Lisbon School of Economics & Management
Universidade de Lisboa

MASTER

ACTUARIAL SCIENCE

MASTER'S FINAL WORK

INTERNSHIP REPORT

GUARANTEED MINIMUM PENSION (GMP) EQUALISATION IMPACT ON INDIVIDUAL TRANSFER VALUES

TAHANI BINTI ABD WAHAB

OCTOBER 2022

Lisbon School
of Economics
& Management
Universidade de Lisboa

MASTER

ACTUARIAL SCIENCE

MASTER'S FINAL WORK

INTERNSHIP REPORT

GUARANTEED MINIMUM PENSION (GMP) EQUALISATION IMPACT ON INDIVIDUAL TRANSFER VALUES

TAHANI BINTI ABD WAHAB

SUPERVISOR

BEATRIZ TAVARES
AGNIESZKA IZABELLA BERGEL

OCTOBER 2022

This task is specially dedicated to dear self, families, close friends and lecturers who have been supporting me throughout this journey of indulging in the working life. Those endless encouragement meant the world to me especially during this pandemic period. May God bless you all with His endless blessings and good health.

- Tahani

ABSTRACT

Guaranteed Minimum Pension (GMP) was founded in April 1978, and it is minimum pension paid when member reached age 65 for male and age 60 for female. Prior to year 1978, the overall payment of the state pension is covered by the government of United Kingdom (UK) but after that period, private pension schemes were given the authorization to supplement part of the pension. The main purpose of GMP is to reconstruct State Earnings Related Pension (SERPS) and ensuring employee that is excluded of SERPS between period, April 6, 1978 and April 5, 1997 to obtain their deserved pension.

There are several factors to be taken into consideration to produce the GMP values such as gender, Date of Birth (DOB), Date of Joining scheme (DOJ), Date of Leaving (DOL), Normal Retirement Date (NRD), Normal Retirement Age (NRA) and whether there is Transfer-In (TV in) during the period of GMP. The GMP age varies for respective gender including the rate used and this leads to the inequalisation of pension values despite the same amount of jobs. Therefore, GMP equalisation was founded to equalise the amount of pension obtained by both genders.

Keywords: Pension Schemes UK, Defined Benefits, Guaranteed Minimum Pension, Equalisation

ACKNOWLEDGEMENTS

This Internship Report was done during COVID-19 Pandemic period dated from March to July 2021 at Lisbon School of Economics and Management (ISEG). This report was purely done based on the experience I went through during my precious five months venturing in working life.

I would like to take this opportunity to express my utmost gratitude to my supervisor from ISEG, Professor Agnieszka Izabella Bergel for always supporting this journey since the beginning I proposed this topic, for always constantly updating on my progress until the end of the reviewing process. Thank you for guidance and encouragement in making sure everything was done as prescribed.

I am also beyond grateful to Mercer company for assigning an experienced and helpful supervisor, Beatriz Tavares. Despite her busy and well occupied schedule, she still manage to allocate times for me to be able to come out with this final report. Not to forget, my Manager, Vera Caleia for providing me the room to learn the process of GMP and regarding the Individual Technical Calculation (ITC) itself. Also to Mercer, for giving me the opportunity and materials to study on this topic.

Some special words to my friend, Farhanah and Shadri for always supporting and encouraging me to do my best in everything. No words could describe how grateful I am to have people who are willing to help me sail the boat in the right direction despite the time zone difference.

Finally, I have to thank both my parents and families for always showing how proud they are of what I am striving to achieve and for continuously giving me the extra strength and motivation to get things done as planned. This report is specially dedicated to them.

Table of Contents

ABBREVIATIONS AND ACRONYMS

Table below shows the list of Abbreviations and Acronyms that was used during my internship period and will be used throughout this report too.

Abbreviations/Acronyms	**Note(s)**
CARE	Career Average Revalued Earnings
CETV	Cash Equivalent Transfer Values
CO	Consultant
CPI	Consumer Price Index
DB	Defined Benefit
DC	Defined Contributions
DCPS	Date Commenced Pensionable Service
DOB	Date of Birth
DOC	Date of Calculation
DOJ	Date of Joining
DOL	Date of Leaving
FPS	Final Pensionable Salary
GMP	Guaranteed Minimum Pension
GMPA	Guaranteed Minimum Pension Age
GMPD	Guaranteed Minimum Pension Date
ITC	Individual Technical Calculation
LPI	Limited Price Index
LRF	Late Retirement Factor
NIC	National Insurance Contributions
NRA	Normal Retirement Age
NRD	Normal Retirement Date
OECD	Organisation for Economic Co-operation and Development
O&T	Operations and Technology
PSPSs	Public Service Pension Schemes
RPI	Retail Price Index
SERPS	State Earnings Related Pension Schemes
SPA	State Pension Age

TVin	Transfer-In
TV	Transfer Value
UK	United Kingdom
USA	United States of America
VBA	Visual Basic for Applications
WAS	Wealth Solutions, Advanced Analytics, Sales Enablement
XS	Excess

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

This report is the result of five months of internship period at Valuation Services department for Mercer company. Mercer is a part of business of Marsh McLennan. It focuses on world's class professional services in the areas of risk, strategy and people.

As starting we were introduced to the core values, business and executive leadership team of Marsh McLennan then, we went through a deeper introduction on Mercer. Daily trainings were either given by trainers or self-training arranged by the manager and it lasted for a month before we were split into respective departments assigned. There were a lot of things that we learned and most of the trainings given were followed by an assessment to test on our understanding and the effectiveness of the trainings that were delivered by the trainers. Some of the topics and field of training that we all had to digest as a newcomer: Introduction to Excel, Introduction to WAS, Welcoming Operations and Technology (O&T), Actuarial Induction, Scheme Return, Studio Induction, UK Transactions Service and UK Individual Technical Calculation (ITC).

On top of that, I also had training sessions from Trustee Toolkits which help me to understand the topics delivered by the trainers deeper and in advance. There are 7 topics including assessment: Introduction to Pension Schemes, Pensions Law, UK Wealth Business I, UK Wealth Business II, The Trustee's Role, How a DB Scheme Works, Funding DB Schemes, and Introduction to Investment. I would say that these are a very good initiative by the company in ensuring that we really understand the flow of the task and job that we will be doing. Besides the creative way of presentation that was done in storyline that we found it very interesting and informative.

In summary, the training sessions were very helpful for beginners to understand the company as well as the job in pension and actuarial line of the business. In my case, it really broadens my perception of working in this field because all the theory that I studied was finally being practiced and finally I was able to relate into the real situation. I was taught by a very experienced worker who uses examples from clients before I really started doing it on

my own. There were also other colleagues that were very helpful in terms of showing and I could always count on them when I needed help or clarifications. I was truly grateful for being surrounded by a very supportive and well-experienced circle.

I chose to study a topic on GMP Equalisation on Individual Transfer Values in the UK for this company. I found it interesting when I was allocated in the UK Team as it was not a common thing for me. I came from ASEAN countries and was not really exposed to the pension system in the UK even during my previous internship in Malaysia.

The GMP inequalities between male and female has been an issue since 1978, when it was officially no longer part of State Scheme Pension but the Private Scheme Pension. On 17 May 1990 (the date of the Barber judgment), UK Defined Benefit has been required to equalise the amount of pension given regardless of the gender. However, no action was taken by most schemes because there was no definite way and clear guidelines on how to proceed with the GMP inequalities, which leads to inaccuracy of the individual benefits obtained. Long after that, the Lloyds has finally provided the clarification for trustees and company of DB to apply the equalisation process.

Therefore, this report will show the flows of my internship in reporting the methods used for equalisation. I was in charge of doing calculation for individual transfer values for the scheme allocated to me. For instance, company A would require our team to calculate the amount of transfer values for their employees. This report was written with the purpose of sharing information on GMP equalisation clearly followed by examples of calculation for several different scenarios. It starts with the introduction on ITC department and GMP. Then, Chapter 2 explained on the goal of UK State Pension Scheme while Chapter 3 focused on Methodology applied for UK system inclusive of market statistics, assumptions implemented, GMP and the difference between switch and temporary annuities. Next in Chapter 4, I explored more on one of the GMP Equalisation method used. The C2 default method for equalising GMPs is to use a dual-records system, with checks performed at each pension increment to ensure that the aggregate amount received by the member and a standard comparison of the opposite sex are equal. In conclusion I wrapped up with overall system of GMP Equalisation on Individual Transfer Values.

2. UK PENSION SYSTEM

2.1 UK State Pension System

A pension scheme is simply a type of savings plan to help you save money for the future, including tax advantages received compared to the other types of savings (moneyhelper.org.uk) as stated in [11]. On the other hand, pension is defined as a retirement plan that requires an employer to make contributions to a fund apart from their own saving for the worker's own future benefit. This fund is then invested on behalf of the employee in variety type of investment depending on the company. Once profits are obtained from the investments, it then generates income to the workers upon retirement as stated in [8].

There are two main categories for pension schemes or retirement plans; Defined Benefit (DB) and Defined Contribution (DC). The main difference is the benefits that each plan promises for its employees. In Mercer, we mostly implement DB that is a type of deferred compensation plan, which is established and maintained by the employer primarily to provide definite determinable benefits to its employees usually over a period of years, or for life, after the retirement (Medicare, 2014) as stated in [9]. DC is when contribution amount is invested and the benefit at retirement is the result from the performance of investment. There are a few type of members which are listed below;

1. Active: Member currently in employment and accruing pension.
2. Deferred: Member who left the scheme (company) and has the right to receive a “deferred pension” at Date of Leaving (DOL) and will no longer accumulate service after DOL.
3. Pensioner: Member pension is already in payment.

UK pensions are split up over periods due to legislation enforcement coming that requires pension treatment to meet the minimum requirements as in Table 1 for example. However, these range periods as presented are scheme specific which are mostly used. Post A may represent any year between 1997 and 2009 and the increase in payment rate may be Consumer Price Index (CPI) or Retail Price Index (RPI). Apart from that, post 1997 is the year after 1997 that a member left a

scheme. CPI is the weighted average prices of goods and services consumed by households while RPI is a measure of consumer inflation which considers the changes in retail prices of goods and services. Excess (XS) represents the range which is in excess of the GMP benefits and revaluation in deferment of S84 orders is the rate used for number of years passed since the DOL.

Accrual Period	Revaluation in Deferment (only apply to deferred members)	Increase in Payment
Post 2009	S84 orders – 2.5% p.a. cap	RPI up to 2.5% p.a.
Post A	S84 orders – 5% p.a. cap	RPI up to 2.5% p.a.
Post 1997	S84 orders – 5% p.a. cap	RPI up to 5% p.a.
Pre 1997 XS (Revaluing)	S84 orders – 5% p.a. cap	0%
Pre 1997 XS (Non-Revaluing)	No revaluations	0%
Post 88 GMP	Fixed/S148/Limited	CPI up to 3% p.a.
Pre 88 GMP	Fixed/S148/Limited	0%

Table 1: Rate of revaluation in deferment and increase in payment with respect to each accrual period
Source: Mercer, 2020 [10]

Besides, pensions are normally considered based on individual's Final Pensionable Salary (FPS) or Career Average Revalued Earnings (CARE). Table 2 shows an example to distinguish between the two methods.

FPS	Example: Member whose final salary is £40,000, who worked for 10 years, and has an accrual rate of 80ths would have an annual pension of £5,000. **£40,000 x 10 x 1/80 = £5,000** **FPS** x Pensionable Time Service x Accrual Rate
CARE	Pension accrued in "blocks" annually, and revalued to retirement. The blocks are calculated the same way as final salary, on an annual basis rather than the same salary over all service years. In addition, it is important to note that salary of a member may change every year and the accrual rate may vary. Therefore, the calculation may be more complex. $\sum_{n=1}^{i} Salary\ (year\ n)\ x\ Acrual\ (year\ n)$; i : Number of years of service

Table 2: Difference between FPS and CARE method
Source: Mercer, 2020 [10]

The UK government has an occupational pension system which is applied to those who have worked in the UK and contributed to National Insurance (NI) payments which is the tax that is paid on earnings. This benefit will be given to an individual or to the spouse if the individual deceased earlier than the retirement age. The duration for the benefits may vary according to the policy of the company, such as the pensioner may be given the benefits until he died or up to a certain age.

There are three main types of UK Pension System:

a. The Current State Pension System
b. The Private Pension System
c. Public Service Pension Schemes

a. <u>The Current State Pension System</u>

In the UK, the statutory state pension system consists of a basic state pension and an earnings-related additional pension known as the state second pension. (HM Treasury, 2014)[5]. This is mandatory for all tax payors and financed using the National Insurance Contributions (NICs).

Currently, men who are 65 years and older are eligible for state pensions. Since 2018, the legal retirement age (SPA) for women has increase from 60 years to 65 years for equlisation purpose. Currently the SPA in use is 66 years old for both genders. The full basic state pension of £113.10 per week (2014/15) currently requires a 30-year NIC (which may include national insurance credit) for men and women. In addition, the basic state pension cannot be withdrawn before the statutory retirement age, but it can be deferred to allow for a higher state pension (10.4% deferred annually) or a lump-sum interest payment (up to 2.0% per year beyond the Bank of England). The changes to the SPA are aimed at bringing women's SPA into line with men's, and taking into account of mobility improvements.

The law requires the state basic pension to be increased annually at least in line with average earnings, but it is at the discretion of the government to increase it at different rate. Since 2011, the government has chosen to increase the state pension in the "triple lock"

which guarantee that the state pension would not depreciate in real terms, and would at least rise in line with inflation. It is called “triple lock” because it works a safeguard with additional securement of three different measures include either highest average income, CPI or 2.5%. Although increase in state basic pension happens every year since 2011, the triple ban is not presented in law which means it does not meet the criteria to be included in these projections which are increased annually (at least according to the prices and the guaranteed minimum amount of the pension credit, in terms of income).

Individuals of SPA have to get admission to Pension Credit, a means-examined advantage comprising Guarantee Credit, an increment primarily based totally on a weekly minimal income. Also, Savings Credit for the elderly aged 65 or more who are rewarded for making financial savings for their retirement. In addition, pensioners will receive a number of associated benefits such as healthcare, journey and gas payments. On top of that, there is separate pension for incapable employee in the UK – the state benefits are given to the one that is not able to work due to incapability, and that is categorized separately from the state pensions system.

In April 2016, new state pension (previously known as single tier) has been founded. The purpose of this system is to provide an individual with a simpler and fairer pension and also give additional certainty regarding proportion they expect to receive from the state upon retirement. It will be purely based on own individual’s contributions, instead of NIC record of their spouse.

Figure 1 shows the difference between the current system and single tier. The purpose of having the current system is to reduce the difference in the amount of benefits received at SPA as presented by the flattened black bar chart. In order to obtain a new state pension, it requires at least 10 years of eligibility, and 35 years of contributions to get the full amount.

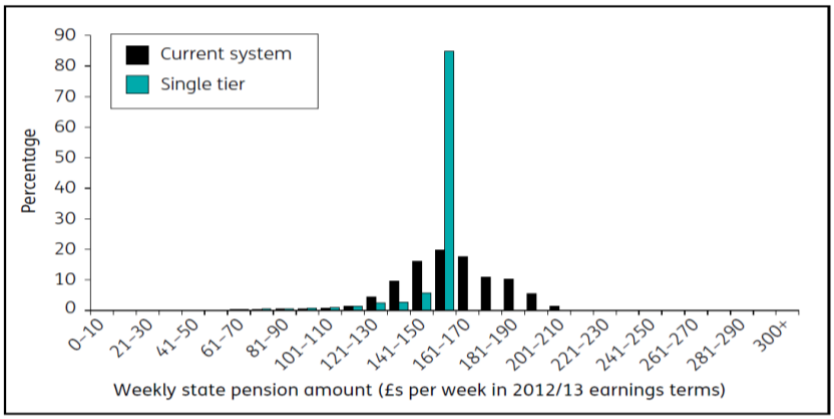

Figure 1: Different percentage between current system and single tier
Source: HM Treasury, 2014 [5]

b. The Private Pension System

As mentioned earlier, in Mercer we mostly work with DB. Employers are responsible to register their employees in a pension plan such as National Employment Savings Trust (NEST) that has been established for employer used. It is a defined contribution pension scheme in the UK and works as part of the government's workplace pension reforms under the Pensions Act 2008 to provide automatic enrolment.

In 1988, private pension system was established with the aim to provide a personal method of saving for retirement to those working as a freelancer or those who often change jobs. Private pensions are a big part of DC schemes and government gives tax relief with limit on contributions to private pensions. Employees then have the choice during retirement, to grab up to 25% of the fund as a tax-free lump sum or others taxed at their marginal rate for every additional money earned as income.

Starting April 2015, individuals who own DC savings will be able to cash out these savings according to income tax rate and rules of the scheme. Other than that, government initiate impartial guidance system so that retirees are aware on the available options. Private pensions have a minimum retirement age of 55, and 57 by 2028.

c. Public Service Pension Schemes (PSPSs)

In the UK, there are eight main categories of company pension plans for public sector employees. These pension schemes are named after PSPSs and make additional payments to the independent statutory pension and also based on the member's length of service and income. The benefits of the scheme vary for each plan; some are based on the member's recent salary and others based on the member's average income. These systems also provide different accrual and revaluation rates, normal retirement ages, government employer and employee contribution rates, flat rates, and index rates.

Figure 2 shows the percentage of 8 largest PSPSs pension spending relative to spending on State Pension. This proves that PSPSs schemes have a small proportion over time.

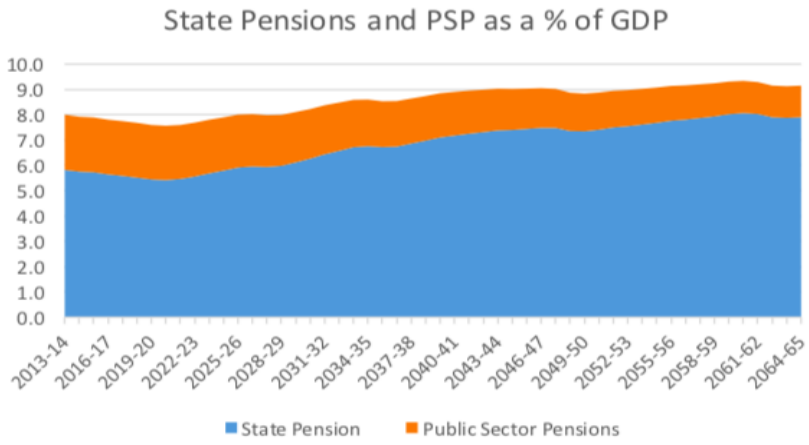

Figure 2: State Pensions and PSP as a percentage of GDP
Source: HM Treasury, 2014 [5]

In 2011, strong contribution to sustainability of PSPS system was due to change of indexation from RPI to CPI. Besides that, reduction of PSPS expenditure and rising of sustainability of the system in 2013 was affected by different calculation based on final salary or average salary.

2.2 Guaranteed Minimum Pension (GMP) Rectification

The process of correcting the benefits for members is known as *GMP Rectification*. Timeline below display the process on the growth of GMP.

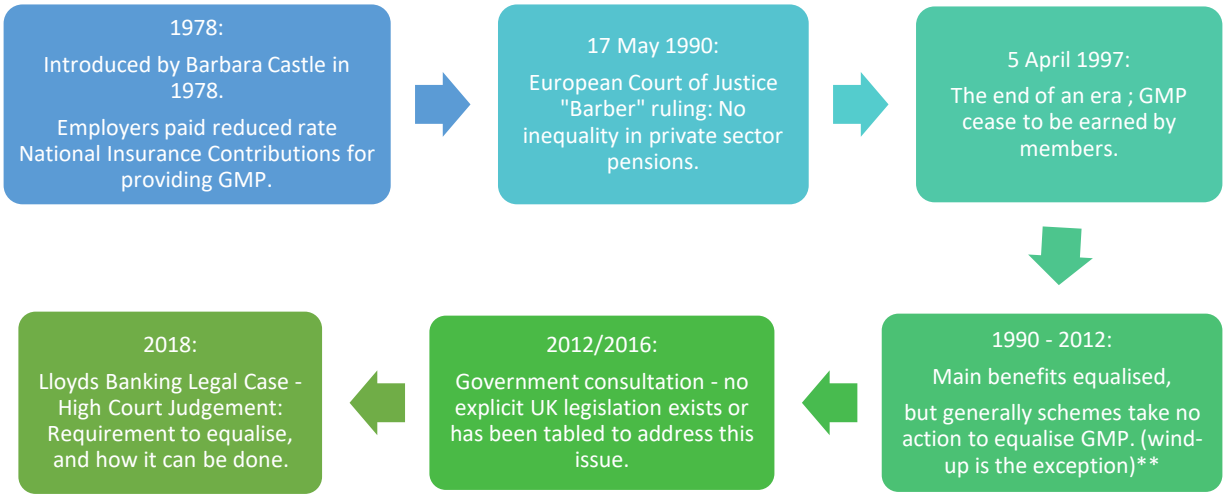

Figure 3: History of GMP
Source: Mercer, 2020 [10]

** The scheme stops to exist, after the scheme used to guarantee member benefits and any excess amount has been either given to members or returned to the employer.

Figure 4: Ranges normally used in Calculation Logs
Source: Mercer, 2019 [4]

Company must provide a GMP for range before 6 April 1997 and after 6 April 1997. There are specific characteristics of GMP which are as follows:

1. Accrued between 6/4/1978 and 5/4/1997;
2. Differences between GMP accrued before and after 6/4/1988;
3. Different increases in payment

4. Retirement Age:
   - GMP Age
   - It is different to SPA and NRA
   - It is at age 60 for females and at age 65 for males.

There are three different pension ages in the UK:

1. SPA: Age at which the state benefits become payable.
2. Normal Retirement Age (NRA): Age at which member becomes automatically entitled to benefit from his/her pension scheme.
3. GMP Age: Age at which a member becomes entitled to GMP benefits.

GMP is split into two components:

1. Pre 88 GMP
   It is accrued between 6/4/1978 and 5/4/1988.

2. Post 88 GMP
   It is accrued from 06/04/1988 to 05/04/1997.

For GMP equalisation purpose to be relevant, the benefits are accrued between 17 May 1990 and 5 April 1997.

Overall, the objective of presenting this report is to document on steps to adjust non-GMP benefits so that the total benefits received by male and female members with equivalent age, service and earnings histories are equal. It is supposed that male and female join on the same date, were paid exactly the same, and left on the same date having accrued the same total pension. However, given that females typically have a shorter working lifetime than males (as GMP age is 5 years earlier), they accrue GMP at a higher rate. In this situation, the female has a higher proportion of GMP than the male and this can be paid from age 60 instead of 65.

3. METHODOLOGY

3.1 Individual Technical Calculation (ITC)

This service has been in WAS Portugal since March 2011, within the Actuarial Transactions center. It has started with a small team of 4 members doing calculations for 20 schemes and afterwards the staff increased to 12 members in the end of 2017, doing calculations for 100 schemes. In 2018 the number of scheme increased to 350, which caused the company to hire more staff to 45 members. Currently the team has 41 members divided into 5 small teams working with 360 schemes.

To be able to perform the task in the ITC department, it is important to have actuarial skills and knowledge about UK Pension Plans. This team also works directly with all UK Mercer offices and enable consultants (CO) to focus more on clients and growth of the business. Besides that, the calculations are being performed by the team and also the team is in permanent contact with Actuarial Teams and Schemes Administrators. The main purpose of the team is to increase flexibility to manage and accommodate demand and greater outputs given the short deadlines for a high volume of short duration transactions.

Besides, it promotes an even higher consistency, quality and efficiency through:

1. Processes and tools that have been improved.
2. Best practices from other services/locations being implemented.
3. Work carried by a specialized and focused team on individual calculations for UK.
4. Work closely with actuarial team to share knowledge and to bring a more efficient process.

There are five main management for the calculations handled by the ITC team:

1. Cash Equivalent Transfer Values (CETV);
2. Transfer Value Bulks;
3. Trivial Commutations;
4. Pension Sharing Orders (PSO);
5. Retirement Quotes.

Services provided by UK ITC Team involves:

1. Once the calculations requests are received, the team needs to validate the members information, query any outstanding items, perform the calculation and prepare a memo/letter to the member.
2. Do and check all calculations and for approximately one-third of them do the evaluation for the colleagues' performance without intervention from Consultant (CO).
3. Perform the Calculation Management work which consists of receiving all emails, allocate the cases to team colleagues into the workflow tool, produce a Calculation Log and send it in a weekly basis to the CO.

The work is to produce calculations related to the pension benefits of an individual that is or was a member of a Retirement Pension Plan, provided by the company that the individual currently works for or used to work.

The member may request these calculations after leaving the Pension Plan and usually before reaching their Retirement Age and also in the case of divorced they may want to transfer out the benefits to another pension plan or simply require a quote of retirement benefits at a present date. The quote is calculated by the team, stated in a letter and then sent to the Scheme Administrators or the Consulting Team, who will contact the member/client directly. This quotation value is called CETV.

3.2 Overview of TV Calculations

Transfer Value calculations consist of several parts; revaluation, annuity and discounting. The request received for quotation comprises of ranges benefit at DOL in which it has to revalue to NRD. Revaluation works use factor of revaluation such as taxes and actuarial figures. Figure 5 shows how the revaluation process takes place in general.

a) Revaluation – Pension at Retirement

First step of the process is to revalue members to NRD through Step 2 from DOL to DOC using known factor. After that Step 3 is performed from DOC to NRD using actuarial factors estimated according to market condition. For the past revaluation, unknown increase is used and actuarial factors for future revaluation. Finally, pension value at retirement is obtained.

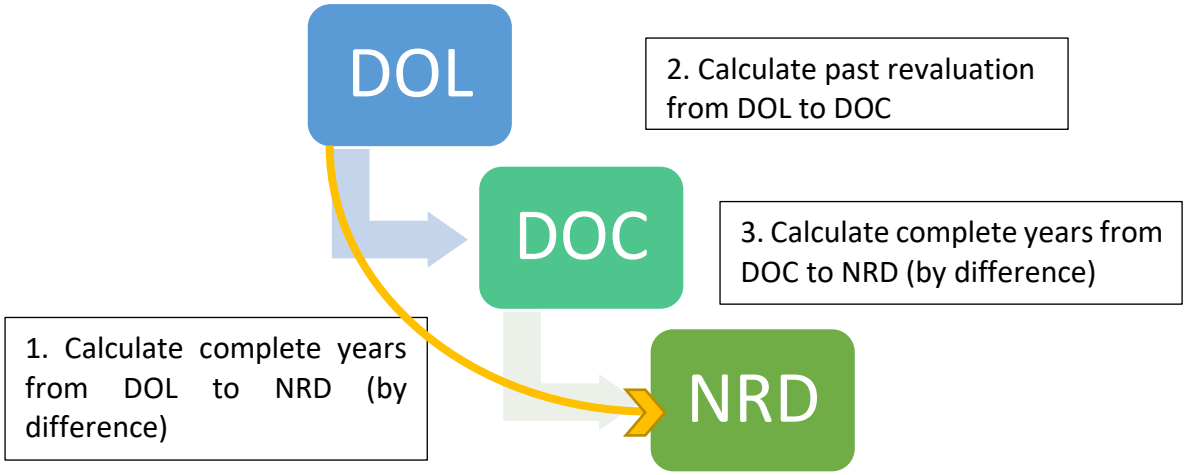

Figure 5: Revaluation process of TV
Source: Mercer, 2020 [10]

b) Annuity – Cost of a Pension at Retirement

Afterwards, we need to know the proportion of retirement received till member's death. We calculate factors that give the proportion of the pension deserved for member (single life annuity) with the spouse/dependent (reversionary life annuity).

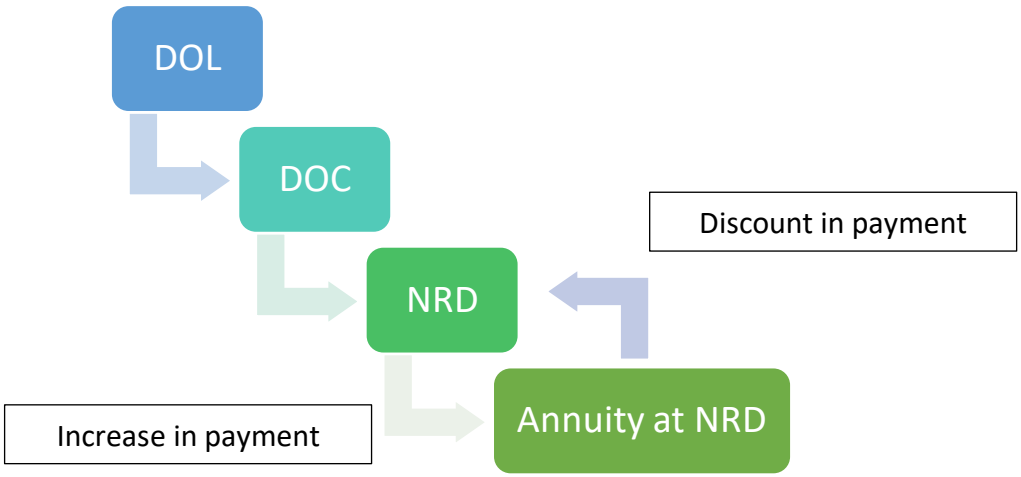

Figure 6: Annuity process of TV
Source: Mercer, 2020 [10]

After that, we need to sum both annuities and do multiplication of % spouse benefits and % gender married which varies according to scheme. The annuity also takes into account increase in payment which allows the growth of pension during retirement.

c) <u>Discount – Pension as at Today</u>

Last step would be to discount the value in order to actualize the annuity at NRD to current date by calculating the complete years and months from NRD to DOC.

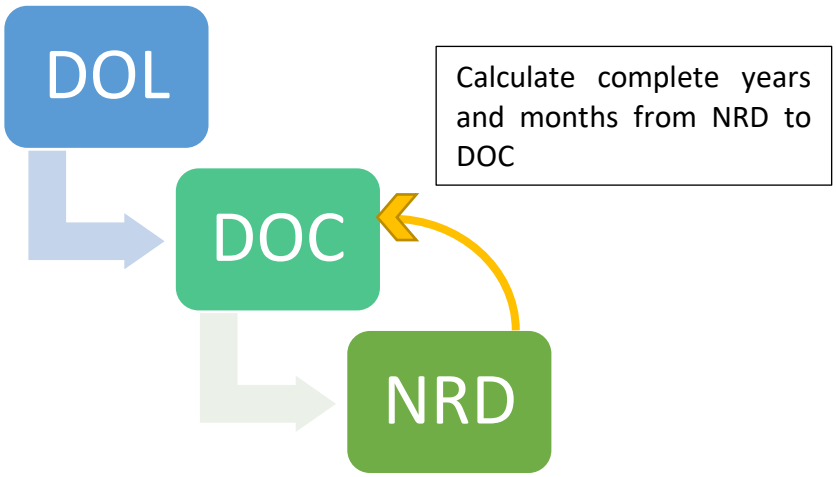

Figure 7: Discounting process of TV
Source: Mercer, 2020 [10]

Next figure shows the summary on the process to obtain final transfer value.

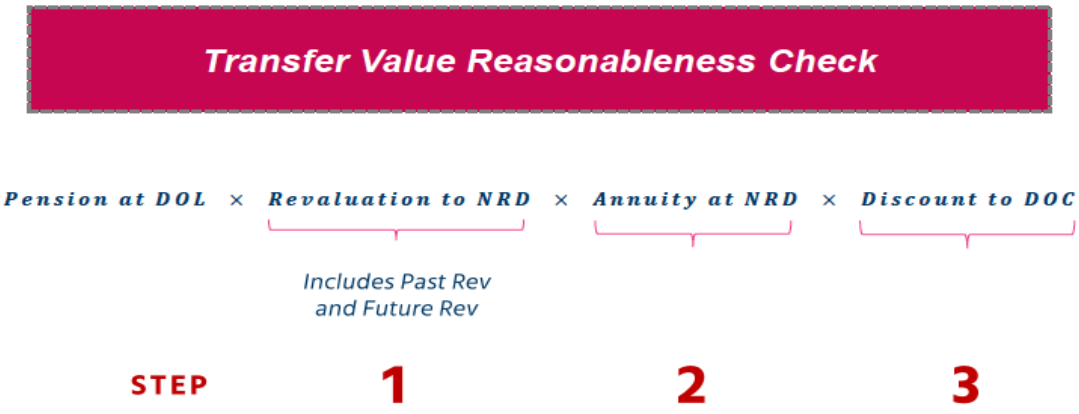

Figure 8: Transfer Value Reasonableness Check
Source: Mercer, 2020 [10]

3.3 Mercer Tools for TV Calculation

There are two tools used at Mercer to calculate transfer values which are mainly Internal Software and Excel using VBA (Proforma "A" and Proforma "B").

a) Internal Software

It is the most accurate tool as to date. It works similarly like the manual calculation involving all ranges with less time consuming as it is calculated by the system provided that the setup is updated according to the scheme details.

In the result, we will then obtain the Transfer Value – Full which contains of Pre '97 Protected Rights – Full and Post '97 Transfer Value – Full. Protected Rights are defined as part of the pension funds that were built up from excluded contributions that were paid into the pension plan. That fund was a result of excluding the State Second Pension (formerly the State Earnings Related Pension Scheme (SERPS)) under this or the previous plan. The ability to exclude stopped on 6 April 2012, therefore no further protected rights fund was built up since then. On 6 April 2012, all protected rights fund were converted to 'ordinary rights' and are now treated in the same way as non-protected rights as stated in [1].

The Pre ’97 Protected Rights involves only GMP without excess pension. It is also important to acknowledge that Transfer Value – Full is not the sum of the two elements because Pre ’97 Protected Rights is different from Pre ’97 Transfer Value.

b) Proforma “A” and “B”

It is an excel spreadsheet which is equipped with VBA coding. We need to input information in the cell and click the Calculate TV button to get the final result of TV. Both works the same way but with different layout and different VBA code used.

There are a few methods used to equalise GMP as portrayed in the diagram:

Figure 9: GMP Equalisation Methods
Source: Mercer, 2019 [4]

In Mercer, we mainly work with method C2 and A3, depending on the rules applied to the scheme. Example on C2 method will be provided in the next section since it is the only method applied throughout the internship period.

a) Method C2 (2018) – All Normal Retirement Age (NRA)

The steps to work with this method are as follows:

1. Member's Gender: Calculate the Transfer Value considering the member's gender.
2. Opposite Gender: Convert GMP at DOL for the opposite gender using the conversion factors.
3. The Total Pension at DOL accrued during the GMP Equalisation Period is the same, then recalculate the Excess at DOL by difference.
4. After that, calculate new Transfer Value considering the pension and GMP age of the opposite gender.
5. Finally compare the gender value: The Member receives the highest Transfer Value.

Method C2 is the lowest cost method because this was the method that the High Court said did not require additional consent and employees generally ask trustees to follow it.

3.4 Market Statistics

There are tables provided in the Mercer Statistics UK website which involves Non GMP Revaluation GMP, GMP revaluation and known increase for Post 88 GMP, and also tables to revalue GMP and excess as in the past. The government statistics website is updated every 1st of January (due to Non GMP) and 6th of April (due to GMP).

3.5 Revaluation of GMP

GMP needs to be revalued in order to preserve its value. Therefore, GMP accrued until year 1997 will continue to be revalued until the member no longer belongs to a company. This

revaluation process takes place if any type of members with a GMP leaves before GPA, which requires the GMP to be revalued to GPA by any of the methods below:

3.5.1 Fixed rate revaluation;

3.5.2 Section 148 (S148) revaluation;

3.5.3 Limited rate revaluation (only applicable for Pre 97 leaver).

3.5.1 Fixed rate revaluation

The GMP value increases at a fixed rate for each tax year between DOL and the date the pension is guaranteed. The rate used will depend on the DOL of the member. Table below shows the rate of fixed revaluation according to DOL which continues to decrease over the year.

DOL	Revaluation rate per annum (%)
Before 06/04/1988	8.50
06/04/1988 – 05/04/1993	7.50
06/04/1993 – 05/04/1997	7.00
06/04/1997 – 05/04/2002	6.25
06/04/2002 – 05/04/2007	4.50
06/04/2007 – 05/04/2012	4.00
06/04/2012 – 05/04/2017	4.75
06/04/2017 and onwards	3.50

Table 3: Rate of fixed revaluations
Source: Mercer, 2020 [10]

Example:

- DOL: 15/04/1998
- NRD: 15/05/2006
- GMP at DOL: £800 per annum

Based on Table 3, the revaluation rate that should be applied is 6.25% as the DOL is between 06/04/1997 and 05/04/2002. Thus, the GMP is calculated like below:

GMP at DOL		Fixed rate rev.		# 6th of April		
£800	x	(1 + 6.25%)	^	8	=	£1,299.34

Table 4: GMP value revalued using fixed rate revaluation method
Source: Method from Mercer, 2020

3.5.2 Section 148 (S148) revaluation

The GMP value will increase every tax year between DOL and GMPA using S148 revaluation rate (Appendix A).

Example:

- DOL: 15/04/1998
- NRD: 15/05/2009
- GMP at DOL: £800 per annum
- Tax year of earnings: 1997/1998
- Tax year of termination: 2008/2009
- S148 orders: 0.578 (Appendix A)

Based on (Appendix A), the revaluation rate that should be applied is 57.8% considering the tax year of earnings and termination. Thus, the GMP is calculated like:

GMP at DOL		Fixed rate rev.		
£800	x	(1 + 57.8%)	=	£1,262,40

Table 5: GMP value revalued using S148 revaluation rate
Source: Method from Mercer, 2020

3.5.3 Limited rate revaluation (only applicable for Pre 97 leavers)

This revaluation is based on the complete tax years between the year that GMP starts until NRD. The rate used should be the minimum between S148 rate and 5% compound for each complete tax year from DOL until NRD.

$$Limited\ Rate\ Revaluation = \min(S148\ rate; 1.05^{n})$$

Example:

Considering previous example from S148 revaluation, we will need to choose the minimum rate between the S148 revaluation rate and compound of 5% for each complete tax years.

$$Limited\ Rate\ Revaluation = \min(0.578; 1.05^{11})$$

GMP at DOL		Fixed rate rev.		Complete Tax Years		
£800	x	(1 + 57.8%)	^	11	=	£1,262,40

Table 6: GMP value revalued using limited revaluation rate
Source: Method from Mercer, 2020

3.6 Transfer Values Calculation at DOC - Illustrations

3.6.1 Assumptions

It is a monthly updated assumption of the RPI to revalue for future and always consider previous month as a rate of revaluation. The rate of revaluation is determined according to type of scheme profiles: young, young intermediate, non-pensioner, intermediate, mature, very mature and retiree.

On top of that, scheme profiles are correlated with LPI Assumptions of single equivalent rates which include CPI or RPI or both with different profiles and models: Black or JY. The pension increase rate vary according to scheme. It is also updated monthly by using the column that is in the current month of calculations not previous month. For instance, if calculation is done in January 2018, the column dated 01/01/2018 should be used.

3.6.2 GMP Conversion Factors

It is the scaling factor to convert accrued GMP into what would have been accrued by a member of the opposite sex. Table in the Appendix B is based on DOB of the member and ratios period of accrual between 16th of birthday or 6 April 1978, if later, because some member cannot start from 16th birthday as GMP did not exist at that time.

The method to convert is illustrated as follows:

1. DOB: 12/05/1961
2. Member's date at 60: 12/05/2021
3. Member's date at 65: 12/05/2026
4. 16th birthday or 05/04/1978 if later
    - The period GMP could start for this member is 05/04/1978 because the 16th birthday is on 12/05/1977.
5. Minimum:
    - Age 44
    - Tax complete years from (4) to (2)
    - We will obtain 43 years of accrual from date 05/04/1978 to 12/05/2021.
6. If male:
    - (3) - (4) = 48 divided by 43 which gives value 1.1163 same as given in the table according to DOB.
7. If female:
    - (2) - (4) = 43 divided by 48 which gives value 0.8958 same as given in the table according to DOB.

However, for simplicity, most of the time we do not recalculate for every member as we use the table provided for conversion factors. It is also important to always use the true gender in the calculation of annuities/factors because we are not assuming the member will change the gender but assuming the male member gets GMP at the age of 60 and accruing it in different rate. Only GMP age and amount is assumed to change, and equalisation should always be done range by range, but there are also other ways, for instance by calculating the total TV that gives the highest value.

3.6.3 Switch and Temporary Annuities

This calculations is crucial for members with Normal Retirement Age (NRA) before reaching the GMP age. In theory, members cannot receive GMP before GMP age, but in practice if the NRA of the scheme is before GMP age, the member starts receiving GMP benefits at NRA as Excess benefits (the GMP benefits will receive Excess increases). This is not going to be forever, so when the member reaches GMP age the treatment of the GMP benefits change to be the "true" GMP.

There are two different approaches to deal with this situation:

1. Switch: Change Excess by GMP increases,
2. Temporary.

<u>Switch Life Annuities</u>

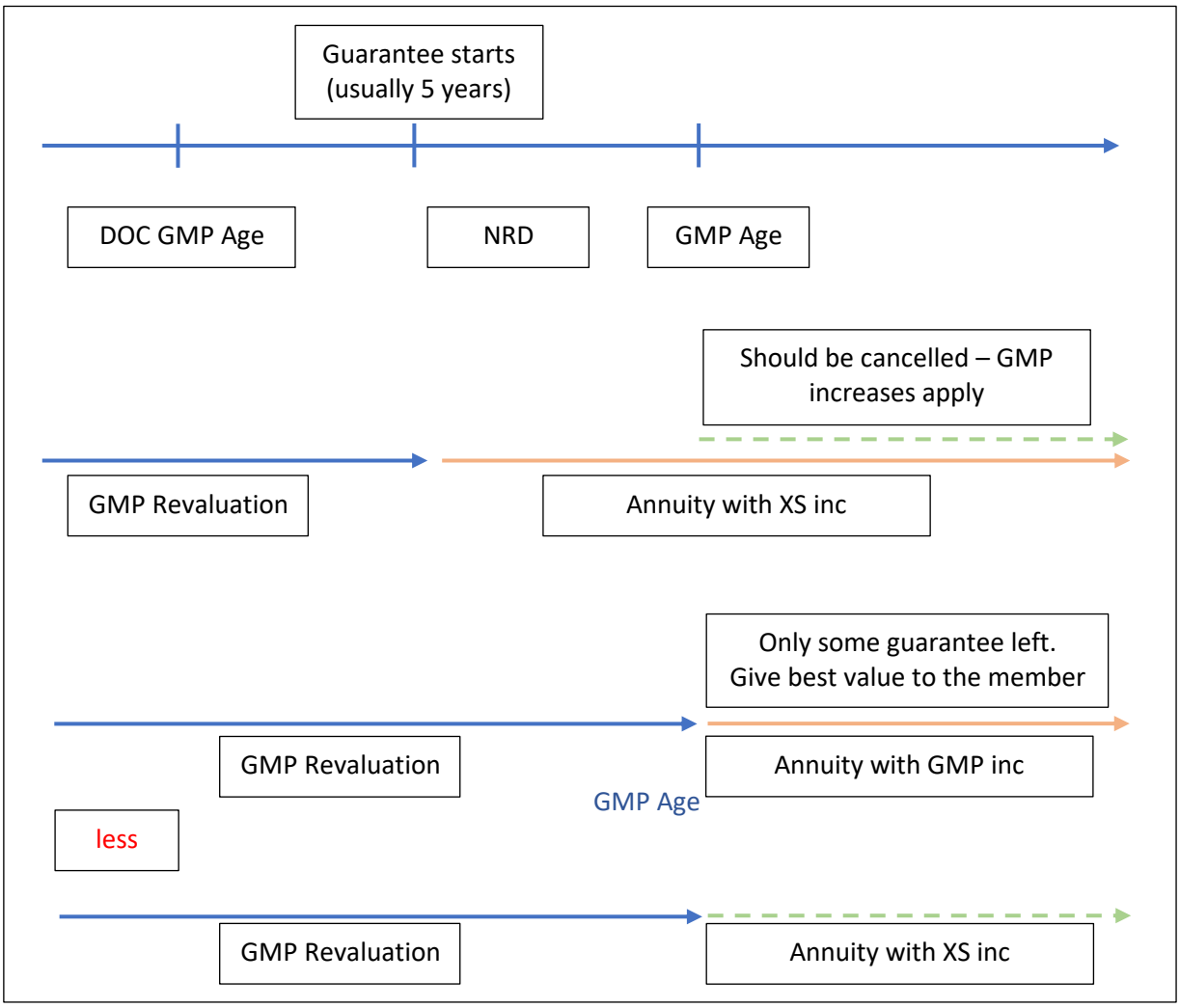

Figure 10: The process of Switch Life Annuities
Source: Mercer, 2020 [10]

The guaranteed start year may vary according to the scheme. Guaranteed Minimum Pension is revalued just to Normal Retirement Date and then annuity is applied until end of the contract (member's life or beneficiary). However, since NRD is before GMP age, the GMP cannot be paid yet, but should give excess (XS) increase. However, the XS increase is only paid until GMP age so the dotted green line above shows the part where it should be cancelled.

Therefore, it is best to revalue GMP to GMP age and from that date we can start to apply annuity with GMP increase. In the example below, the guaranteed period left would be zero because NRD is 60 and five years guaranteed until GMP age, 65. If NRD is 62 and the GMP age is 65, the guaranteed period left would be two years. Then, we will need to deduct the annuities with XS increase (after GMP age) to ensure at least minimum amount of annuity being paid.

Example:

Pension is revalued until NRD 60.

Revaluation

The general formula for Post 88 GMP is given as the product of pension at DOL with fixed revaluation rate accumulated the number of "6th of April" years passed. As for before 97 XS, past revaluation needs to be considered.

	Pension at DOL		**Fixed Rev.**		**# 6th of April**				
Post 88 GMP Post 90 at 60:	£1,191.94	x	1.0350	^	7			=	£1,516.48
			Past Rev.		Future Rev.				
Pre 97 XS Post 90 at 60:	£6,563.75	x	1.0240	x	1.0240	^	5	=	£7,567.49
Post 88 GMP Post 90 at 65:	£1,191.94	x	1.0350	^	11			=	£1,740.20

Table 7: Revaluation process for every range of year
Source: Method from Mercer, 2020

£1,516.48 and £7,567.49 are the pension amounts that will be paid at Normal Retirement Age. Afterwards we apply the annuity life XS increase to the calculation. Since we know it is not for life but for 5 years, we must apply switch method which means revalue to age 65 as shown in Table 7 above.

Transfer Value at DOC:

The general formula is given below (Table 8) as the product of pension (obtained from revaluation calculation, Table 7) with annuity life XS value considering possibilities of both genders (calculated as Appendix C) with discount rate accumulate to the number of years discounted given DOC is 12/12/2015. Number of years discounted is obtained from the difference between DOC and member's date at 60.

	Pension at 60		Annuity Life XS inc		Discount to DOC				TV at DOC
Post 88 GMP as excess from 60:	**£1,516.48**	x	28.4725	x	1.0438	^	-5.5	=	£34,108.91
Pre 97 XS at 60:	**£7,567.49**	x	28.4725	x	1.0438	^	-5.5	=	£170,209.03

Table 8: Annuities and discount process to obtain TV at DOC
Source: Method from Mercer, 2020

Finally, the switch value was used by subtracting annuity life GMP increase with excess increase as shown in Table 9 (calculated as Appendix C). The pre-retirement value is the discount from age 60 to current age while post-retirement from 65 to age 60.

	GMP at 65		Annuity Life GMP inc		Annuity Life XS inc		Pre-Ret Discount				Post-Ret Discount				TV at DOC
Post 88 GMP from 65:	**£1,740.20**	x	(26.4985	-	24.8169)	x	1.0438	^	-5.5	x	1.0228	^	-5	=	£2,587.52

Table 9: Switch value used to obtain TV at DOC
Source: Method from Mercer, 2020

In this scenario, there is still a test that should be done with the franking (explained below) because it starts to pay excess amount at age 60. However, it does not assume that GMP amount might change at age 65. Imagine if GMP calculated is much higher, thus extra pension needs to be paid to guarantee the minimum amount of excess being paid.

Anti-Franking:

The term "franking" refers to the offsetting of GMP revaluation against a non-GMP member's (excess) benefit, once a member left employment. It is divided into two parts; Anti-Franking and Full Franking. Full-Franking could revalue a deferred member's GMP without increasing the overall deferred pension. Its excess GMP was reduced so that the overall deferred pension remained the same. This occurs only for periods before 1 January 1985. Anti-franking refers

to the rule which prohibits this and for member excluded service ceased on or after 1 January 1985.

From previous calculation, we had:

Post 88 GMP as excess from 60	**£1,516.48**
Pre 97 XS at 60	**£7,567.49**
Post 88 GMP from 65	**£1,740.20**

- Pension in Payment at 65 with XS increases:

GMP at 60		XS at 60		XS increases				Pension in payment
(£1,516.48	+	**£7,567.49)**	x	1.0150	^	5	=	**£9,786.01**

- GMP at 65 with GMP revaluation:

£1,740.20

- True XS in payment at GMP age:

Pension in payment		GMP at 65		
£9,786.01	-	**£1,740.20**	=	**£8,045.81**

- XS at NRD:

£7,567.49

- Anti-Franking:

Extra XS		Annuity Life XS inc		Pre-Ret Discount				Post-Ret Discount				TV at DOC
£ 0	x	24.8169	x	1.0438	^	(-5.5)	x	1.0228	^	(-5)	=	**£ 0**

In conclusion, no extra excess is needed as **£7,567.49 is less than £8,045.81**. Thus, the XS at NRD is covered which also means that the XS in payment of £2,587.52 is enough.

Temporary Annuities

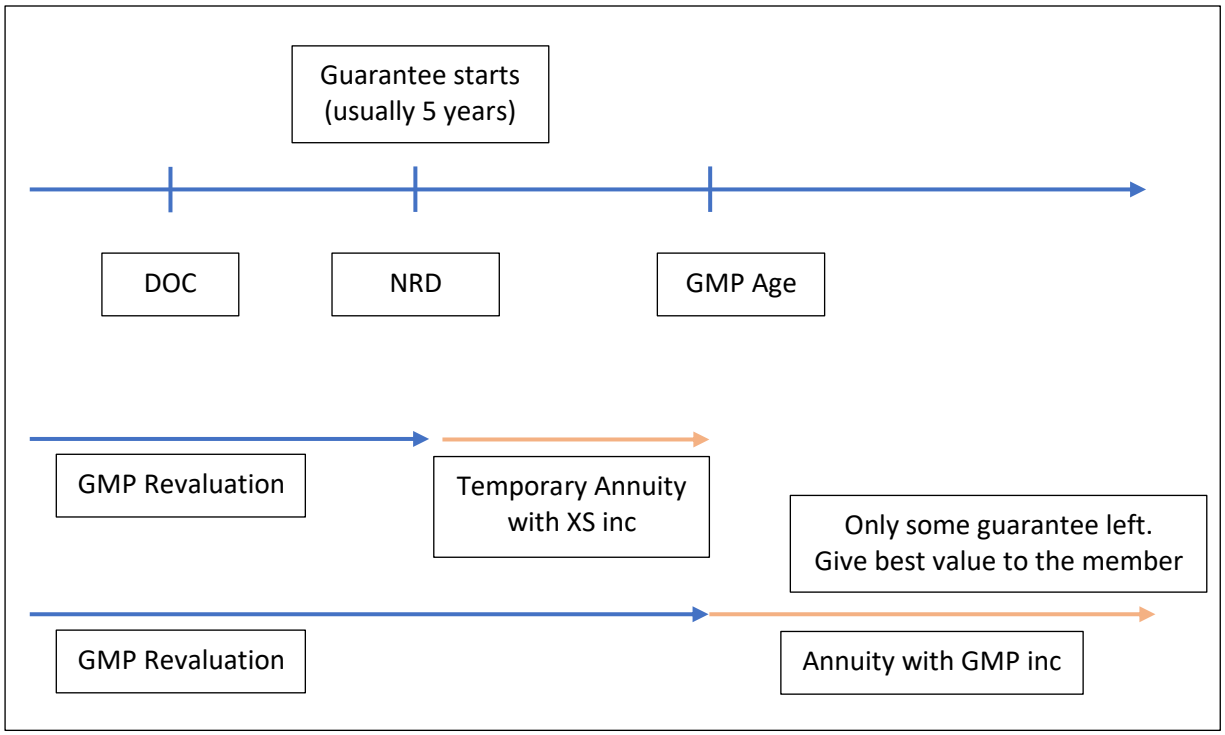

Figure 11: The process of Temporary Life Annuities
Source: Mercer, 2020 [10]

It is the same scenario as switch annuities where we revalue GMP to NRD, but the difference is that we apply temporary annuity that ends at GMP age. Then we apply the annuity with GMP increases. In this method, we always need to revalue twice, to NRD and to GMP age. In addition, the value of temporary annuity is obtained from Actuarial Tools function (depends on particular scheme) by considering the interest rate, the guarantee period and the pension increase rate.

Transfer Value at DOC:

	Pension at 60		**Temp. Annuity XS inc**		**Discount to DOC**				**TV at DOC**
Post 88 GMP as excess from 60:	**£1,516.48**	x	4.9055	x	1.0438	^	-5.5	=	£5,876.61
Pre 97 XS at 60:	**£7,567.49**	x	4.9055	x	1.0438	^	-5.5	=	£29,325.22

Table 10: The calculation of annuities and discount to obtain TV at DOC for Temporary Life Annuities
Source: Method from Mercer, 2020

Finally, we use the switch value. The pre-retirement is discounted from age 60 to current age while post-retirement from age 65 to age 60.

			Annuity Life XS inc		Pre-Ret Discount				Post-Ret Discount				TV at DOC
Pre 97 XS from 65:	**£**	x	24.8169	x	1.0438	^	-5.5	x	1.0228	^	-5	=	**£**
	GMP at 65		**Annuity Life GMP inc**		**Pre-Ret Discount**				**Post-Ret Discount**				**TV at DOC**
Post 88 GMP from 65:	**£1,740.20**	x	26.4985	x	1.0438	^	-5.5	x	1.0228	^	-5	=	£40,773.47

Table 11: The calculation to obtain TV at DOC
Source: Method from Mercer, 2020

Then, we do the Anti-Franking exactly the same as before which results in giving the highest value between True XS in payment at GMP age and XS at NRD for Pre 97 XS from 65.

True XS in payment at GMP age	**£8,045.81**
XS at NRD	**£7,567.49**
Maximum Value	**£8,045.81**

Table 12: The maximum value used for temporary annuities method
Source: Method from Mercer, 2020

			Annuity Life XS inc		Pre-Ret Discount				Post-Ret Discount				TV at DOC
Pre 97 XS from 65:	**£8,045.81**	x	24.8169	x	1.0438	^	-5.5	x	1.0228	^	-5	=	**£176,553.11**

Table 13: The value of TV at DOC using the maximum value
Source: Method from Mercer, 2020

4. APPLICATION OF GMP

This chapter will briefly explain on ways to apply GMP for a male with Normal Retirement Age (NRA) 65 as an example.

Table below shows a dummy benefit detail for a member of a client:

Member's Data		**Deferred Pension at DOL**	
DOB	01/06/1965	Pre 88 GMP	£100
DCPS	13/01/1987	Post 88 GMP	£200
DOL	20/01/2004	Pre 97 XS	£300
DOC	10/08/2020	Post 97	£400
NRD	01/06/2030		
GMPD	01/06/2030		

Table 14: Dummy details of a member
Source: Method from Mercer, 2020

Given that:

- Pre-Retirement : 1.82%
- Post-Retirement : 1.82%

Example of JY Non-Pensioner Assumptions based on the month and year of DOC:

	Revaluation Rate (%)		**Increment Rate (%)**	
Pre 88 GMP	4.50	GMP fixed rev.	0.00	Fixed
Post 88 GMP	4.50	GMP fixed rev.	1.68	CPI [0%,3%]
Pre 97 XS	1.93	CPI	2.57	RPI [0%,4%]
Post 97	1.93	CPI	2.79	RPI [0%,5%]

Table 15: Revaluations and increments rate value used
Source: Method from Mercer, 2020

Step 1: Calculate the Transfer Value considering the member's gender.

According to theory, it is necessary to equalise the GMP accrued from 17 May 1990 to calculate the member's TV,

Firstly, as mentioned in the methodology chapter, we need to calculate the TV by considering the member's gender. The revaluation process is calculated as below, by revaluing to the 6th of April passed every year until age 65 (number of years from DOL to NRD,

which is 26). Then we obtain the amount of GMP at NRD and also at GMP as shown in Table 16. After that, we need to revalue for Pre 97 XS and post 97 ranges, using CPI table rate for past revaluation (Section 84 Orders) while for future revaluation, the CPI rate given in Table 15 will be used. Finally, accrued by the difference between complete years, subtracting past revaluation (NRD to DOC).

Revaluation:

	Deferred Pension		Rev Rate		# 6th of April				
Pre 88 GMP:	£100.00	x	1.0450	^	26			=	£314.07
Post 88 GMP:	£200.00	x	1.0450	^	26			=	£628.14

			Past Rev		Future Rev				
Pre 97 XS:	£300.00	x	1.4710	x	1.0193	^	10	=	£4,413.00
Post 97:	£400.00	x	1.4710	x	1.0193	^	10	=	£5,884.00

Table 16: Revaluation process to obtain TV at DOC
Source: Method from Mercer, 2020

The next step is to calculate the annuities for each range corresponding to the benefits that we have. Annuity values are obtained by using actuarial tools from Microsoft Excel Add-Ins. We use mortality table at the age 65. Afterwards, we apply the annuities and discount to the pension date (Complete Months: Cmp Mths). Finally, total TV is the sum of TV for each range. See Appendix C.

Transfer Value at DOC:

			Annuities		Discount		Cmp Mths		
Pre 88 GMP:	£314.07	x	20.2913	x	1.0182	^	-9 10/12	=	£5,337.14
Post 88 GMP:	£628.14	x	25.4504	x	1.0182	^	-9 10/12	=	£13,388.24
Pre 97 XS:	£4,413.00	x	28.9267	x	1.0182	^	-9 10/12	=	£106,907.25
Post 97:	£5,884.00	x	29.8827	x	1.0182	^	-9 10/12	=	£147,253.99
								Total TV	£272,886.62

Table 17: Annuities and discount calculation process
Source: Method from Mercer, 2020

Step 2: Convert GMP at DOL for a female member using the conversion factors.

We have to consider GMP age at 60 and know that GMP accrued faster for a female, so we are expecting the GMP to be higher. As we know the member starts in 1987 and leaves in 2004, therefore, conversion occurs for GMP to accrue from 17 May 1990, which involved the Post 88 GMP amounts of £200. However, it is necessary to split Post 88 GMP and Excess in Pre 90 and Post 90. In some situations, these values are provided by the admin who is responsible to engage with the clients. See Table 18.

Firstly, we need to count the service period, total split for each range requires to be the same. Calculate split for post 88 GMP and total pension (pre 97 XS range) to obtain the pre 97 XS by difference between the total pension and post 88 GMP. After that, we have to equalise the post 90 as highlighted in the circle below.

Splits Pre 90/Post 90						Pre 88 GMP	Post 88 GMP	Total Pension	Pre 97 XS (by difference)	
	Service Period		Total Ratio	Post 88 Ratio						
13 January 1987	3.333	Pre 90	0.328							
06 April 1988	2.083	Post 88/Pre 90		0.231		100	46.30	196.72	50.43	Pre 90
16 May 1990										
17 May 1990	6.833	Post 90/Pre 97	0.672	0.759			153.70	403.28	249.57	Post 90
05 April 1997										
Total Service Pre 97	10.17					100.00	200.00	600.00	300.00	
Total Post 88 Service	9.00						TRUE	TRUE	TRUE	
Test Sum of the Parts = Total	TRUE									

Table 18: Process of splitting the value for Pre 90 and Post 90
Source: Method from Mercer, 2020

Afterwards, we are able to convert GMP at DOL for opposite gender using the conversion factors. Based on Appendix B, we see that the conversion factor should be equal to 1.1136. The new GMP for the female is:

Post 88 GMP (Post 90):	**£153.70**	**x**	**1.1136**	**=**	**£171.16**

Table 19: Conversion factor used for female gender
Source: Method from Mercer, 2020

As a result:

Deferred Pension at DOL	
Pre 88 GMP	£100.00
Post 88 GMP (Pre 90):	**£46.30**
Post 88 GMP (Post 90):	**£153.70**
Pre 97 XS (Pre 90):	**£50.43**
Pre 97 XS (Post 90):	**£249.57**
Post 97:	£400.00

Table 20: TV for each range
Source: Method from Mercer, 2020

Step 3: <u>The Total Pension at DOL accrued during the GMP Equalisation Period is the same for both genders, then recalculate the Excess at DOL by the difference.</u>

First, we sum the value for Post 90 and deduct the value after the conversion:

Post 88 GMP (Post 90):	**£153.70**
Pre 97 XS (Post 90):	**£249.57**
Total	**£403.27**

Table 21: Total value for Post 90 range
Source: Method from Mercer, 2020

Pre 97 XS (Post 90):	**£403.27**	**-**	**£171.16**	**=**	**£232.11**

Table 22: Excess value at DOL
Source: Method from Mercer, 2020

In conclusion, the values that will be used for post 90 benefits are: £171.16 and £232.11.

Step 4: <u>Conclusion, the Member receives the highest Transfer Value (TV).</u>

- GMPA 65

Deferred Pension at DOL	
Pre 88 GMP:	£100.00
Post 88 GMP (Pre 90):	£46.30
Post 88 GMP (Post 90):	**£153.70**
Pre 97 XS (Pre 90):	£50.43
Pre 97 XS (Post 90):	**£249.57**
Post 97:	£400.00

- GMPA 60

Deferred Pension at DOL	
Pre 88 GMP:	£100.00
Post 88 GMP (Pre 90):	£46.30

Post 88 GMP (Post 90):	**£171.16**
Pre 97 XS (Pre 90):	£50.43
Pre 97 XS (Post 90):	**£232.11**
Post 97:	£400.00

There are two different approaches to conclude the final TV:

1. Calculate the two complete Transfer Values and give the highest.
2. Calculate the TV with GMPA 65, then calculate only the TV for the Post 90 benefits with GMPA 60, compare with the part of the Post 90 benefits from GMPA 65, and add an extra amount if needed.

The first approach is completely similar to the previously done, but with different values and the second approach is less time consuming which will be shown in the example below.

- GMPA 65 and true gender (male)

Post 88 GMP (Post 90):	**£153.70**
Pre 97 XS (Post 90):	**£249.57**
Total	**£403.27**

Table 23: Post 90 TV for each range
Source: Method from Mercer, 2020

Revaluation:

	Deferred Pension		**Rate**		**# 6th of April**				
Post 88 GMP (Post 90):	**£153.70**	x	1.0450	^	26			=	£482.72
			Past Rev		Future Rev				
Pre 97 XS (Post 90):	**£249.57**	x	1.4710	x	1.0193	^	10	=	£444.45

Table 24: Revaluation process for Post 90 TV (member's gender)
Source: Method from Mercer, 2020

Transfer Value at DOC:

			Annuities		**Discount**		**Cmp Mths**		
Post 88 GMP (Post 90):	**£482.72**	x	20.2913	x	1.0182		-9 10/12	=	£8,203.18
Pre 97 XS (Post 90):	**£444.45**	x	28.9267	x	1.0182	^	-9 10/12	=	£10,767.09
					Post 90 TV True Gender				£18,970.28

Table 25: Annuities and discount process for Post 90 TV (member's gender)
Source: Method from Mercer, 2020

For a corresponding female member, it is different because we are assuming the GMPA at 60. When we do the revaluation, we have a smaller number of 6th of April years, and we increase the weeks of statutory LRF to age 65. Statutory LRF may vary according to scheme and months too.

Revaluation:

	Deferred Pension		**Rate**		**# 6th of April**		**Stat. LRF to 65**		
Post 88 GMP (Post 90):	**£171.16**	x	1.0450	^	21	x	1.4906	=	£642.98
			Past Rev		Future Rev				
Pre 97 XS (Post 90):	**£249.57**	x	1.4710	x	1.0193	^	10	=	£413.36

Table 26: Revaluation process for Post 90 TV (opposite gender)
Source: Method from Mercer, 2020

Transfer Value at DOC:

			Annuities		**Discount**		**Cmp Mths**		
Post 88 GMP (Post 90):	**£642.98**	x	20.2913	x	1.0182		-9 10/12	=	£10,926.50
Pre 97 XS (Post 90):	**£413.36**	x	28.9267	x	1.0182	^	-9 10/12	=	£10,013.81
					Post 90 TV Opposite Gender				£20,940.31

Table 27: Annuities and discount process for Post 90 TV (opposite gender)
Source: Method from Mercer, 2020

In this example our member is always a male, we do the calculation with him having the right to receive the GMP at 60 and accrue the GMP at the same rate per year. Hence, the value of annuities are the same. Table below summarises TV throughout all calculations:

Total TV (True Gender):	**£272,886.62 (Table 12)**
Post 90 TV (True Gender):	£18,970.28
Post 90 TV (Opposite Gender):	£20,940.31

Table 28: Summarises of TV
Source: Method from Mercer, 2020

The final step is to quote the Equalised TV to be send to the admin based on calculation as follows:

	£272,886.62	**+**	**max (£0 , £20,940.31 - £18,970.28) = £1,970.03**
=	£272,886.62	+	£1,970.03
=	**£274,886.65**		

Table 29: Process to equalise TV
Source: Method from Mercer, 2020

In this scenario, we use the method for the case NRD is greater than GMPD. If we are given that NRD is before GMP, we would have to use either switch or temporary method, as elaborated in Section 3.5.3. As a result, the TV quoted for client is £274,886.65 (usually sent in the form of letter via email).

5. CONCLUSION

GMP equalisation is seen to be one of the most acceptable approaches in the UK to guarantee the maximum amount of equalisation between male and female members to this day. It is a complex process with different costs, depending on the method chosen, but the process should begin, to avoid prolonging the operation and creating future problems for the schemes. From the calculations and process shown in previous sections, we can conclude that the GMP equalisation using C2 method can either be obtained via calculation using Microsoft Excel or using system generated by the company, depending on the request and budget of the clients.

There are many impacts that can be seen once worked with GMP equalisation and we can summarise some of them as follows:

- ***Financial Implications*** [7] – It is certain that there will be an additional cost for equalisation process. However, it is not always the case that a top-up is required, because someone may have previously made a contribution that satisfies the equalisation needs.
- ***Availability of Information*** [13] – The trustees are responsible of gathering information they have, determining and making assumptions of any missing information. After that, they come up with an approximate figure as a validation on the consequences.
- ***A long process*** – It can take months, if not years, to work through and finalise GMP equalisation for pension transfers.
- ***Equal treatment in the future*** – By default, whichever method was used, it is meant to correct past inequalities and convert future benefits under existing GMP conversion legislation, to have an equalised equivalent benefit (method D2, which is not used during internship period) so that a fair amount will be obtained despite gender of an individual.

An article published in May 2021 by Pensions Age website mentions that by the end of 2022, 55% of trustees and employers expect to be paying pensions on an equalised basis as stated in [12]. In addition, there is also an issue regarding GMP Equalisation and Underpaid CETV that leads to failure to equalise for the effect of unequal GMPs. Moreover, there is a debate on GMP increase orders recently published, in February 2022. The GMP Increase Order and the Social Security Benefits Uprating Order are frequently discussed. The Benefits Uprating Order is typically the subject of negotiations, as Ministers have stated in previous years, whereas the GMP Increase Order is an “essentially technical concern” as stated in [6].

Apart from that, a legal change in regard to GMP equalization is also foreseen to happen, as the Pension Schemes (Conversion of Guaranteed Minimum Pensions) Bill is now making its way through Parliament. Despite the fact that this is a Private Member's Bill, the Minister for Pensions and Financial Inclusion has stated that the government supports it. The bill aims to clarify and simplify several sections of the GMP conversion regulations as stated in [2]. As a conclusion, there are both advantages and disadvantages in this process of equalising and also ongoing discussion regarding GMP equalisation. Hence, it is still in the process of improvement and refinement.

REFERENCES

[1] Aegon. What is non-protected rights (NPR) and protected rights (PRP)? https://www.aegon.co.uk/support/faq/Understanding-our-products/retirement-products/pension-contributions/What-is-non-protected-rights-npr-protected-rights-prp.html
[Accessed in October 2021]

[2] DLA Piper (February 2022). GMP Equalisation: top 5 current issues - Pensions Alert https://www.dlapiper.com/en/uk/insights/publications/2022/02/pensions-alert-gmp-equalisation-top-5-current-issues/
[Accessed in March 2022]

[3] GMP Conversion Factors (2020). https://www.pasa-uk.com/wp-content/uploads/2020/07/GMPE-Data-Guidance-vFINAL.pdf
[Accessed in October 2021]

[4] GMP Equalisation — A Once In A Lifetime Opportunity (2019). https://www.uk.mercer.com/content/dam/mercer/attachments/private/uk-2019-gmp-equalisation-final.pdf
[Accessed in March 2022]

[5] HM Treasury (2014, December). Overview of the UK Pension System. https://europa.eu/epc/sites/default/files/docs/pages/united_kingdom_-_country_fiche_on_pensions.pdf
[Accessed in May 2021]

[6] House of Commons Library. Guaranteed Minimum Pension Increase (February, 2022) https://researchbriefings.files.parliament.uk/documents/SN04956/SN04956.pdf
[Accessed in March 2022]

[7] International Adviser. How will the GMP equalisation ruling impact pension transfers? (2021, March) https://international-adviser.com/how-will-the-gmp-equalisation-ruling-impact-pension-transfers/
[Accessed in October 2021]

[8] Investopedia (2021, April). Pension Plan. https://www.investopedia.com/terms/p/pensionplan.asp
[Accessed in May 2021]

[9] Medicare. Provider Reimbursement Manual Part 1, Chapter 21. https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/Downloads/R461PR1.pdf [Accessed in October 2021]

[10] Mercer (2020). GMP Equalisation. [Internal Document]

[11] Money Helper. What is a pension scheme? https://www.moneyhelper.org.uk/en/pensions-and-retirement/pensions-basics/what-is-a-pension-scheme [Accessed in July 2021]

[12] PensionsAge. 55% of schemes on track for GMP equalisation by close of 2022. https://www.pensionsage.com/pa/Most-schemes-implement-GMP-equalisation-close-2022-Sackers.php [Accessed in August 2021]

[13] The National Law Review. GMP Equalisation Under the Microscope – Proactivity Under the Lens. https://www.natlawreview.com/article/gmp-equalisation-under-microscope-proactivity-under-lens [Accessed in August 2021]

[14] Willis Towers Watson (2020, March). UK Statistics. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjixfWi49_1AhXElIsKHdBMAi8QFnoECAkQAQ&url=https%3A%2F%2Fwww.willistowerswatson.com%2F-%2Fmedia%2FWTW%2FInsights%2Fcampaigns%2FMSB-March-2020.pdf%3Fmodified%3D20200331132309&usg=AOvVaw1zYcB3arX_PrROISEIOFzx [Accessed in February 2022]

APPENDIX

Appendix A

Figure 20. **Section 148 Orders – revaluation of earnings factors (formerly Section 21 Orders)**

	Tax year of termination											
Tax year of earnings	**19/20 %**	**18/19 %**	**17/18 %**	**16/17 %**	**15/16 %**	**14/15 %**	**13/14 %**	**12/13 %**	**11/12 %**	**10/11 %**	**09/10 %**	**08/09 %**	**07/08 %**
1978/79	846.7	820.9	794.1	771.5	754.4	741.7	734.2	719.5	705.0	686.9	677.8	654.2	623.8
1979/80	735.6	712.8	689.2	669.2	654.1	642.9	636.3	623.3	610.5	594.5	586.3	565.7	538.8
1980/81	598.1	579.1	559.3	542.6	530.0	520.7	515.1	504.3	493.6	480.2	473.3	456.1	433.7
1981/82	484.6	468.7	452.2	438.2	427.6	419.6	415.2	406.1	397.1	385.9	380.2	365.7	347.0
1982/83	431.0	416.6	401.5	388.8	379.2	372.1	367.9	359.6	351.5	341.4	336.1	323.0	306.0
1983/84	393.1	379.6	365.7	353.9	345.0	338.4	334.5	326.8	319.2	309.8	305.0	292.8	276.9
1984/85	356.5	344.1	331.2	320.2	312.0	305.9	302.3	295.2	288.2	279.5	275.0	263.7	249.0
1985/86	328.3	316.6	304.5	294.2	286.5	280.8	277.4	270.7	264.2	256.0	251.7	241.2	227.4
1986/87	293.3	282.6	271.4	262.0	254.9	249.7	246.5	240.4	234.4	226.9	223.0	213.3	200.7
1987/88	266.2	256.2	245.8	237.1	230.4	225.6	222.7	217.0	211.3	204.3	200.7	191.7	179.9
1988/89	236.9	227.7	218.1	210.1	204.0	199.5	196.8	191.6	186.4	180.0	176.7	168.4	157.5
1989/90	204.0	195.7	187.1	179.9	174.4	170.3	167.9	163.2	158.5	152.7	149.7	142.2	132.4
1990/91	183.3	175.6	167.6	160.8	155.7	151.9	149.7	145.3	140.9	135.5	132.7	125.7	116.6
1991/92	157.3	150.3	143.0	136.9	132.2	128.8	126.8	122.8	118.8	113.9	111.4	105.0	96.7
1992/93	141.6	135.1	128.2	122.4	118.1	114.8	112.9	109.2	105.5	100.8	98.5	92.5	84.7
1993/94	130.1	123.9	117.3	111.8	107.7	104.6	102.8	99.2	95.7	91.3	89.0	83.3	75.9
1994/95	123.2	117.1	110.8	105.5	101.4	98.5	96.7	93.2	89.8	85.5	83.3	77.8	70.7
1995/96	113.8	108.0	101.9	96.8	93.0	90.1	88.4	85.1	81.8	77.7	75.6	70.3	63.5
1996/97	108.0	102.3	96.4	91.4	87.7	84.9	83.3	80.0	76.8	72.9	70.8	65.7	59.0
1997/98	98.1	92.7	87.1	82.3	78.8	76.1	74.5	71.5	68.4	64.6	62.7	57.8	51.4
1998/99	89.4	84.2	78.8	74.3	70.9	68.4	66.9	63.9	61.0	57.4	55.5	50.9	44.8
1999/00	81.7	76.8	71.6	67.3	64.0	61.6	60.1	57.3	54.5	51.1	49.3	44.8	38.9
2000/01	71.0	66.3	61.5	57.4	54.3	52.0	50.7	48.0	45.4	42.1	40.4	36.2	30.7
2001/02	64.4	59.9	55.3	51.3	48.4	46.2	44.9	42.3	39.8	36.6	35.0	31.0	25.7
2002/03	57.6	53.3	48.9	45.1	42.2	40.1	38.9	36.4	34.0	31.0	29.5	25.6	20.5
2003/04	52.1	48.0	43.7	40.0	37.3	35.3	34.1	31.7	29.4	26.5	25.0	21.2	16.3
2004/05	46.6	42.6	38.4	34.9	32.3	30.3	29.2	26.9	24.6	21.8	20.4	16.8	12.1
2005/06	40.8	37.0	33.0	29.6	27.1	25.2	24.1	21.9	19.7	17.0	15.6	12.2	7.6
2006/07	36.2	32.5	28.6	25.3	22.9	21.1	20.0	17.9	15.8	13.2	11.8	8.5	4.1
2007/08	30.8	27.2	23.5	20.4	18.0	16.3	15.3	13.2	11.2	8.7	7.4	4.2	
2008/09	25.5	22.1	18.6	15.5	13.3	11.6	10.6	8.7	6.7	4.3	3.1		
2009/10	21.8	18.4	15.0	12.1	9.9	8.3	7.3	5.4	3.5	1.2			
2010/11	20.3	17.0	13.6	10.7	8.6	7.0	6.0	4.1	2.3				
2011/12	17.8	14.4	11.1	8.3	6.1	4.6	3.6	1.8					
2012/13	15.5	12.4	9.1	6.3	4.3	2.7	1.8						
2013/14	13.5	10.4	7.2	4.5	2.4	0.9							
2014/15	12.5	9.4	6.2	3.5	1.5								
2015/16	10.8	7.8	4.7	2.0									
2016/17	8.8	5.7	2.6										
2017/18	5.9	3.0											
2018/19	2.8												

Figure 12: Section 148 Revaluation rate
Source: Willis Towers Watson, 2020 [14]

Appendix B

GMP CONVERSION FACTORS			
Date of birth between (inclusive)		Male to Female Factor	Female to Male Factor
Up to 05/04/1934		1	1
06/04/1934	05/04/1935	1.05	0.9524
06/04/1935	05/04/1936	1.1	0.9091
06/04/1936	05/04/1937	1.15	0.8696
06/04/1937	05/04/1938	1.2	0.8333
06/04/1938	05/04/1939	1.25	0.8
06/04/1939	05/04/1940	1.2381	0.8077
06/04/1940	05/04/1941	1.2273	0.8148
06/04/1941	05/04/1942	1.2174	0.8214
06/04/1942	05/04/1943	1.2083	0.8276
06/04/1943	05/04/1944	1.2	0.8333
06/04/1944	05/04/1945	1.1923	0.8387
06/04/1945	05/04/1946	1.1852	0.8438
06/04/1946	05/04/1947	1.1786	0.8485
06/04/1947	05/04/1948	1.1724	0.8529
06/04/1948	05/04/1949	1.1667	0.8571
06/04/1949	05/04/1950	1.1613	0.8611
06/04/1950	05/04/1951	1.1563	0.8649
06/04/1951	05/04/1952	1.1515	0.8684
06/04/1952	05/04/1953	1.1471	0.8718
06/04/1953	05/04/1954	1.1429	0.875
06/04/1954	05/04/1955	1.1389	0.878
06/04/1955	05/04/1956	1.1351	0.881
06/04/1956	05/04/1957	1.1316	0.8837
06/04/1957	05/04/1958	1.1282	0.8864
06/04/1958	05/04/1959	1.125	0.8889
06/04/1959	05/04/1960	1.122	0.8913
06/04/1960	05/04/1961	1.119	0.8936
06/04/1961	05/04/1962	1.1163	0.8958
06/04/1962 or later		1.1136	0.8980

Figure 13: GMP Conversion Factors
Source: PASA, 2020 [3]

Appendix C

	Pre 97		Post 97	
	Pre 88 GMP	**Post 88 GMP**	**Pre 97 Excess**	**Post 97**
Age	65	65	65	65
Interest Rate	1.82%	1.82%	1.82%	1.82%
Pension Increase	0.00%	1.68%	2.57%	2.79%
Guarantee Period	5	5	5	5
Member Mortality	#specific table used depending on scheme (male)			
Member Weighting	100%	100%	100%	100%
Member Rating	0	0	0	0
Member GM Year (Cal)	1965	1965	1965	1965
Spouse Mortality	#specific table used depending on scheme (female)			
Spouse Weighting	100%	100%	100%	100%
Spouse Rating	0	0	0	0
Spouse GM Year	1968	1968	1968	1968
Age Difference	3	3	3	3
Proportions Married	78%	78%	78%	78%
Spouse' Proportion	50%	50%	50%	50%
Annuity:	20.29133	25.45043	28.92668	29.88270

Table 30: Example of annuity values considering both genders
Source: Mercer, 2020 [10]