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Investment Strategy Review
Dyfed Pension Fund

MERCER

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Introduction

This report has been prepared by Mercer for Carmarthenshire County Council (the "Authority") and reviews the investment strategy of the Dyfed Pension Fund (the "Fund").

The results of this exercise were discussed at meetings held on 16 May and 12 June 2008. This report details and expands on the analysis and results.

Background

This asset strategy review has been conducted using the results of the actuarial valuation as at 31 March 2007. We have set out in the table below a comparison of the results from the valuation at 31 March 2007 and at the previous valuation in 31 March 2004.

	2004 Results	2007 Results
Market value of assets	£763m	£1,109m
Past service liabilities	£862m	£1,205m
Deficit	£99m	£96m
Funding level	89%	92%

As illustrated in the table, the Fund's Funding Level has increased by c3% to 92% since the last valuation. It should be noted, however, that some of the Actuary's assumptions in the latest 2007 Valuation have changed from the 2004 Valuation.

In addition, we have set out in the table below a summary of the liability profile of the Fund at the last two Valuations:

	31 Mar 04	31 Mar 07
	%	%
Liability Profile		
Active	51	52
Deferred	7	8
Pensioners	42	40
Funding Level	89	92

As shown above, the Fund's liability profile has not significantly changed over the inter-valuation period. At 31 March 2007, just over half of the liabilities remain in respect of active members.

Assumptions within the Modelling

The funding assumptions used in the modelling of the Fund's liabilities were supplied by and are consistent with those used by the Actuary as set out in the results of the actuarial valuation as at 31 March 2007.

In addition, we would note that the estimated cash flows used to calculate the liability benchmark portfolio reflect past service only and therefore do not take into account the change in benefit structure introduced in April 2008.

Details of the asset class assumptions used in our modelling can be found in **Appendix A**. The asset class return assumptions, set by Mercer on a quarterly basis, are risk premium based and are consistent with the view that, for the long term investor, the outperformance from equities (over bonds) compensates for the extra risk. The majority of the risk (in terms of volatility or spread of expected returns) and correlation assumptions are derived using historic returns data. Asset class return and risk characteristics are based upon Mercer's standard asset class assumptions as at 31 March 2007 for consistency with the liability data being used. The Equity Risk Premium used in these assumptions is 4%. For bonds, however, market implied volatilities are used, based on observed market prices of interest rate derivatives. Please note that the assumptions we have used in our modelling are "best estimates" and therefore differ from the Actuary's more conservative asset class assumptions as used in the actuarial valuation.

Contribution Rates

We have based the contribution rates on those agreed following the actuarial valuation. The modelling assumes that the average annual rates of employer contributions will increase to 15.3% (inclusive of deficit recovery contributions) following the 2007 valuation, and employee contributions of 6.4%. A 25 year recovery period has been assumed.

Objectives

There is no single “correct” answer to the question “What should the investment strategy be?” The strategy decision must be made to meet the needs of the Fund and the Authority. In particular, it should meet the preferred balance of risk and potential return.

A starting point in reviewing the Fund’s investment strategy is to first consider the Authority’s investment objectives. The Fund’s current investment objectives (as summarised in the Statement of Investment Principles) are:

- To ensure that the assets of the Fund match or exceed its liabilities, i.e. the Fund remains solvent.
- To seek a return consistent with the target rate of 0.7% outperformance of the benchmark annualised on a rolling three year basis whilst not underperforming the benchmark by more than 3% in any one financial year.
- To minimise the employers contribution rate, whilst avoiding volatility.

Setting clear and measurable objectives should help to set the Fund’s investment strategy, as the Authority will be able to quantify risk and therefore decide what level of risk can be taken when analysing different investment strategies.

Scope of the Review

This review addresses how the risk inherent in the current investment strategy will impact the likelihood of achieving certain funding levels and the volatility of those levels. In considering the Fund’s investment strategy, we have looked at the likely progression of the funding level over a ten year period. We do not model over longer periods simply because the assumptions underlying our tools (both actuarial and asset class) arguably become less robust over time.

The second part of this report considers a number of “second order” strategic decisions including:

- UK/Overseas Equity Allocation
- Regional Allocation within Overseas Equities
- The Bond Allocation
- Alternative Assets

Current Investment Strategy

The Fund’s current strategic benchmark is shown in the table below.

Asset Class	Benchmark Allocation %
Equities	**69.0**
UK Equities	39.0
Overseas Equities	30.0
North America	*10.0*
Europe (ex UK)	*10.0*
Japan	*3.5*
Pacific Basin ex Japan	*3.25*
Emerging Markets	*3.25*
Bonds	**30.0**
UK Gilts	6.0
UK Index Linked	15.0
Corporate Bonds	9.0
Alternatives	**1.0**
Global Tactical Asset Allocation	1.0
Total	**100.0**

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The Modelling Process

The fundamental premise of the review is that investment strategy should be determined relative to the liabilities of the Fund. Therefore, the first step is to calculate the Fund's "Liability Benchmark Portfolio" (LBP), that is the theoretical combination of index linked and fixed interest gilts whose coupon (and maturity) payments mirror the stream of benefits payable from the Fund. The portfolio identified is then used as a proxy for the Fund's liabilities.

Next, we calculate the level of risk inherent in the Fund's current investment strategy. It is important to note that by "risk" we refer to "risk relative to the Fund's liabilities". We explain as follows:

- Think of the Fund's liabilities in terms of the LBP (i.e. a combination of index linked and fixed interest gilts). Using our core risk and return assumptions we expect this portfolio, and hence the Fund's liabilities, to "move" (in terms of return and therefore growth) in a certain way over future years. Similarly, the assets will change in value over time.

- As the Fund's liabilities and assets move, so too will the funding level. What we aim to do is track the liabilities and measure the extent to which we expect the Fund's assets to move away from the liabilities, thus giving an indication of the expected funding level.

- Our software then performs simulations of the funding level, allowing us to pin a probability on achieving (or otherwise) a certain funding target at a point in the future and the risks associated with not doing so.

- We then move on to investigate the effects of increasing or decreasing the risk level (typically determined by the equity content) on the agreed objectives.

Once the risk modelling described above has been completed, we look to “use” the risk budget identified in the most efficient way possible. In other words we look to find the combination of assets and manager structure which gives the highest possible return for the specified level of risk, subject of course to a number of qualitative and other practical constraints.

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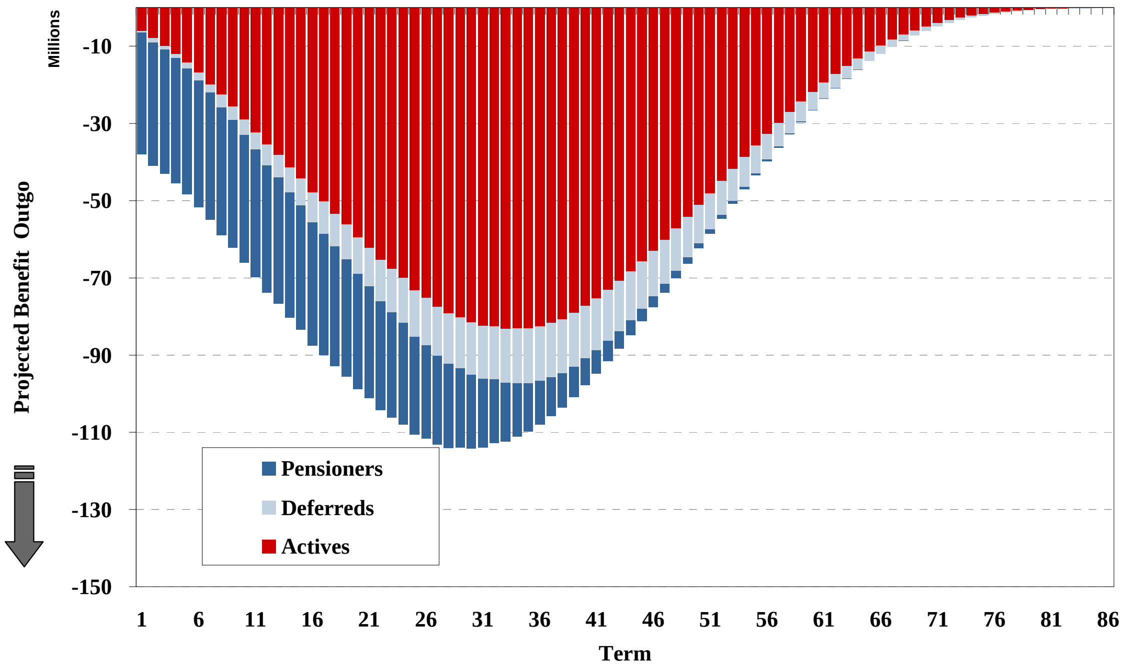
The Liability Benchmark Portfolio ("LBP")

As stated in the previous section, the crux of our ALM process is that investment strategy should be determined relative to pension Fund liabilities.

The LBP is the portfolio of assets that most closely replicates the characteristics of the liabilities of the Fund. The "risk" that is minimised by this portfolio is changes in the funding level of the Fund due to movements in financial markets such as interest rates, inflation, equity market risk, credit risk etc. However, this portfolio is also a relatively "low return" portfolio and, were the Fund's assets invested in this way, the expectation would be for the Fund to cost the Authority more over the long term (i.e. improvements in the funding position would need to come solely from contributions as opposed to a combination of contributions and investment returns).

To identify the LBP, our starting point is an analysis of the liabilities of the Fund. For this purpose, the Fund Actuary provided projections of the net cash flows expected to be paid from the Fund over the next 100 years.

The graph below illustrates the expected future cash flows of the Fund. It shows how cash flows for current pensioners steadily tail off over time, as the pensions gradually cease to be paid. For active and deferred members, the cash flows increase over time as members reach retirement age and start to receive retirement benefits, before then tailing off (as for the current pensioner members).



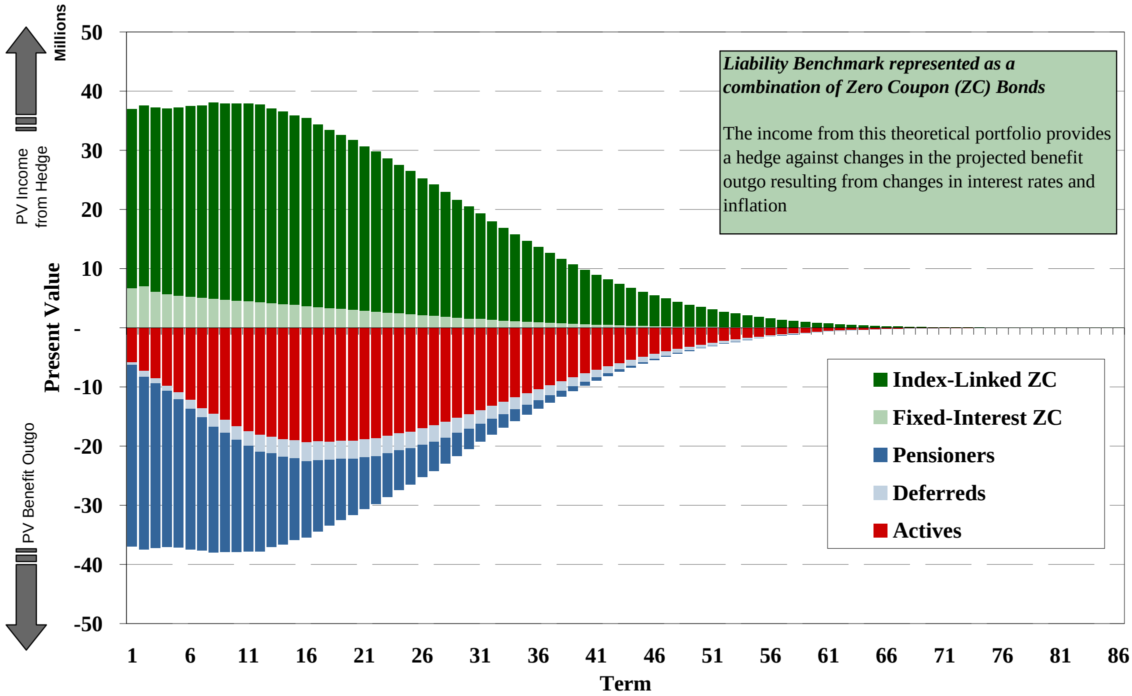
The Fund liabilities can be most closely and securely matched by a portfolio of bonds or bond-like assets of the appropriate nature and duration (“the liability benchmark portfolio”). The appropriate nature of the bonds (fixed interest or index-linked) is principally determined by the benefits payable under the Fund.

Our analysis shows that based on the cash flows described above, the nature of the LBP for the Fund is approximately 11% fixed interest and 89% index linked. This reflects that the pension increases inherent in the Fund are predominantly index-linked.

The appropriate duration of the bonds is determined by the average term of the liabilities of the Fund, after allowing for the effects of discounting. Our analysis shows that, based on cash flows described above, the fixed liability cash flows have an aggregate duration of c.14 years and the inflation linked cash flows have an aggregate duration of c.19 years. Therefore the liability-matching portfolio would consist primarily of index-linked gilts with an average duration of 19 years.

Duration can be thought of as a measure of the sensitivity of the cash flows (be they from assets or liabilities) to changes in interest rates. The longer the duration, the more sensitive the value of the payments is to changes in interest rates. For example a portfolio with a duration of 19 years would increase in value by 19% if interest rates (yields) across the yield curve fell by 1% (with a similar 19% fall in value for a 1% increase in interest rates). This has been an issue for pension plans in recent years when their bond portfolios have been of a shorter duration than their liabilities in a falling interest rate environment, and hence their assets have risen in value by less than their liabilities, impacting negatively on the funding level.

The graph below illustrates the future cash flows of the Fund discounted to the present value (below the horizontal-axis), along with the theoretical portfolio of zero-coupon bonds that could be used to replicate the cash outflows (above the horizontal-axis).



The Rationale for Investment Risk

Given that the option exists to match the Fund's assets closely to its liabilities, it is important to understand where investment risk is being taken and to justify any move away from the LBP.

By adopting the least risk investment strategy the prospect of improving the funding level through strategic asset allocation, such as targeting equity investment performance is removed. If this is the case, adopting the LBP would lead to a far greater reliance being placed on contributions in order to address any deficit. There are also the Actuary's assumptions to consider. If a decision is made to invest in line with the LBP, as the Actuary currently assumes a certain level of equity outperformance in the discount rate assumptions, the equity outperformance assumption would need to be removed and the value placed on the liabilities would rise.

Many pension funds continue to invest a high proportion of their assets in equities, quite simply because investing solely in gilts would make for unaffordable contribution requirements. However, we note that to take equity (or any investment) risk, the Authority must be content that this may lead to additional volatility in funding levels and even over the long term there is no guarantee that the expected investment return will be achieved.

In the next section we look at the expected risk and return for the current investment strategy.

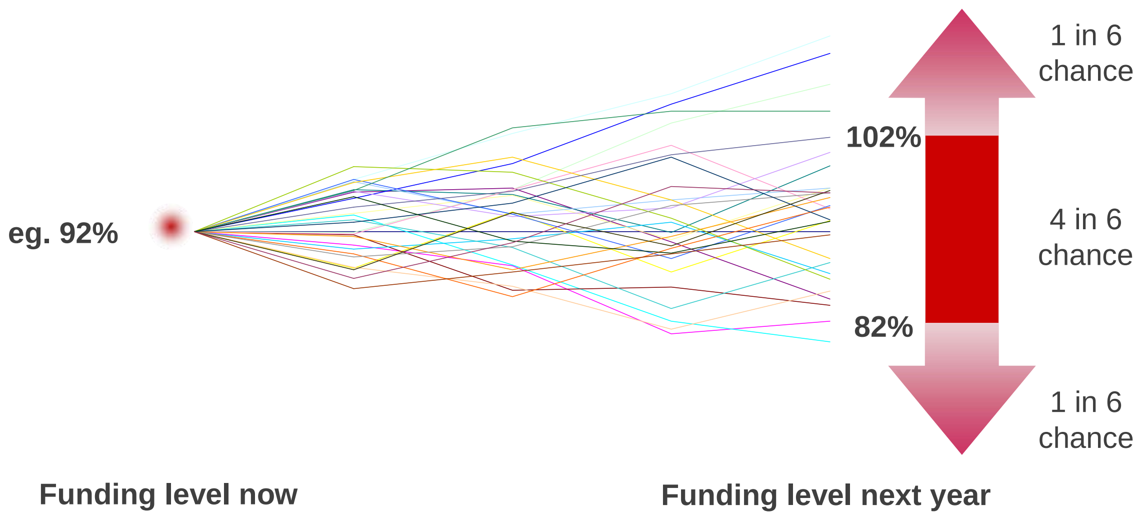
4

The Current Investment Strategy

Expected Risk and Return of the Current Investment Strategy

From our modelling we have calculated that the Fund's current strategy has an expected return (ignoring active management) of 7.4% p.a. which is 2.9% p.a. in excess of that of the LBP. However, it is important to recognise that this is only an expectation and there are risks that the return from the current strategy will be lower than this and potentially lower than the return on the LBP which could lead to a decrease in the Fund's funding position. We calculate the risk level associated with the current strategy to be around 11.6% p.a. relative to the liabilities.

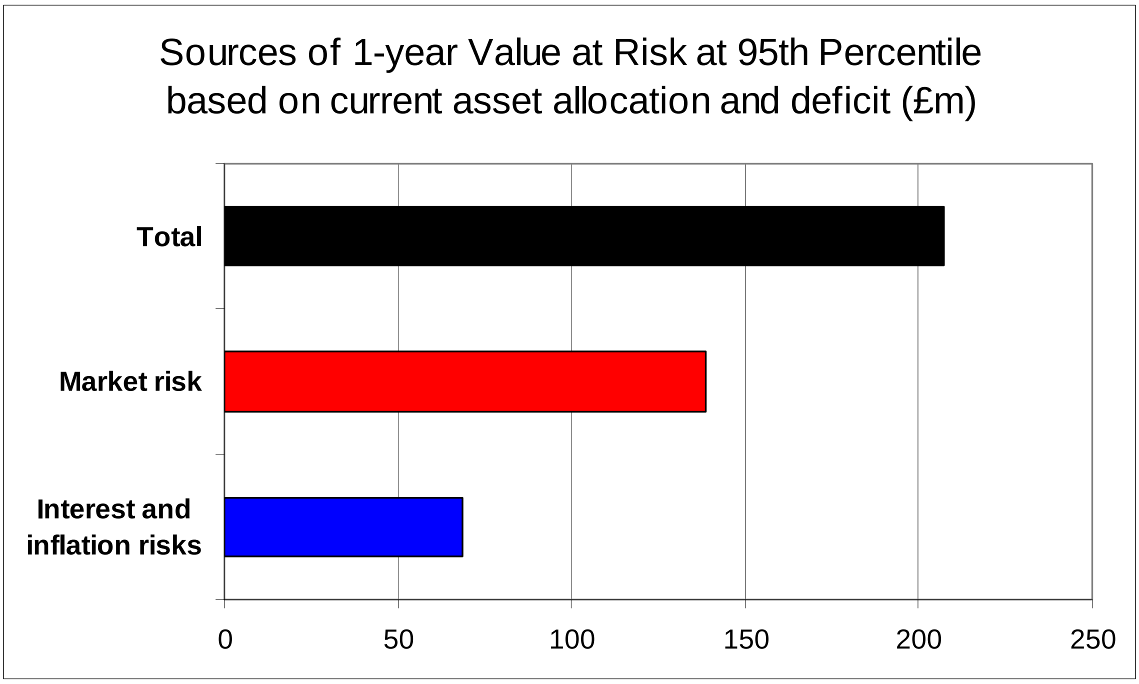
By stating a risk level of 11.6% p.a., along with an expected return of 7.4% p.a. we are saying (assuming that returns are normally distributed) that in terms of impact on funding level, we would broadly expect that the funding level to be within +/- 11.6% of the funding level as at 31 March 2007 one year on 31 March 2008. The following diagram helps to illustrate the idea:



Where does the risk come from?

As we start to move away from the LBP, the payments that make up our portfolio are affected by a number of external factors such as interest rate movements, inflation and market movements. As a result, our portfolio of assets will behave differently to the LBP (and the liabilities).

The graphic below shows how the deficit under the current strategy is affected by interest rate and inflation risk and also market risk. We illustrate this in terms of a Value at Risk measure. That is, the chart below demonstrates by how much more the deficit might increase over the next year with a "worst case" 5% (one in twenty) chance.



In short the graph shows that market risk and interest rate/inflation risks both bring significant potential to adversely affect the funding position. The market risk is the largest risk and results from the Fund's significant allocation to equities and other return seeking assets. This risk highlights the effect a downturn in equity markets may have on the Fund's funding deficit.

With regard to the Fund's exposure to interest rate and inflation risks, this is not insignificant. We typically think of bonds and liabilities in the context of interest rates, whilst equities have (although it is much debated) generally been understood to have zero sensitivity to interest rates (in a duration context). As such, the "zero" duration of the Fund's equity content is contributing to a much lower duration for the portfolio as a whole, relative to the Fund's liabilities; hence the degree of interest rate and inflation risk shown above.

Can the Fund address these risks?

The chart has shown that the Fund is exposed to risks from the markets and also from interest rates and inflation.

Perhaps market risk is the "easiest" to deal with in the sense that we can look to either reduce risk by moving into less risky assets such as bonds or diversify risk by spreading our sources of return. Put simply, why rely solely on the equity market to deliver returns when we can diversify our portfolio by investing in a wide range of return seeking asset classes.

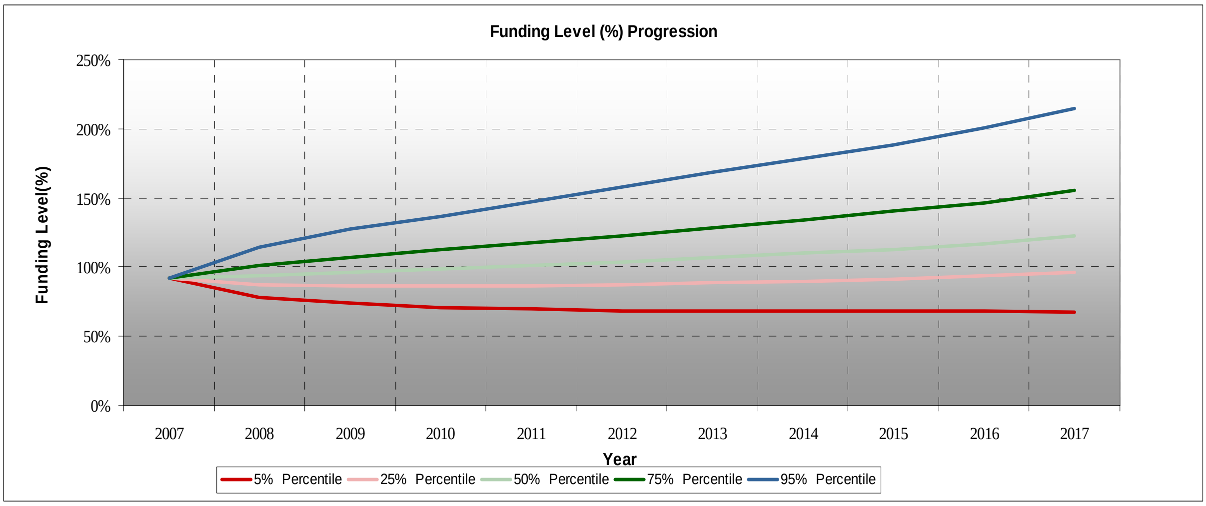
In terms of the interest rate and inflation risks, this is less easy to get to grips with and to mitigate. To begin with we note above that the deficit itself is exposed to risk and until that is eliminated, we will always have an uncovered portion of liabilities that could increase if interest rates move against us.

Secondly, an element of the interest rate risk can be mitigated by better matching the cashflows or the duration of the assets to the liabilities. This is unlikely to be possible however, without implementing a sophisticated solution, and in this case we would question the need for such solutions at present given the larger risk facing the Fund from the equity exposure. We note also that there is some debate about Local Authorities' ability to use swap instruments as part of such a solution. However, we do not dismiss the idea of paying attention to interest rate/inflation risk out of hand, noting that there are vehicles available which aim to assist Local Authorities with the management of these risks. We would be pleased to provide more information on such solutions should the Authority so wish.

The Impact of the Current Strategy on the Fund's Future Funding Position

We have considered both the upside and downside potential of maintaining the current investment strategy. The model used involves stochastic simulations (essentially a large number of random simulations consistent with our asset class assumptions) to calculate the probabilities of various outcomes. The starting point for these projections is the funding level at 31 March 2007. We then project assets and liabilities forward over a ten year period.

The chart below summarises the funding level projections.



Our modelling estimates that maintaining the current investment strategy and proposed contribution rate (and ignoring any gains/losses from active investment management) leads to:

- An expectation of the funding level rising to c.98% by the time of the next actuarial valuation in 2010.
- An expectation of the funding level reaching 100% by 2011.
- A probability of being at least 100% funded at the end of the ten year period in 2017 is c.70%.

In terms of downside risk, maintaining the current strategic benchmark and proposed contribution rate leads to:

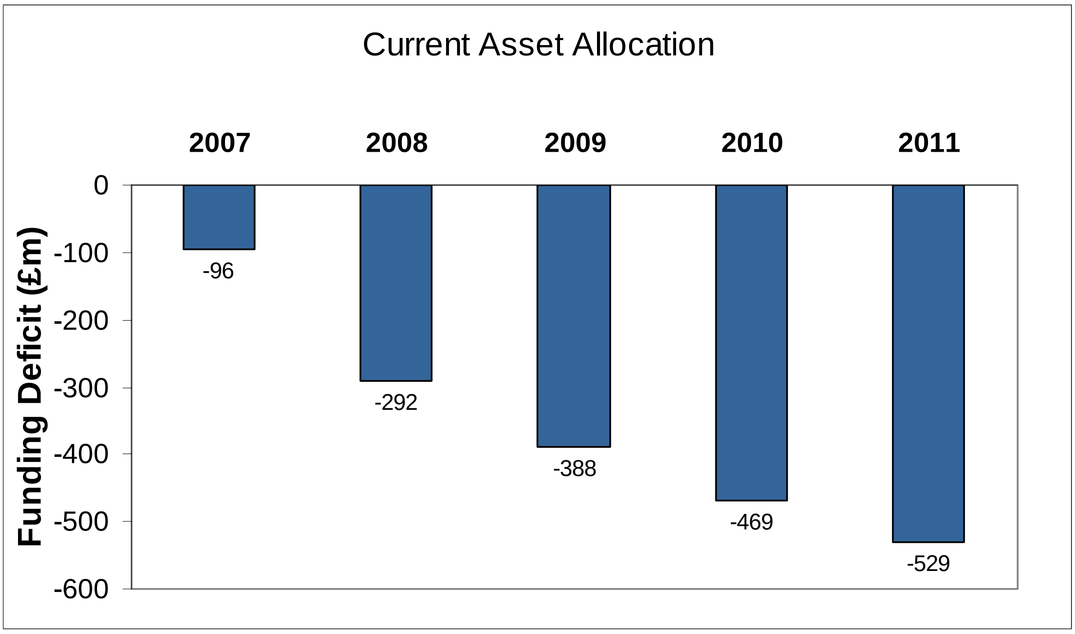
- A probability of the funding level falling below the current level (92%) at the 2010 Valuation of 37%.

- A probability of the funding level falling below the current level (92%) at the end of the ten year period in 2017 of 21%.

- A 5% (1 in 20) chance that the funding level will have fallen below 71% at the 2010 Valuation and below 68% at the end of the ten year period in 2017.

We note that these results are largely as we would expect given the Fund's current investment strategy. The Fund's equity investments are expected to provide returns in excess of gilts (and therefore, broadly speaking the liabilities), which in combination with the (assumed) additional employer contributions, will drive the expected funding level towards improvement over time.

However, in order to illustrate the downside risks further, the chart below shows a "worst case" scenario (5th percentile or 1 in 20 chance) for the funding deficit in successive years under the current investment strategy.



As indicated above, we believe there is a 1 in 20 chance of the deficit growing to over £500m by 2011 given the current investment strategy and risk level as at 31 March 2007. The key question to ask is should such a scenario occur, could the Authority tolerate this?

The analysis so far has looked at the Fund's funding level under the current benchmark investment strategy. The next step is to analyse the impact of making changes to the existing investment strategy.

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Alternative Investment Strategies

In addition to the current investment strategy, we have modelled two alternative investment strategies, one with a higher equity allocation and one with a lower equity allocation than the current investment strategy.

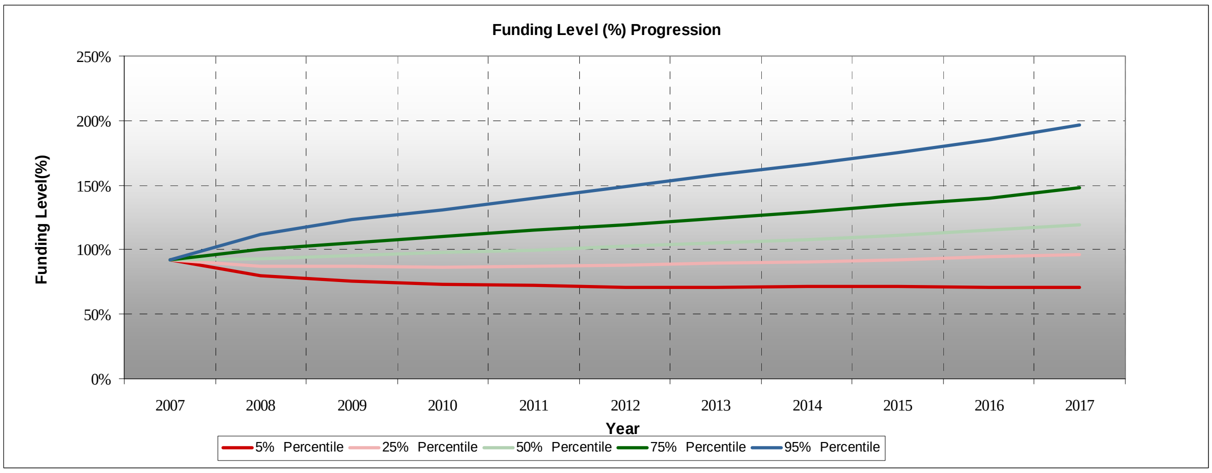
The strategies modelled, and their risk and expected return characteristics are shown in the table below.

Asset Class	Current Strategic Benchmark %	10% Less Equity %	10% More Equity %
Equities	69.0	59.0	79.0
Alternatives	1.0	1.0	1.0
Bonds	30.0	40.0	20.0
Total	**100.0**	**100.0**	**100.0**
Strategic Risk	**11.6 p.a.**	**10.0 p.a.**	**13.1 p.a.**
Strategic Excess Return	**2.9 p.a.**	**2.5 p.a.**	**3.2 p.a.**

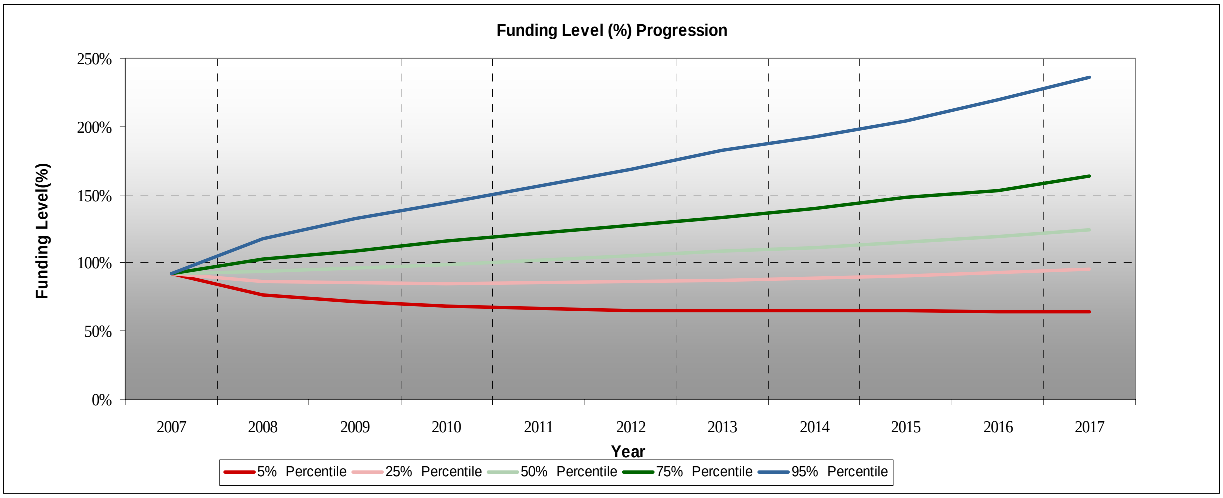
Estimated Funding Progression Under Alternative Strategies

The funding charts below show the expected funding progression for the two additional strategies modelled over a ten year period allowing for market risk and return to 31 March 2017.

10% Less Equity



10% More Equity



Summary of Results

The table below compares the estimated funding levels and downside risk in ten years time for the three strategies modelled and the current strategic benchmark.

		31/03/2017	
	Expected to reach 100% funding by March	Probability of being 100% funded	Probability of being <92% funded
Current Strategic Benchmark	2011	70%	21%
10% Less Equity	2012	69%	20%
10% More Equity	2011	71%	22%

We note that there is very little difference between the strategies modelled in terms of the probability of reaching full funding, and in the downside risk of falling below the current funding level (as measured at the last actuarial valuation).

The Authority indicated it would be happy to either maintain or slightly increase the level of investment risk inherent in the current strategy in order to target a higher expected return, consistent with the characteristics of the higher equity strategy.

Alternative Asset Classes

It is possible to refine the asset mix in order to make most efficient use of the investment risk being taken. One way of doing this is to consider an allocation to alternative investments.

Over the long term we believe that the equity markets will outperfom the bond markets; however in an environment where a huge range of asset classes and techniques are available to pension funds (particularly those of the size of Dyfed) we feel that there is merit behind embracing the principle of diversification within the arena of return seeking assets; particularly if there is a feeling amongst the Authority that equity returns may be volatile over coming months and years.

As the Authority will be aware, there are large numbers of alternative asset classes, techniques and products that can be used by pension funds; arguably too many for pension funds to invest in each and every one.

With this in mind, the preferences and risk tolerances of each pension fund will naturally be a factor in deciding which, if any, alternatives to invest in. However, ideally each fund should have a clear rationale for including and excluding certain assets.

Following initial discussions with the Authority, the immediate asset classes for consideration were Private Equity and Property, particularly pan-European Property, and we provide further background to these asset classes in Section 8.

Proposed Investment Strategy

The proposed high level split between risk-seeking and risk-reducing assets is 75% / 25% (in contrast to the current split of 70% / 30%). The rationale for maintaining this level of investment risk lies in the strength of the sponsor covenant, and the Authority's long time horizon. These factors taken together give the Authority confidence that any shortfalls through negative experience can be rectified by the sponsor, and that any short term volatility in asset returns can be withstood.

A summary of the results is set out in the table below.

Asset Class	Current Strategic Benchmark %	Proposed Strategic Benchmark %
Equities	**69.0**	**60.0**
Alternatives*	**1.0**	**15.0**
Bonds	**30.0**	**25.0**
Total	**100.0**	**100.0**
ERP: 4% p.a.		
Strategic Risk	**11.6 p.a.**	**12.1 p.a.**
Strategic Excess Return	**2.9 p.a.**	**3.2 p.a.**
ERP: 3% p.a.		
Strategic Risk	**11.6 p.a.**	**12.1 p.a.**
Strategic Excess Return	**2.2 p.a.**	**2.6 p.a.**

* Includes an allocation to Private Equity, Pan-European Property and Global Tactical Asset Allocation

Note that the risk and return figures shown above are calculated relative to the Fund's liabilities (as represented by the LBP). In addition, the impact of active management is ignored for these purposes.

Notes on the analysis

The risk and return numbers that are used to drive our modelling and analysis are to a large extent a result of the asset class assumptions that are made at the outset. If we were to alter any of the assumptions, the results would likely change and therefore impact the decisions made.

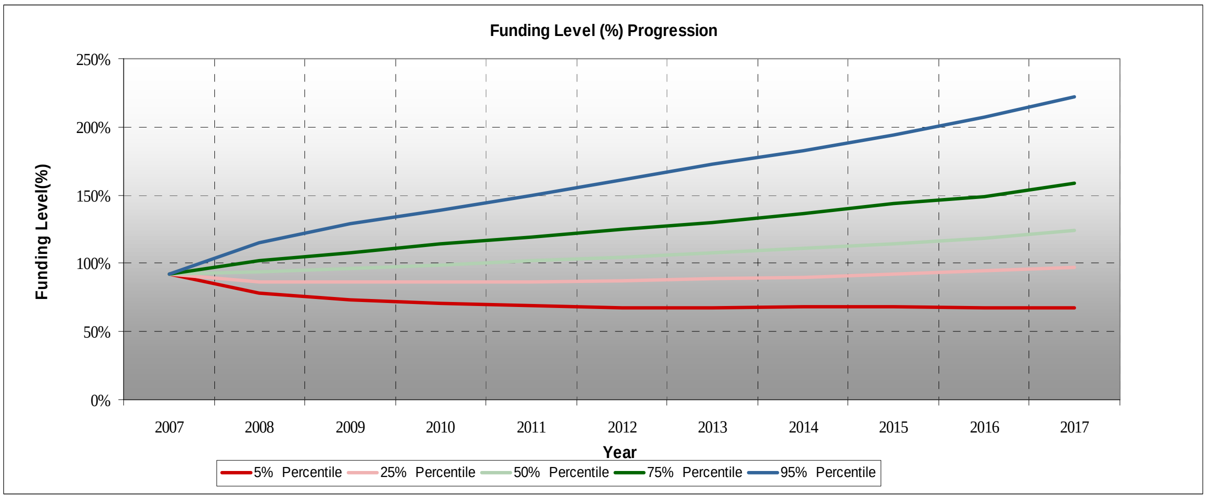
It is with this in mind that we use the risk and return analysis as a starting point, before applying a human or qualitative overlay which takes account of certain practicalities and market conditions.

In particular, one of the key assumptions made is the equity risk premium (“ERP”) i.e. the extent to which we expect equities to outperform government bonds over the long term. Out central assumption for the ERP at 31 March 2007 is 4% p.a. Given the large extent to which the Fund is at present (and will likely be in the future) exposed to the fortunes of the equity markets, we have also carried out the analysis under a lower returning equity environment, with an ERP of 3% p.a.

The analysis provided in the tabe above illustrates that the proposed strategy represents an increase in risk (as expected given the increase in size of the risk-seeking portfolio), and a corresponding increase in expected return. Under the lower ERP assumption, the proposed strategy looks slightly more favourable than the existing strategy as a result of the greater diversification into alternative assets (and therefore reduced reliance on listed equity markets) under the proposed strategy.

Estimated Funding Progression Under Proposal

The funding chart below shows the expected funding progression under the proposed strategic benchmark over a ten year period.



Summary of Results

The table below compares the estimated funding levels and downside risk in ten years for the current and proposed strategic benchmark.

	31/03/2017		
	Expected to reach 100% funding by March	Probability of being 100% funded	Probability of being <92% funded
ERP: 4% p.a.			
Current Strategic Benchmark	2011	70%	21%
Proposed Strategic Benchmark	2011	72%	20%
ERP: 3% p.a.			
Current Strategic Benchmark	2012	74%	27%
Proposed Strategic Benchmark	2012	76%	26%

In conclusion, the main points we would note from the modelling are that:

- There is little difference in the time taken to reach full funding (under the basis assumed) for the two strategies.
- The proposed strategic benchmark has a slightly higher probability of being fully funded, and a marginally lower probability of being less than 92% funded in 2017.

Comment

- The Authority remains unconvinced about the merits of alternative active management startegies, and thus decided against the use of alternative active management techniques such as hedge funds, active currency management, long / short investing and portable alpha.
- In addition, the Authority's preference was to move into one additional alternative asset class initially (pan-European Property), with the decision on whether to invest in Private Equity to be reviewed at some point in the future.
- Alternative strategies were modelled that looked at broadly maintaining the same level of targeted return but at lower risk, and targeting a higher level of risk.

Revised Proposal

The details of the alternative strategies are set out in the table below.

Asset Class	Current Strategic Benchmark %	Proposal A %	Proposal B %
Equities	**69.0**	**64.0**	**69.0**
Alternatives*	**1.0**	**11.0**	**11.0**
Bonds	**30.0**	**25.0**	**20.0**
Total	**100.0**	**100.0**	**100.0**
ERP: 4% p.a.			
Strategic Risk	**11.6 p.a.**	**11.5 p.a.**	**12.3 p.a.**
Strategic Excess Return	**2.9 p.a.**	**3.0 p.a.**	**3.2 p.a.**
ERP: 3% p.a.			
Strategic Risk	**11.6 p.a.**	**11.5 p.a.**	**12.3 p.a.**
Strategic Excess Return	**2.2 p.a.**	**2.4 p.a.**	**2.5 p.a.**

* Includes an allocation to pan-European Property and Global Tactical Asset Allocation

Comment

- Proposal A represents a slight improvement in efficiency relative to the current strategy, giving a slightly higher expected return, at a slightly lower level of risk. This is a result of the allocation to alternatives, which provides diversification away from equity markets. This is even more apparent under the lower equity risk premium assumption of 3% p.a.

- Proposal B represents an increase in risk and return relative to the existing strategy. This is expected given the reduced allocation to bonds (which are relatively low risk relative to the liabilities) in favour of alternatives (namely pan-European Property).

Summary

Whilst it would appear that the differences between the various strategies are relatively small, this is largely a result of the Authority's desire to retain a level of investment risk close to that under the current strategy. This therefore limits the extent of the change in the risk / return characteristics of the overall portfolio.

The following sections set out the rationale for some of the second-order investment decisions, such as the underlying equity and bond allocations, and consideration of alternatives. Whilst these decisions are likely to have a smaller impact than the overall risk-seeking / risk-reducing split, they are none the less important and could have a significant impact on Fund returns going forward.

6

Equity Allocation

There are two main issues that need to be considered with regards to the Fund's equity portfolio. The first is to determine the UK:Overseas equity split and the second decision is to decide upon the allocation between the overseas regions.

UK Equities : Overseas Equity Split

The Fund's current benchmark split between UK and Overseas Equities is approximately 57%:43%. The proposed strategy discussed with the Authority has a 50:50 split between UK and Overseas Equities. In the absence of currency hedging for overseas equities (as under the current strategy), we would support this proposed split.

The rationale for the reduction in the UK equity exposure centres on the stock and sector concentration of the UK market. Indeed we would be supportive of a further move away from the UK subject to the introduction of some passive currency hedging.

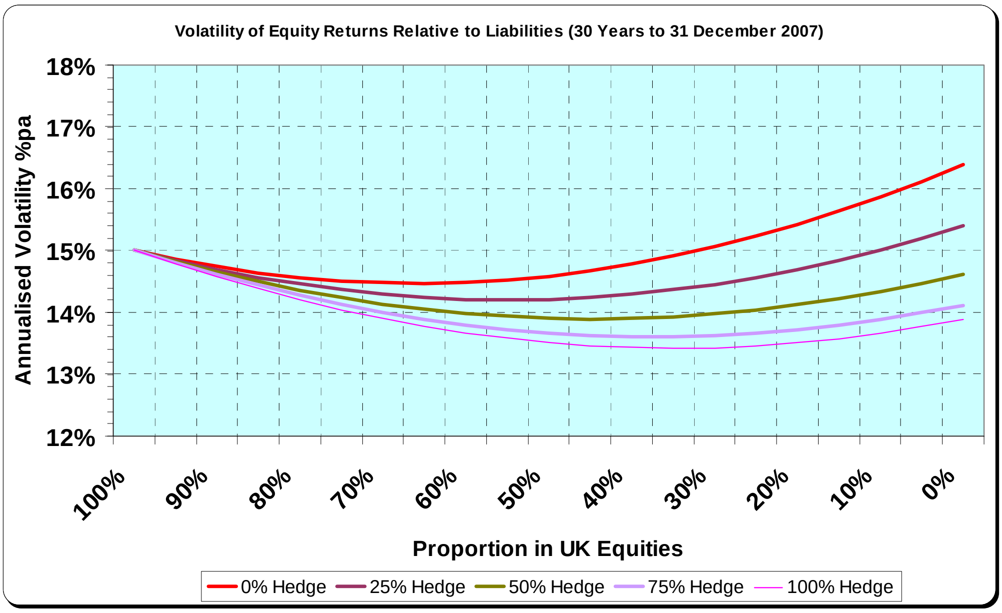
Overseas Equity Allocation

The current approach for investing overseas is via a fixed weights allocation. The Fund currently has a broadly equal split to the main trading regions (i.e. North America, Europe (ex UK), and Pacific Basin (including Japan and Emerging Markets). We remain comfortable with this split.

Currency Hedging

As noted above, when investing overseas the issue of currency risk should be considered.

The chart below illustrates the results of our analysis, based on data for the period from January 1987 to December 2006, showing the risk levels for different mixtures of UK and overseas equities over this period. The chart also considers various levels of hedging and makes an allowance for the associated transaction costs of implementing the hedge.



The lower lines on the chart indicate the impact of introducing progressive levels of hedging to the portfolio. The curves decline as overseas exposure initially increases, reflecting the benefits of diversification. Overall, however, the lower lines exhibit lower levels of risk than the unhedged portfolio as the currency risk has been reduced.

In a similar fashion to the unhedged case, all the lines begin to slope upwards as we further increase the overseas exposure. This is because, as with the unhedged case all portfolios displayed (bar the fully hedged one) suffer an increasing degree of currency risk as the overseas allocation is increased.

Therefore, most Funds will find that partially or fully hedging the benchmark indices for overseas equity assets will help to reduce risk. In addition, it is a way of reducing risk without materially reducing the expected returns. This is because unlike investment in equities where the Fund is taking risk in the expectation of enhancing returns, there is no justifiable economic rationale why taking on (unmanaged) overseas currency risk should increase returns.

Given the proposal to move to a UK / overseas split of 50/50, we are comfortable with the overseas currency risk remaining unhedged, but would want to review this if the balance in the UK were to be further reduced.

7

Bond Allocations

In this section we consider the composition of the Fund's bond allocation to the range of different bond investments. We believe the main considerations in determining the make-up of the bond allocation are as follows:

- Fixed interest bonds vs index linked bonds;
- Split between gilts and corporate bonds;
- The duration of the bond portfolio; and
- The role of alternative bond investments such as overseas bonds or emerging market debt.

The table below sets out the current and proposed bond portfolio allocations:

Asset Class	Current Strategic Benchmark %	Proposal A %	Proposal B %
Fixed Interest Gilts (All Stocks)	6.0	5.0	5.0
Index-linked Gilts (Long-dated)	15.0	10.0	5.0
Corporate Bonds (All Stocks)	9.0	10.0	10.0
Total	**30.0**	**25.0**	**20.0**

Given that the bond portfolio represents a relatively small proportion of the total assets, we have not proposed that the Authority make any radical changes to the structure of the bond portfolio.

The key recommendations are as follows:

- Reduce the Fund's exposure to index-linked gilts to reflect Mercer's view that at present index-linked gilts (especially at the long end of the curve) are overvalued. The reduction is only marginal to reflect the fact that the Fund's liabilities are largely inflation-linked and the fact that there are some concerns about the extent to which inflation may continue to rise, at least in the near term.

- Marginally increase the Fund's exposure to corporate bonds to take advantage of the attractive levels of credit spreads currently available. The all-stocks benchmark should be maintained.

- At present, the two fixed interest allocations are managed actively by BGI, with the index-linked allocation being held on a passive basis. We recommend that the gilt allocation also be made passive, with the corporate bond allocation remaining active. This reflects the greater opportunities for active management within the corporate bond markets, and the relative efficiency of the gilt markets.

8

Alternative Asset Classes and Non-traditional Investment Products

Introduction

Alternative investments are not precisely defined and can include a wide range of different asset classes. We would suggest that investment in alternative asset classes should be used to diversify the Fund's potential sources of return, thus reducing the reliance upon the equity market to deliver outperformance over bonds. Indeed, the use of alternatives to provide diversification has gained prominence on the back of volatility in the equity markets over recent years. We address Pan-European Property investment and Private Equity below.

European Property

The property market is comprised of four main sectors – commercial property, residential property, agricultural property and forestry. In the UK, it is commercial property that typically attracts investment from institutional investors. The other three tend to suffer from higher management costs, lack of diversification and liquidity problems, meaning there is less strategic rationale for investing in these areas.

Commercial property is subdivided into three main sub sectors:-

i. ***Retail*** – this sector is typically subdivided into four additional sub sectors; retail warehouses, shopping centres, standard retail – South East, and standard retail – rest of UK.

ii. **Office** – this sector is typically subdivided into four additional sub sectors, Offices – City, Offices – West End, Offices – South East, Offices – Rest of UK.

iii. **Industrial** – this sector is typically subdivided into two additional sub sectors, Industrials – South East, Industrials – Rest of UK.

A balanced property portfolio will typically have exposure to each of the sub-sectors above. There is also a well developed universe of balanced and sector specialist pooled funds within the UK that provide a means of gaining broad access to the property market.

Advantages of Property

Diversification

Property can provide diversification in a number of ways. First, its returns are generally lowly correlated to those of other asset classes, particularly equities and bonds. Secondly, within the asset class itself, sub-sectors (e.g. offices, retail and industrial) often perform differently from each other and these differences can be exploited by good fund managers. Thirdly, diversification can be exploited further if a mandate includes exposure to non-UK property as well.

Stable Income

Longer term, rental income may provide the majority of the return and this has historically been very stable, irrespective of economic conditions. Companies must generally pay rent before dividends and bond coupons, and so there is a relatively high level of security regarding the income. If a tenant defaults, the owner still has claim to the underlying property into which another tenant can be inserted.

Potential for Adding Value

Property represents high potential for added value from fund management. It is possibly the last market where fund managers can profit by “inside information”. For example, over half of deals take place off market and so some fund managers arguably have access to better information. Furthermore, through development and/or refurbishment, skilful managers can add value to assets.

Various Risk/Return Profiles

Property can occupy a number of places on the risk/return spectrum, from low risk, bond-like portfolios to opportunistic vehicles with high projected returns and levels of gearing. It is therefore a reasonably flexible asset class in this regard.

Disadvantages of Property

Costs

The main disadvantage of property investment is the cost. In the UK, stamp duty, agents' and legal fees and other costs mean the "round trip" cost of buying and selling property is around 8% (largely due to the imposition of stamp duty reserve tax of up to 4% on the purchase of a property). Similar levels of cost are incurred in other countries as well. This means direct property cannot be seen as a tactical investment (though derivatives may help here).

Illiquidity

Property continues to be a relatively illiquid asset class in comparison to others. For directly held portfolios, it can potentially take weeks and months to implement the buy/sell decision. However, this is now less of an issue with the indirect market due to the increasing number of participants.

Volatility Understatement

Historic volatility numbers are usually artificially low. This is a result of the subjective valuation process for property, and the resulting 'smoothing' of property prices.

The rationale for non-domestic investment

While the globalisation of equities and bonds has been accepted by the vast majority of investors, interest in non-domestic real estate has been relatively slow to materialise, particularly from the perspective of UK investors.

Historically, UK pension fund investment in real estate has primarily focused on the domestic market. Continental European institutions have been more comfortable with non-domestic real estate investment; however investment has typically remained within Europe.

However, is there now a strong argument for increasing a real estate manager's remit beyond the domestic market other than the limiting factors being no longer as strong? Below we consider key rationale for investing outside of the domestic real estate market.

Increased opportunity set

As at the end of 2005, the UK real estate market consisted of some €462 billion of assets (Source: Investment Property Databank "IPD"). By comparison the total European real estate market is estimated at some €1,242 billion (Source: IPD). Therefore, by restricting a mandate to purely UK real estate investment the total Pan-European opportunity set is being cut by approximately two thirds.

Diversification and Risk Reduction

Real estate, particularly the unlisted variety, has historically demonstrated a low correlation with other asset classes, and in particular equities, providing diversification at the total portfolio level.

This argument is strengthened by the diversification that can be achieved *within* a non-domestic real estate portfolio. International investing increases the opportunity set available relative to domestic real estate portfolios, providing exposure to sectors and countries not previously available and helps offset the cyclicality to which single sectors, countries or regions can be subject.

Markets within real estate sectors are less correlated than for other asset classes because the real estate market is influenced by local demand/supply conditions to a greater degree, whereas companies, for example, are becoming ever more globalised and therefore price movements are influenced by more than just the immediate region.

Private Equity

What is it?

Private equity incorporates a range of non quoted equity type investments, from backing new company start ups through to providing development capital for existing companies or providing finance for buyouts.

Private equity is long term and illiquid in nature. It should be regarded as a strategic alternative to public equity investment offering potentially higher returns. Returns in the early years of an investment are likely to be negative, with returns coming through as value is “released”, the so-called J-curve of returns.

Why invest?

High quality private equity managers are expected to achieve returns substantially above those available from the quoted market. The expectation of investors in private equity of earning above quoted market returns is based on four factors:

- A premium for illiquidity;
- A premium for risk;
- The enhanced ability to capture the returns which arise from improving a Company’s return on equity potential, particularly through more direct involvement of the investor with the management of the Company.
- The leveraged nature of private equity investments.

In addition private equity can offer diversification benefits. Despite private equity being positively correlated with quoted equity markets, particularly in times of distress (e.g. the collapse of the dot com boom) there are some modest diversification benefits. These diversification benefits arise from the nature of private equity investment which is very much deal led and where the shareholder is much more active in the running and direction of the company.

Further Detail

The rationale for investing in private equity is the expectation of achieving returns above those available from the quoted market. This expectation of a higher return is based on a risk/return premium for investing in illiquid stocks and the scope to capture returns from companies entering a phase of rapid growth. It is not possible, however, to be unequivocal about the merits of investing in the sector. Ultimately it is a qualitative judgement that the sector is capable of, and will continue to be capable of, delivering returns above the quoted market.

Institutional investors have traditionally gained access to the private equity market via pooled funds that are structured as closed-end, limited partnership vehicles. ***It is essential to take a diversified approach to investing in private equity***, in order to reduce the risks in the sector. The first area of diversification is the stage of investment, ranging from Early and Development stages to funds specialising in MBO (management buyout) investment. Further diversification can be achieved by geography, by manager and by timing of investment. In most cases, investment by a fund of funds approach is preferred.

Private equity funds do not fit neatly into traditional performance measurement. The nature of the closed-end partnerships means that calculations of returns in the early years of a fund's life are meaningless and do not help in determining how well the fund is likely to perform in the long-term. The true performance of the fund will actually only be known at the end of the life, when the last distribution has been returned to investors.

We are supportive of the fund of funds approach which provides diversity and specialist selection skills, however it does add an extra layer of fees. Any investment by the Fund should be meaningful (e.g. 3 - 5% minimum) and should ideally be via a fund a funds.

9

Summary of Strategy Recommendations

Summary

Bringing together the issues raised throughout this report, we summarise our strategic recommendations below:

- We are comfortable with an increase in strategic risk, bearing in mind the financial strength of the Fund.

- We are supportive of the proposal to increase the Fund's allocation to Alternative Investments. At this stage, the proposal is to introduce a 10% investment in pan-European Property, whilst retaining the allocation to Global Tactical Asset Allocation. The Fund will keep the decision not to invest in Private Equity at this stage under review.

- Based on the assumption that currency hedging will not be implemented within the overseas equities portfolio we would recommend adopting a broadly equal split between UK and overseas equities.

- Retain a broadly equal allocation to each of the three main trading regions, within the overseas equity portfolio (i.e. North America, Europe (ex UK) and Asia Pacific (including Japan and Emerging Markets).

- Within the Bond portfolio, reduce the allocation to index-linked gilts and fixed interest bonds. We further recommend the allocation to corporate bonds is increased to take advantage of the current spreads versus gilts.

A summary of the two strategies under consideration by the Authority is set out in the table below.

Asset Class	Current Benchmark %	Proposal A %	Proposal B %
Equities	**69.0**	**64.0**	**69.0**
UK Equities	39.0	32.0	34.5
Overseas Equities	30.0	32.0	34.5
Alternatives	**1.0**	**11.0**	**11.0**
Global Tactical Asset Allocation	1.0	1.0	1.0
Pan-European Property	-	10.0	10.0
Bonds	**30.0**	**25.0**	**20.0**
UK Fixed Interest Gilts	6.0	5.0	5.0
UK Index Linked Gilts	15.0	10.0	5.0
UK Corporate Bonds	9.0	10.0	10.0
Total	**100.0**	**100.0**	**100.0**
ERP: 4% p.a.			
Strategic Risk	**11.6 p.a.**	**11.5 p.a.**	**12.3 p.a.**
Strategic Excess Return	**2.9 p.a.**	**3.0 p.a.**	**3.2 p.a.**
ERP: 3% p.a.			
Strategic Risk	**11.6 p.a.**	**11.5 p.a.**	**12.3 p.a.**
Strategic Excess Return	**2.2 p.a.**	**2.4 p.a.**	**2.5 p.a.**

The Authority's proposed strategy has slightly less efficient risk:return characteristics when compared to the strategy proposed by Mercer. However, we believe that the proposed strategic change does strike a balance, and also represents a practical proposal from a qualitative viewpoint considering the Fund's current investment strategy, current market views and the transaction costs which will be incurred as a result of changing strategy.

The Authority's proposal is also reasonable given the decision not to invest in numerous alternative assets at this time, pending further discussion and training as to the merits of alternative investments.

Mark Gee
August 2008

Appendix A

Asset Class Assumptions – 31 March 2007

The asset class assumptions used in our modelling are set out below:

Asset Class	Expected Return (% p.a.)	Volatility (% p.a.)
Cash	4.50	0.6
Index-Linked Gilts (> 5 Years)	4.50	7.5
Fixed Interest Gilts (All Stocks)	4.50	4.3
Fixed Interest Gilts (> 15 Years)	4.50	7.5
UK £ Credit (All Stocks)	5.10	4.5
UK £ Credit (>10 Years)	5.10	7.3
Conventional Property	6.25	14.5
High-Lease-to-Value (HLV) Property	5.50	11.7
Hedge Funds	6.25	8.5
Commodities	4.50	21.3
Infrastructure (Debt)	4.80	7.1
Infrastructure (Listed Equity)	7.90	13.9
Infrastructure (Unlisted Equity)	11.30	29.3
Private Equity	11.75	33.0
Equities	8.60	16.3
Equities (Currency Hedged)	8.50	15.6

Appendix B

Risk Warnings

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- The value of Gilts, bonds, and other fixed income investments including unit trusts can go down as well as up and you may not get back the amount you have invested.
- Investments denominated in a foreign currency will fluctuate with the value of the currency.

- The value of investments in real property can go down as well as up, and you may not get back the amount you have invested. Valuation is generally a matter of a valuer's opinion, rather than fact. It may be difficult or impossible to realise an investment because the property concerned may not be readily saleable.

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