory constraints put in place by the Transport Act 2000.[345]

10.23 The Prospect union (Prospect)[346] noted that the CAA's view that the DB scheme may enter surplus seemed 'mere fantasy'.[347] It said that NERL would need to finance its pension obligations, which would mean taking resources from other areas of investment as the proposed pension savings were unachievable. Prospect stated there was a risk of the pass-through not applying, suggesting that the CAA did not fully understand the legal duties applicable through the SES EU regulations.

10.24 The Pension Trustee (of the Civil Aviation Authority Pension Scheme, or CAAPS) noted that airline users will benefit from a stable and predictable regulatory approach to pensions in the long term, enabling investment in

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[342] CAA Reference, paragraphs 6.11-6.13
[343] CAA Reference, paragraph 6.14 on page 64
[344] CCWG Co-chairs Report, page 32
[345] IAG response to the CAA RP3 consultation document, 2019, paragraphs 58-60. 'More generous' is a reference to a CAA comment.
[346] The trade union that represents most of NERL's ATC workforce
[347] Prospect submission, page 8

assets with a greater level of risk which are expected to deliver a higher level of return as well as enabling longer recovery periods, such as the current nine years.[348]

Our assessment

10.25 We considered the positions both in favour and against the CAA's decision to make a pension adjustment of £24 million, comprising £18 million for deficit repair costs and £6 million for ongoing pension costs. We reviewed the guidance available on the circumstances when the pension pass-through would and would not be applicable, noting that the CAA highlighted that its approach to the pass-through would be consistent with the SES EU regulations.

10.26 We agreed with NERL that, based on the CAA's statements in its Decision, it was not entirely clear whether the pass-through would in practice protect NERL from an increase in deficit contributions. We sought further clarification from the CAA during our investigation. The CAA confirmed in written submissions that NERL should be able to recover the actual costs of funding the deficit, if they turn out to be as high as predicted by NERL in its Business Plan, subject to checks that the costs are efficient and taking account of any offsetting cost savings that NERL has made. In particular if, as stated by NERL, its returns on investment required increased deficit funding, the CAA said that this would be recovered under the pass-through.[349]

10.27 In respect of deficit repair, we therefore did not consider that there was a material difference between the views of the CAA and NERL, assuming that both could agree that funding would be available under the pass-through if deficit funding were to reflect NERL's assumptions. We did not agree that a stranded surplus posed a material risk at this point, as the CAA has a number of regulatory mechanisms open to it given there is another price control planned in 2024, in the event that market conditions change and the cost of funding pensions falls over time. However, the CAA's main concern, supported by GAD, appears to be that NERL was on course to reduce the deficit at a faster rate than comparable companies.

10.28 The size of the future deficit is inherently uncertain. We consider in that context that the size of the upfront adjustments to deficit repair costs made by the CAA are a reasonable estimate of the potential to reduce the amount of

[348] Civil Aviation Authority Pension Scheme (CAAPS) submission, 23 December 2019
[349] CAA ✂

funding in the current period, if changes in market conditions are broadly in line with the CAA and GAD's assumptions.

10.29 There are many factors that may result in actual contributions differing from assumptions made today, such as changing market conditions, different retirement or leaving profiles and changes to expectations of mortality rates. It is open to the regulator to take a different view on market conditions in determining its upfront allowance and NERL can also take a different stance to the regulator when deciding on the level of deficit repair costs it will make. If NERL is confident that its costs are efficiently incurred and reflective of actual market conditions that prevail after the CAA Decision, then it should expect that pass-through provisions will apply at the next price review.

10.30 We therefore conclude that it is reasonable to assume that NERL's deficit repair costs in RP3 should be reduced by £18 million. We are pleased that further clarity on the pension pass-through mechanism has emerged regarding uncontrollable changes such as unforeseen differences in market conditions. We support the intended development of an RPS and consider this is an opportunity for further clarification to be made by the CAA.

10.31 We also conclude in line with the CAA that NERL should be able to make savings in ongoing pension costs. As explained in chapters 7 and 9, we have provisionally adopted CAA's approach to opex allowances, except for the reductions in opex assumed in respect of costs associated with non-regulated income. On the basis that these represented around half of the CAA's efficiency challenge on operating costs, we have also assumed that the associated level of pension cost savings should be reduced by a half to £3 million instead of £6 million.[350]

Our provisional conclusions

10.32 We consider that a pension cost adjustment of £21 million should be applied to the assumption of NERL's costs. However, we recommend that the CAA should produce improved guidance to clarify the pass-through provisions that apply, showing circumstances when determinations of future costs would and would not be subject to pass-through. The CAA's proposed approach of preparing a Regulatory Policy Statement (RPS) represents an opportunity to make this clarification.

[350] Based on CMA analysis of the CAA's opex efficiency challenge. £6 million * (£24 million/£45 million) = c.£3 million. The £24 million is the non-reg opex adjustment and the £45 million is the difference between opex in NERL's RBP and the CAA Decision.

11. Oceanic

Introduction

11.1 The Oceanic price control represents around 4%[351] of NERL's costs and revenues in RP2. It determines the level of charges required to allow NERL to recover the costs associated with North Atlantic flights. Unlike the en route price control, it is not covered by the EU SES[352] Performance scheme. The regulatory framework for the management and development of the Oceanic airspace is led by ICAO[353]. The CAA aligns the price controls and assesses the financeability of NERL for en route and Oceanic together, treating NERL as a single business.[354]

11.2 NERL is introducing a space-based automatic dependent surveillance (ADS-B)[355] system in RP3 to provide more accurate and timely aircraft position information for flights crossing the North Atlantic. This has resulted in a large increase in the Oceanic charges for users.

11.3 The ADS-B data is provided by Aireon, which is currently the only supplier of the space-based service which NERL has decided to implement for Oceanic services. Since 2018[356] NSL has owned a 9% share in Aireon,[357] which is also part-owned by NAV Canada, ENAV, the Irish Aviation Authority, Naviair and Iridium communications.[358]

11.4 We consider the regulatory decisions made for the Oceanic price control, including allowances in the CAA Decision relating to the scope for efficiencies and the associated levels of opex and capex, the level of pension costs allowed, and the application of the same weighted average cost of capital (WACC) as that used within the en route price control.

11.5 We note that a number of airlines (Air Canada, KLM, Lufthansa, United Airlines, Virgin Atlantic and Emirates) and their trade body, IATA,[359] have made representations on the decision to proceed with the introduction of the

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[351] CAA Reference, paragraph 2.74
[352] SES: Single European Sky
[353] ICAO: International Civil Aviation Organisation. See paragraphs F4 to F6 on page 103/104 of the CAA Reference.
[354] CAA Reference, paragraph 2.73
[355] See paragraph 2.38 for more information on ADS-B
[356] NERL Statement of Case (NERL SoC), page 129
[357] NERL SoC, page 132
[358] NERL SoC, Appendix – glossary of terms, page 170
[359] IATA submission, and supporting submissions from the airlines listed above

ADS-B system. We consider below the approach taken to this decision, and whether we should intervene on this for the purposes of this reference.[360]

CAA Decision for RP3

11.6 The CAA Decision allowed NERL to recover costs associated with a full introduction of the ADS-B service at the start of the RP3 period. The CAA decided that it had received sufficient evidence that the benefits arising from the implementation of ADS-B should outweigh the costs. The introduction of the ADS-B system would result in a significant increase in Oceanic charges to airlines of 60%[361] from 2020. The CAA agreed that this was justified, as the new system would bring safety improvements[362] as well as improvements in flight efficiency. The CAA and NERL have both indicated that these efficiency benefits are expected to lead to fuel savings for airlines and increased capacity opportunities as traffic levels rise in the long term. [363]

11.7 The cost allowances in the RP3 price control relevant to Oceanic include several 'building blocks': [364]

a) ADS-B data charges from Aireon, which NERL passes on to airlines (£76 million)[365]

b) Opex for Oceanic services (£84 million)

c) Pension costs for Oceanic staff (£17 million)

d) Regulatory depreciation of Oceanic capex (£29 million)

e) Regulatory return based on the cost of capital (£6 million)

11.8 The CAA allowed the costs of the ADS-B data charges paid to Aireon, but then applied an efficiency adjustment of 5%, applicable to each year's ADS-B data costs through RP3, to reach the allowance of £76 million. The CAA said that this 'reflected the uncertainty associated with the lack of benchmarking information from NERL to properly justify its prices in its contract with

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[360] The submissions have suggested that, if the CMA were concerned about the nature of the Oceanic contract, an investigation under the Competition Act 1998 could be an alternative mechanism for the CMA to intervene.
[361] The core Oceanic charge is £48.10 per flight. The ADS-B data charge adds £29.70 to this, a 60% increase. Source: Table 11.2 on page 146 of CAA Decision.
[362] CAA Reference, paragraph F25: The ADS-B technology will enable the UK to meet the ICAO North Atlantic Tracks target level of safety (TLS).
[363] NERL SoC, paragraph 494. CAA Decision, paragraph 11.30
[364] As described by NERL in the SoC, Table 12. Also in CAA Decision, Table 11.2
[365] Note that this figure excludes the Tango data charges. See appendix B, paragraph 16 for details of Tango.

Aireon'.[366] NERL will keep the benefit if it can negotiate with Aireon a further reduction in the data charges.

11.9 The CAA also decided to proceed with an independent review after two years to assess whether the benefits of ADS-B have effectively exceeded the costs, and whether this is expected to continue do so in the future. The CAA said that review may lead to a positive adjustment to the price control allowance for the ADS-B data charge if the benefits significantly exceed the costs, potentially removing the 5% efficiency adjustment for year 2023 and beyond. However, if the costs exceed the benefits, the CAA indicated it may reduce the cost allowances allowed proportionally, subject to financeability tests. [367]

11.10 For opex efficiency, the CAA applied reductions in each year of the price control. This represents a different approach to en route, where the CAA decided that the efficiencies should only be applied to the final two years to reflect the need for NATS to focus on delivering airspace changes and technology transformation in the initial years. The Oceanic opex efficiency targets[368] were 2.3% for staff costs and 5% for non-staff costs. The CAA applied similar pension efficiency adjustments to those made for the en route price control.

11.11 The capex efficiency target was 5% which the CAA said related to the limited justification of its capital expenditure proposals from NERL.[369]

11.12 The CAA applied the same weighted average cost of capital (2.68%, vanilla) as used in the en route price control to determine the regulatory return for Oceanic. This has only a small effect on Oceanic charges.

NERL's view

11.13 Overall, NERL stated that its RBP's projected costs for Oceanic were £12 million higher than allowed for in the CAA Decision.[370]

11.14 As regards the decision to proceed with the introduction of the ADS-B service, NERL said that the 5% efficiency applied to the data charges was unreasonable, unjustified and arbitrary.[371] It said that the benefits of the

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[366] CAA Decision, paragraph 11.42
[367] CAA Reference, paragraph 2.81. CAA Decision, paragraphs 11.32-11.34
[368] CAA Decision, paragraph 11.42
[369] CAA Decision, paragraph 11.42
[370] NERL SoC, Table 12, page 125. As well as reducing the cost allowances, NERL submitted that the choice of the higher STATFOR forecasts of traffic in the CAA Decision would result in an estimated £2 million more revenue from charges than forecast in the RBP
[371] NERL SoC, paragraph 481; and NERL Reply to CAA Response (NERL Reply), paragraph 291

service were extremely large and that there was no further scope to negotiate lower charges with the system provider. Hence NERL's position was that the data charges should be remunerated in full.

11.15 NERL also presented further background[372] on the contract with the ADS-B system provider, Aireon, details of NSL's shareholding[373] and extent of influence on Aireon. It provided context about the pricing negotiations held with Aireon and the consumer protection for customers arising from issues such as break clauses in the contract and mechanisms for annual price changes. NERL told us that Aireon operates a global pricing policy, typically charging the same price to all its customers, and only depending on the service used. NERL said that this means customers, including NATS, therefore have little buyer power.[374]

11.16 NERL also said that it disagreed with the CAA's approach to the other price control 'building blocks' for the Oceanic service (such as opex and pensions costs), where the CAA had made adjustments. NERL considered that the CAA's efficiency assumptions were unsupported as they lacked evidence, and it was inappropriate to apply the same assumptions to Oceanic operating costs as to en route operating costs.

11.17 According to NERL, the Oceanic business should be assessed as a standalone business as it is subject to a separate economic regulatory regime.[375] It suggested that, after all of the CAA adjustments, the Oceanic business would be loss-making and it would be unlawful for the Oceanic business to be cross-subsidised.[376] NERL also argued that the financeability tests should be undertaken separately for the Oceanic business as this was a separate licenced entity.[377]

CAA's response to NERL

11.18 The CAA confirmed that it supported the introduction of the ADS-B service both to improve safety and to bring other operational benefits for airspace users on North Atlantic routes. The CAA was aware that a number of airspace users were unhappy with the level of charges and were not convinced about the benefits that would arise. Using the evidence available at the time of the

[372] NERL Reply, paragraphs 277-290
[373] NSL (NATS's commercial arm) acquired a 9% shareholding in Aireon in May 2018.
[374] NERL Reply, Paragraph 278
[375] NERL SoC, paragraph 481
[376] NERL SoC, paragraph 526, referring to a breach of Licence Condition 9
[377] NERL Reply, paragraph 274

RP3 Decision, the CAA reviewed initial cost benefit analysis assessments[378] with conservative assumptions and was satisfied that the benefits case was net positive. The CAA also considered the relationship between NERL and Aireon in coming to its decision to improve the introduction of ADS-B.[379]

11.19 The CAA said that it applied a 5% efficiency target to the ADS-B data charges, based on a view that NERL had buyer power in its relationship with Aireon[380] and stated that these efficiencies were reasonable to protect consumers. However, as noted above, the CAA has said that the efficiency requirement may be removed for the final two years of RP3 if the cost benefit analysis is found to be significantly positive when analysed as part of the two-year independent review. [381] If the CAA were to make this adjustment, the total disallowance would be £2.4 million over the first three years of RP3.

11.20 The CAA described its opex efficiency assumptions as a 'modest stretch'. It noted that Oceanic opex costs had fallen in the RP2 period, leading to outperformance of the RP2 determination.[382] It also noted that there were shared costs with the en route service[383] and so there was logic in applying a similar target. The CAA considered that the efficiencies should apply to every year of RP3 as the airspace modernisation initiatives (which were the reason for the en route efficiencies only being applied to the final two years) were not applicable to the Oceanic business.[384]

11.21 The CAA considered that it was not possible due to the modelling approach, nor relevant due to its statutory duties, to assess the financeability of the Oceanic business separately.[385] It stated that the cost of capital allowance was set at a reasonable level.

Other evidence

11.22 We received representations from IATA and a number of airlines expressing concern at the decision to proceed with the introduction of the ADS-B service. The CCWG Co-chairs Report noted that this was the issue with the widest difference of opinion between NERL and the airlines involved in the CCWG. Some of the airlines recognised the benefits of ADS-B, but were concerned at the high costs. IATA and some airlines queried the contractual arrangements

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[378] CAA Reference, paragraphs F24 and F27
[379] CAA Reference, paragraphs F11-F13 and F24
[380] CAA Reference, paragraphs 8.7-8.8
[381] CAA Decision, paragraph 11.33
[382] CAA Reference, paragraph 8.11
[383] CAA Reference, paragraph 8.13
[384] CAA Reference, paragraph 8.13
[385] CAA Reference, paragraphs 8.14-8.15

with Aireon, referring to a possible conflict with NSL's shareholding. IATA also queried whether the need for such safety improvements was established. [386]

Our approach and assessment

11.23 We considered two questions:

(a) Whether the evidence provided by third parties demonstrated that a fresh review of the ADS-B service was appropriate as part of this determination; and

(b) Assuming ADS-B proceeds as planned, whether the CAA's efficiency assumptions to the costs of delivering ADS-B are appropriate.

The decision to implement the ADS-B service

11.24 We considered the information provided about the ADS-B service, requesting further detail from NERL about the ADS-B contract. NERL provided the NSL contract with Aireon and clarified the break clauses and pricing structure. We were told that both CAA and NERL supported the introduction of ADS-B, primarily due to the safety benefits that it brings, and that the broad scale of the initial costs was not in dispute, other than the 5% efficiency adjustment made by CAA. As context, this efficiency target is potentially equivalent to £4.0 million[387] in RP3, which represents one-third of the difference between NERL's RBP and the CAA's decision in respect of the Oceanic service.

11.25 At its hearing, NERL clarified the logic, scope and benefits of NSL's shareholding in Aireon. We understand that IATA has concerns that NATS's investment in Aireon, through NSL, may change the incentives of NATS and Aireon in respect of the provision of the ADS-B service. The contract agreement and shareholding arrangement with Aireon are not themselves within the scope of this reference, though they provide some context to the scope for efficiencies and the decision to undertake a review during RP3.

11.26 Based on our understanding of the background to the decision to implement ADS-B, we do not consider that this is a decision which it would be appropriate for the CMA to revisit at this stage. The decision to implement ADS-B has been made by NERL and approved by CAA following a review of the technical benefits and safety implications over a number of years. Both

[386] IATA submission to CMA, 17 January 2020. Co-chairs Report, page 7. The six airlines that wrote to the CMA regarding the ADS-B issue are listed in paragraph 11.5
[387] NERL SoC, Table 12, page 125

CAA and NERL agreed that there is a significant potential for further safety benefits from the introduction of ADS-B technology, enabling the UK to meet the North Atlantic Tracks target level of safety for vertical risk.[388] We did not consider that it was the role of the competition authority to revisit decisions made by sector experts about technical matters such as the right way to address safety.

11.27 Our role in this appeal is to assess whether the implementation of this new system has been properly reflected in the RP3 price control decision. NERL will need to be able to recover the efficient costs of ADS-B while it is in operation, if it is to be able to finance its activities in terms of the Oceanic price control.

11.28 We therefore assumed that ADS-B would be implemented for RP3, and focused our analysis of the Oceanic price control on whether we agreed that the CAA had acted appropriately in making a number of efficiency adjustments to NERL's assumed costs for Oceanic services. We considered that information about the contract with Aireon was relevant to whether the costs are efficient, given that Aireon is currently the only company currently capable of providing the technology for the ADS-B service.

The CAA's efficiency adjustments and the implementation of the two-year review of ADS-B

11.29 As discussed above, in our assessment we assumed that ADS-B is proceeding, and therefore that the RP3 price control will need to include an allowance to cover the cost of ADS-B. We first considered whether it is appropriate to impose an initial 5% efficiency cut to the ADS-B data charge ahead of a two-year review. This means that the 5% efficiency adjustment would apply at least for the first three years of the five-year control period. We then assessed the rationale provided by the CAA for applying similar assumptions made for the en route control across to this Oceanic control, for issues such as the efficiency scope and timing, the pension adjustments and the cost of capital.

11.30 In relation to CAA's allowances for ADS-B data charges, we were not convinced that the CAA had demonstrated there is scope for NERL to achieve the 5% efficiency adjustments. The charges that NERL will be paying to Aireon for ADS-B have been agreed in accordance with prices charged to other ANSPs. NERL is effectively passing these on to customers without gaining profit from any outperformance of regulatory expectations. The CAA's

[388] CAA Reference, paragraph F25

5% adjustment appears to be arbitrary and not reflective of any specific evidence that the options available to NERL to negotiate the ADS-B contract should allow it to make this scale of savings. If the CAA considers that there is potential to achieve additional savings, then this may be a potential area for investigation as part of the independent review discussed below.

11.31 We agree that the independent review should be an important stage in the process of effective regulation of the introduction of the ADS-B system. In that context, we agree with the decision by the CAA to implement a two-year independent review on the implementation of ADS-B, rather than be tied to the five-year period of RP3. We assessed the information provided by the CAA relating to the scope of this two-year independent review. Whilst the CAA said it will implement a review, the scope and approach, including the potential outcomes, have not been adequately documented at this stage. At the hearing with the CAA, we asked about its proposed approach. We were assured that further detail would be provided in the near future, and that the CAA would consult on the scope of the review in advance of its implementation.[389]

11.32 Based on our hearings with the CAA and NERL, we consider that the methodology for the review, and its potential outcomes, are not sufficiently detailed at this stage. Given the importance of this review in ensuring both that ADS-B is delivering on its objectives, and that it is being implemented in a way which provides value for customers, we recommend that the CAA, NERL and stakeholders should define more precisely the approach that will be taken. There should be a clear understanding of how this review will operate before it starts. It is important that airlines are able to participate in providing reliable information on the flight efficiency changes that have occurred in practice now that the service is operational. The outcome of the independent review needs to be communicated clearly and using assumptions or evidence that are robust.

11.33 In terms of the opex efficiency, we consider that the CAA had a reasonable explanation of why it had applied the opex efficiency targets to every year of the price control, rather than commencing these in 2023 as with en route. Overall, we saw no reason to depart from the CAA's approach.[390] We therefore provisionally conclude that a 5% efficiency reduction for non-staff costs and 2.3% for staff costs to Oceanic opex should be applied to the projected Oceanic opex in NERL's RBP.

[389] CAA ✂

[390] See also chapter 7 for further discussion on CAA decisions on opex.

11.34 We reviewed the CAA's approach to capex and NERL's response. The scale of the effect on NERL is small, and we did not consider that NERL had provided sufficient reasons for us to conclude that CAA's approach was not appropriate. We therefore agreed with the CAA's approach of applying an efficiency adjustment to capex for Oceanic.

11.35 For the reasons stated by the CAA, we did not perform a separate financeability assessment for the Oceanic business. The most important factor in assessing whether the Oceanic business is financeable is whether the price control fully reflects NERL's costs in operating the Oceanic business. This would also address NERL's concerns around cross-subsidisation. In respect of the cost of capital, we agree with the CAA that a single cost of capital is most appropriate as NERL does not in practice raise separate finance for the Oceanic business. In chapter 12, we consider the cost of capital of NERL's overall business.

Our provisional conclusions

11.36 We do not consider that the 5% efficiency assumption applied to the ADS-B data charge is appropriate. In our view the CAA has not demonstrated that it would be achievable, given the form of NERL's contractual agreement to purchase ADS-B from Aireon.

11.37 The CAA intends to re-consider the regulatory allowance in the final two years once the independent review has considered the prevailing cost-benefit analysis. This could result in efficiency adjustments being made to the ADS-B charges, if the CAA concludes that the overall benefits of ADS-B are not sufficient to justify the scale of the cost incurred by NERL. We consider that the CAA should be clearer and more transparent about the methodology, conduct and consequences of the proposed two-year independent review. We encourage the CAA to consider its approach and consult on this by the end of 2020.

11.38 Assuming that a satisfactory review methodology is established, we would not have the same concerns about the CAA's planned approach of making efficiency adjustments to the allowance for data charges in the final two years based on the outputs of that review. For example, should the review demonstrate that the benefits identified in the cost /benefit analysis performed as part of the development of ADS-B were overstated, or that there are in practice opportunities for efficiencies in the costs incurred by NERL.

11.39 For the Oceanic regulatory return allowance, our proposed vanilla WACC for the oceanic price control is 3.08%, the same as we propose to apply with the en route control.[391]

11.40 As discussed in chapters 7, 8 and 10 we consider that the CAA's decisions for opex efficiency, pensions and regulatory depreciation (capex allowances) are appropriate, so we do not propose to make adjustments to these aspects within the Oceanic price control. As with the cost of capital, we consider that a consistent approach is appropriate when setting the Oceanic price control. We also agree that the decision to apply an opex efficiency target, but to apply an efficiency assumption across the whole RP3 period for Oceanic, is based on reasonable assumptions. We agree with the CAA decisions to disallow: NERL's projected costs of £3 million for opex; £2 million for pensions; and £1 million for regulatory depreciation within the Oceanic price control.

[391] See chapter 12

12. Cost of Capital

12.1 This chapter outlines our approach to calculating the cost of capital for NERL. The cost of capital is an input to the calculation of NERL's allowed revenue and is used to calculate the profit that NERL needs to earn to repay its investors within the RP3 price control.

12.2 NERL and the CAA had very different views on the right level of the cost of capital. As a result, the assumption on allowed profit was the largest source of difference between NERL and the CAA. NERL's Statement of Case suggested a cost of capital of 4.21%[392] in vanilla terms.[393] In the CAA Decision the CAA used a cost of capital of 2.68% on a like-for-like basis[394]. This resulted in the allowance for NERL's profits within the RP3 price control being £122 million lower than in NERL's business plan[395]. This £122 million gap between the two profit assumptions was over half of the total difference between NERL's business plan and the CAA's proposed price control.

12.3 In this case, we have performed our own determination of the cost of capital. We started with the framework used by the CAA and NERL – the Capital Asset Pricing Model (CAPM) – which is commonly used in regulated sectors. We took a fresh look at each of the parameters, although this was done by building on the data provided by the Parties and determining our own methodology to interpret that data. In some cases, we measured alternative ways to calculate those parameters, and included additional and more up-to-date information in our assessment.

12.4 In this chapter we first explain the how the weighted average cost of capital is calculated, using the capital asset pricing model. We then set out our analysis of appropriate ranges for NERL of beta, cost of debt, total market return and risk-free rate. We then consider the range of values for cost of capital for NERL which this analysis suggests, and provisionally decide on an appropriate point estimate for the RP3 price control.

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[392] NERL Statement of Case (NERL SoC), paragraph 546
[393] The 'vanilla WACC' is a calculation used widely for regulatory purposes, which combined the pre-tax cost of debt with the post-tax cost of equity. It reflects the total cash payments due to investors in debt and equity.
[394] CAA Decision Appendices, Appendix E, Table E7
[395] NERL SoC, Table 1

The Weighted Average Cost of Capital and the Capital Asset Pricing Model

12.5 The cost of capital applied is a Weighted Average Cost of Capital (WACC), which is based on three inputs:

(a) Cost of equity;

(b) Cost of debt;

(c) Gearing[396]

12.6 The WACC is multiplied by the Regulatory Asset Base (RAB) to calculate the allowed profit in NERL's price control. The RAB is also indexed by RPI inflation in each year, and therefore the cost of capital is expressed in real (RPI-deflated) terms.

12.7 The CMA generally uses the CAPM when considering the cost of equity. The CAPM is an established methodology with well-understood theoretical foundations. It is used by all UK regulators for calculating the cost of capital, including the CAA. The CAPM was also used by NERL in its business plan calculation. The remainder of this section discusses the approach to calculating the cost of capital parameters, on the assumption of using the CAPM.

12.8 The CAPM relates the cost of equity (R_E) to the risk-free rate (R_{rf}), the expected return on the market portfolio (R_m), and a firm-specific measure of investors' exposure to systematic risk (beta or β) as follows:

$$R_E = R_{rf} + \beta(R_m - R_{rf})$$

12.9 If a business were entirely funded by equity, the expected return on equity could be considered to be its 'cost of capital'. However, most firms are funded by a combination of both debt and equity, such that the appropriate cost of capital to consider is the weighted average cost of debt and equity. The WACC is given by the following expression:

$$WACC = R_E \times \frac{E}{(D+E)} + R_d \times \frac{D}{(D+E)}$$ [397]

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[396] Gearing is defined as $g = \frac{D}{(D+E)}$ where D is Debt and E is Equity.

12.10 The return on capital for investors should also take into account the effects of tax on returns to capital providers. The returns to debt holders take the form of interest payments which are usually tax-deductible. The returns to equity holders (dividends), on the other hand, are taxed. Hence, where the cost of capital is expressed 'pre-tax', the cost of equity used must reflect the fact that the actual return to shareholders will be reduced by the rate of tax.

12.11 Both the CAA and NERL followed an approach of calculating a tax allowance based on the financial model which predicts NERL's taxable profits in RP3. This tax allowance was then converted to an uplift to the cost of capital, to ensure that the after-tax profits are sufficient to cover the total costs faced by investors.

Beta

12.12 Beta within the Capital Asset Pricing Model (CAPM) framework reflects an asset's (or a portfolio of assets') exposure to systematic (or common) risks relative to the broader market. A commonly referenced systematic risk is the performance of the overall economy. Systematic risks are distinct from idiosyncratic risks, which may impact only a small number of assets, or may simultaneously impact different assets positively and negatively.

12.13 The beta faced by investors in a company's assets is often called the asset beta. Investors normally invest in securities which are able to call on returns earned on those assets, rather than directly investing in the assets themselves. Where this is the case, as with NERL, the asset beta (β_A) can then be split into equity beta (β_E), the exposure of shareholders to systematic risk, and debt beta (β_D), the exposure of bondholders to systematic risk.

$$\beta_A = g \times \beta_D + (1 - g) \times \beta_E$$

12.14 Equity beta is typically measured by comparing a company's share price movements to movements of the whole market. A share price that generally moves up and down in an exaggerated way relative to the market moving up and down will have an equity beta higher than one. A share price that generally moves in a muted way relative to the market will have an equity beta lower than one. A share price that generally moves in line with the market will have an equity beta close to one.

12.15 Debt beta is generally more difficult to measure than equity beta, as bonds are less well traded than equities. However, in principle, the value of debt should also be affected by systematic risk which will affect the probability of

default or could result in a change in the credit quality of the debt. This will also have an effect on the traded bond prices, and the effect is normally smaller than on share prices.

12.16 Where a firm has traded equities and therefore it is possible to measure the equity beta, the asset beta can also be estimated based on the assumption that the asset beta is a weighted average of the equity beta, which will be higher than the asset beta, and the debt beta, which will be lower than the asset beta. The debt beta will often be assumed to be zero or close to zero as part of this calculation, as the cost of debt will be less sensitive to equity market changes for low risk debt.

12.17 The equity beta, and therefore the cost of equity, in the CAPM framework will therefore generally rise as gearing rises, because increasing gearing means that shareholders are exposed to increasing levels of systematic risks per share. As a result of this relationship between gearing and equity beta, an approach of calculating an asset beta is often used in regulators' WACC decisions. This approach allows comparators to be brought onto a comparable basis, and then this comparator asset beta is adjusted using the formula above to estimate the equity beta of the regulated firm.

12.18 NERL's shares are not publicly traded on a market exchange, so we cannot directly observe its equity beta. Also, as a monopoly provider of air traffic control services in the UK, there are no comparable UK competitors to use as a proxy. As a result, in order to estimate NERL's beta, it is necessary to undertake an assessment of the betas of closely comparable companies in other sectors or regions.

12.19 In this section, we explain the evidence that we have considered in coming to our own view of the best estimate for the asset beta of NERL. We first present the evidence provided by the CAA, NERL and third parties, and then explain how we came to a range for the asset beta, building on the parties' evidence. The evidence provided by the parties included:

(a) A list of preferred comparators, with reasons why they were relevant to measuring NERL's asset beta;

(b) An estimate, or multiple estimates, of the asset betas of these comparator companies; and

(c) An estimate, or range of estimates for the asset beta of NERL, based on an analysis of the risks faced by NERL by comparison to the preferred comparator companies.

12.20 We have observed in our analysis of NERL that it is particularly difficult to identify good comparators by comparison to some other regulated companies, and that ultimately there is a need to exercise judgement in coming to an estimate on NERL's asset beta. However, the overall approach followed by the parties is consistent with normal regulatory practice, and none of the parties suggested that there was a better approach available. We have followed a similar approach to estimating NERL's asset beta in our analysis below.

CAA Decision for RP3

12.21 In its Decision for RP3[398], the CAA calculated NERL's asset beta based on comparator analysis conducted by its consultant Europe Economics. Europe Economics analysed the betas of ENAV S.p.A. (ENAV), the Italian air traffic control services company, as a comparator for NERL (after applying certain adjustments). Europe Economics also created what it termed a 'constraint range'. This was based on its view that the asset beta of NERL should be at least as high as the asset beta of UK utilities and that it should be strictly lower than the asset beta of UK airports, for which international airports were used as comparators given there are no listed UK airports.[399]

12.22 For the comparison to ENAV, Europe Economics calculated an asset beta range of 0.40 to 0.48. Adjusting for non-en route air traffic control revenues, Europe Economics calculated a range of 0.36-0.46 and adjusted the mid-point of 0.41 for differences in operating gearing to arrive at an asset beta point estimate of 0.45 for NERL.[400] This was slightly below the 0.46 point estimate in Europe Economics' earlier report.[401]

12.23 The CAA suggested that NERL faced higher risk than UK utilities, such as greater exposure to volume risk and a higher level of operational leverage.[402] The CAA therefore used Europe Economics' estimate of UK utility betas (0.44 at 0.125 debt beta) as a lower bound for NERL's beta estimate.[403]

12.24 The CAA considered that airport comparators had a similar exposure to aviation demand risk, but that they generally operate without regulatory protections available to NERL (specifically traffic risk-sharing and pension

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[398] CAA Reference, paragraph 2.19
[399] Europe Economics, Components of the Cost of Capital for NERL, December 2018, page 43, paragraph 7.4
[400] Europe Economics, Comments on NERA/NERL critiques of Europe Economics' WACC analysis, 6 June 2019, page 21
[401] Europe Economics, Components of the cost of capital for NERL, paragraph 1.4
[402] Europe Economics defined operating leverage as a measure of the ratio of fixed costs to variable costs, and this is discussed further in our assessment below.
[403] Europe Economics, Comments on NERA/NERL, page 22

cost pass-through). The CAA also considered Europe Economics' conclusion that NERL's asset beta should be lower than for UK airports give NERL is exposed to more internationally diversified traffic. Europe Economics' estimate of 0.55 for UK airports asset beta therefore was an upper bound for the 'constraint range' for NERL and was above the upper bound of the 'comparator range' from ENAV.[404]

12.25 The point estimate from Europe Economics for NERL based on ENAV, checked against the lower and upper bounds based on UK utilities and airports led the CAA to estimate NERL's asset beta at 0.46.[405] The CAA concluded that this asset beta was consistent with an equity beta of 1.00 and a debt beta of 0.10.[406]

NERL's view

12.26 NERL based its beta estimate on analysis conducted by its consultant, NERA. In its analysis, NERA studied the asset betas of publicly listed international airports and ENAV. NERA then undertook a 'relative risk' assessment to consider how much weight to place on the various comparators and whether adjustments were needed to reflect differences in risk between NERL and the comparators.[407]

12.27 NERA concluded that:[408]

(a) international airports represented a valid comparator set, though NERL appeared to face greater demand risk than airports after accounting for operating leverage. More specifically, once risk characteristics were compared more closely, NERA found that ADP was NERL's closest comparator. NERA estimated the Aeroports de Paris (ADP) asset beta to be 0.58 (at 0.05 debt beta).

(b) the asset beta for ENAV was between 0.53 and 0.58 (at 0.05 debt beta). NERA suggested that the appropriate asset beta for NERL would be at the upper end of this range, due to NERL facing greater traffic risk than ENAV.

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[404] Europe Economics, Components of the cost of capital for NERL, page 22
[405] The CAA noted the point estimate for NERL's asset beta based on ENAV from Europe Economics' February 2019 report (0.45) was slightly below the estimate from Europe Economics' December 2018 report (0.46), but chose to retain the earlier estimate.
[406] CAA Reference, page 29, figure 8
[407] NERL SoC, paragraph 569
[408] NERL SoC, paragraph 570

12.28 Based on this evidence, NERL proposed an asset beta of 0.57 for RP3. This represented an increase on the CAA's RP2 determination of 0.505, which NERL considered to be consistent with increasing exposure to systematic risk in the next regulatory period.[409]

12.29 In addition, as input into the CMA's redetermination, NERL asked Economic Insight to undertake a fresh review of NERL and the CAA's approach to estimating NERL's asset beta. Economic Insight estimated NERL's asset beta by applying a risk assessment framework to ENAV and comparators in the airports, airlines and utilities sectors and found (ADP) and ENAV to be of most relevance to NERL.[410]

12.30 In the case of ENAV, Economic Insight applied adjustments reflecting differences in relative risk with respect to NERL, specifically:[411]

(a) an adjustment to reflect the lower risk exposure of ENAV's terminal services; and

(b) an adjustment to reflect ENAV's lower operating leverage.

As a result, it estimated an asset beta range for NERL of 0.53 to 0.56.

12.31 For ADP, Economic Insight started with unlevered betas over two- and five-year timeframes and then applied an adjustment based on ADP's lower operational gearing obtaining an estimated asset beta range for NERL of 0.55 to 0.63.[412]

12.32 Economic Insight recommended an overall range for asset beta between 0.53 and 0.63 and considered that a point estimate of 0.60 reflected that it had not been able to make explicit adjustments to reflect some factors (such as capacity constraints) that implied that NERL had higher systematic risk that its recommended comparators.[413]

Evidence from third parties

IAG's submission from CEPA

12.33 CEPA, in a report prepared for IAG, provided a comparative analysis seeking to illustrate that, while there were differences, many of NATS' (NERL's)

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[409] NERL SoC, paragraph 571
[410] Economic Insight, Beta for RP3 – A Report for NATS En Route plc, December 2019, page 41
[411] Economic Insight, Beta for RP3, page 7
[412] Economic Insight, Beta for RP3, page 7
[413] Economic Insight, Beta for RP3, page 7

characteristics were comparable to utilities. CEPA agreed with CAA that UK regulated utilities were a suitable lower bound for estimating NERL's asset beta. It summarised this (see Table 12-1 below), drawing on the CAA's advice to the Secretary of State for Transport which compares the risks faced by NERL, regulated airports and other regulated sectors.[414]

Table 12-1: Comparative risk assessment of regulated entities

	Uncertain demand	Uncertain input prices	Uncertain delivery/ productivity/ efficiency	Defined benefit pension schemes	Stranded network risk	Regulatory risk	Political risk
Scope for regulatory protection	Demand risk can be transferred to consumers	Input price might be mitigated by using specific price indices	A positive feature of an incentive regime	Scope for consumer funding of pension scheme deficits	May be mitigated in part by careful review of asset life policy	Formalise regulatory mechanisms and principles	Enforceable government guarantees and long term contracts
CAA Airports	★★★	★	★	★★★	★★★	★☆	★★★
CAA NATS	★★☆☆	★	★	★☆☆	★★☆	★☆	★★★
Ofcom	★★☆☆	★☆	★☆	★★★	★★★	★☆	★
Ofgem	☆☆☆	★	★	☆☆☆	★★	★☆	★★★
Ofwat	★☆	★★☆	★	★☆	★☆☆	★☆	★☆
Key:	★ = risk to which investors in a regulated firm are exposed			☆ = risk against which investors in a regulated firm are protected by regulation			

Source: CAA (December 2016), Section 16 advice to the Secretary of State for Transport on extending the length of the notice provisions for termination in the Air Traffic Services licence, page 31, Table 3.

12.34 For the upper bound, CEPA agreed that airports represented a suitable comparator. However, CEPA did not agree with NERA's selection of ADP as a reasonable lower point estimate, nor the selective weighting applied to Fraport, Copenhagen and Vienna airports to derive the upper bound estimate.[415] Rather, CEPA considered taking actual evidence from airport data, without selective adjustments, was an appropriate point of reference for the upper end of the range for NERL's asset beta[416]. In doing this, it concluded that:[417]

(a) an upper bound for NERL's asset beta was likely to be around 0.50 based on their high estimates for airports and networks (giving a figure of 0.49), and on ENAV's beta (0.50).

(b) a lower bound could possibly be around 0.43, based on combining their low estimates for airports and utility networks.

12.35 CEPA considered that a range 0.43-0.50 best reflected the evidence as a whole. The upper end of this was broadly consistent with the assumption used

[414] CEPA report for IAG ✂
[415] Fraport is the owner of Frankfurt airport, and other assets in the sector.
[416] CEPA report for IAG
[417] CEPA report for IAG

in RP2. The lower end reflected its view that evidence for airports comparators in particular was lower that had previously assessed, and significantly lower than characterised by NERA.[418]

Citizens Advice

12.36 Citizens Advice argued that the CAA's approach of estimating betas based on ENAV and wider comparators, coupled with further cross-checks, seemed reasonable. [419]

12.37 However, it considered the CAA's approach to setting the ultimate equity beta (arriving at a figure of 1.00 in their final decision) to be somewhat generous to NERL's shareholders as NERL enjoyed significant risk protections (including full pass-through of its exceptionally high pension costs) and Citizens Advice was unaware of any evidence that NERL was as risky as the wider market.

12.38 Citizens Advice argued that NERL was likely to be less risky than the general market, suggesting an equity beta lower than 1.00, and that the CAA's current position could be viewed as conservative. It considered that 'aiming up' by regulators could allow overly generous beta estimates, meaning that the CAA's estimate of an equity beta of 1.00 was likely to be at the top end of the actual range.

Our approach

12.39 All the submissions to this reference were based on the approach used in regulatory precedent of identifying suitable comparators, measuring their betas, and then estimating the beta of NERL using those comparator betas. We agree that using comparator companies is the correct approach to estimating the beta of NERL, and we broadly followed the approach proposed by the parties.

12.40 One difference between our approach and some of the parties was that we focused on measuring a wide range of beta estimates, and then deciding which of those estimates were most relevant to setting a beta for NERL for RP3. This is similar to the Parties' approaches, but we generally measured a broader range of betas and then used our judgement based on the data that we identified in this way which were most relevant to our assessment of the beta for NERL. By contrast, the Parties identified preferred measures of beta, which in some cases were then adjusted to identify an estimate of beta for

[418] CEPA report for IAG ✂
[419] Citizens Advice

NERL. Both approaches should in principle be able to be used to arrive at comparable results.

12.41 In our assessment below, we present:

(a) First, our approach to choosing comparators;

(b) Second, our measurement of betas for those comparators;

(c) Third, our preferred range for the beta for NERL based on the comparator betas.

Our assessment – choice of comparators

12.42 The parties provided us with evidence of the betas of the following choice of comparators[420], in increasing order of systematic risk:

(a) UK utilities;

(b) ENAV (the Italian ANSP), the only traded European ANSP;

(c) Airports, which split into

(i) Large European airports (ADP, AENA, Fraport)

(ii) Other European airports (Copenhagen, Vienna)

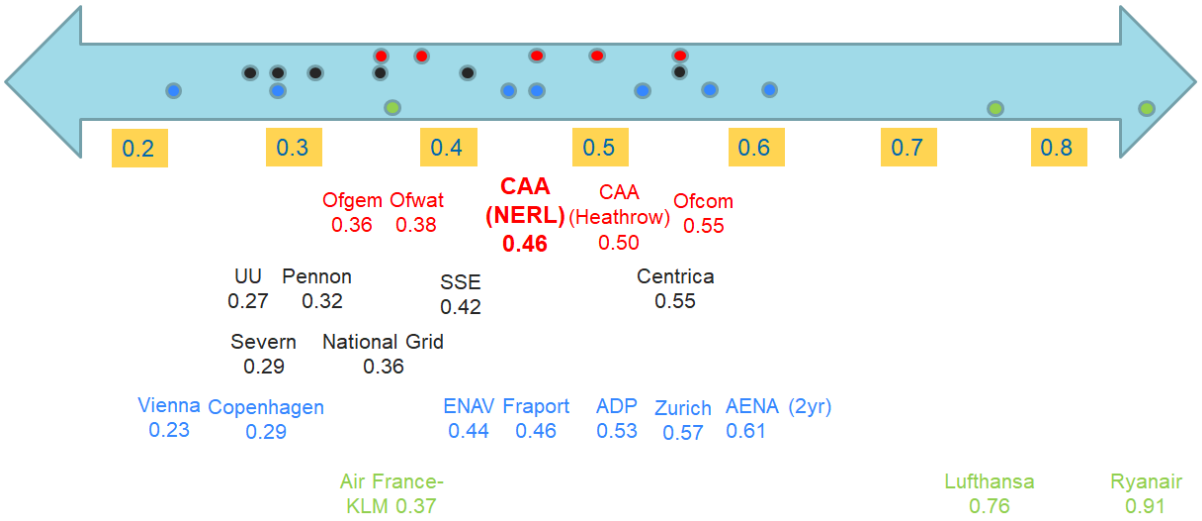
(iii) Non-European airports

(d) Airlines

12.43 We have illustrated in Table 12-1 the betas presented to us by the parties for this group of comparators, which largely follow the intuitive pattern where groups of companies that take more commercial risks have higher asset betas. For example, airlines are fully exposed to volume and price risk, and on average have the highest asset betas.

[420] NERL SoC, paragraph 567-585; NERL Reply, paragraph 345-358; CAA Reference, paragraph 2.18-2.26; CAA Response, paragraph 9.21-9.33

Figure 12-1: Betas



Source: Airlines betas from CMA analysis. Other betas are examples of point estimates for the various comparators from CAA and NERL analysis.

12.44 In Figure 12-1 we have also presented some higher risk UK utilities, in particular Ofcom's beta for BT and Centrica's asset beta, and also airlines, which are higher risk than airports or ANSPs. Although the asset betas of these comparators were presented in some of the tables for context by the parties, none of the submissions presented these as direct comparators for NERL. We therefore do not consider these firms any further.

Assessment of comparators - UK utilities

12.45 First we considered the role of UK utilities, such as water companies, which were used as a lower bound by CAA in coming to its range.

12.46 We have decided not to use the betas of UK utilities in calculating an estimate of NERL's beta. We do not believe that including them as a lower bound adds meaningfully to the accuracy of our analysis. In coming to this decision, we note that:

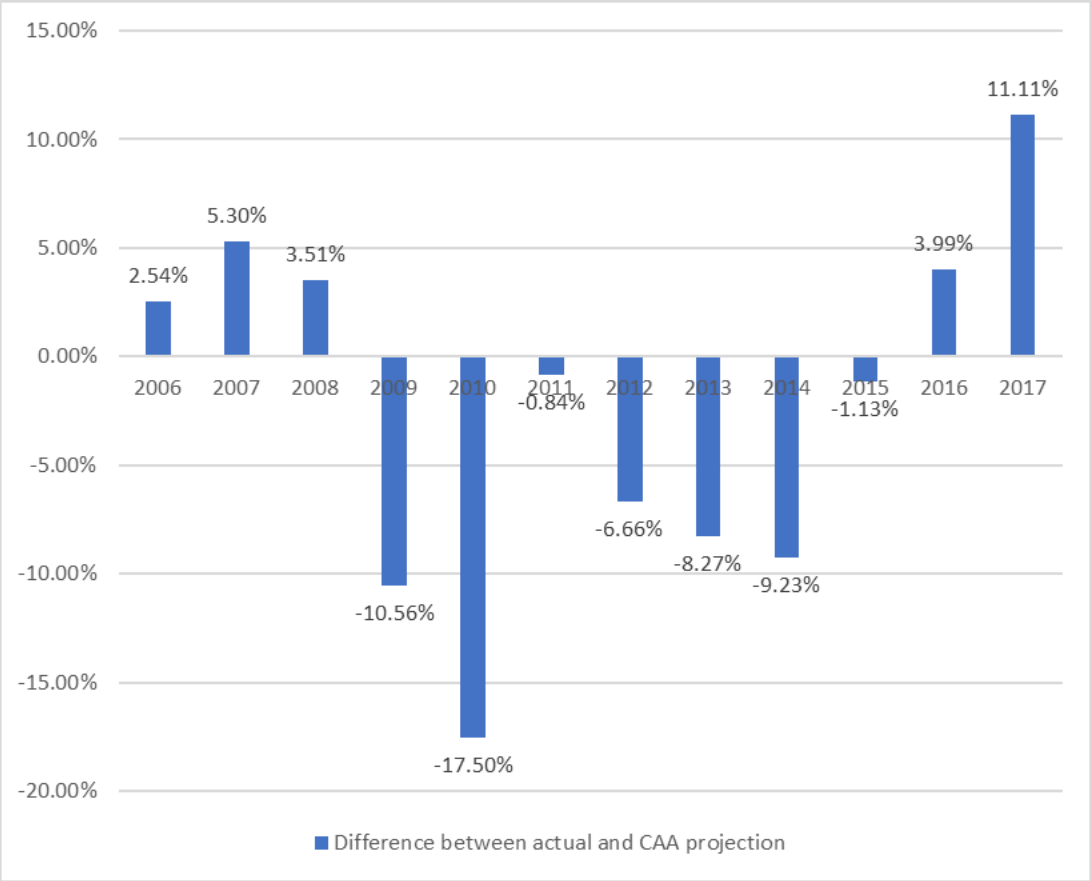
(a) volumes at NERL are likely to be significantly more variable than at water or energy utilities. NERL is exposed to volume risk related to air travel demand which is more susceptible to systematic risks such as economic downturns than essential services such as water or electricity;

(b) NERL's operating profit margins and equity capital are small relative to both opex and capex levels, leaving shareholders in particular vulnerable to relatively small changes in the macroeconomic environment.

12.47 As illustrated by Figure 12-2, this is not a theoretical risk. In the last 15 years, volumes have been highly variable. NERL is exposed to a 4.4% upside and

downside exposure on revenues[421], where volumes are more than 10% different to the CAA's projections. Volumes were near or more than 10% lower than the price control forecast following the economic downturn in 2009 and 2010, again in 2014, and over 10% higher in 2017. Given that NERL's projected margins are around 5% in the next period[422], this reflects a material risk for NERL's investors, which should be given weight in the assessment of beta.

Figure 12-2: Traffic deviation from 2006 to 2017 between NERL's volumes and the price control forecast



Source: Europe Economics (December 2019), Components of the Cost of Capital for NERL, page 10, Table 3.1: Revenue loss under the current and proposed traffic sharing mechanism (2% deadband scenario).

12.48 We therefore consider that, whilst in principle we accept the CAA's position that regulated companies are likely to be a lower bound for NERL's beta, the level of that lower bound is not particularly informative in explaining NERL's beta. In our view, NERL is exposed to additional risks that are likely to imply a materially higher beta than those comparators.

[421] The RP2 mechanism had a maximum of 4.4 per cent of applicable revenue at risk: = (100% sharing * 2% deadband) + (30% sharing * (10% cap – 2% deadband)). See appendix B.
[422] CAA Decision, Table 5.7.

Assessment of comparators - ENAV

12.49 ENAV has been publicly traded since 2016,[423] following privatisation of 42.5% of its share capital.[424] ENAV therefore is a useful comparator for NERL. Both Parties accepted that ENAV was a relevant comparator to NERL. Both Parties also assumed that ENAV would have a lower beta than NERL.[425] We therefore focused our analysis on the assessment of relative risks, and therefore the implications for the beta of NERL.

12.50 The Parties raised three differences between ENAV and NERL. These were (i) operating leverage, (ii) traffic exposure and (iii) the effect of ENAV taking terminal services risk, whereas we are identifying a beta specific to NERL's en-route business.

12.51 Operating leverage is a measure of the relative exposure of profits to changes in cost. Europe Economics described operating leverage as 'the level of its fixed costs relative to variable costs.'[426] Both Parties said that NERL had slightly higher operating leverage compared to ENAV.[427] Table 12-2 presents Europe Economics analysis for the CAA of the differences in operating leverage. Based on this analysis, Europe Economics included in its estimate of the NERL beta a 9% uplift adjustment to ENAV's beta to reflect NERL's higher operational gearing.

Table 12-2: Impacts of operating leverage differences upon asset beta

	ENAV	NERL	Ratio of NERL asset beta to ENAV asset beta
CAPEX/OPEX	16%	40%	1.21
CAPEX/Total Assets	5.5%	12.5%	1.07
OPEX/Total Assets	32.5%	32.5%	1.00
Average			**1.09**

Source: Europe Economics (December 2018), Components of the Cost of Capital for NERL, page 22, Table 4.2.

12.52 NERA also argued that NERL was different from ENAV due to its exposure to greater traffic risk[428]. Based this analysis, and a comparison of actual volume

[423] ENAV Articles of Association
[424] MEF (Government of Italy) (2016), *Privatization of ENAV SpA*
[425] For example, NERL SoC, paragraph 569; CAA Response, paragraph 9.21
[426] Europe Economics, Components of the Cost of Capital for NERL, December 2018, p12
[427] Europe Economics, Components of the Cost of Capital for NERL, December 2018, page 22, and NERA, Cost of Equity for RP3, April 2018, page 23
[428] NERA, Cost of Equity for RP3, pages 22-23

deviation between ENAV and NERL, NERA concluded that NERL was exposed to greater traffic risk compared to ENAV, supporting a higher asset beta for NERL and also stated that that the 9% uplift of EE's operating leverage adjustment was at the low end of potential adjustments.[429]

12.53 Finally, both Parties considered the effect of ENAV's exposure to terminal services. Europe Economics calculated NERL's beta from ENAV's beta adjusting for the effect that only 80% of ENAV's revenues were attributable to en route traffic (NERL revenues by definition were 100% en route). The remaining revenue came mainly from Italian terminal services and therefore, in Europe Economics' view, implied a downward adjustment as a consequence of the approach.[430]

12.54 NERA considered that Europe Economics provided no analysis or evidence to support its assumption that ENAV's terminal services were higher risk (and significantly higher than the lower bound) compared to ENAV's en route services.[431]

12.55 NERA said that the regulatory regime for ENAV's terminal services implied it was exposed to lower risks than en route services, and that this was reflected in the allowed asset betas in RP2 for ENAV's individual services. As a result, it considered that ENAV's total beta should be adjusted upwards to proxy en route services, not downwards as argued by Europe Economics.[432]

12.56 Based on the analysis above, we agree with both CAA and NERL that ENAV represents a relevant comparator. Overall, both CAA and NERL also indicated that ENAV was likely to be lower risk than NERL. We agree that there was evidence that ENAV was less risky than NERL, although the scale of risk is hard to quantify in practice. Much of the evidence provided demonstrates only a limited indication of the scale of any difference in risk and illustrates that the evidence of relative risk is open to interpretation.

12.57 The difficulty of measuring betas, including the ranges of betas for even one stock, leads us to be cautious in trying to measure too narrowly the effect of such risk differentials on beta. Ultimately, the choice of beta for NERL is a matter of judgement, taking into account the data available to us. We decided to use ENAV data in coming to that judgement, on the assumption that NERL's asset beta was likely to be higher than ENAV's asset beta.

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[429] NERA, Cost of Equity for RP3, pages 22-23
[430] Europe Economics , Components of the Cost of Capital for NERL, December 2018 p22. Europe Economics used the following formula: $Beta_{NERL} = (Beta_{ENAV} – 0.2 \times Beta_{UK\_Airports}) / 0.8$
[431] NERA, Cost of Equity for RP3, page 20
[432] NERA, Cost of Equity for RP3, page 22

Assessment of comparators - airports

12.58 NERL and its advisers proposed a range and point estimate for betas which drew heavily on assessment of airports. NERL provided the following wide range of comparator airports and their betas (see Table 12-3).

Table 12-3: NERA updated estimates for international airports

	2Y asset beta	5Y asset beta
ADP (Paris)	0.58	0.53
Fraport (Frankfurt)	0.58	0.46
Zurich	0.89	0.57
Vienna	0.42	0.23
Copenhagen	0.19	0.29
Sydney	0.48	0.47
Auckland	0.87	0.94
AENA	0.61	-
Simple Average	**0.58**	**0.50**

Note: The asset beta for Fraport is calculated by de-levering their equity betas using its book gearing instead of the gearing published by Bloomberg. The gearing published by Bloomberg does not take account of all cash and cash-type instruments, which we understand makes a particularly significant difference for the beta estimates for Fraport. Therefore, we have used the net debt from the accounts to de-lever the equity betas.
Source: NERA analysis of Bloomberg data using 28 February 2019 cut-off date and debt beta of 0.05.

Source: NERA, Cost of Equity for RP3, page 32, Table 2.8.

12.59 CEPA, for IAG, also provided a range of estimates of the same set of airports' betas, alongside those of UK utilities. CEPA considered that a range 0.43-0.50 best reflected the evidence as a whole. The upper end of this range was broadly consistent with the assumption used in RP2. The lower end reflected their view that evidence for airports comparators in particular was lower that had been previously assessed, and also lower than estimated by NERA.[433] We note that CEPA's estimated betas for each of the airports were not exactly the same as NERA's, but were comparable in scale.

12.60 Table 12-4 provides a summary of information about the comparator airports, in terms of their size and the overall regulatory framework that they follow, by comparison to NERL.

Table 12-4: Airports overview

In £m		Most recent			2018		
Company	***Type of regulation***	***Market Cap***	***Revenues***	***Adj. EBITDA***	***Total Assets***	***Gearing***	***Employees***
ADP	Price cap	14,282	3,963	1,665	14,436	23%	22,366
AENA	Price cap	21,248	3,802	2,406	13,386	22%	7,605
Auckland	Price monitoring	5,250	362	268	4,206	16%	498
Copenhagen	Price monitoring	5,153	528	302	1,561	14%	2,632
Fraport	Price monitoring	5,303	3,078	1,049	10,287	39%	23,299

[433] CEPA report for IAG✂

Sydney	Price monitoring	9,831	888	718	7,213	35%	487
Vienna	Price cap	2,583	708	307	1,939	9%	4,555
Zurich	Price monitoring	4,104	884	439	3,485	10%	2,033
NERL	Price cap	N/A	745	293	1551	28%	3,237

Source: Bloomberg, Economic Insight, NERL 2018 Annual Accounts and CMA analysis
Note: Market cap as of 30/01/2020. Airports' gearing calculated as Net Debt/Enterprise Value. NERL's gearing calculated as Net Debt/RAB. All in millions except employees.

12.61 Economic Insight noted in its submission that regulation is a key driver of differences in risk between airports. They considered that an important distinction is between airports subject to price cap regulation and those with looser regulatory arrangements: (i) ADP, AENA and Vienna were subject to price cap regulation and (ii) Auckland, Copenhagen, Fraport, Sydney and Zurich were subject to price monitoring regimes, in which they proposed their own charges, which were subject to scrutiny and/or monitoring from a regulator and stakeholders.[434]

12.62 In respect of airports subject to a price cap, Economic Insight considered that ADP and AENA faced a similar level of price risk to NERL, as it had a similar form of price cap regulation. It considered that the level of Vienna's cap, on the other hand, varied with traffic growth and therefore it differed from NERL's price cap. Economic Insight considered even though Fraport's regime was not subject to a price cap, it required the airport to initiate tariff reviews, which implied a greater degree of price stability than for Sydney and Auckland, potentially to a level similar to NERL.[435]

12.63 We have considered all the evidence provided as to why the airports might be reliable comparators. We recognise that there are theoretical limitations to all of the airports above as comparators, not least that they all undertake activities which are largely unrelated to NERL's en route activities, such as commercial retail activities.

12.64 Our preference in estimating asset beta is to use a wider range of comparators, and then to use our judgement in interpreting the evidence of the asset betas measured for those comparators. We have therefore sought to use the airports as comparators where possible. We have considered two main factors when choosing to use particular comparators:

(a) **That the beta data is reliable:** we would be concerned where the measured beta appears to be an outlier and the data does not appear to be credible as an indicator for NERL's beta; and

[434] Economic Insight, Beta for RP3, page 26
[435] Economic Insight, Beta for RP3, page 27

(b) **That the beta data is mostly based on businesses and investors which are in sufficiently comparable sectors** – if the risks faced by investors are so different (as with UK utilities) that we consider it only provides very limited evidence for NERL's beta, then we would not use the betas in our assessment.

12.65 We expect that where comparators meet both these criteria, then the use of betas from those comparators will be consistent with the broader regulatory principles that we apply in estimating the cost of capital for NERL. For example, the criteria should ensure we are taking account of accuracy, consistency, and managing the risk of regulatory error.

12.66 We had greater confidence that the larger airports (AENA, Fraport, ADP) met these criteria. The reasons why we chose to use these comparators were:

(a) They are large airport groups and we expect that investors in those groups would be guided by expectations around longer-term trends in the air sector. In our view this makes the risks faced by investors sufficiently comparable to NERL to be a reliable comparator;

(b) They are large companies with significant equity free floats and therefore significant liquidity, resulting in the most reliable beta estimates;

(c) Whilst they have different regulatory regimes, they are not in our view so different as to make them insulated from the sector-specific risks faced by NERL;

(d) Whilst the traded entities owned some businesses which faced risks that have limited relevance to NERL's risks, these businesses represented a minority of their activities, and we did not expect that these would make the betas unreliable in practice.

12.67 We decided not to use the smaller European airports, because their smaller size made us more concerned that company-specific issues or a lack of liquidity would distort the betas. There seems to be some evidence of this: Table 12-3 Table 12-3 illustrates that both Vienna and Zurich's betas included an outlier either based on 2-year or 5-year data.

12.68 We decided not to use Sydney and Auckland, on the basis that we did not feel confident that the investors in these very geographically distinct markets could be assumed to be comparable investors with a comparable view on systematic risk. We note that using Sydney would have been unlikely to change our view on the range for the beta, and Auckland is in any case an outlier in the data which would be rejected on that basis.

12.69 Having decided to use the large European airports as comparators, we then considered the relative risk of NERL by comparison to those European airports. CAA assumed that NERL was lower risk than airports, as it had additional regulatory protections, such as the pensions pass-through and the volume risk-sharing mechanism. Both NERA and Economic Insight provided lengthy analysis of the relative risks of NERL by comparison to those airports, with the objective of demonstrating that NERL was either comparable risk or higher risk than the airport comparators. We have summarised this analysis below, in respect of:

(a) Volume risk and capacity constraints; and

(b) Size of margins and implied exposure of investors to operational risk

12.70 Economic Insight stated that the variety of ways in which the airports were regulated varied the extent of exposure to volume risk:[436]

a) It noted that ADP was, like NERL, exposed to volume risk within a deadband, around a central volume projection, with risk sharing outside this range. In ADP's case, outside the deadband risk was shared 50% on the upside and 20% on the downside. Specifically, 50% of the income surplus that resulted from the increase of passenger numbers above the upper band boundary, and 20% of the income loss that resulted from the decrease of passenger numbers below the lower band boundary, were offset by the price adjustments.

b) It expected that the structure of Fraport's regulation provided a material degree of insulation from volume risk since Fraport did not have a defined regulatory period and could call for tariff reviews in the event that traffic forecasts deviated from projections.

c) It concluded AENA was fully exposed to demand risk.

12.71 On capacity constraints, Economic Insight considered that:[437]

a) ADP appeared to face some capacity constraints as its 2018 annual report noted that wide-body capacity was 'currently saturated' and showed an investment plan to meet international traffic capacity demands.

b) Frankfurt Airport appeared to be operating at capacity since traffic figures in 2018 reached 69.5 million, at the level of stated capacity.

[436] Economic Insight, Beta for RP3, page 27
[437] Economic Insight, Beta for RP3, page 28

c) AENA's airports were varied in terms of capacity saturation: (i) Madrid Barajas International Airport appeared to have spare capacity, with 2018's 57.9 million passengers being below its stated capacity of 70 million; (ii) Barcelona Airport and Palma de Mallorca Airport appeared to be closer to full capacity, but both were yet to be saturated.

12.72 Based on the analysis above, Economic Insight considered ADP appeared to be most similar to NERL, although its capacity constraints potentially implied a lower level of risk.[438]

12.73 NERA for NERL provided evidence of a like-for-like comparison between NERL and UK airports, which it said demonstrated that NERL faced higher risk than UK airports.[439] NERA also considered that NERL was exposed to substantially greater cash-flow/return volatility compared to UK airports for a given change in volumes, due to its lower operating margins.[440]

12.74 We agree with NERA that low operating margins are relevant to the exposure of NERL to systematic risk relative to airports.[441] We performed our own cross-check on the operating margins of NERL by comparison to the European comparator airports, and ENAV. Table 12-5 sets out EBITDA and EBIT margin comparison across comparators and NERL. The analysis shows that NERL and ENAV seem to have the lowest operating (EBIT) margins. NERL's margins are projected to be even lower in RP3 (around 5%) as a result of the lower cost of capital in the CAA Decision. This comparison illustrates that the wider set of comparator airports has consistently higher operating (EBIT) margins than NERL, and in most cases also materially higher than ENAV.

Table 12-5: EBITDA margin comparison across airports for 2018

	EBITDA margin	*EBIT margin*
Copenhagen	57%	36%
ADP	42%	26%
Fraport	32%	21%
Zurich	50%	28%
Vienna	43%	27%
Sydney	81%	55%
AENA	62%	43%
ENAV	36%	19%
NERL	33%	8%

Source: Bloomberg, CAA Decision Document and CMA analysis.

[438] Economic Insight, Beta for RP3, page31, Table 13.
[439] NERA, Cost of Equity for RP3, page 28
[440] NERA, Cost of Equity for RP3, page 30, Table 2.7.
[441] CAA Decision Appendices, Appendix E

12.75 Based on this evidence, we have concluded that airports are a relevant comparator for NERL, and that while they face different risks to NERL, there is no consistent evidence that these risks are greater or smaller:

(a) Airports have a different regulatory regime, which in some cases means that they face higher risk, such as the pension protection identified by the CAA, but in other cases results in lower risk;

(b) Airports face different volume risk: they are more exposed than NERL to switching between airports, but the large airports may be protected by capacity constraints.

(c) The large airports all have large asset bases and therefore a much higher operating margin than NATS, which reduces the exposure of investors to systematic risks such as volume risk;

(d) Airports are more exposed than NERL to commercial risks, including their exposure in their retail operations to consumer demand.

12.76 We have concluded that there is inconclusive evidence that airports are either more or less risky than NERL, and therefore we have used the value of the betas of the airport comparators as a direct comparator for NERL's beta.

Approach to beta calculation

12.77 We considered four questions in respect of how to calculate betas:

(a) First, the length of period over which to calculate beta;

(b) Second, whether to use daily or weekly data;

(c) Third, the choice of comparator index; and

(d) Fourth, the approach to treatment of tax in calculating the asset beta.

12.78 In respect of the length of period over which to calculate beta, the Parties provided us with 2-year and 5-year betas, ie betas calculated based on share prices over a 2-year period or a 5-year period. The use of 2-year and 5-year periods for beta measurement is consistent with normal practice. We therefore took the same approach as the Parties, and also used both 2-year and 5-year betas, where data on both was available, or 2-year betas only, where longer-term data was not available.

12.79 The UKRN report[442] also explained the argument for using longer-term betas. The authors, and in particular Wright, Mason, and Pickford, argued that the maturity of betas should, where possible, be consistent with the maturity chosen when selecting other parameters in the price control.[443] We recognise that this may be of merit as a matter of principle, but in this case we have concerns that the betas may not be stable, given the changes in sector conditions over the last ten years. In any case, two of our preferred comparators have more limited data available. We have concluded that betas over a period up to 5 years are likely to be more reliable when estimating the beta for NERL for RP3.

12.80 In respect of the choice between daily and weekly data, the Parties largely provided data based on daily betas. Daily data is often used because it has the lowest standard error. However, there is also a body of evidence that daily data may understate betas. The UKRN report recommended considering long-term betas using monthly data.[444] A recent study by Exeter University sought to establish a theoretical basis for longer period data.[445]

12.81 This is not an area where there is a single view. A study by Donald Robertson for Ofgem did not identify any general concerns with daily data.[446] In this case, we reviewed the daily data for evidence of autocorrelation and for lack of liquidity, both potential sources of error. We found that there was sufficient liquidity for daily betas to be accurate, and we found no evidence of autocorrelation in the daily prices.

12.82 However, the daily data did in some examples result in a significantly lower beta, which might be expected if the hypothesis in the Exeter University paper that there may be a gap before information enters stock prices were to be correct. Given that the choice of beta is ultimately a matter of judgement, we have included both two-year and five-year weekly betas in the analysis below. When using weekly data we gave greatest weight to the five-year weekly betas, because the standard error around two-year weekly betas was high, and also because in practice some of the these two weekly betas appeared to be outliers.[447]

12.83 Third, we considered the use of domestic and wider indices. Most of the beta estimates provided to us were by reference to the Eurostoxx 600 index.

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[442] Wright, Burns, Mason, Pickford,(2018) *Estimating the cost of capital for implementation of price controls by UK Regulators* (UKRN Report). Commissioned by the the CAA, Ofcom, Ofgem and the Utility Regulator
[443] UKRN Report, eg Recommendation 2
[444] UKRN Report, page 6,
[445] Alan Gregory, Rajesh Tharyan and Shan Hua (2018), *In Search of Beta*.
[446] Donald Robertson (2018), *Estimating beta*
[447] Based on CMA analysis conducted on betas with different frequency.

However, in some cases these were compared against betas calculated by reference to domestic indices.

12.84 NERA in its report[448] stated that

> As established in finance literature, the asset beta should be calculated using the investment universe of the marginal investor in the company. The marginal investor was defined as an investor whose behaviour is more likely to affect the share price (and, as a result, the beta of the asset). Once the marginal investor in the company was identified, the stock market index should represent the investment universe available to the marginal investor to diversify its portfolio of assets.

12.85 NERA provided evidence of the shareholder base for ENAV, ADP and Fraport. They considered that whilst the state was the major shareholder for these companies, the remaining investor breakdown suggested that the marginal investor in the three companies was likely to be a large international investment fund holding a geographically diversified portfolio of assets, and therefore the appropriate investment universe for this type of investor was wider than just the country in which this specific asset was located. [449]

12.86 The theoretical benefits of using an international index need to be balanced in practice against a number of challenges in defining a suitable international index, in particular taking into account the effect of currency risks. This will often mean that betas measured by reference to international indices will appear low, as underlying systematic risk is drowned out by 'noise' in the data.

12.87 In the case of the four firms in our sample, we found a consistent pattern that international betas relative to the Eurostoxx 600 index were higher than domestic betas. This suggested that the effect of systematic risk on 'shocks' to the share prices were more highly correlated to the European indices than to the domestic indices, and this in turn indicates that these are likely to be more relevant indices. The use of a European index for stocks based in eurozone countries means that currency risk is not a significant concern. On this basis we concluded that the international betas were likely to be more reliable as a measure of beta for the relevant firms.

12.88 Finally, we considered the approach to adjusting for tax when calculating asset betas. There are two approaches, either to assume that tax is reflected

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[448] NERA, Cost of Equity for RP3, page 15
[449] NERA, Cost of Equity for RP3, page 16, Figure 2.4

in investors' expectations around returns, or to assume that betas are linked to underlying risk and there is no tax adjustment. All the parties to this case used a formula consistent with 12.14 above that does not have regard to tax,[450] although we noted one comparator report for Dublin Airport that had used the alternative formula.[451] Given our approach to gearing (below), and NERL's low implied tax rate, we decided to follow the parties' approach.

Our assessment

12.89 Based on the evidence above, we have taken the following approach to determining an assumption for asset beta for NERL.

a) We have taken into account betas of the large European airports, ADP, Fraport and AENA;

b) We have given weight to ENAV's beta, but we recognise that there are reasons why ENAV is likely to be lower risk than NERL;

c) Although they may be a lower bound, in estimating the value of asset beta we have not given any weight to the betas of domestic (UK) utilities in other sectors;

d) We have not given any weight to the smaller airports or more geographically distinct airports (Sydney, Auckland);

e) In measuring betas, we have not given any weight to betas measured with reference to domestic indices. We have used the Eurostoxx 600 index as the best available market benchmark, which was also the index used by the parties when calculating betas by reference to the European index.

f) We have used betas based on both 2-year data and 5-year data, where available, using daily and weekly data, although in practice we have given least weight to the 2-year weekly betas.

g) Where data is available, we have also considered both current betas and 'rolling betas' over a 1-year, 2-year and 5-year period. Given the uncertainty over measuring beta, this reduces in our view the risk of error,

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[450] The Harris-Pringle formula. See Robert S. Harris and John J. Pringle (1985), *Risk·Adjusted Discount Rates-Extensions from the Average Risk Case*.
[451] Swiss Economics, Dublin Airport cost of Capital for 2019 Determination. Equation used:

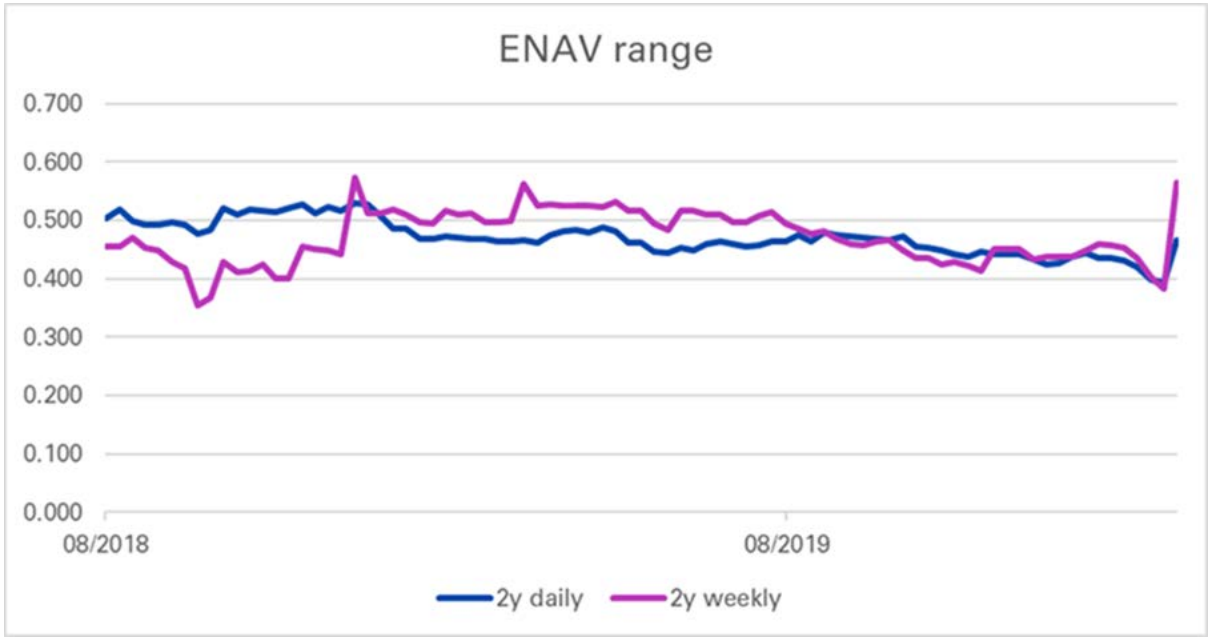
$$\beta_A = \frac{\beta_E}{[1 + (1 - t) \times \frac{D}{E}]}$$

and allows us to take into account whether betas have been stable when interpreting the current beta estimates.

Our analysis of betas

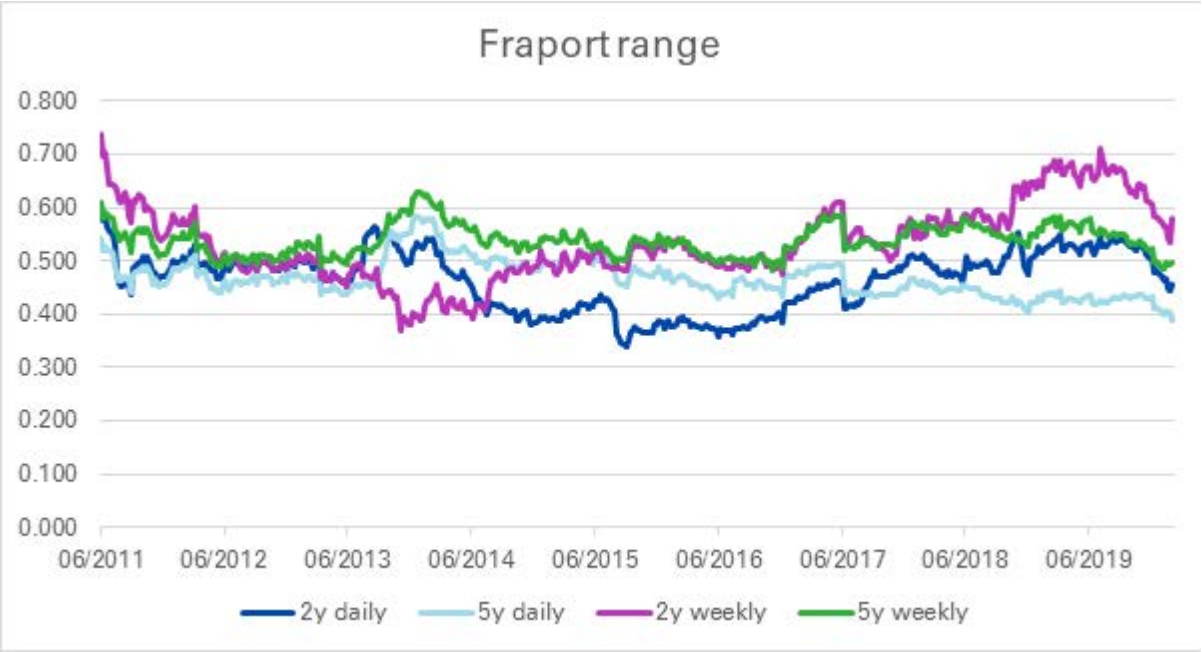
12.90 Figure 12-3 to Figure 12-6 illustrate the betas that we have calculated for the comparator firms. They illustrate the range of potential measures, which we have taken into consideration prior to using our judgement in coming to a range for NERL. Overall, they indicate that whilst all the betas of the firms have been subject to some volatility over time, the overall scale of the betas has been broadly consistent, with least stability in the two-year weekly betas.

Figure 12-3: ENAV range of asset betas



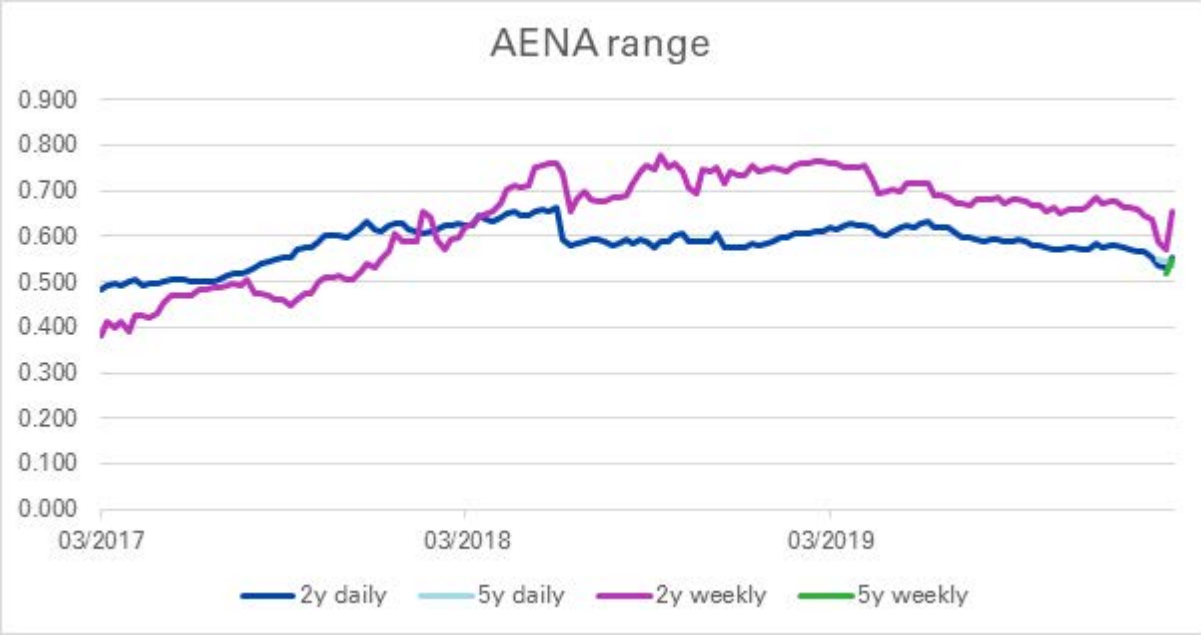
Source: Bloomberg and CMA analysis.

Figure 12-4: Fraport range of asset betas



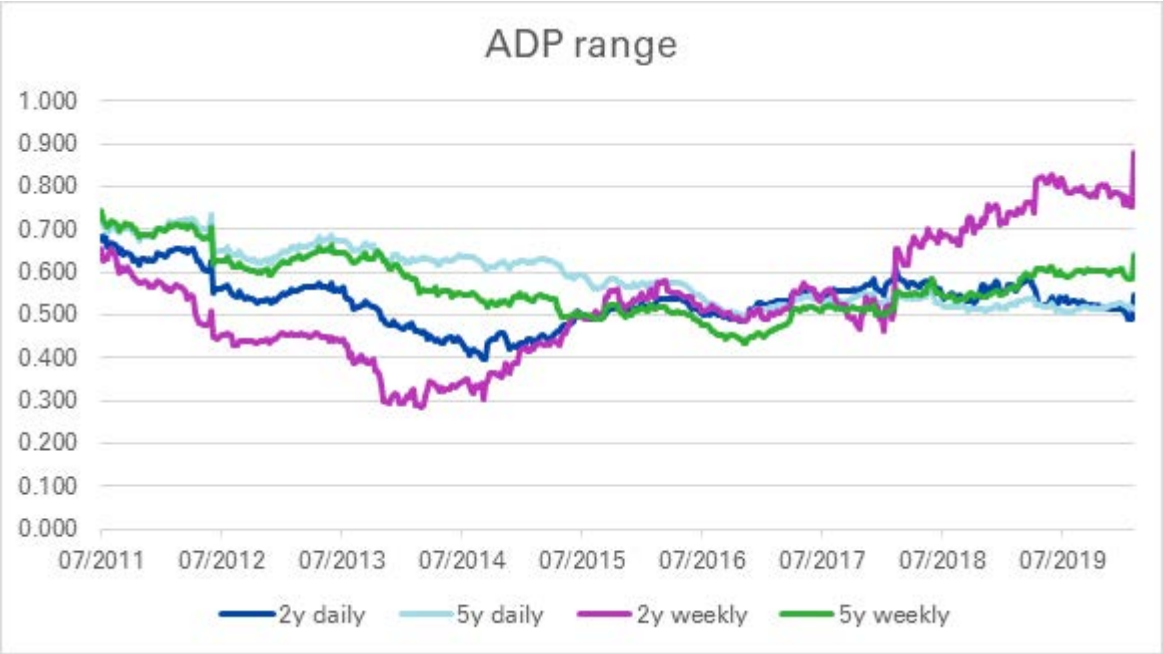
Source: Bloomberg and CMA analysis.

Figure 12-5: AENA range of asset betas



Source: Bloomberg and CMA analysis.

Figure 12-6: ADP range of asset betas



Source: Bloomberg and CMA analysis.

12.91 We summarise in the following tables the asset betas which we considered in our assessment, and which are also presented in the graphs above. We have presented:

(a) Betas based on two-year and five-year measurement periods;

(b) Betas based on daily and weekly data;

(c) Current betas, and averages of betas over a 1-year, 2-year and 5-year period.[452]

Table 12-6: Mean average asset beta of ADP, to end February 2020

Beta measurement period	*Spot (28/2/2020)*	*1-year average*	*2-year average*	*5-year average*
2-year daily	0.55	0.53	0.55	0.53
2-year weekly	0.88	0.79	0.74	0.60
5-year daily	0.51	0.52	0.52	0.54
5-year weekly	0.64	0.60	0.57	0.53

Source: Bloomberg and CMA analysis.
Note: 1-year average is average of betas measured on 28/02/2019 to 28/02/2020, etc. All numbers would be around 0.01-0.02 higher with 0.05 debt beta.

[452] For example, a 1-year average is average of betas measured on 28/02/2019 to 28/02/2020, etc. All numbers except ENAV would be around 0.01-0.02 higher with 0.05 debt beta, and also up to 0.03 higher if tax adjustment made in de-gearing/re-gearing

Table 12-7: Mean average beta of Fraport, to end February 2020

	Spot (28/2/2020)	*1-year average*	*2-year average*	*5-year average*
2-year daily	0.45	0.52	0.51	0.45
2-year weekly	0.58	0.64	0.62	0.56
5-year daily	0.39	0.43	0.43	0.45
5-year weekly	0.50	0.54	0.55	0.54

Source: Bloomberg and CMA analysis.

Table 12-8: Mean average asset beta of AENA, to end February 2020

	Spot (28/2/2020)	*1-year average*	*2-year average*	*5-year average*
2-year daily	0.55	0.59	0.60	N/A
2-year weekly	0.66	0.69	0.70	N/A
5-year daily	0.54	N/A	N/A	N/A
5-year weekly	0.55	N/A	N/A	N/A

Source: Bloomberg and CMA analysis.
Note: 1-year average is average of betas measured on 28/02/2019 to 28/02/2020, etc. All numbers would be around 0.01 higher with 0.05 debt beta.

Table 12-9: Mean average asset beta of ENAV, to end February 2020

	Spot (28/2/2020)	*1-year average*	*2-year average*	*5-year average*
2-year daily	0.47	0.45	N/A	N/A
2-year weekly	0.56	0.48	N/A	N/A
5-year daily	N/A	N/A	N/A	N/A
5-year weekly	N/A	N/A	N/A	N/A

Source: Bloomberg and CMA analysis.
Note: 1-year average is average of betas measured on 28/02/2019 to 28/02/2020, etc.

12.92 In our view, these are all informative comparators in projecting the betas for RP3 for NERL, and therefore we have chosen a range based on interpreting this data in the round. This is consistent with previous CMA reviews of beta. In summarising different approaches to measuring betas, Appendix F of the UKRN report states:[453]

> Therefore, there is no single right answer for the value of the Beta that is estimated. Regulators have exercised their judgement in weighing up the evidence before them before determining the Beta that enters into the allowed cost of equity.

12.93 We agree with this approach. We have not given weight to evidence which we consider is demonstrably less accurate, such as equity betas measured by reference to a domestic share price index, rather than the comparable European index. In interpreting the rest of the measured betas, we prefer to

[453] UKRN report, page F-138

consider a range of evidence and use our judgement in determining an estimate for NERL's beta based on that evidence.

12.94 We consider that the data above indicates the ranges shown in the table below for the comparators in coming to our estimate of the asset beta for NERL (based on zero debt beta). As described above, we have given less weight to the two-year weekly betas, which indicate higher equity betas in recent years, both because they have a higher standard error, and because we decided it was more reliable to choose an estimate of beta consistent with the widest a range of options for measuring beta. On balance, we concluded that this approach would have a lower risk of error, than an alternative, such as using an average of the different betas that we measured.

Table 12-10: Comparators' ranges

	Low estimate	*High estimate*	*Relative risk*
ADP	0.5	0.6	Comparable
Fraport	0.45	0.55	Comparable / marginally lower
AENA	0.55	0.65	Comparable / marginally higher
ENAV	0.45	0.55	Lower

Source: Bloomberg and CMA analysis
Note: In each case we have used a range of 0.1. reflecting the degree of uncertainty and judgement required

12.95 On the basis of this comparator data, we have used a range of 0.5-0.6 for the beta for NERL (assuming zero debt beta).

The CAA's reasoning that equity betas should not be higher than one

12.96 The CAA used an asset beta of 0.46, which it 're-geared' to a beta of one at 60% gearing. As a sense check, the CAA told us that it considered that the equity beta for a regulated business such as NERL should not be higher than one, as it did not accept that NERL, with the protection of regulation and as a monopoly,[454] should be more risky than the overall market.[455]

12.97 Given our proposal, as explained in the next section, to use a lower gearing when calculating the cost of capital, we do not find that NERL's equity beta would be higher than one. We note however that if NERL were to gear up to 60% its shareholders would have relatively high volatility of returns, given its low operational margins. Based on reports from the rating agencies,[456] NATS' ability to raise finance at up to 60% gearing while retaining a strong investment grade rating may be linked to its Government ownership and its strategic importance. Taking this evidence together, it does not seem to us to

[454] CAA RP3 Decision Appendices, Appendix E paragraph E141
[455] CAA ✂
[456] S&P Outlook, 30 September 2019 and Moody's Credit Opinion, 15 November 19

be implausible that NERL could have a cost of equity at 60% gearing consistent with a beta of one or higher.

Choice of gearing ratio

12.98 The choice of the weighted average cost of capital (WACC) also requires the choice of a gearing level. Under the approach used by the CAA, which is consistent with regulatory precedent, gearing affects the choice of the WACC as follows:

(a) The gearing directly affects the weighting of debt and equity;

(b) The gearing directly affects the cost of equity, as the equity beta is calculated as a function of the asset beta, as calculated above, and the level of gearing;

(c) The gearing in principle would be likely to also affect the cost of debt and debt beta. In practice, given that NERL's debt is strong investment-grade, and the level of gearing does not significantly raise the likelihood of default on that debt, the cost of debt may not change significantly.

CAA Decision for RP3

12.99 The CAA used 60%, which is in line with the rate set in RP2 and NERL's projected gearing at the end of the period.[457] The CAA also noted that its decision was purely for a notional gearing, and actual gearing was a matter for NERL.

NERL's view

12.100 NERL also used 60%, for similar reasons to the CAA. NERL indicated that it considered its current gearing to be low and that it expected to increase towards 60% during RP3.[458]

> Over the longer term we are sitting nearer to the 60 per cent, but certainly over the short term it has been a lot lower. We would expect there to be some reversal over RP3 naturally, as we give back the cash in relation to the traffic and Capex starts to exceed regulatory depreciation in the first few years of RP3, so you

[457] CAA Decision Appendices, Appendix E paragraph E103.
[458] NATS ✂

expect gearing to start to come back from its fairly temporary and rather unusual, frankly, low gearing for a business like this.

12.101 NERL also agreed with the CAA that the gearing should be set on a notional basis. NERL's advisers, NERA, summarised the reasons in their report as

> In principle, the regulated company is best placed to assume the responsibility and bear the risks of the financing structure. Under the notional gearing approach, the regulated companies and their shareholders bear the risk of financing structure and are incentivised to outperform, while the customers face the efficient cost of debt for a notionally structured company.[459]

Our analysis

12.102 Both the CAA and NERL used a notional cost of capital when calculating the WACC for the price control. Both the CAA and NERL chose 60% as the level of the notional cost of capital.

12.103 Although both the use of a notional gearing and the level of that notional gearing were not a matter of dispute, we have considered the effect of the choice of gearing on the overall level of the cost of capital. We have not changed the approach of using a notional cost of capital, which is a common approach applied in all UK price controls.

12.104 The choice of gearing affects the WACC, because the cost of equity changes with gearing. The cost of equity is calculated by the CAA from the asset beta and gearing using the standard 're-gearing' formula:[460]

(a) $\beta_E = \frac{\beta_A - \beta_D \times g}{(1-g)}$

12.105 The approach of calculating an asset beta, and then calculating an equity beta using the formula above, or a similar formula, is the standard approach used by UK regulators. However, given the parameters that we have estimated for the cost of capital, this approach has the unexpected effect of resulting in the WACC strictly increasing with gearing. We describe the reasons for this result in Appendix D. This effect of the WACC strictly increasing with gearing is unexpected, since the approach followed in this formula is ultimately derived from the Modigliani-Miller theorems, which

[459] NERA, Updated Weighted Average Cost of Capital for NATS (En-Route) plc at RP3, A Report for NERL, September 2018, page 34
[460] The 'Harris-Pringle' formula.

describe a scenario under which the cost of capital is independent of (and therefore broadly constant with) gearing.

12.106 In 2007, the Competition Commission (CC) highlighted a similar concern, that WACC increased with gearing, in its review of Heathrow Airport.[461] At that time, this surprising result was addressed through the introduction of a debt beta into the WACC calculation. For the reasons identified in Appendix D, this is not sufficient in this case without using a debt beta which is implausibly high.

12.107 The UKRN report also identified potential concerns with 'de-gearing' and 're-gearing' from equity betas with one level of gearing to an equity beta for a different level of gearing, which is the approach followed by the CAA and NERL. Three authors (Wright, Mason and Pickford) raised concerns with this concern, preferring the use of equity betas. Burns disagreed with some of the conclusions of the other authors, but did agree that 'In particular, in situations where there is a material difference between actual and notional gearing, regulators should carefully consider the specific method for re-levering.'[462]

12.108 In this case, we have concluded that it is more appropriate to use a lower notional gearing when calculating the WACC. This is because:

(a) The comparators all have lower gearing than 60%. The three airports all have gearing averaging 30%, and ENAV's gearing is zero. The airport comparators can therefore be reliably used to estimate NERL's equity beta, on the assumption that NERL has gearing of around 30%;

(b) It is accepted by the CAA and NERL that the actual choice of gearing is for NERL. At present NERL has gearing of below 30%. However, if NERL were to choose to increase gearing, it could do so whether the notional gearing in the cost of capital were set at 30% or 60%;

(c) The CAA's rationale, and NERA's language in advising NERL, indicates that the preference for higher gearing of around 60% reflects that this higher gearing is assumed to be closer to the forecast of actual gearing in RP3 and appears reasonable taking into account evidence on financeability. An assumption of a materially higher notional gearing implies that NERL and its customers should benefit by increasing gearing from current levels towards 60%, or in other words that 60% more closely reflect the optimal gearing for NERL. The optimal gearing is assumed to be the level of gearing which minimises the cost of capital for the firm, and

[461] CC Heathrow Airport Ltd and Gatwick Airport Ltd price control review, paragraphs 83 to 90
[462] UKRN report, page 10

therefore should in principle result in the lowest cost of capital to be paid by the customers of the regulated firm.

12.109 Given (c) above, it would be illogical and contrary to the interests of NERL's customers to assume a higher gearing if it were to result in a higher cost of capital. If the cost of capital really were higher at 60% than the comparators' gearing of 30%, then NERL would be better to keep gearing at 30%.

12.110 As a result, we have decided to set the cost of capital based on a gearing of 30%. This allows us to use the comparator airports to estimate the equity beta without needing to materially adjust their gearing, since they have similar gearing to that of NERL. We would then assume that it is for NERL to decide whether or not to actually increase gearing to 60%, but we would assume it will only do so if it results in a lower cost of capital.

12.111 We therefore have concluded that this approach does not risk us underestimating NERL's cost of capital at its optimal gearing level, whatever NERL ultimately decides is the most efficient financing structure. In practice, we expect it is likely, for the reasons stated in Appendix D, that the cost of equity does not increase at the rate implied by the CAA and NERL's 're-gearing' calculation.

Choice of debt beta

CAA Decision for RP3

12.112 The CAA formed a view that a debt beta of 0.1 was appropriate. This was based on considering both direct (or econometric) evidence submitted by NERL and indirect (or decomposition) evidence conducted by Europe Economics. A debt beta of 0.1 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 a debt beta range of 0.10 to 0.15, with a point estimate of 0.125).[463]

NERL's view

12.113 NERL applied a debt beta of 0.05[464] primarily based on direct econometric based evidence developed by Professor Ania Zalewska from the University of Bath. Zalewska derived direct econometric estimates of NERL's

[463] CAA RP3 Decision Appendices, Appendix E, paragraph E138
[464] NERL SoC paragraph 589

debt beta, using both the NERL and Heathrow Airport bonds, as well as iBoxx indices. Zalewska concluded that there was evidence that the debt beta from the NERL bond was significantly smaller than 0.10 and not statistically different from zero. [465]

Our assessment

12.114 We considered that the evidence to support the debt beta was largely speculative. The CAA's analysis was based on regulatory precedent, and an attempt to deconstruct the debt premium. The reasons for current level of the debt premium, in particular why it is much higher than the premia implied by the debt beta and risk of default, are largely unexplained. NERL's evidence, in our view, illustrated that there was significant uncertainty over the ability to measure debt betas using the CAA's approach.

12.115 Whilst we would be cautious about the extent to which interpretation of the traded bond data is possible, on balance we agree with NERL that, consistent with the traded bond data, it is likely that the actual beta of NERL's debt would be lower than 0.1. We took account of the low risk of NERL's debt, and our decision to set a lower gearing ratio, and decided to use a lower debt beta of 0.05.

Our provisional conclusions on betas and gearing

12.116 We agree with the Parties that ENAV represents a relevant comparator, but recognise that ENAV is likely to be lower risk than NERL. As the only other listed air navigation service provider (ANSP), it is our judgement that ENAV's beta is worthy of consideration within our estimate of NERL's beta.

12.117 We consider ADP, Fraport and AENA, the largest European airports in terms of market capitalisation, revenues and total assets, to be the most relevant comparators for NERL. We have chosen not to include data from either smaller European airports or more geographically isolated airports, such as Sydney or Auckland, as their betas were less reliable, and we are unable to accurately ascertain if they face the same systematic risks as NERL.

12.118 We have measured comparator betas with reference to the Eurostoxx 600 index. We have purposely avoided measuring betas with reference to

[465] Professor Zalewska, Estimation of the Debt Beta of the Bond Issued by NATS (En-Route) plc, April 2019

purely domestic indices, as we believe that this domestic-centric would provide an unreliable estimate of NERL's exposure to systematic risks.

12.119 Although the level of gearing was not a matter of dispute between the Parties, with both assuming 60%,[466] we have considered the impact of gearing on our ability to accurately estimate NERL's beta, and as an input into the overall calculation of NERL's cost of capital.

12.120 We note that both the CAA and NERL used an approach of 're-gearing' the asset beta in their calculations. While this approach may have become the standard used by UK regulators, it has the unwelcome effect of resulting in WACCs that strictly increase with levels of gearing (contrary to both academic theory and corporate finance experience). We describe the reasons for this result in Appendix D.

12.121 We have therefore decided to use a gearing figure of 30% within our cost of capital calculations. In our judgement, removing the need to re-gear comparator data allows the most accurate assessment of NERL's beta.

12.122 As a result:

(a) We have used an asset beta of 0.5 to 0.6 (with zero debt beta);

(b) We have used a debt beta of 0.05;

(c) We have used a gearing ratio of 30%; and

(d) By calculation, using these assumptions, we have used an equity beta of range of 0.71-0.86.

[466] CAA Reference, page 28, Figure 7

Cost of debt

Introduction

12.123 In this section we set out our assessment of the evidence on NERL's cost of debt.

12.124 The cost of debt is the return required to compensate debt investors for lending to a business. The cost of debt used within the calculation of NERL's WACC in RP3 includes both the actual cost of embedded (existing) debt and an estimate of the cost of new debt that will need to be raised during the RP3 period.

12.125 As embedded debt is already in place, the amount of new debt that is required will be driven by the assumed level of gearing (total debt as a percent of total debt plus equity). Higher assumed levels of gearing will require more new debt.

12.126 The total cost of debt is calculated using the following formula:[467]

$$Rd = w_E \times R_E + w_N \times R_N$$

CAA Decision

12.127 The CAA calculated that NERL's allowed cost of debt in RP3 would be 0.86%.[468]

12.128 In calculating the costs of embedded and new debt, the CAA used the following assumptions and estimates:[469]

(a) the original yield to maturity on NATS' existing bond was 5.40% and this was used as the cost of embedded debt;

(b) the CAA estimated the cost of new debt using bottom-up (NERL-specific) and top-down (relative) methods. The CAA's bottom-up estimate was 2.68% and the top-down was 3.48%. The CAA equally-weighted these two figures to give an average cost of new debt of 3.08%.

(c) these figures were deflated by RPI in order to arrive at a real (inflation-adjusted) cost of debt. The CAA estimated an RPI figure of 3.00%, 1.00%

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[467] Where Rd is the total cost of debt, w_E is the weight to embedded debt, w_N is the weight to new debt, R_E is the cost of embedded debt and R_N is the cost of new debt.
[468] CAA Decision Appendices, Appendix E, Table E7
[469] CAA Decision Appendices, Appendix E, Tables E1, E5 and E7, and paragraph E149

above CPI, based on forecasts published by the International Monetary Fund (IMF), HM Treasury, Bank of England, Office for Budget Responsibility (OBR) and Oxford Economics;

(d) the CAA made an assumption that gearing would be 60%, of which embedded debt would account for 30% of total debt and new debt would account for 70% of total debt; and

(e) the CAA made an allowance totalling 0.10% for issuance costs, reflecting fees and other costs associated with taking on debt that are not captured by the bond coupon or interest rate, and liquidity costs, fees and charges associated with ensuring adequate short-term credit facilities to meet debt covenant requirements or internal liquidity risk management needs.

12.129 Table 12-111 sets out the CAA's calculation of NERL's allowed cost of debt for RP3 of 0.86%.[470]

Table 12-11: Cost of debt calculation in CAA Decision.

	Cost/Weight (%) - CAA RP3
Cost of embedded debt	5.40
RPI adjustment	3.00
Real embedded debt	2.30
Weight of embedded debt	30
Bottom-up cost of new debt	2.68
Top-down cost of new debt	3.48
Equally-weighted average	3.08
RPI adjustment	3.00
Final decision real cost of new debt	0.10
Weight of new debt	70
Real cost of debt (pre-tax)	0.76
Issuance and liquidity costs	0.10
Total cost of debt (pre-tax) in RP3	0.86

Source: CAA Decision : Appendices, Appendix E, Tables E5 and E7

NERL's view

12.130 NERL estimated the cost of debt based on an analysis by NERA published in September 2018. This suggested a real cost of embedded debt of 2.13% and a bottom-up estimate of the real cost of new debt of 0.40%. These figures were based on an RPI assumption of 3.20%, while the CAA Decision was based on an RPI deflator of 3.00%. NERA did not use a top-down method to calculate the cost of new debt. NERA also suggested issuance and liquidity costs of 0.15%, in line with the figure used in RP2.

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[470] CAA Decision Appendices, Appendix E, Table E.5

NERL, as a result of the work of NERA, estimated the real, pre-tax cost of debt at 1.08% in its Business Plan for RP3[471]. NERL adjusted this estimate down to 1.07% in its response to the CAA draft proposals, following a reduction to its estimate of the real cost of new debt to 0.40%.[472]

Short licence termination notice period

12.131 NERL was concerned that the CAA Decision had understated its future debt costs. NERL has a licence termination notice period that is shorter than the potential maturity of new debt to be issued, and it considered it essential to apply an adjustment to its allowed cost of debt to cover the extra premium bondholders would require as compensation for this risk. It understood that there were practical difficulties in quantifying the exact size of this adjustment but noted Europe Economics (consultants to the CAA) considered a 0.50% uplift as warranted.[473]

12.132 NERL commissioned an independent assurance review by Economic Insight to assess the approaches taken by NERL, the CAA and their respective advisors. It argued that this analysis found a clear 'in-principle' need for an adjustment to reflect a shorter licence termination notice period, and that the CMA should review this issue.[474]

12.133 NERL suggested that a large proportion of new debt would be issued at maturities greater than 10 years, and so would be expected to attract some short licence termination notice period premium.[475]

12.134 NERL submitted that the RP3 cost of debt should include an allowance for the licence termination notice period and suggested an upper bound to this figure of 0.50%.[476] In doing so, it highlighted the following issues as relevant to the CMA's redetermination:[477]

(a) intuition and anecdotal evidence suggest some premium is required for raising debt beyond the notice period for licence termination;

(b) NERL does not currently hold any debt that matures beyond 2031, and therefore it is not possible to directly estimate the premium by analysing NERL's debt portfolio;

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[471] NERL SoC, paragraph 595
[472] CAA Decision Appendices, Appendix E, Table E.5
[473] NERL SoC, paragraph 597
[474] Economic Insight, Review of the evidence on the WACC at RP3, November 2019, section 3.3.4.5
[475] NERL ✂
[476] NERL Reply, paragraph 371
[477] NERL Reply, paragraph 370

(c) empirical evidence from Europe Economics estimated a 'statistically significant and material' premium on bond yields when the bond maturity date falls outside the licence notice period. The CAA used the findings of this study in its response to the DfT's consultation on the duration of NERL's licence in 2016. Europe Economics included an allowance of 0.50% in all of its cost of debt estimates over the duration of the price review;

(d) regardless of whether 0.50% is the 'right' number, there are strong theoretical grounds for allowing a non-zero premium. The CAA's decision not to make any allowance may be seen as an example of the CAA taking the most aggressive stance open to it.

Issuance and liquidity costs

12.135 NERL also argued that in using Europe Economics' work on water companies, the CAA had understated NERL's issuance and liquidity costs. It claimed that this analysis was based on 'rules of thumb' for water companies that do not apply to NERL, and that there was evidence that smaller companies like NERL need to hold additional cash and at additional cost.

12.136 NERL questioned why the combined issuance and liquidity cost allowance should have fallen from the 0.15% level set in RP2. It also suggested that the CAA's reference to CMA precedent, such as the Bristol Water redetermination, may have focused only on issuance costs, rather than including the separate allowance made for cash holding costs.[478]

12.137 NERL gave further details of experienced issuance and liquidity costs, including[479]:

(a) that the issuance cost of its original 2003 bond issue, if amortised over the 15-year expected maturity for new debt, would have cost 0.11% per year;

(b) that the original fees for its £400m credit facility amounted to £1.9 million over five years, representing 0.10% per year, while the cost of extending these facilities (twice) had been 0.10% on each occasion;

(c) that its liquidity risk management requirements were generally funded by the availability of bank loans at a cost of approximately £375,000 per year. On a notional debt level of approximately £660 million, this would represent liquidity costs of 0.06% per year; and

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[478] NERL Reply, paragraphs 365-375
[479] NERL ✂

(d) that higher than expected cash reserves in RP2 (as a result of high traffic levels) meant that liquidity risk management needs had been funded through operating cash flows rather than the use of revolving credit facilities. This had resulted in charged commitment fees of £520,000 (0.13% on the £400 million facility), and so liquidity costs greater than the 0.06% referred to in the hearing or the 0.05% implied in its suggested overall allowance of 0.15% for issuance and liquidity costs.

12.138 Table 12.12 sets out NERL's calculation of their allowed cost of debt for RP3 of 1.07%, and compares this with the CAA's calculation of 0.86%.

Table 12-12: Cost of debt calculation in CAA Decision compared to NERL's Statement of Case

	Cost/Weight (%) - CAA RP3	*Cost/Weight (%) - NERL*
Cost of embedded debt	5.40	5.40
RPI adjustment	3.00	3.20
Real embedded debt	2.30	2.13
Weight of embedded debt	30	30
Bottom-up cost of new debt	2.68	3.64
Top-down cost of new debt	3.48	
Equally-weighted average	3.08	
RPI adjustment	3.00	3.20
Final decision real cost of new debt	0.10	0.40
Weight of new debt	70	70
Real cost of debt (pre-tax)	0.76	0.92
Issuance and liquidity costs	0.10	0.15
Total cost of debt (pre-tax) in RP3	0.86	1.07

Source: CAA Decision Appendices, Appendix E, Tables E5 and E7

CAA's view

12.139 The CAA argued that the strong regulatory protections in place meant that debt holders should not require a premium for raising new debt outside of the minimum termination notice period. It noted that NERL initially accepted this in response to the CAA's draft proposals.[480]

12.140 The CAA believed that it was within their duties as a regulator to provide a framework for managing financing risks, including those associated with raising debt, and the probability that NERL's licence would not be extended appeared low. Therefore, it did not believe it was necessary to incorporate an additional notice period premium in the cost of capital.[481] In its hearing, it stated that if there was to be a premium included in the cost of debt

[480] CAA Response, paragraphs 9.44-9.46
[481] CAA Response, paragraphs 9.44-9.46

calculation, it should be lower than the 0.50% suggested by Europe Economics.[482]

12.141 The CAA suggested that it did not consider licence termination to be a significant risk that needed to be priced into its cost of debt estimate. It argued that:[483]

(a) the evidence from Europe Economics relating to licence termination notice period premium was mixed and was not sufficient justification for a particular uplift. The CAA also noted that Europe Economics' original 2015 analysis[484] had identified that asset lives approximately six years in excess of the minimum termination notice period were enough to entirely eliminate the premium (although this was not referenced in Europe Economics' RP3 advice), and that NERL's average asset life of 15 years was five years longer than its minimum licence termination notice period.

(b) that the risk of NERL losing their licence was probably lower than the comparators used in the Europe Economics analysis;

(c) that the specialised nature of the assets and the strong UK RAB regime protections would mean debt holders would have access to assets if this situation ever arose. The CAA cited CEPA, working on behalf of IAG, who argued that in the event of licence termination the CAA would reasonably be expected to ensure that investors were appropriately compensated for their investment in the RAB;

(d) that CEPA's work also concluded that Europe Economics analysis may not have adequately controlled for rising yields as a function of bond maturity;

(e) that the Air Traffic Management and Unmanned Aircraft Bill 2019 currently before Parliament, if passed as currently set out, would give the Secretary of State the ability to amend the licence period for NERL. The CAA's understanding was that the intention of the government would be to increase the licence period to be in line with average asset lives.

[482] CAA✂
[483] CAA ✂
[484] Europe Economics, Implications for debt-raising and the cost of debt changing the minimum termination notice period for NERL's licence, September 2015, section 4.2.2

Our approach

12.142 In assessing an appropriate cost of debt for NERL, we considered the following issues:

(a) the suitability of the calculations and approaches used by the Parties;

(b) the date of reference for relevant market data;

(c) the potential need to include a premium, and the amount of that premium, for debt issued outside of the minimum termination notice period; and

(d) NERL's experience versus regulatory precedent when calculating issuance and liquidity costs.

12.143 In addition, for consistency we assume a 30% level of gearing (as discussed in paragraph 12.118), in line with other elements of the WACC calculation.

Our assessment

12.144 We reviewed the CAA's overall approach to estimating the cost of debt for NERL and consider that it is reasonable. We noted that NERL did not raise any concerns in its submissions to us about the CAA's overall methodology. However, we take the view that the CAA's market data, based on the June 2019 work of Europe Economics, and inflation estimates, are now less relevant. Where more up-to-date market data is available, we have included this in our calculations. This will be further updated prior to our final determination.

12.145 We noted that NERL's principal areas of disagreement were the inclusion of a minimum licence termination notice period premium and the allowance for issuance and liquidity costs.[485] Therefore, we have focused on these two issues in the rest of this section, as well as explaining the impact of our 30% gearing assumption.

Short minimum termination notice period

12.146 While we noted the Europe Economics' evidence on the need for a debt premium for short minimum termination notice periods in regulated businesses,[486] on balance we do not believe that it is appropriate to include a

[485] NERL SoC, paragraph 596
[486] Europe Economics, Implications for debt-raising and the cost of debt of changing the minimum termination notice period for NERL's licence, September 2015, Table 4.2

specific premium for NERL's short minimum termination notice period. In particular, we note that while Europe Economics' analysis suggests a 0.50% premium, we also observe their conclusion that if asset lives were 71 months (just less than six years) longer than the minimum termination notice period, the yield premium needed was eliminated. As NERL's average asset life is approximately 15 years, five years longer than their minimum termination notice period, we consider the issue to be largely mitigated.

12.147 In addition, we consider that NERL's unique and strategically important assets, including their human resource and intangible assets, as well as the broad regulatory protections that NERL enjoys, reduces risk for bondholders and should significantly diminish the need to price-in additional licence-based risk.

12.148 Finally, we consider that any premium that is warranted will be adequately captured within our updated maturity adjustment (discussed in paragraph 12.29) and the inclusion of a top-down methodology. As a result, it would be inappropriate to include a separate premium, since this may result in double-counting.

Issuance and liquidity costs

12.149 In determining issuance and liquidity costs, we considered the work of Europe Economics for Ofwat's PR19[487], and its suggestion that NERL, as a smaller and higher-rated company, should be able to operate at lower costs of 0.07%. We also noted the CAA's decision to use 0.10% in order to account for recent regulatory precedent, and estimates from NERA and Europe Economics.[488] However, we consider it likely that, as a smaller entity with fewer interactions with banking institutions and the financial markets, NERL may face slightly higher-than-average issuance costs when compared to regulated companies in other sectors.

12.150 Therefore, where we can be reasonably confident that costs have been incurred in an efficient manner, we consider it prudent to use actual cost experience as a guide to future potential costs. Accordingly, we have placed more weight on NERL's experience in RP2 when calculating our estimate of issuance and liquidity costs. As set out in paragraph 12.15, these were issuance costs of 0.10-0.11%, and liquidity costs of 0.06%.

[487] Europe Economics, Initial Assessment of the Cost of Capital, December 2017, section 10.2
[488] CAA Response, paragraphs 9.47-9.49

Gearing

12.151 We calculated that a 30% gearing level during the RP3 period would result in an average weight to embedded debt of 54% and an average weight to new debt of 46%. This compares to the Parties' estimate of 30% embedded debt and 70% new debt. Given the higher cost of embedded debt, this change would mechanically increase our cost of debt estimate relative to the assumptions used by the Parties.

Our provisional conclusions on cost of debt

12.152 As described above, we calculated the cost of debt using a similar approach to the CAA, but with up-to-date market data and a lower level of gearing. As a result, our cost of debt (real, pre-tax) determination is 1.21%. The following paragraphs give a step-by-step breakdown of this calculation.

12.153 We updated the RPI deflator figure used within our calculations to reflect contemporary expectations for RPI inflation over RP3. We used HM Treasury's average of independent forecasts in choosing an RPI deflator of 2.78%.[489]

12.154 The cost of embedded debt is unambiguous - in line with the Parties we used the 5.40% initial yield to maturity of NATS existing bond. As a result, we estimated the RPI-deflated cost of embedded debt as 2.55%.

12.155 To calculate a bottom-up estimate of NERL's cost of debt we:

(a) based the cost of new debt calculation on the yield of NATS' current bond debt. This is the market's current view of the cost of lending to NATS until their existing bond matures in 2026. Using the 6-month average of this data gives a NATS' bond yield of 1.16%;[490]

(b) added an adjustment for the difference in the maturity of NATS' current bond and the target maturity of the new bond debt. We used a slightly different methodology to the CAA[491], comparing the 6-month average yield on the NERL bond to the 6-month average yield on a Bloomberg index of 15-year A-rated utility bonds. We consider that this approach

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[489] HM Treasury (2020) *Forecasts for the UK Economy - a comparison of independent forecasts*
[490] Bloomberg data.
[491] The CAA used the Europe Economics estimate based on the increase in the yield receive on government gilts at the target duration versus the yield on government gilts at the same duration as NERL's current bond. This approach implies that the yield premium of corporate bonds over government gilts remains constant over time. We believe that the premium would be expected to rise over time, reflecting increasing credit risk uncertainty for a private issuer versus a 'risk-free' issuer, and that our approach better captures this effect.

better reflects the spread of corporate debt over risk free debt as maturities increase. This approach should also help to mitigate the need for a separate short minimum termination notice period premium, as it captures the yield on a variety of utilities with a spread of licence notice periods. We calculated that the 6-month average yield on a Bloomberg index of 15-year A-rated utility bonds is 1.90%, while the 6-month average yield on NERL's bond is 1.16%. This gives an absolute difference of 0.74%, and we estimated an appropriate adjustment to be 0.70%;[492] and

(c) added an adjustment to reflect expected risk-free rate increases to mid-RP3. Using the 'expectations hypothesis'[493] approach we estimated this figure to be 0.15%.[494]

12.156 On this basis, we estimated a nominal bottom-up cost of new debt of 2.01%.

12.157 For the top-down approach to estimating NERL's cost of debt we:

(a) used an equally weighted average of Bloomberg bond indices for BBB and A-rated utilities, averaged over 6 months[495]. We have used the average of BBB and A-rated utilities as we consider that these provide the most useful top-down approximation of the potential range of bond yields for future NERL debt, taking into account both NERL's own current A credit rating (which is influenced by their business model, strategic importance and government ownership)[496], and our assessment that NERL's business model is, on average, riskier than utility business models (see discussion of beta choice above). The equally weighted yield of these indices is 2.03% in nominal terms, and we used 2.00% as an appropriate figure for our top-down estimate;[497] and

(b) as in the bottom-up analysis, we added 0.15% to account for expected risk-free rate increases to mid-RP3;

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[492] Bloomberg data
[493] The expectation hypothesis suggests that future interest rates can be calculated from current yields (interest rates) at relevant maturities. In a simple example, to estimate the 1-year spot rate in 1 year's time, we would note the return available from a 1-year bond bought today and held to maturity, and calculate what interest rate this would have to be reinvested at in 1-year's time in order to match the total return from a two-year bond bought today and held to maturity.
[494] Bank of England yield curve data.
[495] To note, we have compared our Bloomberg index data to iBoxx GBP Non-Financial A and GBP Non-Financial BBB rated indices covering 10-15 year maturities and 15 year and above maturities, as well as iBoxx GBP Utility indices over the same two maturity classes. Our estimate of 2.00% sits between the 6-month average of the GBP Non-Financial A-rated 10-15 year index yield of 1.93%, and the 6-month average of the GBP Non-Financial A-rated 15 year + index yield of 2.30%. As such, we are comfortable that our approach provides a fair top-down estimate of 15-year debt issued by NERL.
[496] S&P (Sept 19) and Moody's (Nov 19) credit reports.
[497] Bloomberg data

12.158 On this basis, we estimated a nominal top-down cost of new debt of 2.15%.

12.159 We took an equally weighted average of these two approaches to give a nominal cost of new debt of 2.08%. We deflated this number by an RPI deflator of 2.78% to give a real cost of new debt of -0.68%.

12.160 As explained in paragraph 12.151, gearing of 30% produces an embedded to new debt ratio of 54:46. Therefore, we weight embedded debt by 54% and new debt by 46% to give a pre-issuance and liquidity cost-weighted cost of total debt (real, pre-tax) of 1.06%. We added 0.10% for issuance costs and 0.05% for liquidity costs.

12.161 This gives a cost of debt (real, pre-tax) of 1.21%. A breakdown of this calculation can be seen in Table 12-13 below.

Table 12-13: Comparison of the CAA Decision, NERL's Statement of Case and the CMA's provisional view on the cost of debt

	Cost/Weight (%) - CAA RP3	*Cost/Weight (%) - NERL*	*Cost/Weight (%) - CMA provisional view*
Cost of embedded debt	5.40	5.40	5.40
RPI adjustment	3.00	3.20	2.78
Real embedded debt	2.30	2.13	2.55
Weight of embedded debt	30	30	54
Bottom-up cost of new debt	2.68	3.64	2.01
Top-down cost of new debt	3.48		2.15
Equally-weighted average	3.08		2.08
RPI adjustment	3.00	3.20	2.78
Final decision real cost of new debt	0.10	0.42	-0.68
Weight of new debt	70	70	46
Real cost of debt (pre-tax)	0.76	0.92	1.06
Issuance and liquidity costs	0.10	0.15	0.15
Total cost of debt (pre-tax) in RP3	0.86	1.08	1.21

Source: CAA Decision Appendices, Appendix E, Table E.5 and CMA analysis

12.162 Our cost of debt estimate is higher than the estimates of both NERL and the CAA. Our higher estimate is a function of:

(a) our lower estimate of RPI over RP3, which is based on more recent market data; and

(b) our use of lower gearing when calculating the RP3 WACC, which mechanically results in a higher proportion of more expensive embedded debt being used within our cost of debt calculation.

Total Market Return

Introduction

12.163 In this section we set out our assessment of the evidence on Total Market Returns (TMR). TMR is a measure of returns on the whole market for UK equities.

12.164 TMR is the total return that investors require for investing in equities. It is the sum of the of the risk-free rate (RFR) and the equity risk premium (ERP), which is the part of this return that compensates investors for the additional risk associated with investing in equities, rather than in risk-free assets. The risk-free rate and resultant equity risk premium are inputs to the CAPM formula in the calculation of cost of equity. Hence, its calculation impacts the weighted average cost of capital (WACC).[498]

12.165 There is no universally accepted method for deriving TMR, because it is concerned with investors' ex ante expectations of returns, which are largely unobservable. The academic literature on the subject is large and can be categorised into three types:

(a) studies that assume that historical realised returns are equal to investors' expectations (so-called 'historical ex post' approaches);

(b) studies that fit models of stock returns to historical data to separate out ex-ante expectations from ex-post good or bad fortune (so-called 'historical ex-ante approaches');

(c) studies that use current market prices and surveys of market participants to derive current forward-looking expectations (so-called 'forward-looking approaches').

12.166 We use historical approaches (both ex-ante and ex-post) as our sources for estimating the equity market return, as we consider these to be the most reliable evidence on TMR. We note that forward-looking approaches are largely assumption-driven, with little evidence to support the use of one set of assumptions over others, and they produce a wide range of estimates. As a result, we have not placed weight on the estimates produced using these approaches.

[498] See paragraph 12.5.

Previous CMA/CC inquiries

12.167 The CC used historical approaches as the primary source for estimating total market returns and forward-looking evidence used only as a cross check on the resulting estimates.[499]

12.168 The last detailed review of TMR was conducted as part of the Northern Ireland Electricity (NIE) price determination in 2013/14. The CC estimated a TMR of 5.0 to 6.5%. In the context of setting a cost of capital for an efficient licence holder, the CC was less concerned with a lower limit to the TMR (wishing to avoid the licence holder's cost of capital being too low). As a result, more weight was placed on the top end of the range and ultimately 6.5% was used.[500]

CAA Decision for RP3

12.169 The CAA's point estimate for TMR is 5.4% (RPI deflated) in RP3.

NERL's view

12.170 NERL considered that a point estimate of 6.25% (RPI deflated) for the TMR was appropriate. Analysis carried out by NERA, on behalf of NERL, considered long-run realised historic returns, forward-looking evidence based on the Bank of England dividend growth model, and regulatory precedent, including previous CMA views.[501] However, NERA submitted that forward-looking evidence should be treated with caution, given the sensitivity of the results to dividend growth assumptions and recommended relying primarily on long-run historical returns in estimating TMR, using forward-looking evidence as a cross-check only.[502]

12.171 When considering the historic evidence, NERA highlighted that there was no historical data series that measured historical CPI inflation back to 1900 for the UK. NERA argued, therefore, that to derive a historical real CPI-deflated return, the correct approach was to first estimate historical returns using the historical RPI index and then adjust the results for the estimate of the historical RPI-CPI wedge, which it considered was between 47bps and 72

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[499] NIE Final determination, paragraph 13.137
[500] In Bristol Water price determination in 2014/15, it was considered that NIE (2014) represented an appropriate comparison for estimating the total market return and had been published only 18 months earlier, and hence was relatively up to date. Therefore, a total market return of 6.5% was adopted.
[501] NERL SoC, paragraphs 551-552
[502] NERA, Updated Weighted Average Cost of Capital for NATS (En Route) plc at RP3, September 2018, paragraph 4.2.1

bps. This return could then be adjusted by the forward-looking RPI-CPI wedge of 100bps.[503]

12.172 Taking this approach, NERA estimated a historical RPI-deflated range for the TMR of 6.8% to 7.1% (based on a holding period assumption of 1 to 5 years), which it converted to a CPI-deflated return of between 7.3% and 7.9%. Applying the 100bps RPI-CPI wedge to these figures, NERA concluded that a TMR range of 6.2 to 6.8% was appropriate.

12.173 With respect to the forward-looking evidence, NERA argued that PwC's Dividend Growth Model (DGM)-based evidence was based on erroneous assumptions and was downward biased. NERA submitted that UK GDP growth cannot be used to proxy FTSE dividends given that 70% of FTSE earnings come from overseas market. Instead, a global GDP growth assumption was more appropriate.

12.174 NERA suggested that analysts' forecasts should be used to proxy short-term dividend growth given there was no evidence that short-run GDP growth provided a good proxy of investors' expectations of dividend growth. NERA highlighted that the academic evidence no longer supported the finding of optimism bias in analysts' forecasts, and that the use of such forecasts was consistent with the approach adopted by central banks, academics and practitioners. NERA observed that the Bank of England's DGM used these assumptions and estimated a forward-looking TMR of between 7.2% and 8.1% RPI-deflated, ie higher than the historical evidence.[504]

CAA's view

12.175 The CAA's estimate of TMR was based on historical long-term equity returns and supported by forward-looking evidence, professional investor studies, as well as other regulatory decisions.[505] In estimating the appropriate level for the TMR, the CAA drew on evidence from a wide range of sources, including the UKRN report and PwC's advice to the CAA for the H7 price review.[506]

12.176 In its February 2019 report for the CAA, PwC estimated ex post long-term historic returns, reflecting data from the latest Credit Suisse Global Investment Returns Yearbook with an updated assessment of historic CPI inflation based on the Bank of England millennium dataset, in line with the

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[503] NERA, Cost of Equity for RP3 Prepared for NERL, April 2019, pages 51-52
[504] NERA, report for NATS, 12 April 2019, pages 57-59
[505] CAA Reference, paragraph 2.15
[506] PWC reports of November 2017, February 2019 and August 2019 (which also included RP3).

UKRN report. The UKRN report and PwC[507] report pointed to a range of 6 to 7% CPI deflated, which converts to 5 to 6% on an RPI deflated basis looking forward. PwC also observed that given the CAA used a longer-term holding period, and there was evidence of predictability of returns at longer horizons, any point estimate should be taken from the lower end of this range.

12.177 In its review of TMR, PwC looked at three forward-looking sources of evidence:[508]

a) Dividend discount modelling, using a multi-stage model, capturing both short-term expectations of future dividend growth as well as long-term expectations of future dividend growth. The output from this analysis[509] was a nominal TMR spot rate of 8.4%, with the average TMR since January 2014, also 8.4%. Updated analysis[510] showed an increase in the nominal TMR to 8.5% in its five-year trailing average.

b) Market valuation evidence from Regulatory Capital Value (RCV) premia on regulated utility transactions. PwC submitted that recent transactions prior to its 2017 report achieved premiums above the 1.24x long-run average. PwC considered that there could be two factors driving the elevated premiums: outperformance of regulatory allowances and/or the cost of equity allowed by regulators regarded by investors as being in excess of required returns. PwC contended that outperformance alone was unlikely to explain the premia and therefore implied that investor required rates of return were likely to be below previous regulatory assumptions of 6.5% real TMR. PwC's work for Ofwat suggested a nominal TMR of 7.5 to 8.2%.[511]

c) Investor survey evidence – used to triangulate estimates of TMR. The most up to date survey of UK market investors was a TMR assumption of 8.3%[512] (nominal).

12.178 From the review of the three sources of data noted above, PwC concluded an appropriate TMR in current market conditions to be 8.0-8.6% nominal. Deflating on an RPI assumption of 2.8%, this yields a range of 5.1-5.6% real.[513] While lower than recent regulatory decision, PwC noted it was still within the range of 5-6.5% proposed by the CC/CMA in Northern Ireland

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[507] PwC report, February 2019, page 48
[508] PwC report, November 17, pages 5-6
[509] PwC report, November 17
[510] PwC report, February 2019, page 55
[511] PwC report, November 17, page 8
[512] PwC report, August 2019
[513] PwC report, November 17, pages 42-43, paragraphs 5.48-5.49

Electricity NIE. PwC considered new evidence in its later reports[514] and confirmed its view that the CAA should set a real TMR in the range of 5.1 to 5.6%.

12.179 The CAA concluded that TMR of 5.4%, RPI deflated, to be appropriate. The CAA considered that its point estimate was in line with historical average returns, supporting a range of 5.0 to 6.0% as well as forward looking evidence with a range of 5.0 to 5.8%. The CAA concluded that other cross-checks, such as MARs, investor surveys and international precedent appeared to support a TMR towards, or below, the lower end of these ranges.[515]

Evidence from third parties

12.180 Some third parties (Ofgem, Ofwat, IAG, Citizen's Advice) were generally supportive of the CAA's decision and in some cases the CAA's point estimate was in line with their own estimate of TMR.

12.181 With respect to the change in the CAA's TMR estimates between RP2 and RP3:

(a) IAG submitted that independent analysis carried out by CEPA supported the CAA's calculations, stating that it was appropriate for the CAA to move away from regulatory precedent in light of economy wide changes and methodological considerations.[516] A fresh review of the evidence showed that TMR should be lower than previous estimations.

(b) In the analysis submitted by IAG, CEPA said that while TMR has historically been more stable than ERP, they did not believe that TMR was completely stable and that evidence on TMR could vary.[517]

(c) Ofgem consider it necessary that contemporaneous information should be taken into account when reviewing the TMR as opposed to following precedent set by previous price controls.[518]

(d) Citizens Advice also submitted that the TMR should be lower still in light of lower recent historic returns and currently lower expected returns (on a forward-looking basis). Citizens Advice explained that they did not support the use of a long-run TMR as the (UK) economy has experienced distinct economic phases over time, some of considerable duration, such that the

[514] PwC reports February 2019 and August 2019
[515] CAA Decision Appendices, Appendix E, paragraph E87
[516] International Airlines Group (IAG) submission, 23 December 2019
[517] CEPA report for IAG ✂
[518] Ofgem submission, 31 December 2019, page 2

use of long-run TMRs could result in a cost of capital that was not compatible with the economic environment at the time.[519]

12.182 Ofwat agreed with the CAA's use of the Bank of England's historical CPI series, stating that it was calculated on a more consistent basis than RPI. Ofwat said that changes to the composition and measurement of RPI since it was introduced had caused latter-day RPI to be structurally higher than in historic periods, due to the higher 'formula effect'. This means that unadjusted historical RPI-deflated returns were an unreliable guide to prospective RPI-deflated returns that investors required.[520] Ofgem also cautioned against the use of RPI, given its loss of credibility as an inflation measure.[521] Ofwat considered it particularly important that the Cost of Living Index was not used as an inflation measure over the 1914-1947 period of the historic series given its flaws.[522]

12.183 However, others (Energy Network Association (ENA), HAL, water companies) submitted that the CAA's point estimate was too low:

a) HAL stated that there was no reliable market evidence to suggest that expected returns were lower relative to RP2[523] and therefore the significant reduction in TMR was not credible.

b) The ENA submitted that the use of the Bank of England CPI dataset, as a measure of inflation to deflate historic equity returns, overstated CPI inflation and therefore understated historic equity returns.[524] In particular, ENA highlighted that, in contrast to the observed average difference of 0.84% between RPI and CPI inflation since CPI was first published in 1997, the modelled formula effect (ie that derived from the backcast dataset) of 0.29% on average for the 1950–1988 period was surprisingly small, appeared to tend towards zero and became noticeably less volatile as the back-cast horizon was extended. As such, the figure arrived at was not credible. The ENA noted that Oxera estimated that the historical average CPI inflation rate was around 0.45% lower once these features of the data were allowed for, giving an arithmetic average CPI-deflated return on UK equities of 7.4% for the period 1899–2018.

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[519] Citizens Advice submission, 20 December 2019, pages 2 to 3
[520] Ofwat submission, 20 December 2019, page 4
[521] Ofgem submission, page 2
[522] Ofwat submission, page 4
[523] Heathrow Airport Limited (HAL) submission, 24 December 2019, paragraphs 5.6-5.11
[524] Energy Networks Association (ENA) submission, 20 December 2019, page 6, paragraph a) ii

c) Additionally, ENA submitted that the CAA's TMR estimate is downward biased due to the weight placed on geometric averaging, as opposed to an arithmetic average.[525]

12.184 As regards deriving expected real market returns from nominal historical realised returns, some third parties put forward alternative methods to that adopted by the CAA to consider:

a) Oxera sought to adjust the historic RPI time series for changes in methodology with the aim to recreate an RPI historic time series consistent with current estimation methodology. It said this 'RPI real' TMR could then be applied on a forward-looking basis with no further adjustments.[526]

b) Gregory, for the water companies, submitted that the approach taken by the UKRN report was likely to overstate inflation, due to the use of the Bank of England's 'preferred' CPI dataset. Gregory submitted that no reliable estimate of CPI was available before 1949 and that the inflation data used for the period 1900-1914 implied a negative formula effect (and a zero RPI-CPI wedge 1915-1949), which he considered to be unlikely. Therefore, Gregory estimated 'real' returns on both an RPI and a 'quasi CPI' basis, with the latter controlling for CPI inflation between 1950 and 2018 and using RPI sources prior to that.[527] Gregory concluded that the RPI real returns estimated from historical data were consistent with the CMA's 6.5% estimate from the NIE and Bristol Water redeterminations and that the forward-looking RPI/CPI wedge should be adjusted for by uplifting historic RPI real estimates to give a CPI real TMR.[528]

Our approach

Historic ex-post

12.185 The ex-post approach is predicated on the assumption that expected returns remain constant over time and that historic returns provide a reliable indicator of expected returns in the future. Therefore, in order to estimate the TMR, we reviewed data over the longest period possible, drawing on the Dimson, Marsh and Staunton (DMS) 2020 dataset, which spans 1900 to 2018.

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[525] ENA, page 8, paragraphs 3.21-3.24
[526] ENA, page 8, paragraph 3.20
[527] The 'RPI source' used is the Cost of Living Index. See Appendix E, paragraphs 19 to 23 for further information on this index.
[528] Northumbrian, Anglian and Wessex Water submission, 2 January 2020, paragraphs 7.14-7.16

12.186 When considering historic evidence on returns, there are two key methodological considerations:

(a) How to control for inflation when seeking to identify expected real returns; and

(b) The appropriate averaging method: arithmetic or geometric, which is related to the relevant time period over which to consider returns. This is often also called the holding period, ie the period investors would hold equity in the firm.

12.187 We consider each of these methodological issues in turn.

Inflation

12.188 In order to estimate historical equity returns, a historic time series of nominal returns needs to be deflated by a measure of inflation to estimate real equity returns. This requires us to address the following points:

a) First, while there are various inflation datasets from 1900 onwards, ie which cover the period for which we have nominal equity returns, there is no single measure of inflation that covers the whole period. As a result, it is necessary to combine separate inflation datasets in order to cover the whole period.

b) Second, all the available inflation series have issues in terms of either their accuracy as a measure of inflation and/or their consistency over time.

c) Third, having chosen the most robust inflation measure, it is then necessary to consider how to apply the estimated historic real TMR derived on a forward-looking basis, ie how to index it in the future (to CPI, to RPI, to another measure).

12.189 The various potential approaches to estimating the TMR are described as adopting either ‘CPI’ or ‘RPI’ as the inflation series with which to deflate nominal historical returns. However, for the period from 1900 to 1947/9, neither RPI nor CPI data exists: the two main inflation measures in use are the cost of living index (COLI) and the consumption expenditure deflator (CED). Whereas, in the period after 1947/9, the choice is between RPI or CPI, including the ‘backcast’ for the latter, in the period 1947 to 1988.

12.190 For the period prior to 1947/9 (for which no RPI or CPI data exists), we consider that the CED dataset should be used as this is the most reliable available source of inflation data. The Office for National Statistics has stated

its preference for using the implied deflator, due to the COLI's relatively limited coverage in terms of both products and population, and concerns about the quality of the weights.[529]

12.191 For the period from 1947/9 onwards, we have estimated historic returns using both the RPI and the CPI (actual plus 'backcast') inflation series, placing somewhat greater weight on the latter and using the former as a cross-check to our analysis.

12.192 In coming to this view, we have taken into account the fact that RPI is both:

(a) A less robust measure of inflation than CPI due to its use of the Carli formula[530], as well as issues with the data source of the weights (coming from the Living Costs and Food Survey only), population coverage (excluding the highest-earning 4% of households, as well as pensioner households that derive at least 75% of their income from state benefits, institutional households and foreign visitors to the UK) and treatment of some goods, such as owner occupiers housing;[531] and

(b) An inconsistent measure of inflation insofar as changes to the underlying methodology used to calculate the RPI mean that it is not comparable over time. The clearest example of this was the significant increase in the formula effect in 2010 as a result of a change to the way that clothing prices were collected. This increase in the formula effect, from around 0.5 percentage points to 0.8-0.9 percentage points, is shown in Figure 12-7 below.

12.193 These issues with RPI mean that it is no longer a national statistic and the Office of National Statistics (ONS) now discourages its use. We note that

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[529] Office for National Statistics, 'Consumer Price Indices Technical Manual, 2007 edition', p73

[530] The Carli formula takes the rate of change in each price, and then takes the arithmetic average of those changes. The method is also known as the average of price relatives (AR). The use of Carli is effectively prohibited by a legally binding European regulation in the Harmonised Index of Consumer Prices (HICP), the CPI in the UK, because it can be shown in certain circumstances that the use of Carli combined with chain linking of in-year indices introduces an upward bias known as 'chain drift'. The Carli formula is used in the RPI in about 30 per cent of items. Source: UK Statistics Authority, *Elementary aggregate formula descriptions*.

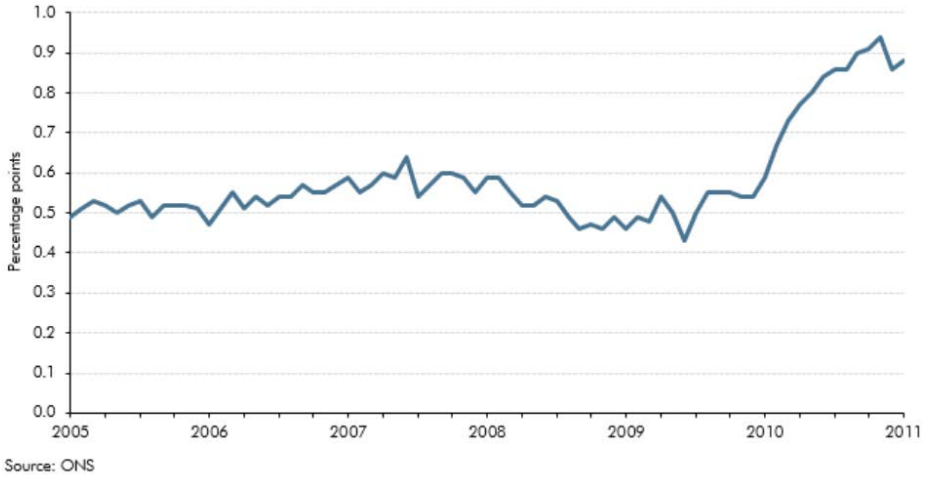
[531] For example, the Johnson Review states that:

> As we stressed above it is generally hard in this area to come to absolute conclusions. But it is our strong view that the use of the Carli is inappropriate and that the RPI is upwardly biased because of its use. In light of this, ONS has introduced an additional inflation measure – RPIJ – which is essentially the same as the RPI except that it uses the Jevons method wherever the RPI uses the Carli… But it is not just the use of the Carli which is problematic in the construction of the RPI as a measure of consumer price inflation. Issues with the data source of the weights, population coverage and treatment of some goods (like insurance and owner occupiers housing costs) make the RPI less suitable as a measure of overall inflation. RPIJ is problematic for all the same reasons.

Similarly, the UKRN Report notes that '[T]he elementary price aggregation methods in RPI create significant and unstable biases between recorded inflation and what it is attempting to measure.', page D-109.

Dimson, Marsh and Staunton have switched away from using RPI in their latest yearbook and chosen to use CPI data, including the backcast, instead.

Figure 12-7: Contribution of the difference between RPI and CPI from the formula effect



Source: OBR website

12.194 However, we also observe that the CPI data series has some issues in terms of its coverage of goods and services, notably its exclusion of housing costs, and is comprised of a mix of actual and modelled data. With respect to the latter, we note that the researchers who carried out the backcast highlighted that '[t]he method provide[d] only approximate results and there is no way to determine how accurate [it]… is as sufficient data to calculate the CPI do not exist prior to 1987.'[532]

12.195 As a result, we believe it is also appropriate to consider the TMR estimates using RPI data as a cross-check on the CPI results.

12.196 When considering the consistency of the full 1900 to 2019/20 inflation series, we observe that there is a debate as to whether the CED is more similar to RPI or CPI inflation.[533] Our view is that, as a deflator as opposed to a price index, the CED is neither RPI nor CPI. As a deflator, it will not suffer from the 'formula effect, which is an important reason for RPI no longer being viewed as a reliable inflation measure. Moreover, as a Paasche index[534], we consider that it may be expected to under measure price inflation and hence, its use in the context of our analysis may result in an over-estimate of returns. We conclude, therefore, that it is reasonable to combine CED data with both CPI and RPI, on the basis that it represents the most reliable measure of

[532] ONS (2013), *Modelling a back-series for the consumer price index*, pages 2-3
[533] This debate concerns whether it is appropriate to pair CED with RPI or with CPI over the period as a whole.
[534] A Paasche index uses current-period quantity weightings. This me-that it takes into consideration (changes in) consumption patterns within period. As a result, it will tend to understate the changes in price because the index already reflects changes in consumption patterns when consumers respond to price changes and adopt substitutes.

inflation available for the first half of the twentieth century. (See Appendix E for further details of our consideration of historic inflation measures).

12.197 We consider how to apply the estimated historic CPI-real and RPI-real TMR figures in the context of the RP3 price control in paragraphs 12.198 to 12.208 below.

Averaging and holding periods

12.198 The simplest approach is to calculate the arithmetic average of historical returns. This is appropriate if there is a constant underlying return and the return in each year is independent of that in other years. However, investors in the equity market usually expect to invest in the market for longer than a year. Therefore, we consider that the simple arithmetic average would upwardly bias the TMR.

12.199 As set out in Table 12-14, we estimated average returns using different estimators for 10- and 20-year holding periods. We have focused on these longer-term holding periods in order to reflect both the longer investment horizons of NATS' shareholders and ensuring consistency with the time horizons used in estimating risk-free rates and the cost of debt.

Results

12.200 The results of our analysis are set out in Table 12-14.

Table 12-14: CMA estimates of real returns, 1900 to 2019

		Inflation series	
	Holding period	*CED/CPI*	*CED/RPI*
Arithmetic mean	1 year	7.0%	6.7%
Geometric mean	120 years	5.2%	5.0%
Blume (1974)	10 years	6.8%	6.6%
	20 years	6.4%	6.5%
JKM (2005) unbiased estimator	10 years	6.9%	6.6%
	20 years	6.7%	6.5%
JKM (MSE)	10 years	6.6%	6.3%
	20 years	6.1%	5.9%
Overlapping	10 years	6.6%	6.4%
	20 years	6.7%	6.4%
Non-overlapping	10 years	6.8%	6.5%
	20 years	7.2%	6.8%

Source: CMA analysis
Note: With a holding period of 10 years, the non-overlapping average comprises 12 observations, which reduces to 6 observations for a holding period of 20 years. Due to the small sample size, we have put less weight on these results.

Assessment

12.201 The estimates of real returns using the CED/CPI inflation series range from 6.1 to 6.9%[535]. Adjusting for the forward-looking estimated RPI/CPI wedge of approximately 100 basis points gives an RPI-real TMR range of 5.1 to 5.9%.

12.202 The estimates of real returns using the CED/RPI inflation series range from 5.9 to 6.6%[536]. However, we consider that the methodological changes in the RPI series over time, demonstrated by the 2010 increase in the 'formula effect' in response to change in the collection of clothing data, means that these historic estimates cannot be taken, unadjusted, as the expected RPI-real equity market return on a forward-looking basis.

12.203 Therefore, we considered three potential approaches to adjusting these historic RPI-real TMR estimates to take into account the methodological changes to RPI over time. In particular, we considered the 'Oxera' and 'NERA' approaches (as set out in paragraphs 12.18412.184 and 12.171 above), as well as a 'CMA RPI' approach.

12.204 The Oxera approach, which seeks to adjust historic RPI such that it is stated on a consistent basis with current RPI, comprises two different potential adjustment methods. The first is a back-casting exercise that seeks to estimate what weights and prices would have been associated with certain items before they were introduced to the series and then estimating the adjusted RPI. The second method is to use an algorithm to identify structural breaks and estimate their magnitude in the RPI series and build a counterfactual series around these results. The results of Oxera's preliminary analysis suggest that adjusted RPI would have been between 1bp less to 30bps higher than the measured time series.[537]

12.205 We observe that Oxera's approach appears to be experimental at this stage, with Oxera itself stating that more work would be needed to assess the validity of these approaches. Furthermore, we note that the estimated changes in RPI are significantly less than we would have expected given that the 2010 change in the formula effect was around 30-40bps alone.[538] For

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[535] This range excludes the simple arithmetic and geometric means as well as the non-overlapping estimates which are based on very small sample sizes (12 and 6 observations for 10- and 20-year holding periods, respectively).
[536] This range excludes the simple arithmetic and geometric means as well as the non-overlapping estimates which are based on very small sample sizes (12 and 6 observations for 10- and 20-year holding periods, respectively).
[537] Oxera, 29 November 2019, Page 15
[538] ONS, CPI and RPI: increased impact of the formula effect in 2010, page 1. Appendix E, Figure E-2 from OBR shows an increase of up to 0.4 percentage points from 2010 to 2011 of the contribution of the difference between RPI and CPI from the formula effect.

these reasons, therefore, we do not consider this approach to be sufficiently reliable or practicable.

12.206 In contrast, we find that NERA's proposed approach, of adjusting for the estimated formula effect is straight-forward and therefore, practical to apply. However, this approach relies on the accuracy of the CPI backcast from which the pre-1988 formula effect is derived and, hence, cannot be considered to provide an independent cross-check on that approach.

12.207 Our preferred approach to adjusting historic RPI-real TMR estimates is to adjust them only for the well-evidenced change in the formula effect in 2010. This approach has the benefit of not relying on the CPI backcast data, and therefore provides as an independent cross-check to the "CPI" approach set out above.

12.208 Applying this approach, we take the 5.9 to 6.6% historic RPI real TMR range and deduct the change in the formula effect from 2010 of 30-40bps, to give a forward-looking RPI real expected market return of between 5.6% and 6.2%. We note that this range is lower than that identified by the CMA in its NIE decision (of 6-7%)[539] as the result of two revisions to our previous approach: i) our current view that the CED inflation series is a better measure of inflation than the COLI; and ii) our view that the step-change in the formula effect as of 2010 means that historic RPI-deflated returns need to be adjusted when used on a forward-looking basis. The first of these effects reduces estimated historic returns by around 35bps, while the second adjustment reduces the RPI-real returns by a further 30-40bps on a forward-looking basis.

Historic ex-ante

12.209 The historical ex post method has drawn significant criticism in finance literature and many studies have concluded that it does not provide a reliable indication of the ERP. Mehra and Prescott (1985) observed that the high historical returns provided by equities relative to government bonds are inexplicable in the context of standard economics models that describe risk. Similarly, Blanchard, Shiller and Siegel (1993) concluded that the ex-post ERP appears far in excess of what is justified by standard asset-pricing models with reasonable levels of risk aversion.

[539] NIE Final Determination, paragraph 13.141

Approach

12.210 The main approach used to calculate the TMR using historical ex-ante data is to decompose returns into average dividend yields and the average rate of dividend growth.

12.211 Fama and French (2002) highlight that the average stock return is equal to the average dividend yield plus the average rate of capital gain. They then note that, assuming that the price-dividend ratio is stationary, ie mean-reverting, over a long period of time the compound rate of dividend growth can be expected to approach the compound rate of capital gain, such that the **expected** stock return would be equal to the average dividend yield plus the average growth rate of dividends.[540] They use this model to break-down historic returns into an underlying expected return, equal to the average dividend yield plus the average dividend growth rate, and an unexpected return, ie capital gain in excess of the rate of dividend growth.

12.212 Using data from the 2018 Barclays Equity Gilt Study[541] suggests that the average dividend yield has been 4.5% over the period 1900 to 2017 in the UK, with average real dividend growth rates of around 1.2% (arithmetic mean). This suggests a TMR of around 5.7%. We note that these figures have been deflated using RPI inflation.

12.213 Gregory (2011) estimates a 'Fama and French bias-adjustment' from Barclays Equity Gilt Study data, which effectively converts a geometric mean to an arithmetic mean of 1.3%.[542]

12.214 DMS (2019) seek to infer what investors may have been expecting, on average, in the past, by separating the historical equity premium[543] into elements that correspond to investor expectations and elements of non-repeatable good or bad luck. These elements include the mean dividend yield, the growth rate of real dividends, the expansion of the price/dividend ratio, and change in real exchange rate.

12.215 The DMS data for the UK from 2019[544] indicates a geometric mean dividend yield of 4.58% and a growth rate of real dividends of 0.83%, which would indicate an expected return of 5.41%. We note that these figures have

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[540] Fama and French, The Equity Premium, Journal of Finance Vol 57, No 2 (Apr 2002).
[541] Barclays Equity Gilt Study 2018, Figure 7, pages 107-109. The Average Income Yield % of Barclays UK Equity Index is 4.5%.
[542] A. Gregory (2011), Expected Cost of Equity and the Expected Risk Premium in the UK', *Review of Behavioural Finance*, page 3
[543] This is calculated as the geometric difference between the equity return achieved over the period and the risk-free rate over that same period. Credit Suisse Global Investment Returns Yearbook 2019, page 28.
[544] Credit Suisse Global Investment Yearbook 2019, (page 34, Table 10)

been calculated using a composite price index, comprising the 'Retail Price Index'[545] up until 1949 and then CPI data (actuals and the 'backcast') from then onwards.

12.216 DMS uplift their geometric mean returns by 150bps to give an arithmetic mean risk premium, which they explain is their estimate of the expected long-run equity risk premium for use in asset allocation, stock valuation, regulatory and capital budgeting applications.[546]

Assessment

12.217 We considered how the above figures should be adjusted in order to ensure consistency with our historic ex-post estimates in terms of the treatment of inflation and assumptions regarding holding periods (ie the use of arithmetic or geometric means).

12.218 As shown in Appendix E, Table 1, the estimated market returns using COLI/RPI[547] are approximately 10bps higher than using the CED/CPI data.[548] If we adjust for this difference and the (100bps) RPI/CPI wedge to give a forward-looking estimate, the Fama and French approach, using Barclays data, gives an RPI-real TMR of between 4.6%[549] and 5.9%,[550] depending on whether the geometric or arithmetic mean is used.

12.219 Adopting this same approach but using the CED/RPI data series and the 'CMA RPI' approach, as set out in paragraph 12.207 to 12.208, gives a forward-looking RPI-real TMR of between 5.0% and 6.2%.[551]

12.220 With regards to the DMS dataset, we note a 35bps difference between their estimate of real returns and those estimated using the CED inflation series together with CPI inflation. Adjusting the 5.41% estimated TMR (see paragraph 12.216 above) for this difference, as well as for the expected

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[545] We understand that this is the Cost of Living Index referred to in Appendix E, paragraphs 19-23.
[546] Credit Suisse Global Investment Yearbook 2019, page 37
[547] This is the inflation index that we understand has been used in the Barclays Equity Gilt Study 2018.
[548] The average difference between COLI/RPI and CED/RPI across the different estimators is 10 bps.
[549] 4.6% is calculated by taking the 5.7% (COLI/RPI), deducting 10 bps for the difference between COLI/RPI and CED/CPI and then deducting 100 bps for the difference between RPI and CPI.
[550] 5.9% is equal to 4.6%, as calculated, plus 1.3% 'Fama and French bias adjustment' (paragraph 12.213).
[551] Adopting the "CMA RPI" approach, as set out above, a historic COLI/RPI-real TMR of 5.7% would translate into a CED/RPI-real TMR of 5.3% after deducting 0.4% (see Appendix E, Table E-1, the difference between COLI/RPI and CED/RPI). This gives a range of 5.0% to 6.2% once corrected for the change in the formula effect, with the lower end of the range representing the geometric mean and the upper end, the arithmetic mean. 5.0% = 5.3% - 30 bps (formula effect) and 6.2% = 5.3% - 40 bps (formula effect) + 1.3% (bias adjustment, see paragraph 12.51).

RPI/CPI wedge gives an estimated RPI-real TMR of between 4.1%[552] and 5.6%, depending on whether the geometric or arithmetic mean is used.

12.221 These DMS estimates when adapted for the CED/RPI data series and the 'CMA RPI' approach, give a forward-looking real TMR of 5.0% to 6.5%.[553]

12.222 As set out in Table 12-14, when considering a 10 to 20 year holding period, the various unbiased/efficient estimates of returns are below the simple arithmetic mean estimates and above the geometric mean estimates but tend to be closer to the former.

Forward-looking

12.223 The most commonly used approach is to estimate a dividend discount model (DDM) using a range of current and forward-looking financial information. Under this approach, the expected market return is the discount rate at which the present value of future dividends is equal to the current market price.[554]

12.224 The key inputs to the model are the current dividend yield,[555] which is known, and expectations of short-term and long-term dividend growth rates, which must be assumed.

Parties' estimates of TMR

12.225 The CAA observed that recent DDM/DGM analysis by Ofwat, Ofcom, Europe Economics, CEPA and PwC suggested forward-looking estimates of TMR around 4.0% to 6.2% in RPI-deflated terms.[556] In its February 2019 report[557], PwC estimated a TMR range of 5.3 to 6.2% using its DDM model, with the upper end of the range driven by the current (or spot) DDM estimate, which PwC noted tends to be more volatile, and considered that its proposed TMR of 5.1 to 5.6% remained appropriate when also taking into account the other forms of TMR evidence.

12.226 In contrast, NERA, in its report for NERL, cited Bank of England analysis of DGM, which produces a forward-looking TMR of 7.2% to 8.1% in

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[552] 5.41% - 1.35% = 4.1% (1dp)
[553] The lower end of this range represents the geometric mean and is calculated as 5.41% - 10bps – 30bps = 5.0%, where 10bps is the difference in historic TMR estimates based on COLI/CPI and CED/RPI, and 30bps is the change in the formula effect around 2010. The upper end of the range includes 150bps uplift to the arithmetic mean.
[554] This assumes that investors value listed companies based on the present value of discounted future cashflows (in the form of dividends).
[555] We note that the dividend yield is affected by share buy backs and these should be accounted for in a DDM.
[556] 4.0-6.2%, PwC report, page 48
[557] PwC report, 'Estimating the costs of capital for H7 – response to shareholder views', February 2019, page 11

RPI deflated terms. NERA submitted that PwC's approach understated returns from DDMs by using UK GDP growth to estimate future dividend growth, ignoring UK companies' exposure to international markets with higher growth, and by ignoring analyst forecasts of dividend growth, which were higher than GDP growth.

Assessment of forward-looking approaches

12.227 A limitation of the DDM approach is that it is wholly dependent on assumptions and produces a broad range of TMR estimates depending on the assumptions used. As the Parties' views above demonstrate, different assumptions on short and longer-term, growth rates can produce materially different TMR estimates.

12.228 In considering the assumptions put forward by the Parties, we note that:

(a) Historic real dividend growth (at 0.83% per year based on the DMS dataset) has been significantly lower than historic UK GDP growth (at around 2%)[558] over the longer term; and

(b) The academic literature generally finds that analysts' forecasts are overly optimistic.

12.229 This suggests that the CAA's estimates of the TMR are likely to be more robust than the various alternatives put forward. We observe that these are consistent with the 5 to 6% TMR range derived from the historic data. However, due to the sensitivity of these estimates to assumptions, we place less weight on the results derived from this approach.

12.230 Another possible source for forward-looking estimates of the ERP is surveys of investors, market participants and academics. However, the results of such surveys tend to depend on the identity and outlook of the respondents and how they interpret the questions being asked. Some surveys do not clarify the time frame over which the parameters are to be estimated (the long-term equilibrium ERP or a shorter-term estimate); whether an arithmetic or geometric averaging approach should be used; or whether the ERP is over bonds or bills or some other instrument.

12.231 In this report we have preferred to focus our assessment on the historic data, which we consider to be more robust.

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[558] Bank of England (2017), A millennium of macroeconomic data for the UK

Our provisional conclusions on total market return

12.232 On an historic ex-post basis, the CED/CPI inflation series approach produces a range of 5.1 to 5.9% on an RPI-real basis,[559] while the CED/RPI approach produces a slightly higher range of 5.6 to 6.2% on an RPI-real basis. Our two approaches to estimating the expected market return give ranges that overlap significantly. We consider that the CED/CPI approach is likely to be more reliable than the CED/RPI approach due to CPI's greater accuracy and consistency as a measure of inflation.

12.233 On an ex-ante basis, the evidence suggests a range of between 4.1[560] and 6.5%,[561] depending on whether we use CPI or RPI and whether we consider geometric or arithmetic means. As shown in Table 12-14:, the various unbiased/efficient estimators tend to give TMR estimates that are between the arithmetic and geometric means. Therefore, we consider that the reasonable range of the TMR is likely to be above the bottom end of this range and below the top end.

12.234 Taking this evidence in the round, our provisional view is that the TMR estimates produced under both the historic ex-post and historic ex-ante approaches are consistent with a figure of between 5 and 6% on an RPI-real basis. We observe that the forward-looking approaches result in a wide range of results which are driven to a great extent by the assumptions made. However, our current view is that these assumptions are not well-supported by evidence of past dividend growth rates. As a result, we have not placed weight on forward-looking TMR estimates.

[559] Taking the range of 6.1% to 6.9% (see paragraph 12.201) and deducting 100bps results in 5.1 to 5.9% (RPI deflated)
[560] See paragraph 12.220, from DMS dataset (bottom of range).
[561] See paragraph 12.221, from DMS dataset (top of range)

The Risk-free Rate

Introduction

12.235 In this section we set out our assessment of the evidence on the Risk-Free Rate (RFR).

12.236 The risk-free rate is the return an investor could expect on an investment that carries zero risk, and it is an important element within the capital asset pricing model (CAPM) used to estimate NERL's weighted average cost of capital (WACC).

12.237 The risk-free rate is a hypothetical number, as in reality no investment has absolutely zero risk. As a result, it is common practice to use very high-quality government debt as the best representation of a risk-free investment. In the UK, this would mean using the yield on a government gilt at a relevant maturity.

CAA Decision for RP3

12.238 The risk-free rate in the CAA decision was estimated at -1.70%. In coming to this estimate, the CAA:[562]

(a) based their estimate on the yield on index-linked gilts (ILGs);

(b) used implied forward gilt yields at different maturities for the period covering RP3 (2020-2024) to take account of expected risk-free rate movements;

(c) estimated that at the mid-point of RP3, the RFR would be -1.90%;

(d) compared this -1.90% figure against yields on 10 to 20-year spot rates and tested how this figure compared to 3 and 6-month averages of spot rates at those maturities. These results suggested a slightly higher RFR range of -1.80% to -1.70% would be appropriate;

(e) noted the volatility in ILGs in the previous 6 months, and the uncertainty associated with Brexit, and so decided to use the higher end of the range, -1.70%, as the point estimate for RFR in RP3.

[562] CAA Decision Appendices, Appendix E, paragraphs E90-E102

12.239 The CAA noted that if they had used nominal gilt yields deflated by RPI, the RFR estimate would have been higher at -1.30%.[563]

NERL's view

12.240 NERL's original business plan estimate of the RFR was 0.46%, based on a range of -1.10% to 1.50%.[564]

12.241 NERL subsequently accepted the -1.40% figure included in the CAA's Draft Decision but disagreed with the -1.70% RFR included in the CAA's Final Decision.[565]

12.242 NERL agreed that the CAA's use of ILGs was valid but argued that the CAA should also draw on evidence from the yields on RPI-deflated nominal gilts. NERL argued that analysis by Economic Insight, in a report commissioned by NERL, suggested that:[566]

(a) the yield gap between ILGs and nominal gilts should be the result of market inflation expectations, any liquidity premium within ILG yields and the inflation risk premium in nominal gilt yields, but that the evidence suggested that these expectations and premia did not fully account for historic differences in yields. This suggested that there could be distortions present, potentially due to:

(i) differing tax treatment for index-linked and nominal gilts;

(ii) regulatory requirements of large purchasers such as life companies or pension funds; or

(iii) government or central bank intervention, such as the use of quantitative easing policies.

(b) Economic Insight argued that the UKRN report relied upon by the CAA was incorrect in its assessment that the RFR could be directly inferred from prevailing negative ILGs, irrespective of 'why' those negative yields can be observed, arguing that:

(i) the RFR is a 'hypothetical notion' with no direct measure, and that yields on government gilts are an imperfect proxy measure;

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[563] CAA Decision Appendices, Appendix E
[564] CAA Decision Appendices, Appendix E, paragraphs E90-E102
[565] NERL SoC, paragraph 587
[566] Economic Insight Assurance Review and Assessment of the Evidence on the WACC at RP3 – A report for NATS (Nov 2019), Section 2.2

(ii) the hypothetical RFR should not only be free from risk, but also should be undisturbed by market distortions; and

(iii) the CMA and CC have previous taken these distortions into account.

CAA's view

12.243 The CAA adopted the approach advocated by the UKRN report, which suggests that regulators should use the zero coupon yield on inflation-linked gilts at their chosen horizon to derive an estimate of the risk free rate at that horizon.[567]

12.244 In addressing the issue of whether ILGs were distorted, the UKRN report argues that:[568]

(a) the market price of indexed debt is simply what it is, and that regulators shouldn't treat it differently to any other market price;

(b) there is no economic principle that rules out a negative risk-free rate, and that there have been extended period in the past when risk-free rates have been negative; and

(c) a negative risk-free rate is not irrational and is consistent with a standard decision-making model.

12.245 The CAA also cited Ofwat's PR19 decision, which found that the difference in yields between ILGs and nominal gilts was accounted for entirely by the inflation premium. Ofwat also argued that it was inappropriate to use nominal yields within the RFR calculation, suggesting that this would result in using a rate that compensates for inflation risk in a sector with substantial inflation protection to revenues and regulatory capital values.[569]

Views of third parties

12.246 Gregory, working with KPMG and on behalf of Anglian Water, submitted that the unadjusted UK market data was potentially distorted, volatile, and inconsistent with the Bank of England's (BoE's) equilibrium risk-free rate estimate, economic theory and the international data.[570]

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[567] CAA Decision Appendices, Appendix E, paragraphs E90-E102
[568] UKRN Report, section 4.3
[569] CAA Response, paragraph 9.37
[570] Gregory and KPMG for Anglian Water ✂

12.247 Gregory submitted that US TIPS data had remained slightly above zero for the last 10 years, and highlighted work by the bank of England that suggested a long-term equilibrium real interest rate (R*) in the UK of 0.50% in CPI terms.[571]

12.248 Gregory submitted that a reasonable allowance for the RFR would be between 0.0% and 0.2% in CPI terms, and so approximately -1.0% to -0.8% in real RPI terms.[572]

12.249 Gregory also highlighted the recent volatility in market data and cautioned against 'locking-in' short-term rates in a fixed allowance (with no indexation), which may not be appropriate over the specified forward looking time horizon.[573]

Our approach

12.250 In assessing an appropriate RFR for NERL, we considered the following issues:

(a) the suitability of including the analysis of RPI-deflated nominal gilts as well as index-linked gilts;

(b) whether current index-linked gilt yields may be distorted in absolute terms and thus unsuitable for use in calculating a WACC for NERL; and

(c) the adjustments to spot rates that are appropriate when estimating the RFR.

Our assessment

12.251 We consider that current ILG rates continue to provide the most appropriate basis for the measurement of a notional investors' achievable risk-free returns. While we acknowledge that ILG yields are low in the historical context (and negative in absolute terms), we do not consider that negative yields are irrational, per se, and therefore inappropriate for inclusion in the calculation of WACC for NERL. Furthermore, we do not consider that there is strong evidence to support the view that ILG yields are likely to change in a predictable manner over RP3. For example, we note that US TIPS yields have remained above UK ILG yields (normalised for their different

[571] Gregory and KPMG✂
[572] Gregory and KPMG✂
[573] Gregory and KPMG✂

inflation adjustment methods) for a number of years, with no evidence of convergence between them[574].

12.252 Next, we considered the evidence submitted regarding deflated nominal gilt yields. We agreed with the CAA and Ofwat[575] that it would be inappropriate to allow a regulated entity such as NERL to earn an inflation premium (by including nominal yields in the RFR calculation), when inflation risk is largely passed on to their customers. Therefore, in order to use deflated nominal gilt yields, it would be necessary to remove the inflation risk premium. We note that there is uncertainty over the size of the inflation risk premium, with Ofwat estimating that it accounts for the full difference between ILG and nominal gilt yields[576], while other parties have submitted smaller estimates. In light of this uncertainty and, taking into account Ofwat's estimates, we consider that appropriately adjusted nominal gilt yields would not give a materially different estimate of the RFR from that derived from ILG yields, with the latter having the clear strength of being directly observed. As a result, we have relied on the former in estimating the RFR.

12.253 We acknowledge the arguments of Gregory and accept that there is a spectrum of views as to whether current market-based risk-free rates are distorted in absolute terms.

12.254 We note that both US TIPS and the Bank of England's estimate of R* referenced by Gregory are real in CPI terms and would show negative real rates using the RPI deflation method used in our WACC calculations.

12.255 After careful consideration we do not believe that alternative sources of data are suitable for inclusion in our calculation of the RFR within NERL's WACC:

(a) We do not consider international RFR data, such as US TIPS, as suitable for inclusion in the calculation of the RFR that is appropriate for a notional investor buying equity in a regulated UK asset that has pound sterling-denominated assets and cashflows.

(b) We acknowledge that the Bank of England's R* estimate is a potentially interesting datapoint, but we note that real interest rates have been negative for a number of years[577] and we do not consider that there is any

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[574] Data from Federal Reserve Bank of St. Louis and Bank of England. Assuming a consistent 1.00% wedge between CPI (used in US TIPS) and RPI (used in UK ILGs), the risk-free rate has been higher in the US since 2014.
[575] CAA Response, paragraph 9.37
[576] Ofwat, PR19 final determinations, Allowed return on capital technical appendix, December 2019, section 5.2.1
[577] The 10-year ILG yield has been negative since September 2011.

evidence to suggest that risk free investment returns will reach (or even trend towards) this figure within the period in question.[578]

12.256 We consider that the CAA's approach to estimating the RFR was prudent and appropriate, balancing the benefits of price discovery through the use of market data with the smoothing of volatility by cross-checking against 3 and 6-month averages. We have used this approach when estimating the appropriate RFR. However, we believe that the CAA's market data, based on the June 2019 work of Europe Economics, is now less relevant. Where more up-to-date market data is available, we have included this in our calculations. This will be further updated prior to our final determination.

12.257 In line with both NERL and the CAA, we use ILG forward curves to adjust spot yields for anticipated rises in yields between the decision date and the middle of the RP3 period.

Our provisional conclusions on the risk-free rate

12.258 We base our RFR on 10-year ILG data provided by the Bank of England, cross checked against yields on 10-20 year maturity ILGs and against 3 and 6 month historic averages. In our provisional conclusions we use data to the end of February 2020. Relevant yield data is summarised in the Table 12-15 below:

Table 12-15: Relevant Index-Linked Gilt spot yields across our target maturities

	UK 10-Year ILG Spot Rate (%)	*UK 15-Year ILG Spot Rate (%)*	*UK 20-Year ILG Spot Rate (%)*
Spot Rate on 28th Feb 2020	-2.63	-2.46	-2.27
3-month average spot rate (daily data)	-2.53	-2.33	-2.14
6-month average (daily data)	-2.60	-2.39	-2.19

Source: Bank of England Index-Linked Gilt Spot Yield Data.

12.259 On the basis of this data and the approach described in 12.250, we estimate a suitable RFR would be in the range of -2.60% to -2.20% and use -2.40% as an appropriate basis of our RFR assumptions.

12.260 In line with the approach taken by the Parties, we adjust this figure for anticipated increases in yields between now and the middle of RP3. We calculate this figure using the average of six months of end-of-month yields

[578] Bank of England *Inflation Report, August 2018*

and estimate the adjustment to be 0.15%. This figure is lower than that used by the CAA due to changing market estimates of future yields and as a result of there being a shorter gap between our calculation point and the middle of RP3.

12.261 As a result, our provisional determination of (real) RFR in RP3 is -2.25%.

Overall WACC

Introduction

12.262 We have discussed above our analysis of the individual parameters for the cost of capital. For the two key parameters of the cost of equity, the Total Market Return and the asset beta, we have a range of values, as there is uncertainty about the right level for the parameter. This reflects the fact that estimating the individual components of cost of capital is not an exact science and involves a degree of judgement as to which evidence for different points within the range should be given more weight. As a result, we considered that the right level for each parameter could arguably lie anywhere within each range.

12.263 It is then a matter of judgement whether the evidence for different points within the range should be given more weight, and therefore whether the level should ultimately be towards the top end or the bottom end of the range.

12.264 In submissions to this appeal, some third parties pointed to reasons for either 'aiming up' or 'aiming down' when setting the cost of capital. These arguments related to whether, where there is uncertainty around the right level of the cost of capital, the balance of risks associated with setting the cost of capital too high or too low imply that it is better to choose a level of the cost of capital from the top or the bottom of the range.

CAA Decision for RP3

12.265 The CAA decided to set a cost of capital of 2.68% (RPI-adjusted, vanilla).[579] It set the cost of capital based on the point estimates it had derived for each of the individual parameters. We compare the CAA's assumptions to those of NERL below.

[579] CAA Decision Appendices, Appendix E, paragraph E180

12.266 The CAA did not explicitly produce a range for the cost of capital. It chose ranges for individual parameters, and then selected a point estimate for each of those parameters, as follows.

(a) For TMR, the CAA chose 5.4%, based on a range of comparators. The CAA noted that 'historical average returns appear to support a range of 5 to 6%' and that 5.4% was also consistent with ranges from a number of other sources;[580]

(b) For RFR, the CAA chose -1.7%, which it concluded was consistent with a range of -1.3% to -1.95% from other recent estimates;[581]

(c) For gearing, the CAA chose 60%;[582]

(d) For equity beta, the CAA chose 1.00, which it compared to a range of 0.87 to 1.11 from the draft proposals;[583]

(e) For debt beta, the CAA chose 0.1, which it said was based on evidence that pointed to the lower end of a range of 0.1 to 0.19;[584]

(f) The CAA used a 30% proportion of embedded debt, and cost of debt of 2.3% for that debt;[585]

(g) For new debt, the CAA used 0.1% as the cost of debt, together with a 0.1% allowance for transaction costs. It did not present a range but concluded that this point estimate was consistent with NERL's assumptions, after two adjustments.[586]

12.267 The CAA then calculated a cost of capital of 2.68% (vanilla), based directly on the point estimates above.[587]

NERL's view

12.268 In its Statement of Case, NERL provided its comparison of what it considered to be appropriate point estimates for the individual parameters which combine to estimate the cost of capital. NERL's comparison is reproduced below in Table 12-16.[588]

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[580] CAA Decision Appendices, Appendix E, paragraph E87
[581] CAA Decision Appendices, Appendix E, paragraph E101
[582] CAA Decision Appendices, Appendix E, paragraph E106
[583] CAA Decision Appendices, Appendix E, paragraph E140
[584] CAA Decision Appendices, Appendix E, paragraph E138
[585] CAA Decision Appendices, Appendix E, paragraph E153-154
[586] CAA Decision Appendices, Appendix E, paragraph E166-170
[587] CAA Decision Appendices, Appendix E, paragraph E180
[588] NERL SoC, Table E138 14

Table 12-16: Comparison of parameters of the cost of capital

Real, RPI-deflated	RP2 allowance	RP3 – NERL's response to CAA's draft proposals	RP3 – CAA RP3 Decision
Risk free rate	0.75%	-1.40%	-1.70%
Total market return	6.25%	6.25%	5.40%
Asset beta	0.505	0.57	0.46
Equity beta	1.11	1.35	1.00
Debt beta	0.10	0.05	0.10
Post-tax cost of equity	6.87%	8.93%	5.40%
Gearing	60%	60%	60%
Cost of new debt	1.75%	0.40%	0.10%
Cost of embedded debt	2.50%	2.13%	2.30%
Proportion of new debt	20%	70%	70%
Issuance costs	0.15%	0.15%	0.10%
Pre-tax cost of debt	2.50%	1.07%	0.86%
Vanilla WACC	**4.25%**	**4.21%**	**2.68%**
Tax uplift	37%		9.9%
Pre-tax WACC	**5.86%**		**2.91%**

Source: NERL SoC

12.269 NERL also did not explicitly produce a range for the cost of capital. It chose ranges for some of the individual parameters and selected a point estimate for all of the parameters, as follows.

(a) NERL chose a TMR of 6.25% from a range of 6.2% to 6.8%. NERL's stated reasons for choosing 6.25% included that it was consistent with the top of the CAA's range in its Draft Proposals.[589]

(b) For RFR, NERL proposed -1.4% (and said the RFR should be no lower), although it noted that based on a beta of 1.00, there was no effect of the choice of RFR;[590]

(c) NERL proposed an asset beta of 0.57, based on a range of sources of evidence from Europe Economics;[591]

(d) NERL said that it proposed a debt beta of 0.05, based on evidence from Zalewska;[592]

(e) NERL said that it assumed the cost of new debt should be 0.4%,[593] including a 50bp adjustment rejected by the CAA.[594] For embedded debt,

[589] NERL SoC, paragraph 552
[590] NERL SoC, paragraph 586
[591] NERL SoC, paragraph 571
[592] NERL SoC, paragraph 589
[593] NERL SoC, paragraph 595
[594] NERL SoC, paragraph 595

the CAA had in practice chosen a higher rate than NERL's business plan due to changes in market data.

12.270 NERL did not therefore explicitly propose 'aiming up'. It submitted that the CAA's decision on cost of capital breached the Financeability Duty, because in its view the cost of capital does not properly reflect risk. In its Statement of Case it said that:

> a WACC estimate that is below the level required to fully compensate investors for systematic risk fails to meet the requirements of the Financeability Duty, even if there is sufficient cash flow to sustain an investment grade credit rating.[595]

CAA's view

12.271 In its response to the Statement of Case, the CAA highlighted that in addition to a full review of the individual parameters, it had used its judgement in setting the overall level of the cost of capital. The CAA said that 'This overall judgement was important to avoid placing undue reliance on individual parameters that require judgement.'[596]

12.272 The CAA said, given this exercise of judgement and the approach taken of assessing a range of evidence for the cost of capital parameters, that:

> 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.[597]

Other evidence

12.273 As described above, both CAA and NERL determined a point estimate for the cost of capital based on selecting point estimates for each of the parameters of the cost of capital. However, third parties noted the importance of setting the cost of capital high enough to promote investment and proposed that this required 'aiming up'.

12.274 The ENA provided a report from Frontier Economics which reviewed the evidence for aiming up. It highlighted that aiming up was both consistent

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[595] NERL SoC, paragraph 544
[596] CAA Response, paragraph 9.2
[597] CAA Response, paragraph 12

with regulatory practice and justified 'by recognising that underinvestment arising from setting allowed returns too low leads to much more material harm to consumers than the modest harm that arises from setting the number too high'.[598]

12.275 Northumbrian Water, Wessex Water and Anglian Water provided a report from Gregory which included a comparable argument:

> However, if the cost of capital is set too low, there would be under investment in the sector. Given that most regulated services are essential goods and customers have no choice but to purchase the service from the provider being regulated, the welfare loss from under investment is large. The asymmetric risk therefore lies in the knock-on consequences of setting the cost of capital too low being worse than if the cost of capital is set too high.[599]

12.276 Gregory's report noted that the risk of under-investment should not be looked at only in the context of the current period, as this, in his view, implicitly implies that the cost of capital and the relationship to investment is a one-round process.

12.277 While these arguments were made in the context of the water and energy sectors, we consider that they could have some merit in respect of NATS, where there is significant investment required over the next five-year period. In contrast, Citizens advice advised us against any upward bias in setting the cost of capital. Citizens Advice said that regulators have consistently set the cost of capital too high and therefore that consumers have consistently lost out in terms of the final outcome.[600] Citizens Advices' recent 'Monopoly Money' report recommended that in other sectors, the firms should repay some of this outperformance back to customers.[601]

Our assessment

12.278 As described above, we have identified a range for the TMR and the asset beta, where we have concluded that the evidence could reasonably support all of the numbers within that range. We have chosen point estimates for the other elements of the cost of capital, which are at least more measurable in practice. Table 12-17 shows how these individual ranges can be converted to a range for the cost of capital.

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[598] Frontier Economics report for ENA ✂9
[599] Anglian, Northumbrian and Wessex water submission
[600] Citizens Advice ✂
[601] Citizens Advice 'Monopoly Money' report

Table 12-17: The CMA's range for the cost of capital.

WACC calculations	NERL RP3 response to CAA RP3 proposals	CAA RP3 Final Decision	CMA *low range*	*high range*
TMR	6.25%	5.40%	5.00%	6.00%
RFR	-1.40%	-1.70%	-2.25%	-2.25%
ERP	7.65%	7.10%	7.25%	8.25%
Asset beta	0.57	0.46	0.52	0.62
Debt beta	0.05	0.10	0.05	0.05
Equity beta	1.350	1.000	0.71	0.86
Cost of new debt	0.40%	0.10%	-0.68%	-0.68%
Cost of embedded debt	2.13%	2.30%	2.55%	2.55%
Proportion of new debt	70%	70%	46%	46%
Issuance costs	0.15%	0.10%	0.15%	0.15%
Pre-tax cost of debt	**1.07%**	**0.86%**	**1.21%**	**1.21%**
Post-tax cost of equity	**8.93%**	**5.40%**	**2.93%**	**4.82%**
Gearing	60%	60%	30%	30%
Vanilla WACC	**4.21%**	**2.68%**	**2.41%**	**3.74%**

Source: NERL SoC Table 14, page 139, and CMA analysis
Note: The asset beta represents the combination of the 0.5-0.6 estimate for the unlevered equity beta (or asset beta with zero debt beta) and our choice of debt beta

12.279 Table 12-17: illustrates that the range is wide, and the lower end of the range includes the CAA's assumption for the cost of capital. The middle of the range is 3.08%, which is higher than the CAA's assumption, primarily because we have assumed a higher range for the asset beta.

12.280 We have not identified a point estimate for the TMR or the asset beta. Although in principle any choice from the range could be taken to imply a particular point estimate for the individual parameters, our provisional view is that the reason for choosing ranges is that there is a fundamental uncertainty about the level of the individual parameters. As described by the CAA in its response, it is at some point necessary for a regulator to exercise judgement in choosing the WACC from the range.

12.281 We note that neither CAA nor NERL explicitly suggested that it was appropriate to 'aim up' or 'aim down'. However, the assumptions made by NERL result in a WACC which is above the top of our range, and the assumption made by the CAA is towards the bottom of the range. In practice, we concluded that NERL's assumptions were consistently at the high end of what we consider could be justified by the evidence, and its TMR in particular

was above the top of our range. We therefore consider that the allowed cost of capital in the price control should be lower than NERL's assumption.

12.282 If we were to agree with the CAA's decision, that would result in us setting a cost of capital towards the bottom of our range. For the reasons below, we have concluded that it would better balance our objectives to determine the cost of capital to be at a level higher than the CAA's assumption.

12.283 In coming to a point estimate, we considered possible reasons for departing from the mid-point of the range, including:

(a) Potential bias in the cost of capital range;

(b) Potential asymmetries in the broader price control settlement;

(c) The case for 'aiming up', including potential asymmetries in the balance of risks between getting the cost of capital too high or too low.

12.284 First, we considered whether the balance of probabilities in estimating the cost of capital may suggest that it is more likely to be in the upper or lower end of the range. We concluded that the way we had calculated our individual ranges meant that there was no reason that we should give more weight to either end of the range.

12.285 Second, we considered whether the price control decision is asymmetric. There will always be some price control decisions where the outcomes may not be perfectly symmetric. For example, penalty-only regimes, or incentive mechanisms where the underlying risks are more likely to be in one direction than the other. In the case of NERL, not all the incentives are likely to be perfectly symmetric. For example:

(a) The returns on capex are capped at the WACC, meaning that NERL can only underperform relative to the WACC. This is an adverse asymmetric risk relative to the CAA's assumptions, to the extent that there is a possibility of disallowance under the capex incentives; and

(b) On opex, there are some mitigations to overspend risk. NERL has an 'opex flexibility fund', and we have seen examples of NERL's actual spend in the current and previous periods which suggest that in the context of a 100% incentive mechanism, NERL may be able to defer some spend if necessary due to risks that arising which are outside its control;

(c) The performance targets are not perfectly symmetric, with in some areas larger maximum penalties for underperformance than rewards for overperformance.

12.286 In chapter 8, we outlined our review of the capex incentives. We proposed a number of mitigations to the risks which NERL identified that it could face penalties under these incentives. We also reviewed the service targets and concluded that they balanced the need to provide incentives to maintain performance against the risks and challenges posed by the investment programme during RP3. We are aware that NERL has outperformed in previous controls, and the overall approach to the price control gives it some flexibility in how it manages its costs within the price control period.

12.287 Taking these points together, we concluded that there was no evidence that the net effect of the price control was asymmetric either in favour of NERL or against NERL. Subject to the provisional recommendations in our report, we consider that the package of incentives and adjustment mechanisms form an appropriate balance, and there is no need to adjust the cost of capital due to asymmetry.

12.288 Third, we considered the argument made by ENA and Anglian Water for 'aiming up' to promote investment. We accept that there may be an argument that, in the long-run, customers' interests are served by a small premium to the cost of capital, particularly if that helps avoid an 'opex bias', where companies have the incentive in their business plans to run down the existing capital assets for as long as possible.

12.289 If there are positive externalities and longer-term benefits to consumers from identifying and investing in new capital projects, then we agree that there could be a case for a long-term premium on the cost of capital. At the same time, given that the premium would apply to assets already in place as well as promoting new investments, it might only need to be small to be effective.

12.290 We cannot take a view in this reference about whether the ENA and Anglian Water view would be justified in other sectors. However, in the air traffic sector we do not see any evidence that such a premium is necessary. NERL has a clear incentive to identify and deliver the capital programme associated with AMS, both through the regulatory framework and also through the broader governance of the relevant initiatives. The decision to implement AMS follows a consultation across the sector, and has relevant support from government, both in policy terms and as a shareholder in NERL. More generally, NERL's ownership and the structure of the PPP should mitigate any risks that it might not have incentives to identify and implement a capital

programme which would have benefits for its direct customers and for broader airspace users. We therefore have concluded that no uplift to the cost of capital is necessary in RP3.

12.291 We note that Citizens Advice has made a counter argument that customers have overpaid in previous periods. We agree with Citizens Advice that any approach which structurally favours companies in some periods should in principle be consistent across periods, even if the same approach results in a lower cost of capital in some other periods. However, our view is that this would not support moving away from the mid-point in this case. In this case, our approach to the cost of capital is to ensure that NERL's investors in RP3 have a reasonable expectation, at least based on targeted efficiency, of recovering their cost of capital.

Our provisional conclusions on overall WACC

12.292 We provisionally conclude that the CAA's proposed modification set the cost of capital below a level which properly balances its objectives in determining NERL's assumed return. Our assessment of the cost of capital to use for NERL's price control for RP3 is 3.08% vanilla, which is the mid-point of our range for the cost of capital.

12.293 We provisionally conclude that our cost of capital is sufficient to ensure that NERL can meet its financing costs, and therefore that it is financeable. We have not identified any separate concerns around financeability related to credit ratios or availability of finance. In any case, we have assumed a lower level of gearing, which further strengthens NERL's credit ratios.

12.294 In setting the price control, the CAA applied a tax uplift based on NERL's projected tax rate within the model. We propose to use the same approach. We will work with the CAA and NERL to agree a revised version of the model which reflects our provisional determination (and subsequently any changes that we may make between provisional and final determination) and will apply the tax charge implied from that model.

13. Provisional findings

Introduction

13.1 As outlined in chapter 3, the reference questions that we are to answer are:

a) Whether or not a failure to set price controls and impose the appropriate modifications to the RP3 licence would operate against the public interest or may be expected to do so;

b) If so, it must consider what modifications to said licence would remedy that adverse effect and whether the conditions the CAA has proposed are adequate.

First reference question

13.2 In chapter 4 we provisionally found that a failure by CAA to set a price control and impose the appropriate modifications to NERL's licence to enable the CAA to exercise regulatory control over NERL would operate against the public interest or may be expected to do so.

13.3 The adverse effects we provisionally identified are set out in chapter 4.

Second reference question

13.4 We have assessed each element of the price control and considered what modifications to the Conditions are required to remedy the adverse effects identified in chapter 4.

Provisional conclusions on charge control elements

13.5 For the reasons set out above, we consider that the following provisional conclusions propose modifications that would address the effects adverse to the public interest identified in chapter 4 and should form the price control for NATS in RP3.

Traffic

13.6 We provisionally conclude we should use STATFOR traffic forecasts to calculate the unit charge in the charge control, rather than the traffic forecasts prepared by NERL.

13.7 Consistent with our view that we should use the most up to date information available, for our Final Determination we intend to use the latest STATFOR forecasts, which we understand was to be available in March 2020.[602]

13.8 This provisional decision is relevant to modifications of Condition 21 and Condition 22 of NERL's licence.

Service delivery targets

13.9 We provisionally conclude that the licence should be modified to include the service quality and 3Di targets and incentives proposed by the CAA Decision.

13.10 This provisional decision is relevant to Condition 21 of NERL's licence.

Opex

13.11 We provisionally conclude that the licence should be modified to include the opex reductions proposed by the CAA (around 2% reduction).

13.12 This provisional decision is relevant to Conditions 21 and 22 of NERL's licence.

Capex

Capex governance and incentives

13.13 We provisionally conclude that a licence condition should be applied, or a CAA policy statement developed, that appropriately specifies and constrains the circumstances under which it might be reasonable for the CAA to find that capex should be disallowed from NERL's RAB following an ex-post efficiency review.

13.14 We provisionally conclude that the Licence should be modified with a single capex engagement incentive with a penalty cap of £36 million, which is approximately equal to the equity returns allowed for in relation to NERL's capex programme.

[602] We were informed on 5 March 2020 by the CAA that the updated STATFOR forecast has been delayed until the end of March, to take account of the impact of Covid-19 on traffic volumes. Given subsequent discussions and the current uncertain situation with Covid-19, we will work with the Parties following the publication of our provisional findings to determine the appropriate approach to the reference.

13.15 We provisionally conclude that the licence should be modified to include enhancements to the Independent Reviewer role, and the requirement for quarterly SIP updates.

13.16 This provisional decision is relevant to Condition 10 of NERL's licence.

Capex level

13.17 Our provisional view is, assuming the capex incentives are amended as outlined above, the licence should be modified to include an overall capex allowance for RP3 of £667 million, as proposed in the CAA Decision.

13.18 This provisional decision is relevant to Condition 21 and 22 of NERL's licence.

Non-regulated income

13.19 Our provisional view is that for RP3 it is not appropriate to require any further reduction in opex from consideration of the reduction in non-regulated activity, as we consider the appropriate efficiency reduction has already been applied to opex.

13.20 Our provisional view is also that it is not appropriate to require NERL to obtain additional non-regulated income above that already specified in the RBP and adjusted for the CAA changes to FMARS and London Approach.[603]

13.21 This provisional decision is relevant to Conditions 21 and 21a.

Oceanic

13.22 We provisionally conclude that the ADS-B data charge should be included in full in the charges paid by the airlines, without applying any efficiency assumption.

13.23 We also provisionally conclude that that an opex and capex efficiency target (5% non-staff efficiency and 2.3% for staff costs) should be applied to NERL's opex and capex cost projections associated with the Oceanic service for each year in the RP3 price control, as proposed by the CAA. We provisionally conclude that a pension adjustment should be applied to the Oceanic service as proposed by the CAA. We provisionally conclude the regulatory return for the oceanic service should be based on a cost of capital of 3.08%.

[603] These resulted in the CAA providing an increased allowance of £18 million compared with NERL's RBP, and this was not disputed by NERL.

13.24 This provisional decision is relevant to Condition 22 of NERL's licence.

Pensions

13.25 Our provisional view is that an adjustment of £21 million should be applied to NERL's pension costs projections, slightly less than the CAA Decision. However, we recommend that the CAA produces improved guidance to clarify the pass-through provisions that apply, showing circumstances when determinations of future costs would and would not be subject to pass-through. The proposal by the CAA to consult on and then issue a Regulatory Policy Statement (RPS) represents an opportunity for this clarification to be made.

13.26 This provisional decision is relevant to Conditions 10, 21 and 22 of NERL's licence.

Cost of Capital

13.27 Our provisional conclusion is that the cost of capital assumed in the price control should be 3.08%.

13.28 This provisional decision is relevant to Conditions 21 and 22 of NERL's licence.

'In the round' assessment

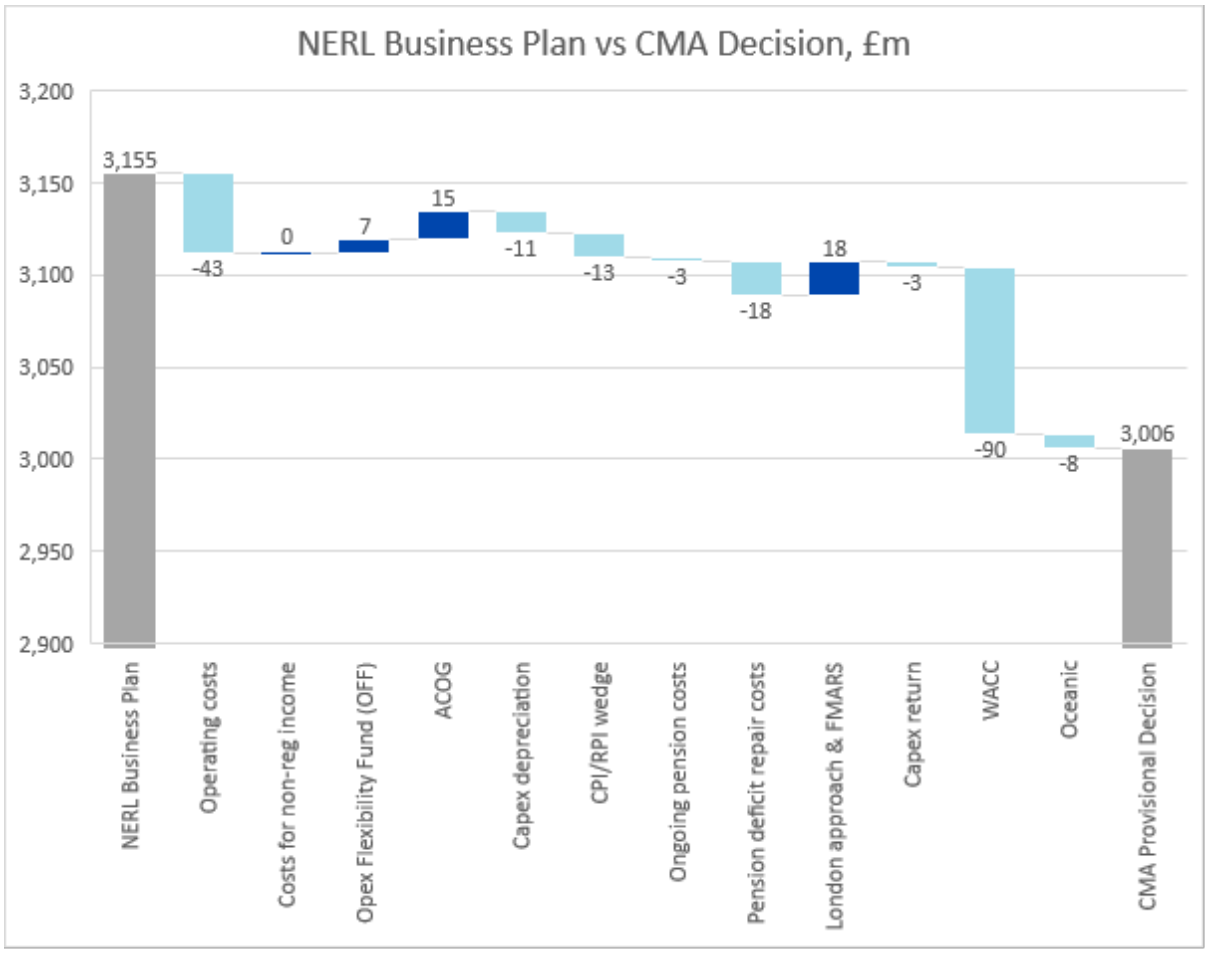
13.29 Having investigated the elements of the price control, focusing on the disagreements between NERL and the CAA, we 'stood back' from the individual elements to consider the effect of our provisional conclusions on the price control in its entirety.

13.30 In particular, we took our provisional decisions on cost allowances into account when considering the feasible range for the WACC and in deciding on a point estimate (that is, whether and to what extent it would be appropriate to 'aim up' or 'aim down').

13.31 We are satisfied that it would be against the public interest if there were no operative price control conditions in NERL's licence, that the price control we have provisionally proposed is balanced, that there are no conflicting incentives, and that the modifications set out in our report would remedy the effects adverse to the public interest.

13.32 The impact of our provisional findings on the NERL RBP can be seen in Figure 13-1.

Figure 13-1: Impact of CMA provisional findings



Source: NERL SoC and CMA analysis

Financial impact on NERL compared to CAA Decision for RP3

13.33 We then estimated the financial impact of our provisional conclusions on NERL's finances to check that it would be financeable (see Table 13-1:).[604]

[604] Note that this assessment was on the basis of the operational context and business plans prior to the Covid-19 situation

Table 13-1: Comparison of impact of CMA proposals vs CAA RP3 decision, £m

£ million *Element of price control*	*Building block affected*	*CAA decision vs NERL RBP*	*CMA decision vs NERL RBP*	*Comment on CMA decision*
Operating costs	Opex	(43)	(43)	CMA agreed with CAA proposed opex efficiency cut (the CAA's adjustment in relation to non-regulated activity is shown separately below)
Costs for non-reg income	Opex	(24)	0	CMA considered efficiency cuts already applied to Opex so removed CAA reduction to costs (+£24m)
Opex Flexibility Fund (OFF)	Opex	+7	+7	Not in dispute
ACOG	Opex	+15	+15	Not in dispute
Capex depreciation	Depreciation	(11)	(11)	CMA agreed with CAA proposed Capex efficiency allowance
CPI/RPI wedge	Depreciation	(13)	(13)	Not in dispute
Capex governance and incentives	Potential for penalty to be applied in RP4 review			CMA proposed changes to CAA incentive proposals to provide greater constraints and clarity in terms of how they might be applied
Ongoing pension costs	Pensions	(6)	(3)	CMA agreed with CAA proposed adjustments, but amended the ongoing costs (+£3m) to reflect the different position on underlying opex relating to non-regulated income
Pension deficit repair costs	Pensions	(18)	(18)	CMA agrees reduction, subject to clarification of pass-through arrangements
London approach & FMARS	Non-reg Income	+18	+18	Not in dispute
Capex return	Return	(3)	(3)	CMA agreed reductions in allowed capex level, subject to CMA proposed changes in governance. CMA also proposes changes to WACC
WACC	Return	(122)	(90)	CMA proposed a higher WACC for NERL (estimated effect +£32m based on proportionate reduction in the gap between the NERL and CAA)
Oceanic	Oceanic building blocks	(12)	(8)	CMA proposed to allow ADS-B charges in full (+£4m) but agreed with CAA other changes. Small change to return because of WACC change
Delay incentives				CMA agreed with CAA proposed targets and incentives
3Di incentives				CMA agreed with CAA proposed targets and incentives
Traffic Forecast	Traffic			CMA agreed with CAA proposal to use STATFOR forecast
Total	**Determined Costs**	**(212)**[605]	**(149)**	

Source: CAA Decision, NERL SoC and CMA analysis

[605] We note that the CAA calculate the difference as being £211 million

13.34 We consider that NERL would not find it unduly difficult to finance activities authorised by its licence, on the basis of these provisional findings.

Other recommendations

13.35 In additional to our provisional findings on proposed licence modifications, as outlined above, we have identified various areas where we consider the price control methodology could be improved. We have outlined these throughout our provisional findings report where appropriate.

Next steps

13.36 Having reached our provisional view on each of the individual elements of the RP3 price control and considered the price control 'in the round', we are inviting comments on these provisional findings.

13.37 We will work with the Parties to determine how our provisional findings can be taken forward.