

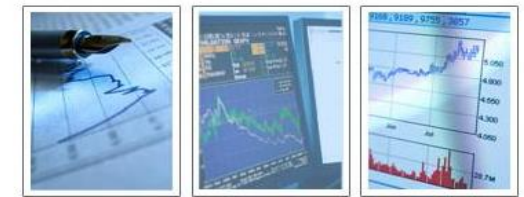
Quarterly Risk and Return Analysis
Total Fund

Worcestershire County Council Pension Fund



Specialists in Investment Risk and Return Evaluation

Period ending 31st December 2016

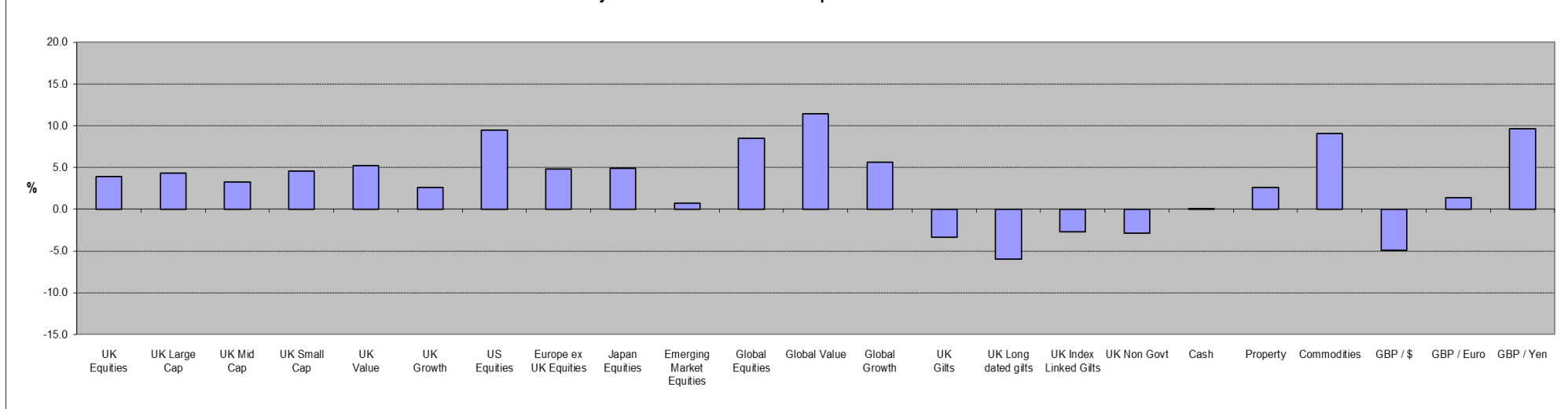


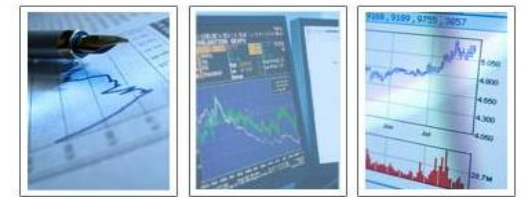
Portfolio Evaluation Ltd Market Commentary Q4 2016 (sterling)

The UK market and economy has been driven by the implications and expectations of the Brexit vote in the summer. Following the large depreciation of sterling versus our major trading partners (and in particular the US dollar) large capitalisation stocks that have significant non UK earnings have particularly benefitted and pushed the FTSE 100 higher than mid and small cap stocks. Commodity stocks have also benefitted over the year with Oil and Technology stocks being particularly strong performers; lower growth sectors include the more defensive utility stocks, Consumer Goods and Consumer Services and Financial stocks i.e. those sectors that will be negatively impacted by Brexit, lower sterling and increased inflation. With question marks over UK economic growth value stocks (also because these are often large cap global companies) have outperformed growth stocks. On a global basis most regions have posted positive returns even allowing for sterling depreciation as stockmarkets benefit from an outlook that for many includes expected economic growth and cheap money.

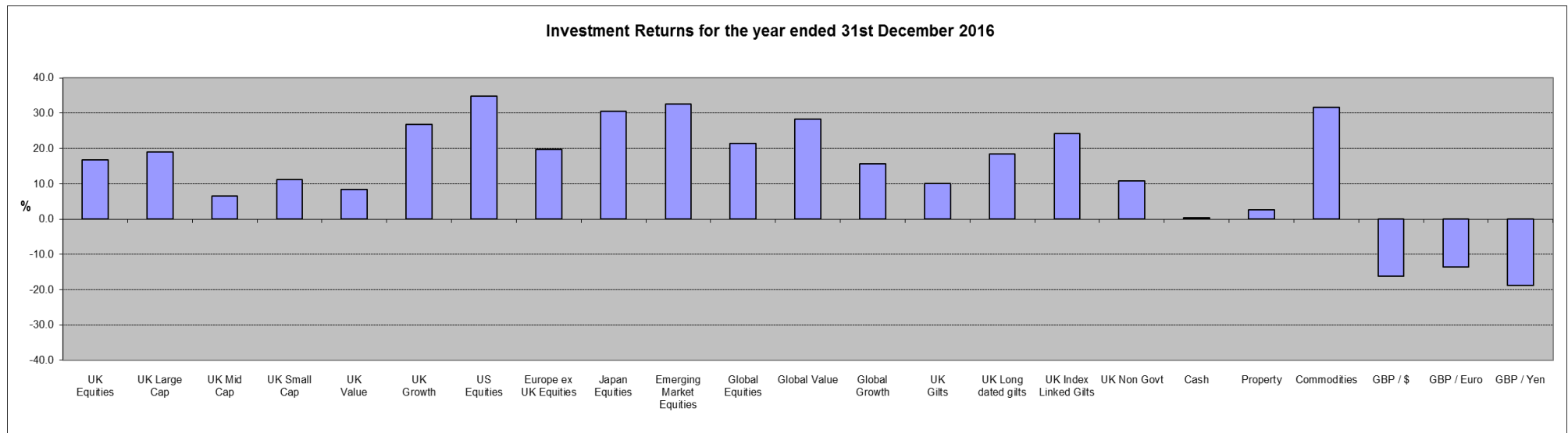
In Q4 UK fixed income asset classes posted negative returns as yields increased. Yields increased partly because of Brexit, the perceived additional risk of sterling bonds, increased rates and because of the reduced impact of QE. As expected longer dated bonds had lower returns than shorter dated bonds. Corporate bonds were the best performing core fixed income asset class as they benefitted from the rise in equity markets. This should benefit solvency levels and managers that have a short relative duration position. However please note that over the year all primary UK bond asset classes have posted strong positive returns.

Quarterly Investment Returns for the period ended 31st December 2016





The outlook for the UK remains uncertain, especially with Brexit talks looming, but we can expect to see possibly higher inflation, higher interest rates, lower government tax receipts, increased sterling volatility and declining business confidence especially in the second half of the year. In the US we expect to see a more pro-business environment given the new incoming president and the end of QE. In Europe QE will continue but growth rates will vary between countries; however expectations will be shaped by the Brexit discussions and the elections due this year. In emerging markets the consensus appears to be that growth in China will remain low (relatively!) whilst other large markets such as Russia and Brazil will improve.



It should be noted that for most markets have seen a positive return. Given our role for clients we are particularly interested in market risk. It is worth noting that market volatility has increased significantly through the year, with a significant additional spike due to Brexit, as investor risk aversion increases. However at the end of 2016 we saw market volatility level off but the outlook for risk levels is 'volatile' given all the factors that can impact markets this year.

For further information

If you would like further information about the topics contained in this newsletter or would like to discuss your investment performance requirements please contact Nick Kent or Deborah Barlow Tel: +44 (0)113 242 9381 (e-mail: nick.kent@portfolioevaluation.net) or visit our website at www.portfolioevaluation.net. Please note that all numbers, comments and ideas contained in this document are for information purposes only and as such are not investment advice in any form. Please remember that past performance is not a guide to future performance.

Worcestershire County Council Pension Fund - Commentary

Period ending 31st December 2016

QUARTERLY SUMMARY: **Worcestershire County Council Pension Fund** **Return: 3.6%** **Benchmark Return: 3.7%** **Excess Return: -0.1%**

- The Fund achieved a total return of 3.6%. This was primarily due to positive equity markets, alternative assets, property and infrastructure. Bonds had a negative return as bond yields rose.
- The Fund marginally underperformed its benchmark this quarter by -0.1%. This was primarily due equities as Nomura underperformed, additionally property, due to Invesco, was a minor drag on performance. Asset allocation was a positive contributor as the Fund was overweight equities and underweight bonds.
- Of the active managers only JPMorgan (Emerging Market equities) outperformed. All index funds tracked their benchmarks. The JPM corporate bond portfolio also outperformed.
- Please note that for Green Investment Bank returns are not available for the quarter as data is lagged by the manager.

YEAR SUMMARY AND LONGER: **Worcestershire County Council Pension Fund** **Return: 21.7%** **Benchmark Return: 18.7%** **Excess Return: 1.2%**

- We have only monitored the Fund for nine months and therefore our long term observations are limited for now especially given the restructuring of equity portfolios and increase in exposure to Infrastructure and Property assets.
- Over the financial YTD (since we have been measuring the portfolio) the Fund has generated a return of 21.7 % outperforming the benchmark by 1.2%. The portfolio has outperformed both from asset allocation and stock selection across nearly all asset classes.
- Over the YTD period all active equity managers have outperformed as has the JPM corporate bond portfolio. Asset allocation has also been a positive contributor due to the overweight equity position (high performing asset class) and underweight bond (low performing asset class) exposures.
- Over the one, three and five year periods the Fund has outperformed. However over the longer term the Fund has underperformed.
- The Total Risk of the Fund is consistent with that of a typical multi asset class Fund. Active risk is also consistent with a typical multi asset class Fund that uses both passive and active strategies.

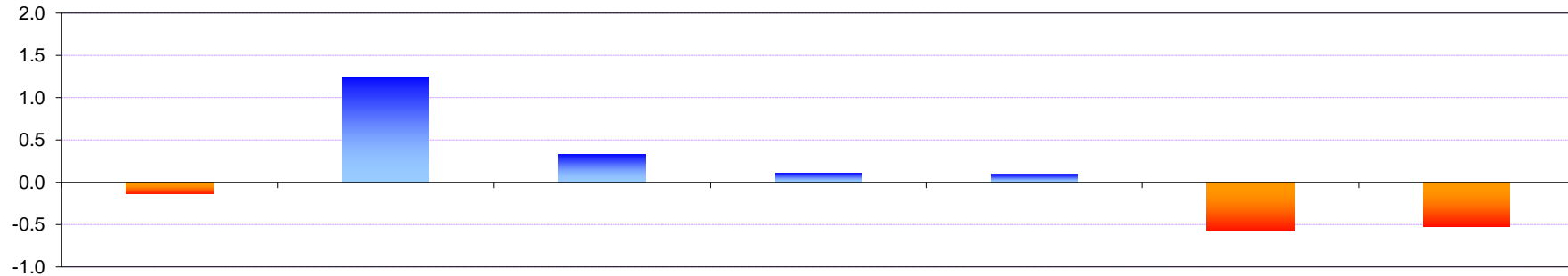
Client: Worcestershire County Council Pension Fund
 Manager: Multi-manager
 Mandate: Total Fund
 Asset Class: Combined Assets
 Benchmark: Worcestershire Total Fund Index - Client Specil
 Inception: 31-Mar-1987
 Mkt Val: £2.3b

Total Fund Overview

Total Fund

Report Period: Quarter Ending December 2016

Excess Return Analysis (%)



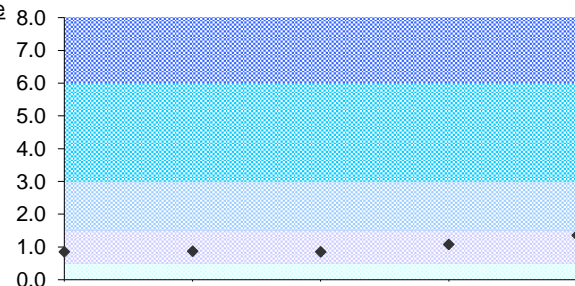
	QTR	YTD	1 Yr	3 Yr	5 Yr	10Yr	Since Mar 87 (p.a.)
Portfolio Return	3.6	20.0	21.7	9.9	11.4	6.4	8.1
Benchmark Return	3.7	18.7	21.4	9.8	11.3	6.9	8.6
Excess Return	-0.1	1.2	0.3	0.1	0.1	-0.6	-0.5

All returns for periods in excess of 1 year are annualised.

Ex-Post Active Risk Analysis (%)

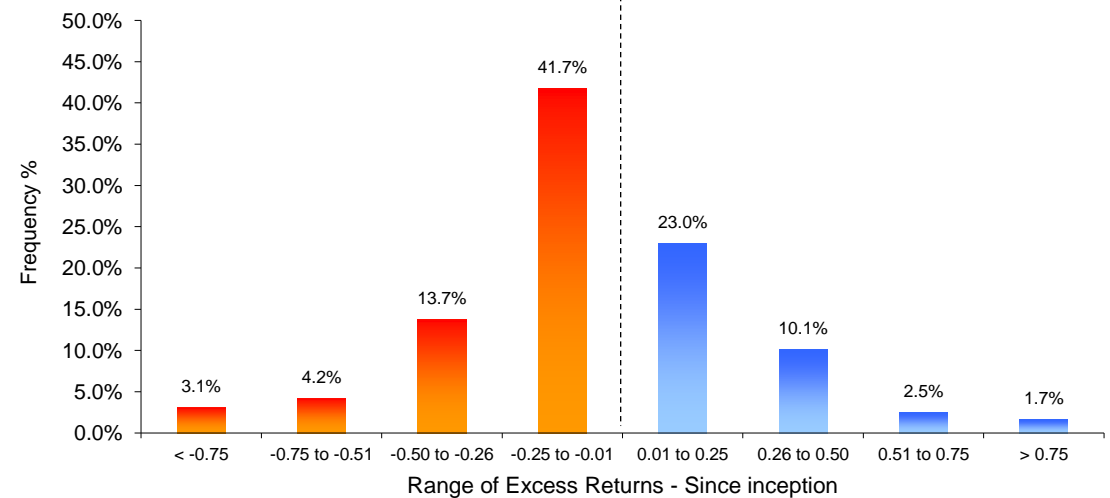
Expected Active Risk Ranges

- Aggressive
- Active Plus
- Active
- Core
- Indexed
- Active Risk



	1 Yr	3 Yr	5 Yr	10 Yr	Mar 87
Active Risk	0.8	0.9	0.8	1.1	1.4
Portfolio Risk	8.9	9.0	9.2	13.2	13.0
Benchmark Risk	8.5	8.6	9.0	12.6	12.7

Excess Return Consistency Analysis

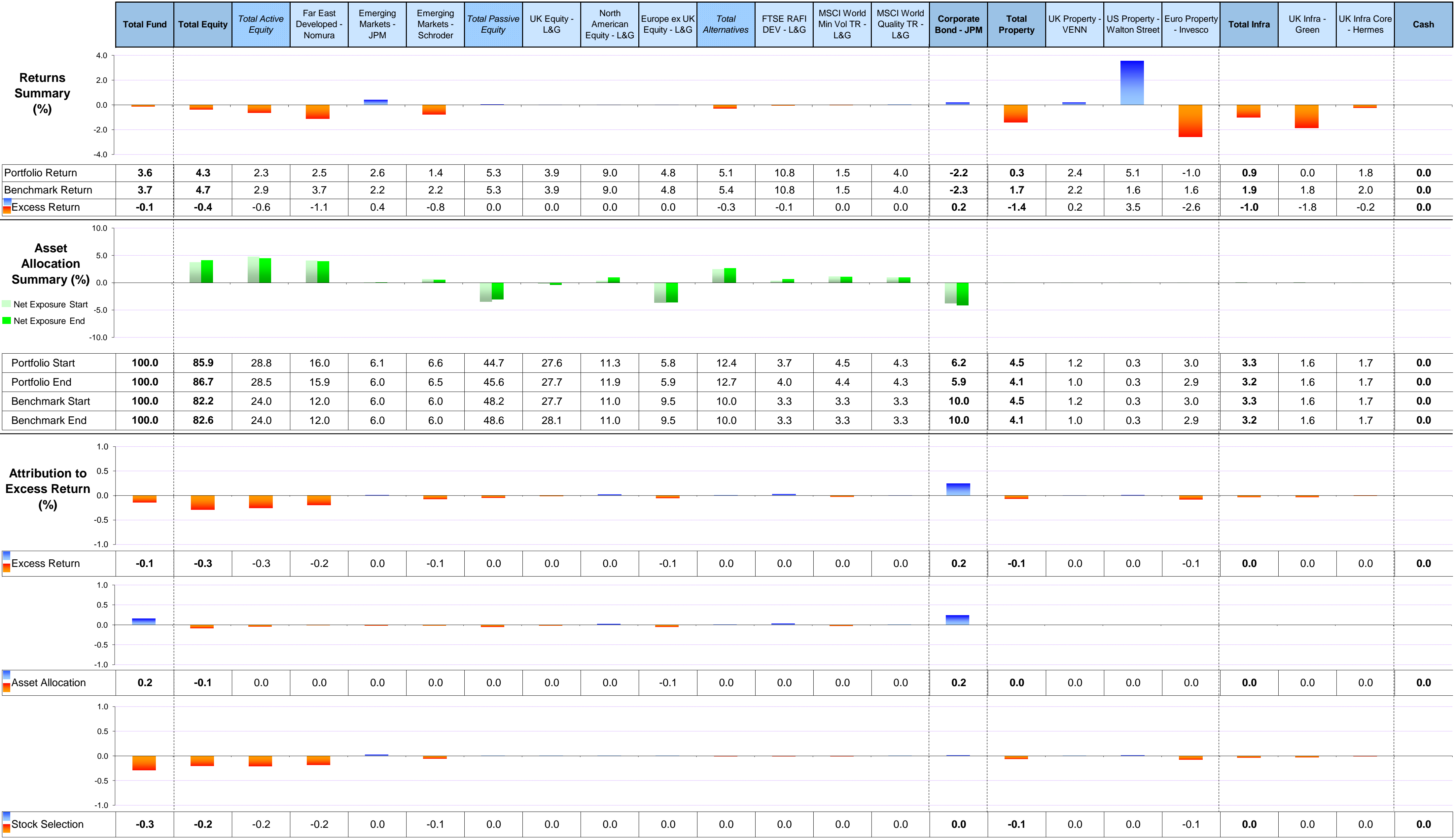


Ex-Post Active Risk measures the volatility of the actual excess returns achieved by the Portfolio/Fund.

Excess Return Consistency Analysis measures the frequency of the Portfolio/Fund's outperformance (Blue) and underperformance (Red) versus its benchmark, calculated using monthly (or quarterly if indicated) returns since inception.

Attribution to Total Fund Excess Return Analysis
Worcestershire County Council Pension Fund
for Quarter Ended 31st December 2016

Market Value: £2.3bn



The **Returns Summary** details the Portfolio, Benchmark and Excess Returns. The Excess Returns are plotted. The **Asset Allocation Summary** details the weights held by the portfolio and benchmark in each asset class/manager. The green plots are the over/underweight exposures of the Fund (v Fund benchmark) at the beginning and end of the period. The **Attribution to Excess Return**, identifies how each asset class/manager has contributed to the overall excess return of the Total Fund. It is broken down into **Asset Allocation** (how successful the decision to over/underweight each asset class was) and then into **Stock Selection** (how well each manager/s decisions have performed). The **Asset Allocation** plus the **Stock Selection** excess returns are all additive and equal the **Total Excess Return** of the Fund.

Attribution to Total Fund Excess Return Analysis
Worcestershire County Council Pension Fund
for Year to Date Ended 31st December 2016

Market Value: £2.24bn



The **Returns Summary** details the Portfolio, Benchmark and Excess Returns. The Excess Returns are plotted. The **Asset Allocation Summary** details the weights held by the portfolio and benchmark in each asset class/manager. The green plots are the over/underweight exposures of the Fund (v Fund benchmark) at the beginning and end of the period. The **Attribution to Excess Return**, identifies how each asset class/manager has contributed to the overall excess return of the Total Fund. It is broken down into **Asset Allocation** (how successful the decision to over/underweight each asset class was) and then into **Stock Selection** (how well each manager/s decisions have performed). The **Asset Allocation** plus the **Stock Selection** excess returns are all additive and equal the **Total Excess Return** of the Fund.

* Partial Return

Manager Return Analysis

Worcestershire County Council Pension Fund

for Quarter Ended 31st December 2016

Market Value: £2.24bn

	Benchmark	Incep Date	Market Value (£m)	Weight	QTR			Year To Date			1 Year			3 Year			5 Year			10 Year			Since Inception		
					PF	BM	ER	PF	BM	ER	PF	BM	ER	PF	BM	ER	PF	BM	ER	PF	BM	ER	PF	BM	ER
Total Equity Fund	Client Specific Weighted Index	Mar-16	2,005.3	86.7	4.3	4.7	-0.4	22.7	22.2	0.5												22.7	22.2	0.5	
Total Active Equity Fund	Client Specific Weighted Index	Mar-16	658.2	28.5	2.3	2.9	-0.6	26.6	25.3	1.3												26.6	25.3	1.3	
Far East Developed Fund - Nomura	FTSE Developed Asia Pacific Index	Feb-03	368.1	15.9	2.5	3.7	-1.1	27.0	26.0	1.0	24.2	25.5	-1.3	12.7	12.0	0.7	11.6	11.6	0.0	7.3	7.6	-0.3	10.9	10.9	-0.1
Emerging Markets Fund - JPM	FTSE All World Emerging Market Index	Dec-11	139.3	6.0	2.6	2.2	0.4	26.5	24.5	2.0	36.7	35.4	1.3	9.1	9.4	-0.3	7.6	6.9	0.6				7.2	6.9	0.3
Emerging Markets Fund- Schroder	FTSE All World Emerging Market Index	Oct-11	150.8	6.5	1.4	2.2	-0.8	25.7	24.5	1.2	32.1	35.4	-3.4	10.0	9.4	0.6	8.7	6.9	1.8				7.8	5.9	1.9
Total Passive Equity Fund	Client Specific Weighted Index	Mar-16	1,054.5	45.6	5.3	5.3	0.0	21.1	20.3	0.7												21.1	20.3	0.7	
UK Equity Fund - L&G	FTSE All Share Index	Dec-15	641.2	27.7	3.9	3.9	0.0	17.3	17.2	0.1	16.8	16.8	0.1									20.0	19.9	0.1	
North American Equity Fund- L&G	FTSE All World North American Index	Dec-15	276.1	11.9	9.0	9.0	0.0	28.7	28.8	-0.1	34.0	34.1	-0.1									35.1	35.2	-0.1	
Europe ex UK Equity Fund- L&G	FTSE Developed Europe Ex. UK Index	Dec-15	137.2	5.9	4.8	4.8	0.0	19.3	19.5	-0.2	19.4	19.7	-0.3									22.1	22.4	-0.3	
Total Alternatives Fund	Client Specific Weighted Index	Mar-16	292.6	12.7	5.1	5.4	-0.3	22.3	22.8	-0.4												22.3	22.8	-0.4	
FTSE RAFI DEV Fund - L&G	FTSE RAFI Developed 1000 QSR Net Index	Dec-15	91.6	4.0	10.8	10.8	-0.1	30.0	30.1	-0.1	33.0	33.1	-0.1									35.7	35.8	-0.1	
MSCI World Min Vol TR Fund - L&G	MSCI World Minimum Volatility Net Index	Dec-15	101.4	4.4	1.5	1.5	0.0	17.9	17.8	0.1	27.6	27.6	0.0									30.5	30.4	0.1	
MSCI World Quality TR Fund - L&G	MSCI World Quality Total Return Net Index	Dec-15	99.6	4.3	4.0	4.0	0.0	20.4	20.4	0.0	25.4	25.4	0.0									27.0	27.0	0.0	
Corporate Bond Fund- JPM	Barclays Capital Global Aggregate - Ex Treasury, Ex Government Related 100% Hedged to GBP	Mar-03	136.3	5.9	-2.2	-2.3	0.2	2.9	2.5	0.5	6.0	5.8	0.2	4.9	4.6	0.3	4.3	4.1	0.2	5.8	6.3	-0.5	5.4	5.6	-0.3
Total Property Fund	Client Specific Weighted Index	Mar-16	95.7	4.1	0.3	1.7	-1.4	8.1	5.3	2.8												8.1	5.3	2.8	
UK Property Fund - VENN	Absolute Return +9%	Jul-15	22.1	1.0	2.4	2.2	0.2	6.8	6.7	0.1	8.4	9.0	-0.6									7.4	9.5	-2.1	
US Property Fund- Walton Street	Absolute Return + 6.5%	Jan-16	7.6	0.3	5.1	1.6	3.5	10.0	4.8	5.2												12.0	4.8	7.2	
Euro Property Fund- Invesco	Absolute Return + 6.5%	Feb-16	66.1	2.9	-1.0	1.6	-2.6	8.4	4.8	3.6												11.2	4.8	6.3	
Total Infrastructure Fund	Client Specific Weighted Index	Mar-16	74.9	3.2	0.9	1.9	-1.0	4.7	6.0	-1.3												4.7	6.0	-1.3	
UK Infrastructure Fund - Green	Absolute Return +7.6%	Apr-15	35.9	1.6	0.0	1.8	-1.8	3.0	5.6	-2.7	3.0	7.6	-4.6									2.1	7.6	-5.4	
UK Infrastructure Core Fund - Hermes	Absolute Return +8.4%	May-15	39.0	1.7	1.8	2.0	-0.2	6.3	6.2	0.0	10.2	8.4	1.8									8.2	8.4	-0.2	
Worcestershire CC Total Fund		Mar-87	2,312.2	100.0	3.6	3.7	-0.1	20.0	18.7	1.2	21.7	21.4	0.3	9.9	9.8	0.1	11.4	11.3	0.1	6.4	6.9	-0.6	8.1	8.6	-0.5

PF = Portfolio Return BM = Benchmark Return ER = Excess Return

Total Fund Benchmark	CLIENT SPECIFIC BM AS AT DEC 2016: <div> <div>28.1% FTSE All Share</div> <div>11% FTSE All World North America</div> </div> <div> <div>9.5% FTSE Developed Europe Ex UK</div> <div>12% FTSE Developed Asia Pacific</div> </div> <div> <div>12% FTSE All World Emerging Markets</div> <div>10% 1/3 FTSE RAFI DEV 1000 QSR Total Return NET & 1/3 MSCI World Minimum Vol Total Return NET & 1/3 MSCI World Quality Total Return NET</div> </div> <div> <div>Corp Bonds: 10% Barclays Global Agg Corporate Bond HEDGED into GBP</div> </div> <div> <div>Property: 4.1% Client Specific Index</div> <div>Infrastructure: 3.2% Client Specific Index</div> </div>	Notes: For the Total Fund benchmark the weightings for the Infrastructure and Property will match the actual drawdowns/market values of the funds, then the remainder will be put into UK Passive Equities . Total Infrastructure and Total Property are measured against a weighted index of the funds underlying benchmarks. Historic data up to and including 31.03.2016 has been provided by the WM Co and L&G.
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Total Fund Reconciliation Analysis
Worcestershire County Council Pension Fund
for Quarter Ended 31st December 2016

Market Value: £2.24bn

	30th Sept 2016		Net Investment (£000s)	Total Income (£000s)	Total Gain/Loss (£000s)	31st Dec 2016	
	Market Val (£000s)	Exposure (%)				Market Val (£000s)	Exposure (%)
Total Equity Fund	1,923,097	85.9	0	0	82,213	2,005,311	86.7
<i>Total Active Equity Fund</i>	643,486	28.8	0	0	14,709	658,195	28.5
Far East Developed Fund - Nomura	358,945	16.0	0	0	9,120	368,065	15.9
Emerging Markets Fund - JPM	135,782	6.1	0	0	3,502	139,284	6.0
Emerging Markets Fund- Schroder	148,758	6.6	0	0	2,088	150,846	6.5
<i>Total Passive Equity Fund</i>	1,001,228	44.7	0	0	53,272	1,054,500	45.6
UK Equity Fund - L&G	617,063	27.6	0	0	24,092	641,155	27.7
North American Equity Fund- L&G	253,276	11.3	0	0	22,844	276,120	11.9
Europe ex UK Equity Fund- L&G	130,889	5.8	0	0	6,336	137,226	5.9
<i>Total Alternatives Fund</i>	278,384	12.4	0	0	14,232	292,616	12.7
FTSE RAFI DEV Fund - L&G	82,697	3.7	0	0	8,894	91,591	4.0
MSCI World Min Vol TR Fund - L&G	99,908	4.5	0	0	1,524	101,432	4.4
MSCI World Quality TR Fund - L&G	95,778	4.3	0	0	3,814	99,593	4.3
Corporate Bond Fund- JPM	139,285	6.2	0	0	-3,014	136,271	5.9
Total Property Fund	100,350	4.5	-4,943	0	336	95,743	4.1
UK Property Fund - VENN	26,378	1.2	-4,943	0	628	22,063	1.0
US Property Fund- Walton Street	7,215	0.3	0	0	370	7,585	0.3
Euro Property Fund- Invesco	66,757	3.0	0	0	-662	66,095	2.9
Total Infrastructure Fund	74,856	3.3	-660	0	696	74,893	3.2
UK Infrastructure Fund - Green	35,889	1.6	0	0	0	35,889	1.6
UK Infrastructure Core Fund - Hermes	38,967	1.7	-660	0	696	39,004	1.7
Cash Fund	0	0.0	-5,603	0	0	0	0.0
Worcestershire CC Total Fund	2,237,589	100.0	-5,603	0	80,231	2,312,218	100.0

Note: Cashflow into cash reflects sum of portfolio contributions minus net investments. It is assumed that Cash for the Fund is held outside of the invested assets and is therefore withdrawn from the Total Fund