



Government Actuary's Department

Civil Aviation Authority

Analysis of pension costs for NATS (En Route) plc

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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 to help inform the allowance for pension costs in RP3 (covering the period from 1 January 2020 to 31 December 2024).
- 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 pension scheme” in this report). 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: NERL's projected pension contributions
 - > section 8: governance and expenses
- 1.3 In January 2018, the CAA published its business plan guidance for NERL, including specific guidance on pension costs. We have reviewed NERL's initial business plan and set out in Appendix C the sections of this report that relate to the CAA's guidance.
- 1.4 The results of this review enable the CAA to understand the factors affecting NERL's future cash pension contributions, and the extent to which NATS pension scheme'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 RP3 pension cost allowance amounts requested by NERL.

Scheme benefits

- 1.5 Scheme benefits are one of the main determinants of *defined benefit* (DB) pension schemes' ultimate costs. NATS pension scheme 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 pension scheme benefits were to be more typical of UK schemes¹, all else being equal the employer *standard contribution rate* could be around 30% of *pensionable pay* instead of the 41.8% assessed at the 2017 funding valuation.

¹ [Occupational Pension Schemes Survey 2016](#) (ONS), Tables 11, 12, 13, 16



- 1.6 There have been no changes to the benefits since GAD's last review², however 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
 - > capping general pensionable pay increases to a maximum of CPI + 0.25% a year from 2013 to 2024

Considering consumer interests: application of surplus

- 1.7 Under the current recovery plan, if *neutral estimate* investment returns are achieved on the scheme assets then a surplus is expected to emerge during 2022. 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).
- 1.8 If a surplus does emerge then the trustee could consider using that surplus to de-risk the investment strategy and/or reduce employer contributions. A reduction in employer contributions could be passed onto consumers as a saving. However, I understand that the decision will be based on the long term funding strategy of the scheme which is yet to be confirmed. NERL state in their initial business plan 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 investment strategy if the trustees are supportive of this approach.
- 1.9 De-risking the investment strategy should reduce the likelihood of materially higher deficit recovery payments being required in the future. However, in the short to medium term it can potentially lead to higher contributions and therefore costs to consumers if the *discount rate* is reduced as a consequence of the de-risking. We note that the de-risking undertaken since our previous review has not resulted in a reduction in the *discount rate* assumption and therefore not increased the *standard contribution rate*. The CAA may like to engage with NERL as appropriate regarding a long term strategy.

Considering consumer interests: pension cash alternative

- 1.10 In 2016, NERL introduced a *pension cash alternative* to members of the NATS pension scheme whereby instead of continuing to accrue benefits within the scheme eligible members could instead opt to receive 25% of pensionable pay.

² GAD's report on the RP2 price control review for NATS (En Route) plc dated 14 March 2014



- 1.11 The *pension cash alternative*, including the associated National Insurance contributions, costs NERL 28.45% of pensionable pay. This represents a saving of about 3½% of *pensionable pay* compared to the current level of employer contributions to the *DB scheme*, payable up to 31 December 2019 and a saving of 13¼% pay thereafter (employer rates being 31.8% and 41.7% respectively as discussed in paragraph 7.8). Based on the optants up to 31 December 2017 this represents a saving of around £3 million a year currently, rising to around £10 million a year from 2020.
- 1.12 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 savings to NERL. Whether the same level of take up would have been achieved if lower rates had been offered is uncertain.
- 1.13 The pension cash alternative rate received is guaranteed once taken, but subject to review at future valuations for any new contracts. It is possible that employer contribution rates could reduce below 28.45% at future valuations therefore resulting in the pension cash alternative being more expensive for those members who have already taken the option.
- 1.14 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 2017 £1.7 billion of transfer values (around 40% of the current value of assets) have been paid out which removes the risk of a future deficit arising with respect to those liabilities.

Investment strategy

- 1.15 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. A number of factors affect schemes' investment strategies such as employer covenant, risk appetite and scheme maturity.
- 1.16 The proportion of assets invested in *return-seeking assets* (such as equities) has reduced within the NATS pension scheme from 53% in December 2015 to 42% in December 2017. All else being equal, a reduction in *return-seeking assets* implies lower long term expected investment returns and therefore higher contributions. However it also implies less investment risk and hence less volatile funding outcomes.
- 1.17 The proportion of NATS pension scheme assets invested in *return-seeking assets* is broadly in line with that suggested by data³ on average UK pension schemes' investment strategies for schemes of a similar maturity, although such a simplified comparison ignores many factors.

³ [The Purple Book](#): DB Pensions Universe Risk Profile 2017 published by the Pension Protection Fund



- 1.18 The investment strategy now incorporates a *liability-driven investment* (LDI) portfolio, with an inflation and interest hedge ratio of 65%. This type of approach is now common among many UK private sector defined benefit pension schemes.
- 1.19 At a high level the current investment strategy appears reasonable. However, as discussed in paragraph 1.9, 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.

Funding valuation assumptions

- 1.20 The results of actuarial funding valuations of NATS pension scheme, 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 2017, which informs the RP3 projected pension costs.
- 1.21 The assumptions adopted for a funding valuation are set by the trustee and must be prudent when assessing the *technical provisions*. At the 2017 valuation the main source of *prudence* was within the *discount rate* as well as a small amount of prudence in the mortality assumption. Approximate calculations suggest the degree of prudence in the valuation assumptions is in the region of £1-1.3 billion, or 20%-25% of the value of the total liabilities, and around 15%-25% of *pensionable pay* within the *standard contribution rate*, depending on any assumption made about the future de-risking of the investment strategy. This is a broadly similar level of *prudence* as that disclosed for the 2015 valuation.
- 1.22 The most important assumption is the *discount rate*. The NATS pension scheme adopts separate *discount rates* for the periods pre and post retirement of:
- > a pre-retirement discount rate of gilts+3% a year. This is higher than the average rate adopted by UK *DB schemes*⁴ of around gilts+1.8% a year which could indicate less prudence than average (given the NATS pension scheme has a broadly similar proportion of return-seeking assets to the average UK DB scheme)
 - > a post-retirement discount rate of gilts+0.25% a year. This is lower than the average rate adopted by UK *DB schemes*⁴ of around gilts+0.4% a year which could indicate more prudence than average.
 - > a single equivalent discount rate⁵ of gilts+1.0% (as assessed by NERL's actuarial adviser Mercer) and gilts+1.2% (also assessed by Mercer but using a methodology consistent to that of The Pensions Regulator). This is higher than the average rate adopted by UK *DB schemes*⁴ of around gilts+0.9% a year (as assessed by The Pensions Regulator) which could indicate slightly less prudence than average.

⁴ [TPR's Scheme Funding Appendix](#) 2018, table 4.1

⁵ 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



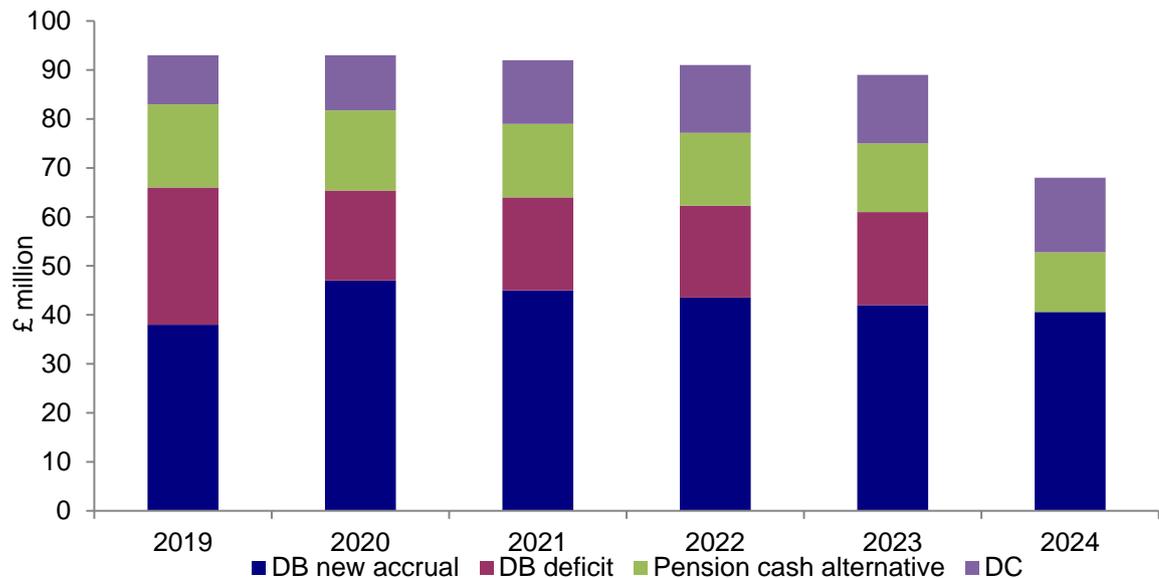
As the scheme is closed to new entrants, over time the post-retirement discount rate will become the more important assumption as the scheme matures and the number of pensioners increases.

- 1.23 At the 2015 valuation, NERL successfully negotiated that the general increase of *pensionable pay* assumption be reduced to equal CPI instead of the CPI plus 0.25% adopted at the 2012 valuation. This reflected NERL's management intention to restrict pensionable pay increases to CPI and therefore below the pensionable pay cap in place. Alongside a reduction in the assumed rates of promotional increases, these changes were estimated by the Scheme Actuary to result in around a £65 million reduction in assessed liabilities (or a circa 1% increase in funding level). These assumptions were retained at the 2017 valuation.
- 1.24 In general the assumptions adopted for the 2017 funding valuation of the NATS pension scheme are within a broadly reasonable range compared to wider practice given the investment strategy adopted by the NATS pension scheme and the assessed *employer covenant* strength. Although it should be considered whether the current level for prudence is optimal and aligns with the long term strategy for the scheme.

NERL's projected pension contributions

- 1.25 Figure 1.1 shows NERL's projected pension contributions for calendar years 2019 to 2024, split between contributions to the NATS pension scheme (further split between new accrual and *deficit recovery* payments), contributions towards the *pension cash alternative* and contributions to NERL's *defined contribution* (DC) pension scheme.

Figure 1.1: NERL's breakdown of projected pension contributions – amounts in 2017 CPI prices (as included in NERL's initial business plan)





- 1.26 DB pension costs from 2020 onwards reflect the 2017 valuation results. In 2020 the cost of DB new accrual is higher than in 2019 due to the employer's *standard contribution rate* increasing from 31.8% of *pensionable pay* to 41.7% of *pensionable pay* as a result of the 2017 valuation. This is primarily due to changes in market conditions, specifically the reduction in gilt yields between 31 December 2015 and 31 December 2017. The increase in DB new accrual is broadly offset by a reduction in *deficit contributions*.
- 1.27 The projected pension contributions contained within NERL's initial business plan 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 7.23 to 7.29.

Defined contribution pension costs

- 1.28 On average NERL contribute 15% of pensionable pay towards the DC pension scheme. This is higher than might be considered typical, with FTSE100 companies on average paying around 10% of pensionable pay⁶. However the contribution rate is significantly lower than the equivalent DB 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 (discussed below), the stewardship report provided does not appear to suggest any reasons for concern regarding the operation of the NATS pension scheme.
- 1.30 We have reviewed the expenses incurred in NATS pension scheme over 2015-2017. Overall, the level of administrative expenses appears to be higher than the typical level, when compared to data published by the Pensions Regulator⁷. In the 2016 stewardship report, the trustees 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 CAA may like to explore this point further with NERL to consider if any further action is required.

⁶ 12th edition of the Willis Towers Watson FTSE DC Pension Scheme [Survey](#)

⁷ <http://www.thepensionsregulator.gov.uk/trustees/your-db-scheme-costs.aspx>



Considerations for the CAA

- 1.31 The CAA will be assessing, in broad terms, the overall efficiency of costs in NERL's initial business plan. 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:
- > the extent to which benefits accrued before 31 October 2013 can be indexed with respect to CPI instead of RPI – paragraph 3.14
 - > the application of any future surplus arising within the scheme – paragraphs 4.3 to 4.13
 - > the mechanism of adjusting pension costs under EU regulation 391/2013 – paragraphs 4.22 to 4.25
 - > engaging with NERL on an appropriate long term investment strategy – section 5
 - > whether any actions can be taken in order to strengthen the trustees assessment of the long term *employer covenant* – paragraphs 6.11 and 6.15
 - > whether the level of prudence in the valuation assumptions strikes the right balance between the interest of consumers and the long term strategy of the scheme – paragraphs 6.16 to 6.19
 - > that a regulated proportion of 76%, and the underlying salary projections that inform the pension contribution projections in the initial business plan, are correct and consistent with data and analysis of other components of the price review – paragraphs 7.6 to 7.7 and 7.25 to 7.31
 - > whether the administrative costs incurred represent value for money – paragraphs 8.6 to 8.12

Limitations

- 1.32 This review considers NERL's pension arrangements only. It is recognised that pension arrangements are only part of overall remuneration packages.
- 1.33 This report compares the NATS pension scheme with publicly available information on other UK private sector DB pension schemes. Such comparisons do not take into account factors which affect particular industries, sponsoring employers or pension schemes in isolation, and are provided as a guide only.
- 1.34 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.
- 1.35 The purpose of this report is to assist the CAA in considering its price controls for the period 1 January 2020 to 31 December 2024. This report does not represent advice on the appropriate funding of the NATS pension scheme, or other pension schemes.



A handwritten signature in black ink, appearing to read "O Dimbylow".

Owen Dimbylow
Fellow of the Institute and Faculty of Actuaries
Government Actuary's Department
24 September 2018



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 RP3, 1 January 2020 to 31 December 2024.
- 2.3 As part of this review, the CAA considers pension costs incurred. NERL's pension costs are with respect to a *defined benefit* (DB) pension scheme for employees joining before 2009 and a *defined contribution* (DC) pension scheme for employees joining after 2009. The relevant DB pension scheme is the NATS section of the Civil Aviation Authority Pension Scheme (referred to as the "NATS pension scheme" 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 enable CAA to understand the factors affecting NERL's pension costs and the extent to which NATS pension scheme's funding approach is consistent with that of other UK private sector DB pension schemes.
- 2.5 This report builds on GAD's report on the RP2 price control review for NATS (En Route) plc dated 14 March 2014, which considered the assumptions and approach used by NERL to project their pension contributions for the price control period from 1 January 2015 to 31 December 2019. Primarily this was based on the actuarial valuation that occurred as at 31 December 2012.

Structure of this report

- 2.6 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 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. This affects the level of contributions assessed to be required
 - > **Section 7: NERL's projected pension contributions** – comments on the level of contributions required following the 31 December 2017 valuation including how the deficit recovery plan has been structured
 - > **Section 8: governance and expenses** – discussion on the governance of NERL's pension arrangements and level of administration expenses



- 2.7 This report mainly considers the NATS pension scheme which is currently responsible for the majority of NERL's pension costs. Reviewing NERL's *DC pension scheme* is more straightforward than reviewing their *DB scheme* because the DC 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 pension contributions are covered in section 7.
- 2.8 Appendix A provides a high level summary of the terms of reference for this review.
- 2.9 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

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

- 2.12 This report is addressed to the CAA. I am aware that the CAA may make this report available to other parties, including NERL and the trustees of the NATS pension scheme. I am 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.
- 2.13 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

- 2.14 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 *DB pension schemes'* ultimate costs, and therefore also of contribution rates to schemes, with the more generous the benefits, the higher the contributions. This section considers the benefits provided by the NATS pension scheme, 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.
- 3.2 The employer *standard contribution rate* would be 10-15% of *pensionable pay* lower if the benefits in the NATS pension scheme were aligned to those of a typical UK pension scheme. Total contributions to the DB scheme are projected to account for around 70% of NERL's total pension costs at the start of RP3.
- 3.3 I understand that the NATS pension scheme 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 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 pension scheme's provisions can be amended.

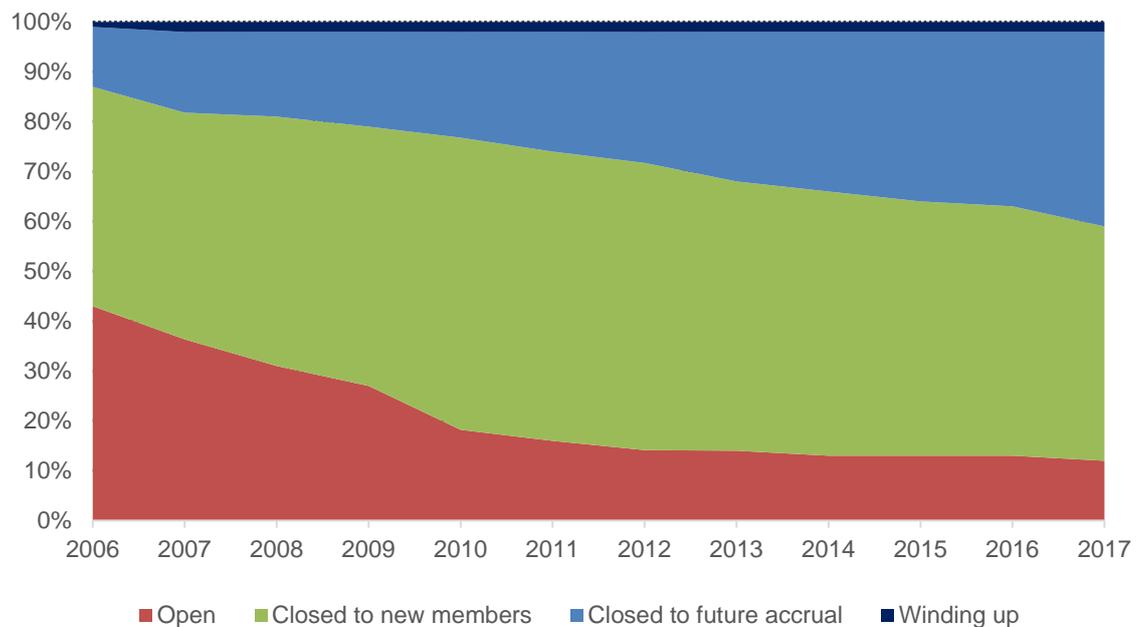
Closure of scheme to new entrants

- 3.4 The NATS pension scheme 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 *DC pension scheme* instead.
- 3.5 DC arrangements typically, but need not, involve lower employer pension contributions than a *DB pension scheme*. Whether contributions are lower to a DC arrangement rather to 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 arrangement the risk of adverse future experience rests with the member through lower than expected benefits.
- 3.7 Therefore, replacing DB provision with DC provision for new entrants reduces NERL's exposure to deficiency contributions, and is expected to reduce overall pension costs and therefore benefit consumers. These effects will increase over time, as more entrants join the DC arrangement and the liabilities of the DB scheme run down.



- 3.8 Following the most recent formal actuarial valuation as at 31 December 2017, NERL's contribution rate to the NATS pension scheme of 41.7% 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 pension scheme.
- 3.9 Figure 3.1 below shows how the distribution of open and closed schemes in the UK has evolved from 2006 to 2017. This shows only 10% of DB schemes are currently open to new members, with 90% being closed to new members or future accrual. NERL's provision of DC pension for new entrants is consistent with wider UK practice. Due to the member protections in place we understand that NERL cannot fully close the scheme to future accrual for existing DB members.

Figure 3.1 Proportion of all UK defined benefit pension schemes closed from 2006-2017



Note: 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 pension scheme are summarised in table 3.1. The benefits are unchanged since GAD's last review in 2014. This table also shows the benefits offered by "typical" UK private sector *DB pension schemes*⁸ from ONS survey data.

⁸ [Occupational Pension Schemes Survey 2016](#) (ONS), Tables 11, 12, 13, 16



Table 3.1 NATS pension scheme benefits (principal benefits only)

	NATS scheme	“Typical” UK scheme
Age at which unreduced benefits are paid (NRA)	60	65
Accrual rate	58ths	60ths
Dependants’ pension after death of member	67% ⁽ⁱ⁾	50%
Lump sum on retirement	By commutation	By commutation
Member contributions (% of pay)	6% ⁽ⁱⁱ⁾	6%
Pension increases (in payment)	CPI ⁽ⁱⁱⁱ⁾	RPI/CPI with cap ^(iv)

⁽ⁱ⁾ Increased to 100% in the period of 10 years following the member’s retirement.

⁽ⁱⁱ⁾ Some members pay lower rates of contribution.

⁽ⁱⁱⁱ⁾ 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.

^(iv) UK private sector DB pension schemes’ pension increases typically reflect increases in either the RPI or CPI, depending on the scheme rules. Increases are often capped at 2½% or 5% a year.

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

3.12 We estimate that if the NATS pension scheme benefits were in line with the typical benefits outlined in table 3.1 then the employer *standard contribution rate* would be around 30% of *pensionable pay*, compared to the 41.8% of *pensionable pay* determined at the 2017 valuation. This would result in NERL’s pension contributions being around £12 million lower a year during RP3 (in 2017 CPI terms). The purpose of this approximate calculation is solely to illustrate the broad effect of the level of the NATS pension scheme 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 approximate only. 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 awards⁹ 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 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. For example, the employer *standard contribution rate* may have been around 10% of *pensionable pay* higher, say, than that assessed at the 2017 valuation if this change had not been made (corresponding to around £10 million a year higher contributions during RP3 in 2017 CPI terms). 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 trustees 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.

Cessation of contracting out

- 3.15 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.
- 3.16 Under the Act, a statutory override was made available to employers which enabled them to either increase member contributions and/or reduce benefits in order 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 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.

⁹ Increases in pensionable pay due to promotions are not capped



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 two main areas to be considered regarding the treatment of surplus is whether surplus is used for de-risking the investment strategy and therefore is not returned to NERL (and ultimately consumers) and whether 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 2022. 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 trustees could consider using that surplus to de-risk the investment strategy and/or reduce employer contributions. I understand that the decision will be based on the long term funding strategy of the scheme which is yet to be confirmed, and may depend on the presence of a regulatory policy statement to provide the trustees with comfort on the continuing *employer covenant* strength.
- 4.5 A reduction in employer contributions would potentially be passed onto consumers as a saving.
- 4.6 NERL state in their initial business plan 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 investment strategy if the trustees are supportive of this approach rather than passing savings onto consumers.
- 4.7 Typically, de-risking uses the surplus in the following way:
- > return seeking assets (such as equities) are switched to matching assets (such as index-linked gilts)
 - > matching assets are expected to match the liabilities so that future deficits are less likely to emerge. However, they are also expected to achieve lower returns
 - > the discount rate used to put a value on the liabilities therefore decreases
 - > which increases the liabilities and removes the surplus



- 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 initial business plan that if a surplus were to arise, they will work closely with the trustees 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 reflects an approach which on balance is in the best interests of consumers.

Trapped surplus

- 4.11 I understand that apart from the above two options, NERL cannot access any surplus until the pension scheme is wound up, although legal clarification should be sought if this is unclear. 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 and adopting a longer recovery plan, 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 6.15 to 6.18.
- 4.13 The CAA may wish to engage with NERL as appropriate regarding a long term strategy.

Pension cash alternative

- 4.14 In 2016, NERL introduced a *pension cash alternative* to members of the NATS pension scheme whereby instead of continuing to accrue benefits within the scheme eligible members could instead opt to receive 25% of *pensionable pay*. According to the annual report and accounts, around 980 members have opted for the pension cash alternative up to 31 December 2017, which based on the average salary of members within the scheme will represent a saving of around £3 million a year under the existing contribution rates and around £10 million a year once the 2017 valuation contribution rates are implemented in 2020.



- 4.15 Eligible 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. I 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.
- 4.16 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 pension scheme. 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.
- 4.17 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 pension scheme for any contracts that have yet to start.
- 4.18 The pension cash alternative, including the associated National Insurance contributions, costs NERL 28.45% of pensionable pay. This represents a saving of about 3½% of pensionable pay compared to the current levels of employer contributions to the *DB scheme* payable up to 31 December 2019 and a saving of 13¼% pay thereafter (employer rates being 31.8% and 41.7% respectively).
- 4.19 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 savings to NERL. Whether the same level of take up would have been achieved if lower rates had been offered is uncertain.
- 4.20 If NERL's *DB employer standard contribution* rate fell below 28.45% 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 discount rates were to increase by around 1% a year.

Liability reduction management

- 4.21 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 31 December 2015 and 31 December 2017 £1.7 billion of transfer values (around 40% 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 also a reported gain relative to the valuation basis of £37 million (around ¾% of the current value of *technical provisions*).



Cost exempt report

- 4.22 Under EU regulation 391/2013 I 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.
- 4.23 In order to be in scope, the pension costs must be due to unforeseen changes in either:
- > national pensions law
 - > pension accounting
 - > financial market conditions
- 4.24 It may be beneficial if a set of principles were agreed between the CAA and NERL detailing how this process should work and what items are expected to be in scope. 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.
- 4.25 Legal clarification should be sought by the CAA, as appropriate, on what constitutes an unforeseen change in financial market conditions. This may include changes in contributions due to changes in gilt yields and lower/higher return on investments than expected. Other items that result in a change of contributions at a valuation, such as changes in demographic assumptions would not be expected to be in scope.

Approaches taken by other schemes

- 4.26 In seeking to manage the scheme as efficiently as possible we would expect NERL to consider the merits of approaches used by other pension schemes to reduce costs/risks.
- 4.27 **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 also mitigate the risk of a future deficit arising with respect to those liabilities that have been transferred out.
- 4.28 I understand NATS pension scheme 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 in the event that a member does take 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.



- 4.29 **Commutation factors** – I understand the principle behind setting commutation factors within the NATS pension scheme 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 funding valuation 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 the tax benefit of the cash commuted.

Recent approaches by other regulators

- 4.30 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, however please note it has not been considered whether such approaches are appropriate or not for the CAA.

Consumer interests

- 4.31 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, they have challenged companies to demonstrate that good governance procedures are in place and that schemes' running expenses are demonstrably value for money.
- 4.32 Ofgem have consulted on its approach to pensions twice in recent years (May 2015 and March 2016). We note in particular 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

- 4.33 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.
- 4.34 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.



- 4.35 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.



5 Investment strategy

- 5.1 *Employer covenant*, risk appetite and scheme maturity affects 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. There has been a material reduction in the proportion of *return seeking assets* held by the NATS pension scheme since GAD's previous review but the proportion held is broadly in line with the average of UK *DB schemes* with similar maturity.
- 5.2 A summary of the key factors that influence the high-level strategic investment strategy for a funded DB pension scheme is given in Appendix E. The analysis in this section concentrates on a high-level split between return seeking assets, low risk assets and *matching assets*. A more detailed analysis of specific asset classes is beyond the scope of this report.

NATS pension scheme investment strategy

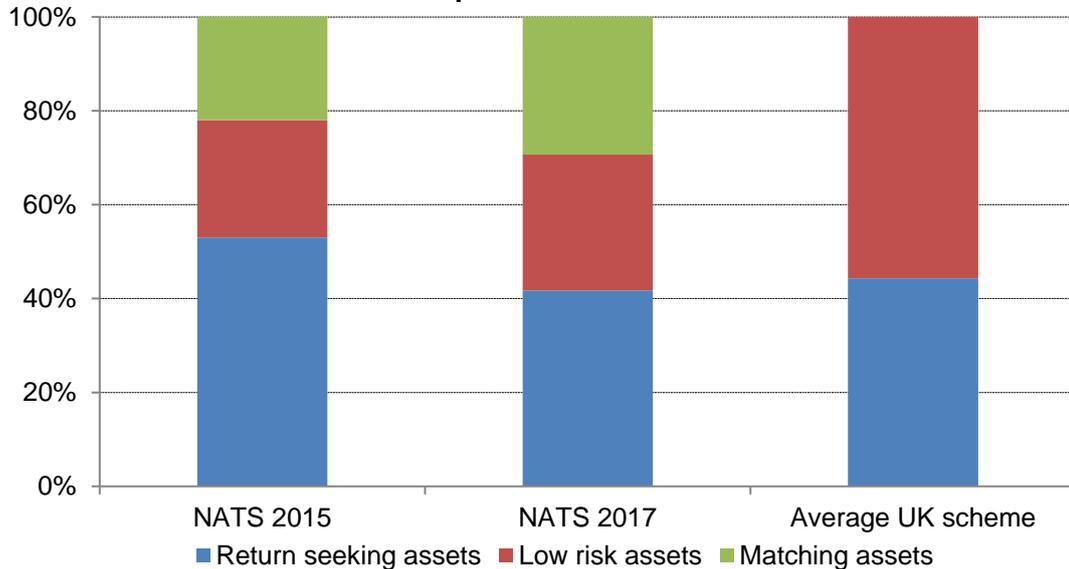
- 5.3 At the 2017 valuation date, the NATS pension scheme assets were invested as follows:
- > 42% invested in return seeking assets (equities and alternatives)
 - > 29% invested in low risk assets (corporate bonds, high yield bonds¹⁰ and cash)
 - > 29% invested in matching assets (*LDI*)
- 5.4 Figure 5.1 illustrates the NATS pension scheme investment strategy at the 2017 valuation, as well as for comparison it's strategy at the 2015 valuation and the average asset allocation for UK private sector DB pension schemes in 2017¹¹. 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.

¹⁰ High yield bonds are not as low risk as typical corporate bonds, nor are they expected to achieve as high returns as equities and alternatives. For consistency with the Purple book data we have classified them as low risk assets for this purpose. High yield bonds make up 3% of NATS pension scheme asset allocation so this does not make a material difference to the analysis.

¹¹ Taken from [The Purple Book](#): DB Pensions Universe Risk Profile 2017 published by the Pension Protection Fund



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

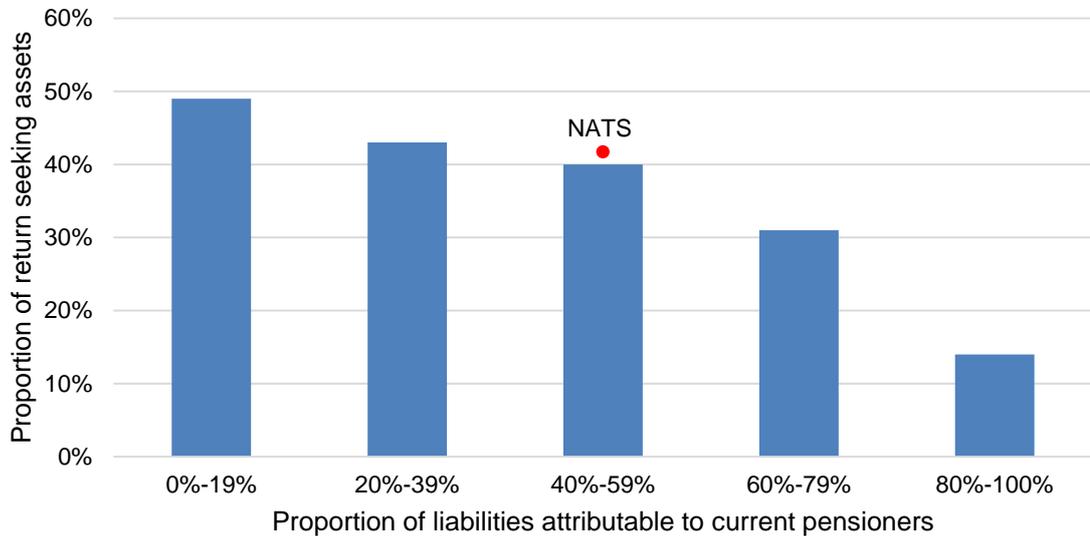


- 5.5 Figure 5.1 shows that around 42% of the NATS pension scheme's assets were invested in return seeking assets as at 31 December 2017, a reduction from 53% as at 31 December 2015. NATS pension scheme now has a slightly lower allocation to return seeking assets than the average UK private sector DB pension scheme, where at the previous review it had a higher allocation.
- 5.6 I have also considered the investment strategy of schemes with a similar maturity profile to NATS pension scheme. 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 increases¹² (which reflects scheme maturity).

¹² Taken from [The Purple Book](#): DB Pensions Universe Risk Profile 2017 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



- 5.7 NATS pension scheme has 54% of its liabilities relating to pensioners so would fall in the third group, but has a 42% allocation to return seeking assets which is slightly higher than the average at this maturity level of 40%, as marked in red above.
- 5.8 However, this comparison does not take into account the strength of the employer covenant. The NATS pension scheme has a strong covenant, as assessed by its trustees. Typically a strong covenant allows trustees greater flexibility to seek higher returns and therefore an expectation of lower long-term employer contributions. The NATS pension scheme has made some allowance of its strong covenant by having a slightly higher proportion of return seeking assets than average for its maturity profile. This is at the expense of higher investment risk and therefore potentially more volatile contribution rates on the expectation that these can be absorbed by the sponsoring employer.



Recent changes to investment strategy

- 5.9 Since our previous review, the NATS pension scheme has changed its investment approach and introduced the following portfolios:
- > a *Liability Driven Investment* (LDI) portfolio – 30%
 - > a growth asset portfolio – 70%
- 5.10 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. It typically achieves this through hedging a pension schemes exposure to changes in interest rates and inflation. Incorporating LDI within the investment strategy is being seen across the industry and represents a way to reduce the risk of materially higher deficit recovery payments being required in the future, which would ultimately be met by consumers. For example, NERL state in their initial business plan that increasing the real interest rate hedge ratios from around 25% to over 50% reduced the reported deficit at the 2017 valuation by around £375 million than would otherwise have been the case (a circa 7% increase in funding level). The real interest rate hedge ratio has since increased to 65%.
- 5.11 I understand the growth asset portfolio has been constructed to support the existing pre-retirement and post-retirement discount rates of 3% a year and 0.25% a year in excess of gilts respectively. As well as traditional *return seeking assets* it also includes lower risk fixed income assets such as corporate bonds, which historically have achieved a lower return than return seeking assets, but a higher return than a typical LDI portfolio.
- 5.12 During 2017, discussions were held between NERL and the trustees on changes to the investment strategy, with a proposed move towards a higher proportion of fixed income assets. NERL stated that the Scheme Actuary, Aon Hewitt, assess that this change leads to a reduction of 0.3% a year in expected investment returns for the whole fund over a 10 year time horizon. However the downside risk of a deterioration in funding level due to volatile investment returns, which will lead to additional *deficit contributions* being required, has also decreased.
- 5.13 Overall there has been a material reduction in return seeking assets within the NATS pension scheme since our previous review. A reduction in the proportion of return-seeking assets is a common trend for many UK private sector DB pension schemes as their liability profiles mature. As the NATS pension scheme is closed to new members, a gradual move to matching assets over time is not unexpected. However, I understand the material reduction in traditional return seeking assets with a corresponding higher allocation to lower risk fixed income assets is an intended consequence of the new investment strategy, albeit the reduction may have been accelerated somewhat due to the high volume of transfers out of the scheme over the last few years which would have increased the maturity of the scheme.



- 5.14 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.

Limitations of this analysis

- 5.15 The analysis in this section focuses on high-level investment strategy only. It ignores many detailed risk and return factors which schemes' trustees take into account when deciding on investment strategy.



6 Funding valuation assumptions

- 6.1 The results of a pension scheme's funding valuation and therefore the sponsor's future cash contributions depend on the assumptions adopted for that assessment. Assumptions have to be made in relation to both the financial aspects of the pension scheme and the demographic aspects of the scheme membership. This section explains the assumptions adopted for the NATS pension scheme valuation as at 31 December 2017 and compares the assumptions used with publicly available information on other UK private sector *DB pension schemes*. In general, and considering the set of assumptions as a whole, the assumptions adopted for the 2017 funding valuation are within a reasonable range given the investment strategy adopted by the NATS pension scheme 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 NATS pension scheme 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. I understand that NERL, alongside their actuarial advisers, met with the trustees regularly throughout the 2017 valuation process in order 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 pension scheme 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 ½% increase in discount rate could reduce NATS ongoing contributions calculated at the 2017 valuation from 41.7% to around 34%, and increase the funding level at that valuation from 94% to over 105%.
- 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 in order to meet future benefit payments. Therefore, the value placed on its liabilities is lower, its funding level is higher, and its standard contribution rate (SCR) 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 gilts¹³. 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, where pre-retirement may be expected to correspond to a return-seeking investment strategy, and post retirement to a matching investment strategy.
- 6.9 Table 6.1 shows the discount rate *outperformance* adopted at the NATS valuations at 31 December 2015 and 2017, as well as the average/typical discount rate *outperformance* adopted by UK private sector DB pension schemes published by The Pensions Regulator¹⁴, covering valuation dates between 22 September 2015 and 21 September 2016. This represents the latest data available, but covers the 2015 valuation date instead of the 2017 valuation. To the extent that the discount rate assumption has remained the same at the 2015 and 2017 valuations it still provides a reasonable comparison.

¹³ Gilt yields are taken to represent the market's view of the expected rate of return on risk-free assets

¹⁴ [TPR's Scheme Funding Appendix 2018](#), table 4.1. "Tranche 11" schemes covering valuation dates between 22 September 2015 and 21 September 2016



Table 6.1: Discount rate outperformance above long dated gilts

	Discount rate in excess of gilts, pa	
	Pre-retirement	Post-retirement
NATS 2015 valuation	3.00%	0.25%
NATS 2017 valuation	3.00%	0.25%
TPR average	~1.8%	~0.4%

- 6.10 The table above shows typical outperformance assumptions for funding purposes would be around 1.8% a year pre-retirement and 0.4% a year post-retirement with the NATS pension scheme having a higher than average pre-retirement discount rate but a lower than average post-retirement discount rate.
- 6.11 Over time the post-retirement discount rate will become the more important assumption as the scheme matures and the pre-retirement liability diminishes. I note that as part of the 2017 valuation consultation process NERL made a formal request to the trustees to rebalance the pre and post retirement discount rates so the post-retirement rate was increased to gilts + 0.5% a year and the pre-retirement rate was reduced to a level that would have produced the same level of *technical provisions* and contributions as the existing discount rates. All else being equal, such a change would be expected to result in reduced contributions at future valuations. We understand this proposal was rejected by the trustees, in part due to concerns over the extent to which the trustees can continue to rely on the *employer covenant* over the long term.
- 6.12 The single equivalent discount rate at the 2017 valuation as assessed by NERL's actuarial adviser Mercer is 1.0% in excess of gilts. A single equivalent discount rate is the discount rate that if applied uniformly both pre and post retirement would achieve the same result as a pre-retirement discount rate of 3% in excess of gilts and a post-retirement discount rate of 0.25% in excess of gilts. However, using a methodology consistent to that of The Pensions Regulator in their 2018 scheme funding appendix, NERL's actuarial adviser Mercer determine the single equivalent discount rate as 1.2% in excess of gilts. We have relied on this assessment in our analysis below. Table 6.2 compares the single equivalent discount rate against The Pensions Regulator data, including looking at similar schemes (those with a strong covenant and a similar maturity).



Table 6.2 Single equivalent discount rates

	Single equivalent discount rate in excess of gilts, pa
NATS 2017 valuation	1.2%
TPR average (all schemes)	~0.9%
TPR average (strong covenant)	~0.9%
TPR average (similar maturity to NATS: 50%-75% pensioner liabilities)	~1.0%

- 6.13 Table 6.2 suggests that the discount rate structure adopted overall at the 2017 valuation was similar to but 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 a slightly earlier period). However, conversely table 6.2 shows that the strength of covenant does not appear to result in different discount rates being adopted across UK *DB schemes* on average. The slightly higher than average proportion of *return seeking assets* given the scheme maturity as shown in figure 5.2 will also contribute to a higher than average discount rate assumption.
- 6.14 In practice a wide range of discount rates are adopted which reflect a wide variety of scheme circumstances. To add some further context, a single equivalent discount rate of around 1.3% in excess of gilts represents the upper quartile of all schemes, and around 1.9% in excess of gilts represents the 95th percentile¹⁵.
- 6.15 Given the comments in paragraph 6.11, the CAA and NERL may like to consider what appropriate actions can be taken in order for NERL's strong covenant to be fully recognised in any future discussions on the valuation discount rate. In their letter to Martin Rolfe of 31 October 2017 the trustees state that an economic regulatory statement from the CAA clarifying its position on the remuneration of DB pension costs in the long-term would be useful in this regard.

Neutral estimate

- 6.16 A *neutral estimate* is an indication of likely future experience on a best-estimate basis, 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.

¹⁵ That is 5% of UK DB schemes have a single equivalent discount rate of at least 1.9% in excess of gilts



- 6.17 In providing information for the RP3 review, information on the allowance for outperformance in the discount rate was provided. The Scheme Actuary, Aon Hewitt anticipate an expected return of gilts plus 2.5% a year over a 10 year time frame given the scheme's current investment strategy. There is therefore around a 1.5% margin for prudence in the single equivalent discount rate of gilts+1.0% (as assessed by NERL's actuarial adviser Mercer) compared to the current investment strategy.
- 6.18 If this margin for prudence in the discount rate was removed then our approximate calculations based on the sensitivities detailed in section 7 suggest a neutral estimate of the liability might be around £3.5 billion, compared to £4.8 billion on the prudent funding basis. Or, in other words the scheme's funding target is currently £1.3 billion higher (around 25% of the value of the liability) than is expected to be required to meet future benefit outgo if the existing investment strategy were to continue indefinitely. On a *neutral estimate* basis the employer *standard contribution rate* may also be expected to be around 15-20% of *pensionable pay* rather than the 41.7% assessed at the 2017 valuation. However, it should be noted that this measure ignores the expected de-risking of the investment strategy that is likely to occur over time as more members retire. If it were to be assumed that the investment strategy were to be de-risked in accordance with the change in weighted discount rate year on year then the level of prudence might be considered to be lower at around £1 billion (around 20% of the value of the liability) and the *neutral estimate* employer *standard contribution rate* may be around 25-30% of *pensionable pay* rather than the 41.7% assessed at the 2017 valuation. At the 2015 valuation, the level of prudence within the liability was determined by the Scheme Actuary in his report on the initial results dated 6 June 2016 as around £0.9 billion, so it appears the prudence in the 2017 valuation was broadly similar to the 2015 valuation, noting the approximate nature of our calculations.
- 6.19 Given the potential for a trapped surplus in the scheme, as discussed in paragraphs 4.11 – 4.13, it should be considered if this level of prudence strikes the right balance between the interest of consumers and the long term strategy for the scheme.

Assumed rates of price inflation and pension increases

- 6.20 The assumed rates of Retail Prices Index (RPI) price inflation, in the 2017 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.
- 6.21 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 2017 valuation assumes that CPI will be 1.1% a year lower than RPI. Estimates of this difference vary between commentators, however a gap of 1.1% a year is within a range that might be considered a reasonable *neutral estimate* assumption.



- 6.22 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%. 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 therefore it is consistent to also use market implied inflation, with no inflation risk premium, when assessing the liabilities.

Assumed rates of pay increases

- 6.23 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.
- 6.24 The assumed future general (inflationary) pay increase is equal to the assumed rate of CPI price inflation. 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 following representations by NERL to the trustees on its approach to pay. 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.
- 6.25 The assumed future promotional pay increases were reduced at the 2015 valuation compared to the 2012 valuation (and subsequently retained for the 2017 valuation). This was a result of actual promotional salary increases being lower than expected between 2012 and 2015 valuations. Lower promotional pay increases will result in reduced pension contributions and costs. The combined changes to the general and promotional salary assumptions were estimated by the Scheme Actuary to result in around a £65 million reduction in assessed liabilities (or a circa 1% increase in funding level).

Demographic assumptions

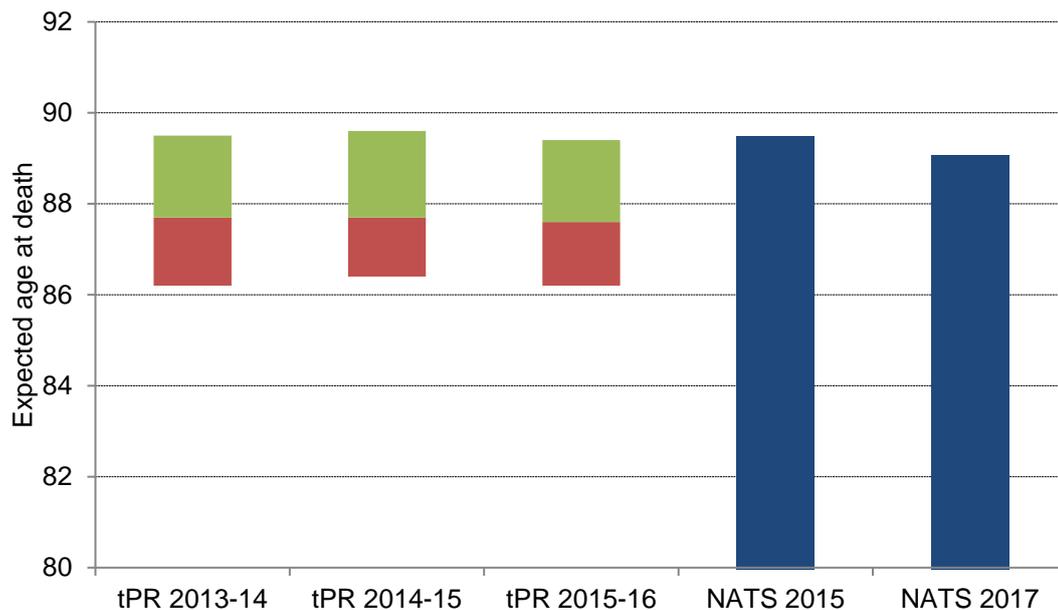
Assumed longevity

- 6.26 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.



- 6.27 Figures 6.1 and 6.2 show the expected age at death for a 65 year old male pension scheme member at the valuation date (in Figure 6.1) and for an active member currently aged 45 (Figure 6.2), for the previous two NATS pension scheme valuations. Figures 6.1 and 6.2 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.
- 6.28 The Pensions Regulator data¹⁶ in Figures 6.1 and 6.2 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)

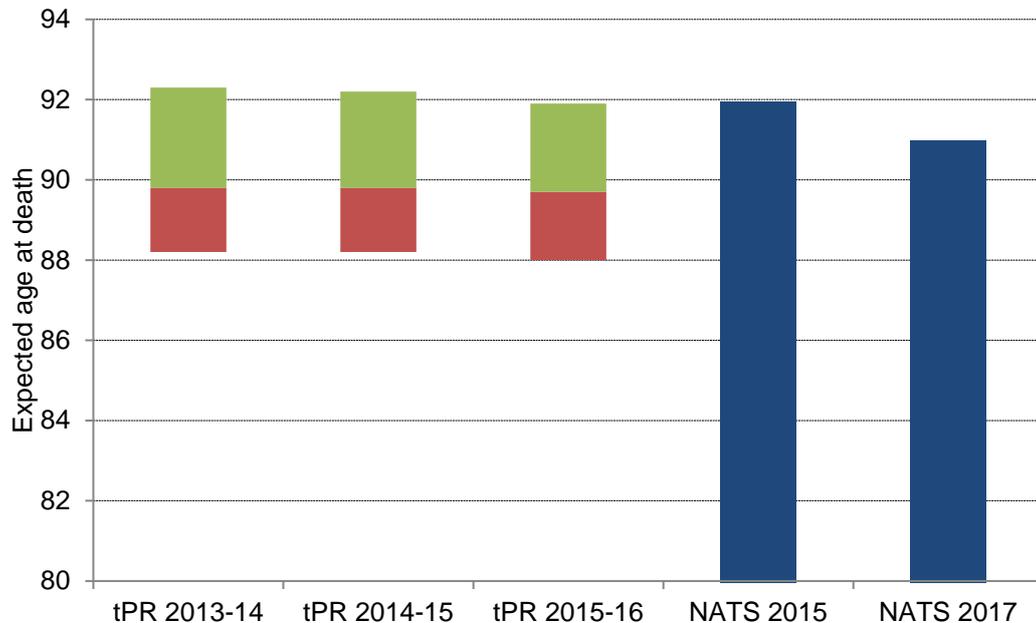
Figure 6.1 Assumed expected age at death for a 65 year old male at the valuation date, from TPR data (the 5th percentile, median and 95th percentile) and for the 2015 and 2017 valuations of the NATS pension scheme



¹⁶ ["Scheme Funding Statistics" \(TPR\)](#), June 2018



Figure 6.2 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 2015 and 2017 valuations of the NATS pension scheme



- 6.29 Figures 6.1 and 6.2 show that the assumed expectations of life for the 2015 valuation of the NATS pension scheme are towards the top end of the range adopted by other schemes. The NATS pension scheme 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 from 2017 valuation dates is not yet available.
- 6.30 The reduction in assumed life expectancy of about one year between the 2015 and 2017 valuations is expected because the 2016 CMI model which was the latest available at the time of the 2017 valuation contains lower future rates of improvement in mortality than previous versions of the model, based on recent observed mortality trends in the UK population.
- 6.31 Assumptions for future mortality improvements, adopted by NATS pension scheme 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 June 2018 indicates that over 90% 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 2018 suggests that around $\frac{3}{4}$ of those schemes who use CMI mortality improvements adopt a 1.5% long term rate of improvement. NATS pension scheme 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%.



Changes to demographic assumptions

6.32 Changes to the demographic assumptions at the 2017 valuation resulted in a £226 million 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:

- > Increase in expected withdrawals which recognises the likelihood of opt-outs due to the pension cash alternative
- > Allowance for members who withdraw subsequently taking a transfer out which will represent a saving to the scheme

6.33 Allowing for the likelihood of opt-outs and subsequent take up of CETVs within the valuation assumptions seems reasonable and will result in a reduction in the assessed liabilities and *Standard Contribution Rate* at the valuation.

Other factors

6.34 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 NERL's projected pension contributions

- 7.1 This section discusses NERL's projected contributions as contained within their initial business plan for RP3, and the extent to which they appear reasonable.
- 7.2 It was agreed between NERL and the trustees that all changes to the contributions arising from the 2017 valuation will not be implemented until 1 January 2020, the start of RP3.
- 7.3 Figures 7.1 and 7.2 show NERL's projected pension contributions for calendar years 2019 to 2024 as contained within their initial business plan. Figure 7.1 shows NERL's total contributions as a percentage of *pensionable pay*. Figure 7.2 shows amounts separately for contributions to the NATS pension scheme, which is a *defined benefit* (DB) final salary 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* (DC) pension scheme.

Figure 7.1: NERL's total projected pension contributions – percentage of pensionable pay

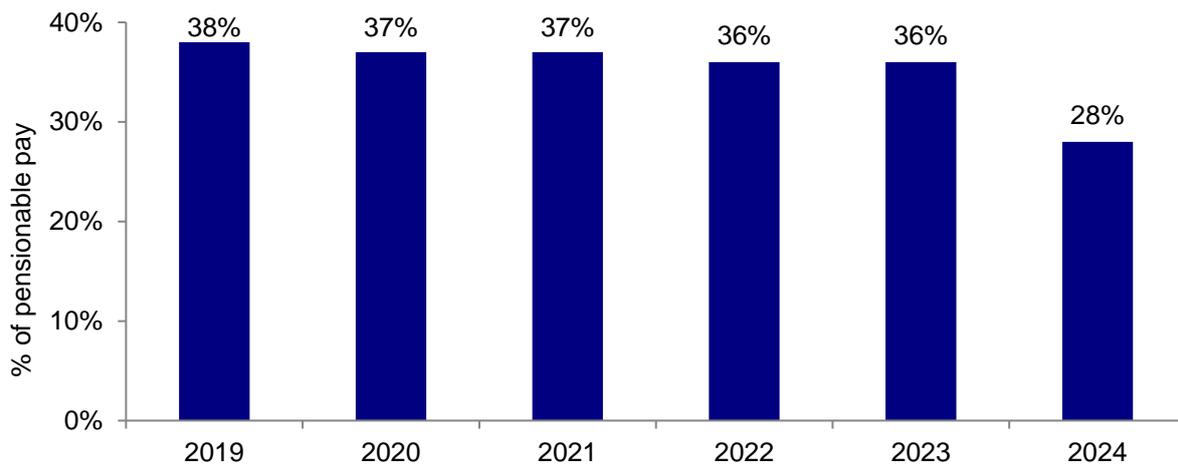
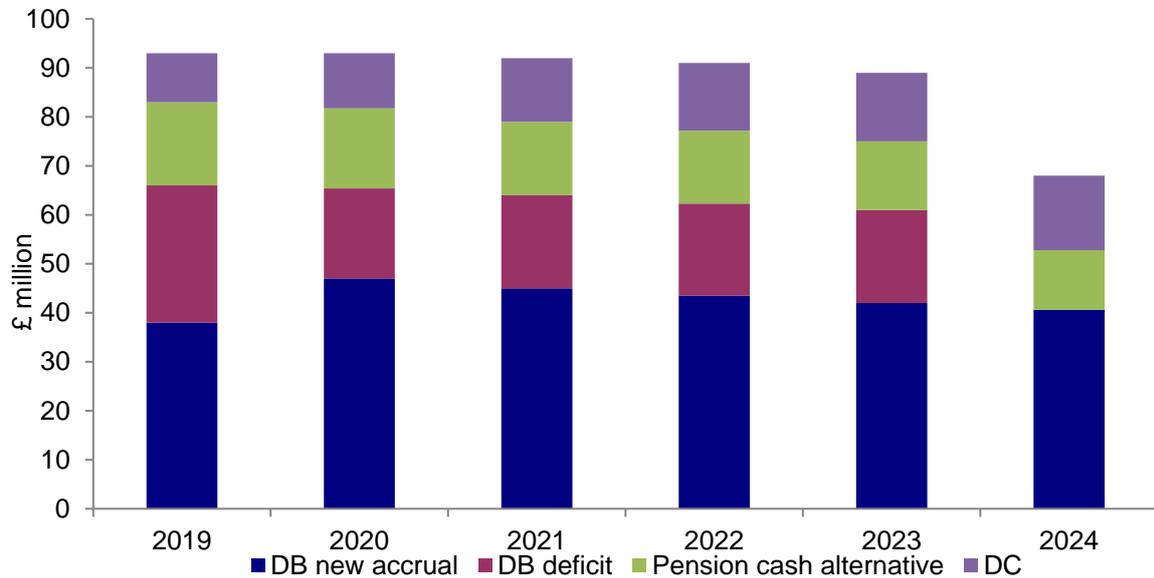




Figure 7.2: NERL's breakdown of projected pension contributions – amounts in 2017 CPI prices



7.4 Figure 7.1 shows that NERL's total pension contributions are projected to decrease steadily from 38% of pensionable pay in 2019 to 36% in 2023, before significantly decreasing to 28% in 2024 due to their being no deficit recovery contributions currently due in that year.

7.5 Figure 7.2 shows the following features:

- > the majority of NERL's pension costs are with respect of the (DB) NATS pension 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 pension costs from 2020 onwards reflect the results from the formal valuation as at 31 December 2017. In aggregate this has limited impact on the projected pension costs in 2020 compared to 2019 due to the increase in the cost of new accrual being broadly offset by a reduction in deficit recovery payments.
- > over time, as older members leave the DB scheme and new entrants join the DC scheme, the contributions toward new DB accrual in monetary terms decreases slightly whilst the DC contributions in monetary terms increases.
- > projected total costs reduce by £21 million in 2024, which is primarily due to no deficit contributions being required in the year under the existing recovery plan. However this recovery plan will be subject to change at the next formal triennial valuation expected as at 31 December 2020.



Regulated proportion

- 7.6 NERL's projected contributions to the NATS pension scheme appear to represent 76% of the total expected employer contributions to the scheme. This is consistent with their initial business plan where NERL state their economic share of the scheme is 76%. The CAA should confirm that this economic share is correct and consistent with data and analysis for other components of the price review.
- 7.7 I understand that, in practice, pension scheme deficit contributions are split between different parts of the business in proportion to DB pensionable payroll. The business plan projections are consistent with this approach. This approach seems reasonable to me 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 pension scheme standard contributions

- 7.8 The DB 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 2017 valuation are to be 41.7%¹⁷ of *pensionable pay*, an increase from the 31.8% payable following the 2015 valuation. This increase is due to changes in market conditions, specifically the reduction in gilt yields between 31 December 2015 and 31 December 2017, which has partially been offset by the reduction in life expectancies.
- 7.9 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 41.7% appears reasonable.
- 7.10 NERL's initial business plan projections appear to assume a small increase in the *standard contribution rate* in the future, with 43% instead of 42% reported for the year 2024. This is consistent with RP2 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). I agree that such a conclusion is reasonable, providing that standard contribution rates will change in practice within RP3.

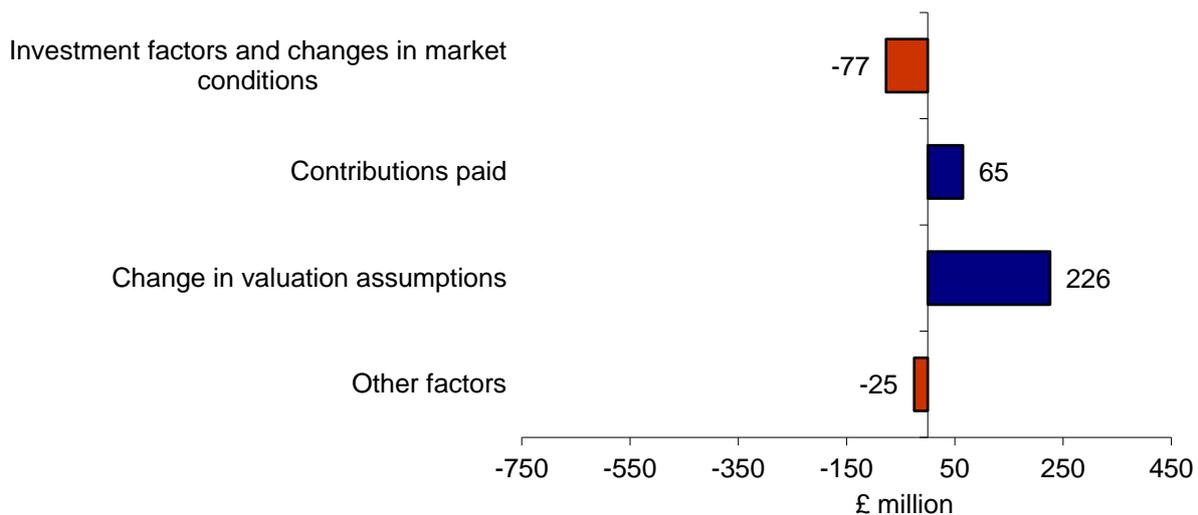
¹⁷ The final assessed employer contribution rate was 41.8% of pensionable pay, however it was agreed that 41.7% will be paid which was the assessed cost determined on an earlier estimate of the valuation results



NATS pension scheme deficit contributions

- 7.11 *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 in order to correct the deficit between assets and the assessed value of the liabilities. The amount of *deficit contributions* depend on the size of the deficit and the period over which it has been agreed to repay the deficit (recovery period). Some of the NATS pension scheme deficit is expected to be made good through investment outperformance.
- 7.12 The deficit in NATS pension scheme decreased from £459 million as at 31 December 2015 to £270 million¹⁸ as at 31 December 2017 resulting in a reduction in deficit recovery contributions required. Figure 7.3 shows the principal reasons for the improvement in the scheme's funding position over the period.

Figure 7.3 Change in valuation deficit between the 2015 and 2017 valuations



- 7.13 Figure 7.3 indicates that the main reasons for the reduction in deficit between the 2015 and 2017 valuations is due to changes in the valuation assumptions and the deficit recovery contributions paid. This has been partially offset by a small loss due to investment factors and market conditions (specifically that the increase in the value of liabilities due to a reduction in gilt yields was £77 million higher than the investment gain achieved on the scheme's assets) As discussed in paragraph 6.30 the reduction in deficit due to a change in valuation assumptions is primarily due to a reduction in life expectancy consistent with recent mortality trends observed within the UK. These items all seem reasonable.

¹⁸ This is the deficit in the whole of the NATS pension scheme rather than NERL's economic share which is 76% of this amount



Deficit recovery plan

- 7.14 The main features of the recovery plan¹⁹ agreed at the 2017 valuation are as follows:
- > runs until 31 December 2026 (the end date of the previous recovery plan)
 - > includes an allowance for investment returns 0.3% higher than the discount rate
 - > £40.8 million required in 2018 and 2019 (increasing by 2.37% in 2019) as per the previous recovery plan
 - > payments reducing to £25.4 million required in 2020 to 2023 (increasing by 2.37% in 2021 and subsequent years)
 - > no deficit contributions required in 2024 and £2.25 million required in 2025 and 2026 (increasing by 2.37% in 2026), with investment outperformance expected to make good the remaining deficit as explained below.
- 7.15 It has been assumed that part of the valuation deficit of £270 million will be met by the NATS pension scheme's investment returns during the recovery period (9 years from the valuation date) exceeding the prudent investment return assumptions used for the valuation by 0.3% a year (but 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. In the absence of this assumption, then increased deficit contributions would be required to meet the whole of the deficit.
- 7.16 The original recovery plan proposed by the trustees ended three years earlier at the end of 2023 to reflect the improved funding position. NERL requested that the end date of the previous recovery plan was retained. The trustees agreed to this proposal, which reduced the deficit recovery payments required in RP3 by around £40 million.
- 7.17 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 as at 31 December 2020.
- 7.18 Table 7.1 compares the characteristics of the NATS pension scheme recovery plan to the average across other UK DB pension schemes²⁰.

¹⁹ This is the recovery plan for the whole of the NATS pension scheme rather than NERL's economic share

²⁰ 'Tranche 10' schemes from [TPR's 2017 Scheme Funding Appendix](#). Tranche 10 schemes are those schemes whose valuation was between 22 September 2014 and 21 September 2015



Table 7.1 Recovery plan characteristics

	Recovery plan length (years)	Annual recovery contribution as percentage of liabilities ²¹
NATS pension scheme	9	~ 0.8% - 0.5%
Industry average (all)	7.5	1.9%
Industry average ('strong covenant')	5.4	1.8%
Industry average (over 90% funded)	4.6	1.1%

- 7.19 Table 7.1 shows that NATS has a longer recovery plan and pays lower relative recovery contributions than the average. A recovery plan of 9 years is significantly higher to the average of those schemes who have a strong covenant or a similar funding level to the NATS pension scheme. However, a wide range of recovery periods are adopted in practice depending on the individual circumstances of the scheme. With a recovery period of around 10 years representing the upper quartile of all schemes, and around 17 years representing the 95th percentile²².
- 7.20 There is no simple actuarial answer as to what a "correct" deficit recovery period should be. Typically schemes with stronger *employer covenants* are associated with shorter periods, 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.

Defined Contribution pension costs

- 7.21 DC pension 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 pension 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 15% of pensionable pay, based on recent experience. This is in line with the assumed rates at the time of GAD's previous review.

²¹ Liabilities estimated on a reference basis of gilts+0.5% to allow meaningful comparison

²² In other words 5% of UK DB schemes have a recovery period of at least 17 years



- 7.22 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 which 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. I 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 practice²³.
- 7.23 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 2016 was 3.2%. Due to the introduction of auto-enrolment this statistic is likely to be skewed by auto-enrolled companies paying at the minimum possible level. A 2016 Aon Hewitt²⁴ survey reported an average DC employer contribution rate of 7.5% in 2014 and noted the impact of auto enrolment pulling average rates down. An alternative benchmark is against the contribution rates paid by FTSE100 companies. Willis Towers Watson²⁵ report that in 2017 FTSE100 companies were on average paying around 10% of pay towards DC schemes.
- 7.24 Overall the average employer contribution rate is higher than those typically paid elsewhere, however, the level of employer contributions made towards a DC scheme needs to be considered as part of the whole remuneration package. I understand the level of DC 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 contributions (15% on average) are considerably lower than DB contributions (31.8% rising to 41.7% in 2020) this represents a reduction in consumer costs than would have been due had the *DB scheme* not closed.

Reasonableness of projected cash contributions

- 7.25 We have performed some checks to ensure that the level of projected cash contributions contained within NERL's initial business plan (see figure 7.2) are reasonable.
- 7.26 The *deficit contributions* are defined in monetary terms so we have been able to check that the cash contributions in each year within RP3 correspond to the recovery plan discussed in paragraphs 7.14 to 7.20 and a regulated proportion of 76%.
- 7.27 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 RP3.

²³ See section 7 of [the IDS report](#)

²⁴ [Aon Hewitt DC Member Survey 2016](#) – page 8

²⁵ [12th edition of the FTSE DC Pension Scheme Survey](#)



- 7.28 The projected level of cash contributions for DB new accrual in 2020 appear reasonable given the total pensionable pay of active members as at 31 December 2017 (contained within the valuation report) and a regulated proportion of 76%. The amount of contributions then reduces over RP3, which is expected due to the scheme being closed to new entrants.
- 7.29 The projected level of cash contributions for the pension cash alternative in 2020 appear reasonable given the average pensionable pay of active members as at 31 December 2017 (contained within the valuation report), the known number of members who have opted for the pension cash alternative and a regulated proportion of 76%. The contributions then reduce over RP3 at a quicker rate compared to the DB new accrual contributions which is plausible given those members who take the pension cash alternative are expected to be older and therefore more likely to reach retirement within RP3.
- 7.30 The projected level of cash DC scheme contributions over RP3 appears at a level consistent with RP2 (where a rate of employer contribution of 15% was also adopted) albeit slightly higher which is expected as new entrants join the DC scheme.
- 7.31 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 initial business plan. 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

- 7.32 The assessed value of the *technical provisions* and level of contributions are very sensitive to the assumptions adopted. For reference, we have summarised the sensitivity analysis contained within the 2017 valuation documentation.
- 7.33 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 1 September 2017 are summarised in table 7.2.

Table 7.2 Discount rate sensitivities

Discount rate	Change to discount rate	Change in total technical provisions	Change in standard contribution rate as a % of pensionable pay
Pre-retirement	-0.5%	+3.3%	+3.2%
Post-retirement	+0.1%	-1.9%	-1.0%

- 7.34 Table 7.2 shows that the valuation results are sensitive to relatively small changes in the discount rates, especially the post-retirement discount rate. Given the discount rates are set with reference to gilt yields, which can vary materially over time, the discount rates and therefore valuation results may be significantly different at the next funding valuation due as at 31 December 2020.



7.35 Some “what if” scenarios and their impact on the *funding level* as at 31 December 2017, as included in the 2017 funding valuation report, are summarised in table 7.3. In particular it can be seen that any changes in investment markets could have a material impact on the funding level of the scheme (and hence level of *deficit recovery contributions*).

Table 7.3 “What if” scenarios

Scenario	Funding level
2017 valuation <i>technical provisions</i> basis	94%
Life expectancy increases by three years	84% (-10%)
Bond yields fall by 1% pa	87% (-7%)
Inflation increases by 1% pa	89% (-5%)
Value of the assets in the growth portfolio fall by 25%	79% (-15%)
No commutation occurs	92% (-2%)
Pensionable pay increases are 0.25% pa more than assumed	94% (0%)



8 Governance and expenses

8.1 This section considers the stewardship test applied by CAA and the level of expenses in the NATS pension scheme. The level of administrative expenses incurred within the NATS pension scheme 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

8.2 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”.

8.3 To comply with this the trustees produce a stewardship report each year summarising the scheme’s operation and governance arrangements. In particular, the stewardship report over the year ending 31 December 2016 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 2016

8.4 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 pension scheme.

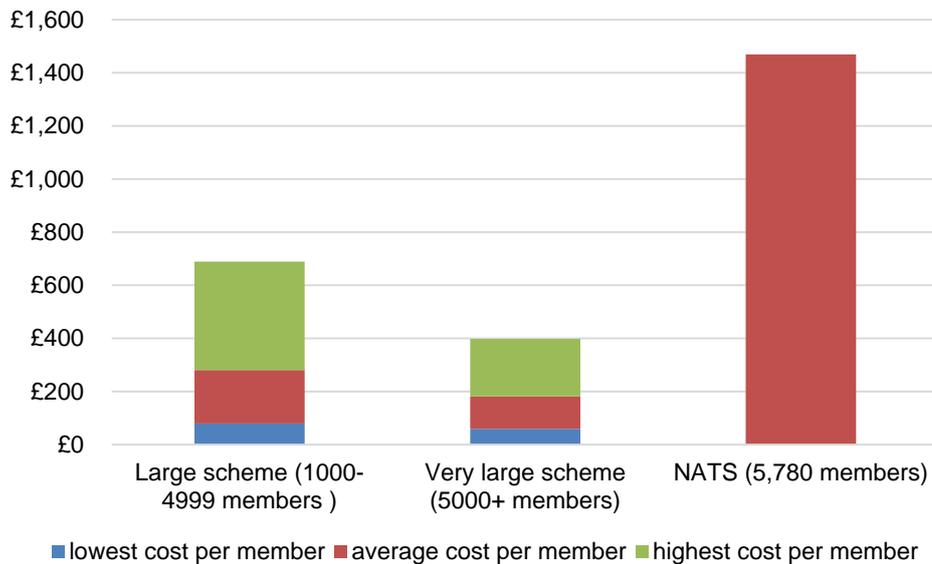
8.5 In advising on this point, we have only considered the information provided to us for this review. I have not undertaken any independent review or audit of the NATS pension scheme, its accounts or its trustees.



Expenses

- 8.6 We have compared the average annual level of expenses incurred by the NATS pension scheme over the past 3 years (calendar years 2015-2017 inclusive) with data published by the Pensions Regulator²⁶. 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 pension scheme expenses are compared with expenses incurred by schemes of a similar size; that is with very large schemes (over 5,000 members) and large schemes (between 1,000 and 5,000 members).
- 8.7 Figure 8.1 below compares the annual cost per member for total administrative and investment management charges.

Figure 8.1: annual expense charge per member



- 8.8 As can be seen from Figure 8.1, average NATS expense costs appear significantly higher than the sample data²⁷. Table 8.1 below shows the split between the annual average cost per member between administrative and investment costs

²⁶ <http://www.thepensionsregulator.gov.uk/trustees/your-db-scheme-costs.aspx>

²⁷ The Pensions Regulator's sample contained 75 schemes in the 'large' category and 24 schemes in the 'very large' category



Table 8.1: average annual expense charge per member split by administrative and investment costs

	NATS	Large schemes (1,000 – 4,999 members)	Very large schemes (5000+ members)
Administrative costs ²⁸	£360	£200	£100
Investment costs	£1,110	£80	£80
Total	£1,470	£280	£180

- 8.9 Table 8.1 shows that the investment expenses make up a high proportion (around $\frac{3}{4}$) 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 pension scheme 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 pension scheme is around £785,000²⁹, which is only slightly lower than the current *lifetime allowance* of £1.03 million. Therefore, benchmarking against the investment expenses per member published by The Pensions Regulator does not provide a meaningful comparison.
- 8.10 Annual NATS pension scheme investment expenses are around 0.15% 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 I 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 assets³⁰. Given the nature of the NATS pension scheme the level of investment expenses appear broadly reasonable.
- 8.11 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 trustees 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.
- 8.12 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 trustees in the stewardship report.

²⁸ Excluding PPF levy

²⁹ As per the 2017 valuation report, where the NATS pension scheme assets total £4,540.4 million and there were 5,780 members

³⁰ <https://www.gov.uk/government/consultations/local-government-pension-scheme-opportunities-for-collaboration-cost-savings-and-efficiencies>



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 31st December 2015 (or some point thereafter if NERL provide another formal valuation), that NERL may include in its Business Plan assumptions, or its outturn costs;
- > NERL's stewardship of its pension schemes, in conjunction with the Trustees, 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 Defined Benefit pension scheme and the Defined Contribution pension scheme, prior to 31st December 2024;
- > The actuarial assumptions underpinning the estimated pension costs that NERL may include in its Business Plan assumptions, or its outturn costs;
- > The impact of Article 14 of EU Regulation 391/2013, with regards to pension costs that are exempt from cost-sharing due to: unforeseen changes in national pensions law, pension accounting law, or costs resulting from unforeseen financial market conditions.



Appendix B: Information used for the review

Information regarding the NATS pension scheme

1. The Scheme Actuary's actuarial valuation reports as at 31 December 2015 and 2017;
2. The Trustees' annual report & accounts 2015, 2016 and 2017;
3. The Scheme Actuary's paper on Allowance for Outperformance in the Discount Rate, dated 1 September 2017;
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 25 August 2017;
6. The Scheme Actuary's paper on Allowance for opt-outs and CETVs, dated 17 July 2017;
7. Statement of Funding Principles, dated 4 June 2018;
8. The Scheme Actuary's papers on the 2017 factor review, dated 9 March 2017 and 30 May 2017;
9. The pension costs section in appendix H of NERL's initial business plan, dated 9 April 2018;
10. CAAPS Stewardship report for the year ending 31 December 2016, dated April 2017;
11. Information provided by NERL under Question 51 to 55, forwarded via email from the CAA on 6 July 2018;

Publicly available reference information

12. ["The Purple Book"](#), Pension Protection Fund, 2017
13. ["Scheme funding statistics, Appendix"](#), The Pensions Regulator, 2018 and 2017.
14. ["Occupational pension schemes survey 2016"](#), Office for National Statistics, September 2017.

Information regarding approaches by other regulators

15. Ofgem - <https://www.ofgem.gov.uk/publications-and-updates/revised-pension-allowance-values-and-completion-2017-reasonableness-review>



16. Ofgem's consultation - <https://www.ofgem.gov.uk/publications-and-updates/decision-ofgems-policy-funding-pension-scheme-established-deficits>
17. Utility Regulator, Northern Ireland - <https://www.uregni.gov.uk/consultations/nie-networks-transmission-and-distribution-price-control-rp6-draft-determination>
18. Ofwat's treatment of deficit costs - https://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs_in1317pr14pension.pdf
19. 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: Business plan guidance

C.1 In January 2018, the CAA published its business plan guidance³¹ for NERL. The below table sets out the main aspects of the guidance which relates to pensions and paragraphs within this report that may be relevant.

Paragraph	The CAA business plan guidance	Relevant paragraphs in GAD report
4.37	<p>NERL's business plan should explain and, where appropriate, provide evidence for how it can help manage the risks associated with a DB scheme in a way that acknowledges and respects that it is underwritten by customers, i.e. in the interest of those customers. This would include:</p> <ul style="list-style-type: none"> > constructive suggestions for the regulatory regime itself that might help improve the strength of the covenant and thereby facilitate the negotiation of more customer-led strategies for the scheme; > the company's approach to mitigating the deficit; > the company's approach to managing the risk of trapped surpluses and any associated high-cost de-risking; > how NERL proposes to include in customer charges for RP3 those pass through adjustments arising from RP1 and RP2, and the process and evidence it has used to verify these adjustments. 	<p>4.4, 6.15</p> <p>3.4 – 3.16, 4.14 – 4.21, 5.9 – 5.14, section 6, 7.11 – 7.20</p> <p>4.3 – 4.13</p> <p>4.22 – 4.25</p>
4.38	<p>The overall level of pension costs that are finally allowed in setting the RP3 price control, as well as the application of pass-through provisions, depend on NERL demonstrating that it has done all it can to mitigate the burden on airspace users arising from the company's pension obligations. One example we are aware of is that the company has recently offered remuneration uplifts to employees in exchange for their foregoing rights to future pensionable service – an outcome which might be advantageous to both parties.</p>	4.14 – 4.21

³¹ <https://publicapps.caa.co.uk/docs/33/CAP1625NERLbusinessplanGuidanceRP3.pdf>



4.39	<p>In regards to the efficient level of costs, we expect NERL to provide the following evidence in its business plan:</p> <ul style="list-style-type: none">> that it has behaved and is continuing to behave in a manner consistent with a commercially minded company by taking all steps available to it within its legal discretion, which are in the interests of users, to manage and mitigate the pension cost burden on airspace users;> it has considered and where appropriate taken actions consistent with those actions taken by other employers in the UK that do not benefit from the cost pass-through arrangements that have been available to NERL;> that it has worked with the Trustees to take actions to help minimise future costs and how these compare with actions taken by other employers and Trustees of other schemes, including those in sectors of the economy subject to normal commercial and competitive pressure. NERL should also set out and explain the assumptions it has made about the Trustees' future actions, including evidence of benchmarking these assumptions against the actions of Trustees operating schemes in sectors of the economy open to normal commercial and competitive pressures;> identifying cash costs of the DB Scheme separately from those of the DC Scheme, that the cash costs of the DB Scheme are separated between ongoing service and deficit repair and that its forecasts of these costs take into account information from the December 2017 actuarial valuation; and> that the assumptions supporting the December 2017 actuarial valuation are reasonable and are supported by independent benchmarking against other pension schemes.	<p>3.4 – 3.16, 4.14 – 4.21</p> <p>3.4 – 3.16, 4.14 – 4.21</p> <p>Section 8</p> <p>Section 7</p> <p>Section 6</p>
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Appendix D: Background to scheme funding and contributions

- D.1 Most UK private sector *defined benefit pension schemes* are subject to the scheme funding requirements of Part 3 of the Pensions Act 2004³². 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.³³
- D.2 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 rate. The higher the members' contribution rate, 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 employer to make up the shortfall. Conversely, where the scheme's assets are more than sufficient, the employer's contributions may be reduced, depending on the scheme's rules.
- D.3 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 employer's share of the SCR.
 - > The actuarial assumptions used: the more optimistic the assumptions, the lower the expected cost now of providing the defined benefits.³⁴

³² For further information, please refer to the Pensions Regulator's regulatory code of practice 03, "[Funding defined benefits](#)".

³³ 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.

³⁴ 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 the age of the members. SCRs are expected to increase as a membership ages.

D.4 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 period*: in other words, 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.

D.5 Some key points on the scheme funding process are³⁵:

- > 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.³⁶
- > 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'.

D.6 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), pay increases, price inflation and pension increases.

³⁵ This list is not exhaustive.

³⁶ Please refer to Appendix F for a definition of "*prudence*" in this context.



- > Demographic assumptions: including assumed longevity (allowing for expected future longevity improvements), assumed rates of withdrawal from active service (and 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.
- D.7 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 pension scheme only, which are used to determine NERL's cash contributions to the scheme.
- D.8 The NATS pension scheme 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 pension scheme), 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.
- D.9 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.
- D.10 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.
- D.11 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*.
- D.12 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 in light of the corresponding expected reduction in pensionable payroll.



- D.13 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, and pensioners' longevity)
- D.14 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).
- D.15 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

- E.1 A number of 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 liabilities³⁷.
- E.2 In their consideration of risk, one key factor for the trustees is the financial strength of the sponsoring employer (that is, its '*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.
- E.3 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*).

³⁷ Depending on the method used to value the scheme's liabilities.



Implications of a change in holdings in return-seeking assets

- E.4 *Long-term implications* Other things 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
 - > potentially less (more) volatile funding outcomes; and therefore
 - > potentially less (more) volatile overall employer contribution rates.
- E.5 *Short-term implications* One possible consequence of a relatively low (high) investment in *return-seeking* assets is a relatively high (low) employer contribution rate in the short term, 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 (SCRs)* 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.

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*.

Neutral estimate – A *neutral estimate* is similar to a "best-estimate" assumption, where there is expected to be a broadly 50% chance that future experience will be higher (or lower) than the relevant assumption.



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 pension scheme, 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.