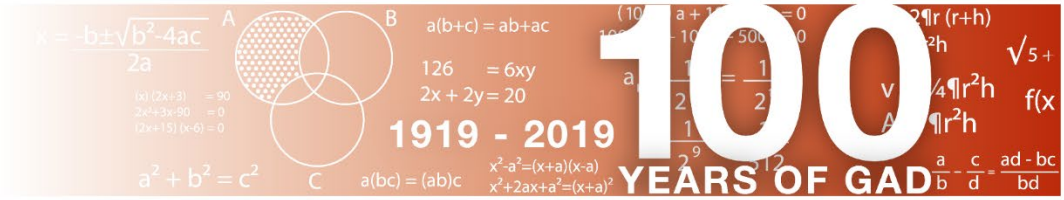
Government Actuary's Department



Civil Servants and Others Pension Scheme (CSOPS)
Alpha Scheme

Early payment reduction (normal health) and age addition

Factors and guidance

Date: 1 August 2019

Contents

1 Overview

1.1 This note is addressed to the Cabinet Office as scheme manager of the Civil Servants and Others Pension Scheme ('CSOPS' or **alpha** scheme). The **alpha** scheme was established by The Public Service (Civil Servants and Others) Pensions Regulations 2014 (SI 2014/1964) ("the Regulations") and came into force on 1 April 2015.

1.2 This note is applicable to benefits accruing in the **alpha** scheme and provides advice on:

a. early payment reduction factors (in normal health); and

b. age addition factors.

1.3 Late payment supplements are applied to the benefits of deferred members who retire after their normal pension age (NPA[1]) or effective pension age (EPA). Late payment supplements for **alpha** members are the subject of a separate guidance document.

1.4 The factors provided in this note have been prepared in light of our advice to the Cabinet Office dated 30 October 2018 and its instructions following that advice.

Implementation and review

1.5 The factors contained in this guidance will apply from 1 May 2019. This implementation date has been determined by Cabinet Office. This guidance will apply with immediate effect.

1.6 This guidance is intended to supersede any factors or advice previously issued which rely on input from GAD. In particular, this guidance supersedes the previous guidance "Civil Servants and Others Pension Scheme (CSOPS): Early Payment Reduction (normal health) and Age Addition Factors – Factors and guidance for the alpha scheme" dated 30 June 2015.

1.7 Factors have been updated but the calculation methodology remains unchanged.

1.8 The accompanying guidance and examples are intended to demonstrate how these factors are to be applied.

[1] Normal pension age is defined as a member's state pension age (or 65, if that is higher) in the alpha section. For the purpose of this note, a member's expected NPA in the alpha section is the same as their state pension age as defined by legislation at the point when benefits are paid.

1.9 Appendix A of this note sets out the following factors.

Factor table number	***Description***
P2ER60 (Consolidated spreadsheet table number 401)	Early payment reduction factors for EEPA 60. Unisex factors. Retirement from active or deferred status.
P2ER65 (Consolidated spreadsheet table number 402)	Early payment reduction factors for NPA/EPA 65. Unisex factors. Retirement from active or deferred status.
P2ER66 (Consolidated spreadsheet table number 403)	Early payment reduction factors for NPA/EPA 66. Unisex factors. Retirement from active or deferred status.
P2ER67 (Consolidated spreadsheet table number 404)	Early payment reduction factors for NPA/EPA 67. Unisex factors. Retirement from active or deferred status.
P2ER68 (Consolidated spreadsheet table number 405)	Early payment reduction factors for NPA/EPA 68. Unisex factors. Retirement from active or deferred status.
P2AA1 (Consolidated spreadsheet table number 415)	Age addition factors across various NPA/EPAs. Unisex factors. Used to increase all descriptions of pension except added (self only) pension Members older than NPA/EPA and in active service during the previous year.
P2AA2 (Consolidated spreadsheet table number 416)	Age addition factors across various NPAs. Unisex factors. Used to increase added (self only) pension. Members older than NPA and in active service during the previous year.

1.10 The remainder of this note provides guidance about how the factors should be used. Appendix B sets out a number of worked examples.

1.11 Appendix C provides details of the principal assumptions underlying the factor tables in this guidance.

1.12 References to EPA in this note are also applicable to EEPA (enhanced effective pension age). Effective Pension Age and Enhanced Effective Pension Age for **alpha** members are the subject of a separate guidance document.

1.13 The principles set out in this note apply to partial and full retirement.

1.14 This guidance has been written for pension administrators and assumes some knowledge of general pension terminology, and some familiarity with retirement calculations for the Civil Servants and Others Pension Scheme. Any questions concerning the application of the guidance should, in the first instance, be referred to Cabinet Office.

1.15 In line with best practice and in order to make sure that factors are being used as intended and the instructions are fit for purpose, we suggest that some example calculations are sent to GAD for review.

1.16 The factors contained in this guidance will be subject to review periodically. This will depend on external circumstances, for example whenever there is a change in the SCAPE basis; when changes in the actuarial assumptions adopted for other scheme factors take place; or following each future actuarial valuation where mortality and other relevant experience is reviewed or if other credible and material information comes to light.

Cases not covered by this note

1.17 Any special cases not covered by this note should be referred to GAD.

Scheme regulations

1.18 The Regulations set out that the early payment reduction payment factors and age addition factors are the responsibility of the scheme manager after having taken advice from the scheme actuary.

1.19 The Regulations to which this document relates, and the corresponding factors provided, are as follows:

Factor Table Titles/Reference Numbers	Statutory References (*)
P2ER60 - Early payment reduction factors for EEPA 60 **P2ER65** - Early payment reduction factors for NPA/EPA 65 **P2ER66** - Early payment reduction factors for NPA/EPA 66 **P2ER67** - Early payment reduction factors for NPA/EPA 67 **P2ER68** - Early payment reduction factors for NPA/EPA 68	**29** Descriptions of accrued pension **30** Descriptions of full retirement pension **31** Descriptions of partial retirement pension
P2AA1 – Age addition factors across various NPA/EPAs – for use with all descriptions of pension – except added (self only) pension **P2AA2 –** Age addition factors across various NPA/EPAs – for use with added (self only) pension	**33** Determination of "the age addition" **34 (2)** Determination of "the assumed age addition"

* References are to: SI 2014/1964: The Public Service (Civil Servants and Others) Pension Regulations 2014

Third party reliance

1.20 This guidance has been prepared for the use of Cabinet Office and the scheme administrators for the purposes of demonstrating the application of the factors covered by this guidance only. This guidance may be published on the Cabinet Office and the scheme administrator's website but must not otherwise be reproduced, distributed or communicated in whole or in part to any other person without GAD's prior written permission.

1.21 Other than the Cabinet Office and the scheme administrators, no person or third party is entitled to place any reliance on the contents of this guidance, except to any extent explicitly stated herein. GAD has no liability to any person or third party for any action taken or for any failure to act, either in whole or in part, on the basis of this guidance, whether or not GAD has agreed to the disclosure of its advice to the third party.

Limitations of this guidance

1.22 This guidance should not be used for any purpose other than those set out in this guidance.

1.23 The factors contained in this guidance are subject to regular review. Scheme managers and administrators need to ensure that they are using the latest factors, as relevant, when processing cases.

1.24 Advice provided by GAD must be taken in context and is intended to be considered in its entirety. Individual sections, if considered in isolation, may be misleading, and conclusions reached by a review of some sections on their own may be incorrect. GAD does not accept responsibility for advice that is altered or used selectively. Clarification should be sought if there is any doubt about the intention or scope of advice provided by GAD.

1.25 This guidance only covers the actuarial principles around the calculation and application of early payment reduction and age addition factors. Any legal advice in this area should be sought from an appropriately qualified person or source.

1.26 Scheme managers and administrators should satisfy themselves that early payment reduction and age addition retirement calculations and benefit awards comply with all legislative requirements including, but not limited to, tax and contracting-out requirements.

1.27 This guidance is based on the Regulations in force at the time of writing. It is possible that future changes to the Regulations might create inconsistencies between this guidance and the Regulations. If users of this guidance believe there to be any such inconsistencies, they should bring this to the attention of Cabinet Office and GAD. Under no circumstances should this guidance take precedence over the Regulations. Administrators should ensure that they comply with all relevant Regulations.

2 Early retirement with actuarial reduction

2.1 Early payment reduction factors are used to reduce benefits of members who wish to retire before their NPA/EPA. This note does not apply to those who retire with an ill-health pension.

2.2 We understand that on retirement a full or partial retirement account is established for the member. The retirement account will specify the amount of each description of full / partial retirement pension as set out in Regulations 30 and 31.

2.3 We have assumed that full / partial retirement pensions in respect of deferred members include pension increases in line with the Pensions (Increase) Act 1971 to the proposed date of early retirement where relevant.

2.4 The benefits payable on early retirement are determined by applying the appropriate early payment reduction factor to each description of full/partial retirement.

2.5 The formula below sets out our intended application of the early payment reduction factors (or early retirement pension factors). The early retirement pension is the pension remaining after deducting the early payment reduction (or after having applied the early retirement pension factors). Where a member has different pension ages for different tranches of their pension (e.g. because they have purchased an EPA/EEPA option on some of their benefits), the early retirement pension (ERP) should be calculated separately for each tranche. The formulae below show how the ERP would be calculated if the member had purchased an EPA on some of their pension (with the remainder of their pension payable from the member's NPA).

$$ERP_{NPA} = Pension_{NPA} \times P2ER\ factor_{NPA}$$

$$ERP_{EPA} = Pension_{EPA} \times P2ER\ factor_{EPA}$$

$$Total\ ERP = ERP_{NPA} + ERP_{EPA}$$

Where;

ERP is the member's early retirement pension

$Pension_{NPA}$ is the pension, at the early retirement date, which was eligible to be paid unreduced from the member's NPA, including the relevant in-service or deferred revaluation to the early retirement date.

$Pension_{EPA}$ is the pension, at the early retirement date, which was eligible to be paid unreduced from the member's EPA, including the relevant in-service or deferred revaluation to the early retirement date.

P2ER factor$_{NPA}$ is the factor at the member's age at early retirement date (in years and complete months) taken from the P2ER table (in Appendix A) relevant to the member's NPA. If a member has a non-integer NPA then more than one factor is required and these factors are interpolated to obtain the actual factor to use (see example 1 in Appendix B).

P2ER factor$_{EPA}$ is the factor at the member's age at early retirement date (in years and complete months) taken from the P2ER table (in Appendix A) relevant to the member's EPA. If a member has a non-integer EPA then more than one factor is required and these factors are interpolated to obtain the actual factor to use (see example 1 in Appendix B).

2.6 Worked examples are shown in Appendix B.

2.7 The following points should be noted:

a. Reduced benefits should be calculated before the commutation option is exercised.

b. The early retirement reduction applies to the member pension only. The contingent dependant benefits are not reduced on early retirement.

2.8 We understand that the minimum retirement age for benefits accrued in the alpha scheme is age 55 years. Factor tables start at age 54 rather than age 55 as the age 54 factors may be required where a member with a non-integer NPA retires aged 55.

Pension credits (as a result of Pension Sharing on Divorce)

2.9 Pension Credit pensions should be reduced on early retirement as described above.

Pension debits (as a result of Pension Sharing on Divorce)

2.10 Pension Debit Pensions should be treated in the same way as a deferred member's pension. Therefore they should be reduced on early retirement as described in paragraphs 2.3.

Scheme pays debits

2.11 This note does not cover the adjustments to apply to scheme pays debits on early or late retirement. Please refer to our separate guidance on scheme pays debits.

Added Pension

2.12 On early retirement, added pension should be reduced as described in paragraph 2.5.

Eligibility for actuarially reduced early retirement

2.13 Actuarially reduced early retirement is not allowed if the reduced benefits in respect of service given on or after 6 April 1978 and on or before 5 April 1997 are expected to be less than a member's guaranteed minimum pension (GMP) at GMP payment age (65 for males and 60 for females). In other schemes a 'GMP test' may be performed at early retirement to check eligibility. However, in alpha the only GMP will be in respect of transfers into the scheme. Therefore it has been decided that there will be a GMP test performed when the benefits are transferred into alpha but no GMP test done when the member takes early retirement. This will be confirmed in our advice on GMP tests which will be provided separately.

3 Age additions and assumed age additions for active members retiring after NPA/EPA

3.1 Members that continue to work after their NPA/EPA will have their benefits increased for late payment. This is done by an 'age addition' that is added to the member's account on each scheme anniversary (1 April) after the member reaches NPA/EPA and is still in service. An 'assumed age addition' is added to the member's account on the date that they retire or leave service, if the date they retired or left service was after NPA/EPA.

3.2 Age addition factors only apply to members who remain in active service after NPA/EPA. Members who retire after NPA/EPA from deferred status should receive a late payment supplement, not an age addition, in respect of the period of deferment after NPA/EPA. Members who leave active service after NPA/EPA and then further delay retirement will receive an age addition and a late payment supplement. Guidance on late payment supplements is provided separately.

3.3 In order to calculate the appropriate age addition for a scheme year, a percentage is applied to the 'opening balance' of the relevant description of accrued pension for the previous scheme year. Regulation 29 sets out each description of accrued pension.

3.4 For example, to calculate an age addition to be applied on 01/04/2017 a percentage is applied to the 'opening balance' of pension for the year 2016-17, not the opening balance for the year 2017-18. The opening balance for 2016-17 can be thought of as the balance at 31 March 2016.

3.5 The 'opening balance' in relation to a description of pension is as defined in Regulation 44(3). The provision definition document '2.1 Accruing a pension' (version 4-0) sets out further details of how this operates. In particular, we understand that the opening balance on a given scheme anniversary includes the opening balance at the previous scheme anniversary, indexation on the opening balance (at the previous scheme anniversary), earned pension applicable over the previous scheme year and any age addition awarded at the start of the previous scheme year.

3.6 The age addition is added to the member's account on the scheme anniversary but after the indexation has been determined on the opening balance for that year. So at 01/04/2017 the indexation on the opening balance at that date is determined first and added to the account and then the age addition amount (based on the opening balance for the previous scheme year) is added.

3.7 The age addition percentage applicable to the member's relevant opening balance is derived from unisex factors. Factors are taken from tables P2AA1 and P2AA2 (in Appendix A). Table P2AA2 is used to calculate the age addition percentage for added (self only) pension. Table P2AA1is used to calculate the age addition percentage for all other descriptions of accrued pension.

3.8 For the member's first age addition after passing NPA/EPA the appropriate factors are based on the member's age at the first scheme anniversary after NPA/EPA and the member's NPA/EPA.

3.9 The percentage used to calculate the first age addition is derived:

Age addition percentage =

[(Factor at age at first scheme anniversary after NPA/EPA) ÷ (Factor at age at NPA/EPA)] – 1

Where;

Age addition percentage is applied to the opening balance (of the relevant accrued pension) for the previous scheme year.

Factors are taken from:

- Table P2AA2 for added (self only) pension,
- table P2AA1 for all other descriptions of accrued pension,

and the member's age is that at the relevant date in complete years and months with part months ignored.

3.10 For subsequent age additions the appropriate factors are based on the member's age at current scheme anniversary and the member's age at previous scheme anniversary.

3.11 The percentage used to calculate subsequent age additions is derived:

Age addition percentage =

[(Factor at age at current scheme anniversary) ÷ (Factor at age at previous scheme anniversary)] – 1

Where;

Age addition percentage is applied to the opening balance (of the relevant accrued pension) for the previous scheme year.

Factors are taken from:

- table P2AA2 for added (self only) pension,
- table P2AA1 for all other descriptions of accrued pension,

and the member's age is that at the relevant date in complete years and months with part months ignored.

3.12 Where a member who is over their NPA/EPA leaves active service part way through a scheme year (either to become a deferred member or to retire) then an assumed age addition is added to the member's account at retirement/leaving date to reflect the period between the previous scheme anniversary and date of leaving/retirement. There will also be an assumed age addition if a member passes NPA/EPA and at a later date within the same scheme year leaves or retires.

3.13 The assumed age addition is calculated similarly to the age addition described above, except that the appropriate factors are based on the member's age at deferment or retirement and the greater of member's NPA/EPA or age at previous scheme anniversary.

3.14 The percentage used to calculate the assumed age addition is derived:

Assumed age addition percentage =

[(Factor at age at date of leaving/retirement) ÷ (Factor at age at previous scheme anniversary or NPA/EPA if later)] – 1

Where;

Assumed age addition percentage is applied to the opening balance (of the relevant accrued pension) for the current scheme year (i.e. this is the same opening balance as would have been used had the member remained in service until the next 1 April).

Factors are taken from:

- table P2AA2 for added (self only) pension,
- table P2AA1 for all other descriptions of accrued pension,

and the member's age is that at the relevant date in complete years and months with part months ignored.

3.15 Our understanding is that a member who leaves active service after NPA/EPA but does not retire immediately can receive age addition in respect of service up to leaving active service and also a late payment supplement in respect if the period from their leaving date to their eventual retirement date.

3.16 The following points should be noted:

a. Age additions and assumed age additions are calculated before the commutation option is exercised.

b. The age additions and assumed age additions applied to the member's pension should also apply to the contingent partner's pension (where one is payable).

Pension credits (as a result of Pension Sharing on Divorce)

3.17 Our understanding is that Pension Credit pensions should not receive any increase on late retirement.

Pension debits (as a result of Pension Sharing on Divorce)

3.18 Pension Debit pensions should be treated in the same way as a deferred member's pension. Therefore on late retirement they should be increased by a late payment supplement, not an age addition. Please refer to the latest guidance on late payment supplements.

Scheme pays debits

3.19 This note does not cover the adjustments to apply to scheme pays debits on early or late retirement. Please refer to the latest guidance on scheme pays debits.

Added Pension

3.20 Added pension should receive age additions (or assumed age additions, as appropriate) as described in paragraphs 3.9 to 3.14. Only NPA is relevant for Added Pension and references to EPA should be ignored when considering Added Pension for the purposes of determining age additions or assumed age additions. Note that different factors are used to calculate the age addition for added (all beneficiaries) pension (table P2AA1) and added (self only) pension (table P2AA2).

3.21 Example 4 in Appendix B includes a member who has purchased added (self only) pension.

Appendix A: – Factor tables

Table 1: P2ER60 – Early payment reduction factors for EEPA 60

Age at early retirement (complete years and months, ignoring part months)						
	55	**56**	**57**	**58**	**59**	**60**
months						
0	0.794	0.830	0.869	0.910	0.954	1.000
1	0.797	0.833	0.872	0.914	0.958	
2	0.800	0.837	0.876	0.917	0.962	
3	0.803	0.840	0.879	0.921	0.966	
4	0.806	0.843	0.882	0.925	0.970	
5	0.809	0.846	0.886	0.928	0.974	
6	0.812	0.849	0.889	0.932	0.978	
7	0.815	0.853	0.893	0.936	0.982	
8	0.818	0.856	0.896	0.939	0.986	
9	0.821	0.859	0.900	0.943	0.990	
10	0.824	0.862	0.903	0.947	0.994	
11	0.827	0.865	0.906	0.951	0.998	

Table 2: P2ER65 – Early payment reduction factors for NPA/EPA 65

	Age at early retirement (complete years and months, ignoring part months)											
	54	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**
months												
0	0.588	0.613	0.640	0.670	0.701	0.735	0.771	0.810	0.852	0.898	0.948	1.000
1	0.590	0.615	0.643	0.672	0.704	0.738	0.774	0.814	0.856	0.902	0.953	
2	0.592	0.618	0.645	0.675	0.707	0.741	0.777	0.817	0.860	0.906	0.957	
3	0.594	0.620	0.648	0.677	0.709	0.744	0.781	0.821	0.864	0.911	0.962	
4	0.596	0.622	0.650	0.680	0.712	0.747	0.784	0.824	0.868	0.915	0.966	
5	0.598	0.624	0.653	0.683	0.715	0.750	0.787	0.828	0.871	0.919	0.971	
6	0.600	0.627	0.655	0.685	0.718	0.753	0.790	0.831	0.875	0.923	0.975	
7	0.603	0.629	0.657	0.688	0.721	0.756	0.794	0.835	0.879	0.927	0.980	
8	0.605	0.631	0.660	0.690	0.723	0.759	0.797	0.838	0.883	0.931	0.984	
9	0.607	0.634	0.662	0.693	0.726	0.762	0.800	0.842	0.887	0.935	0.989	
10	0.609	0.636	0.665	0.696	0.729	0.765	0.803	0.845	0.890	0.940	0.993	
11	0.611	0.638	0.667	0.698	0.732	0.768	0.807	0.849	0.894	0.944	0.998	

Table 3: P2ER66 – Early payment reduction factors for NPA/EPA 66

Age at early retirement (complete years and months, ignoring part months)													
	54	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**
months													
0	0.556	0.580	0.606	0.633	0.663	0.694	0.729	0.765	0.805	0.848	0.895	0.947	1.000
1	0.558	0.582	0.608	0.636	0.665	0.697	0.732	0.769	0.809	0.852	0.900	0.951	
2	0.560	0.584	0.610	0.638	0.668	0.700	0.735	0.772	0.812	0.856	0.904	0.956	
3	0.562	0.586	0.613	0.641	0.671	0.703	0.738	0.775	0.816	0.860	0.908	0.961	
4	0.564	0.588	0.615	0.643	0.673	0.706	0.741	0.779	0.820	0.864	0.912	0.965	
5	0.566	0.591	0.617	0.645	0.676	0.709	0.744	0.782	0.823	0.868	0.917	0.970	
6	0.568	0.593	0.619	0.648	0.678	0.711	0.747	0.785	0.827	0.872	0.921	0.974	
7	0.570	0.595	0.622	0.650	0.681	0.714	0.750	0.789	0.830	0.876	0.925	0.979	
8	0.572	0.597	0.624	0.653	0.684	0.717	0.753	0.792	0.834	0.880	0.929	0.984	
9	0.574	0.599	0.626	0.655	0.686	0.720	0.756	0.795	0.838	0.884	0.934	0.988	
10	0.576	0.601	0.629	0.658	0.689	0.723	0.759	0.798	0.841	0.887	0.938	0.993	
11	0.578	0.603	0.631	0.660	0.692	0.726	0.762	0.802	0.845	0.891	0.942	0.998	

Table 4: P2ER67 – Early payment reduction factors for NPA/EPA 67

Age at early retirement (complete years and months, ignoring part months)														
	54	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**
months														
0	0.525	0.548	0.572	0.598	0.626	0.655	0.687	0.722	0.760	0.800	0.844	0.892	0.945	1.000
1	0.527	0.550	0.574	0.600	0.628	0.658	0.690	0.725	0.763	0.804	0.848	0.897	0.950	
2	0.529	0.552	0.576	0.602	0.630	0.661	0.693	0.728	0.766	0.807	0.852	0.901	0.955	
3	0.531	0.554	0.578	0.605	0.633	0.663	0.696	0.731	0.770	0.811	0.856	0.905	0.959	
4	0.533	0.556	0.580	0.607	0.635	0.666	0.699	0.735	0.773	0.815	0.860	0.910	0.964	
5	0.535	0.558	0.583	0.609	0.638	0.669	0.702	0.738	0.776	0.818	0.864	0.914	0.969	
6	0.536	0.560	0.585	0.612	0.640	0.671	0.705	0.741	0.780	0.822	0.868	0.919	0.974	
7	0.538	0.562	0.587	0.614	0.643	0.674	0.708	0.744	0.783	0.826	0.872	0.923	0.978	
8	0.540	0.564	0.589	0.616	0.645	0.677	0.710	0.747	0.786	0.829	0.876	0.927	0.983	
9	0.542	0.566	0.591	0.619	0.648	0.679	0.713	0.750	0.790	0.833	0.880	0.932	0.988	
10	0.544	0.568	0.593	0.621	0.650	0.682	0.716	0.753	0.793	0.837	0.884	0.936	0.993	
11	0.546	0.570	0.596	0.623	0.653	0.685	0.719	0.756	0.797	0.840	0.888	0.940	0.998	

Table 5: P2ER68 – Early payment reduction factors for NPA/EPA 68

Age at early retirement (complete years and months, ignoring part months)															
	54	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**
months															
0	0.495	0.516	0.539	0.563	0.589	0.617	0.648	0.680	0.715	0.753	0.795	0.840	0.889	0.943	1.000
1	0.497	0.518	0.541	0.566	0.592	0.620	0.650	0.683	0.718	0.757	0.798	0.844	0.894	0.948	
2	0.499	0.520	0.543	0.568	0.594	0.622	0.653	0.686	0.722	0.760	0.802	0.848	0.898	0.953	
3	0.501	0.522	0.545	0.570	0.596	0.625	0.656	0.689	0.725	0.764	0.806	0.852	0.903	0.958	
4	0.502	0.524	0.547	0.572	0.599	0.627	0.658	0.692	0.728	0.767	0.810	0.856	0.907	0.963	
5	0.504	0.526	0.549	0.574	0.601	0.630	0.661	0.695	0.731	0.770	0.813	0.860	0.912	0.968	
6	0.506	0.528	0.551	0.576	0.603	0.632	0.664	0.698	0.734	0.774	0.817	0.864	0.916	0.973	
7	0.508	0.530	0.553	0.579	0.606	0.635	0.666	0.701	0.737	0.777	0.821	0.868	0.921	0.978	
8	0.509	0.531	0.555	0.581	0.608	0.637	0.669	0.703	0.741	0.781	0.825	0.873	0.925	0.983	
9	0.511	0.533	0.557	0.583	0.610	0.640	0.672	0.706	0.744	0.784	0.828	0.877	0.930	0.988	
10	0.513	0.535	0.559	0.585	0.613	0.642	0.675	0.709	0.747	0.788	0.832	0.881	0.934	0.993	
11	0.515	0.537	0.561	0.587	0.615	0.645	0.677	0.712	0.750	0.791	0.836	0.885	0.939	0.998	

Table 6: P2AA1 – Age addition factors across various NPA/EPAs - for use with all descriptions of pension except added (self only) pension

Age when assessing (assumed) age addition (complete years and months, ignoring part months)																				
	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
months																					
0	0.760	0.799	0.843	0.892	0.944	1.000	1.057	1.123	1.196	1.276	1.362	1.459	1.568	1.689	1.823	1.965	2.131	2.316	2.524	2.756	3.005
1	0.763	0.803	0.847	0.896	0.949	1.005	1.063	1.129	1.202	1.283	1.370	1.469	1.578	1.700	1.834	1.979	2.146	2.334	2.543	2.777	
2	0.766	0.806	0.852	0.900	0.953	1.010	1.068	1.135	1.209	1.290	1.378	1.478	1.588	1.711	1.846	1.993	2.162	2.351	2.563	2.798	
3	0.770	0.810	0.856	0.905	0.958	1.014	1.074	1.141	1.216	1.297	1.386	1.487	1.598	1.722	1.858	2.006	2.177	2.368	2.582	2.818	
4	0.773	0.814	0.860	0.909	0.963	1.019	1.079	1.147	1.222	1.304	1.394	1.496	1.608	1.733	1.870	2.020	2.193	2.386	2.601	2.839	
5	0.776	0.818	0.864	0.913	0.967	1.024	1.085	1.153	1.229	1.311	1.402	1.505	1.618	1.744	1.882	2.034	2.208	2.403	2.621	2.860	
6	0.779	0.821	0.868	0.918	0.972	1.029	1.090	1.159	1.236	1.319	1.411	1.514	1.628	1.756	1.894	2.048	2.223	2.420	2.640	2.880	
7	0.783	0.825	0.872	0.922	0.977	1.033	1.096	1.165	1.242	1.326	1.419	1.523	1.638	1.767	1.906	2.062	2.239	2.437	2.659	2.901	
8	0.786	0.829	0.876	0.927	0.981	1.038	1.101	1.172	1.249	1.333	1.427	1.532	1.648	1.778	1.917	2.075	2.254	2.455	2.679	2.922	
9	0.789	0.832	0.880	0.931	0.986	1.043	1.107	1.178	1.256	1.340	1.435	1.541	1.658	1.789	1.929	2.089	2.270	2.472	2.698	2.942	
10	0.792	0.836	0.884	0.935	0.991	1.048	1.112	1.184	1.262	1.347	1.443	1.550	1.668	1.800	1.941	2.103	2.285	2.489	2.718	2.963	
11	0.796	0.840	0.888	0.940	0.995	1.052	1.118	1.190	1.269	1.354	1.451	1.559	1.679	1.811	1.953	2.117	2.301	2.507	2.737	2.984	

Table 7: P2AA2 – Age addition factors across various NPA/EPAs - for use with added (self only) pension

Age when assessing (assumed) age addition (complete years and months, ignoring part months)																					
	60	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**
months																					
0	0.750	0.790	0.836	0.886	0.940	1.000	1.060	1.129	1.206	1.291	1.385	1.490	1.607	1.737	1.882	2.044	2.226	2.430	2.658	2.915	3.204
1	0.753	0.794	0.840	0.890	0.945	1.005	1.066	1.136	1.213	1.299	1.394	1.500	1.618	1.749	1.895	2.059	2.243	2.449	2.680	2.939	
2	0.756	0.798	0.844	0.895	0.950	1.010	1.071	1.142	1.220	1.306	1.403	1.509	1.628	1.761	1.909	2.074	2.260	2.468	2.701	2.963	
3	0.760	0.801	0.848	0.900	0.955	1.015	1.077	1.148	1.227	1.314	1.411	1.519	1.639	1.773	1.922	2.090	2.277	2.487	2.723	2.987	
4	0.763	0.805	0.853	0.904	0.960	1.020	1.083	1.155	1.234	1.322	1.420	1.529	1.650	1.785	1.936	2.105	2.294	2.506	2.744	3.011	
5	0.766	0.809	0.857	0.909	0.965	1.025	1.089	1.161	1.241	1.330	1.429	1.539	1.661	1.797	1.949	2.120	2.311	2.525	2.765	3.035	
6	0.770	0.813	0.861	0.913	0.970	1.030	1.095	1.168	1.248	1.338	1.438	1.548	1.672	1.809	1.963	2.135	2.328	2.544	2.787	3.059	
7	0.773	0.817	0.865	0.918	0.975	1.035	1.100	1.174	1.255	1.346	1.446	1.558	1.683	1.821	1.977	2.150	2.345	2.563	2.808	3.084	
8	0.777	0.821	0.869	0.922	0.980	1.040	1.106	1.180	1.262	1.354	1.455	1.568	1.693	1.833	1.990	2.165	2.362	2.582	2.830	3.108	
9	0.780	0.824	0.873	0.927	0.985	1.045	1.112	1.187	1.269	1.361	1.464	1.578	1.704	1.846	2.004	2.181	2.379	2.601	2.851	3.132	
10	0.783	0.828	0.878	0.931	0.990	1.050	1.118	1.193	1.277	1.369	1.472	1.587	1.715	1.858	2.017	2.196	2.396	2.620	2.872	3.156	
11	0.787	0.832	0.882	0.936	0.995	1.055	1.124	1.199	1.284	1.377	1.481	1.597	1.726	1.870	2.031	2.211	2.413	2.639	2.894	3.180	

Appendix B: – Worked examples

Worked example 1: Early retirement – standard earned pension only, non-integer NPA

Consider a member whose entire pension amount is in respect of standard earned pension (i.e. payable from NPA) with further information as follows:

- Normal Pension Age (NPA): 66 years 2 months *(complete years and months, part months ignored)*
- Age at early retirement date: 63 years 8 months *(complete years and months, part months ignored)*
- Full retirement standard earned pension at early retirement date: £6,000
- Dependant earned pension at early retirement date: £2,250

To derive the appropriate factor to use for a member with a NPA of 66 years 2 months we interpolate between NPA 66 and NPA 67 factors. The member is retiring 2 years and 6 (complete) months early, so we subtract this from ages 66 and 67 and take the early retirement factor for:

- 63 years 6 months for a member with NPA 66, i.e. 0.872 from Table 3 (P2ER66); and
- 64 years 6 months for a member with NPA 67, i.e. 0.868 from Table 4 (P2ER67).

We then interpolate between the factors above to give a factor for an NPA of 66 years 2 months. The appropriate early retirement factor is:

[(0.872 x 10) + (0.868 x 2)] ÷ 12 = 0.8713 (rounded to 4 decimal places).

The early retirement pension at date of early retirement is therefore 0.8713 x £6,000 = £5,227.80.

The dependant pension is not reduced and therefore remains £2,250.

Worked example 2: Early retirement – EPA option on part of their pension

Consider a member who has purchased an EPA option on part of their pension with further information as follows:

- Normal Pension Age (NPA): 66 years *(complete years and months, part months ignored)*
- Effective Pension Age (EPA): 65 years *(complete years and months, part months ignored)*
- Age at early retirement date: 63 years 8 months *(complete years and months, part months ignored)*
- Standard earned pension (i.e. payable unreduced from NPA) at early retirement date: £4,000
- Earned pension attributable to an EPA option at early retirement date: £2,000
- Dependant earned pension at early retirement date: £2,250

The pension payable unreduced from NPA and from EPA should be reduced separately. The factors to be used are as follows:

- 63 years 8 months for a member with NPA 66, i.e. 0.880 from Table 3 (P2ER66); and
- 63 years 8 months for a member with EPA 65, i.e. 0.931 from Table 2 (P2ER65).

The early retirement pension (ERP) will then be calculated as follows:

ERP_{NPA} = £4,000 * 0.880

= £3,520

ERP_{EPA} = £2,000 * 0.931

= £1,862

Total ERP = £3,520 + £1,862

= £5,382

The dependant pension is not reduced and therefore remains £2,250.

Worked example 3: Age addition – standard earned pension only

The figures in this example are for illustrative purposes only. The example below shows how age addition percentage increases would be calculated.

Consider a member retiring from active service after NPA with details as follows:

- Date of birth: 01/09/1955
- NPA: reached at 01/09/2021 (i.e. when member is age 66 years)
- Retirement date: 15/08/2024 (i.e. when member is aged 68 years 11 complete months)

Age addition for standard earned pension is calculated using **table P2AA1**.

The **first age addition** will occur on the first scheme anniversary after the NPA, i.e. 01/04/2022, when the member will be 66 years 7 months.

The percentage increase will be given by;

[(Factor for 66 years 7 months) ÷ (Factor for 66 years 0 months) – 1]

i.e. [(1.096 ÷ 1.057) – 1] = 0.0369

The age addition is 3.69% of the member's opening balance for the previous scheme year (i.e. the balance at 31 March 2021). The age addition is added to the member's account on 01/04/2022, after the indexation of the opening balance at that date.

The **second age addition** will occur on the next scheme anniversary, i.e. 01/04/2023, when the member will be 67 years 7 months.

The percentage increase will be given by;

[(Factor for 67 years 7 months) ÷ (Factor for 66 years 7 months) – 1]

i.e. [(1.165 ÷ 1.096) – 1] = 0.0630

The age addition is 6.30% of the member's opening balance for the previous scheme year (i.e. the balance at 31 March 2022). The age addition is added to the member's account on 01/04/2023, after the indexation of the opening balance at that date.

The **third age addition** will occur on the next scheme anniversary, i.e. 01/04/2024, when the member will be 68 years 7 months.

The percentage increase will be given by;

[(Factor for 68 years 7 months) ÷ (Factor for 67 years 7 months) – 1]

i.e. [(1.242 ÷ 1.165) – 1] = 0.0661

The age addition is 6.61% of the member's opening balance for the previous scheme year (i.e. the balance at 31 March 2023). The age addition is added to the member's account on 01/04/2024, after the indexation of the opening balance at that date.

The final **assumed age addition** comes into payment on the member's retirement, i.e. 15/08/2024, and is calculated based on the member's age at retirement. At this time the member will be 68 years 11 (complete) months.

The percentage increase will be given by;

[(Factor for 68 years 11 months) ÷ (Factor for 68 years 7 months) – 1]

i.e. [(1.269 ÷ 1.242) – 1] = 0.0217

The assumed age addition is the addition in respect of the part-year of active service which would have been awarded at the next 1 April if the member had not retired. Therefore, it is 2.17% of the member's opening balance at 31 March 2024 (which would have been the opening balance for the previous scheme year had the addition been awarded at the next 1 April). The assumed age addition is added to the member's account at retirement.

The contingent partner's pension will be 37.5% of the member's pension (including any age additions awarded to the member).

Worked example 4: Age addition – with added (self only) pension

The figures in this example are for illustrative purposes only. The example below shows how age addition percentage increases would be calculated.

Consider a member retiring from active service after NPA with details as follows:

- Date of birth: 01/09/1955
- NPA: reached at 01/09/2021 (i.e. when member is age 66 years)
- Retirement date: 15/08/2022 (i.e. when member is aged 66 years 11 complete months)
- Member has standard earned pension and added (self only) pension

The age addition is calculated using **table P2AA1** for the standard earned pension and **table P2AA2** for the added (self only) pension.

The **first age addition** will occur on the first scheme anniversary after the NPA, i.e. 01/04/2022, when the member will be 66 years 7 months.

The percentage which will be applied to the standard earned pension will be given by;

[(Factor for 66 years 7 months) ÷ (Factor for 66 years 0 months) – 1]

i.e. [(1.096 ÷ 1.057) – 1] = 0.0369

The percentage which will be applied to the added (self only) pension will be given by;

[(Factor for 66 years 7 months) ÷ (Factor for 66 years 0 months) – 1]

i.e. [(1.100 ÷ 1.060) – 1] = 0.0377

The age addition amount is 3.69% of the member's opening balance attributable to standard earned pension for the previous scheme year (i.e. the balance at 31 March 2021) and 3.77% of the member's opening balance attributable to added (self only) pension for the previous scheme year (i.e. the balance at 31 March 2021). The age addition amount is added to the member's account on 01/04/2022, after the indexation of the opening balance at that date.

The final **assumed age addition** occurs on the date of the member's retirement, and is calculated based on the member's age at retirement. At retirement the member will be 66 years 11 (complete) months.

The percentage which will be applied to the standard earned pension will be given by;

[(Factor for 66 years 11 months) ÷ (Factor for 66 years 7 months) – 1]

i.e. [(1.118 ÷ 1.096) – 1] = 0.0201

The percentage which will be applied to the added (self only) pension will be given by;

[(Factor for 66 years 11 months) ÷ (Factor for 66 years 7 months) – 1]

i.e. [(1.124 ÷ 1.100) – 1] = 0.0218

The assumed age addition is the addition in respect of the part-year of active service which would have been awarded at the next 1 April if the member had not retired. Therefore, it is 2.01% of the member's opening balance attributable to standard earned pension at 31 March 2022 (which would have been the opening balance for the previous scheme year had the addition been awarded at the next 1 April) and 2.18% of the member's opening balance attributable to added (self-only) pension at 31 March 2022. The assumed age addition is added to the member's account at retirement.

The contingent partner's pension, where payable, will be 37.5% of the member's pension (including any age additions awarded to the member). For added (self only) pension there is no partner's pension payable.

Worked example 5: Age addition – with EPA option on part of their pension

Consider a member retiring from active service after NPA and EPA with details as follows:

- Date of birth: 01/09/1955
- NPA: reached at 01/09/2021 (i.e. when member is age 66 years)
- EPA reached at 01/09/2020 (i.e. when member is age 65 years)
- Retirement date: 15/03/2022 (i.e. when member is aged 66 years 6 complete months)

Member has standard earned pension (i.e. payable from NPA) and pension attributable to an EPA option. Age addition for standard earned pension and pension attributable to an EPA option are both calculated using **table P2AA1**.

The **first age addition for the pension attributable to EPA** will occur on the first scheme anniversary after the EPA, i.e. 01/04/2021, when the member will be 65 years 7 months.

The percentage increase will be given by;

[(Factor for 65 years 7 months) ÷ (Factor for 65 years 0 months) – 1]

i.e. [(1.033 ÷ 1.000) – 1] = 0.0330

The age addition is 3.30% of the member's opening balance attributable to an EPA option for the previous scheme year (i.e. the balance at 31 March 2020). The age addition is added to the member's account on 01/04/2021, after the indexation of the opening balance at that date.

No age addition for standard earned pension will occur on 01/04/2021 as the member is still below NPA.

The **assumed age addition for the pension attributable to EPA** will occur on the date of the member's retirement. It is calculated based on the member's age at retirement. At retirement the member will be 66 years 6 (complete) months.

The percentage increase will be given by;

[(Factor for 66 years 6 months) ÷ (Factor for 65 years 7 months) – 1]

i.e. [(1.090÷ 1.033) – 1] = 0.0552

The assumed age addition is 5.52% of the member's opening balance attributable to an EPA option at 31 March 2021. The assumed age addition is added to the member's account at retirement.

The **assumed age addition for the standard earned pension** will also occur on the date of the member's retirement. As the member reached NPA and retired during the year the factors used are for the ages at NPA and retirement.

The percentage increase will be given by;

[(Factor for 66 years 6 months) ÷ (Factor for 66 years 0 months) – 1]

i.e. [(1.090 ÷ 1.057) – 1] = 0.0312

The assumed age addition amount is 3.12% of the member's opening balance attributable to standard earned pension at 31 March 2021. The age addition amount is added to the member's account at retirement.

The contingent partner's pension will be 37.5% of the member's pension (including any age additions awarded to the member).

Worked example 6: Age addition – Numerical example

The figures in this example are for illustrative purposes only.

The example below shows how age addition percentage increases would be calculated.

Consider the following member:

- Date of birth: 01/09/1955
- NPA: reached at 01/09/2021 (i.e. when member is age 66 years)
- Retirement date: 15/08/2023 (i.e. when member is aged 67 years 11 complete months)

Opening balance for 2021-22	**£8,000.00**	**A**	***i.e. balance as at 31/3/2021***
Relevant CPI figure	2.50%	B	
Indexation amount	£200.00	C	*(= A x B) added to member's account on 1/4/2021.*
Age addition	£0	D	*member is still below NPA at 1/4/2021.*
Pension accrued in 2021-22	£500.00	E	
Opening balance for 2022-23	**£8,700.00**	**F**	***i.e. balance as at 31/3/2022. (= A + C + D + E)***
Relevant CPI figure	2.00%	G	
Indexation amount	£174.00	H	*(= F x G) added to member's account on 1/4/2022.*
Age addition factor at age at 1/4/2022	1.096	J	*Age 66 years, 7 months factor from P2AA1*
Age addition factor at NPA	1.057	K	*Age 66 years, 0 months factor from P2AA1*
Age addition percentage increase	0.0369	L	*= J / K - 1, rounded to 4 decimal places*
Age addition	£295.20	M	*(= A x L) added to member's account on 1/4/2022.*
Pension accrued in 2022-23	£520.00	N	

Opening balance for 2023-24	**£9,689.20**	**P**	***i.e. balance as at 31/3/2023 (= F + H + M + N)***
Relevant CPI figure	1.50%	Q	
Indexation amount	£145.34	R	*(= P x Q) added to member's account on 1/4/2023.*
Age addition factor at age at 1/4/2023	1.165	S	*Age 67 years, 7 months factor from P2AA1*
Age addition percentage increase	0.0630	T	*= S / J - 1, rounded to 4 decimal places*
Age addition	£548.10	U	*(= F x T) added to member's account on 1/4/2023.*
Pension accrued in 2023-24	£270.00	V	
Age addition factor at age at retirement	1.190	W	*Age 67 years, 11 months factor from P2AA1*
Assumed age addition percentage increase	0.0215	X	*= W / S - 1, rounded to 4 decimal places*
Assumed age addition	£208.32	Y	*(= P x X) added to member's account on retirement*
Pension at retirement in August 2023	**£10,860.96**	**Z**	***(= P + R + U + V + Y) the pension will be increased at the next scheme anniversary to allow for the retirement index adjustment when the relevant CPI figure is known.***

Appendix C: Principal assumptions underlying factors

Financial assumptions

Nominal discount rate	4.448%
CPI	2.00%
Long term earnings growth	4.20%
Real discount rate (in excess of CPI)	2.40%
Real discount rate (in excess of general earnings growth)	0.24%

Mortality assumptions

Base mortality tables and adjustments	Member: 104% of S2NMA (M) and 104% of S2NFA (F) (as per 2016 valuation)
Future mortality improvement	Based on ONS principal UK population projections 2016
Year of use	2020

Other assumptions

Proportion of male members for unisex factors	50%
Allowance for commutation	Nil