



THE QUEEN'S AWARDS
FOR ENTERPRISE:
SUSTAINABLE DEVELOPMENT
2014

Sustainable Energy Investment Forum Conference Commercial Value from Energy Efficiency Retrofitting

Tim Mockett

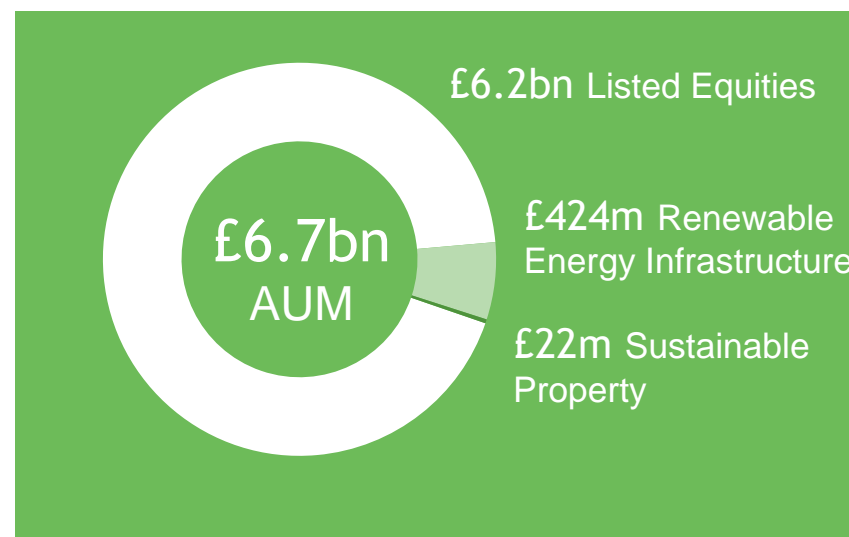
Dublin – 28 September 2017

CLEAR INVESTMENT

Impax is a global leader in Environmental Markets investing

- Dedicated to environmental markets since 1998
- Global institutional client base
- Established thought leaders
- Offices in London, Hong Kong, New York, and Portland (OR)
- 30 experienced investment team members

ASSETS UNDER MANAGEMENT AND ADVICE¹



WINNER OF NUMEROUS AWARDS



2017 UNPRI assessment:
A+
Policies, Processes,
Practices, and Governance



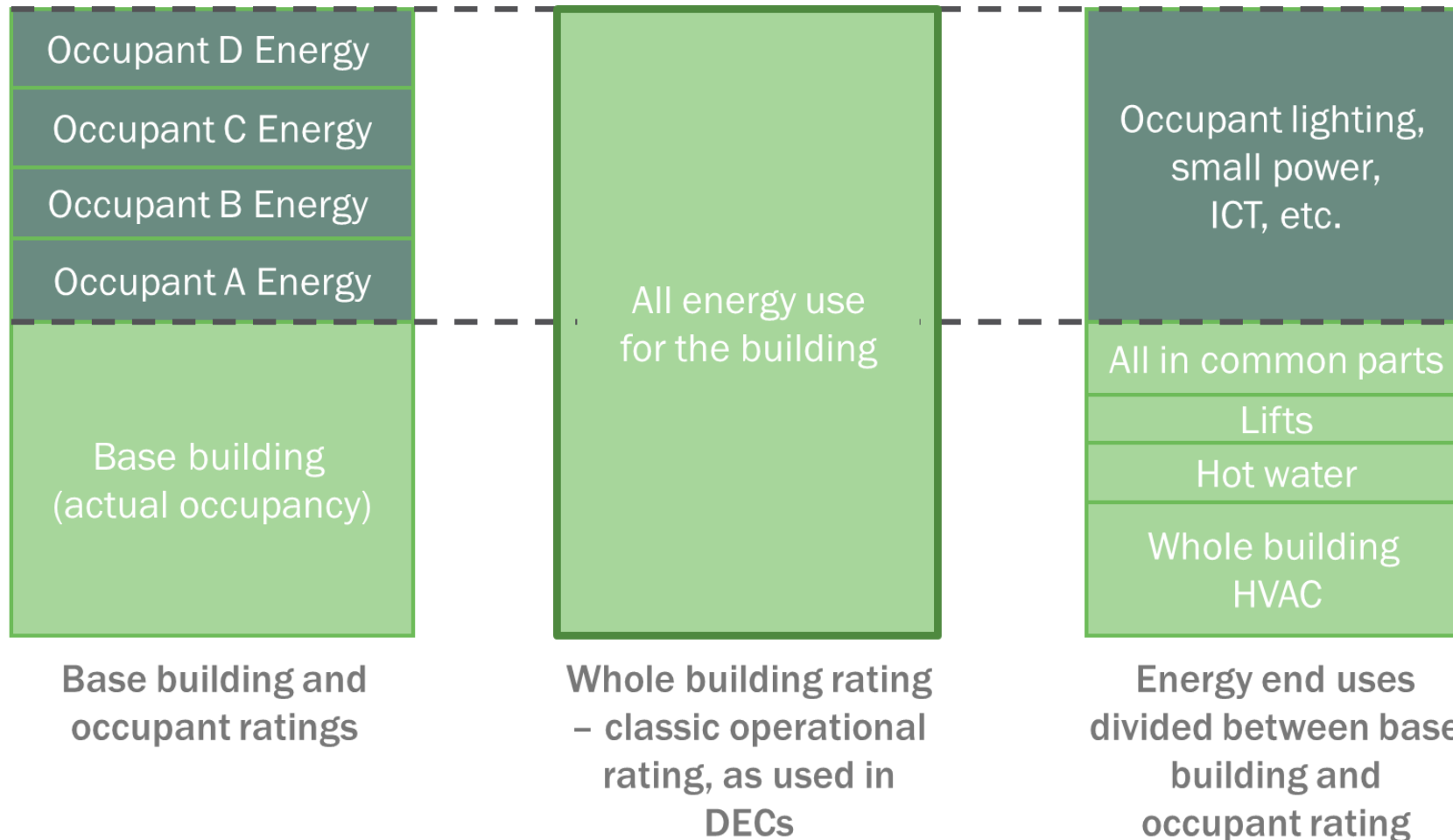
¹As at 30 June 2017. Assets under advice represent ~4% of total AUM.

A Sustainable Property Fund?

- Meets Manager's corporate objective and reporting....UNPRI etc
- Fund and asset level benchmarking.... BREEAM, EPC
- Create “alpha” returns from property – City Centre Brown > Green, Buy>Fix>Sell.
- Quantify the “green alpha” created

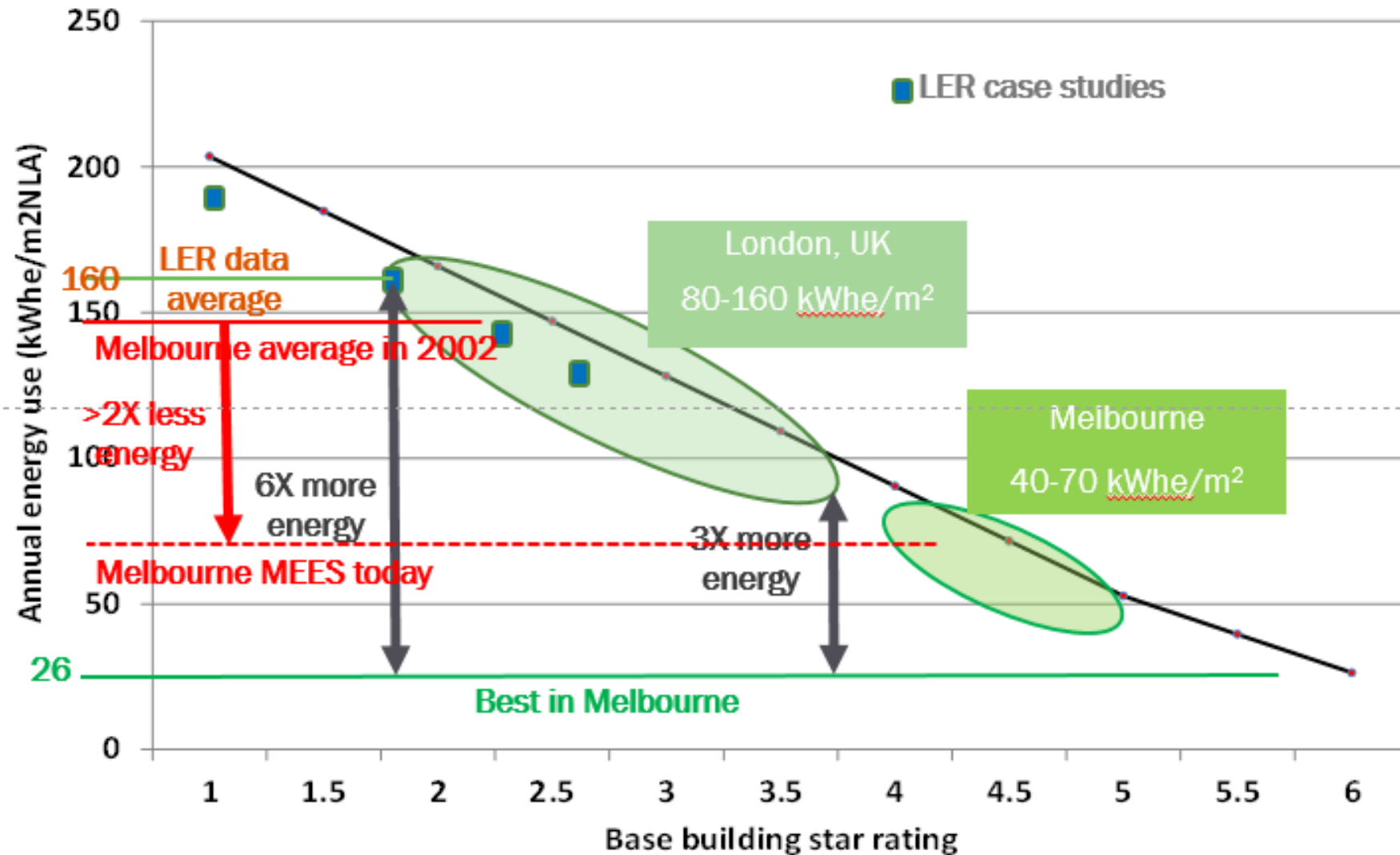
Separating energy for base building services and tenant activities

For a rating scheme, this enables comparability between different buildings. And it gives building operators and occupants the data they need to take responsibility for the energy uses they are able to control directly



Source: Design for Performance: How the commitment to disclose in-use performance can transform energy outcomes for new buildings

New building energy use in Australia has been halved in 15 years



Source: Design for Performance: How the commitment to disclose in-use performance can transform energy outcomes for new buildings

Energy Efficiency – no ‘green bling’

Repositioning Existing Buildings: Replace inefficiency, fine tune, measure & monitor = typical energy savings of **25%+**



5 St Philip's Place, Birmingham



Investment Summary

Acquisition Date	February 2009
Acquisition Price	£31.5m
Equity Invested	£16.0m
Acquisition Yield	7%
Size (Sq Ft)	80,358
Disposal Date	June 2014
Disposal Price	£38.0m
Disposal Gain	£6.5m
Gross IRR*	11.6%
ROE	1.25x

Figures as at 30 June 2017. Gross IRR does not include management fees and carried interest to be borne by investors. Equity multiple (ROE) is calculated as the net proceeds on the sale of the property to the fund (after repayment of 3rd party debt and after disposal costs) divided by the net cost of the property to the Fund (includes acquisition costs and after 3rd party debt)

Initiatives Completed

- Comprehensive Pre-acquisition Energy analysis...multi-let but part unoccupied by Government departments...very poor Sustainability profile.
- Green Lease completed with Government tenant
- New lighting throughout office floors and common areas, new heating and cooling controls, new electrical sub-station, water flow restrictors, AMR Metering throughout £700k capex spent (L&T)
- DEC Energy Ratings: Acquisition G (231), Exit D (98)
- Carbon Reduction - 63% (2009-2013)
- **NPV of energy savings £151,787**

Making performance visible with display energy certificates

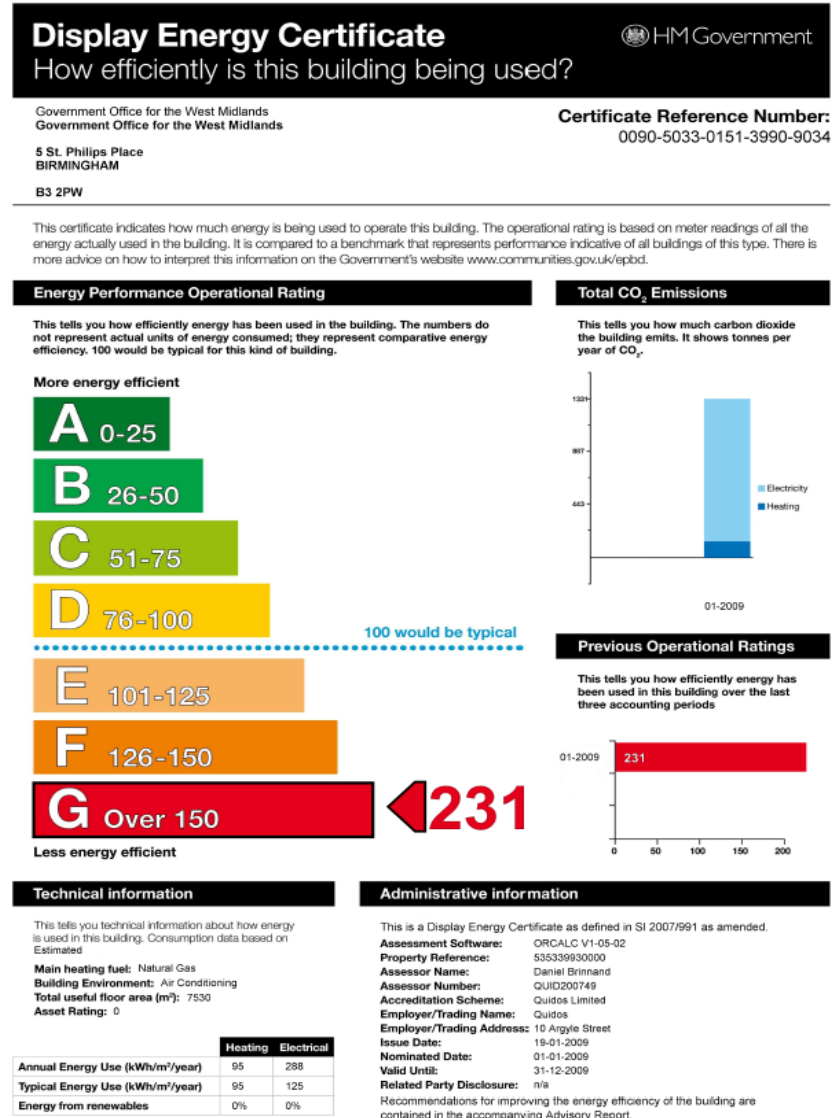
- 5 St Philip's Place - High specification but poor DEC - with CO2 emissions 231% of benchmark

WHY?

- Annual heating energy use was 95 kWh/m² - 24% better than the DEC benchmark value of 125 kWh/m²

BUT

- Annual electricity use was 288 kWh/m²- over three times the DEC benchmark value of 95 kWh/m².

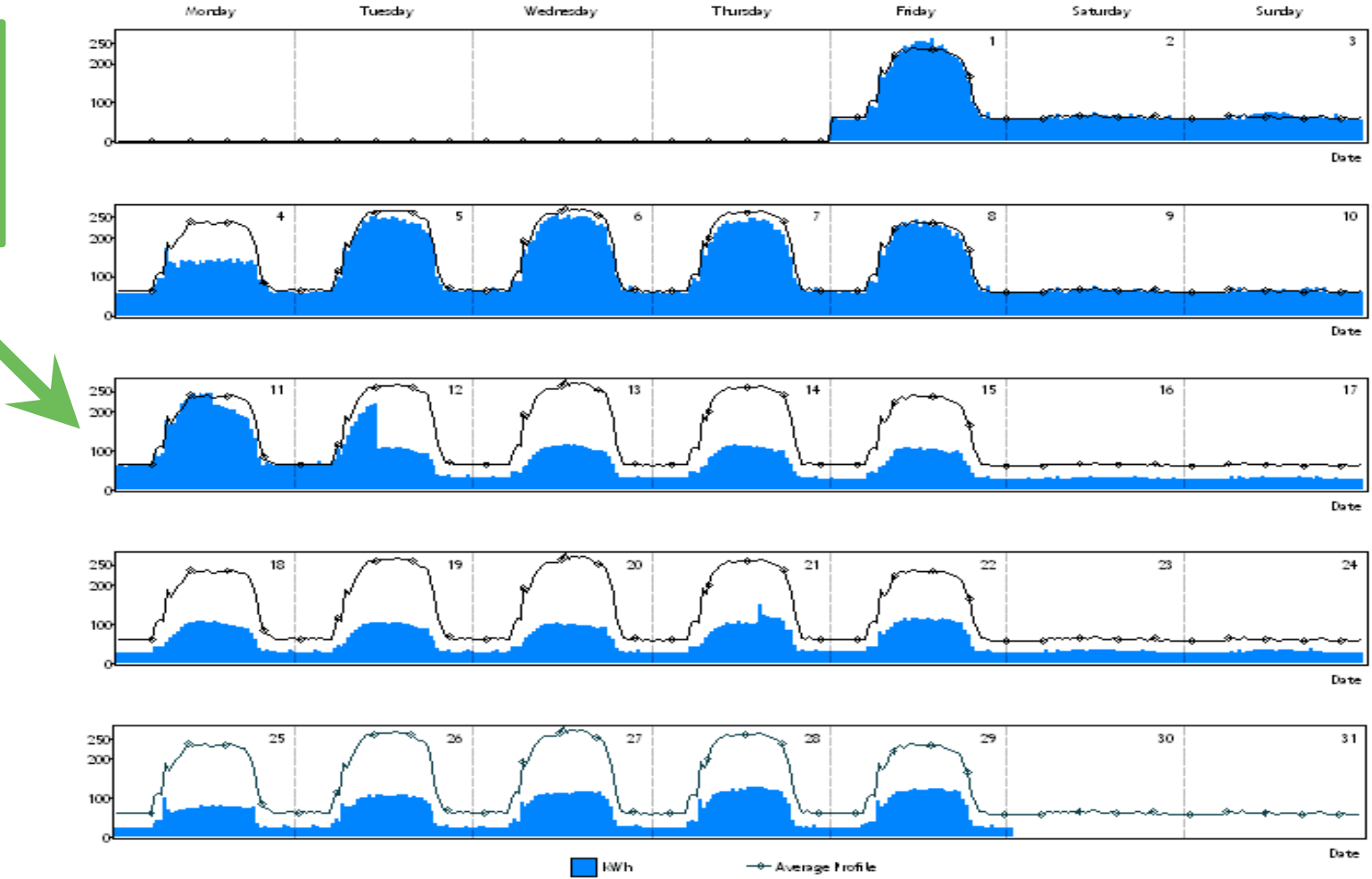


nPower has confirmed the meter error after a site meeting with GOWM and PE on 5 May



Metering records were corrected. On 12 May 2009, 2008-09 data has now been updated retrospectively

Significant rebate secured from Utility company



G to C in less than 4 years

Display Energy Certificate

How efficiently is this building being used?

HM Government

Government Office for the West Midlands
Government Office for the West Midlands
1 St. Philips Place
BIRMINGHAM
B3 2PW

Certificate Reference Number:
0090-5833-0151-3090-9034

The certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicators of all buildings of the type. There is more advice on how to interpret the information on the Government's website www.communities.gov.uk/gedc

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed, they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient

- A 0-25
- B 26-50
- C 51-75
- D 76-100
- E 101-125
- F 126-150
- G Over 150

100 would be typical

Less energy efficient

Total CO₂ Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO₂.

Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods.

Technical Information

This tells you technical information about how energy is used in this building. Consumption data based on 12 months

Main heating fuel: Natural Gas
Building Environment: Air Conditioning
Total useful floor area (m²): 1500
Asset Rating: 0

	Reading	Benchmark
Actual Energy Use (kWh/m ² /year)	18	100
Typical Energy Use (kWh/m ² /year)	18	100
Energy use reasonable	0%	0%

Administrative Information

This is a Display Energy Certificate as defined in SI 2007/261 as amended

Assessment Software: eREC/2.11-25-02
Property Reference: 0000000000
Assessor Name: Daniel Bennett
Assessor Number: 0000000000
Accreditation Scheme: 0000000000
Employer/Trading Name: 000000
Employer/Trading Address: 00 High Street
Issue Date: 01-01-2012
Renewal Date: 01-01-2015
Valid Until: 01-12-2015
Related Party Disclosure: No
Recommendations for improving the energy efficiency of the building are contained in the accompanying advisory report.

Display Energy Certificate

How efficiently is this building being used?

HM Government

Government Office
Department for Communities and Local Government
1 St. Philips Place
BIRMINGHAM
B3 2PW

Certificate Reference Number:
0700-5833-0152-3090-9030

The certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicators of all buildings of the type. There is more advice on how to interpret the information on the Government's website www.communities.gov.uk/gedc

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed, they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient

- A 0-25
- B 26-50
- C 51-75
- D 76-100
- E 101-125
- F 126-150
- G Over 150

100 would be typical

Less energy efficient

	Reading	Benchmark
Actual Energy Use (kWh/m ² /year)	71	100
Typical Energy Use (kWh/m ² /year)	102	100
Energy use reasonable	0.0%	0.0%

Total CO₂ Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO₂.

Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods.

Technical Information

This tells you technical information about how energy is used in this building. Consumption data based on 12 month meter readings

Main heating fuel: Natural Gas
Building Environment: Air Conditioning
Total useful floor area (m²): 1501
Asset Rating: 100 available

Administrative Information

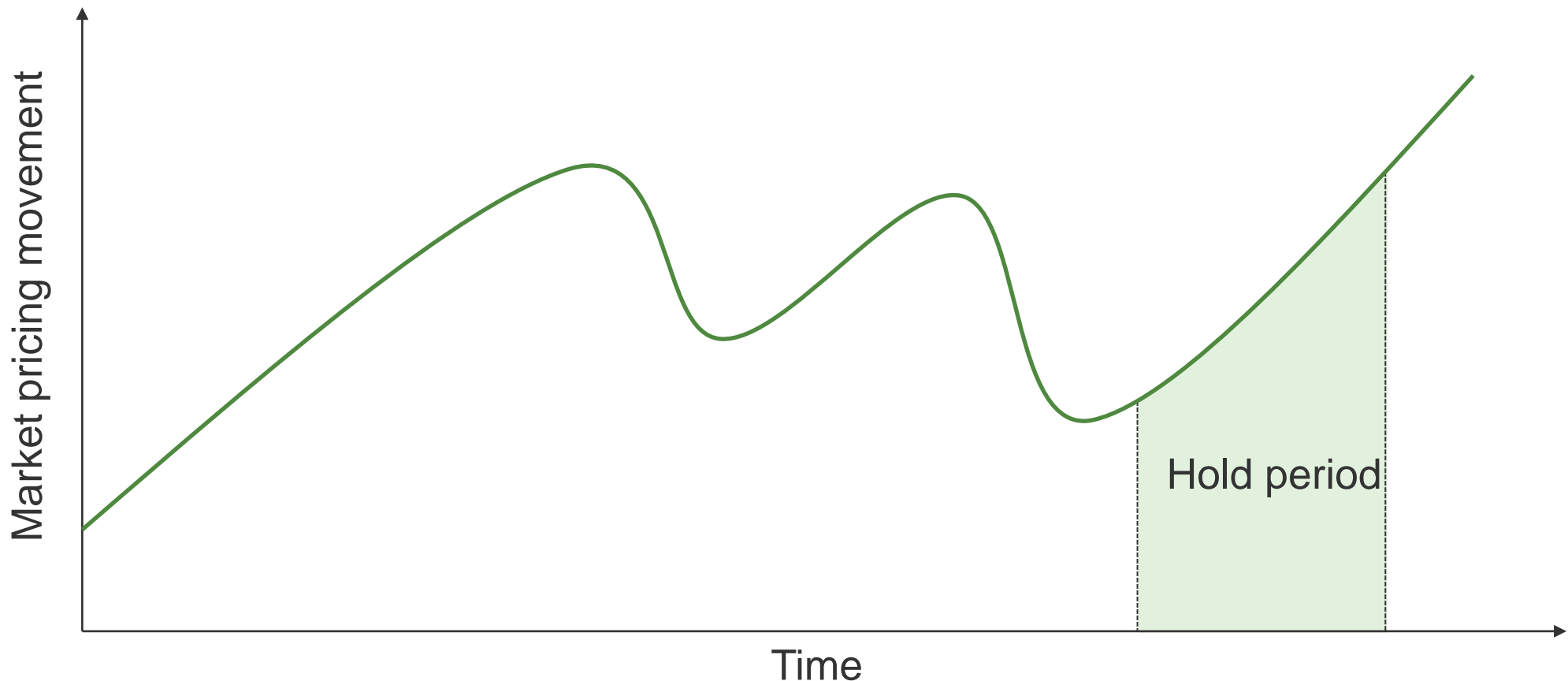
This is a Display Energy Certificate as defined in SI 2007/261 as amended

Assessment Software: System, Inc. QP/Tools v1.8
Property Reference: 0000000000
Assessor Name: Anthony Davis
Assessor Number: 0000000000
Accreditation Scheme: Scheme Certification Ltd
Employer/Trading Name: 00000000
Employer/Trading Address: 00 George Road Glasgow G3 7JG
Issue Date: 06-11-2012
Renewal Date: 28-12-2012
Valid Until: 28-12-2015
Related Party Disclosure: Not related to the assessor
Recommendations for improving the energy efficiency of the building are contained in the accompanying advisory report.

	2008	2009	2010	2011	2012	% Change 2008- 2012
Electricity - kWh/year (as invoiced by the electricity supplier)	2,168,935	1,124,276	899,753	736,716	697,421	- 67%
Energy - Cost p.a. (for electricity and gas as invoiced and excluding the rebate reimbursed by the electricity supplier in May 2009)	£259,174	£144,510	£98,825	£77,957	71,239	- 72%
Carbon - tCO2 p.a. (for electricity and gas)	1,305	716	616	483	467	- 64%
Display Energy Certificate (A-G where A is Zero Carbon)	G	F	E	D	C	

The challenge

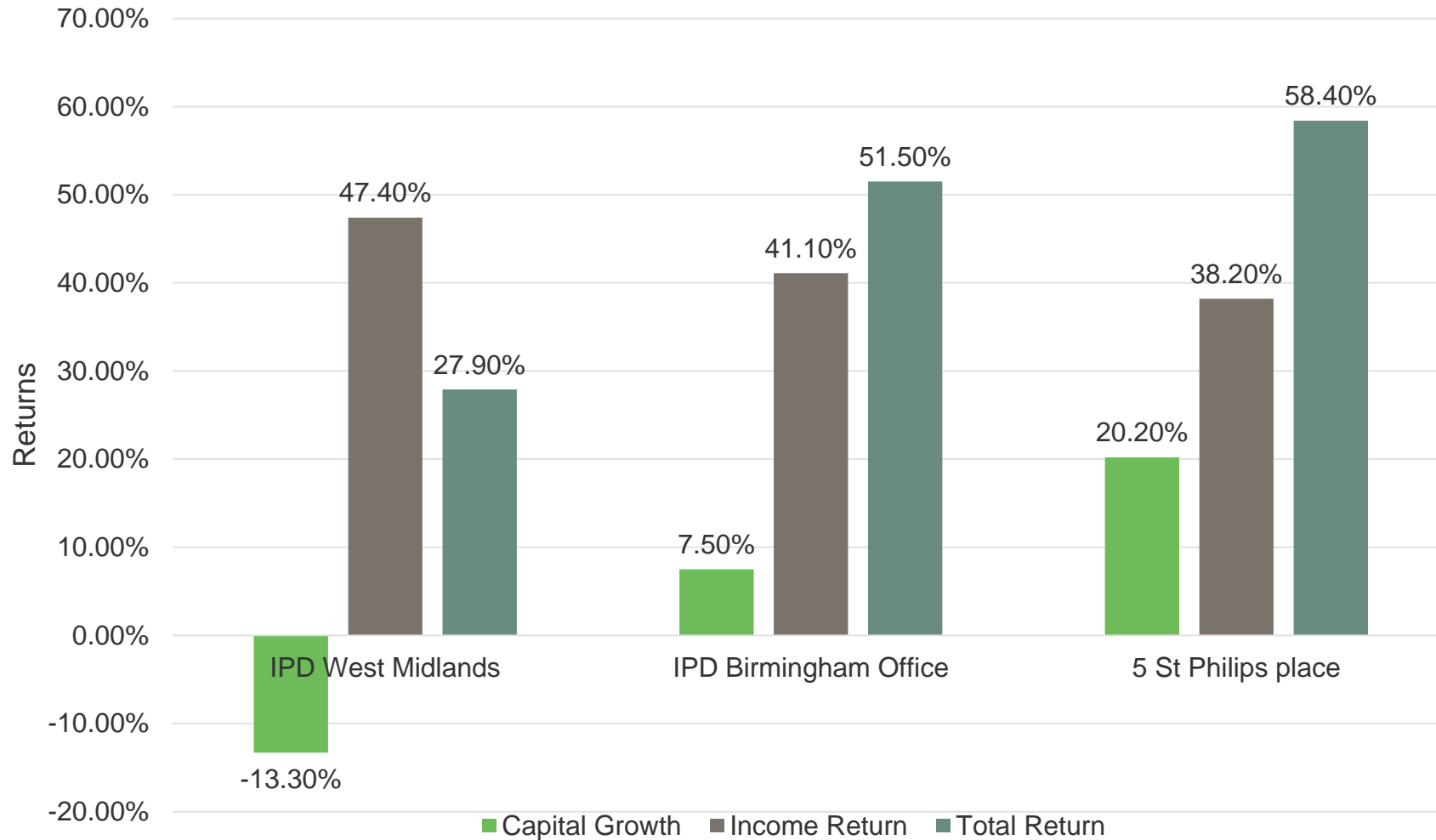
- *How to quantify green alpha...going beyond market Beta.*
- *Downside risk and seeking upside.*
- *Controlling for the business cycle and movement in the market*
- *Multi portfolio analysis or single asset?*



Source: JLL Sustainable Investment Analysis – “Green Alpha” Theory and Practice

Case Study - 5 St Philips Square, Birmingham

Outperformance to IPD (Ung geared Total Return over Hold Period)



Source: JLL Sustainable Investment Analysis – “Green Alpha” Theory and Practice

'Green Alpha' methodology

Management quantify how much additional value they add from their energy efficiency initiatives

1

Input Data

- Background to the property and its local market
- Capex in Energy Efficiency Measures
- Calculation of energy savings and paybacks
- Investment Performance Analysis, in terms of Total Return, against comparable transactions
- IPD benchmarking and JLL Forecast comparison

2

DCF model

- Statistical analysis of 20-30 years of historic movements in yield and rental growth
- Monte Carlo probability distribution curves onto JLL forecasts over hold period
- Controlling for inflation by use of real rental growth figures, rather than nominal
- Isolation of outperformance over and above the market that indicate Externalities attribution

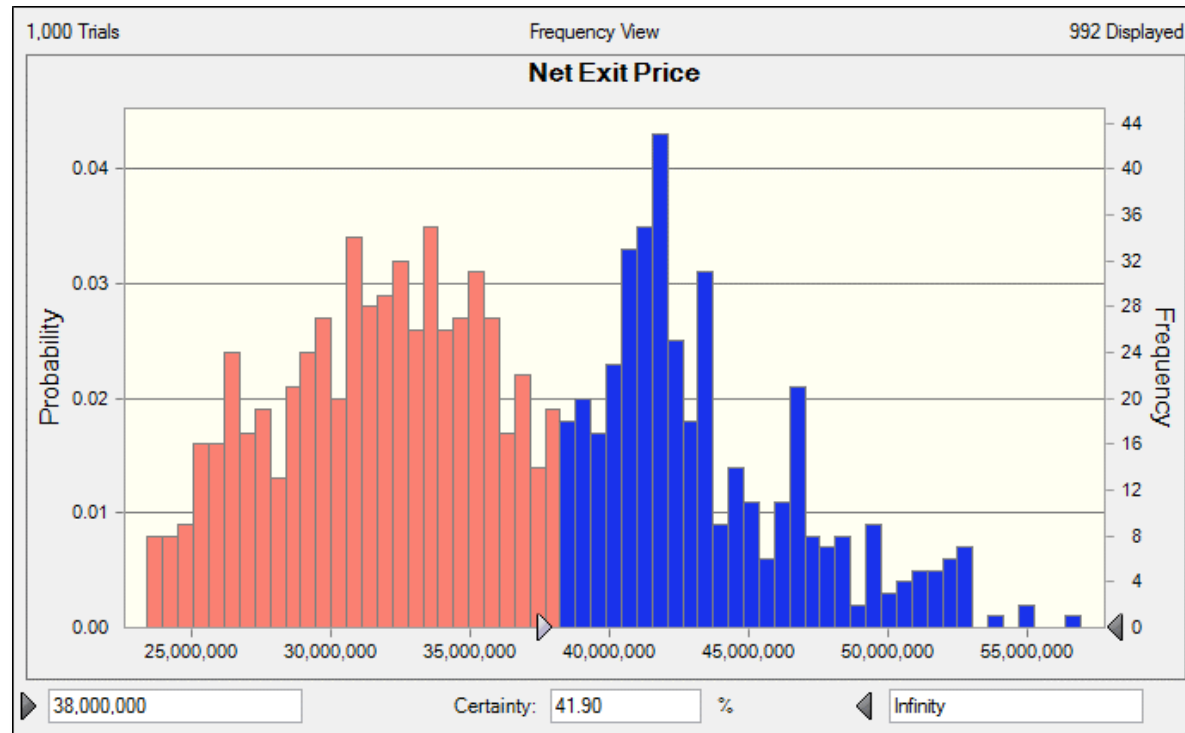
3

'Green Alpha' Total Return Attribution

- Isolation of outperformance from Monte Carlo analysis
- NPV of energy savings and apportionment to Total Return

Case Study - 5 St Philips Square, Birmingham

Monte Carlo Simulation Analysis



Monte Carlo analysis isolates the confidence in achieving sales prices given various scenarios adopting actual and forecasted market conditions

Case Study - 5 St Philips Square, Birmingham

Monte Carlo Simulation Output

Monte Carlo	5 St Philips Place
Disposal Price – Nominal (actual)	£38,000,000
Disposal Price – Nominal (median)	£36,229,685
Disposal Price – Nominal (difference)	£1,770,315
CPI Movement	17.1%
Market Movement (IPD Birmingham)	7.5%
Disposal Price – Real (actual)	£29,315,247
Disposal Price – Real (median)	£27,949,530
Disposal Price – Real (difference)	£1,365,716
NPV of energy savings	£151,787
% of Real difference in Disposal Price	11.1%

Future Trends

- Use this methodology as a predictive tool on future acquisitions
- Not just NPV of Energy Savings but Attribute other factors to green alpha, such as
 - Carbon pricing
 - Flood & other Climate Risk
 - Wellness & overall Occupier Satisfaction
 - Digital and technological resilience
 - Location Connectivity to on site and shared renewables
- The % of “green alpha” will increase as the factors that define a “green building” evolves
- Occupiers and Investors should all be considering all these factors when repositioning assets....look for the Green Alpha.

Any questions?

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