



Government
Actuary's
Department

Matthews 2 calculator

Input and output specification

13 October 2023

The Government Actuary's Department is proud to be accredited under the Institute and Faculty of Actuaries' [Quality Assurance Scheme](#). Our website describes [the standards we apply](#).



Data input specification

This section provides guidance on how to fill in the data fields in the calculator. The inputs are grouped together under the sections of the calculator they fall into, with additional information provided as necessary.

Inputs should reflect the eligible firefighter's position at the date of processing their application for a statement of their options under the exercise. Calculations should be re-run once any date of election to pay is known to get updated outputs.

The calculator performs some basic checks on the inputs provided, but ultimate responsibility for the accuracy of the inputs lies with the user. To support user understanding and building on knowledge gained from the first (2014) options exercise, fields have been colour coded as follows:

OLD	Fields that were present in the calculator for the first options exercise
M1	Inputs that should match what was provided in the calculator for the first option exercise
NEW	Fields that are new for this calculator

Not all sections will be applicable for eligible firefighter cases that are in scope for the first version of the (Matthews 2) calculator. These are labelled below. Functionality for these sections will be added in a future version of the calculator.

Basic details

The inputs summarised below are relevant for all cases and are enabled in the first version of the calculator.

	Name of field	Description
OLD	Name	Free text field not used in calculations
OLD	Unique identifier	Free text field not used in calculations
OLD	Address	Free text field not used in calculations
OLD	Date of birth	Used to calculate the date that Normal Retirement Age is reached
OLD	Calculation date	Date of processing the eligible firefighter's application for statement or election Interest will be included up to this date If the date of payment is unknown, an expected date can be used and the Calculator re-run once the date of payment is confirmed*

Name of field	Description
NEW	Was the member given a reasonable opportunity to take part in the first Matthews options exercise? Yes/No
NEW	Did the member elect to take part in the first Matthews options exercise? Yes/No Only required if field above is Yes Only record as 'Yes' if they elected to purchase benefits in first options exercise

*The calculator will not need to be re-run if the actual date of election is in the month of the calculation date for processing the eligible firefighter's application. This is because interest is calculated on a monthly basis.

Matthews 1 basic details

This section of inputs is only required if a member elected to purchase benefits in the first options exercise. The first version of the (Matthews 2) calculator will not process cases requiring these inputs, but they will be covered in the second version.

The inputs here should match the inputs used for the member in the first options exercise (where appropriate).

Name of field	Description
M1	Date of calculation for first options exercise Date up to 31/12/2015
M1	Start of the Mandatory Special Period for first options exercise (MSP1) Date between 01/07/2000 and 05/04/2006
M1	What was the special membership category at the time of the first options exercise? 'Special Firefighter Member', 'Special Deferred Member' or 'Special Pensioner Member'
M1	Did the member convert any standard to special membership as part of the first options exercise? 'Yes' or 'No'; cannot be 'Yes' if row below is 'Yes'
M1	Did the member convert any special to standard membership as part of the first options exercise? 'Yes' or 'No'; cannot be 'Yes' if row above is 'Yes'
NEW	Does the member want to undo this conversion? 'Yes' or 'No' Only required if one of the two fields above is 'Yes'

	Name of field	Description
NEW	Did the member cease paying periodic contributions for the first options exercise early without making a settlement payment?	Yes' or 'No' If 'Yes' case must be referred to GAD for processing. Please provide information on the payments that were made, and the amount of benefit ultimately purchased

First exercise conversion from standard membership to special membership

This section of inputs is only required if a member converted standard membership to special membership in the first options exercise and now wants to undo that conversion. The first version of the (Matthews 2) calculator will not process cases requiring these inputs, but they will be covered in the second version.

The inputs here should match the inputs used for the member in the first options exercise.

	Name of field	Description
M1	Start of membership in standard 2006 scheme	Member's start date in the standard 2006 scheme (must be a date between 06/04/2006 and date of calculation for first options exercise)
M1	End of membership in standard 2006 scheme	Member's last day of service in the standard 2006 scheme, prior to Mathews 1 election, before any conversion (must be a date between row above and 30/09/2015)
M1	Using past contributions or pay data?	'Contributions' or 'Pay data' Type of data being input in field below to calculate contribution adjustment Employer choice based on data available
M1	Standard 2006 scheme contributions paid OR Actual pensionable pay (as appropriate)	Type of data depends on row above Either contributions paid by the member or pensionable pay paid to the member; split by financial year 2006/07 to 2015/16
M1	Reference pay	Annual salary of full-time equivalent firefighter, split by financial year 2006/07 to 2015/16

First exercise conversion from special membership to standard membership (actives only)

This section of inputs is only required if a member converted special membership to standard membership in the first options exercise and now wants to undo that conversion. The first version

of the (Matthews 2) calculator will not process cases requiring these inputs, but they will be covered in the second version.

The inputs here should match the inputs used for the member in the first options exercise.

	Name of field	Description
M1	Start of membership in standard 2006 scheme	Member's start date in the standard 2006 scheme (date between 06/04/2006 and 31/03/2015)
M1	End of membership in standard 2006 scheme	Member's last day of service in the standard 2006 scheme, prior to Matthews 1 election, before any conversion (date between row above and 31/03/2022)
M1	Actual pensionable pay	Pensionable pay received by the member; split by financial year 2006/07 to 2015/16
M1	Reference pay	Annual salary of full-time equivalent firefighter; split by financial year 2006/07 to 2015/16

Matthews 2 details

This section of inputs is required for all cases. It is enabled in the first version of the (Matthews 2) calculator.

	Name of field	Description
OLD	Special membership category at the time of the second options exercise	Membership category at the calculation date 'Special Firefighter Member' (active), 'Special Deferred Member' or 'Special Pensioner Member'
NEW	Tax relief entitlement	Member's current marginal income tax rate Used to calculate periodic repayments Only required for active members
NEW	Latest or final reference pay	Used to calculate amount of pension the member is purchasing or converting For active members, this should be their current reference pay For deferred and pensioner members, this should be the reference pay at the date they left service
NEW	Date left service	Used to calculate amount of pension the member is purchasing or converting Only required for deferred or pensioner members
OLD	Converting membership from standard to special?	Yes/No; cannot be Yes if row below is Yes Only active and pensioner members can convert standard service to special service

OLD	Converting membership from special to standard?	Yes/No; cannot be Yes if row above is Yes Only active members can convert special service to standard service
-----	---	---

Mandatory Special Period Pension contributions

This section of inputs is required for all cases. It is enabled for the first version of the (Matthews 2) calculator.

Name of field		Description
OLD	Start of the Mandatory Special Period	Start date of service being purchased Must be before MSP1 start date (or 06/04/2006 if not offered first exercise)
OLD	End of the Mandatory Special Period	End date of service being purchased Members who took part in first exercise: must be day before the start date of the MSP1 Members converting special to standard (no M1): must be 05/04/2006 Members converting standard to special (no M1): between 05/04/2006 and date of leaving 2006 scheme Members not converting service (no M1): any date before 01/04/2015
OLD	Actual pensionable pay	Pensionable pay received by the member; split by financial year in the Mandatory Special Period This is the actual amount paid to the member in each financial year, not an annualised amount
OLD	Reference Pay	Annual salary of full-time firefighter in an equivalent role for each financial year in the Mandatory Special Period

Converting membership from standard membership to special membership

This section of inputs is only required for standard members who wish to convert standard membership to special membership as part of the second options exercise (available to active and pensioner members only). It is enabled for the first version of the (Matthews 2) calculator.

The start date of membership in standard 2006 scheme will be taken as the day after the end of the Mandatory special period, or the end of MSP1 for members who purchased benefits under the 2014 options exercise.

Name of field		Description
OLD	End of membership in standard 2006 scheme	Date the member left the standard 2006 scheme Must be on or before 31/03/2015 Any standard service after 31/03/2015 will be considered in the McCloud exercise
OLD	Using past contributions or pay data?	Type of data being input in field below to calculate contribution adjustment Employer choice based on data available
OLD	Standard 2006 scheme contributions paid OR Actual pensionable pay (as appropriate from above choice)	Contributions paid into the standard 2006 scheme OR Actual pensionable pay received by the member Value required for each financial year in the conversion period
OLD	Reference pay	Annual salary of full-time firefighter in an equivalent role for each financial year converted

Special pensioner member

This section of inputs is only required for special pensioner members. It is enabled in the first version of the (Matthews 2) calculator.

Name of field		Description
OLD	Normal or ill health pensioner?	Reason for member retiring 'Normal health' or 'Ill health' 'Ill health' cases where the firefighter was medically retired between 7 April 2000 and 5 April 2006 will need to be forwarded to GAD
OLD	Special membership category immediately prior to the pension commencement date	'Special Firefighter Member' or 'Special Deferred Member'
OLD	Special pension commencement date	Date the member's Special pension should have commenced For members retiring from active status: date between end of the Mandatory Special Period and calculation date For members retiring from deferred status: date of 60th birthday
OLD	Commutated lump sum	Amount of lump sum member received as a result of commuting pension

This section also includes calculated fields showing the user:

- the member's age at retirement (based on the special pension commencement date provided)
- the member's initial pre-commutation pension (based on the service being purchased/converted and final reference pay)
- the member's initial post-commutation pension (based on the pre-commutation pension and the commuted lump sum provided)

Pensioners already in receipt of a Standard 2006 scheme pension (normal or ill health)

This section of inputs is only required for special pensioner members who are converting their standard service to special service. It is enabled in the first version of the (Matthews 2) calculator.

	Name of field	Description
OLD	Normal or ill health pensioner?	Reason for member retiring 'Normal health' or 'Ill health'
OLD	Standard scheme pension commencement date	Date first payment of standard scheme pension was made Must be between 06/04/2006 and the calculation date
OLD	Date of last pension payment	Date a standard 2006 scheme pension payment was last made to the member Must be within the two-month period preceding the calculation date
OLD	Lump sum commuted at retirement	Amount of lump sum member received as a result of commuting pension
NEW	Lump sum payment at date of calculation for first options exercise	Amount of lump sum member received as a result of election for the first options exercise (where relevant and assumed paid at date of calculation for first options exercise) Only applies if the member was a special pensioner member at the first options exercise
OLD	Pension payments	Payments made to the pensioner in respect of pensionable service in the standard scheme Important: please exclude any pension payments in relation to transferred-in service (i.e., excluding pension due to periods of service which the member is entitled to count as pensionable service in accordance with rules 10 and 11 of Part 12 Schedule 1 to The Firefighters' Pension Scheme (England) Order 2006, as amended) Payments split by financial year

Converting membership from special membership to standard membership

This section of inputs is only required for standard members who wish to convert special membership to standard membership as part of the second options exercise. The first version of the (Matthews 2) calculator will not process cases requiring these inputs, but they will be covered in the second version.

	Name of field	Description
OLD	Start of membership in standard 2006 scheme	Member's start date in the standard 2006 scheme (date between 2006 scheme commencement (06/04/2006) and 31/03/2015)
OLD	Actual pensionable pay	Actual pensionable pay received by the member Value required for each financial year in the conversion period
OLD	Reference pay	Annual salary of full-time equivalent firefighter for each financial year converted

Pensioners already in receipt of a Special 2006 scheme pension (normal or ill health)

This section of inputs is only required for special pensioner members who have been in receipt of a special pension as a result of the first exercise and now wish to convert their special service to standard service. The first version of the (Matthews 2) calculator will not process cases requiring these inputs, but they will be covered in the second version.

	Name of field	Description
NEW	Normal or ill health pensioner?	Reason for member retiring 'Normal health' or 'Ill health'
NEW	Special scheme pension commencement date	Date first payment of Standard 2006 scheme pension was made Must be between 01/04/2014 and the calculation date
NEW	Date of last pension payment	Must be within the two-month period preceding the calculation date
NEW	Lump sum commuted at retirement	Amount of lump sum member received as a result of commuting pension
NEW	Pension payments	Total of the gross monthly pension payments paid to the member for each financial year that the pension has been in payment

Calculator outputs specification

This section describes the outputs generated for each of the groups described in the data input specification above.

Outputs will only appear for the sections where inputs have been provided. Output fields have been colour coded as follows for user convenience.

CONT	The amounts the firefighter will need to pay (or for pensioners, will receive) when taking-up their options under the second Matthews options exercise. This includes subtotals for each option choice (e.g., Mandatory Special Period, Conversion, undoing Conversion)
EXPL	Amounts which explain the member contributions amount (e.g., interest element included)
BENE	Amounts of service and pension purchasable under their options at this (Matthews 2) exercise

First exercise conversion from standard membership to special membership

These outputs show the refund due to the member if they elect to undo a standard to special conversion made in the first options exercise. These cases won't be processed by the first version of the (Matthews 2) calculator, but they will be produced where relevant in the second version.

	Name of field	Description
EXPL	Refund due to member	Total refund due to the member across all months and years This number includes tax relief but does not include interest
EXPL	Interest on refund due to the member	Total amount of interest on the refund due to the member across all months and years
CONT	Total amount due to the member	Sum of the above two values
BENE	Amount of service converted	Service in years and months being converted from the 2006 standard scheme to the 2006 special scheme
BENE	Annual special pension per annum gained	Amount of additional special scheme pension per year the member will receive from the calculation date For active members, this is based on their latest reference pay For deferred and pensioner members, this is based on their final reference pay and uplifted for pension increases to the calculation date

BENE	Annual standard pension per annum lost	<p>Amount of standard scheme pension per year the member will lose from the calculation date</p> <p>For active members this is based on their latest reference pay</p> <p>For deferred and pensioner members, this is based on their final reference pay and uplifted for pension increases to the calculation date</p>
------	--	---

First exercise conversion from special membership to standard membership (actives only)

These outputs show the additional contributions due from the member if they elect to undo a standard to special conversion made in the first options exercise. These cases won't be processed by the first version of the (Matthews 2) calculator, but they will be produced where relevant in the second version.

	Name of field	Description
EXPL	Contributions due to the scheme	<p>Total amount of contributions due from the member across all months and years</p> <p>This number includes tax relief but does not include interest</p>
EXPL	Interest on contributions due to scheme	Total amount of interest on the contributions due from the member across all months and years
CONT	Total amount due to scheme	Sum of the above two values
BENE	Amount of service converted	Service in years and months being converted from the 2006 special scheme to the 2006 standard scheme
BENE	Annual standard pension per annum gained	<p>Amount of additional standard scheme pension per year the member will receive from the calculation date</p> <p>For active members this is based on their latest reference pay</p> <p>For deferred and pensioner members, this is based on their final reference pay and uplifted for pension increases to the calculation date</p>
BENE	Annual special pension per annum lost	<p>Amount of special scheme pension per year the member will lose from the calculation date</p> <p>For active members this is based on their latest reference pay</p> <p>For deferred and pensioner members, this is based on their final reference pay and uplifted for pension increases to the calculation date</p>

Mandatory Special Period Pension contributions

These outputs show the additional contributions due from the member for purchasing MSP, and the amount of service and pension they are purchasing. These outputs will be provided from the first version of the calculator.

	Name of field	Description
EXPL	Contributions due to scheme	Total amount of contributions – excluding tax relief and interest – the member owes the scheme for purchasing the MSP service
EXPL	Tax relief on contributions	Total amount of tax relief applied to contributions the member owes the scheme for purchasing the MSP service
EXPL	Interest on contributions	Total amount of interest charged on contributions the member owes the scheme (net of tax relief) for purchasing the MSP service
CONT	Total amount due to the scheme	Total amount of contributions net of tax relief plus interest the member owes the scheme for purchasing the MSP service
CONT	Periodic contributions for service on or after 1 July 2000 (monthly payments spread over 10 years)	Monthly cost to the member if they decide to spread the lump sum contribution relating to service being purchased on or after 1 July 2000 over a period of 10 years Output for active members only
EXPL	Total interest on periodic contributions for service on or after 1 July 2000	Total amount of interest that would be paid if the member paid the periodic contributions above for the whole 10-year period Output for active members only
CONT	Periodic contributions for service before 1 July 2000 (monthly payments spread over 20 years)	Monthly cost to the member if they decide to spread the lump sum contribution relating to service being purchased before 1 July 2000 over a period of 20 years Output for active members only
EXPL	Total interest on periodic contributions for service before 1 July 2000	Total amount of interest that would be paid if the member paid the periodic contributions above for the whole 20-year period Output for active members only
BENE	Amount of mandatory special period service being purchased	Total amount of MSP service being purchased
BENE	Annual special pension per annum being purchased	Amount of additional pension per annum the member would receive for the MSP service being purchased For active members this is based on their latest reference pay For deferred and pensioner members this is based on their final reference pay and uplifted for pension increases to the calculation date

Converting membership from standard membership to special membership

These outputs show the additional contributions due from the member for converting existing standard scheme service to special scheme service. It also shows the amount of service they are converting, the amount of special scheme pension being gained, and the amount of standard scheme pension being lost. These outputs will be provided for relevant cases from the first version of the calculator.

	Name of field	Description
EXPL	Contributions due to scheme	Total amount of contributions – excluding tax relief and interest – the member owes the scheme for converting service
EXPL	Tax relief on contributions	Total amount of tax relief applied to contributions the member owes the scheme for converting the service
EXPL	Interest on contributions	Total amount of interest charged on contributions the member owes the scheme (net of tax relief) for converting the service
CONT	Total amount due to the scheme	Total amount of contributions net of tax relief plus interest the member owes the scheme for converting the service
CONT	Periodic contributions (monthly payments spread over 10 years)	Monthly cost to the member if they decide to spread the lump sum contribution over a period of 10 years Output for active members only
EXPL	Total interest on periodic contributions	Total amount of interest that would be paid if the member paid the periodic contributions above for the whole 10-year period Output for active members only
BENE	Amount of service being converted	Service in years and months being converted from the 2006 standard scheme to the 2006 special scheme
BENE	Annual special pension per annum gained	Amount of additional special scheme pension per year the member will receive from the calculation date For active members this is based on their latest reference pay For deferred and pensioner members this is based on their final reference pay and uplifted for pension increases to the calculation date
BENE	Annual standard pension per annum being lost	Amount of standard scheme pension per year the member will lose from the calculation date For active members this is based on their latest reference pay For deferred and pensioner members this is based on their final reference pay and uplifted for pension increases to the calculation date

Special pensioner member

These outputs show the amount of backdated special pension payments owed to the member, including interest owed to the member on those payments. These outputs will be provided for relevant cases from the first version of the calculator.

	Name of field	Description
CONT	Lump sum to backdate pension payments and commuted lump sum (this includes interest, but is prior to any deductions, e.g., for member contributions)	Total amount of backdated special pension payments owed to the member
EXPL	Interest included in lump sum above	Amount of interest included in the value in the field above

Pensioners already in receipt of a standard 2006 scheme pension (normal or ill health)

These outputs show the refund owed to the scheme by the member for standard scheme pension payments already received. A pensioner member owes this if they are converting standard scheme service to special scheme service. The additional backdated special scheme pension the member will receive in exchange is reflected in the [Special pensioner member outputs](#). These outputs will be provided for relevant cases from the first version of the calculator.

	Name of field	Description
CONT	Lump sum value of standard pension payments already received (this includes interest)	Total amount of standard pension – including interest – owed by the member to the scheme
EXPL	Interest included in lump sum	Total amount of interest included in the value above.

Converting membership from special membership to standard membership

These outputs show the additional contributions due from the member for purchasing MSP service and converting it to standard scheme service. It also shows the amount of service they are converting; the amount of standard scheme pension being gained; and the amount of special scheme pension being lost. These cases won't be processed by the first version of the (Matthews 2) calculator, but they will be produced where relevant in the second version.

	Name of field	Description
EXPL	Contributions due to scheme	Total amount of contributions – excluding tax relief and interest – the member owes the scheme for converting service
EXPL	Tax relief on contributions	Total amount of tax relief applied to contributions the member owes the scheme for converting the service

EXPL	Interest on contributions	Total amount of interest charged on contributions the member owes the scheme (net of tax relief) for converting the service
CONT	Total amount due to the scheme	Total amount of contributions net of tax relief plus interest the member owes the scheme for converting the service
CONT	Periodic contributions (monthly payments spread over 10 years)	Monthly cost to the member if they decide to spread the lump sum contribution over a period of 10 years Output for active members only
EXPL	Total interest on periodic contributions	Total amount of interest that would be paid if the member paid the periodic contributions above for the whole 10-year period Output for active members only
BENE	Amount of service being converted	Service in years and months being converted from the 2006 special scheme to the 2006 standard scheme
BENE	Annual standard pension per annum gained	Amount of additional standard scheme pension per year the member will receive from the calculation date For active members this is based on their latest reference pay For deferred and pensioner members this is based on their final reference pay and uplifted for pension increases to the calculation date
BENE	Annual special pension per annum being lost	Amount of special scheme pension per year the member will lose from the calculation date For active members this is based on their latest reference pay For deferred and pensioner members this is based on their final reference pay and uplifted for pension increases to the calculation date

Pensioners already in receipt of a special 2006 scheme pension (normal or ill health)

These outputs show the refund owed to the scheme by the member for special scheme pension payments already received. A pensioner member owes this if they are converting special scheme service to standard scheme service. They will receive additional backdated standard scheme pension in exchange. These cases won't be processed by the first version of the calculator, but they will be produced where relevant in the second version.

	Name of field	Description
CONT	Lump sum value of special pension payments already received (this includes interest)	Total amount of special pension – including interest – owed by the member to the scheme
EXPL	Interest included in lump sum	Total amount of interest included in the value above.

Summary

This section summarises the outputs of all of the above sections for the member.

	Name of field	Description
CONT	Total amount due to scheme	Sum of total amounts due to the scheme across all sections
CONT	Total amount due to member	Sum of total amounts due to the member across all sections
CONT	Net amount due to the scheme	Total amount due to the scheme less total amount due to the member A negative amount is money owed to the member
CONT	Periodic payments (10 yrs.)	Sum of monthly payments being spread out over 10 years across all sections
CONT	Periodic payments (20 yrs.)	Sum of monthly payments being spread out over 20 years across all sections
BENE	Change to special service	Change to the member's special service accrued in years and months
BENE	Change to annual special pension	Change to the member's special pension received per annum as of the calculation date
BENE	Change to standard service	Change to the member's standard service accrued in years and months
BENE	Change to annual standard pension	Change to the member's standard pension received per annum as of the calculation date