

Appendix 1 to the Board's determination under Section 175(5) of the Pensions Act 2004 in respect of the financial year 1 April 2007 – 31 March 2008

Formulae for transforming section 179 valuation results to a section 179 basis as at the date required for the purpose of calculating the pension protection levy in respect of the financial year 1 April 2007 – 31 March 2008

Summary

This document details the formulae developed jointly by the Board of the Pension Protection Fund and the Government Actuary's Department to transform valuation results which have been provided to the Board on a section 179 basis (in the Scheme Return or otherwise) as at a date other than 31 October 2006 into valuation results on a section 179 basis as at 31 October 2006 (referred to as "the output date" below).

This document complements the document published on 1 March 2007 setting out the formulae for adapting valuation results on the MFR basis to a section 179 basis as at 31 October 2006.

1 Background

- 1.1 For the 2007/08 levy year, a scheme has the option of undertaking a valuation on a Pension Protection Fund liabilities (section 179) basis and providing this information to the Board by 31 March 2007. This information may then be used in place of information about the scheme's funding position on the MFR basis contained in the Scheme Return in assessing the scheme's funding position on the section 179 basis as at 31 October 2006.
- 1.2 A model created in conjunction with the Government Actuary's Department will enable the Board to transform section 179 valuations to a consistent valuation date, 31 October 2006. A similar model has been created for adapting and rolling forward valuation results on the MFR basis.
- 1.3 The section 179 valuation result provided may have been prepared in accordance with a different version of the valuation guidance to that in force at 31 October 2006 (depending on the date on which it was certified) and this is taken into account in the transformation formulae.
- 1.4 The model itself only uses information about each scheme that will be supplied by the scheme to the Board either directly (the section 179 valuation result) or from the Scheme Return submitted by the scheme to the Pensions Regulator, together with published data on investment market conditions.

2 Summary of the calculation

- 2.1 The formulae constitute a technical actuarial document which is intended to be read only by those with significant experience in carrying out actuarial

calculations. For those with a broad interest in the conversion proposal, the main stages of the calculations are summarized below.

2.2 Transformation of the value of the liabilities on the section 179 basis as at the input date and in respect of protected liabilities to the value of liabilities on the section 179 basis as at the output date (31 October 2006) in respect of full liabilities.

- The section 179 methodology prescribes an allowance for expenses, and removing this allowance is the first stage in transforming the liabilities (where information about a section 179 valuation is given on a section 179 valuation certificate directly to the board, this stage is unnecessary, as figures for the value of liabilities for pensioners, deferred pensioners and active members excluding expenses, are available directly from the form).
- The section 179 methodology also prescribes adjustments to liabilities to reflect the capping of benefits and the limitation of benefits to 90% of the scheme benefits for those under pension age; these adjustments are also removed.
- The formulae then use figures for the proportions of liabilities that relate to service before and after 6 April 1997 taken, where possible, from the Scheme Return data, to allow for differences in Pension Protection Fund compensation for service before and after 1997. Where these figures have not been given, assumptions are made.
- Ratios of annuity factors and deferred annuity factors are then used to convert the adjusted section 179 liabilities, which at this stage reflect the levels of indexation included in protected liabilities and as paid by the Pension Protection Fund, to full scheme liabilities on section 179 assumptions as at the output date (31 October 2006). This is a typical actuarial method for adjusting for changes in pension increase assumptions. This process relies on information about actual scheme practice on indexation as recorded on the Scheme Return.
- The liabilities are at this point still effectively at the section 179 calculation date used by the scheme, and reflect the scheme's benefit structure, despite being calculated with reference to section 179 assumptions at the output date.

2.3 Moving assets and the liabilities forward (or backward) from the date of the section 179 calculation to the output date.

- Liabilities are increased (or discounted) at a rate that is reasonably consistent with section 179 assumptions, as the liabilities are now closer to (or further away from) coming into payment.
- The assets are assumed to achieve (or to have achieved) returns in line with certain stock market indices, allowance being made for how much of the scheme's assets are invested in equities, bonds etc. as taken from the Scheme Return provided to the Pensions Regulator.

- The liabilities are now at the output date, and are based on section 179 assumptions. However, they still reflect scheme benefits.
- Neither assets nor liabilities are adjusted for benefit payments. Liabilities are not adjusted for new benefit accrual, nor are assets adjusted for contributions. The comparatively short period between the section 179 valuation effective date and the output date (31 October 2006) should mean that any inaccuracies arising from this are small. Certification of special contributions should be considered where these may materially affect the result.

2.4 Allowing for Pension Protection Fund benefit levels in the rolled forward liabilities.

- Ratios of annuities are used to reduce the liabilities to reflect PPF benefit levels for pensioners. A reduction is then made in the expectation that some of the pensioner membership will be below normal pension age, where their benefits would be subject to the cap on compensation and reduced to a 90% compensation level.
- Similar reductions are then applied to non-pensioner liabilities. An assumption is made that a proportion of non-pensioner liabilities would be restricted by the compensation cap and all non-pensioner liabilities would be reduced to a 90% compensation level.
- As a final step the expenses specified for Section 179 calculations are added to the liabilities to give the final results.

3 Summary of outputs from and inputs to the formulae

3.1 Outputs

• Assets for section 179 valuation	S179Ass
• Liabilities for pensions in payment (excluding section 179 member-related expenses)	S179PL
• Liabilities for deferred members (excluding section 179 member-related expenses)	S179DL
• Liabilities for active members (excluding section 179 member-related expenses)	S179AL
• S179 estimated cost of wind-up (excluding benefit installation/payment)	S179WUExp
• S179 estimated expenses of benefit installation/payment	S179PayExp
• Effective date of the section 179 valuation required for output (31 October 2006)	OutputDate

From these can be calculated

• Total liabilities (including section 179 expense allowance)	S179TL
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3.2 Inputs

The section 179 valuation results as given on the Scheme Return submitted to the Pensions Regulator (section 20.2) or on the Section 179 valuation certificate submitted to the Pension Protection Fund:

• Assets for section 179 valuation purposes	S179InputAss
• External liabilities	S179InputExLiab
• Date of relevant accounts giving asset figure	RelAcDate
• Total values of protected liabilities	S179InputTL
• Liabilities for pensions in payment, possibly including expenses	S179InputPL
• Liabilities for deferred members, possibly including expenses	S179InputDL
• Liabilities for active members, possibly including expenses	S179InputAL
• Estimated costs of windup (excluding benefit installation/payment)	S179InputWUExp
• Estimated expenses of benefit installation/payment	S179InputPayExp
• Proportion of pensioner liabilities, excluding expenses, relating to service before 6 April 1997	S179InputPPre97 Ppn
• Proportion of deferred pensioner liabilities, excluding expenses, relating to service before 6 April 1997	S179InputDPre97 Ppn
• Proportion of active member liabilities, excluding expenses, relating to service before 6 April 1997	S179InputAPre97 Ppn
• Effective date of the section 179 valuation	S179InputDate
• Version number of s179 guidance used for this valuation	S179InputGuiVNo
• Version number of s179 assumptions used for this valuation	S179InputAssVNo

Information on scheme pension indexation policy (section 23.1)

• Information about the indexation of scheme benefits accruing pre 1997 (fixed increases/percentage of RPI/full RPI/capped RPI/RPI with maximum and minimum/none)	IndMeth
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Scheme asset information in the Scheme Return (section 24.1) – percentages of the total assets as at the date of the last audited financial statement (note that this may be different from both the S179InputDate and the RelAcDate identified above; the value of assets at AssetDate is not known, and it may be rather different from S179InputAss where, for instance, a bulk transfer has taken place):

• Insurance policies (excluding managed funds)	IP%
• Equities	Eq%
• Gilts/fixed interest products	FI%
• Property	Pr%
• Cash and deposits	Ca%
• Other	Ot%
• Date of asset breakdown	AssetDate

Numbers of members with defined benefits only or partial defined benefits from the Scheme Return (section 7.1)

• Pensioner members	PMemNo
• Deferred members	DMemNo
• Active members	AMemNo

Average ages of different classes of members from the Scheme Return (section 7.3)

• Pensioner members	PAvAge
• Deferred members	DAvAge
• Active members	AAvAge

Where any of the above information has not been provided, the Board of the Pension Protection Fund will need to adopt an assumed value. Details of the assumptions that will be made in these circumstances are set out at the end of this document. Note also that average ages falling outside particular ranges will be subject to adjustment (see end of document for details).

4 The formulae

a) Transformation of liabilities from the section 179 basis on assumptions as at input date to the section 179 basis as at the output date

l) Strip out any expense allowance from liability figures for each class of membership if necessary

If $S179InputGuiVNo = 2$ or 3 , whether from a Scheme Return or a S179 valuation certificate, input data should state liabilities for each class of membership excluding expenses, with the section 179 expenses given separately

So

$$S179InputPLNoExp = S179InputPL$$

$$S179InputDLNoExp = S179InputDL$$

$$S179InputALNoExp = S179InputAL$$

If $S179InputGuiVNo = 1$, whether from a Scheme Return or a S179 valuation certificate, input data liabilities for each class of membership may or may not include expenses

If $S179InputTL > (S179InputPL + S179InputDL + S179InputAL)$, the difference should be the amount of the expenses, so

$$S179InputPLNoExp = S179InputPL$$

$$S179InputDLNoExp = S179InputDL$$

$$S179InputALNoExp = S179InputAL$$

Otherwise

$$S179InputPLNoPayExp = S179InputPL - £350 \times PMemNo$$

$$S179InputALNoPayExp = S179InputAL - £500 \times AMemNo$$

$$S179InputDLNoPayExp = S179InputDL - £500 \times DMemNo$$

$$\text{And } S179InputTLNoPayExp = S179InputPLNoPayExp + \\ S179InputALNoPayExp + S179InputDLNoPayExp$$

$$S179InputPLNoExp = S179InputPLNoPayExp / (1 + S179InputExp\%)$$

$$S179InputDLNoExp = S179InputDLNoPayExp / (1 + S179InputExp\%)$$

$$S179InputALNoExp = S179InputALNoPayExp / (1 + S179InputExp\%)$$

Where

$$\text{If } S179\text{InputTLNoPayExp} < \text{£}51.5 \text{ million,} \\ (1 + S179\text{InputExp}\%) = 103\%$$

If $\text{£}51.5 \text{ million} \leq S179\text{InputTLNoPayExp} < \text{£}102.5 \text{ million,}$

$$(1 + S179\text{InputExp}\%) = (1.02 \times S179\text{InputTLNoPayExp}) / \\ (S179\text{InputTLNoPayExp} - \text{£}0.5 \text{ million})$$

If $S179\text{InputTLNoPayExp} \geq \text{£}102.5 \text{ million}$

$$(1 + S179\text{InputExp}\%) = (1.01 \times S179\text{InputTLNoPayExp}) / \\ (S179\text{InputTLNoPayExp} - \text{£}1.5 \text{ million})$$

II) Divide the liabilities between those accrued before and after April 1997 (different indexation)

$$S179\text{InputPLPre97} = S179\text{InputPLNoExp} \times S179\text{InputPPre97Ppn}$$

$$S179\text{InputPLPost97} = S179\text{InputPLNoExp} \times (1 - S179\text{InputPPre97Ppn})$$

$$S179\text{InputDLPre97} = S179\text{InputDLNoExp} \times S179\text{InputDPre97Ppn}$$

$$S179\text{InputDLPost97} = S179\text{InputDLNoExp} \times (1 - S179\text{InputDPre97Ppn})$$

$$S179\text{InputALPre97} = S179\text{InputALNoExp} \times S179\text{InputAPre97Ppn}$$

$$S179\text{InputALPost97} = S179\text{InputALNoExp} \times (1 - S179\text{InputAPre97Ppn})$$

Details of the assumptions made where $S179\text{InputPPre97Ppn}$, $S179\text{InputDPre97Ppn}$ or $S179\text{InputAPre97Ppn}$ have not been provided are set out at the end of this document.

III) Rate up section 179 liabilities to reflect full rather than 90% liabilities, and to remove effect of capping

$$S179\text{InputNoCapPLPre97} = S179\text{InputPLPre97} / 0.97$$

$$S179\text{InputNoCapPLPost97} = S179\text{InputPLPost97} / 0.97$$

$$S179\text{InputNoCapDLPre97} = S179\text{InputDLPre97} / (0.98 \times 0.9)$$

$$S179\text{InputNoCapDLPost97} = S179\text{InputDLPost97} / (0.98 \times 0.9)$$

$$S179\text{InputNoCapALPre97} = S179\text{InputALPre97} / (0.98 \times 0.9)$$

$$S179\text{InputNoCapALPost97} = S179\text{InputALPost97} / (0.98 \times 0.9)$$

Factors for cap and benefit cut back (0.97, 0.98 and 0.9) as in section (c). These factors are not particularly important, as they will cancel out later on in section (c) of the calculation.

IV) Convert from section 179 economic assumptions at S179InputDate to section 179 basis (all benefits, not just PPF protected benefits) as at OutputDate

Pensioner liabilities

S179FullPLPre97@S179InputDate

$$= \text{S179InputNoCapPLPre97} \times \frac{\text{annuityfactor2}(\text{S179rate@OutputDate})}{\text{annuityfactor1}(\text{S179rate@S179InputDate})}$$

For pre 1997 liabilities annuityfactor2(S179rate@OutputDate) varies according to the scheme pension increases (indicated by IndMeth) as well as on economic conditions at OutputDate. See the table in the final section of this document setting out the derivation of discount rates for different pension increases. Note that annuityfactor2 cancels with the factor of the same name used at stage (c)(l) of the conversion process, and the assumptions for it are therefore not crucial to the final result.

annuityfactor1 (with PPF indexation, that is none for pre 1997 benefits) discount rate

- Rate based on annualised yield on FTSE Actuaries Government 10 year Fixed Interest Index.

For post 1997 liabilities, assume that indexation is at statutory minimum requirements, that is, in line with RPI with a 5% a year cap.

S179FullPLPost97@S179InputDate

$$= \text{S179InputNoCapPLPost97} \times \frac{\text{annuityfactor4}(\text{S179rate@OutputDate})}{\text{annuityfactor3}(\text{S179rate@S179InputDate})}$$

For post 1997 liabilities annuityfactor4(S179rate@OutputDate) is based on an assumption that scheme benefits include increases at the minimum statutory rate, that is in line with increases in the Retail Prices Index capped at 5% each year. Note that annuityfactor4 cancels with the factor of the same name used at stage (c)(l) of the conversion process, and the assumptions for it are therefore not crucial to the final result.

annuityfactor3 (with PPF indexation, that is in line with increases in the Retail Prices Index capped at 2.5% each year) discount rate:

Where S179InputGuiVNo = V1 or V2

- Index-linked gilt yields (average of Government Securities Index-linked annualised real yields over 5 years assuming 0% and 5% inflation) – 0.5%

Where S179InputGuiVNo = G3 and S179InputAssVNo = A3

- Maximum of
 - Index-linked gilt yields (average of Government Securities Index-linked annualised real yields over 5 years assuming 0% and 5% inflation) – 0.5%
 and
 - Annualised yield on FTSE Actuaries Government 10 year Fixed Interest Index – 2.5%

annuityfactor4 (increases in line with the Retail Prices Index capped at 5% each year) discount rate:

- Maximum of
 - Index-linked gilt yields (average of Government Securities Index-linked annualised real yields over 5 years assuming 0% and 5% inflation) – 0.75%
 and
 - Annualised yield on FTSE Actuaries Government 10 year Fixed Interest Index – 5%

General assumptions for annuity factors

- Mortality: PMA92mc (U=S179InputDate for annuityfactor1 and annuityfactor3, OutputDate for annuityfactor2 and annuityfactor4)
- Age: PAvAge¹
- Sex: male
- Spouse's proportion: 0.5
- Proportion married: 80%
- Wife three years younger than member

Non-pensioner liabilities

S179FullDLPre97@S179InputDate

$$= S179InputNoCapDLPre97 \times \frac{\text{defannuityfactor2}(S179rate@OutputDate)}{\text{defannuityfactor1}(S179rate@S179InputDate)}$$

S179FullALPre97@S179Inputdate

$$= S179InputNoCapALPre97 \times \frac{\text{defannuityfactor4}(S179rate@OutputDate)}{\text{defannuityfactor3}(S179rate@S179InputDate)}$$

¹ Details of the assumptions made where average ages have not been provided by schemes are set out at the end of this document.

Post-retirement discount rates:

defannuityfactor2(S179rate@OutputDate) and defannuityfactor4(S179rate@OutputDate) vary according to the scheme pension increases (indicated by IndMeth) as well as on economic conditions at OutputDate. See the table in the final section of this document setting out the derivation of discount rates for different pension increases.

defannuityfactor1 and defannuityfactor3 – post-retirement discount rates relate to non-indexed pensions:

- Rate based on conventional gilt yield (annualised yield on FTSE Actuaries Government 10 year Fixed Interest Index)

Pre-retirement discount rates

defannuityfactor2 and defannuityfactor4 reflect full scheme revaluation (assumed to be the statutory revaluation requirement as applying to all rights in respect of leavers since 1 Jan 1991).

defannuityfactor1 and defannuityfactor3 – pre-retirement discount rates reflect PPF protected liabilities level of revaluation, therefore use:

For defannuityfactor1 and defannuityfactor3 where S179InputGuiVNo = V1 or V2

- Average of FTSE Actuaries Government Securities Index-Linked annualised real yields >15 years assuming 0% and 5% inflation as at InputDate – 0.5%

For defannuityfactor1 and defannuityfactor3 where S179InputGuiVNo = G3 and S179InputAssVNo = A3, and for defannuityfactor2 and defannuityfactor4 in all cases

- Average of FTSE Actuaries Government Securities Index-Linked annualised real yields >15 years assuming 0% and 5% inflation as at InputDate – 0.7%

Note that defannuityfactor2(S179rate@OutputDate) and defannuityfactor4(S179rate@OutputDate) cancel with the factors of the same names used at stage (c)(l) of the conversion process, and therefore the assumptions for them are therefore not crucial to the final result.

For post 1997 liabilities, assume that scheme indexation is at statutory minimum requirements, that is, in line with RPI with a 5% a year cap.

S179FullDLPost97@S179InputDate

$$= S179InputNoCapDLPost97 \times \frac{\text{defannuityfactor6}(S179rate@OutputDate)}{\text{defannuityfactor5}(S179rate@S179InputDate)}$$

S179FullALPost97@S179InputDate

$$= S179InputNoCapALPost97 \times \frac{\text{defannuityfactor8}(S179rate@OutputDate)}{\text{defannuityfactor7}(S179rate@S179InputDate)}$$

Post retirement discount rates:

defannuityfactor6(S179rate@OutputDate) and defannuityfactor8(S179rate@OutputDate) assume that scheme benefits increase at the minimum statutory rate, that is, in line with increases in the Retail Prices Index capped at 5% a year.

defannuityfactor5 and defannuityfactor7 (with PPF indexation, that is in line with increases in the Retail Prices Index capped at 2.5% each year):

where S179InputGuiVNo = V1 or V2

- Index-linked gilt yields (average of Government Securities Index-linked annualised real yields over 5 years assuming 0% and 5% inflation) – 0.5%

where S179InputGuiVNo = G3 and S179InputAssVNo = A3

- Maximum of
 - Index-linked gilt yields (average of Government Securities Index-linked annualised real yields over 5 years assuming 0% and 5% inflation) – 0.5%

and

- Annualised yield on FTSE Actuaries Government 10 year Fixed Interest Index – 2.5%

defannuityfactor6 and defannuityfactor8 (with indexation in line with increases in the Retail Prices Index capped at 5% each year):

- Maximum of
 - Index-linked gilt yields (average of Government Securities Index-linked annualised real yields over 5 years assuming 0% and 5% inflation) – 0.75%

and

- Annualised yield on FTSE Actuaries Government 10 year Fixed Interest Index – 5%

Pre-retirement discount rates:

defannuityfactor6 and defannuityfactor8 as defannuityfactor2 and defannuityfactor4.

defannuityfactor5 and defannuityfactor7 as defannuityfactor1 and defannuityfactor3.

Note that defannuityfactor6(S179rate@OutputDate) and defannuityfactor8(S179rate@OutputDate) cancel with the factors of the same names used at stage (c)(l) of the conversion process, and therefore the assumptions for them are therefore not crucial to the final result.

Generally defannuityfactor() = $(1 / (1 + i)^t) \times annuityfactor()$, as no allowance for mortality before retirement.

t = period to retirement,

taken as (normal pension age – AAvAge/DAvAge (as appropriate)²).

General assumptions for annuity/deferred annuity factors

- Mortality: PMA92mc (U=S179InputDate + 63 - AAvAge/DAvAge (as appropriate) for defannuityfactor1, defannuityfactor3, defannuityfactor5 and defannuityfactor7, U=OutputDate + 63 - AAvAge/DAvAge (as appropriate) for defannuityfactor2, defannuityfactor4, defannuityfactor6 and defannuityfactor8)
- Normal pension age: 63
- Age: AAvAge/DAvAge (as appropriate)²
- Sex: male
- Spouse's proportion: 0.5
- Proportion married at retirement: 80%
- Wife three years younger than member
- No allowance for pre-retirement mortality
- Where AAvAge or DAvAge > 63, an immediate annuity is used in place of a deferred annuity

b) Transforming assets from RelAcDate to OutputDate and the liabilities from S179InputDate to OutputDate

1) Liabilities

S179FullPLPre97@OutputDate

$$= S179FullPLPre97@S179InputDate \times (1 + i)^{(OutputDate - S179InputDate)}$$

S179FullIDLPre97@OutputDate

$$= S179FullIDLPre97@S179InputDate \times (1 + i)^{(OutputDate - S179InputDate)}$$

S179FullALPre97@OutputDate

$$= S179FullALpre97@S179InputDate \times (1 + i)^{(OutputDate - S179InputDate)}$$

Time periods (OutputDate – S179InputDate) measured in years and fractions of years.

And similarly for post 1997 liabilities

i = annualised yield on the FTSE Actuaries Government 15-Year Fixed Interest index as at OutputDate

² Details of the assumptions made where average ages have not been provided by schemes are set out at the end of this document.

II) Assets

Reflect returns likely to be earned or to have been earned on schemes' actual assets using, as far as possible, published information about returns on assets in different classes.

If AssetDate = RelAcDate,

$$\text{Equities@RelAcDate} = \text{S179InputAss} \times \text{Eq\%}$$

$$\text{FI@RelAcDate} = \text{S179InputAss} \times \text{FI\%}$$

$$\text{Prop@RelAcDate} = \text{S179InputAss} \times \text{Pr\%}$$

$$\text{Cash@RelAcDate} = \text{S179InputAss} \times \text{Ca\%}$$

$$\text{Insurance@RelAcDate} = \text{S179InputAss} \times \text{IP\%}$$

$$\text{Other@RelAcDate} = \text{S179InputAss} \times \text{Ot\%}$$

Then,

Equities@OutputDate

$$= \text{Equities@RelAcDate} \times \text{EqRet}(\text{RelAcDate}, \text{OutputDate})$$

Where

$$\begin{aligned} \text{EqRet}(\text{RelAcDate}, \text{OutputDate}) = & 55\% \times \left(\frac{\text{FTSE-Allshare TRI@OutputDate}}{\text{FTSE-Allshare TRI@RelAcDate}} \right) \\ & + 45\% \times \left(\frac{\text{MSCI World (gross) Total Return Index@OutputDate}}{\text{MSCI World (gross) Total Return Index@RelAcDate}} \right)^3 \end{aligned}$$

$$\text{FI@OutputDate} = \frac{\text{FI@RelAcDate} \times \text{FTSE-UK gilt TRI@OutputDate}}{\text{FTSE-UK gilt TRI@RelAcDate}}$$

Prop@OutputDate

$$= \text{Prop@RelAcDate} \times \text{EqRet}(\text{RelAcDate}, \text{OutputDate})$$

Cash@OutputDate

$$= \text{Cash@RelAcDate} \times (1 + \text{Cashreturn\%}(\text{RelAcDate}, \text{OutputDate}))$$

Cashreturn% estimated by rolling up Bank of England base rate from RelAcDate to OutputDate

³ MSCI index expressed in £ sterling terms

Insurance@OutputDate

$$= \text{Insurance@RelAcDate} \times \text{CompRet}(\text{RelAcDate}, \text{Outputdate})$$

Where

CompRet(RelAcDate, Outputdate) = Composite roll-up factor created based on 50% of the fixed interest roll-up factor above, 25% of the equity roll-up factor and 25% of the cash roll-up factor

$$\text{Other@OutputDate} = \text{Other@RelAcDate} \\ \times \text{CompRet}(\text{RelAcDate}, \text{Outputdate})$$

$$\text{S179Ass} = \text{S179Ass@OutputDate} \\ = \text{Equities@OutputDate} + \text{FI@OutputDate} \\ + \text{Prop@OutputDate} + \text{Cash@OutputDate} \\ + \text{Insurance@OutputDate} + \text{Other@OutputDate}$$

If AssetDate is earlier than RelAcDate

Derive the asset distribution at RelAcDate based on the given asset distribution at AssetDate, allowing for differential asset returns based on information on returns on different investments in the period AssetDate to RelAcDate. This is done using the formulae above. The asset distribution at RelAcDate is thereby calculated by normalising the total to 100%.

If AssetDate is later than RelAcDate,

Derive the asset distribution at RelAcDate based on the given asset distribution at AssetDate, allowing for differential asset returns based on information on returns on different investments in the period RelAcDate to AssetDate. In effect the roll-forward formulae above are used "in reverse" for the period from AssetDate back to RelAcDate and applied to the proportions of assets in each class as at AssetDate. The assets distribution at RelAcDate is thereby calculated by normalising the total to 100%.

c) Allowing for PPF benefit levels in the liabilities at output date

l) Conversion to protected liabilities

Pensioner liabilities

Different indexation in the PPF compared to the scheme rules (as reflected in the value of the liabilities after stage (a) and therefore in the S179Full*L variables calculated above).

S179PPFIndexPLPre97

$$= S179FullPLPre97@Outputdate \times \frac{\text{annuityfactor1}(S179rate@OutputDate)}{\text{annuityfactor2}(S179rate@OutputDate)}$$

annuityfactor1 and annuityfactor2 defined as in stage (a)(IV). annuityfactor1 is based on the discount rate set out in Version A3 of the s179 guidance on assumptions (the version in force at OutputDate). Note that annuityfactor2(S179rate@OutputDate) cancels with the factor of the same name at stage (a)(IV), and the assumptions for it are therefore not crucial to the final result.

S179PPFIndexPLPost97

$$= S179FullPLPost97@Outputdate \times \frac{\text{annuityfactor3}(S179rate@OutputDate)}{\text{annuityfactor4}(S179rate@OutputDate)}$$

annuityfactor3 and annuityfactor4 defined as at stage (a)(IV). annuityfactor3 is based on the discount rate set out in Version A3 of the s179 guidance on assumptions (the version in force at OutputDate). Note that annuityfactor4(S179rate@OutputDate) is the same as the factor of the same name at stage (a)(IV), and the assumptions for it are therefore not crucial to the final result.

Cut-backs to 90% and the cap for those under scheme normal pension age. These will affect only a small proportion of cases. Use a simple proportion, constant for all schemes of 97%.

S179CutbackPL

$$= 0.97 \times (S179PPFIndexPLPre97 + S179PPFIndexPLPost97)$$

Non-pensioner liabilities

Different indexation in payment and revaluation in deferment

S179PPFIndexDLPre97

$$= S179FullDLPre97@OutputDate \times \frac{\text{defannuityfactor1}(S179rate@OutputDate)}{\text{defannuityfactor2}(S179rate@OutputDate)}$$

S179PPFIndexALPre97

$$= S179FullALPre97@OutputDate \times \frac{\text{defannuityfactor3}(S179rate@OutputDate)}{\text{defannuityfactor4}(S179rate@OutputDate)}$$

defannuityfactor1, defannuityfactor2, defannuityfactor3 and defannuityfactor4 defined as at stage (a)(IV). defannuityfactor1 and defannuityfactor3 are based on the discount rates set out in Version A3 of the s179 assumptions guidance (the version in force at OutputDate). Note defannuityfactor2(S179rate@OutputDate) and defannuityfactor4(S179rate@OutputDate) cancel with the factors of the same names in stage (a)(IV), and therefore the assumptions for them are not crucial to the final result.

S179PPFIndexDLPost97

$$= S179FullDLPost97@OutputDate \times \frac{\text{defannuityfactor5}(S179rate@OutputDate)}{\text{defannuityfactor6}(S179rate@OutputDate)}$$

S179PPFIndexALPost97

$$= S179FullALPost97@OutputDate \times \frac{\text{defannuityfactor7}(S179rate@OutputDate)}{\text{defannuityfactor8}(S179rate@OutputDate)}$$

defannuityfactor5, defannuityfactor6, defannuityfactor7 and defannuityfactor8 defined as at stage (a)(IV). defannuityfactor5 and defannuityfactor7 are based on the discount rates set out in Version A3 of the s179 assumptions guidance (the version in force at OutputDate).

Note defannuityfactor6(S179rate@OutputDate) and defannuityfactor8(S179rate@OutputDate) cancel with the factors of the same names in stage (a)(IV), and therefore the assumptions for them are not crucial to the final result.

Cap

S179CutbackDL

$$= (S179PPFIndexDLPre97 + S179PPFIndexDLPost97) \times \text{CapD}$$

S179CutbackAL

$$= (S179PPFIndexALPre97 + S179PPFIndexALPost97) \times \text{CapA}$$

$$\text{CapD} = \text{CapA} = 0.98$$

Application of the 90% factor

$$S17990DL = 0.90 \times S179CutbackDL$$

$$S17990AL = 0.90 \times S179CutbackAL$$

II) Application of section 179 expenses

If S179InputGuiVNo = 2 or 3,

$$S179PayExp = S179InputPayExp$$

If S179INputGuiVNo = 1,

If S179InputTL > (S179InputPL + S179InputDL + S179InputAL)

$$S179PayExp = S179InputTL - (S179InputPL + S179InputDL + S179InputAL) - S179InputWUExp$$

Where

If (S179InputPL + S179InputDL + S179InputAL) < £50 million,

$$S179InputWUExp = (S179InputPL + S179InputDL + S179InputAL) \times 0.03$$

If £50 million =< (S179InputPL + S179InputDL + S179InputAL) < £100 million,

$$S179InputWUExp = (S179InputPL + S179InputDL + S179InputAL) \times 0.02 + £0.5 \text{ million}$$

If (S179InputPL + S179InputDL + S179InputAL) >= £100 million,

$$S179InputWUExp = (S179InputPL + S179InputDL + S179InputAL) \times 0.01 + £1.5 \text{ million}$$

Otherwise

$$S179PayExp = £350 \times PMemNo + £500 \times (AMemNo + DMemNo)$$

In all cases

If (S179CutbackPL + S17990DL + S17990AL) < £50 million,

$$S179WUExp = (S179CutbackPL + S17990DL + S17990AL) \times 0.03$$

If £50million =< (S179CutbackPL + S17990DL + S17990AL) < £100 million,

$$S179WUExp = (S179CutbackPL + S17990DL + S17990AL) \times 0.02 + £0.5 \text{ million}$$

If (S179CutbackPL + S17990DL + S17990AL) >= £100 million,

$$S179WUExp = (S179CutbackPL + S17990DL + S17990AL) \times 0.01 + \text{£}1.5 \text{ million}$$

$$S179Exp = S179PayExp + S179WUExp$$

III) Total liabilities on Section 179 basis

If S179InputGuiVNo = G3 then

$$S179TL = S179CutbackPL + S17990DL + S17990AL + S179Exp + S179InputExLiab$$

Otherwise

$$S179TL = S179CutbackPL + S17990DL + S17990AL + S179Exp$$

Summary of discount rate assumptions to be used in calculating annuity factors relevant to pensions with different levels of indexation and revaluation

Section 179 basis

The rates to be used at the initial stage (a)(IV) and the final conversion stage (c)(I), where the benefits considered are “protected liabilities” on the section 179 basis, are those laid out in the relevant version of the PPF’s guidance on performing section 179 valuations used in the Input section 179 valuation or in force at the OutputDate as appropriate. The following table sets out the derivation of discount rates for different pension increases on a basis consistent with this guidance.

Level of pensions increases in payment	Version of s179 guidance	Discount rate to use
RPI to maximum of 2.5%	V1, V2	50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 5 years assuming 5% inflation and 0% inflation – 0.5%
	G3/A3	Maximum of <ul style="list-style-type: none"> • 50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 5 years assuming 5% inflation and 0% inflation – 0.5% • Annualised yield on FTSE Actuaries

Level of pensions increases in payment	Version of s179 guidance	Discount rate to use
		Government 10 Year Fixed Index – 2.5%
RPI to maximum of 2%	G3/A3	Annualised yield on FTSE Actuaries Government 10 Year Fixed Index – 2%
RPI to maximum of 5%	G3/A3	Maximum of <ul style="list-style-type: none"> • 50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 5 years assuming 5% inflation and 0% inflation – 0.75% • Annualised yield on FTSE Actuaries Government 10 Year Fixed Index – 5%
RPI to maximum of 8%	G3/A3	Maximum of <ul style="list-style-type: none"> • 50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 5 years assuming 5% inflation and 0% inflation – 1% • Annualised yield on FTSE Actuaries Government 10 Year Fixed Index – 8%
RPI with a maximum of 5% and a minimum of p% (p>0)	G3/A3	Minimum of <ul style="list-style-type: none"> • Annualised yield on FTSE Actuaries Government 10 Year Fixed Index – p% • Maximum of <ul style="list-style-type: none"> • 50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 5 years assuming 5% inflation and 0% inflation – 1% • Annualised yield on FTSE Actuaries Government 10 Year Fixed Index – 5%

Level of pensions increases in payment	Version of s179 guidance	Discount rate to use
RPI with a maximum of 8% and a minimum of p% (p>0)	G3/A3	Minimum of <ul style="list-style-type: none"> • Annualised yield on FTSE Actuaries Government 10 Year Fixed Index – p% • Maximum of <ul style="list-style-type: none"> • 50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 5 years assuming 5% inflation and 0% inflation – 1.25% • Annualised yield on FTSE Actuaries Government 10 Year Fixed Index – 8%
None	V1, V2, G3/A3	Annualised yield on FTSE Actuaries Government 10 Year Fixed Index

Revaluation assumptions for pre-retirement discount rates

For the section 179 basis use:

Version of s179 guidance	Discount rate to use
V1, V2	50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 15 years assuming 5% inflation and 0% inflation – 0.5%
G3/A3	50% of the sum of the FTSE Actuaries Government Securities Index-Linked Real Yields over 15 years assuming 5% inflation and 0% inflation – 0.7%

Other discount rates, both pre and post retirement, for annuity and deferred annuity factors for full scheme benefits on the section 179 basis are not crucial to the final result, as the relevant annuity and deferred annuity factors cancel out.

Assumptions made where input information has not been provided

If total value of protected liabilities (S179InputTL) is provided, but S179InputPL, S179InputDL, S179InputAL and S179InputWUExp are missing:

• Liabilities for pensions in payment, possibly including expenses	S179InputPL	= 0.44 x S179InputTL
• Liabilities for deferred members, possibly including expenses	S179InputDL	= 0.24 x S179InputTL
• Liabilities for active members, possibly including expenses	S179InputAL	= 0.29 x S179InputTL
• Estimated costs of windup (excluding benefit installation/payment)	S179InputWUExp	= 0.03 x S179InputTL

If the proportions of liabilities relating to service before 6 April 1997 are not provided the following will be assumed:

• Proportion of pensioner liabilities, excluding expenses, relating to service before 6 April 1997	S179InputPPre97Ppn	= 0.9
• Proportion of deferred pensioner liabilities, excluding expenses, relating to service before 6 April 1997	S179InputDPre97Ppn	= 0.8
• Proportion of active member liabilities, excluding expenses, relating to service before 6 April 1997	S179InputAPre97Ppn	= 0.6

Where information on scheme pension indexation policy (IndMeth) is incomplete:

Fixed increases selected, but % not given	Assume zero increases
Percentage of the increase in the RPI, but % not given	Assume zero increases
Index linking with RPI up to a maximum, maximum not given	Assume zero increases
Index linking with RPI up to a maximum and minimum, maximum and minimum not given	Assume zero increases
Not applicable selected	Assume zero increases
Where more than one option has been selected or the information provided is unclear or misleading	Assume zero increases

Where the total of the percentages of the assets in each asset class (IP% + Eq% + FI% + Pr% + Ca% + Ot%) is less than 100% (or no breakdown is provided), Ca% will be increased to give a total of 100%.

If AMemNo + DMemNo+ PMemNo = 0 but total membership number, TotMemNo is provided then

• Pensioner members	PMemNo	= 0.45 x TotMemNo
• Deferred members	DMemNo	= 0.25 x TotMemNo
• Active members	AMemNo	= 0.3 x TotMemNo

Where average ages of different classes of members are not provided the following will be assumed

• Pensioner members	PAvAge	66
• Deferred members	DAvAge	46
• Active members	AAvAge	46

Note also that where average ages have been provided, if they fall out of particular ranges, they will be subject to the following adjustments

• Pensioner members	PAvAge	PAvAge>120 reduced to 66, minimum of 25
• Deferred members	DAvAge	DAvAge>75 reduced to 46, minimum of 25
• Active members	AAvAge	AAvAge>75 reduced to 46, minimum of 25