

**STRATEGIC INSIGHT VIEW**

# Solving for Guaranteed Income in Retirement Portfolios with Lifetime Annuities

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## Executive Summary

Strategic Insight has released a paper which sets out its views on the important topic of lifetime annuities used in retirement portfolios.

### Challenges and risks confronting the retiree's portfolio

Retirees face several key risks:

- Longevity risk - The risk of outliving one's savings, given life expectancies have increased and are expected to continue to increase.
- Sequencing risk - The different impact that market fluctuations, especially downwards, can have depending on when they occur through the retirement phase, namely, at the start, part way through or towards the end of the retirees' lifespans, creating different issues to be addressed.
- Inflation risk - The risk that the income stream from retirement assets doesn't meet the rising costs of living in retirement.

### Lifetime annuities have features which can offset some part of the risks

Lifetime annuities have unique features which have the potential to ameliorate risks. Annuity payments are payable for the life of the annuitant (and nominated reversionary) irrespective of how long they may live. Also, in Australia, annuity payments are guaranteed, irrespective of market returns, and, depending on the type selected, allow access to capital for a specified period of time.

### The Age Pension, reasonable levels of income in retirement and improving life expectancy

Age Pension entitlements may provide a first layer of guaranteed income in the future, but retirees need to consider the income levels they want for maintaining 'modest' and 'comfortable' standards of living. The Association of Superannuation Funds of Australia (ASFA) suggests 'comfortable' levels as \$43,317 p.a. for a single and \$60,977 p.a. for a couple<sup>1</sup>; Further points which affect retirees are their likely life expectancies, where population statistics indicate male life expectancy (from age 65) as at least 19.22 years and females (from aged 65) as 22.05 years<sup>2</sup>. These life expectancies are expected to increase in the future.

### Portfolios which include the age pension and a lifetime annuity

As outlined in the paper, using quotation software which was made available by Challenger and incorporates the Willis Towers Watson Global Asset Model, three model portfolios of differing sizes (based on male and female homeowners, each aged 67) were examined. Challenger lifetime annuities were used in each case, but in principle the software would also operate if other organisations' lifetime annuities were used. Each model compared a portfolio consisting of an account-based pension (balanced asset mix, against another where part of the account-based pension defensive component was replaced by a lifetime annuity. The software was used to project the portfolios over 26 years.

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<sup>1</sup>ASFA Retirement Standard, December quarter 2018, national

<sup>2</sup> Australian Government Actuary Tables, 2010-12

## The probability of achieving the income levels rose for portfolios with the annuity in the model

The increased probabilities are due to the increased amount of guaranteed income from the annuity. There is a further effect in that the annuity has a higher rate of annual return than the defensive assets it replaces. Also, the volatility of the portfolio's income reduces markedly with use of the annuity. The paper provides illustrations of the layering effect of the Age Pension, and an annuity, complementing the allocated pension, as well as the portfolio construction applications with asset allocations before and after annuity introduction.

## Conclusion

The paper concludes with Strategic Insight's view as actuaries and researchers, namely that 'in an uncertain world, lifetime annuities have the capability to introduce improved elements of certainty, reduced volatility and additional longevity into portfolios, and for these reasons should be given serious consideration as integral parts of retirement portfolios'. It is also pointed out that this is a general view and while lifetime annuities provide scope for solutions in retirement planning, personalised client circumstances must always be considered.

## Introduction

At the point of time when a retirement portfolio first starts being drawn on, a specific set of challenges emerge for retirees. These challenges all relate to the ability of the portfolio to meet the ongoing income needs of the individuals, either as singles or as couples. In Australia, meeting these challenges has generally been dealt with up to now through a planning and portfolio management process, based largely on the retirees' financial circumstances, risk tolerance, needs and goals. A typical approach is one based on the use of a mix of assets which may include equities, property and property trusts, fixed interest, managed fund investment options and cash. The retirement portfolio will usually be held within superannuation, but there may be other private assets which supplement the retirees' income, as well as some entitlement to the Australian age pension; these need to be taken into consideration in setting up and maintaining the overall retirement plan.

A unique set of challenges which need to be confronted in the above process can be summarised as:

- Longevity Risk - The risk of outliving one's savings, given life expectancies have increased and are expected to continue to increase in Australia.
- Sequencing Risk - The different impact that market fluctuations, especially downwards, can have depending on when they occur through the retirement phase, namely, at the start, part way through or towards the end of the retirees' lifespans, creating different issues to be addressed.
- Inflation Risk - ability of the assets to generate investment returns which meet inflation, therefore the income stream needs to meet the rising costs of living in retirement.

In addition to the asset types identified above, Australian retirees could include lifetime annuities as part of their portfolios. This paper will examine how the various challenges can be ameliorated by the introduction of these annuities, and will look at worked examples of 'before' and 'after' situations so as to gauge the impact of lifetime annuities in numeric and probabilistic terms.

## Lifetime Annuities

### History of Lifetime Annuities

A clear understanding of lifetime annuities is an essential precursor to their use and impact on retirement planning, as well as the benefits and limitations they convey.

Dating back to Roman times, lifetime annuities have been used as a means of providing annual income, either through rulers rewarding their veteran soldiers or by speculators providing citizens with payments until death in return for receipt of a lump sum. In the 1700s English Friendly Societies began accepting voluntary subscriptions from their members and subsequently paying a stream of income up to the time of a member's decease, effectively creating an annuity product.

As more societies and later, life companies started offering this product, extra features were added: these included a guarantee of the level of income paid by the insurer, a guaranteed minimum payment period such as 10 years irrespective of the purchaser's death, and joint and reversionary annuities, payable until the death of both annuitants. The unique aspect of these annuities was, and still is, access to an asset which matches an individual's life expectancy (or 'longevity') by providing a continual stream of income over that lifetime.

Apart from the lifetime annuity, another type of annuity, namely fixed term (which provides a combination of return of capital and interest) is available in Australia, but this doesn't have the key feature of 'longevity' payment and isn't considered in this discussion.

### Payments for a lifetime

Payment of the annuity income continues for the life of the annuitant or, in the case of joint annuitants, for the life of the surviving annuitant after the death of the other annuitant. This feature is available because the life company which sells lifetime annuities has built in an assumption of the expected lengths of lives of annuity purchasers. For those annuitants with the same life expectancy (say N years) as this assumption, this would produce a satisfactory result of optimum benefit if they survive for exactly N years. In the case of those with above average good health, there is the potential to receive income, which is based on both capital and earnings, for a period longer than the policy's in-built life expectancy. This is the uniquely valuable feature of the lifetime annuity - although the capital would have been consumed after N years without an annuity, the guarantee by the life company to keep paying keeps the income rolling on for as long as the annuitant survives.

However, for people with impaired health, such as smokers, heavy drinkers, cancer sufferers and those with very impaired health, a cautionary point needs to be made, since the amount and period of annuity payments they receive could fall short of what they anticipate, through early death.

In the UK, this issue is addressed through the sale of enhanced and impaired life annuities, with the annuitants receiving a higher annual income than a standard annuity sold to healthy individuals. This means that although the period until death may be shorter and the total number of payments less than those of healthier annuitants, there is compensation through the payment of higher annuity income to the impaired life annuitant. This type of annuity is not yet available in Australia, so persons of a less healthy type need to be made aware of the potential drawback to a lifetime annuity in their case.

To mitigate the above problem, Australian insurers have added death benefits, thereby providing a lump sum in event the annuitant dies during an agreed period. These are more modern approaches than the earlier method offered by insurers whereby annuity payments continued after a single annuitant's death, up to the end of the guaranteed period.

### Payment guarantees for certain options

For a single annuitant purchasing a level annuity, the amount of the annuity payment is guaranteed; for an increasing annuity it's guaranteed to rise at a fixed rate each year. An annuity which is fully or partially linked to CPI will increase in a year where CPI is positive but could reduce if it is negative. There are costs for selecting fixed increase or CPI options, and this is reflected in a reduction of the annual annuity income. For a joint annuity, apart from these options, there is normally the option at commencement to specify a reduction in the annual annuity payment, on the first death. A fairly typical reduction is 30%, so that 70% of the income would continue.

### Access to capital in certain cases

Commutation (withdrawal) may be available under certain terms and conditions. In the case of an annuity with a guaranteed minimum period of annuity payments, the usual practice is to provide access to the capital, subject to the commutation terms of the policy selected, during this guaranteed period; this provides some liquidity during the guaranteed period.

Where a commutation is made, the commutation terms (generally based on prevailing economic factors) may be severe, so liquidity could come at a steep price. After the guaranteed period there would normally be no ability to draw on the capital.

### Some other points to consider

Although annuities have built-in guarantees provided by the issuing life companies, this does not mean that the products are risk-free. The guarantees are only as good as the ability of the companies to meet them. Life companies in Australia have safeguards as they operate under the Life Insurance Act 1995, are supervised by APRA and are required to hold certain reserves, especially where products have some form of guarantee i.e. Solvency and Capital Adequacy Reserves. Purchasers of annuities can access information as to the strength of these reserves through material published regularly by APRA.

To cover the costs of administration there are usually minimum purchase amounts required for investment into an annuity, while to avoid over-exposure to any one annuitant, life companies generally set an upper limit to the amount invested into an annuity.

There is a limited choice of life companies in Australia, with only two offering lifetime annuities as at 1 January 2019.

## Consideration in Retirement Portfolio Planning

The extent and timing of asset fluctuations (particularly when these are downwards and capable of reducing retirees' income), the non-matching of assets' longevity with retirees' longevity, the inability of earnings growth to meet annual inflation and the lack of sufficient liquidity for covering urgent needs, are amongst the major issues which confront retirement portfolios in general. Implicit in all of these is the retirees' needs for a reasonable level of income, sustained over both the life of the portfolio and their life expectancies.

Examples of these types of issues and their effects:

- A portfolio with an initially large proportion of equities and property would be markedly affected by say, a sudden drop of 30% in both of these markets, especially if occurring right at the start of the income drawing; there might subsequently be insufficient time, despite market conditions gradually improving, to make up the loss, resulting in the retirees running down the portfolio well short of their lifetimes.
- Another scenario is that of a portfolio which lasts as long as the retirees' life expectancies, but never earns enough to boost the annual income to meet inflation, resulting in an income which is unable to cover rising living costs.
- Managing and matching a portfolio with a declining balance each year, so as to meet specific income goals, while continuing to maintain the correct asset mix over 30 or even 35 years, is not an easy process even for professionals, and yet this is the task required of typical retirees.
- Situations where a forced sale of assets to meet contingencies such as emergency medical expenses, could result in a substantial capital loss, especially when selling off equities or long-term fixed interest securities, while also reducing the stock of assets with higher levels of dividends and interest earnings.

## Reasonable Income

The level of income which retirees target is a key consideration in the planning process. The Association of Australian Superannuation Funds Australia, ASFA, has estimated that to achieve a 'comfortable' standard of living in retirement, a single retiree aged 65-85 would need \$545,000 and a couple would need \$640,000 (ASFA Retirement Standard). ASFA also defines (September 2018) what it calls a 'modest' standard of living, namely an annual income of \$27,595 for a single and \$39,666 for a couple, and \$43,200 for a single and \$60,843 for a couple, as 'comfortable' levels. The 'modest' figures seem much too low and our view is that around 70% of the 'comfortable' levels, say \$30,240 and \$42,590 p.a. respectively, seem more appropriate as low-level incomes.



## Life Expectancy

Life expectancy is a critical issue for retirees, given that their retirement portfolios need to last as long as at least one of a couple is still alive and also that these generate sufficient income, together with any age pension, to meet their income needs. The length of time involved in this exercise is much longer than most persons realise and is demonstrated by the following statistics from the Australian Government Actuary's Australian Life Tables 2010-12:

**Complete expectation of life(as at 2011):**

Male age 65	19.22 years
Female age 65	22.05 years

These figures are averages, since some individuals will die before life expectancy while others will survive beyond it. In the case of males, in 2011 the likelihood of a 65-year-old reaching age 84.22 was 0.52 (i.e. out of 1000 males aged 65, 520 were expected to be alive 19.22 years later). In the case of females, the likelihood of reaching age 87.05 was 0.53, so 530 females out of 1000 were expected to survive 22.05 years.

These estimates do not tell the full story. The complete expectation of life assumes that the mortality rate at each age in 2011 stays constant. However, medical improvements mean that mortality rates have been constantly declining and can be expected to continue to do so. The Australian Government Actuary even publishes the estimates and the method to do this. Using the 25-year improvement factors, a 65-year-old male in 2019 can expect to live to 87 and a 65-year-old female to 89. In other words, more than half the population aged 65 can be expected to reach these older ages.

The outlook therefore, is for lifespans which are longer than anticipated a few years ago. In our view this is going to make retirement planning, especially for portfolios which depend largely on non-guaranteed income streams, less and less likely to achieve its goals. Better solutions which incorporate long term guaranteed income streams, such as lifetime annuities need to be seriously considered.

## Portfolio Size

The ability of a portfolio (assumed to be in both superannuation and non-superannuation accounts) to deliver a level of income over the lifetime of a retiree is directly related to the **size** of the portfolio. If for example, a single retiree aged 65 is targeting a modest level of income earned by his or her retirement funds, lasting to at least age 95 (say \$30,000 p.a., increasing each year at CPI, which is assumed to be 2.5% p.a.), the problem is much more easily handled with a portfolio of \$1 million than say one of \$300,000.

In the first example, the amount of capital is so large, that provided the portfolio earns an average of 2.25% p.a. over a lifetime of 30 years, there will still be \$127,000 left at the end of the 30<sup>th</sup> year; this is despite the fact that the annual drawings in this example have grown from \$30,000 in year 1 to nearly \$63,000 in year 30.

A \$500,000 portfolio, with the same earning rate and with the same income drawings will only last to the end of the 17<sup>th</sup> year and even when earning 6% p.a. will be used up by the end of year 25. A \$300,000 portfolio earning 6% p.a., drawing \$20,000 p.a. and with CPI at 2.5% p.a. will last 21 years.

The growth rates used in these examples are uniform ones, in that they assume that growth over the period averages out i.e. positives overcome negatives to achieve an overall positive rate p.a. In the real world the effect of sequencing risk can have a dramatic impact, with sudden, dramatic falls in equity markets followed by a lengthy period of low returns and recovery making the targeted earning rate unachievable for some retirees.

Larger portfolios lying above \$500,000, up to \$1.2 million, are not all that uncommon, especially in self-managed superannuation where the average has recently been \$595,500 (Strategic Insight Report 2015). Industry Funds have had averages in the order of \$210,000, but allowing for consolidation of individuals' disparate accounts as well as adding in non-superannuation savings, suggests a range of \$300,000 to \$600,000 at retirement applying to a substantial part of the retired population. This paper consequently looks at funds in this range, namely from \$400,000 to \$1.2 million.

## Retirement planning with asset modelling

The typical planning approach to meet the challenges of the retirement portfolio has for many years followed asset-allocation lines, in which the client's age, income needs and objectives are used to develop a model with a set of asset types, each with its own range of allocations as well as indicative, projected rates of future return. So-called 'Monte Carlo simulations' consider the occurrence of past scenarios, inputting historic investment performance and asset allocations to generate 'probability of occurrence factors based on levels of statistical confidence'. Other less complex methods used in planning rely substantially on past experience to arrive at recommended asset mixes to meet the client's profile.

The limitations of asset models are highlighted by the authors David Blanchett and Wade Pfau in their article, "The Power and Limitations of Monte Carlo Simulations, 2014" ([www.advisorperspectives.com/the-power-and-limitations-of-monte-carlo-simulations](http://www.advisorperspectives.com/the-power-and-limitations-of-monte-carlo-simulations)) making the point that:

*"Explaining the past is much easier than predicting the future. This uncertainty raises a significant number of issues when creating a financial plan for a client. Monte Carlo simulations will illuminate the nature of that uncertainty, but only if advisors understand how it should be applied – and its limitations."*

Strategic Insight's view is that on its own the use of asset modelling is at best a very partial solution to the issues highlighted earlier in this paper. Essentially what such modelling lacks is the ability to generate high degrees of probability in achieving specific income streams, especially over very lengthy time frames. As the forthcoming sections indicate, using asset modelling solely, even with the inclusion of the age pension in the income projections, the probabilities for generating levels of reasonable income over very long terms remain on the low side.

## The Age Pension in Australia

In considering retirement planning and the use of lifetime annuities in the Australian context, it's essential to consider the effect of the Age Pension, since this provides a major part of the retired population with a key layer of its retirement income. Government figures show that in 2009-10 there were 2.078 million persons receiving the Age Pension and by June 2016 (Department of Social Services), this had grown to 2.538 million individuals. ABS figures further indicated that in 2014-15 there were 3.6 million retired persons over the age of 45, so applying the June 2016 Age Pension data to these figures suggests that a percentage in the order of 70% of retirees currently receive some part of the age pension. This is supported by a statement made recently (Mine Wealth and Wellbeing Financial Advice, July 2017): *'Despite our increased reliance on superannuation savings to fund our retirement, the government expects more than 67% of Australians will still qualify for at least a part government pension for decades to come'*.

Essentially the Age Pension is like a lifetime annuity, where:

- Guaranteed annual income is underwritten by the Australian Government
- Longevity of payment matches the lifetime of the retirees
- The maximum pension payable is adjusted twice a year, in March and September, to reflect changes in a pensioner's cost of living

Based on the position at 1 January 2019, the full Age Pension, including pensioner and energy supplements was:

Singles:	\$23,824 p.a.
Couples:	\$35,916 p.a.

The amount of pension an individual or couple receive is subject to both an income and assets test, with reductions being applied to the full pension, depending on the size of assets and income. At a certain point, which varies per individual and couple, the age pension will cut out, but for a substantial number of persons, even a small part of the pension is still obtainable.

The availability of part of the age pension to many retirees has enabled a process of ‘income layering’ to be applied, when determining how a retiree can best generate an income in retirement. In this situation the age pension or part thereof thus forms the first layer of retirement income.

On its own the age pension, even at its maximum level, falls below the ‘comfortable’ level prescribed by ASFA, but as an adjunct to the income generated by retirees’ other assets, it can provide a substantially improved means of meeting future retirement-income needs.

### Age Pension means testing of lifetime annuities

Lifetime annuities enjoy specific assessment under both the Age Pension Income and assets tests. This assessment differs relative to most other available investments or investment structures (including account-based pensions). This assessment can provide different Age Pension payment profiles over time where a client invests part of his or her retirement assets in a lifetime annuity.

The Government has now legislated changes to the means testing of lifetime annuities commenced on or after 1 July 2019 .

Test	From 1 July 2019
Income Test	Annual payment x60 per cent
Assets Test	Greater of: <ul style="list-style-type: none"> <li>• Current/future surrender value</li> <li>• Current/future death benefit</li> <li>• Purchase price x 60 per cent until the life expectancy of a 65-year-old male (currently 84), or a minimum of five years, and then purchase price x 30 per cent for life</li> </ul>

## The Age Pension 'layered' onto a portfolio

As a first step in examining a retirement portfolio and the age pension in conjunction, some form of income projector or reckoner is required. Strangely there's a marked lack of this type of application which looks at income and income needs post-retirement, either in Australia or overseas.

There are plenty of reckoners for projecting contributions and funds in the years leading up to retirement – ASIC has one as do most of the leading Industry Funds – but as regards to a projection of needs and income, together with Age Pension in retirement, it appears that only the Challenger Retirement Illustrator allows this to be done. This online software incorporates stochastic modelling by analysing 2,000 retirement portfolios outcomes using Willis Towers Watson Global Asset Market assumptions for 40 years. This has been integrated with Challenger's own range of lifetime annuities, providing illustrations both with and without annuities in a portfolio, and producing the degree of probability that particular asset-models are expected to generate specified future income levels. We were able to access the online version of this software and hence run a number of scenarios. We understand that the Illustrator has been customised to operate with Challenger Annuities but in principle would also operate if other organisations' annuities were linked to it.

A combination of assets and income goals were examined, followed by the replacement of part of the assets with a lifetime annuity. In the examples chosen, the illustrations use a period of 26 years equal to improved life expectancy for one of the client couple and assume that both retirees survive that length of time.

## Test Case 1

Male, female homeowners each aged 67 years; male superannuation assets \$400,000, balanced asset mix 50/50 defensive/growth assets selected.

Present value of targeted income p.a., allowing for 2.5% CPI p.a.: \$56,000; it is assumed that this amount is the total expended each year, comprising \$40,000 of basic needs and a further \$16,000 of 'wants'.

Table 1a describes income in two different portfolios, one where super is invested solely to generate an account-based pension (ABP) and the other where it is invested in a portfolio combining an ABP and a 30% allocation to a lifetime annuity.

Table 1a

Present-day Year 1 values of the incomes (inflation at 2.5% p.a.)	ABP only	ABP with 30% Lifetime allocation
ABP	\$21,994	\$14,555
Lifetime	Nil	\$6,504
Age Pension	\$34,006	\$34,941
Total	\$56,000	\$56,000

Assumptions: As at 1 February 2019 Challenger Liquid Lifetime Flexible Income, invested in the male's name, monthly payments indexed with CPI, 16-year withdrawal period, no adviser fee. Account based pension assumes an earning rate on growth assets of 6.4% net p.a., and on defensive assets 2.6% net p.a. The make-up of the income components will change each year as the portfolio alters and the age pension adjusts.

The software projects the income derived from the assets over the expected lifetime of the retirees using the statistical data provided by Willis Towers Watson and is based on the scenario where there is a 50% chance of at least one of the retirees surviving 26 years.

Table 1b

Probability of achieving income at year 26	ABP only	ABP with 30% Lifetime allocation
Needs and Wants of \$56,000	19%	41%
Needs of \$40,000	23%	100%

As described in Table 1b, the software shows using an ABP only portfolio results in a probability of 19% that the assets and age pension (which is recalculated each year) will enable the retirees to expend \$56,000 each year for the 26-year period being illustrated. The probability of achieving their minimum income needs of \$40,000 at year 26 if they drew down \$56,000 p.a. for as long as they can in retirement, is only slightly better at 23%.

In contrast, where a portion of the portfolio is combined with a lifetime annuity the probability of meeting the income target of \$56,000 p.a. increases by 2.2 times to 41% and the probability of meeting the minimal income needs of \$40,000 p.a. in year 26 if they draw down \$56,000 p.a. for as long as they can in retirement, increases by 4.3 times to 100%.

## Test Case 2

Male, female homeowners each aged 67years; male superannuation assets \$600,000, balanced asset mix 50/50 defensive/growth assets selected.

Present value of targeted income p.a., allowing for 2.5% CPI p.a. : \$60,000; it is assumed that this amount is the total expended each year, including \$42,000 of basic needs and a further \$18,000 of 'wants'.

Table 2a describes income in two different portfolios, one where super is invested solely to generate an ABP and the other where it is invested in a portfolio combing an ABP and a 25% allocation to a lifetime annuity.

Table 2a

<b>Present-day Year 1 values of the incomes (inflation at 2.5% p.a.)</b>	<b>ABP only</b>	<b>ABP with 25% Lifetime allocation</b>
ABP	\$40,659	\$32,529
Lifetime	Nil	\$8,130
Age Pension	\$19,341	\$19,341
Total	\$60,000	\$60,000

Assumptions: As at 1 February 2019 Challenger Liquid Lifetime Flexible Income, invested in the male's name, monthly payments indexed with CPI, 16 year withdrawal period, no adviser fee. Account based pension assumes an earning rate on growth assets of 6.4% net p.a., and on defensive assets 2.6% net p.a. The make-up of the income components will change each year as the portfolio alters and the age pension adjusts.

The software projects the income derived from the assets over the expected lifetime of the retirees using the statistical data provided by Willis Towers Watson and is based on the scenario where there is a 50% chance of at least one of the retirees surviving 26 years.

Table 2b

<b>Probability of achieving income at year 26</b>	<b>ABP only</b>	<b>ABP with 25% Lifetime allocation</b>
Needs and Wants of \$60,000	39%	65%
Needs of \$42,000	43%	100%

As described in Table 2b, as might be expected, given the larger amount of assets available, even though the targeted income has increased from \$56,000 to \$60,000, the ability of the portfolio to achieve the targeted and minimal needs incomes improves.

Specifically, the software shows using an ABP only portfolio results in a probability of 39% that the assets and age pension (which is recalculated each year) will enable the retirees to expend \$60,000 each year for the 26 year period. In terms of their basic needs income, if they drew down \$60,000 p.a. for as long as they can in retirement the probability of achieving \$42,000 at year 26 is only slightly better at 43%.

In contrast where a portion of the portfolio is combined with a lifetime annuity the probability of meeting the income target of \$60,000 p.a. had increased from 39% to 65% and the probability of meeting the income target of \$42,000 in year 26 increases by 2.3 times to 100%.

### Test Case 3

Male, female home-owners each aged 67years; male superannuation assets \$1,200,000, balanced asset mix 50/50 defensive/growth assets selected.

Present value of targeted income p.a., allowing for 2.5% CPI p.a.: \$75,000 (\$45,000 basic needs and \$30,000 'wants').

Table 3a describes income in two different portfolios, one where super is invested solely in the ABP and the other where it is invested in a portfolio combining an ABP and a 20% allocation to a lifetime annuity.

Table 3a

<b>Present-day Year 1 values of the incomes (inflation at 2.5% p.a.)</b>	<b>ABP only</b>	<b>ABP with 20% Lifetime allocation</b>
ABP	\$75,000	\$61,992
Lifetime	Nil	\$13,008
Age Pension	Nil	Nil
<b>Total</b>	<b>\$75,000</b>	<b>\$75,000</b>

Assumptions: As at 1 February 2019 Challenger Liquid Lifetime Flexible Income, invested in the male's name, monthly payments indexed with CPI, 16 year withdrawal period, no adviser fee. Account based pension assumes an earning rate on growth assets of 6.4% net p.a., and on defensive assets 2.6% net p.a. The make-up of the income components will change each year as the portfolio alters and the age pension adjusts.

The software projects the income derived from the assets over the expected lifetime of the retirees using the statistical data provided by Willis Towers Watson and is based on the scenario where there is a 50% chance of at least one of the retirees surviving 26 years.

Table 3b

<b>Probability of achieving income at year 26</b>	<b>ABP only</b>	<b>ABP with 20% Lifetime allocation</b>
Needs and Wants of 75,000	44%	69%
Needs of \$45,000	50%	100%

As described in Table 3b, the software shows using an ABP only portfolio results in a probability of 44% that the assets and age pension (which is recalculated each year) will enable the retirees to expend \$75,000 each year for the 26 year period. In terms of their basic needs, if they drew down \$75,000 p.a. for as long as they can in retirement the probability of achieving \$45,000 at year 26 is slightly better at 50%.

In contrast where a portion of the portfolio is combined with a lifetime annuity the probability of meeting the income target of \$75,000 p.a. had increased from 44% to 69% and the probability of meeting the income target of \$45,000 in year 26, increases by 2 times to 100%.



### Factors producing the increased probabilities

In all of the test cases, the substantially improved probabilities which the introduction of the lifetime annuity generates are due to several factors:

- An increased portion of the targeted income becomes guaranteed. For example, in test case 1 and described in Table 1a, the proportion of guaranteed income in year 1 (from the combined age pension and the lifetime annuity) increases from 61% to 74%, in test case 2, Table 2a shows it rises from 32% to 46% and in Test Case 3, Table Case 3a (where the Age Pension doesn't apply initially) shows it increases from 0% to 17%. It follows from this that there is greater likelihood of generating an increased amount of income with the annuity in the portfolio.
- The annuity replaces defensive assets and provides a guaranteed payment of \$5,420 (indexed) per \$100,000, as at 1 February 2019. Whilst the overall defensive assets continue to earn the same return over the illustrated period, the annuity portfolio benefits from the additional benefit of 'pooling' in form of mortality credits. This additional benefit means that the growth assets are not required to work as hard i.e. they can target a lower earning rate since the annuity is contributing an extra amount of earnings
- To maintain the overall growth and defensive mix for the 26 year period, the allocation of growth assets within the account based pension are adjusted to account for the annuity forming part of the defensive assets of the total portfolio.

### Annuities can positively reduce the volatility of income

The level of income volatility in the portfolio is reduced in each instance that an annuity replaces part of the assets. So, treating CPI as being non-volatile (as at 1 February 2019, but this may of course change in future) for year 1 in test case 1, 39% of the income is volatile and capable of fluctuation; after inclusion of the annuity, volatility reduces to 26%. In test case 2 income volatility reduces from 68% to 54% and in test case 3 from 100% to 83%. Reducing the portfolio's volatility is potentially a further way of improving probabilities, although this does of course depend on the assumptions and methodology used in the asset-modelling.

### Other effects

There are other effects of the annuity which need to be considered. One of these is liquidity. Replacing part of the defensive assets with an annuity could lessen the portfolio's liquidity. While the annuity used in the various test cases has a withdrawal period of 16 years, this period may be less than those of the defensive assets, which remain accessible for as long as the capital has not been spent. The value paid out on withdrawal from the annuity may be lower relatively speaking than that paid from defensive assets, such as cash and short term fixed interest, as the regular annuity payments include some capital repayments and there may be additional withdrawal charges applied by the life company.

The examples set out in this review are only a small sample of a very wide range of possible combinations of portfolio size, annuity purchase amount, other assets and income, sex, age, single life, joint life and reversionary parameters which can apply to retirees. Readers will thus need to view scenarios and results obtained from similar retirement illustrators using specific parameters, if they wish to obtain specific results. What will remain a constant factor in such scenarios, however, is the potential impact of the annuity utilised in increasing the amount of guaranteed income.

## A Layered View of Retirees' Income with an Annuity in the Portfolio

### Lifetime annuity impact on a portfolio

A view of how a lifetime annuity impacts on a portfolio is depicted in the figure below. The annuity chosen provides level income as long as the annuity purchaser is alive. The age pension has for the sake of simplicity been kept constant although in practice it will vary and the size of the non-annuitized part of portfolio is shown as a straight line but in practice will fluctuate.

The income from the portfolio balance (in the form of an allocated pension) is assumed to remain at a level which just brings the total income drawn to meet the retirees' 'needs' and 'wants' for the first 26 years, declining thereafter.

This represents a possible scenario where the retiree or retirees' income requirement has been met for 26 years and becomes increasingly less thereafter. The age pension constitutes the first layer of guaranteed income, with the annuity adding a further guaranteed layer. Provided that the total of these meet the retirees' basic needs, the excess drawn from the allocated pension is available to meet their 'wants'.

### *The Layering Effect of the Age Pension, Lifetime Annuity and Allocated Pension*

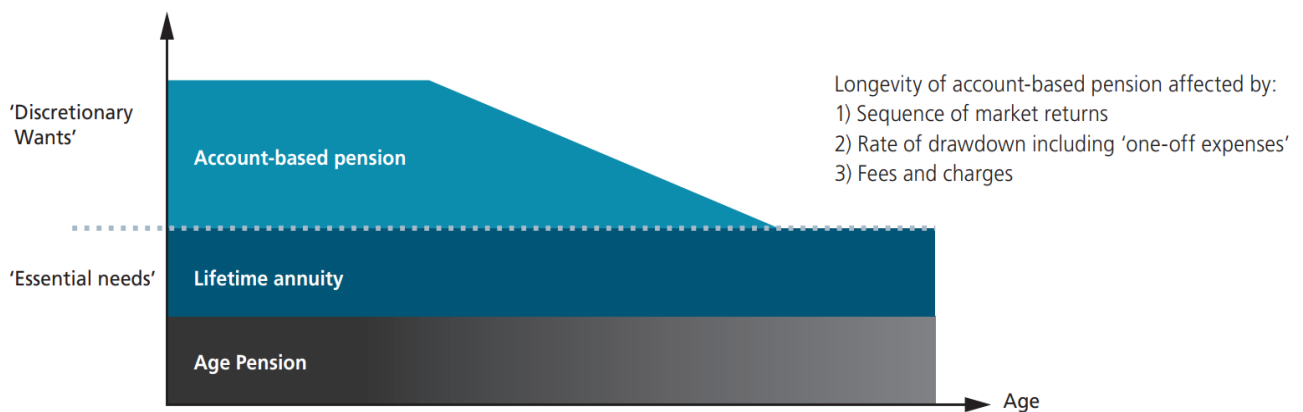


Diagram is illustrative only and is not to scale. It can include other income sources such as term annuities, investment bonds, term deposits, shares, managed funds and cash.

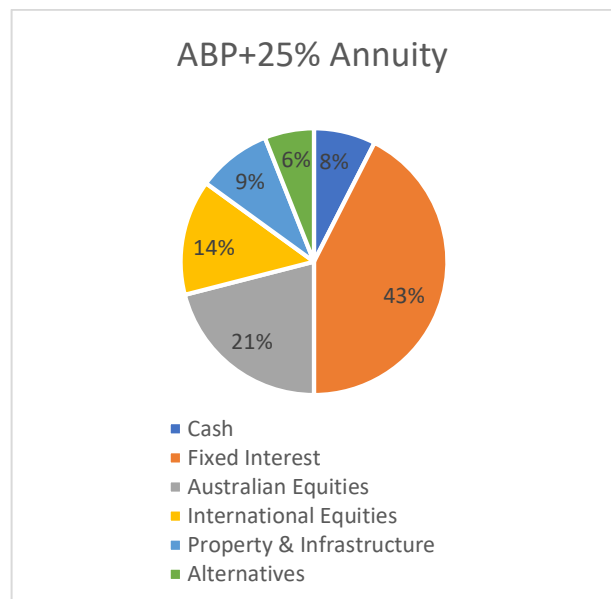
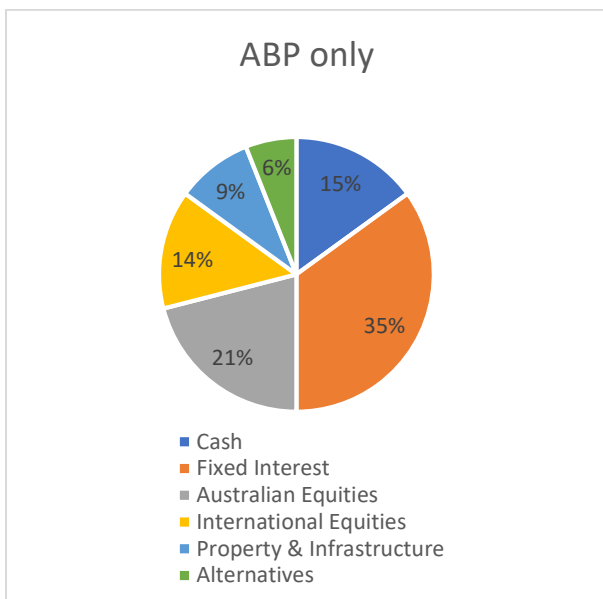
Possible portfolio mix before and after introducing an Annuity

Using **Test Case 2** with male, female house-owners each aged 67 years; male superannuation assets \$600,000, balanced asset mix 50/50 defensive/growth assets selected.

Asset Type	Account-based Pension (ABP)	ABP Asset Allocation	ABP adjusted for Annuity inclusion	ABP Adjusted Asset Allocation	Annuity 25% of Portfolio	Combined ABP and Annuity	ABP & Annuity Asset Allocation
Growth/Defensive Split	\$	50%/50%	\$	67%/33%	\$	\$	50%/50%
Cash	90,000	15.00%	45,000	10.00%		45,000	7.50%
Fixed Interest	210,000	35.00%	105,000	23.33%	150,000	255,000	42.50%
Australian Equities	126,000	21.00%	126,000	28.00%		126,000	21.00%
International Equities	84,000	14.00%	84,000	18.67%		84,000	14.00%
Property & Infrastructure	54,000	9.00%	54,000	12.00%		54,000	9.00%
Alternatives	36,000	6.00%	36,000	8.00%		36,000	6.00%
<b>Total</b>	<b>600,000</b>	<b>100.00%</b>	<b>450,000</b>	<b>100.00%</b>	<b>150,000</b>	<b>600,000</b>	<b>100.00%</b>

In the example, the 50/50 allocation has been adjusted to allow the 25% lifetime annuity inclusion. The account-based pension asset allocation has been readjusted to a 67/33 growth/defensive split. An annuity itself is a defensive investment so the annuity been included in the fixed interest allocation. While the asset allocation of the allocated pension portion adjusts to 67/33 the dollar value of the growth assets stays the same even when the annuity is included.

The percentages in the defensive part of the portfolio (cash and fixed interest) have each been reduced in proportion so as to make up the portfolio with the annuity inclusion. However, at an overall portfolio level with an annuity included, that overall split remains unchanged at 50% growth and 50% defensive. The important point to bear in mind in this change is that the annuity addition impacts on both the level of income and the degree of certainty of income.



## Conclusion

As both an actuarial firm and a research house, Strategic Insight and Plan for Life have always had a strong belief in the value which lifetime annuities have both in their own right as stand-alone products and as part of portfolios.

It is our view, that in an uncertain world, lifetime annuities have the capability to introduce improved elements of certainty, reduced volatility and additional longevity into portfolios, and for these reasons should be given serious consideration as integral parts of retirement portfolios.

We should point out that this is a general view and that while annuities, especially lifetime annuities, provide scope for solutions in retirement planning, personalised client circumstances must always be considered.

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