Government Actuary's Department

Civil Aviation Authority

Analysis of pension costs for NATS (En Route) plc

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Contents

1. Executive summary

1.1 The Civil Aviation Authority ('CAA') is the economic regulator of NATS (En Route) plc ('NERL'). The CAA commissioned the Government Actuary's Department (GAD) to review certain aspects of NERL's pension arrangements and to provide their view on the reasonable and efficient pension costs in NR23 (covering the period from 1 January 2023 to 31 December 2027). This will help inform the allowance for pension costs in NR23 which are passed on to the airspace users (the customers).

1.2 This report analyses the principal factors which determine NERL's pension costs and predominantly covers the *defined benefit* (*DB*) costs arising from the NATS Section of the Civil Aviation Authority Pension Scheme (referred to as the 'NATS Section' in this report). NERL's pension costs also include contributions towards the *defined contribution (DC)* scheme and a Pensions Cash Alternative for employees close to pension tax thresholds; this report also considers these projected costs.

1.3 This report comprises of the following sections:

- section 2: introduction
- section 3: scheme benefits
- section 4: considering consumer interests
- section 5: investment strategy
- section 6: funding valuation assumptions
- section 7: governance and expenses
- section 8: NERL's projected pension contributions
- section 9: reasonable and efficient range
- supporting Appendices, including a Glossary containing any terms in *italics* in the main report.

1.4 In June 2021, the CAA published its business plan guidance for NERL (CAP2160), including specific guidance on pension costs. Prior to this, CAA provided a Regulatory Policy Statement to NERL (part of CAP2119), which set out the principles expected from NERL in relation to incurring pension costs. We have reviewed NERL's Business Plan dated 7 February 2022 and set out in Appendix C the sections of this report that relate to the CAA's guidance.

1.5 The results of this review support the CAA in understanding the factors affecting NERL's future cash pension contributions, and the extent to which the NATS Section's funding approach is consistent with that of other UK private sector *defined benefit* pension schemes. Further, this review should assist the CAA in determining whether it needs to adjust the NR23 pension cost allowance amounts requested by NERL.

Scheme benefits

1.6 Scheme benefits are one of the main determinants of *defined benefit (DB)* pension schemes' ultimate costs. GAD has found that NATS Section benefits are more generous than those provided by typical UK private sector *DB schemes*. However, there appears to be limited scope to change the benefits due to protections in place under the scheme's Trust Deed and Rules, the 'Trust of a Promise' document and the 'Memorandum of Understanding'. Approximate calculations suggest that if the NATS Section benefits were to be more typical of UK schemes[1], all else being equal the employer *standard contribution rate* could be around 52% of *pensionable pay* instead of the 66.2% assessed at the 31 December 2020 actuarial valuation.

1.7 There have been no changes to the benefits since GAD's last review[2]. Prior to the last review, steps had been taken to manage scheme costs by:

- closing the scheme to new entrants with effect from 31 March 2009;
- increasing benefits accrued after 31 October 2013 with respect to the Consumer Prices Index (CPI) rather than the Retail Prices Index (RPI); CPI is expected to increase by less than RPI on average over the long term although it is HM Government's intention to align the RPI inflation measure with CPIH from 2030 onwards; and
- capping general pensionable pay increases to a maximum of CPI + 0.25% a year from 2013 to 2024.

Considering consumer interests

1.8 GAD's review has considered the extent to which the pension cost risk is managed and passed on to the airspace users (the consumers). This section covers the key areas of risk and risk management, which are covered in more detail in Section 4.

Considering consumer interests: application of surplus

1.9 Under the current recovery plan, if *neutral estimate* investment returns are achieved on the scheme assets then GAD estimate that a surplus is expected to emerge during 2025. *Neutral estimate* returns are the best estimate of returns, such that there is equal chance of returns being higher or lower than the *neutral estimate*. Depending on scheme experience and market conditions a surplus may emerge earlier or later than 2025, although it will only be recognised at a formal funding valuation (typically every three years).

1.10 If a surplus emerges then the Trustee could consider using that surplus to de-risk the investment strategy or reduce employer contributions. A reduction in employer contributions could be passed onto consumers as a saving. NERL state in their Business Plan dated 7 February 2022 that their preferred long-term strategy is to fund the scheme on a long-term low-risk basis, which they expect to be more cost effective than a *buy-out* with an insurance company. This indicates that priority might be given to de-risking the

[1] Occupational Pension Schemes Survey 2018 (ONS)

[2] GAD's report on the RP3 price control review for NATS (En Route) plc dated 24 September 2018

investment strategy if the Trustees is supportive of this approach. That said, if a surplus emerges then this could be used to *buy-out* benefits if this was deemed to be in the best interests of all parties. For example, this would have the benefit of transferring the entirety of the risk attaching to the benefits to an insurance company.

Considering consumer interests: trapped surplus

1.11 We note that the asset reallocation undertaken since our previous review reduced the Trustee's assessment of investment risk as measured by the *Value at Risk ('VaR')*. Although this slightly reduced their expected return on assets it also allowed them to continue to support existing *discount rates* without materially impacting the funding of the scheme. This being the case, the changes could reduce the likelihood of trapped surplus emerging even if the *discount rate* remains the same and there are no changes to the *standard contribution rate*. This is because the potential for upside returns in the investment strategy has also been reduced relative to the same on-going costs as well as the likelihood of future deficits emerging.

Considering consumer interests: pension cash alternative

1.12 To reduce the risks associated with funding future accrual of *DB scheme* benefits, in 2016 NERL introduced a *pension cash alternative* to members of the NATS Section whereby instead of continuing to accrue benefits within the scheme eligible members could instead opt to receive 25% of pensionable pay. The effect of this option has been to reduce the cost of accrual within the NATS Section, and therefore the pension cost.

1.13 The *pension cash alternative*, including the associated National Insurance contributions, costs NERL 28.5% of pensionable pay, increasing to around 29% of pensionable pay following the anticipated increase of National Insurance contributions from 1 April 2022. This represents a saving of about 12.7% of *pensionable pay* compared to the current level of employer contributions to the *DB scheme,* payable up to 31 December 2022 and a saving of 37.2% pay thereafter (employer rates being 41.7%[3] and 66.2% respectively as discussed in paragraph 8.8). Based on the optants up to 31 December 2020, GAD estimate that this represents a saving of up to £11 million a year currently, rising to around £33 million a year from 2023.

1.14 The current pension cash alternative rate is set at a level which appears to be sufficiently attractive to members, resulting in a high initial level of take up (with 1,020 members exercising this option, equivalent to 18% of the membership of the NATS Section at the date of 2020 valuation), whilst providing savings to NERL for members opting out of the NATS Section. Whether the same level of take up would have been achieved if lower rates had been offered is uncertain.

1.15 The pension cash alternative rate received is guaranteed once taken. The rate offered to new optants is subject to review in the future. It is possible that employer contribution rates into the NATS Section could reduce below the 29% pension cash alternative rate at future valuations, resulting in the pension cash alternative being more expensive for those

[3] 41.7% of pensionable pay was agreed with effect from 1 January 2020, based on the valuation as at 31 December 2017, this was marginally less than the net cost of future benefit accrual, as contributions were determined based on an early estimate of the valuation results, it was agreed not to change this aspect of the contributions

members who have already taken the option. However, to put this into perspective, long-term gilt yields would need to increase by c. 2.5 percentage points per annum for this to occur.

1.16 The introduction of the pension cash alternative has also seen an increase in the amount of Cash Equivalent Transfer Values (CETVs) taken with a significant proportion of members who opted-out subsequently choosing to transfer their benefits out of the scheme entirely. Between 31 December 2015 and 31 December 2020. £1.76 billion of transfer values (around 32% of the current value of assets) have been paid out which removes the risk of a future deficit arising with respect to those liabilities. It may be expected that future savings may be limited, with those who were eligible for the option and interested in exercising the option having already taken this up. More generally, the transfer process has come under greater scrutiny in recent years, with increased risk of scams and the importance of having taken appropriate individual advice. This may lead to less appetite for sponsoring employers to engage in enhancement exercises.

Investment strategy

1.17 A scheme's investment strategy affects its investment returns (and therefore its current and future funding levels) and the choice of actuarial assumptions for funding valuations. Several factors affect schemes' investment strategies such as employer covenant, risk appetite and scheme maturity.

1.18 The proportion of assets invested in *return-seeking assets* has reduced within the NATS Section from around 42% at the 2017 valuation to around 24% in December 2020. The reduction in the proportion of *return-seeking assets* results from a shift into more *credit and bond assets*. We understand that the new investment strategy reduces risk as measured by the Trustee's assessment of *Value at Risk (VaR)* by nearly a half but with an expected return that although lower would continue to support the allowance for outperformance in the discount rates.

1.19 The proportion of NATS Section assets invested in *return-seeking assets* is slightly lower than that suggested by data[4] on average UK pension schemes' investment strategies for schemes of a similar maturity, although such a simplified comparison ignores many factors.

1.20 The current investment strategy aims to achieve arguably greater diversification away from *return-seeking assets* with some additional return expectation through investment in a range of *credit and bond assets*. These are assets intended to capture illiquidity premium as an alternative to equity risk premium. This approach in our experience is not uncommon in terms of recent trends in pension scheme investment. *Credit and bond assets* also have some or even significant *matching asset* characteristics especially with assets like corporate bonds.

1.21 The investment strategy now incorporates a *liability-driven investment* (LDI) portfolio, with an increased inflation and interest hedge ratio of around 87% on the NATS Section's

[4] The Purple Book: DB Pensions Universe Risk Profile 2021 published by the Pension Protection Fund

technical provisions. This type of approach is also very common among many UK private sector defined benefit pension schemes[5].

1.22 At a high level, the current investment strategy appears to be broadly reasonable. However, as discussed in paragraph 5.17, the CAA may like to engage with NERL to understand whether the investment strategy is on balance in the best interest of the consumer, in its role of setting allowances for reasonable and efficient costs. It will also be important to monitor the performance of the new investment mandates to ensure they are providing the intended risk-return and offering suitable value-for-money.

Funding valuation assumptions

1.23 The results of actuarial funding valuations of the NATS Section, and therefore NERL's cash pension contributions, depend significantly on the assumptions made for future experience. This report considers the assumptions adopted for the funding valuation as at 31 December 2020, which informs the NR23 projected pension costs.

1.24 The assumptions adopted for a funding valuation are set by the Trustee in consultation with the sponsor and must be prudent when assessing the *technical provisions*. At the 2020 valuation the main source of *prudence* was within the *discount rate* as well as a small amount of prudence in the mortality assumption.

1.25 The most important assumption is the *discount rate*. The approach to setting the *discount rate* changed for the 31 December 2020 valuation. Rather than setting different discount rates for pre- and post-retirement that was used in previous valuations, the discount rate for the 2020 valuation is explicitly term-dependent:

- For the period covering 1 January 2021 to 31 December 2030, the discount rate is 1.8% a year above the yield on government bonds ('gilts').
- This reduces linearly to 0.5% a year above gilts, covering the period up to 31 December 2036, then remaining at 0.5% a year above gilts thereafter.
- We estimate that the single equivalent discount rate[6] is around 1.1% a year above gilts. This is higher than the average rate adopted by UK *DB schemes*[7] of around 0.8% a year above gilts (as assessed by The Pensions Regulator) which could indicate slightly more investment risk and reliance on the strength of the covenant than a typical scheme. It could also reflect the relative immaturity of the NATS Section, which would justify a higher discount rate all other things being equal compared to a less immature scheme.

1.26 In general, the assumptions adopted for the 2020 funding valuation of the NATS Section are within a broadly reasonable range compared to wider practice given the investment strategy adopted by the NATS Section and the assessed *employer covenant* strength. However, consideration should be given as to whether the integrated approach for

[5] The Pensions Expert: The last great risk facing defined benefit pension schemes, 2021

[6] A single equivalent discount rate is broadly the rate that if applied uniformly both pre and post retirement would result in the same liability value as using the different pre and post rates specified

[7] Scheme funding analysis 2021 annex, table 4.1

transitioning to the Trustee's long-term funding objective is appropriate, for example, consider if there is scope for the transition to be delayed.

1.27 We would expect NERL to discuss changes to the funding and investment approach robustly with the Trustee. In view of some comments we have made, CAA could consider the extent the which the costs assessed on the 2020 funding valuation assumptions reflect reasonable and efficient costs to pass through to the airspace users during the NR23 price control period. In addition, CAA may wish to provide further guidance to NERL on expectations of outcomes at the valuation due no later than 31 December 2023.

Defined contribution pension costs

1.28 On average NERL contribute 16% of pensionable pay towards the *defined contribution pension scheme*. This is higher than might be considered typical, with FTSE100 companies on average paying around 11% of pensionable pay[8]. However, the contribution rate is significantly lower than the equivalent *defined benefit pension scheme* contributions, that the *DC scheme* replaced as part of negotiations with trade unions to close the *DB scheme* to new entrants in 2009.

Governance and expenses

1.29 Apart from the level of administrative expenses, the stewardship report provided does not appear to suggest any reasons for concern regarding the operation of the NATS Section.

1.30 We have reviewed the expenses incurred in NATS Section over the five-year period between 1 January 2016 and 31 December 2020. Overall, the level of administrative expenses appears higher than the typical level, when compared to data published by the Pensions Regulator[9]. The CAA may like to explore this point further with NERL to consider if any further action is required.

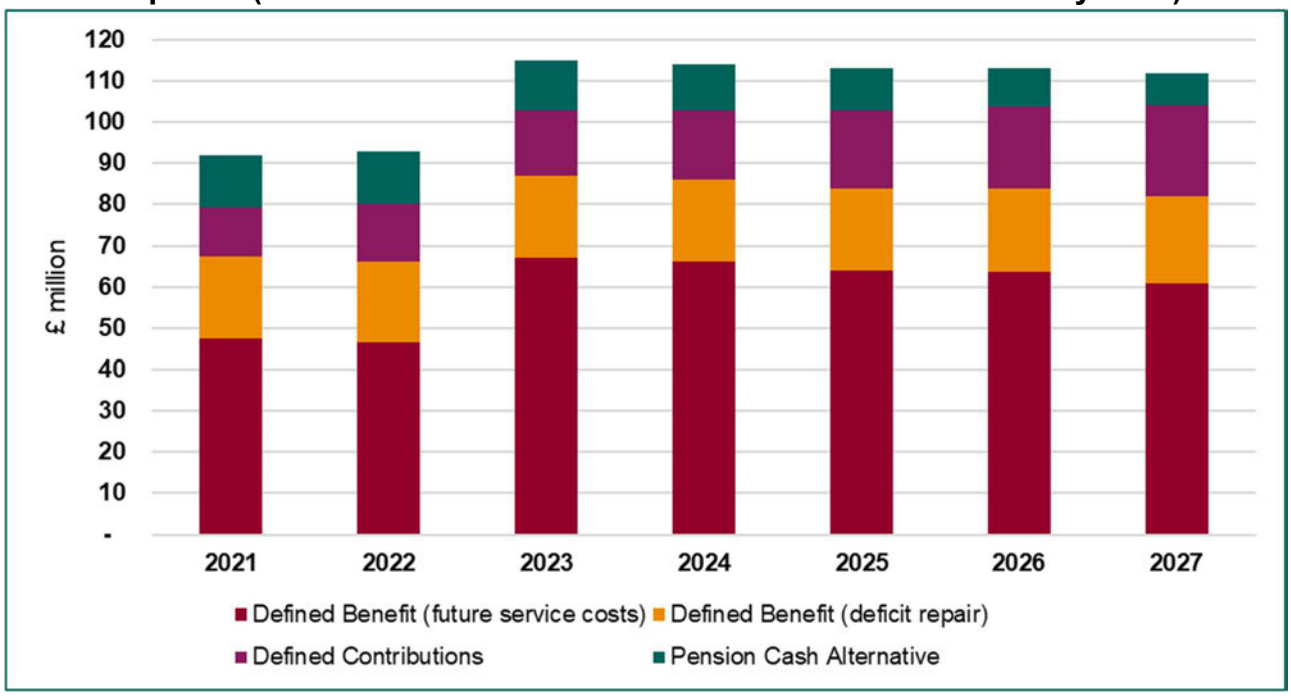
NERL's projected pension contributions

1.31 Figure 1.1 shows NERL's projected pension contributions for calendar years 2021 to 2027, split between contributions to the NATS Section (further split between new accrual and *deficit recovery* payments), contributions towards the *pension cash alternative* and contributions to NERL's *defined contribution pension scheme*.

[8] Willis Towers Watson FTSE 350 DC Pension Scheme Survey, 2021

[9] TPR DB Scheme Costs, 2014

Figure 1.1: NERL's breakdown of projected pension contributions – amounts in 2020 CPI prices (as included in NERL's Business Plan dated 7 February 2022)



1.32 The *defined benefit pension scheme* costs from 2023 onwards reflect the 2020 valuation results as this is when the 2020 valuation will be implemented. The *DB scheme* future service costs are higher in 2023 than in 2022 due to the employer's *standard contribution rate* increasing from 41.7% of *pensionable pay* to 66.2% of *pensionable pay*. The increase in *standard contribution rate* is primarily due to changes in market conditions, specifically the reduction in gilt yields between 31 December 2017 and 31 December 2020.

1.33 The projected pension contributions contained within NERL's Business Plan dated 7 February 2022 appear reasonable to the extent we have been able to verify them. The checks we have carried out and the aspects we are not able to verify are discussed in paragraphs 8.26 to 8.32.

1.34 In view of the increase in costs, CAA should seek further reassurance from NERL regarding the robustness of discussions and the continuing affordability of contributions in the context of providing value-for-money for consumers.

A reasonable and efficient range

1.35 NERL's projected pension costs included within the Business Plan dated 7 February 2022 fall towards the upper bound of what GAD consider to be a reasonable and efficient range of pension costs for the NR23 price control period. This analysis is supported by three scenarios showing the lower, mid and upper bounds of reasonable and efficient pension costs. These estimated costs are set out in the following table. It is worth noting:

- These estimated costs include defined benefit future service contributions, deficit repair contributions and allowance for the defined contributions scheme and the pension cash alternative option.

- This analysis is intended to provide an indication of the impact to pension costs in NR23 if various changes were made to the assumptions underlying the actuarial valuation. Further details of changes captured in GAD's estimated costs are given in section 9.

Table 1.1 GAD's estimated reasonable range of pension costs

Calendar years 2020 prices £m	2023	2024	2025	2026	2027
Lower bound	56	55	55	55	55
Mid-range	81	81	80	79	79
Upper bound	131	130	129	128	128
Total pension costs in NERL Business Plan	115	114	113	112	112

Considerations for the CAA

1.36 The CAA will be assessing, in broad terms, the overall efficiency of costs in NERL's Business Plan dated 7 February 2022. Throughout this report we have highlighted some areas for pension costs which the CAA may like to consider within its assessment. These areas and the relevant sections of the report are summarised below:

- engaging with NERL on an appropriate long-term investment strategy – Section 5
- engaging with NERL to ensure the right balance between the interest of consumers and timeframe for the transition to the long-term strategy of the scheme – paragraphs 6.15 to 6.23
- whether the administrative costs incurred represent value for money – paragraphs 7.6 to 7.13
- that a regulated proportion of 75%, and the underlying salary projections that inform the pension contribution projections in the Business Plan dated 7 February 2022, are correct and consistent with data and analysis of other components of the price review – paragraphs 8.6 to 8.7 and 8.26 to 8.32
- consider whether removal of the outperformance margin within the calculated deficit repair contributions as at the 2020 valuation represents efficient cost management – paragraphs 8.14 to 8.21
- considering NERL's Business Plan dated 7 February 2022 relative to the reasonable and efficient range of costs presented in Section 9, which are broadly consistent with a discount rate set between the 70th and the 95th percentile relative to TPR's analysis of *defined benefit* pension schemes

Limitations

1.37 This review considers NERL's pension arrangements only. It is recognised that pension arrangements are only part of overall remuneration packages.

1.38 This report compares the NATS Section with publicly available information on other UK private sector *defined benefit pension schemes*. Such comparisons do not consider factors which affect specific industries, sponsoring employers or pension schemes in isolation, and are provided as a guide only.

1.39 *Defined benefit pension schemes*' benefits, investment strategies and funding approaches should reflect each scheme's particular circumstances. It is beyond the scope of this report to consider all such factors. It is recognised that a "one-size fits all" approach is not appropriate. This review must not be interpreted as advising that a particular approach is necessarily inappropriate.

1.40 The purpose of this report is to assist the CAA in considering its price controls for the period 1 January 2023 to 31 December 2027. This report does not represent advice on the appropriate funding of the NATS Section, or other pension schemes.

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2. Introduction

2.1 This report has been prepared by the Government Actuary's Department ('GAD') at the request of the Civil Aviation Authority ('CAA').

2.2 The CAA is the economic regulator of NATS (En Route) plc ('NERL'). Every five years the CAA sets price controls which limit the maximum revenue NERL is permitted to earn from its regulated businesses. The CAA is currently reviewing the price controls for period NR23, 1 January 2023 to 31 December 2027.

2.3 As part of this review, the CAA considers pension costs projected to be incurred. NERL's pension costs are with respect to a *defined benefit pension scheme (DB scheme)* for employees joining before 2009 and a *defined contribution pension scheme (DC scheme)* for employees joining after 2009. The relevant *DB scheme* is the NATS section of the Civil Aviation Authority Pension Scheme (referred to as the 'NATS Section' in this report).

2.4 The CAA has asked GAD to perform a review of the pension costs of NERL. This report sets out the results of our analysis. This report should support CAA in understanding the factors affecting NERL's pension costs and the extent to which the NATS Section's funding approach is consistent with that of other UK private sector *defined benefit pension schemes*.

2.5 This report builds on GAD's report on the RP3 price control review for NATS (En Route) plc dated 24 September 2018, which considered the assumptions and approach used by NERL to project their pension contributions for the price control period from 1 January 2020 to 31 December 2024. Primarily this was based on the actuarial valuation that occurred as at 31 December 2017.

2.6 In August 2019, the CAA published its final decision on the terms of NERL's price controls for RP3. However, NERL did not consider that the proposed modifications to its licence were in the public interest. NERL rejected CAA's proposed licence modifications and in November 2019 CAA made a reference to the Competition and Markets Authority ('CMA'). Part of the reference required the CMA to investigate and report on whether the conditions proposed by CAA were in the public interest.

2.7 During the period when the CMA was considering the reference to the CMA, the COVID-19 pandemic emerged, with a particularly severe impact on the aviation sector. The CMA established price controls covering the two-year period from 1 January 2020 to 31 December 2022. It was agreed that a new price control period would be agreed from 1 January 2023, allowing for the impact of the COVID-19 pandemic. The requested costs are based on the results of the actuarial valuation as at 31 December 2020, which we understand did not specifically address the long-term impacts of the COVID-19 pandemic. The long-term impacts of the COVID-19 pandemic remain unclear at this stage, and further information would be required to support a robust and evidence based adjustment to the submitted pension costs.

Structure of this report

2.8 The main areas we have considered in our review are:

- **Section 3: scheme benefits** – the more generous the benefits the higher the ultimate cost for consumers
- **Section 4: considering consumer interests** – wider areas that will impact the ultimate cost for consumers
- **Section 5: investment strategy** – this affects investment returns and the risk of future surplus and deficits emerging, which impacts on current and future *funding levels* as well as the choice of *discount rate*
- **Section 6: valuation assumptions** – primarily choice of discount rate and mortality assumptions, but also the cost of hedging risks if these strategies are employed. This affects the level of contributions assessed to be required
- **Section 7: governance and expenses** – discussion on the governance of NERL's pension arrangements and level of administration expenses
- **Section 8: NERL's projected pension contributions** – comments on the level of contributions required following the 31 December 2020 valuation including how the deficit recovery plan has been structured
- **Section 9: Reasonable and efficient range** – illustrates a range of pension costs that might be considered reasonable and efficient, incorporating comments from throughout the report, in particular Section 5 and Section 6

2.9 This report mainly considers the NATS Section which is currently responsible for the majority of NERL's pension costs. Reviewing NERL's *defined contribution pension scheme (DC scheme)* is more straightforward than reviewing their *defined benefit pension scheme* because the *DC scheme* pension costs are equal to the set level of contribution which, subject to legislative requirements, is in the control of the employer. NERL's *DC scheme* contributions are covered in Section 8. NERL offer a Pension Cash Alternative targeted at employees with accrued pension close to tax thresholds, these costs are considered in paragraphs 4.15 to 4.22.

2.10 The Appendices provide further supporting information:

- **Appendix A** provides a high-level summary of the terms of reference for this review.
- **Appendix B** lists the information on NERL's pension arrangements used in this review.
- **Appendix C** sets out the business plan guidance the CAA provided to NERL.
- **Appendix D** provides some background on pension scheme funding and contributions.
- **Appendix E** summarises factors affecting a pension scheme's high-level investment strategy.

- A glossary is included in **Appendix F** which contains any terms in *italics* within the main report.

Information used

2.11 Appendix B lists the information on NERL's pension arrangements which has been provided to us by the CAA, NERL and the NATS Section Scheme Actuary, as well as information in the public domain, such as that published by The Pensions Regulator ('TPR') and Pension Protection Fund ('PPF'). Our analysis is based solely on this information and relies on it being complete and accurate. We have not independently verified any of the information provided.

2.12 The CAA and NERL were shown drafts of this report before it was finalised, for comment and to check factual accuracy. The CAA and NERL's comments have been borne in mind when preparing the final version.

Distribution and publication of this report

2.13 This report is addressed to the CAA. We are aware that the CAA may make this report available to other parties, including NERL and the Trustee of the NATS Section and their advisers. We are aware that the CAA intend to publish this report in its entirety, or to quote this report in part, subject to confidentiality requirements. GAD reserves the right to review and comment on any documents in which the CAA quotes or refers to this report in part.

2.14 Advice provided by GAD to the CAA is intended solely for the use of CAA. GAD does not accept any responsibility to third parties who may read this report or extracts from it.

Compliance

2.15 This work has been carried out in accordance with the applicable Technical Actuarial Standard: TAS 100 issued by the Financial Reporting Council (FRC). The FRC sets technical standards for actuarial work in the UK.

3. Scheme benefits

3.1 Scheme benefits are one of the main determinants of *defined benefit pension scheme* (*DB scheme*) ultimate costs, and therefore also of contribution rates to schemes. The more generous the benefits, the higher the contributions, all else being equal. This section considers the benefits provided by the NATS Section, the closure of the scheme to new entrants and changes made to benefits for existing members. The purpose of this is to understand the level of the required contributions especially in relation to *DB schemes* more generally.

3.2 The employer *standard contribution rate* would be 10-15% of *pensionable pay* lower if the benefits in the NATS Section were aligned to those of a typical UK pension scheme. Total contributions to the *DB scheme* are projected to account for around 75% of NERL's total pension costs over the NR23 price control period.

3.3 We understand that the NATS Section benefits reflect the scheme's public sector origins and that they are protected under provisions in the scheme's Trust Deed and Rules, the 'Trust of a Promise' document and the 'Memorandum of Understanding'. This protection restricts the extent to which the *DB scheme*'s benefits and member contribution rates can be changed, in respect of both past and future service, for those NERL employees who were active members of the scheme at the date of closure to new entrants. The CAA may like to take legal advice, if necessary, to understand the extent to which the NATS Section's provisions can be amended.

Closure of scheme to new entrants

3.4 The NATS Section was closed to new entrants with effect from 31 March 2009. Existing active members of the scheme continued to accrue benefits in respect of service after this date, but new employees were offered membership in a *defined contribution pension scheme (DC scheme)* instead. Closing the *DB scheme* to new entrants is the most significant step that could be taken towards managing the NERL pension costs.

3.5 *DC schemes* typically, but need not, involve lower employer pension contributions than a *DB scheme*. Whether contributions are lower to a *DC scheme* or a *DB scheme* depends on the design of the two schemes.

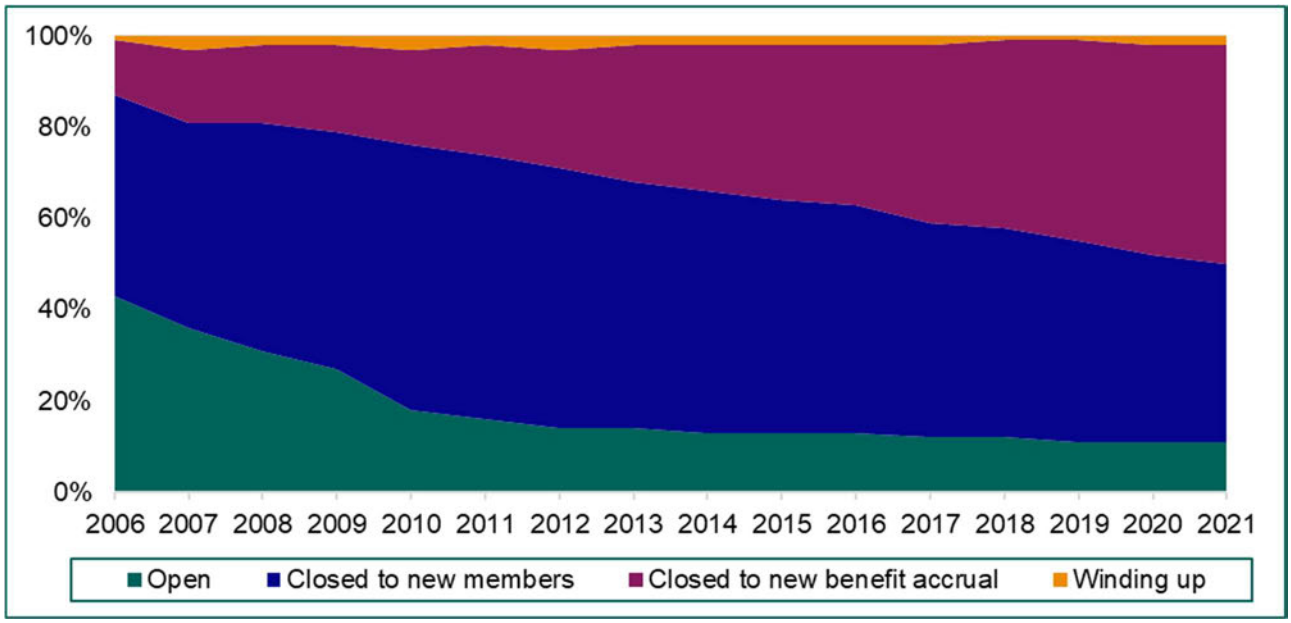
3.6 The main difference between DB and DC provision for an employer relates to risk: in a *DB scheme* the employer bears the risk of adverse future experience through the possibility of deficiency contributions being required, whereas in a *DC scheme* the risk of adverse future experience rests with the member through lower-than-expected benefits.

3.7 Therefore, replacing the *DB scheme* with a *DC scheme* for new entrants reduces NERL's exposure to deficiency contributions, and is expected to reduce overall pension costs and therefore to benefit consumers. These effects will increase over time, as more entrants join the *DC scheme* and the liabilities of the *DB scheme* run down.

3.8 Following the most recent formal actuarial valuation as at 31 December 2020, NERL's increased contribution rate to the NATS Section of 66.2% of *pensionable pay* in respect of benefit accrual plus additional contributions to address the scheme's assessed deficit is significantly higher than its employer contribution rate to the *DC scheme*.

3.9 Figure 3.1 below shows how the distribution of open and closed schemes regulated by TPR in the UK has evolved from 2006 to 2021. This shows only 11% of *DB schemes* are currently open to new members, with 39% being closed to new members (such as the NATS Section) and 50% either closed to future accrual or in the process of winding up. NERL's provision of a *DC scheme* for new entrants is consistent with wider UK practice. Due to the member protections in place, we understand that NERL cannot fully close the *DB scheme* to future accrual for existing members.

Figure 3.1 Proportion of all UK defined benefit pension schemes (regulated by TPR) closed from 2006-2021



Note: the schemes remaining open has held steady since around 2012; however, the proportion of UK schemes closed to new members decreases from 2010 onwards as more schemes move from this status to being fully closed to future accrual.

Benefit structure

3.10 The principal benefits provided by the NATS Section are summarised in Table 3.1. The benefits are unchanged since GAD's last review in 2018. This table also shows the benefits offered by "typical" UK private sector *defined benefit pension schemes*[10] from ONS survey data.

3.11 Table 3.1 shows that the NATS Section benefits are more generous than those provided by typical UK private sector *DB schemes*. Benefits are paid unreduced five years earlier (from age 60 compared to age 65), they accrue at a slightly quicker rate (58ths compared to 60ths) and dependants receive a higher pension.

[10] Occupational Pension Schemes Survey 2019 (ONS)

Table 3.1 NATS Section benefits (principal benefits only)

	NATS Section	"Typical" UK scheme
Age at which unreduced benefits are paid (NRA)	60	65
Accrual rate	58ths	60ths
Dependants' pension after death of member	67%[1]	50%
Lump sum on retirement	By commutation	By commutation
Member contributions (% of pensionable pay)	6%[2]	6%
Pension increases (in payment)	RPI/CPI[3]	RPI/CPI with cap[4]

Notes

1) Increased to 100% in the period of 10 years following the member's retirement.

2) Some members pay lower rates of contribution.

3) Benefits earned in respect of service before 31 October 2013 are increased in line with the Retail Prices Index (RPI). The Consumer Prices Index (CPI) is expected to increase by less than RPI on average over the long-term. It is HM Government's intention to align the RPI inflation measure with CPIH from 2030 onwards.

4) UK private sector DB pension schemes' pension increases, certainly for benefits earned after 1997, typically reflect increases in either the RPI or CPI, depending on the scheme rules. Increases are often capped at 2½% or 5% a year.

3.12 We estimate that if the NATS Section benefits were in line with the typical benefits outlined in Table 3.1 then the employer *standard contribution rate* would be around 52% of *pensionable pay*, compared to the 66.2% of *pensionable pay* determined at the 2020 valuation. This would result in NERL's pension contributions being around £10 million lower a year during NR23 (in 2020 CPI terms). The purpose of this approximate calculation is solely to illustrate the broad effect of the level of the NATS Section benefits (which there is limited scope to changing) on NERL's projected contributions.

3.13 This comparison with a "typical" UK private sector *DB scheme* is only approximate. It considers pension benefits in isolation, ignoring industry or company specific factors and other elements of the remuneration package.

Recent changes to benefits

3.14 Despite the limited scope for changing benefits, NERL have historically made some changes which will reduce the ultimate cost of providing the benefits and therefore the level of contributions required:

- **Pensionable pay cap** – In 2013 agreement with the trade unions was reached to limit future pensionable pay increases resulting from general pay awards[11] to a maximum of CPI + 0.25% a year up to January 2024.

- **Indexation on benefits** – Benefits accrued after 31 October 2013 are increased in line with CPI in payment as opposed to RPI. CPI is expected to increase by less than RPI on average over the long-term so this is expected to reduce the cost of providing the benefits. Benefits accrued before this date are still increased relative to RPI. The extent to which benefits accrued before 31 October 2013 can be indexed with respect to CPI instead of RPI, will depend on the legal position of such a change as well as the views of the unions and any associated implications**.**

  NERL have informed us that restrictions agreed with unions in 2013 as part of the agreement on the introduction of a pensionable pay cap make it very unlikely that there can be any NERL requests of the Trustee to further change indexation before 2024 without union agreement. The CAA may wish to seek evidence of this agreement and seek advice on whether such a change is possible, as appropriate. We are not aware of any agreements in place for pay awards after 2024, CAA may wish to engage with NERL to ensure that any future agreements on pensionable pay after 2024, and the secondary impacts on pension cost, are reasonable and provide value to the airspace users. CAA should ascertain the pensionable pay projection assumption used by NERL in their Business Plan dated 7 February 2022, and ensure that they are comfortable with this assumption.

3.15 The Chancellor launched a consultation on the future of RPI on 11 March 2020 following a recommendation by the UK Statistical Authority that RPI be discontinued. The Chancellor responded to the consultation on 25 November 2020, confirming that RPI will be aligned with CPIH (a measure of CPI with an allowance for owner-occupier housing costs); that the timeline for such change is in 2030; and that no compensation is offered to holders of index-linked gilts. The announced change to align the RPI measure of inflation with CPIH from 2030 will reduce the cost of RPI-linked benefits accrued before 31 October 2013 if it is implemented. However, on 23 December 2021 the trustees of the BT, Ford and Marks and Spencer pension schemes were granted a judicial review of HM Government's decision to replace RPI, and the hearing is expected in Summer 2022. It remains HM Government policy for this change to be made, however it should be noted that there is some element of uncertainty in the indexation reform pending the review.

Cessation of contracting out

3.16 Due to the introduction of the new state pension system in April 2016 under the Pensions Act 2014, contracting out of the Second State Pension was abolished resulting in employers no longer receiving National Insurance contribution rebates of 3.4% of relevant band earnings.

3.17 Under the Act, a statutory override was made available to employers which enabled them to either increase member contributions or reduce benefits to offset the increased employer cost due to the loss of the rebate. NERL have confirmed that due to the benefit protections within the 'Trust of a Promise' document this override could not be applied to protected members of the scheme without Department for Transport consent. NERL have

[11] Increases in pensionable pay due to promotions are not capped

informed us they were unable to obtain consent and following careful consideration decided not to implement changes to those minority of active members without the protection. The cessation of contracting-out in isolation has resulted in increased pension costs for NERL.

GMP equalisation

3.18 The Lloyds Bank Court Judgement in October 2018 established that pension schemes cannot provide unequal benefits in respect of post 17 May 1990 service to men and women because of the Guaranteed Minimum Pension element of the pension being unequal.

3.19 The impact of this judgement has led to many schemes establishing a reserve to fund the uncertain cost of equalising for Guaranteed Minimum Pensions. The estimated impact varies from scheme to scheme and is determined by various factors such as the mix of members and the benefit structure.

3.20 At the 2020 valuation the Trustee established a reserve of £1m to fund the cost of equalising for Guaranteed Minimum Pensions. We are not able to provide any comment on the extent to which this is reasonable and such a reserve would appear trivial in respect of funding considerations.

4. Considering consumer interests

4.1 This section considers the wider areas that will impact on the cost efficiency of NERL's pension arrangements and therefore the level of consumer costs. This includes the treatment of any surplus that may arise, actions NERL have taken to manage pension costs, eligible changes to pass through costs due to EU regulation 391/2013 and actions other regulators are taking.

4.2 The main area to be considered regarding the treatment of surplus is whether surplus is used for de-risking the investment strategy. Therefore the surplus would not be returned to NERL (and ultimately consumers) and there is the possibility for a long-term trapped surplus.

Application of future surplus

4.3 If the *neutral estimate* investment returns are achieved in practice, then a surplus is expected to emerge during 2025. However, depending on scheme experience and market conditions a surplus may emerge earlier or later than this, although it will only be recognised at a formal funding valuation (typically every three years). NERL have not provided any further information on the likelihood of a surplus emerging in any given year. However, the potential timing of a surplus arising should not change the focus of considering the most appropriate strategy of how to use any future surplus, which we would expect to have regard to the best interests of consumers.

4.4 In the event of a future surplus arising in the scheme the Trustee could consider using that surplus to de-risk the investment strategy or reduce employer contributions.

4.5 A reduction in employer contributions would potentially be passed onto consumers as a saving. Were the trustees to decide to de-risk the investment strategy or to accelerate the transition to a long-term funding target this may act to increase the assessed *standard contribution rate* and therefore these costs may be passed on to the consumers to the extent the costs could not be met out of emerging surplus.

4.6 NERL state in their Business Plan dated 7 February 2022 that their preferred long-term strategy is to fund the scheme on a long-term low-risk basis. This indicates that priority might be given to de-risking the investment strategy if the Trustees is supportive of this approach rather than passing savings onto consumers.

4.7 Typically, de-risking uses the surplus in the following ways:

- Currently held return seeking assets are switched to matching assets (such as index-linked gilts). Matching assets are expected to provide cash-flows to match the liability payments so that future deficits are less likely to emerge. The discount rate used to put a value on the liabilities therefore decreases to reflect the market yield on the assets, which places a higher but market consistent value on the liabilities and therefore removes the surplus.

- The existing strategy is maintained at least for the time-being with the intention of supporting a higher allocation of matching assets at some point in the future, perhaps by bringing forward the point at which the transition to a lower risk investment strategy

is assumed to occur. In this case the discount rate used to value benefit payments in the future decreases and therefore also removes the surplus.

- Although the intention is to transition to a lower-risk investment strategy at some future date that is expected to be less costly than securing the benefits with an insurance company, arguably emerging surplus could be used instead to insure the benefits as a further de-risking option if it was felt in the best interest of all stakeholders. The benefit would be to transfer the entire risk of providing the insured benefits to the insurance company.

4.8 When de-risking an investment strategy, the pace at which it occurs is important, as it may result in lower discount rates being adopted at an actuarial valuation and therefore an increase in the employer *standard contribution rate*. Material de-risking when there are still active members in the scheme may therefore ultimately increase costs for consumers.

4.9 However, de-risking would be expected to result in less volatile funding valuation outcomes at future valuations, so the chance of a deficit re-emerging and requiring further deficit recovery contributions at a cost to consumers will be lower.

4.10 NERL also state in their Business Plan dated 7 February 2022 that if a surplus were to arise, they will work closely with the Trustee to ensure an appropriate balance is struck between de-risking the investment strategy and reducing future contributions. The CAA may wish to engage with NERL as appropriate with the intention of seeking that the long-term strategy (and the timeframes for transitioning to the long-term strategy) reflects an approach which on balance is in the best interests of consumers reflecting the maturity and strength of sponsor covenant.

Trapped surplus

4.11 We understand that apart from the above two options of offsetting the cost of future benefit accrual or de-risking the investment strategy, and subject to legal clarification, NERL cannot access any surplus until the pension scheme is wound up. This suggests that the potential of a trapped surplus occurring over the long term is a possibility. A trapped surplus is where there is still a surplus in the scheme once the investment strategy is fully de-risked and there are no more active members (and hence no further employer contributions to the scheme). In these circumstances NERL would be unable to take a contribution holiday or pay lower contributions to access the surplus. Contributions returned to NERL if the scheme was wound up would attract a tax charge.

4.12 The impact of a trapped surplus should be considered during the consultation phase of a funding valuation and when the recovery plan is designed. All else being equal, reducing the amount of prudence in the valuation assumptions or adopting recovery plan that is longer or allows for expected out-performance, back-end loading of the contributions, or making payments into an escrow account, would reduce the likelihood of a trapped surplus occurring in the future. The level of prudence contained in the valuation discount rate is discussed in further details in paragraphs 6.28 to 6.32.

4.13 We understand that the asset reallocation undertaken since our previous review has reduced the Trustee's assessment of investment risk as measured on a *Value at Risk (VaR)* measure by nearly a half but with an expected return that, although slightly lower, would continue to support the allowance for outperformance in the discount rates. This being the case, the changes should reduce the likelihood of trapped surplus emerging in

the future even if the *discount rate* remains the same and there are no changes to the *standard contribution rate* all other things being equal. This is because the potential for upside returns in the investment strategy has also been reduced relative to the same on-going costs as well as the likelihood of future deficits emerging. The extent to which this is achieved may be monitored to ensure it is delivering in line with intentions and providing value for money for the airspace users.

4.14 The CAA may wish to engage with NERL regarding the long-term strategy and the likelihood of a trapped surplus emerging; ensuring that there is a robust process and approach in place between NERL and the Trustee to mitigate any future surplus risk.

Pension cash alternative

4.15 In 2016, NERL introduced a *pension cash alternative* to members of the NATS Section. Under this option, instead of continuing to accrue benefits within the scheme eligible members could instead opt to receive 25% of *pensionable pay*. According to the Trustee Report and Accounts, around 1,020 members have opted for the pension cash alternative up to 31 December 2020. Based on the average salary of members within the scheme, this would represent a saving of up to £11 million a year under the existing contribution rates, and around £33 million a year once the 2020 valuation contribution rates are implemented in 2023. We note that this option received a high take up in the first two years, 980 members up to 31 December 2017. However, since then, based on the information available with the Trustee Report and Accounts, we estimate that only a further 40 members have elected to take this option (up to 31 December 2020).

4.16 Eligible active members are those whose existing pension benefits within the scheme are greater than 85% of their *Lifetime Allowance* or those members who take a Cash Equivalent Transfer Value (CETV) greater than 85% of their *Lifetime Allowance*. For these members, continuing to accrue pension benefits may not be tax efficient. Where it is not tax efficient, opting for an appropriate level of cash in lieu of further pension benefits may be beneficial for both the employee and NERL. We understand independent financial advice must be sought by the member, as agreed with the Trade Unions, before being allowed to opt for the *pension cash alternative*.

4.17 Once a member opts to receive the *pension cash alternative* they will continue to do so until the point that employer contributions would have ceased within the NATS Section. If the member retains their deferred benefits within the scheme (i.e. they do not take a CETV) then they will also continue to be eligible for the same level of death and ill-health benefits as apply to active members.

4.18 The *pension cash alternative* is guaranteed to remain at 25% of *pensionable pay* for existing contracts but is subject to review at future valuations of the NATS Section for any contracts that have yet to start.

4.19 The *pension cash alternative*, including the associated National Insurance contributions, costs NERL 28.5% of *pensionable pay*, increasing to around 29% from 31 March 2022 reflecting UK government policy to increase employer's national insurance contributions by 1.25% percentage points. This represents a saving of about 37.2% of *pensionable pay* compared to the agreed employer contributions to the *DB scheme* payable from 31 December 2022.

4.20 The current *pension cash alternative* rate is set at a level which appears to be sufficiently attractive to members, resulting in a high level of take up, whilst providing significant savings to NERL. Whether the same level of take up would have been achieved if lower rates had been offered is uncertain and should be subject to regular review and monitoring.

4.21 If NERL's DB *employer standard contribution* rate fell below 29% at future valuations, this would result in the *pension cash alternative* being more expensive for the employer than if the optants were members of the *DB scheme*. Our approximate calculations indicate that this would occur if long-term interest rates were to increase by around 2.5% percentage points per annum, assuming that these are the principal driver of discount rates.

Liability reduction management

4.22 The introduction of the *pension cash alternative* has seen an increase in the amount of CETVs taken with a significant proportion of members who opted-out transferring their benefits out of the scheme. Between 1 January 2016 and 31 December 2020 £1.76 billion of transfer values (around 32% of the current value of assets) have been paid out which removes the risk of a future deficit arising with respect to those liabilities. There was a modest reported gain relative to the 2020 valuation basis of £7 million in respect of transfers between 1 January 2018 and 31 December 2020.

4.23 More generally, the transfer process has come under greater scrutiny in recent years, with increased risk of scams and the importance of having taken appropriate individual advice. This may lead to less appetite for sponsoring employers to engage in enhancement exercises as a means of reducing liabilities.

Cost exempt report

4.24 Under EU regulation 391/2013 we understand there are circumstances whereby NERL can adjust the costs to be passed through to consumers from those agreed with the CAA before the price control period. In such cases NERL provide a cost exempt report to the CAA.

4.25 To be in scope, the pension costs must be due to unforeseen changes in either:

- national pensions law;
- pension accounting;
- financial market conditions.

4.26 At a high level, we would expect changes in pension costs due to unforeseen changes in financial market conditions to only occur as a result of a funding valuation, so typically this would only be claimed every 3 years (assuming triennial valuations occur). Whereas unforeseen changes in national pensions law and pension accounting are likely to occur on a more ad-hoc basis.

4.27 We understand that the CAA and NERL have established principles with NERL as to the scope of the cost exempt report, this mechanism was in place over the course of the last price control period.

Approaches taken by other schemes

4.28 In seeking to manage the *defined benefit pension scheme* as efficiently as possible we would expect NERL to consider the merits of approaches used by other pension schemes to reduce costs or risks.

4.29 **Enhanced CETVs** – some schemes choose to offer enhanced CETVs where the value being offered is higher than the statutory minimum but lower than the liability on the *technical provisions* basis. This can lead to an increased take up of CETVs which will improve the funding level at future valuations and mitigate the risk of a future deficit arising with respect to those liabilities that have been transferred out.

4.30 We understand NATS Section previously offered CETVs at a level higher than statutory minimum. CETVs have subsequently been reduced in value to reflect the statutory minimum amounts. This will result in a saving if a member takes a CETV but conversely it will provide members with less incentive to take a transfer. If this then results in reduced transfer activity, it may limit any future gains and reduction in risk that otherwise may have occurred. In recent years there has been an increased focus on the risks faced by pensions scams arising from transfers, and the requirements for individuals to have taken advice from an individual financial advisor. It is likely that this increased attention and regulatory burden may reduce the appeal of engaging in such member options exercises in the future.

4.31 **Pension increase exchange** – other member options exist, such as pension increase exchange; members are offered higher initial pensions with pension increases reduced (to statutory minimum levels). This option may be valued by members for the increased pension during the initial years of retirement, whilst helps to manage the scheme liabilities through lower inflation risk and longevity risk. [redacted]

4.32 **Commutation factors** – We understand the principle behind setting commutation factors within the NATS Section is for them to be set at a level such that the gap between commutation factors and the value of commutation as assessed on the *technical provisions* basis remains broadly constant over time. A more typical approach might be for the *neutral estimate* basis to be adopted to set commutation factors as this reflects the expected value of the pension that is being commuted to cash. An alternative approach could be to set commutation factors at a rate lower than *neutral estimate*, for example to reflect pricing of selection specific factors

Recent approaches by other regulators

4.33 The CAA could consider the merits of approaches used by other regulators to incentivise their regulated companies to manage their pension schemes more effectively. For information these approaches are summarised below. Please note, however, it has not been considered whether such approaches are appropriate or not for the CAA.

Consumer interests

4.34 A key cost determinant in funding the scheme is the investment strategy and identifying the optimal level of strategy risk. In developing their approach, Ofgem have challenged their regulated companies to demonstrate that they have taken consumer interests into account in setting strategies. This led to some of the companies consulting with consumers on the appropriate level of risk to take within the scheme's investment strategy. Further, Ofgem have challenged companies to demonstrate that good governance procedures are in place and that schemes' running expenses are demonstrably value for money.

4.35 Ofgem have determined their approach to pensions deficits[12] (April 2017). We note that Ofgem had previously envisaged pension scheme deficits being repaid over a fixed 15-year period. However, having identified some potential issues with the use of a fixed 15-year period and a "stop dead" date (for example, use of excessive margins for *prudence* in actuarial valuations carried out in the run up to the "stop dead" date), Ofgem's future direction will include more flexibility over what the *recovery period* should be.

Pension deficits

4.36 Ofgem and the Utility Regulator for Northern Ireland use a Pension Deficit Allocation Methodology (PDAM), whereby only deficit attributable to pensionable service up to a defined cut-off date can be passed through to consumers.

4.37 Other regulators have taken different approaches to their price reviews to incentivise regulated companies to act efficiently. In contrast to the Ofgem approach, Ofwat disallowed 50% of deficit contributions as it believed this would create a stronger alignment between the shareholders and consumer interests. Ofwat have also stated that they will allow no more deficit contribution payments beyond the end of the recovery plans agreed in 2009 (effectively introducing a fixed end point for consumer support of pension scheme deficits). The end dates for these recovery plans typically range from 2019 to 2025.

4.38 Further, we are aware that Ofcom disallowed all deficit contributions in determining pension cost allowances for BT. The regulatory approach on allowance for deficit contributions appears quite wide.

[12] Decision on Ofgem's policy for funding Pension Scheme Established Deficits, April 2017

5. Investment strategy

5.1 *Employer covenant*, risk appetite and scheme maturity affect the Trustee's choice of investment strategy and therefore investment returns. This feeds into the choice of actuarial assumptions for funding valuations, and therefore projected contributions. We understand that the Trustee has assessed the *employer covenant* as strong. We would, therefore, expect that this would be reflected in the approach to the investment strategy.

5.2 There has been a change in the NATS Section investment strategy since GAD's previous review, and this has included a reduction in the proportion of *return seeking assets* in favour of more *credit and bond assets*. The proportion of *return-seeking assets* held is slightly below the average of UK *DB schemes* with similar maturity.

5.3 A summary of the key factors that influence the high-level strategic investment strategy for a funded *defined benefit pension scheme* is given in Appendix E. The analysis in this section concentrates on a high-level split between *return-seeking assets* and *matching assets*. A more detailed analysis of specific asset classes is beyond the scope of this report.

NATS Section investment strategy

5.4 At the 2020 valuation date, the NATS Section assets were invested as follows:

- 24% invested in *return-seeking assets* (equities, property and other alternatives).

  These assets primarily seek returns above "risk-free" rates to reduce the cost of providing benefits. The investments are inherently riskier and so the overall allocation to such assets is a trade-off between cost and risk.

- 47% invested in *credit and bond assets* (multi-asset credit and bond investments and overseas government bonds).

  These assets exhibit some of the properties of *return-seeking assets* targeting a return above "risk-free" rates arising from an illiquidity premium, but instead are exposed to default risk and some market or reinvestment risk. They also exhibit some or even a lot of the properties of *matching assets* because they can produce income payments that can also be used to match liability payments, or they have redemption yields that are strongly correlated to gilt yields and hence market values that move in line with liabilities.

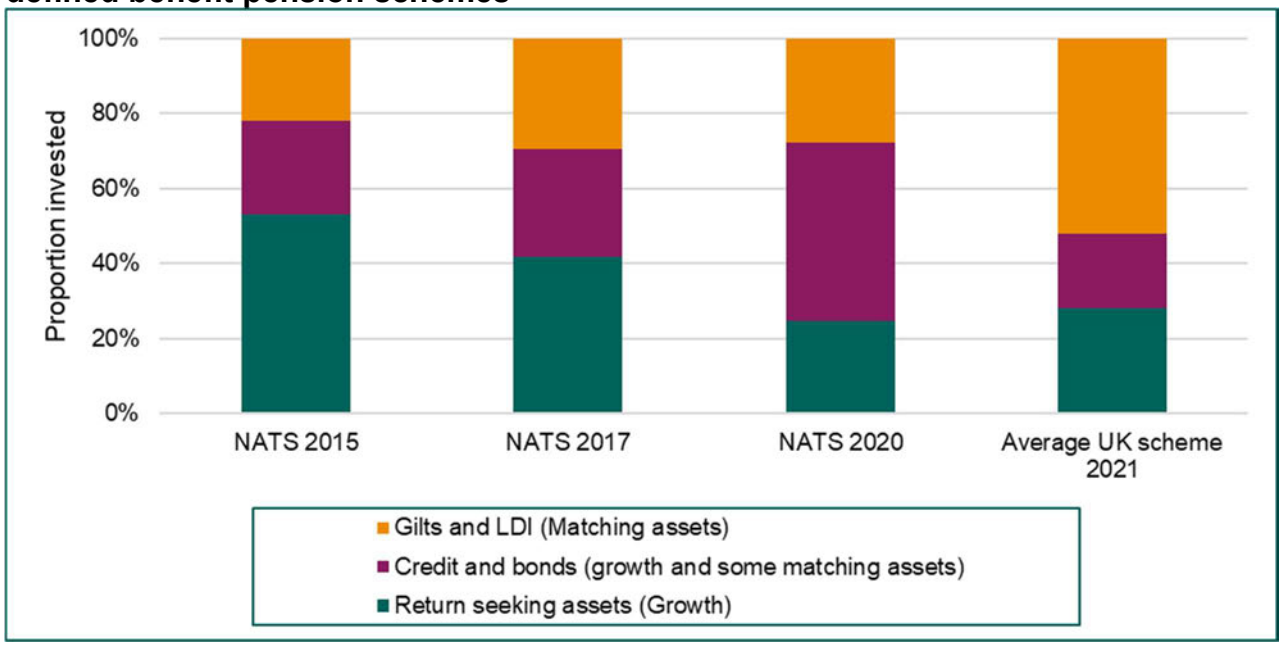
  Together the *return-seeking assets* and *credit and bond assets* make up the growth portfolio of the DB schemes invested assets.

- 29% invested in *liability-driven investment (LDI)* portfolio (UK government index-linked bonds and derivative contracts providing leverage). These can be considered as *matching assets*.

  These assets primarily provide the 87% hedging of interest and inflation risk as a means of hedging basis risk in the valuation of assets and liabilities.

5.5 Figure 5.1 illustrates the NATS Section investment strategy at the 2020 valuation, as well as for comparison its strategy at the 2017 valuation and the average asset allocation for UK private sector *defined benefit pension schemes* in 2021[13]. It is more useful to compare the respective allocations to *return-seeking assets* (the blue bars in figure 5.1) with the average UK scheme as the Purple Book does not differentiate between matching and low risk assets.

Figure 5.1 NATS Section's investments versus average asset allocation of UK defined benefit pension schemes



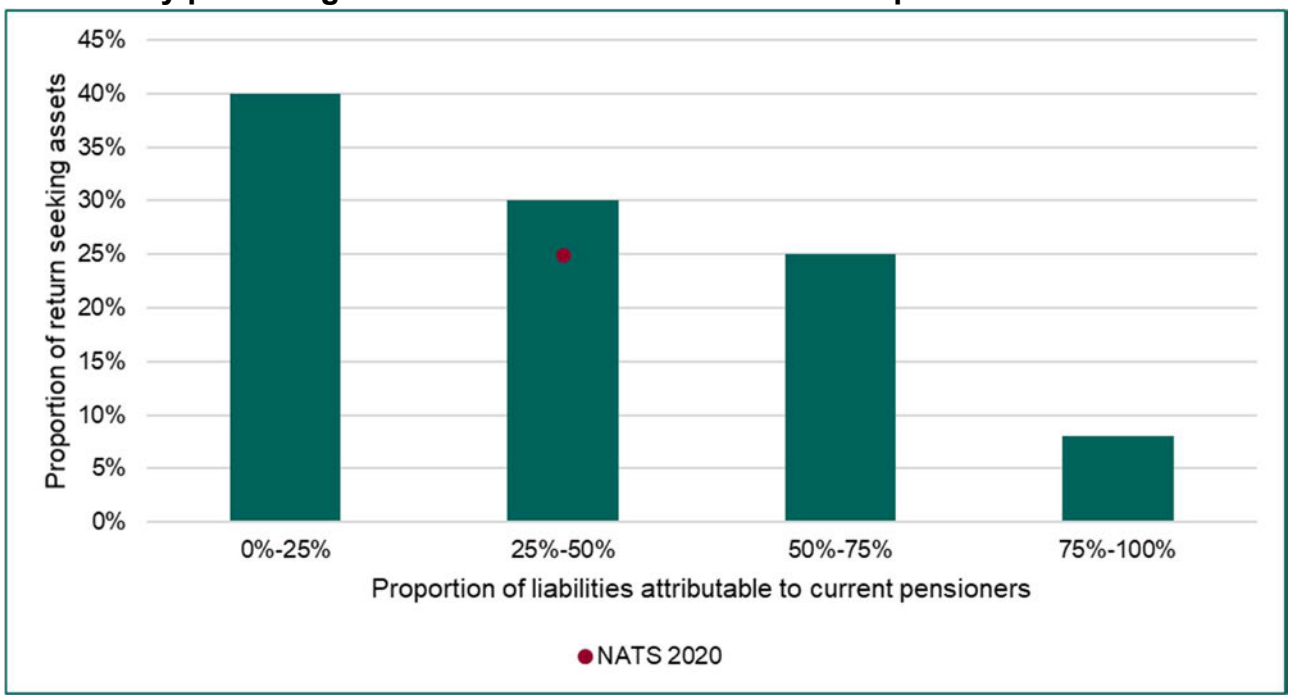
5.6 Figure 5.1 shows that around 24% of the NATS Section's assets were invested in *return-seeking assets* as at 31 December 2020, a decrease from 42% as at 31 December 2017. NATS Section now has a slightly lower allocation to *return-seeking assets* than the average UK private sector *DB scheme* based on the asset classes used by the PPF in the publishing of the Purple Book.

5.7 We have also considered the investment strategy of schemes with a similar maturity profile to NATS Section. One of the main factors affecting investment strategy is the maturity of the scheme: all things being equal, a scheme with a more mature liability profile would be expected to invest a lower proportion of its assets in *return-seeking assets*. Figure 5.2 illustrates this by showing how the average allocation to *return-seeking assets* reduces as the proportion of liabilities attributable to pensioners increases[14] (which reflects scheme maturity).

[13] Taken from The Purple Book: DB Pensions Universe Risk Profile 2021 published by the Pension Protection Fund

[14] Taken from The Purple Book: DB Pensions Universe Risk Profile 2021 published by the Pension Protection Fund

Figure 5.2 UK defined benefit pension scheme average investment in return seeking assets – by percentage of liabilities attributable to current pensioners



5.8 NATS Section has 45% of its liabilities relating to pensioners so would fall in the second group but has a 24% allocation to *return-seeking assets* which is slightly lower than the average at this maturity level (of 30%), as marked above.

5.9 Changes in the investment strategy since the 2017 valuation have resulted in a significant part of the overall return being targeted through the credit allocation within the portfolio. In the benchmarking against the Purple Book, this additional source of return is not fully reflected. We have discussed the impacts to the risk and return of the NATS Section's investment strategy in paragraphs 5.11 to 5.17.

5.10 This comparison does not consider the strength of the *employer covenant*. The NATS Section has a strong *employer covenant*, as assessed by its Trustee. Typically, a strong *employer covenant* allows Trustee greater flexibility to seek higher returns and therefore an expectation of lower long-term employer contributions. CAA may wish to consider whether NERL have fully utilised the strong *employer covenant* and relative immaturity of the NATS Section with their allocation to traditional *return-seeking assets*, or whether there is scope to increase the level of investment and market risk within the investment strategy in pursuit of positive experience and a reduced reliance on funding from NERL and the airspace users. Further consideration of the expected return from the investment strategy is provided from paragraph 5.11.

Recent changes to investment strategy

5.11 Since our previous review, the NATS Section has changed its investment approach and has made the following headline changes:

- Increasing the hedge of interest rate and inflation risk provided by the *Liability-driven Investment (LDI)* portfolio

- Increasing the proportion of *credit and bond assets* within the growth asset portfolio. These assets have both *return-seeking* and *matching asset* properties

5.12 *LDI* is an investment strategy as opposed to a specific asset, with the objective of producing a portfolio of assets whose movement in value is expected to mirror any changes in the estimated value of the liabilities. The risk presented by changes in the liabilities due to interest rate changes and changes in inflation expectations are typically described as unrewarded risk, where the carrier of the risk would not expect a return for bearing it, and the *LDI* portfolio achieves this through hedging a pension schemes exposure to changes in interest rates and inflation. Incorporating *LDI* within the investment strategy has been utilised widely across the DB pensions landscape and represents a way to reduce the risk of materially higher deficit recovery payments being required in the future because of adverse market conditions, which would ultimately be met by consumers. The interest rate and inflation hedge ratio has been increased from 65% to around 87% when assessed on the *technical provisions* basis. The hedge achieved is greater than the portion of the assets included within the LDI portfolio, this is achieved through leverage. In the absence of the liability hedge, the Scheme Actuary estimates that the funding position at the 2020 valuation would have been around £684m worse.

5.13 We understand the growth asset portfolio has been constructed to support the short-term discount rate of 1.8 percentage points per annum more than gilts. Strategy documents produced by Aon show that the current portfolio overall (including *LDI*) broadly targets a return of 2.4 percentage points a year more than gilts. The 0.6 percentage point per annum difference is a margin for prudence within the funding approach. As well as a smaller allocation to traditional *return-seeking assets* such as equities, property, and other alternatives, the larger proportion of the expected return is now expected to be generated by more modestly returning *credit and bond assets* such as multi-asset credit, domestic and overseas corporate bonds, and overseas government bonds.

5.14 The *credit and bond assets* universe is very large, with opportunities to achieve return across a broad range of vehicles within this space. A feature of *credit and bond asset* types is that their returns are contractual and subject to a greater degree of certainty although that will depend on the quality of the investment and its credit rating. Higher yields may still be available even allowing for credit risk as schemes will be aiming to capture illiquidity premiums resulting from holding the investments until maturity and therefore not being exposed to daily fluctuations in market prices and the risk of being a forced seller of the assets.

5.15 From the Business Plan, NERL state that they engaged with the Trustee to the changes in the investment strategy, with the principal aim the reduction in the overall risk. There is a requirement for the Trustee to consult with the sponsor on changes to a UK d*efined benefit pension scheme*. The Trustee's advisors utilised the risk measure *Value at Risk* to analyse the reduction in the risks faced by the scheme. All else being equal, we understand that the reduction in the measured risk reduces the volatility of future funding assessments by nearly a half, which should result in less volatile pension costs being passed on to the airspace users.

5.16 A reduction in the proportion of *return-seeking assets* is a common trend for many UK private sector *DB schemes* as their liability profiles mature. As the NATS Section is closed to new members, a gradual move to *matching assets* over time would be expected. The Trustee is targeting a lower-risk funding approach as the NATS Section matures, they have outlined that their preference would be to realign the funding and investment strategy

between 31 December 2033 and 31 December 2038 to support a funding approach of 0.5 percentage points per annum above gilts.

5.17 At a high level the current investment strategy appears reasonable and is broadly consistent with a typical private sector *DB scheme* of similar maturity. However, as discussed in paragraphs 4.3 to 4.10, the CAA may like to engage with NERL with the intention of seeking that any further reduction in *return-seeking assets* is on balance in the best interest of the consumer, in its role of setting allowances for reasonable and efficient costs.

Limitations of this analysis

5.18 The analysis in this section focuses on high-level investment strategy only. It ignores many detailed risk and return factors which the NATS Section's Trustee takes into account when deciding on investment strategy. Some of our analysis is supported by benchmarking against publicly available industry wide data compiled by the PPF as part of their Purple Book; we have therefore used consistent asset class definitions as the PPF.

6. Funding valuation assumptions

6.1 The results of a *DB scheme*'s funding valuation and therefore the sponsor's future cash contributions depend on the assumptions adopted for that assessment. Assumptions must be made in relation to both the financial aspects of the *DB scheme* and the demographic aspects of the scheme membership. This section explains the assumptions adopted for the NATS Section valuation as at 31 December 2020 and compares the assumptions used with publicly available information on other UK private sector *DB schemes*. In general, and considering the set of assumptions as a whole, the assumptions adopted for the 2020 funding valuation are within a reasonable range given the investment strategy adopted by the NATS Section and the assessed *employer covenant* strength.

6.2 Generally, assumptions will affect the timing of when contributions are made rather than the actual cost of providing benefits (higher contributions in the short-term will result in lower contributions in the long term and vice versa). However, given the NATS Section is closed to new entrants, there will be a limited time horizon over which NERL can potentially benefit from a surplus by paying reduced contributions as the active membership will decline over time. There is also the issue of inter-generational equity between consumers when considering the timing of contribution reductions or payment of deficit contributions.

6.3 The assumptions used for funding purposes are set by the pension scheme trustees, after taking actuarial advice, and are agreed by the sponsoring employer. The CAA's focus for this purpose is on the powers of the sponsoring employer to influence and agree the funding valuation's outcomes. We understand that NERL, alongside their actuarial advisers, met with the Trustee regularly throughout the 2020 valuation process to review and discuss the assumptions.

6.4 The assumptions for assessing the *technical provisions* must be prudent, with the degree of *prudence* depending on the scheme's circumstances, in particular the trustee's view of the sponsoring employer's *covenant*. Typically, the stronger the covenant the lower the margin for prudence. The main source of prudence is generally contained within the discount rate. The NATS Section valuation assumptions also include a small margin for prudence in the post-retirement mortality assumption, with all other assumptions representing *neutral estimates*.

6.5 Appendix D provides background on scheme funding valuations and assumptions.

Financial assumptions

Discount rate

6.6 The discount rate is the rate at which a scheme's expected future benefit outgo is discounted back to provide a current capitalised value. It can be thought of as corresponding to an assumed rate of return on the scheme's assets. The assumed discount rate is usually the most important valuation assumption in determining contribution requirements because valuation outcomes are very sensitive to changes in the discount rate. For example, a 0.25 percentage point increase each year in discount rate could reduce NATS Section ongoing contributions calculated at the 2020 valuation

from 66.2% to around 60%, and increase the funding level at that valuation from 97% to 103%.

6.7 A higher discount rate (or assumed rate of return) means that the scheme's assets are expected to generate higher investment returns, and therefore the scheme needs to hold less money now to meet future benefit payments. Therefore, the value placed on its liabilities is lower, its funding level is higher, and its *standard contribution rate* is lower.

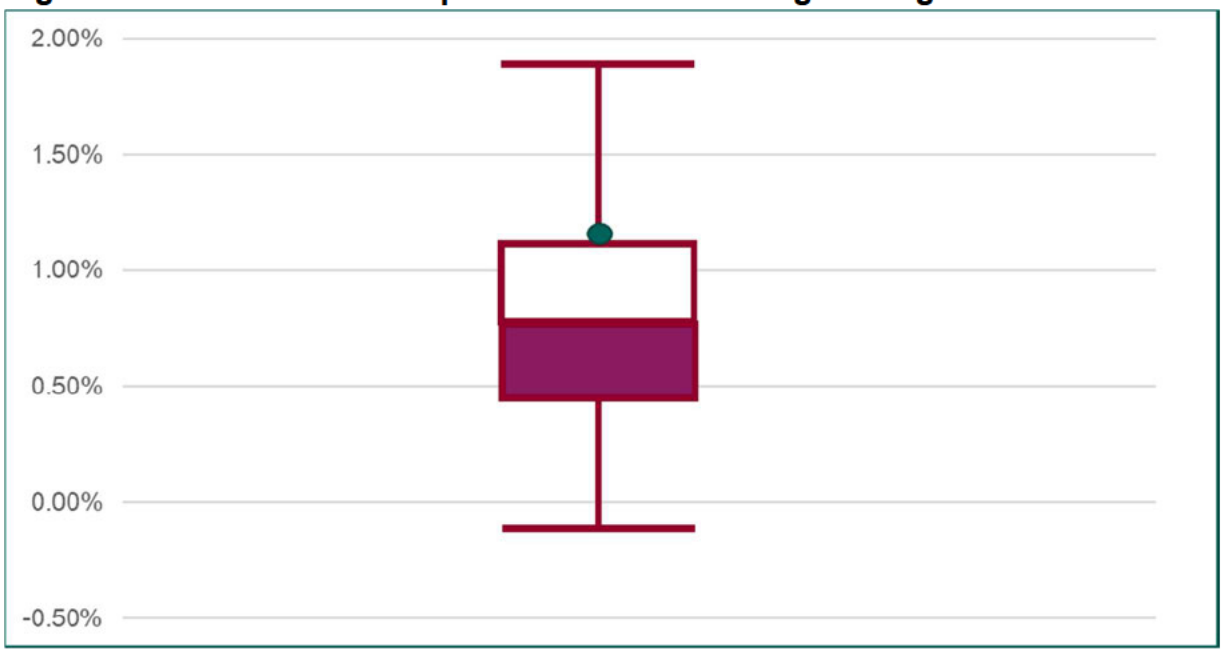
6.8 Discount rates are typically described by reference to gilt yields (or swap curves), plus an allowance for assumed *outperformance* of return-seeking assets relative to gilts[15]. It is also common to consider the discount rate for the periods pre- and post-retirement separately to reflect the different investment strategies associated with each period. Pre-retirement may be expected to correspond to a return-seeking investment strategy, and post retirement to a matching investment strategy. This was the approach adopted by Trustee at the 2017 valuation and prior valuations, and implicitly allows for de-risking over time. An alternative expression of de-risking is to allow for an *outperformance* margin that changes over time, this allows for an explicit allowance for de-risking; this approach was adopted for the 2020 valuation.

6.9 Figure 6.1 shows the discount rate outperformance adopted at the NATS valuations at 31 December 2020, as well as a chart showing the range of discount rate outperformance adopted by UK private sector DB pension schemes published by The Pensions Regulator[16]. This covers valuation dates between 22 September 2018 and 21 September 2019 and is the latest data available at the time of writing.

[15] Gilt yields are taken to represent the market's view of the expected rate of return on risk-free assets

[16] Scheme funding analysis 2021 annex, table 4.1. "Tranche 14" schemes covering valuation dates between 22 September 2018 and 21 September 209

Figure 6.1: Discount rate outperformance above long dated gilts



6.10 Figure 6.1 above shows typical outperformance assumptions for funding purposes would be around 0.75 percentage points a year with the Trustee of the NATS Section having a higher-than-average outperformance in their discount rate.

6.11 Over time the long-term funding target discount rate will become the more important assumption as the scheme matures. All else being equal, such a change would be expected to result in increased contributions at future valuations.

6.12 GAD estimate that the single equivalent discount rate ('SEDR') at the 2020 valuation is around 1.1 percentage points a year above gilt yields. An SEDR is the discount rate that if applied uniformly across the short-term and long-term. We have relied on this assessment in our analysis below. Table 6.1 compares the single equivalent discount rate against the Pensions Regulator's data, including looking at similar schemes (those with a strong covenant and a similar maturity).

Table 6.1 Single equivalent discount rates

	Outperformance above long dated gilts (% pa)
NATS Section 2020 valuation (GAD estimate)	1.1 (Based on 1.8 until 31 December 2030 reducing to 0.5 from 31 December 2036 onwards)
Neutral estimate (GAD estimate)	1.5
TPR average (all schemes)	0.74
TPR average (strong covenant)	0.77

TPR average (maturity: 25%-50% pensioner liabilities)	0.84

6.13 Table 6.1 suggests that the discount rate structure adopted overall at the 2020 valuation was slightly higher than what might be considered typical for schemes of similar maturity, which arguably may reflect the relatively strong sponsor covenant offered by a regulated company (noting that the TPR data is from an earlier period, by considering outperformance in excess of government bond yields this partially neutralises the changes in market conditions between periods). Conversely, Table 6.1 shows that the strength of covenant does not appear to result in different discount rates being adopted across UK *DB schemes* on average.

6.14 In practice a wide range of discount rates are adopted which reflect a wide variety of scheme circumstances, and in particular whether the scheme remains open to future accrual. To add some further context, a single equivalent discount rate of around 1.1 percentage points each year above gilt yields represents the upper quartile of all schemes, and around 1.85 percentage points above gilt yields represent the 95th percentile[17].

Funding approach – transition to a long-term funding target

6.15 At the 2020 valuation, the discount rate has been set as a structured term-dependent rate. Different levels of outperformance rates apply in the short-term and long-term, reflecting the intention for the Section's investment strategy to evolve over time. The short-term outperformance of 1.8 percentage points a year above gilt yields is assumed until 31 December 2030, with the level of outperformance decreasing linearly until 31 December 2036. Thereafter the outperformance is assumed to be 0.5 percentage points a year above gilt yields.

6.16 NERL state that they support the move to a structured discount rate assumption; this is an approach that is increasingly common and early indications from TPR suggest that this would be a suitable approach. The main advantage of the term-dependent discount rate is that assumptions about future returns are made explicitly, and therefore it is simpler to integrate funding and investment strategy considerations. This funding approach integrates a plan for the funding to be aligned with a *low-dependency* long-term funding target of 0.5 percentage points a year above gilt yields from 31 December 2036 onwards. NERL have noted that they support this approach to long-term funding, compared to other available options, such as targeting securing the NATS Section's liabilities through an insurer.

6.17 TPR are due to release their new Defined Benefits Code of Practice within the next year. It is expected that the Code of Practice would outline expected behaviours from *DB schemes* in terms of long-term funding targets, appropriate considerations of long-term funding targets within their *technical provisions*, and expectations around timeframes for DB schemes entering their de-risking journey. From early consultation documents, TPR have introduced the term "significant maturity", which is taken to be a duration of around 12-14 years. Consultation documents have suggested that from this point in time, schemes that are significantly mature will be expected to align their funding with their long-

[17] That is 5% of UK DB schemes have a single equivalent discount rate of at least 1.85% in excess of gilts

term funding objective. Whilst any parameters remain to be confirmed, a reasonable *low-dependency* long-term funding objective might be to be fully funded on a discount rate of around 0.5 percentage points each year above gilt yields.

6.18 We consider that the approach taken by the Trustee and supported by NERL is reasonable. A *low-dependency* long-term funding target would be expected to be less costly to NERL and the airspace users than a more expensive avenue through an insurer.

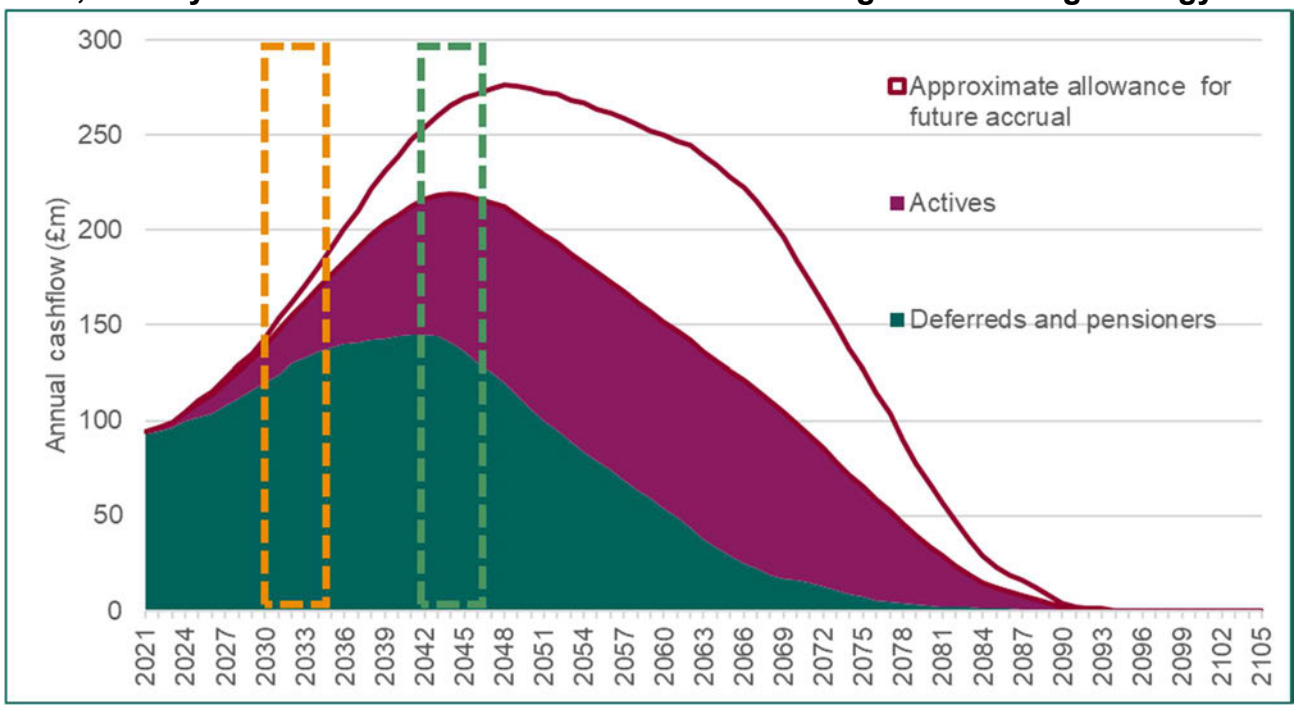
6.19 The approach to funding, as illustrated by the 2020 *technical provisions* imply that the Trustee is intending to align with their long-term funding target from 31 December 2036, with de-risking to occur from 31 December 2030 onwards. This is aligned with the Trustee's investment strategy considerations; the Trustee's investment advisers Aon have discussed a de-risking window between 31 December 2033 and 31 December 2038.

6.20 We estimate that the NATS Section would be considered at the stage of significant maturity from around 2045-50 considering benefits accrued up until 31 December 2020. If approximate allowances are made for the benefits that are currently being accrued by active members, this stage of significant maturity may not be expected until slightly later, between 2048-53. This coincides with another measure of maturity, which is to consider the "peak" cashflow, i.e., the highest projected nominal cashflow before the payments out of the scheme reduce year on year. From the information provided by NERL, we estimate that this may be around 2045-55 when an approximate allowance for future service is included.

6.21 The current transition to the long-term funding target is included within the Trustee's assessment of the *technical provisions*, and therefore places a higher cost on the NATS Section benefit obligation expected to be paid after 31 December 2030. Our analysis suggests that there may be scope for the NATS Section to delay the transition to the long-term funding target. This delay would be within the anticipated scope of the new Code of Practice, and is arguably supported by the strong sponsor covenant.

6.22 In order to illustrate the impact of the timing of the transition to a long-term funding target integrated with *technical provisions*, we have estimated the position of the valuation as at 31 December 2020 for a transition occurring between 31 December 2040 and 31 December 2046 (ie a 10 year delay). This example is illustrated in Figure 6.2. All else being equal, we estimate that this would reduce the assessed value of the liabilities by around £400m, placing the NATS Section into a surplus and mitigating any requirement for the economic share of the deficit repair contributions. The employer share of the *standard contribution rate* would be around 57%. Possible uses of the £250m surplus could be to negotiate for a modified contribution rate which would further reduce the contributions in respect of future accrual.

Figure 6.2 Illustrating the cashflow profile of the NATS Section as at 31 December 2020, overlayed with timeframes for transition to the long-term funding strategy



6.23 CAA may wish to question the NERL's considerations and the rationale for the current timeframes for transitioning to the long-term funding strategy. CAA should consider whether the cost of integrating this future de-risking within these timeframes is reasonable and efficient to pass on to the airspace users in the NR23 price control period. CAA may also wish to consider whether further guidance on their expectations from NERL in further negotiations on appropriate time-horizons for transitioning to the long-term funding target would be useful. This may aid NERL at future valuations (such as the valuation due no later than 31 December 2023).

Funding approach – methodology

6.24 Prior to the 2020 valuation, the approach to setting the discount rate used different outperformance levels for liabilities pre-retirement and post-retirement. This formulation of the discount rate reflects how notionally liabilities pre-retirement can be supported by a higher-returning, higher-risk investment strategy, and post-retirement by a more matched strategy.

6.25 Over time, as the membership ages and the profile matures, the overall funding approach reduces return expectations as the investment strategy would implicitly be supporting more post-retirement liability. The 2020 valuation discount rate approach moved to a more explicit expression how the funding approach and investment strategy would transition over time.

6.26 At the 2017 valuation, the post-retirement discount rate was set at 0.25% a year above the yield on gilts. This implies that at a significantly mature stage where the entire NATS Section is comprised of pensioner members, these liabilities would be funded on a 0.25% a year above gilts basis. As a part of the 2020 valuation NERL negotiated to increase the long-term funding discount rate to be 0.50% above the yield on gilts; NERL outlined the Trustee objective was to initially retain the 0.25% a year outperformance in the long-term.

NERL state that this negotiated outcome reduces the expected assets required to meet the NATS Section benefit obligation by around £400m. This evidences some negotiation that would be expected from reasonable and efficient sponsoring employer.

6.27 GAD are broadly supportive of this outcome following the negotiation on the long-term funding approach, noting that this will have had the impact of reducing both the deficit and valuation of the future service cost as at 31 December 2020, thereby reducing the valuation of the costs that are passed through to the airspace users.

Neutral estimate

6.28 A *neutral estimate* is an indication of likely future experience on an unbiased basis, i.e., intended to be neither prudent nor optimistic rather than on a prudent basis which is required by scheme funding legislation. A neutral estimate of the liability can be considered as an estimate which has a 50% chance of being overstated and a 50% chance of being understated. It may therefore be considered as the benchmark against which all other cost assessments might be compared especially when considering consumer interests and cost efficiency.

6.29 It is our understanding that the discount rate assumption includes a margin for prudence. From information provided by Aon, the Trustee advisers, the investment strategy is constructed to target a return of 2.4 percentage points a year above gilt yields. We have inferred that there is therefore a margin of prudence of approximately 0.6 percentage points each year above the short-term discount rate of gilts plus 1.8% per annum. The funding approach integrates a plan for de-risking to a prudent estimated return of 0.5 percentage points each year above gilt yields. GAD estimate that a margin for prudence included within this long-term strategy would be smaller, perhaps 0.1% to 0.25% percentage points each year above gilt yields.

6.30 If this margin for prudence in the discount rate was removed then our approximate calculations, based on the information provided within the 2020 valuation report, suggest a *neutral estimate* of the liability and employer *standard contribution rate* might be around:

- liabilities of £4.3 billion and an employer standard contribution rate of around 34% pa of pensionable pay, should the current investment strategy be assumed to continue indefinitely;
- liabilities of £4.7 billion and an employer standard contribution rate of around 46% of pensionable pay, if the timeframe for de-risking is extended by 10 years; and
- liabilities of £5.2 billion and an employer standard contribution rate of around 58% of pensionable pay, if the current timeframes for de-risking are assumed, and based on GAD's estimate of 0.1% to 0.25% a year of prudence in the investment strategy after 2036.

These assessments compare to £5.7 billion and 66.2% on the prudent funding basis.

6.31 At the 2017 valuation, the level of prudence within the liability was estimated by GAD to be around 1.5 percentage points each year above gilt yields over a ten-year timeframe based on information provided by the Scheme Actuary and NERL's actuarial advisers. We estimate that the 2020 valuation removed some level of prudence from within the funding approach, which would reflect the transition to a less risky investment strategy, i.e., the

margin for prudence is lower but in relation to a *neutral estimate* of the discount rate that is also lower.

6.32 We consider that this reduced level of prudence, given the balance of fairness between generations of consumers, is broadly reasonable. CAA may wish to enter into discussions with NERL to set out their expectations for the margin for prudence within the long-term funding target.

Assumed rates of price inflation and pension increases

6.33 The assumed rates of Retail Prices Index (RPI) price inflation, in the 2020 valuation was derived using market data, allowing for the differences between yields on fixed-interest gilts and real yields on index-linked gilts. This is a common approach.

6.34 An assumption is required for the assumed rates of the Consumer Prices Index (CPI), as pensions accrued after October 2013 are increased by reference to CPI. The 2020 valuation assumes that CPI will be 0.8 percentage points a year lower than RPI until 2030 and 0.1 percentage points a year lower than RPI thereafter. This term-dependant assumption reflects the expected reform of Retail Price Indexation from 2030. Estimates of this difference vary between commentators, however, a gap of 0.8 percentage points a year is within a range that might be considered a reasonable *neutral estimate* assumption, albeit towards the prudent end.

6.35 We note that no allowance has been made for an *inflation risk premium* which some schemes incorporate into their assumptions. A typical *neutral estimate* inflation risk premium might be in the region of 0.25% percentage points per annum. Allowing for such an adjustment might be expected to reduce the assessed value of the liabilities by perhaps up to 5%, say. However, we understand that the inflation hedge is in place with respect to market implied inflation for past service benefits therefore it is consistent to also use market implied inflation, with no inflation risk premium, when assessing the liabilities.

6.36 The *SCR* allows for something closer to what might be considered a long-run best estimate assumption of 2.2% per annum. This implies that the Trustee is not considering inflation hedging for accruing benefits, at least for the time-being. The 2020 valuation report suggests the Trustee believes there is evidence of a significant *inflation risk premium* at the valuation date, which it has allowed for in the assumption for CPI in respect of benefits accruing after the valuation date. This may well reflect uncertainties over the future of RPI indexation or concerns that the current costs of hedging are relatively expensive.

Assumed rates of pay increases

6.37 The allowance for future pay increases in the funding valuation comprises two elements:

- Assumed future general (inflationary) pay increases; and
- Assumed future pay increases due to promotion and progression.

6.38 The assumed future general (inflationary) pay increase is equal to the assumed rate of CPI price inflation. Following representations by NERL to the Trustee on its approach to pay, this assumption was reduced at the 2015 valuation (and then retained for the 2017 valuation) from the corresponding assumption at the 2012 valuation of CPI plus 0.25% per year. This amendment reflects NERL's management intention to restrict *pensionable pay* rises to CPI, which they will achieve by separating out non-pensionable and pensionable pay increases if necessary. This change in assumption will result in a lower value being placed on active member's pension benefits and will therefore reduce contributions. If NERL's management do restrict *pensionable pay* increases to CPI in practice then this will reduce ultimate pension costs. We consider that this remains reasonable in the absence of NERL providing an explicit pay policy of lower pay increases than prices. However, CAA may wish to discuss explicit or announced pay policy with NERL to the extent it is reflected in the 2022 valuation as this is one area where the sponsor can engage very robustly with the Trustee.

6.39 The assumed future promotional pay increases were reduced at the 2015 valuation compared to the 2012 valuation (and subsequently retained for the 2017 and 2020 valuations). This was a result of actual promotional salary increases being lower than expected. Lower promotional pay increases will result in reduced pension contributions and costs.

Demographic assumptions

Assumed longevity

6.40 The longer a pensioner lives after retirement, the greater the cost of providing a pension. Funding valuations require an assumption regarding the assumed longevity of members and their dependants. Such assumptions should reflect the particular membership of the scheme (in other words, whether the members' industry or geographical location suggests they might live for shorter or longer than average), and should allow for expected future improvements in longevity.

6.41 Figures 6.2 and 6.3 show the expected age at death for a 65-year-old male pension scheme member at the valuation date (in Figure 6.2) and for an active member currently aged 45 (Figure 6.3), for the previous two NATS Section valuations. Figures 6.2 and 6.3 also show the corresponding data published by the Pensions Regulator on the range of longevity assumptions used for funding valuation purposes by UK private sector *DB schemes*.

6.42 The Pensions Regulator data[18] in Figures 6.2 and 6.3 are shown separately for valuation dates occurring in each of the last three years for which data is available (September to September in each case). For each year, the following statistics are shown:

- The 5th percentile of schemes (bottom of the red block)
- The median of schemes (boundary between the red and green blocks)
- The 95th percentile of schemes (top of the green block)

6.43 Figures 6.2 and 6.3 show that the assumed expectations of life for the 2020 valuation of the NATS Section are towards the top end of the range adopted by other schemes. The NATS Section baseline mortality assumptions reflect recent mortality experience within the scheme, so aside from the small margin for prudence incorporated into the rate of future mortality improvement discussed below, the higher-than-average life expectancies reflect the scheme's membership. The Pensions Regulator data covering the period of the 2020 valuation dates is not yet available. We expect that this will show further downward revisions in estimates of future life expectancies, following the trend shown by the NATS Section.

[18] Scheme funding analysis 2021 annex, June 2021

Figure 6.2 Assumed expected age at death for a 65-year-old male at the valuation date, from TPR data (the 5th percentile, median and 95th percentile) and for the 2017 and 2020 valuations of the NATS Section

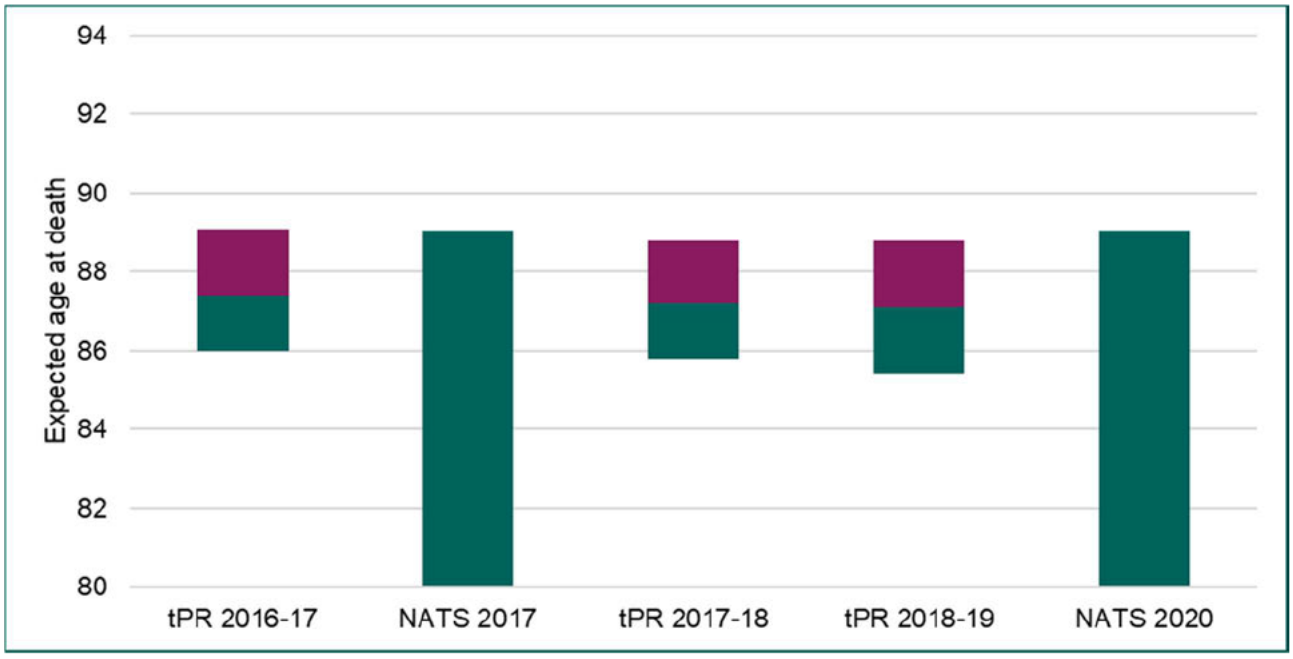
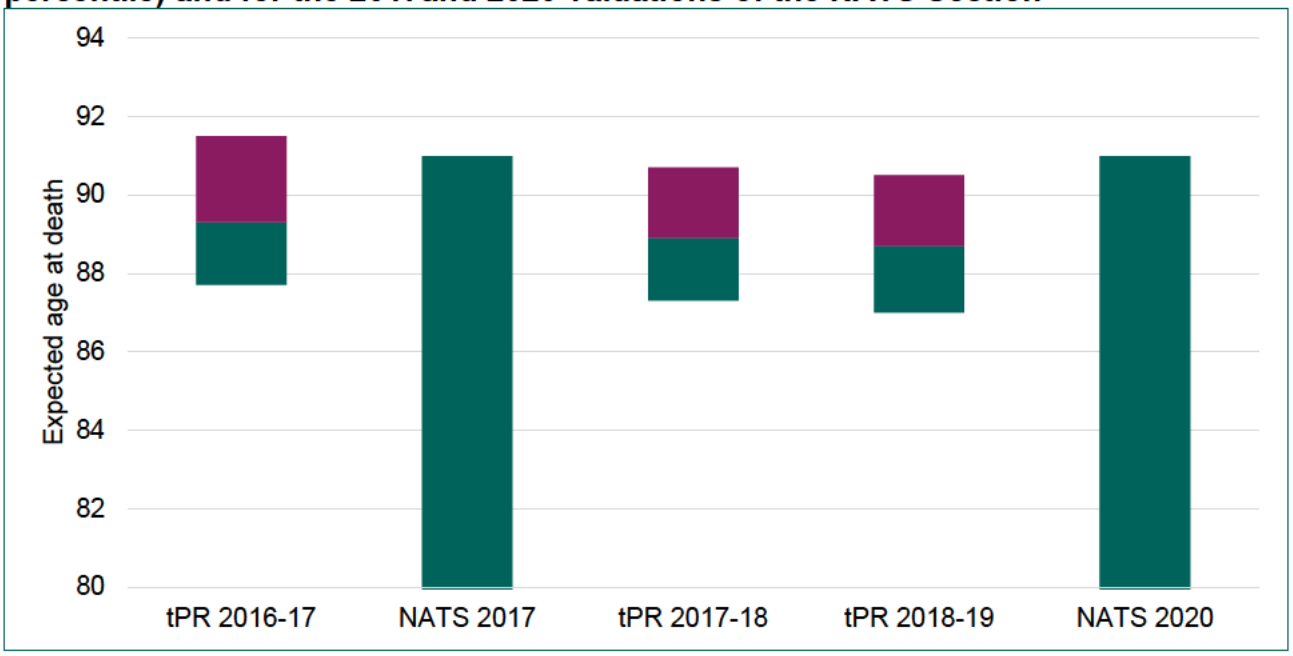


Figure 6.3 Assumed expected age at death for a male retiring at age 65, 20 years after the valuation date, from TPR data (the 5th percentile, median and 95th percentile) and for the 2017and 2020 valuations of the NATS Section



6.44 Assumptions for a member's life expectancy are comprised of two components:

- Baseline mortality – the age-related mortality at a given year in the recent past;
- Improvement assumption – an assumption as to how this rate will evolve and more usually improve in the future.

6.45 The assumptions made for the baseline mortality were updated at the 2020 valuation. Since 2017, the widely used industry tables produced on data collected on Self Administered Pension Schemes ('SAPS') released an update, Series 3, with a base year of 2013. At the 2020 valuation the Trustee adopted this latest set of tables, and applied an adjustment factor which we understand is set part based on an analysis of the experience of the NATS Section membership and part on Aon's in-house mortality assumptions generator. We understand the principles underlying this adjustment were to set the baseline mortality assumption at a *neutral estimate* level.

6.46 Assumptions for future mortality improvements, adopted by NATS Section were based on a model produced by the Continuous Mortality Investigation ('CMI'). Table 5.4 of the "Scheme Funding Statistics Appendix published by the Pensions Regulator in July 2021 indicates that over 97% of *DB schemes* base their mortality improvements on the CMI model. The CMI model allows users to select the long-term rate of improvement. Table 5.5 of the "Scheme Funding Statistics Appendix published by the Pensions Regulator in June 2021 suggests that around 85% of those schemes who use CMI mortality improvements adopt a 1.5% long term rate of improvement or lower. NATS Section have adopted a more prudent long-term rate of 1.75%. This additional 0.25% of mortality improvement is an explicit margin for prudence and results in an increase to the *technical provisions* of around 1%.

6.47 Overall, the changes in the assumptions made have led to a reduction in assumed life expectancy of about one year between the 2017 and 2020 valuations. This is broadly expected because the Series 3 baseline mortality tables and 2019 CMI model collectively result in higher rates of mortality in the future, based on recent observed mortality trends in the UK population.

6.48 It is worth noting that the assumed life expectancies at the 2020 valuation of the NATS Section do not consider the impact of the COVID-19 pandemic, as the impact would not have been known in detail at the time of the valuation and still remains uncertain. However, the 2020 valuation would have allowed for the impact of the pandemic on investment markets and global economic outlook up to the valuation date, as well as the experience within the NATS Section's membership up until 31 December 2020.

Changes to demographic assumptions

6.49 Changes to the demographic assumptions at the 2020 valuation resulted in an improvement in funding position. Most of this will be attributable to a reduction in life expectancy as discussed above. However, the following changes also occurred to do with expected CETV experience, which we expect led to an increase in the assessed liabilities:

- Reduced assumption of CETV uptake (from 25% to 20% for non-opt-out withdrawals, and from 100% to 70% for opt-out withdrawals);
- Assumption of the saving from the CETV experience reduced from 18% to 12% of the *technical provisions* basis.

Other factors

6.50 A number of other actuarial assumptions affect the results of a funding valuation. These include the allowance made for commutation, the assumed rates of withdrawal, ill-health and early retirement, and the allowance made for expenses. We have not independently reviewed in detail every such assumption, but we understand from the valuation documentation that they are in line with scheme experience and therefore reasonable.

7. Governance and expenses

7.1 This section considers the stewardship test applied by CAA and the level of expenses in the NATS Section. The level of administrative expenses incurred within the NATS Section is higher than average according to data published by The Pensions Regulator, which was acknowledged and discussed in the stewardship report. The annual level of investment expenses appears reasonable as a proportion of the overall value of the fund.

Stewardship test

7.2 The CAA applies a stewardship test, which is intended to ensure that the charges that users pay reflect the efficient management of the pension schemes. The test involves "the trustees to the pension scheme in all material respects fulfilling the requirements of pensions legislation and the codes of practice issued by the Pensions Regulator (formerly OPRA) under the Pensions Act 2004".

7.3 To comply with this the Trustee produces a stewardship report each year summarising the scheme's operation and governance arrangements. In particular, the stewardship report over the year ending 31 December 2020 confirms that:

- The scheme's accounts have not been the subject of any audit qualification;
- The scheme has experienced only a low level of complaints from members, and has not been required to pay any penalty or change its system of working as a consequence of any dispute; and
- There were no reportable breaches of the law or notifiable events to the Pensions Regulator in 2020

7.4 Apart from the level of administrative expenses (discussed below), the information provided does not appear to suggest any reasons for concern regarding the operation of the NATS Section.

7.5 In advising on this point, we have only considered the information provided to us for this review. We have not undertaken any independent review or audit of the NATS Section, its accounts or its Trustee.

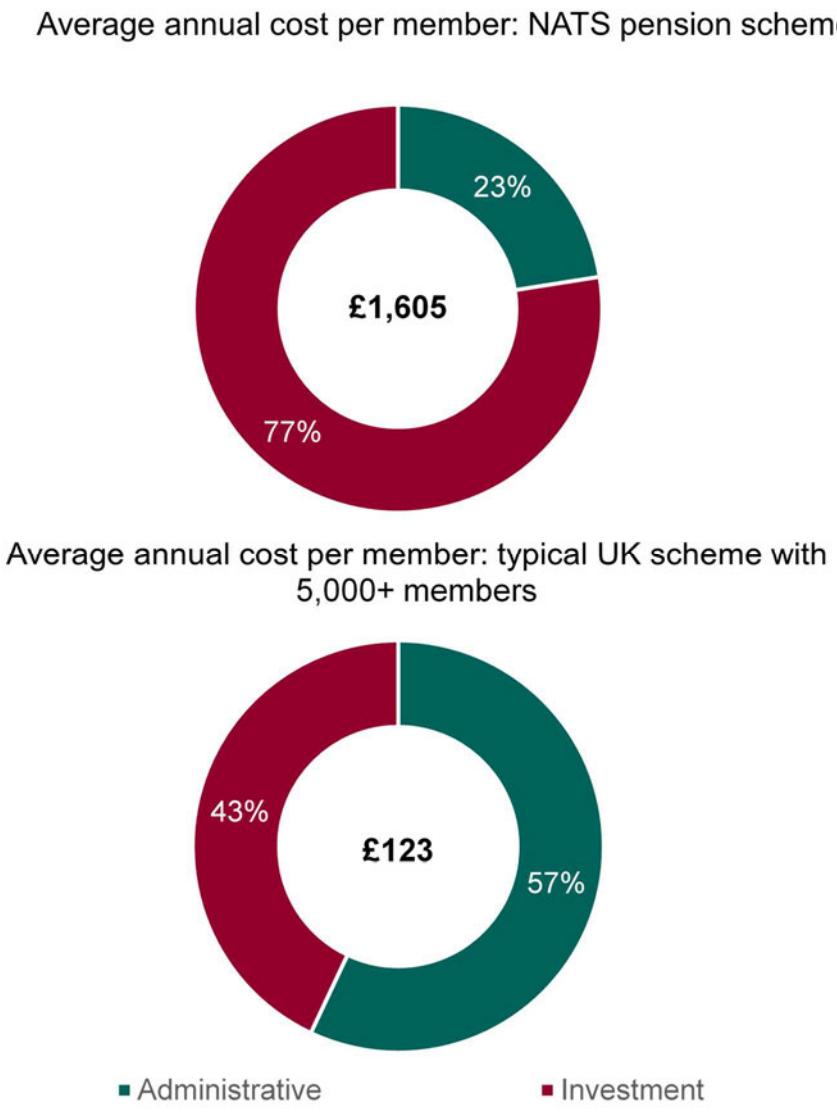
Expenses

7.6 We have compared the average annual level of expenses incurred by the NATS Section over the past 5 years (calendar years 2016-20) with data published by the Pensions Regulator[19]. The expenses data is classified according to scheme size to enable a more informative comparison (larger schemes are expected to have lower per member expenses charges due to economies of scale). Accordingly NATS Section expenses are compared with expenses incurred by schemes of a similar size; that is with large schemes (between 1,000 and 5,000 members) and very large schemes (over 5,000 members).

[19] TPR DB Scheme Costs, 2014

7.7 Figure 7.1 below compares the annual cost per member for total administrative and investment management charges.

Figure 7.1: annual expense charge per member



7.8 As can be seen from Figure 7.1, average NATS Section expense costs appear significantly higher than the sample data[20]. Table 7.1 below shows the split between the annual average cost per member between administrative and investment costs.

[20] The Pensions Regulator's sample contained 75 schemes in the 'large' category and 24 schemes in the 'very large' category

Table 7.1: average annual expense charge per member split by administrative and investment costs

	NATS Section	Large schemes (1,000 – 4,999 members)	Very large schemes (5000+ members)
Administrative costs[21]	£360	£145	£70
Investment costs	£1,245	£55	£55
Total	£1,605	£200	£125

7.9 Table 7.1 shows that the investment expenses make up a high proportion of NATS total expenses and that this aspect in particular appears to be significantly higher than the Pensions Regulator sample data. However, investment expenses would be typically considered as a percentage of assets rather than per member. Members of the NATS Section have significantly higher associated liabilities and therefore assets compared to a typical scheme (due to the generous benefits, higher than average salaries and long periods of service). For context the average asset share per member in the NATS Section is around £970,000[22], which is only slightly lower than the current *lifetime allowance* of £1.07 million. Therefore, benchmarking against the investment expenses per member published by The Pensions Regulator has some limitations.

7.10 Annual NATS Section investment expenses are around 0.17% of the value of the assets. This is in line with other DB pension schemes that we hold information on. There is a lack of publicly available benchmarks across all UK DB schemes, however we note that a sample of 18 Local Government Pension Scheme (LGPS) funds were found in 2012 to have average annual investment costs of 0.44% of assets[23]. Given the nature of the NATS Section the level of investment expenses appear broadly reasonable.

7.11 The administration costs, which are reasonable to assess on a per member basis, are higher than the Pensions Regulator sample data. In the 2016 stewardship report, the Trustee acknowledged that administration costs were higher than average and carried out a review which concluded that the costs were reasonable given the current administration workload. The costs have remained relatively high on a per member basis and this is recognised in the 2020 stewardship report. We understand that the administration workload referenced in the 2016 stewardship report was driven by the introduction of the pension cash alternative, which led to £1.7bn of transfers paid out of the NATS Section between 1 January 2016 and 31 December 2017. In the period from 1 January 2018 through to 31 December 2020 only £100m of CETVs have been paid.

7.12 It appears additional measures have been taken to identify whether the administrative costs are appropriate. This includes benchmarking against administrative costs of 15 other pension schemes over 2016 to 2018. It is worth noting that the other schemes used for this benchmarking are of considerably larger size (between 12,000 and 85,000 members)

[21] Excluding PPF levy

[22] As per the 2020 valuation report, where the NATS Section assets total £5,496.2 million and there were 5,659 members

[23] Local government pension scheme: opportunities for collaboration, cost savings and efficiencies, 2014

while NATS Section has approximately 6,000 members. Other measures have also been taken to reduce administrative costs, such as reducing staffing levels over time. For context, the annual administration expenses represent approximately 2% of the NATS Section pension costs included within Business Plan dated 7 February 2022, adjusted for the NERL economic share.

7.13 Given the current level of administrative costs, the CAA may like to discuss with NERL if any further action is required, noting the comments made by the Trustee in the stewardship report.

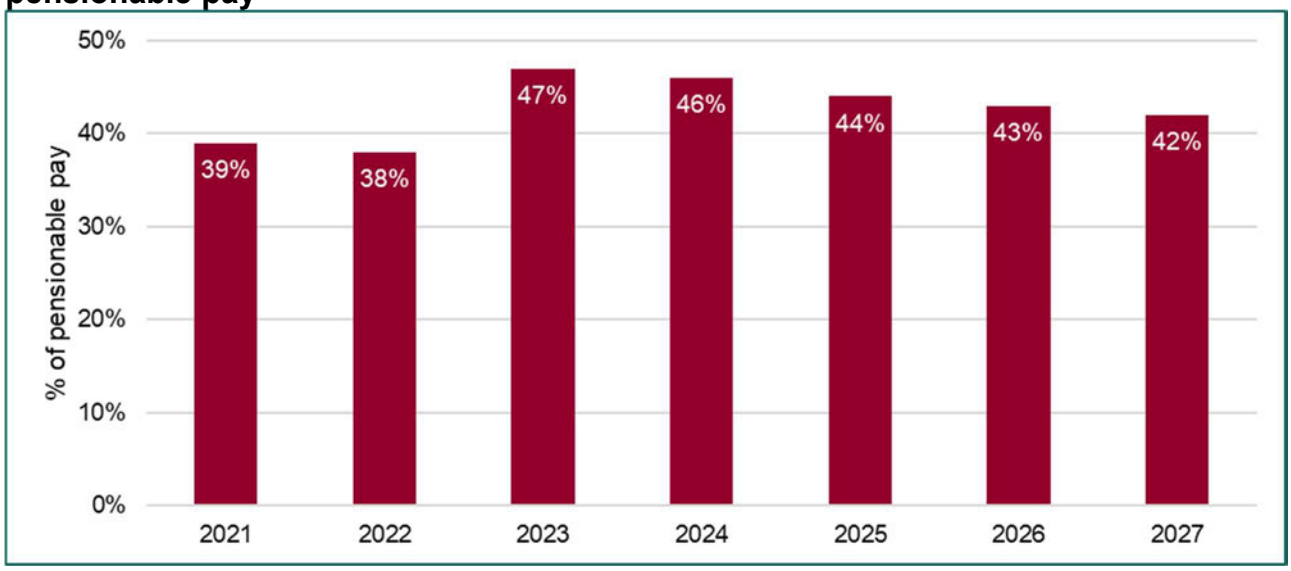
8. NERL's projected pension contributions

8.1 This section discusses NERL's projected contributions as contained within their Business Plan dated 7 February 2022 for NR23, and the extent to which they appear reasonable.

8.2 It was agreed between NERL and the Trustee that all changes to the contributions arising from the 2020 valuation will not be implemented until 1 January 2023, the start of NR23.

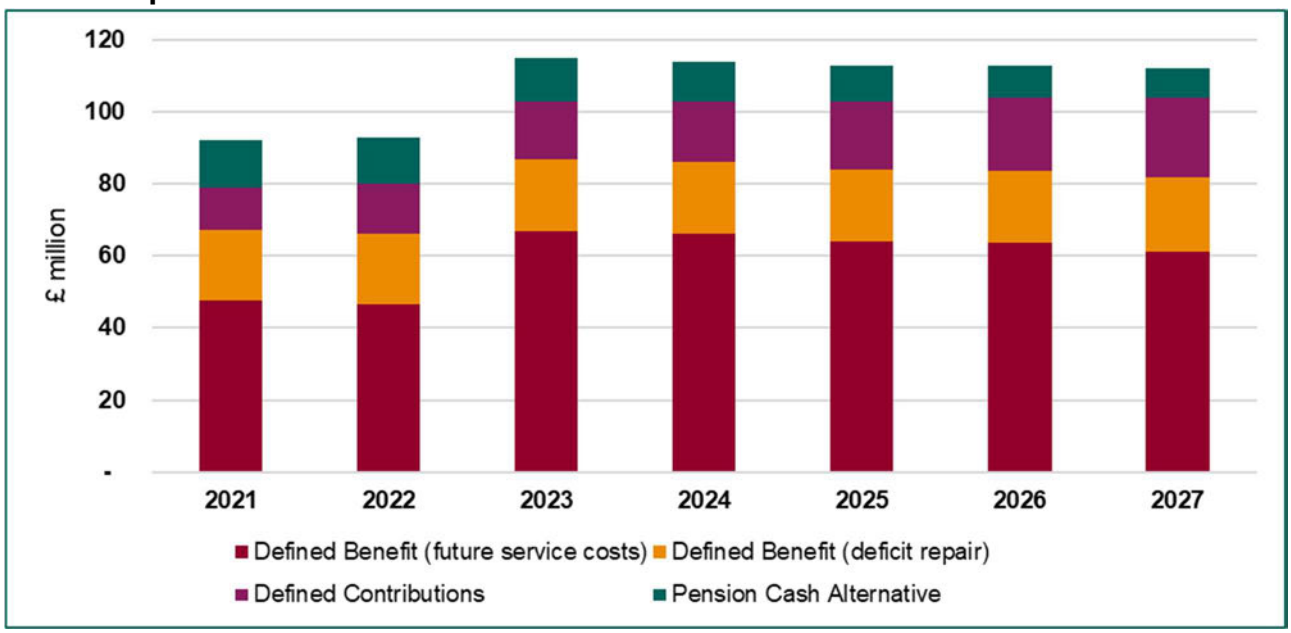
8.3 Figures 8.1 and 8.2 show NERL's projected pension contributions for calendar years 2023 to 2027, as contained within their Business Plan dated 7 February 2022. Figure 8.1 shows NERL's total contributions as a percentage of *pensionable pay*. Figure 8.2 shows amounts separately for contributions to the NATS Section, a *defined benefit pension scheme*, split between new accrual and *deficit recovery* payments, contributions towards the *pension cash alternative* (as discussed in Section 4) and contributions to NERL's *defined contribution pension scheme*.

Figure 8.1: NERL's total projected pension contributions – percentage of pensionable pay



8.4 Figure 8.1 shows that NERL's total pension contributions are projected to decrease steadily from 47% of pensionable pay in 2023 to 42% in 2027.

Figure 8.2: NERL's breakdown of projected pension contributions – amounts in 2020 CPI prices



8.5 Figure 8.2 shows the following features:

- the majority of NERL's pension costs are with respect of the *DB scheme*. This is primarily due to the employer contribution rates to the *DC scheme* being significantly lower than those of the *DB scheme*.
- the *DB scheme* costs from 2023 onwards reflect the implementation of the results from the formal valuation as at 31 December 2020. In aggregate this has a substantial impact on the projected pension costs in 2023 compared to 2022 due to the increase in the cost of new accrual.
- over time, as older members leave the *DB scheme* and new entrants join the *DC scheme*, the contributions toward new *DB scheme* accrual in monetary terms decreases slightly whilst the *DC scheme* contributions in monetary terms increases.

Regulated proportion

8.6 NERL's projected contributions to the NATS Section appear to represent around 75% of the total expected employer contributions to the *DB scheme*. This is consistent with their NR23 Business Plan dated 7 February 2022, where NERL state their economic share of the scheme is approximately 75%. The CAA should confirm that this economic share is correct and consistent with data and analysis for other components of the price review.

8.7 We understand that, in practice, *DB scheme* deficit contributions are split between different parts of the business in proportion to the *DB scheme* pensionable payroll. The business plan projections are consistent with this approach. This approach seems reasonable if there have not been significant changes in the relative sizes of the regulated and unregulated businesses over time (such that current payroll would not represent an appropriate proxy for the split of accrued liabilities).

NATS Section standard contributions

8.8 The *DB scheme* employer *standard contributions* are the employer's share of the contributions required to meet the expected cost of pension benefits accruing to active members in the relevant period, including an allowance for administration expenses. The employer *standard contributions* payable following the 2020 valuation are to be 66.2% of *pensionable pay*, an increase from the 41.7% of *pensionable pay* payable following the 2017 valuation. This increase is primarily due to changes in market conditions, specifically the reduction in gilt yields between 31 December 2017 and 31 December 2020, which has partially been offset by the reduction in life expectancies.

8.9 The *standard contribution rate* is a function of the level of benefits and valuation assumptions adopted, which are reviewed in Sections 3 and 6 respectively. Given the level of benefits and assumptions adopted the assessed employer *standard contribution rate* of 66.2% of *pensionable pay* appears reasonable.

8.10 NERL's Business Plan dated 7 February 2022 projections appear to assume a small reduction in the *standard contribution rate* in the future, with 63% instead of 66% reported for the year 2027. This is in contrast with RP3 where a small increase was assumed in the standard contribution rate at future actuarial valuations due to the ageing of the active membership (because the scheme is closed to new entrants). It could be understood that NERL are projecting that the 2023 valuation would produce a lower *standard contribution rate* than the 2020 valuation. We have not seen any evidence to support this reduction over time. We have not considered whether this reduction over time is reasonable given the information that we have available; however, we note that this reduces the overall costs across NR23.

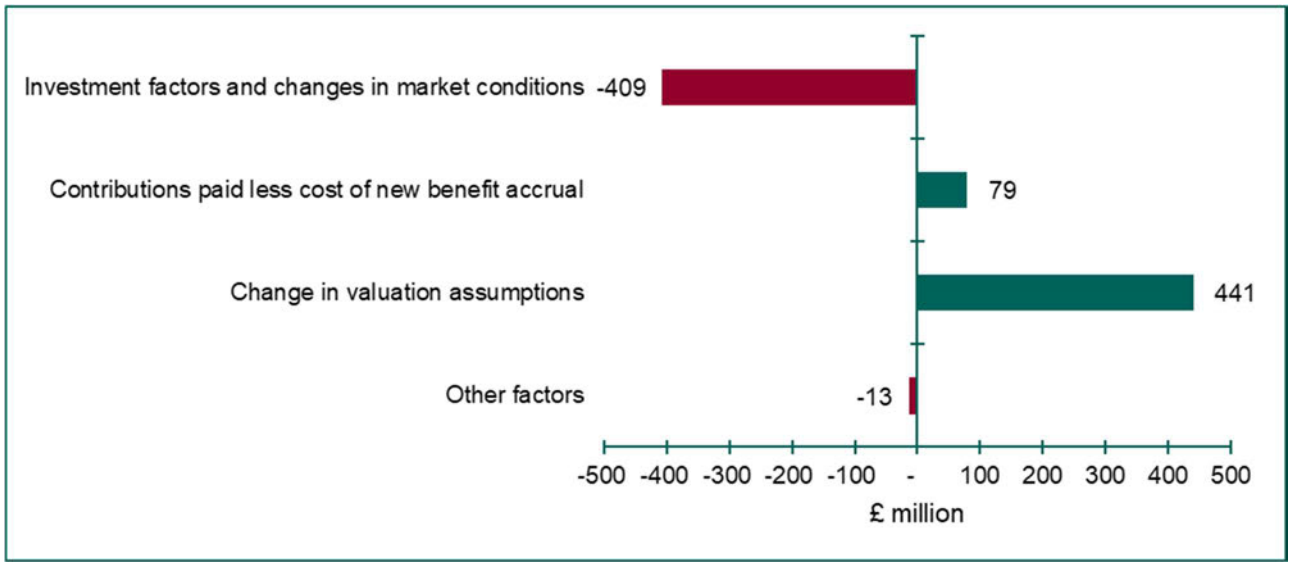
NATS Section deficit contributions

8.11 *Deficit contributions* arise due to the assets at the valuation date being less than the assessed value of the liabilities. A recovery plan is then put in place which sets out the deficit contributions payable to correct the deficit between assets and the assessed value of the liabilities. The amount of *deficit contribution*s depend on the size of the deficit, the period over which it has been agreed to repay the deficit (recovery period), and any assumptions made for expected out-performance of investments against the *technical provision's* discount rate.

8.12 The deficit in NATS Section decreased from £270 million as at 31 December 2017 to £172 million[24] as at 31 December 2020. Figure 8.3 shows the principal reasons for the improvement in the *DB scheme'*s funding position over the period.

[24] This is the deficit in the whole of the NATS Section rather than NERL's economic share which is around 75% of this amount

Figure 8.3 Change in valuation surplus / (deficit) between the 2017 and 2020 valuations



8.13 Figure 8.3 indicates that the main reasons for the reduction in deficit between the 2017 and 2020 valuations is due to changes in the valuation assumptions and the deficit recovery contributions paid. This has been largely offset by a loss due to market conditions (noting that the full extent of this loss was mitigated by the hedge against interest rates and inflation). As discussed in paragraph 6.47, the reduction in deficit illustrated in Figure 8.3 due to a change in valuation assumptions (a £441m improvement in the funding position) is partially due to a reduction in life expectancy consistent with recent mortality trends observed within the UK; the other driving factor was the change in the discount rate methodology introduced at the 2020 valuation, responsible for approximately £280m improvement in the funding position, discussed in paragraphs 6.15 to 6.23. These items all seem reasonable.

Deficit recovery plan

8.14 The main features of the recovery plan[25] agreed at the 2020 valuation are as follows:

- runs until 31 December 2029
- includes no allowance for outperformance higher than the discount rate used to assess the technical provisions
- £26.0 million required in 2021 and £26.6m in 2022 (2.37% increase on 2021) as per the previous recovery plan
- payments increasing to £27.2 million required in 2023 and increasing by 2.37% in 2024 and thereafter

8.15 The Trustee assumed when setting the deficit recovery plan at the 2017 valuation that part of the deficit of £270 million will be met by the NATS Section's investment returns during the recovery period exceeding the prudent investment return assumptions used for the

[25] This is the recovery plan for the whole of the NATS Section rather than NERL's economic share

valuation by 0.3 percentage points each year. This was still below the *neutral estimate* of future investment returns. Assuming that some of the valuation deficit will be met by excess investment returns instead of employer contributions is relatively common but not universally used. At the 2020 valuation, no allowance for outperformance above the prudent *technical provisions discount* rate has been made. NERL have outlined that the rationale was that the new discount rate methodology was inconsistent with retaining an allowance for outperformance. The 2020 valuation introduced a new structure to the discount rate, the effect of which is a relatively small increase in the margin for outperformance over the period of the recovery plan. Over the recovery plan period, the changes in the discount rate methodology result in a lower overall assumed return relative to the explicit margin for prudence assumed as apart of the 2017 valuation. NERL have estimated that the return expectations used in the calculation of the recovery plan payments have reduced from around 1.9% a year above the yield on gilts in the 2017 valuation, to 1.8% a year above the yield on gilts at the 2020 valuation.

8.16 All else remaining constant (the contributions in 2021 and 2022 and the length of the recovery plan), GAD estimate that the impact of allowing for the same level of outperformance as in the 2017 valuation would be a saving of £15m a year across the price control period. GAD have not seen any evidence to support the decision to remove the margin for outperformance within the calculated recovery plan contributions.

8.17 The scheme's *funding level* will be reassessed at least triennially and the recovery plan amended as necessary depending on the scheme's experience. The next formal funding valuation is expected no later than at 31 December 2023.

8.18 Table 8.1 compares the characteristics of the NATS Section recovery plan to the average across other UK DB pension schemes[26].

Table 8.1 Recovery plan characteristics

	Recovery plan	Annual recovery contribution as % of liabilities
NATS Section	9	~ 0.8% - 0.5%
TPR average (all schemes)	7.5	1.9%
TPR average (strong covenant)	5.4	1.8%
TPR average (maturity: 25%-50% pensioner liabilities)	4.6	1.1%

8.19 Table 8.1 shows that NATS has a longer recovery plan and pays lower relative recovery contributions than the average. A recovery plan of 9 years is notably higher than the average of those schemes who have a strong covenant or a similar funding level to the NATS Section; the recovery plan length of 9 years is consistent with the agreed plan following the 31 December 2017 valuation. However, a wide range of recovery periods are adopted in practice depending on the individual circumstances of the scheme. With a

[26] Scheme funding analysis 2021 annex, June 2021

recovery period of around 8 years representing the upper quartile of all schemes, and around 15 years representing the 95th percentile[27].

8.20 There is no single answer as to what the "correct" deficit recovery period should be. Typically schemes with stronger *employer covenants* are associated with shorter periods, although this may simply reflect the sponsor's ability to pay contributions to the scheme rather than to invest them in the business in the expectation of being able to strengthen the *sponsor covenant*. However, we also note that there are regulatory issues which may need to be taken into consideration (for example, wanting to adopt a period which strikes a fair balance for different generations of consumers). The implications of any trapped surplus as discussed in Section 4 should also be considered when setting the length of the recovery plan.

8.21 CAA should consider whether the removal of any allowance for outperformance within the recovery plan, against the context of the wider discount rate methodological changes introduced at the 2020 valuation, reflects efficient pension cost management.

Defined Contribution pension costs

8.22 *DC scheme* costs depend directly on the level of contribution rates paid and so do not require projections of expected future benefit outgo in the same way as DB schemes. Within their *DC scheme*, NERL pay employer contributions at a level of twice the amount the employee decides to pay in, up to a maximum employer cost of 18% of *pensionable pay*. NERL's projections assume the average employer contribution will be 16% of *pensionable pay*, based on recent experience. This is broadly in line with the assumed rates at the time of GAD's previous review.

8.23 It is usual for employers to operate a matching contribution structure as NERL have done as it incentivises employees to contribute more and therefore build up a bigger retirement fund. The use of a 2:1 matching structure was considered in GAD's letter to the CAA of 6 May 2010. It concluded that NERL's contribution rates were likely to be towards the upper end of typical employers' matching contributions, but that they did not appear significantly excessive, based on the survey data reported by Incomes Data Services (IDS) in August 2009. We also note that the CAA commissioned the IDS in 2014 to review employment costs and concluded that the DC scheme was broadly in line with general DC practice[28].

8.24 The Occupational Pension Schemes Survey published by the Office for National Statistics states that the average employer contribution rate into DC schemes in the UK in 2019 was 3.5%. Due to the introduction of auto-enrolment this statistic is likely to be skewed by auto-enrolled companies paying at the minimum possible level. An alternative benchmark is against the contribution rates paid by FTSE 100 companies. Willis Towers Watson[29] report that in 2021, FTSE 100 companies where some element of matching employee contributions take place, were on average paying around 11.3% of pay towards DC schemes.

8.25 Overall, the average employer contribution rate is higher than those typically paid elsewhere, however, the level of employer contributions made towards the *DC scheme*

[27] In other words 5% of UK DB schemes have a recovery period of at least 15 years

[28] See section 7 of the IDS report

[29] Willis Towers Watson FTSE 350 DC Pension Scheme Survey, 2021

needs to be considered as part of the whole remuneration package. We understand the level of *DC scheme* contributions was part of the agreement with trade unions to close the *DB scheme* to new entrants in 2009. So, to the extent that *DC scheme* contributions (16% on average) are considerably lower than *DB scheme* contributions (41.8% of *pensionable pay* rising to 66.2% of *pensionable pay* in 2023) this represents a reduction in consumer costs than would have been otherwise due had the *DB scheme* not closed.

Reasonableness of projected cash contributions

8.26 We have performed some checks to ensure that the level of projected cash contributions contained within NERL's Business Plan dated 7 February 2022 (see Figure 8.2) are reasonable.

8.27 The *deficit contributions* are defined in monetary terms, We have been able to check, and we are content that the cash contributions in each year within NR23 correspond to the recovery plan discussed in paragraphs 8.14 to 8.21 and a regulated proportion of around 75%.

8.28 The level of contributions towards new accrual in the *DB scheme*, the *pension cash alternative* and the *DC scheme* are defined as a percentage of *pensionable pay* and therefore depend on salary projections over NR23.

8.29 The projected level of cash contributions for *DB scheme* new accrual in 2023 appear reasonable given the total *pensionable pay* of active members as at 31 December 2020 (contained within the valuation report) and a regulated proportion of around 75%. The amount of contributions then reduces over NR23, which is expected due to the scheme being closed to new entrants, although we noted in paragraph 8.10 that contributions expressed as a percentage of pensionable pay are also reducing when we might actually expect a slight increase.

8.30 The projected level of cash contributions for the *pension cash alternative* in 2023 appear reasonable given the average *pensionable pay* of active members as at 31 December 2020 (contained within the valuation report), the known number of members who have opted for the pension cash alternative and a regulated proportion of around 75%. The contributions then reduce over NR23 at a quicker rate compared to the *DB scheme* new accrual contributions. This is plausible given those members who take the *pension cash alternative* are expected to be older and therefore more likely to reach retirement within NR23.

8.31 The projected level of cash *DC scheme* contributions over NR23 appears at a level consistent with RP3 (where a slightly lower level of employer contribution at 15% of *pensionable pay* was adopted) albeit slightly higher which is expected as new entrants join the *DC scheme*.

8.32 At a high level, we have no concerns over the cash contributions for new accrual in the *DB scheme*, the *pension cash alternative* and the *DC scheme* contained within the Business Plan dated 7 February 2022. However, we cannot fully verify the amounts without reviewing the underlying salary projection of the relevant members which is beyond the scope of this review.

Sensitivities

8.33 The assessed value of the *technical provisions* and level of DB contributions are very sensitive to the assumptions adopted. We have summarised the sensitivity analysis contained within the 2020 valuation documentation for context and to support CAA's considerations. We have provided further sensitivities, estimated by GAD, to changes in the underlying market conditions.

8.34 The sensitivities to a change in *discount rate* included in the Scheme Actuary's paper "Allowance for outperformance in the discount rate – NATS Section" dated 5 November 2020 were produced based on a discount rate structure with differing rates pre- and post-retirement. We have instead estimated sensitivities based on the agreed discount rate structure which varies over time (further discussion included in paragraphs 6.6 to 6.14). Our estimated sensitivities are summarised in Table 8.2.

Table 8.2 Discount rate sensitivities

	Change to discount rate	Change in surplus/(deficit)	Change in *standard contribution rate* as a % of pensionable pay
Short-term Until 31 Dec 2030	+0.25% pa	+£150m	-2.7%
Long-term From 31 Dec 2036	+0.25% pa	+£180m	-3.5%

8.35 Table 8.2 shows that the valuation results are sensitive to relatively small changes in the discount rates. Given the discount rates are set with reference to gilt yields, which can vary over time, the discount rates and therefore valuation results may be different at the next funding valuation, due no later than 31 December 2023. Strategy papers provided by the Trustee's investment advisor Aon suggest that the scheme's investment portfolio provides a hedge against movements in the underlying gilt yield and movements in the market expectation of future inflation. This hedge is understood to provide around 87% protection against movements in the value of the assessed *technical provisions*; such that for an increase in government bond yields across the whole duration of the DB scheme liabilities of 0.25 percentage points each year, Table 8.2, suggests the value of the liabilities would be expected to fall by around £330m, but the LDI portfolio would be expected to fall in value by around £290m.

8.36 Some "what if" scenarios and their impact on the *funding level* as at 31 December 2020, based on information included in the 2020 funding valuation report, are set out below. Additional scenarios illustrating the impact of adverse volatility on nominal and real yields affecting gilt yields, discount rates, and *credit and bond asset* yields and on the *return-seeking assets*, are summarised in Table 8.3. These scenarios are intended to illustrate realistic adverse market conditions movements that may be seen from year to year and therefore may be included within a cost exempt report during the new price control period. In particular, it can be seen that any changes in investment markets might have a less

material impact on the funding level of the scheme (and hence level of *deficit recovery contributions*) because of the hedging in place.

Table 8.3 "What if" scenarios

	Funding level	SCR (employer share)
Change in assumptions		
2020 valuation *technical provisions* basis	97%	66.2%
Life expectancy increases by one year	93% (-4%)	68.8% (+2.6%)
Discount rate decreases by 0.25% pa	91% (-6%)	72.4% (+6.2%)
RPI inflation increases by 0.25% pa	92% (-5%)	71.8% (+5.6%)
"What if" scenarios - change in market conditions		
Nominal yields decrease by 0.5% pa (impacting assets and liabilities)	96% (-1%)	78.6% (+12.4%)
Real yields decrease by 0.5% pa (impacting assets and liabilities)	96% (-1%)	78.6% (+12.4%)
10% fall in market value of return-seeking assets	95% (-2%)	66.2% (nil)

Notes
1. The impact for change in assumptions are based on information provided in the 2020 valuation report.
2. The "what if" scenarios are based on GAD analysis using the information provided in the 2020 valuation report to illustrate potential impacts resulting from changes in market conditions. Although the illustrations may be regarded as more extreme, they are nonetheless still plausible even if we have not assigned a likelihood to the potential impacts.

9. Reasonable and efficient range

9.1 CAA asked GAD to estimate a range of pension costs that might be considered reasonable and efficient in comparison with similar DB schemes.

9.2 The principles underlying the reasonable range are informed by the funding analysis included within Section 6 of this report. The most financially material assumption underlying the assessed pension costs is the discount rate. Considering the NATS Section's investment strategy, strong employer covenant and relative immaturity, we would expect that the funding strategy would be broadly between the 70th and 95th percentile of *Defined Benefit pension schemes*. By comparison, the current discount rate is broadly 75th percentile.

Table B.1: projected pension costs and GAD estimated range

Calendar years 2020 prices £m	2023	2024	2025	2026	2027
Defined Benefit (future service costs)	67	66	64	63	61
- Lower / Mid / Upper bound	*28 / 53 / 69*	*27 / 53 / 68*	*26 / 51 / 66*	*26 / 50 / 65*	*25 / 49 / 63*
Defined Benefit (deficit repair)	20	20	20	20	21
- Lower / Mid / Upper bound	*0 / 0 / 33*	*0 / 0 / 33*	*0 / 0 / 33*	*0 / 0 / 33*	*0 / 0 / 35*
Defined Contributions	16	17	19	20	22
Pension Cash Alternative	12	11	10	9	8
Total	**115**	**114**	**113**	**112**	**112**
- Total: Lower / Mid / Upper bound	***56 / 81 / 131***	***55 / 81 / 130***	***55 / 80 / 129***	***55 / 79 / 128***	***55 / 79 / 128***

Note:
Dark plum shaded rows reflect pension costs requested by NERL within their Business Plan dated 7 February 2022. Light plum shaded rows have been approximated by GAD.

9.3 The GAD lower, mid and upper bound pension costs are estimated using the following assumptions:

Lower bound (95th percentile)
A lower bound for pension costs may be around the level of the 95th percentile of all *Defined Benefit pension schemes*. For example: the current investment strategy supports a prudent investment return of 1.8 percentage points above the gilt yield in the short term, if the funding framework did not reflect long-term de-risking intentions; alternatively, the current funding framework might be retained, however higher returns would be targeted in the short-term and long-term.

GAD estimate that the results of the 2020 valuation would have shown a surplus of around £700m.

- Discount rate of 1.8 percentage points above government bond yields, all other assumptions are consistent with the other assumptions used by the Trustee at the 2020 valuation. This might be justified, for example, with no intention to de-risk in the future and to continue with the existing investment strategy indefinitely.

- Approximately 50% of the estimated total surplus is used to modify the employer contribution rate for 15 years (five valuation cycles, and roughly equivalent to the average future working lifetime); 50% is intended to represent a reasonable negotiation outcome between NERL and the Trustee over the use of the surplus, with the other 50% used to achieve other Trustee aims.

- No deficit repair contributions would be required as the estimated funded position would show a surplus.

Mid (85th percentile)
Mid-way between the lower and upper bounds for reasonable and efficient pension costs may be around the level of the 85th percentile of all *Defined Benefit pension schemes*. For example: within the current funding framework, a delay to the integrated transition to low dependency by around 10 years, discussed further in paragraph 6.22.

GAD estimate that the results of the 2020 valuation would have shown a surplus of around £200m.

- Discount rate of 1.4 percentage points above government bond yields, all other assumptions are consistent with the other assumptions used by the Trustee at the 2020 valuation.

- Approximately 50% of the estimated total surplus is used to modify the employer contribution rate for 15 years (five valuation cycles, and roughly equivalent to the average future working lifetime); 50% is intended to represent a reasonable negotiation outcome between NERL and the Trustee over the use of the surplus, with the other 50% used to achieve other Trustee aims.

- No deficit repair contributions would be required as the estimated funded position would show a surplus.

Upper bound (70th percentile)
The lower bound for reasonable and efficient pension costs may be around the 70th percentile of all *Defined Benefit pension schemes*. For example: slightly higher margins for prudence could be adopted in the funding assumptions; the investment strategy could shift to a higher allocation towards matching assets.

GAD estimate that the results of the 2020 valuation would have shown a deficit of around £300m.

- Discount rate of 1.0 percentage point above government bond yields, all other assumptions are consistent with the other assumptions used by the Trustee at the 2020 valuation.

- Recovery plan length is unchanged from the 2020 valuation, no allowance for outperformance above the discount rate.

9.4 The above results are provided to give an indication of the potential impact to pension costs in NR23 if various changes were made to the 2020 valuation assumptions. It should be noted that:

- The costs are based on those contained in NERL's Business Plan dated 7 February 2022, and therefore reflect NERL's economic share rather than total scheme costs. They also include Defined Contribution and Pension Cash Alternative costs, which are assumed to be unaffected in each scenario.

- The impact of the changes in assumptions have been taken from information within the Scheme Actuary's actuarial valuation report, which we have relied on being accurate.

- We have assumed that any change in contributions arising from the 2020 valuation would not be implemented until the 2023 calendar year, in line with the agreed Schedule of Contributions.

Appendix A: Objectives of the review

A high level summary of the requirements for this review, based on the specification contained within the invitation to provide a proposal, is set out below.

To advise the CAA on

- The actuarial assumptions underpinning the pension scheme valuations, either at 31 December 2020 (or some point thereafter if NERL provide another formal valuation), that NERL may include in its Business Plan assumptions, or its outturn costs, including:
    - the reasonableness of the actuarial assumptions adopted by the Trustee of the NERL *defined benefit pension schemes*, as at 31 December 2020, and how they affect expected future cash contributions, including a comparison with the assumptions and levels of prudence adopted by other pension schemes
    - relevant benchmarks within this range, e.g. upper quartile, based on expectations of where NERL's pension scheme should fall within the ranges based on the characteristics of the NERL pension scheme;
    - the impact of adopting alternative actuarial assumptions within this range, and quantification of the impact of adopting alternative assumptions;
    - NERL's planning assumptions in respect of future pension costs, and how these relate to the Trustee's assumptions;
    - how the Trustee's actuarial assumptions might change at future expected valuations and how that might affect cash contributions in the NR23 period (we note that a valuation as at 31 December 2023 would affect costs within the NR23 period).
- The reasonableness and efficiency of other assumptions and costs in NERL's Business Plan for the *DC scheme* and *pension cash alternative*. Including comparisons with costs of assumptions adopted by other pension schemes, views on the range of reasonable assumptions, views on relevant benchmarks within this range (e.g. upper quartile) taking into account the characteristics of NERL's pension scheme, the impact of adopting alternative assumptions within this range, and the quantification of the impact of adopting alternative assumptions.
- NERL's stewardship of its pension schemes, in conjunction with the Trustee, from 2013, including the approach to asset and liability management and its approach to deficit recovery;
- Options open to NERL to manage the cost efficiency and optimal provision of both the DB pension scheme and the DC pension scheme within the NR23 period.

Appendix B: Information used for the review

Information regarding the NATS Section

1. The Scheme Actuary's actuarial valuation reports as at 31 December 2015, 2017 and 2020;
2. The Trustee's annual report & accounts 2016, 2017, 2018, 2019 and 2020;
3. The Scheme Actuary's paper on Allowance for Outperformance in the Discount Rate – NATS Section, dated 5 November 2020;
4. The Scheme Actuary's paper on NATS' Discount Rate Request, dated 5 September 2017;
5. The Scheme Actuary's paper on Life expectancy and mortality, dated 26 August 2020;
6. The Scheme Actuary's paper on Experience analysis and demographic assumptions – NATS Section, dated 26 August 2020;
7. Aon's paper on Investment Strategy as at 31 December 2021, dated 17 February 2022;
8. Statement of Funding Principles, dated 15 September 2021;
9. Schedule of Contributions, dated 15 September 2021;
10. Recovery Plan, dated 15 September 2021;
11. The Scheme Actuary's Scheme funding report, dated 15 September 2021;
12. Civil Aviation Authority Pension Scheme – NATS Section Statement of Investment Principles, dated November 2021;
13. The Scheme Actuary's papers on the 2017 factor review, dated 9 March 2017 and 30 May 2017;
14. The pension costs section in appendix K of NERL's Business Plan, dated 7 February 2022;
15. CAAPS Stewardship report for the year ending 31 December 2020, dated March 2021;
16. Cost Comparison Survey by Muse Advisory, dated November 2019

Publicly available reference information

17. "The Purple Book", Pension Protection Fund, 2021
18. "Scheme funding analysis, annex", The Pensions Regulator, 2021.
19. "Occupational pension schemes survey 2019", Office for National Statistics, January 2021.
20. "TPR DB scheme costs", The Pensions Regulator, 2022

Information regarding approaches by other regulators

21. Ofgem - https://www.ofgem.gov.uk/publications/revised-pension-allowance-values-and-completion-2020-reasonableness-review

22. Ofgem's consultation - https://www.ofgem.gov.uk/publications-and-updates/decision-ofgems-policy-funding-pension-scheme-established-deficits

23. Utility Regulator, Northern Ireland - https://www.uregni.gov.uk/niw-final-determination

24. Ofwat's treatment of deficit costs - https://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs_in1317pr14pension.pdf

25. Ofcom's treatment of deficit cost - https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2010/ofcom-statement-on-bt-pensions

Appendix C: CAA guidance

In 2021, the CAA published an update on the approach for NR23. This publication included its Regulatory Policy Statement ('RPS'), designed to provide guidance for NERL and for the Trustee of the NATS Section on the principles to be applied when analysing *DB scheme* costs. The below table sets out the main aspects of the guidance that may be relevant.

Paragraph	Regulatory Policy Statement (Appendix C of document given in footnote)	Relevant paragraphs in GAD report
1	NERL are expected to provide evidence to demonstrate that they have taken steps to ensure the pension costs remain efficient and reasonable.	Sections 4, 5, 6, 7 and 8
5 - 8	Pension costs should be assessed on a basis of reasonable and prudent assumptions and should take into account the long-run investment returns and the strength of the employer's covenant. NERL should provide evidence of benchmarking the Trustee valuation assumptions against those adopted by trustees operating schemes in sectors of the economy open to normal commercial and competitive pressures. Any confirmed deficits should be funded over a reasonable period, taking into account the strength of the employer's covenant and commitment to fund reasonable pension costs.	Section 6 Paragraphs 8.14 to 8.21
11 - 14	It is expected that cost implications for NERL's contributions are appropriately considered when deciding on the strategy. These implications include: A relatively high level of investment risk could lead to a more volatile funding position and potentially higher deficit repair contributions. As the pension scheme matures, it is expected that the Trustee will want to invest in assets to generate income and cashflows to match the benefit payments to pensioners.	Section 5
15	As the scheme matures, it is expected that the investment strategy will be rebalanced from riskier to	Section 5

	less risky assets, taking account of the relevant costs and consumer benefits, now and in the future.	
16 – 19	Consideration should be given to applying any emerging surplus both to de-risking and to lowering NERL's pension contributions to reduce the burden on airspace users. In the event of a surplus at a future valuation: • deficit repair contributions will no longer be required and airspace users should benefit through lower charges • surplus should be managed effectively in the best interests of current and future airspace users • manage the risk of a trapped surplus and minimise the likelihood of any trapped surplus arising and provide some evidence on how NERL intend to minimise this risk	Paragraphs 4.3 – 4.14

Appendix D: Background to scheme funding and contributions

Most UK private sector *defined benefit pension schemes* are subject to the scheme funding requirements of Part 3 of the Pensions Act 2004[30]. Pension schemes must have a full actuarial valuation carried out at least every three years. The purposes of such an actuarial valuation are:

- To check whether the pension scheme's assets are sufficient to cover its accrued liabilities (referred to as its *technical provisions* in the Pensions Act 2004); and
- To determine the contribution rate payable by the employer going forward.[31]

The employers' contribution rates usually comprise two elements:

- The employer's share of the *Standard Contribution Rate (SCR)*: this is the contribution rate required to meet the expected cost of pension benefits accruing to active members in respect of service in the relevant period (often the next three years), after deducting the members' contribution rates. The higher the members' contribution rates, the lower the employer's share of the *SCR*.
- Adjustments for past service surplus or deficit: where an actuarial valuation shows that the scheme's assets are less than required to cover the expected cost of members' benefits which have accrued up to the valuation date, additional *deficiency contributions* are required from the employers to make up the shortfall. Conversely, where the scheme's assets are more than sufficient, the employers' contributions may be reduced, depending on the scheme's rules.

The *Standard Contribution Rate (SCR)* therefore depends on the following three main factors:

- The level of benefits being provided: the more generous the benefits, the higher the *SCR*. Also, the lower the members' contribution rate (as specified in the scheme rules), the higher the employers' share of the *SCR*.
- The actuarial assumptions used: the more optimistic the assumptions, the lower the expected cost now of providing the defined benefits.[32]

[30] For further information, please refer to the Pensions Regulator's regulatory code of practice 03, "Funding defined benefits".

[31] The pension scheme's rules usually determine the rate of members' contributions. In a *defined benefit scheme*, the employer's contributions are usually variable, and depend on the scheme's experience. In other words, given a fixed rate of member contributions, the employer must ensure the scheme has sufficient assets to pay the specified benefits.

[32] Other things being equal, the more optimistic the assumptions used to calculate the SCR, the greater the risk of actual future experience being worse than the assumptions used and hence of a deficit emerging in the pension scheme in the future.

- The membership profile of the pension scheme: the expected cost of providing a pension depends on factors such as the age, gender, occupation, and socio-economic background of the scheme members. *SCR*s are expected to increase as a membership ages although this does not always have to be the case.

The amount of any *deficiency contributions* depends on the following factors:

- **The scheme's funding position**: this depends on the scheme's actual past experience, and also on the assumptions used for the valuation with regard to the scheme's future experience. Past experience affects both the scheme's liabilities (its obligations to pay members' pensions) and the scheme's assets (the fund which has built up from past contributions and the actual investment performance achieved to date).

- **The *recovery plan period and other underlying assumptions***: the recovery plan period is the period over which any shortfall must be met by the employer through additional contributions. For any given deficit, the annual deficiency contribution will be lower the longer the period over which the deficit is to be repaid. Other assumptions are also relevant to any *deficit contributions*, particularly any allowance for outperformance above the *technical provisions* discount rate over the recovery plan period, and any assumptions made regarding the timing and nature of the payments, for example fixed or increasing in line with CPI.

Some key points on the scheme funding process are[33]:

The assumptions to be adopted for funding purposes are not prescribed in legislation or guidance.

- Assumptions must be set by the pension scheme trustees, after taking actuarial advice, and they generally must be agreed by the sponsoring employer. Assumptions must reflect the scheme's and the sponsoring employer's specific circumstances, in particular the trustees' view of the sponsoring *employer's covenant*.

- When calculating past service liabilities, assumptions must be prudent. The degree of *prudence* is not defined and will depend on the scheme's circumstances.[34]

- The *recovery period* must also be agreed with the sponsoring employer. The trustees should aim to eliminate any funding shortfall 'as quickly as the employer can reasonably afford'.

A number of assumptions affect the results of an ongoing funding valuation. These include:

- **Financial assumptions**: including the *discount rate* (or equivalently, the assumed rate of return on the scheme's assets less a margin for prudence), pay increases, price inflation and pension increases.

- **Demographic assumptions**: including assumed longevity (allowing for expected future longevity improvements), assumed rates of withdrawal from active service (and

[33] This list is not exhaustive.

[34] Please refer to Appendix F for a definition of "*prudence*" in this context.

whether this is through voluntary withdrawal, ill-health, death or retirement), and the proportion of members in respect of whom dependants' benefits will be paid.

Actuarial valuations may be carried out for other purposes, for example to determine pension costs and liabilities for the sponsoring employer's financial statements under FRS102 or IAS19, or to assess the extent to which the pension scheme's assets would be sufficient to buy out the accrued liabilities with an insurer if the scheme were to wind up (referred to as a solvency valuation). Different types of actuarial valuations use different methods and assumptions, as appropriate for the purposes of the valuation. This report considers scheme funding valuations of the NATS Section only, which are used to determine NERL's cash contributions to the scheme.

The NATS Section uses an actuarial method called the *projected unit method*. This is a standard method which is commonly used for funding valuations. For schemes that are closed to new entrants (like NATS Section), an alternative method (called the *attained age method*) is sometimes used. The *attained age method* would be expected to result in higher contribution rates in the short term. The following paragraphs explain this further.

The expected cost of pension benefits accruing to active members, expressed as a percentage of payroll, usually increases with age (although this depends on the actuarial assumptions used to calculate the expected cost). Where a pension scheme is closed to new entrants, this would be expected to result in an increase in the average age of active members over time, and hence an increase in the expected cost of benefits accruing to active members, expressed as a percentage of payroll.

If the employer *standard contribution rate* (*SCR*) is calculated to be sufficient to meet the expected cost of benefits accruing to active members in the few (typically three) years following the valuation date, then the employer *SCR* (expressed as a percentage of payroll) would be expected to increase in the future for a closed scheme. Such an approach is called the *projected unit method*.

Alternatively, the employer *SCR* could be calculated to be sufficient to meet the average expected cost of benefits accruing to active members for the remainder of their expected working lifetimes. This can result in a higher initial *SCR*, but with no further increases being expected in the future as the average age of active members increases. This is called the *attained age method*.

Both the *projected unit method* and the *attained age method* are commonly used for funding valuations of closed pension schemes. The *projected unit method* would be expected to result in lower initial employer contributions than if the *attained age method* were used. The *projected unit method* is expected to lead to future increases in the employer *SCR* as the average age of active members' increases, but this should be considered against the corresponding expected reduction in pensionable payroll.

A *defined benefit pension scheme's* ultimate cost depends on three factors:

- The scheme's benefits (including to what extent members pay for their own benefits);
- The scheme's investment returns; and
- Members' experience (for example employees' pay rises, the options they take at retirement, and pensioners' longevity)

However, an employer's contributions to a pension scheme also depend on the method and assumptions used to calculate the contribution rates (in other words, the assumptions made regarding future investment returns and future experience).

The use of more prudent assumptions causes a higher initial contribution rate, but would be more likely to result in a future valuation surplus and hence lower future contribution rates (assuming that surpluses are used to reduce contribution rates rather than to improve members' benefits). Therefore, differences in contribution rates which are caused by different methods and assumptions might, in broad terms, be expected to even themselves out over time (assuming the scheme is ongoing), but raise issues of equity between customers at different times if they are reflected in price limits.

Appendix E: Factors affecting investment strategy

Several factors affect the high-level strategic investment strategy for a funded *defined benefit pension scheme*. The choice of investment strategy represents a trade-off between:

- Return – In isolation, assets which are expected to generate higher returns would be preferred to assets with lower expected returns. Such assets include equities and property, and are referred to as *return-seeking assets* in this report.

- Risk – The scheme's trustees wish to minimise the risk of sufficient assets not being available to meet the scheme's benefit payments as they fall due. The employer may also want to minimise the risk of large *deficiency contributions* being required in the future. Investing in *matching assets*, such as government and corporate bonds, can reduce risk by providing an approximate match to future pension liabilities, and by their market values broadly reflecting changes in the present value of the scheme's liabilities[35].

In their consideration of risk, one key factor for the trustees is the financial strength of the sponsoring employer (that is, the '*employer's covenant*'). They wish to minimise the likelihood of there being insufficient assets in the scheme with no continuing sponsoring employer being able to meet the deficiency. The greater the trustees' perceived risk of the sponsoring employer's insolvency, the more cautious the scheme's investment strategy is likely to be, although this may be influenced by the size of any existing surplus or deficit.

The maturity of the scheme is also important. Mature schemes, for example schemes where a large proportion of their liabilities relate to current pensioners, generally have net cash outflow and need certainty of investment income to ensure pensioner payments can be met. Immature schemes with significant cash inflows may choose to take a more risky approach to investment, as there is a longer time horizon to deal with fluctuations in asset values (subject to the strength of the *sponsor's covenant*).

Implications of a change in holdings in return-seeking assets

Long-term implications

All else being equal, less (more) investment in *return-seeking* assets implies:

- lower (higher) long-term expected investment returns; and therefore

- an expectation of higher (lower) long-term employer contributions (in order for the scheme's assets to be able to meet future benefit payments); but with

- less (more) investment risk; so

[35] Depending on the method used to value the scheme's liabilities.

- potentially less (more) volatile funding outcomes; and therefore
- potentially less (more) volatile overall employer contribution rates.

Short-term implications

One possible consequence of a relatively low (high) investment in *return-seeking assets* is a relatively high (low) employer contribution rate, due to actuarial valuation assumptions anticipating lower (higher) long-term investment returns.

Appendix F: Glossary

Accrual rate – The rate at which benefits accrue to active members in a *defined benefit scheme.* For example, in a final salary scheme where a member is entitled to a pension of one eightieth of his or her final salary for each year of pensionable service, the *accrual rate* is one eightieth.

Asset outperformance – The assumed extent to which a scheme's investment return will exceed returns on government bonds (gilts).

Attained age method – A method used to calculate *standard contribution rates (*SCR*s)* where the *SCR* is calculated to be sufficient to meet the average expected cost of benefits accruing to active members for the remainder of their expected working lifetimes. (Compare with *projected unit method*.)

Buy-out – A financial transaction whereby a *DB pension scheme* pays a fixed amount to an insurance company in order for the insurance company to take on the obligation of meeting future benefit payments. This relieves the sponsoring employer of any liability associated with these benefit payments.

Cash or bond assets – these are assets like corporate and non-UK government bonds, as well as other income generating assets that have a contractual basis to the provision of investment returns. They exhibit properties of *return-seeking assets* in that they target additional returns based on illiquidity premiums but can also be regarded as *matching assets* if the income can match liability payments or market yields provide strong correlation to gilts yields. For the NATS Section, these assets are pooled together with *return-seeking assets* in the scheme's growth portfolio.

Covenant - see *employer covenant.*

Deficiency (or deficit) contributions – Where an actuarial funding valuation shows that the scheme's assets are less than required to cover the expected cost of members' benefits which have accrued up to the valuation date (so the scheme is in "deficit"), additional *deficiency contributions* will be required from the employer to make up the shortfall. *Deficiency contributions* are payable for a fixed term, known as the ***recovery period***, after which the deficiency would be expected to have been eliminated.

Defined benefit pension scheme (DB scheme) – A pension scheme in which an employee's pension is determined under the scheme rules. In a ***final salary scheme***, the pension is based on the number of years of service and on the employee's *pensionable pay* at, or shortly before, the employee leaves active service. In a ***career average scheme***, the pension reflects the employee's average *pensionable pay* throughout his or her active service. The cost of providing the defined benefits will depend on the scheme's experience. In most schemes, the employer has to provide additional funds to the scheme to meet the cost of providing the defined benefits, if experience is worse than expected. In other words, the risk of adverse experience usually rests with the sponsoring employer. Conversely, the employer usually benefits from reduced contributions if experience is favourable.

Defined contribution pension scheme (DC scheme) – A pension scheme in which the benefits paid to an employee depend on the level of contributions to the scheme, the investment return earned on the contributions, annuity rates at retirement and the provider's expense charges. There

is no guaranteed level of benefits. In other words, the risk of adverse experience rests with the employee (who also benefits from any favourable experience).

Discount rate – The rate at which a *defined benefit pension scheme's* expected future benefit expenditure is discounted for the purpose of an actuarial valuation. That is, to convert a stream of expected future benefit cash flows to a current capitalised value. It can be thought of as corresponding to an assumed rate of return on assets. A higher *discount rate* (or assumed rate of return) means that the scheme's assets are expected to generate higher investment returns, and therefore the scheme needs to hold less assets now in order to meet its liabilities, its *funding level* is higher, and its *standard contribution rate* is lower.

Employer (sponsor) covenant – The degree to which the employer is willing and able to meet the funding requirements of the scheme.

Funding level – The ratio of the value of the pension scheme's assets to the assessed value of its accrued liabilities. A *funding level* of 100% means that the pension scheme is deemed to be "fully funded"; in other words, its assets are expected to be sufficient to meet the expected cost of the benefits accrued to the valuation date, on the basis of the assumptions adopted for the valuation. A "fully-funded" scheme is not guaranteed to be able to meet its future liabilities; it is only an expectation based on the assumptions adopted.

Inflation risk premium - The additional return investors are assumed to require on fixed interest gilts to compensate them for the risk that higher than expected inflation erodes their returns in real terms. The assumed *inflation risk premium* can be subtracted from the rate of inflation implied by the difference between yields on fixed-interest gilts and real yields on index-linked gilts, to produce an assumption for future levels of RPI inflation.

Liability-driven investment (LDI) – *Liability-driven investment* is an investment strategy which considers the nature of both a pension scheme's assets and liabilities when determining an approach. Typically these strategies involve the use of swaps and other derivatives to manage, or hedge, a scheme's exposure to risk (most commonly interest rates and inflation). Such strategies can also incorporate 'flight paths' with the aim of reducing risk over the long-term, subject to returns delivering a suitable level of outperformance against low-risk asset classes in the meantime.

Lifetime Allowance – The *Lifetime Allowance* is the overall value of pension savings that an individual can have at retirement without incurring a tax charge. For the majority of individuals the *Lifetime Allowance* for the 2018/19 tax year is £1.03 million. For *DB scheme* benefits the *Lifetime Allowance* is calculated as an individual's annual pension multiplied by 20, plus any automatic lump sum.

Matching assets – Asset classes such as government and corporate bonds, whose cashflows can provide an approximate match to future pension payments, and whose market values may broadly reflect changes in the present value of the scheme's liabilities, depending on the method used to value the scheme's liabilities. Such assets are used to reduce a pension scheme's investment risk (in simplistic terms) but at the expense of lower expected long-term investment returns compared with *return-seeking assets***.** In this sense, the *liability-drive investment (LDI)* can also be considered a *matching asset*, although its purpose is slightly different in that it protects against potential volatility in funding levels by matching movements in market values of assets with changes in the valuation of liabilities arising from movements in market yields.

Neutral estimate – A *neutral estimate* is an estimate where there is expected to be a broadly 50% chance that future experience will be higher (or lower) than the relevant assumption. The purpose

of a *neutral estimate* is to be neither intentionally prudent or optimistic and is used as a benchmark against which any prudence in the assumptions can be measured and their impact understood.

Pensionable pay – The amount of an employee's salary which is used to calculate the amount of contributions to a pension scheme, and the benefits provided by a *defined benefit pension scheme*. *Pensionable pay* can exclude fluctuating elements of pay, such as overtime and bonuses.

Pension cash alternative – An alternative benefit offered by NERL to eligible members of the NATS Section, whereby instead of continuing to accrue benefits within the scheme eligible members could instead opt to receive 25% of *pensionable pay.*

Prudence *(in the context of scheme funding assumptions)* – A prudent (or cautious) assumption increases the value of the liabilities compared to a best-estimate assumption.

Recovery period – See *deficiency contributions*.

Return-seeking assets – In a pensions context, asset classes such as equities and property, which are expected to generate higher returns than *matching assets*. However, the market values of such assets are expected to demonstrate greater volatility of returns relative to the value of the liabilities than *matching assets*, increasing the risk of a future deficit.

Standard contribution rate (SCR) – The level of contributions required to meet the expected cost of the additional pension to which active members will be entitled in respect of service in the relevant period. The *SCR* is assessed at full actuarial funding valuations.

Technical provisions – The present value of a pension scheme's past service liabilities for scheme funding purposes.

Value at Risk (VaR) – This is a metric that estimates the risk in the investment strategy relative to the liabilities. It is a statistical technique used to illustrate the potential loss that could happen over a particular time (usually one year) with chosen level of probability (for example, 5% likelihood the loss might be at least equal to the *VaR*).