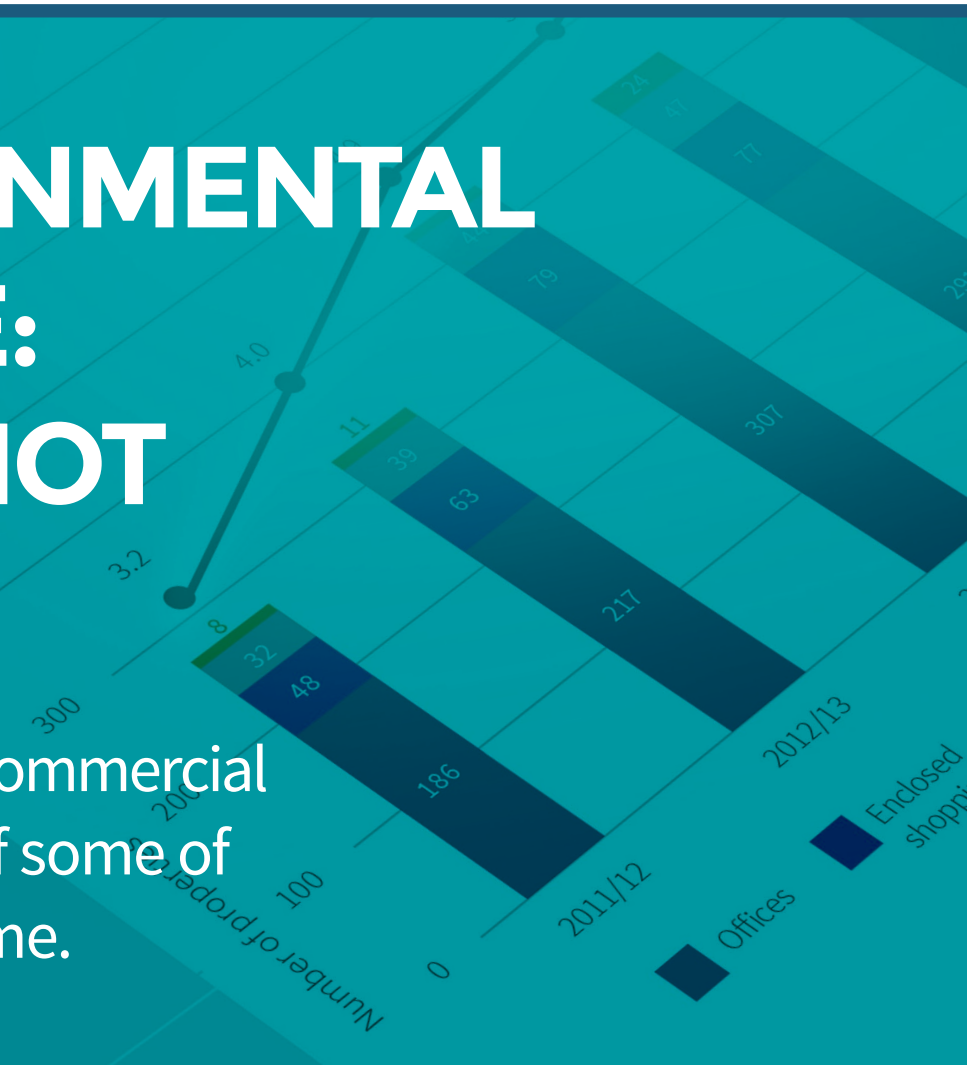


REAL ESTATE ENVIRONMENTAL BENCHMARK UPDATE: 2017 ENERGY SNAPSHOT

In 2017, BBP members submitted data on 683 properties, covering over 7.1 million m² of UK commercial real estate. This report provides a snapshot of some of the key facts and performance trends over time.



Introduction

Each year BBP members submit data on their managed UK commercial real estate portfolios into the Real Estate Environmental Benchmark (REEB). With no other initiative operating at such a scale, it provides a valuable insight into the latest energy performance of commercial properties in the UK and its associated benchmarks are now increasingly being used by the wider industry.

This report provides a summary of the 2016/17 results and a retrospective assessment of how BBP members' portfolios have performed over the past 5 years. The key highlights include:

- **Data coverage** – there has been a 122% increase in the floor area submitted over the past 5 years, showing that the REEB data set is consistently growing.
- **Data quality** – significant improvements to data quality checks have provided much greater data integrity, demonstrated by the consistent decrease in the number of properties being excluded from analysis.
- **Performance improvements** – since 2010/11 energy intensity has improved at an average rate of 3.9% each year totalling 18% over that period. However, the data suggests a slowing of the rate of improvement, with energy intensity improving by only 1% in the past year..

Comparing your own properties

A major output of the REEB project is to produce operational energy benchmarks for the wider industry. These enable other organisations to compare their own properties with the benchmarks. Check-out the 2017 REEB Benchmarks and compare your properties [here](#).



KEY FACTS

7.1M
M² OF FLOOR AREA

+25%
COMPARED TO 2016

683
PROPERTIES

+30%
COMPARED TO 2016

1,238
GWH ENERGY CONSUMPTION

+14%
COMPARED TO 2016

£130M
ENERGY SPEND

+14%
COMPARED TO 2016

235
NEW PROPERTIES

+6%
COMPARED TO 2016

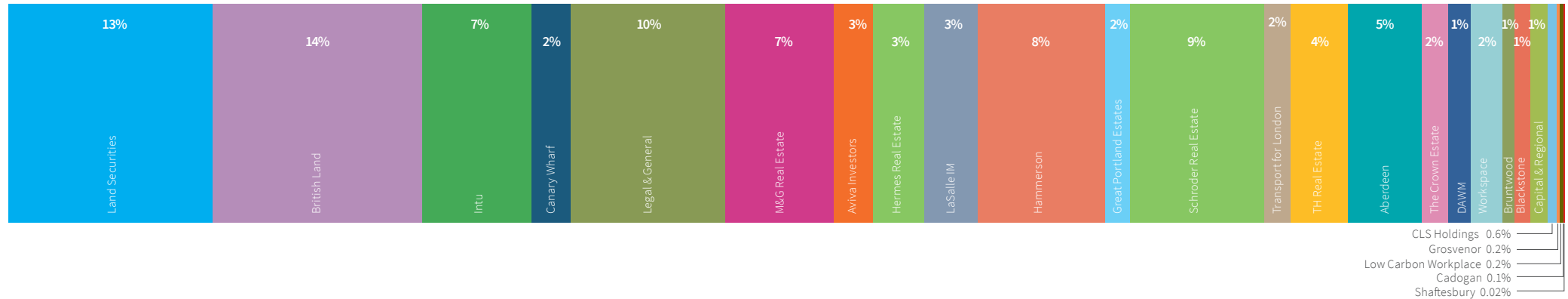
948
GWH LIKE-FOR-LIKE ENERGY CONSUMPTION

-0.4%
COMPARED TO 2016

The 2017 Data Set

Chart 1. Data Set Breakdown by BBP Member

Share of floor area



Share of energy consumption

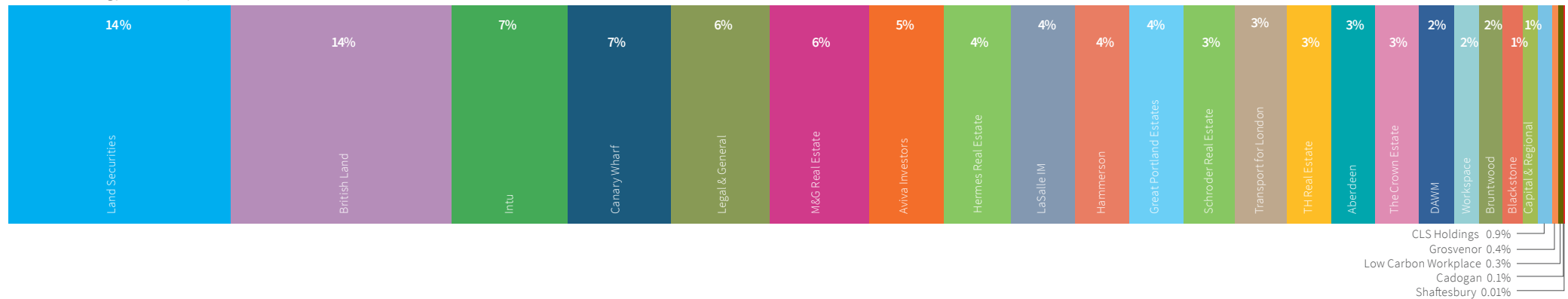


Chart 1 shows the contribution of individual members to the REEB data set. The upper row indicates the proportion of properties by floor area, submitted by each member, whilst the lower

row highlights the proportion of the total energy consumption those properties represent. Energy consumption of the properties will naturally vary due to type, size and use.

IN 2017, 26 BBP MEMBERS SUBMITTED THEIR MANAGED PORTFOLIOS INTO THE REAL ESTATE ENVIRONMENTAL BENCHMARK

Chart 2. REEB Property Profile

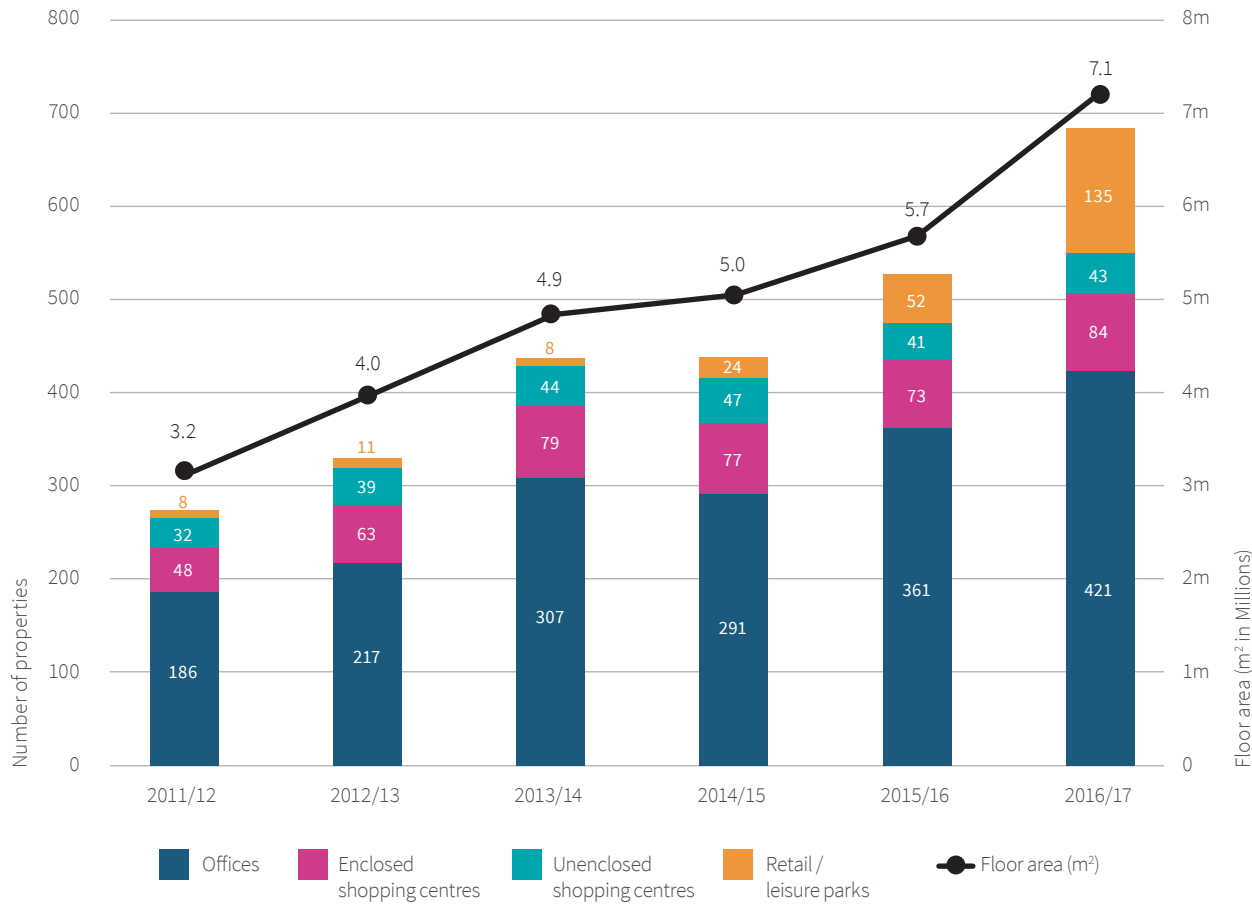


Chart 3. 2016/17 Floor Area

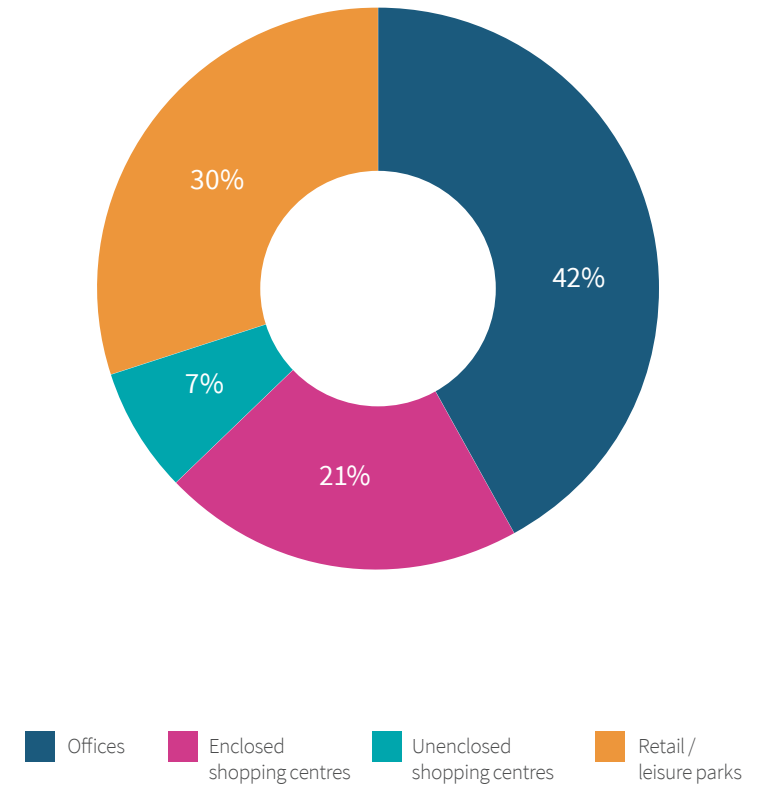


Chart 2 and 3 show the size of the REEB data in terms of number of properties and floor area over time. The REEB data set has steadily grown every year, both in terms of number of members submitting data as well as the size of the data set.

In 2017, the floor area of properties in the REEB data set increased by 25% and the total number of properties

increased by 30%. There was also significant portfolio churn with 32% of the properties for 2016/17 being new entries. The new properties represent a combination of new BBP members submitting data for the first time as well as newly purchased and/or refurbished properties entering the data set. Properties that left the data set are either being refurbished or have been sold.

THE REEB DATA SET IS GROWING; IN THE PAST YEAR THE TOTAL NUMBER OF PROPERTIES HAS INCREASED BY 30% AND THE FLOOR AREA HAS INCREASED BY 25%

Trends Over Time

CHANGES SINCE 2012

+122%
M² OF FLOOR AREA

+149%
PROPERTIES

+73%
PARTICIPANTS

98 GWH
ENERGY SAVED

£10M
ENERGY SAVINGS

3.4%
ANNUALISED LIKE-FOR-LIKE REDUCTION

Chart 4. Indexed Energy Intensity Trend

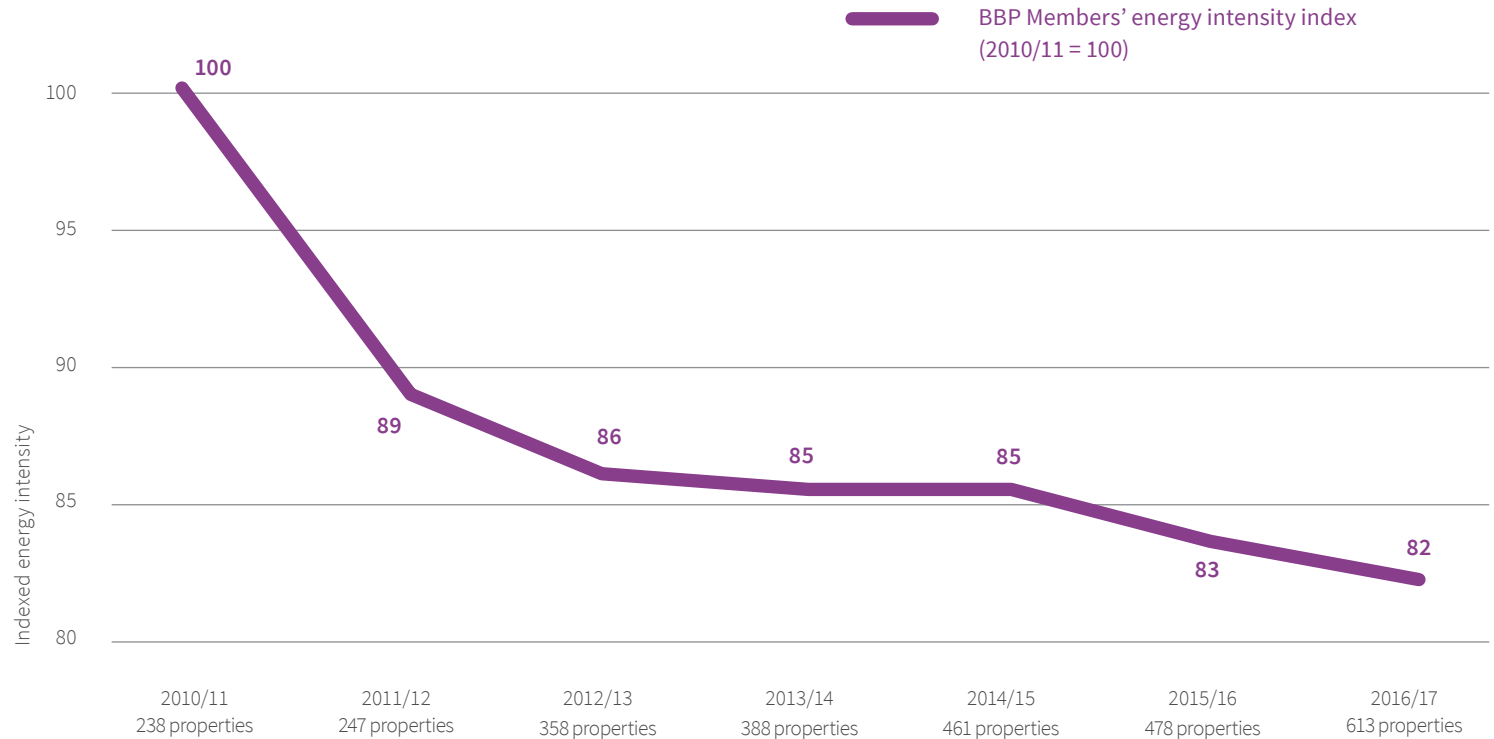


Chart 4 shows the combined indexed energy intensity of BBP Members' office and retail portfolios as it stood each year. Starting at a baseline of 100, it tracks how the energy intensity of annually submitted properties changes over time, in relation to the baseline year. An indexing approach is used as it allows multiple property types to be combined together into one simple performance metric. Results show that the energy efficiency of properties submitted into REEB have steadily improved over time, with 1% improvement in the last year and 18% improvement over the last 6 years.

BBP MEMBERS ARE DEMONSTRATING CONTINUOUS IMPROVEMENTS IN ENERGY EFFICIENCY. OVER THE LAST 6 YEARS ENERGY INTENSITY HAS REDUCED AT AN AVERAGE RATE OF 3.9% PER YEAR

Chart 5. Like-for-Like Energy Savings

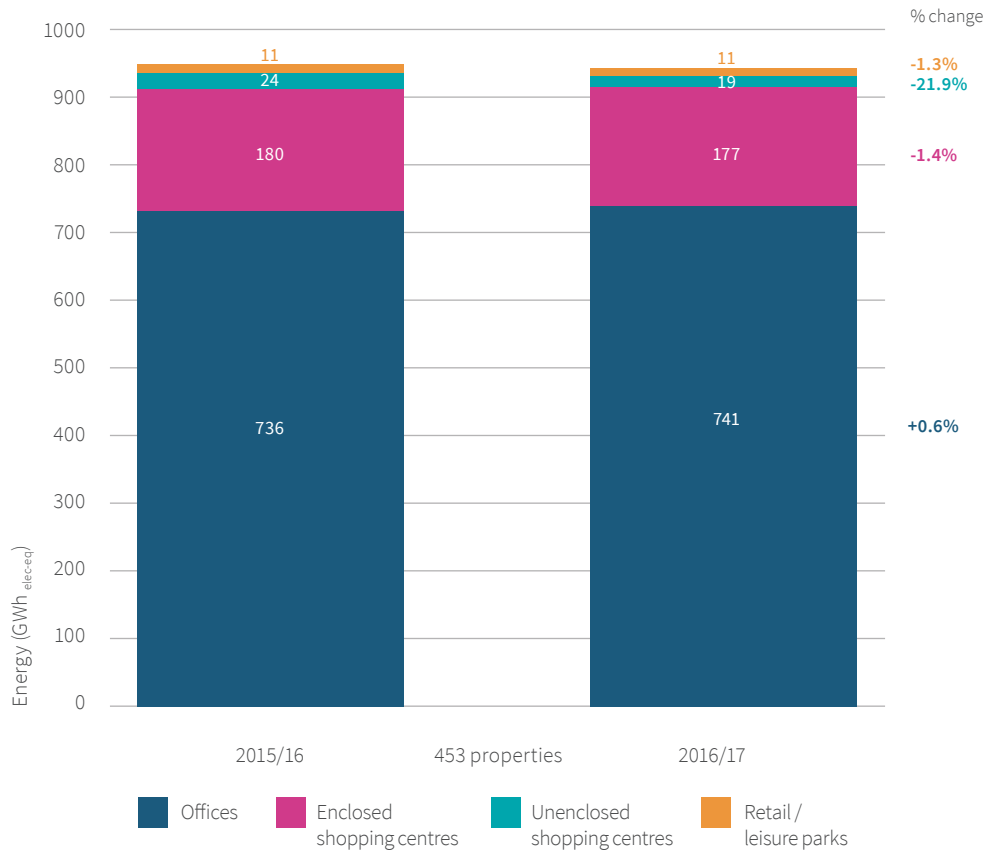


Chart 5 reports the change in absolute energy consumption of the 453 properties that remained consistent over the past two reporting years. The change in like-for-like energy consumption is broken down by property type.

For these 453 properties, the overall energy consumption reduced by 0.4% last year. While

like-for-like consumption for offices increased by 0.6%, enclosed shopping centres achieved -1.4% reduction and retail and leisure parks achieved an impressive -21.9% reduction. Such savings are accomplished by a combination of energy conservation measures through refurbishment and upgrades, and engaging with occupiers to reduce energy consumption through better management.

Chart 6. Like-for-Like Energy Savings Over Time

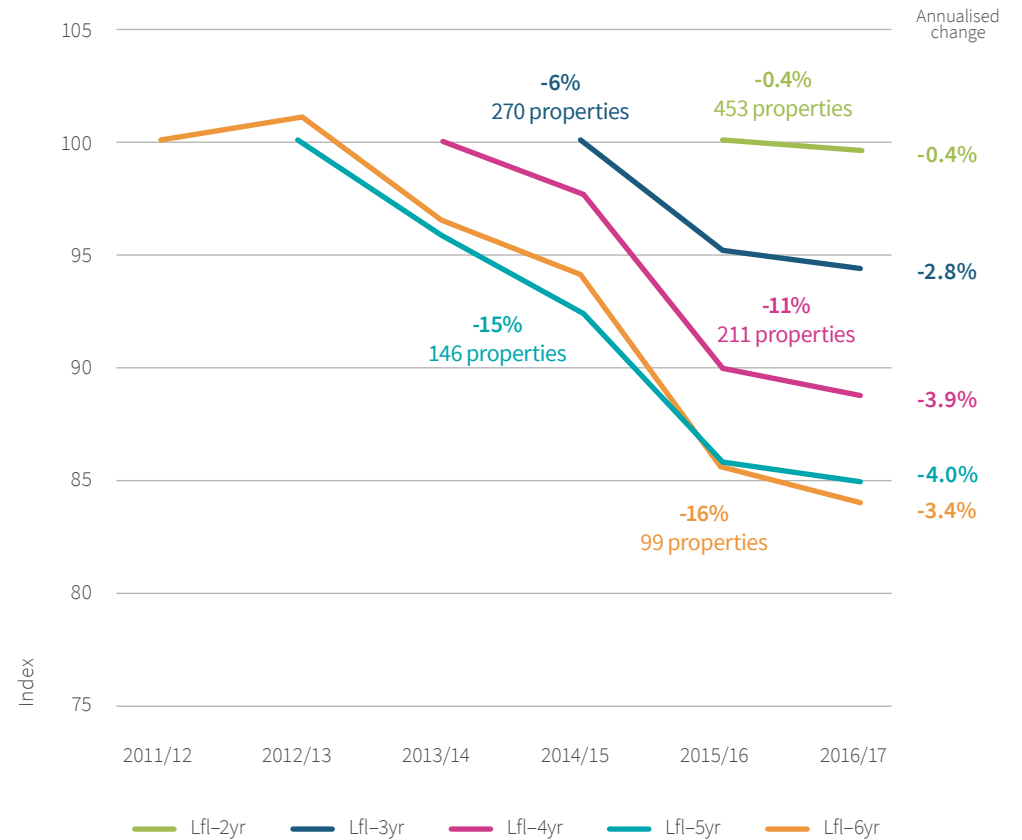


Chart 6 shows the performance of like-for-like properties over time. Each line represents a consistent set of properties starting at a different base year. Figures on the right show the annualised rates of reduction per year, while those over the lines show the overall reduction for the corresponding period.

Each consistent set of properties have made like-for-like energy reductions demonstrating the action

members have been undertaking to drive energy reductions across their portfolio. The properties that have been within the REEB data set the longest have also achieved the greatest like-for-like savings. Of the 99 properties that have remained consistent within the data set since 2011/12, there has been a 16% reduction in energy consumption, equating to an annualised reduction rate of 3.4%.

Chart 7. Like-for-Like Energy Cost Savings

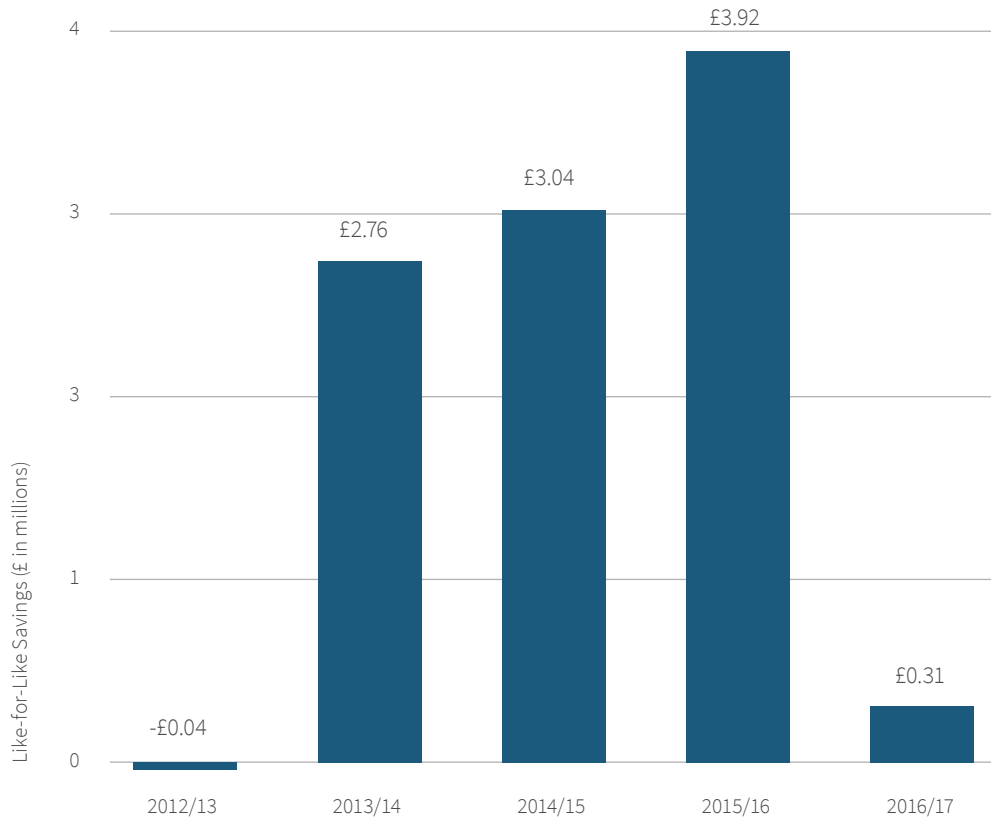


Chart 7 shows the energy cost savings made by members over time for their like-for-like properties submitted into REEB. Each bar represents the savings made between consistent sets of buildings over two consecutive years. In 2016/17, an overall £0.31m savings were made across 453 properties.

These savings represent reduction in total utility costs due to a combination of energy efficiency measures and management practices.

The savings this year are much lower than 2015/16 as like-for-like energy reduced by only 0.4% in 2016/17, compared to a reduction of over 4% in 2015/16.

Chart 8. Absolute Energy Consumption



Chart 8 shows the total unadjusted energy consumption of the REEB data set in GWh over time, broken down by individual fuel type. The other fuels here represent the consumption linked to the use of district heating, biofuels, LPG, wood pellets etc.

Absolute energy consumption changes each year as a result of the number of properties within the data set and the floor area that they represent. This can be seen in the way the energy consumption in Chart 8 mirrors the increasing number of properties and floor area seen within Chart 2.

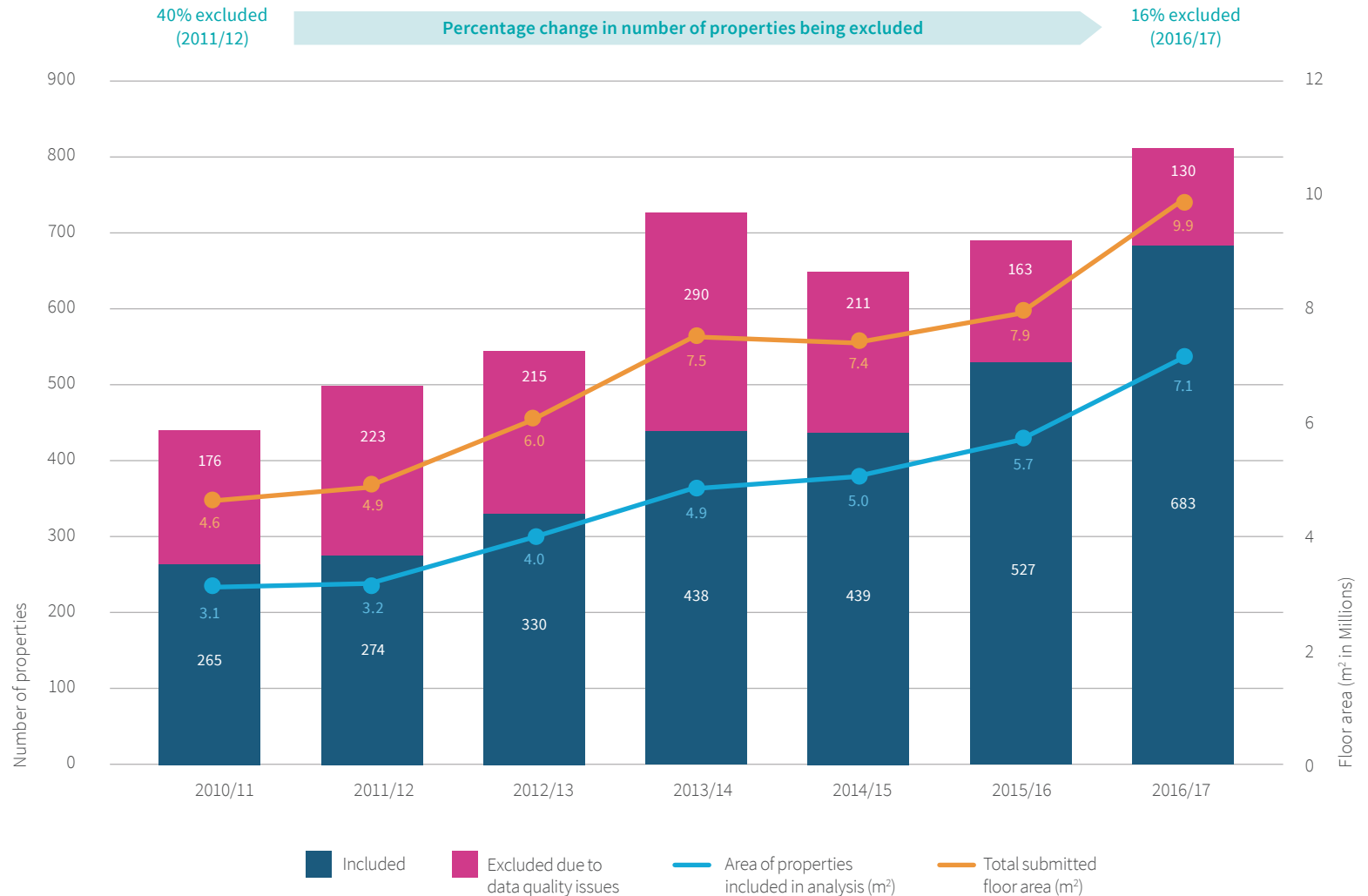
Comparing this report to previous years

Transparency and integrity are vital components of any data analysis. For each 'snapshot' report, efforts are made to ensure information is presented in a clear, concise and open manner. When comparing the results of this report to those previously published, readers will note that not all historic figures match. There are a number of reasons why this is the case:

- Some new properties that entered the data set in 2016/17 provided multiple years' worth of data, impacting historical performance.
- Between each year's data collection, efforts are made with members to go back and update historic data and correct any erroneous submissions.
- New data quality checks were implemented this year which have been retrospectively applied to historic data, resulting in an increased number of property exclusions (see graph to right).
- Energy intensity is no longer adjusted for the number of property operating hours. This decision was based on a study undertaken by BBP that showed no co-relation between operating hours and energy performance.

Further details on how calculations are made is provided within the Methodology notes on page 9.

Chart 9. Property Exclusions from REEB Data set



Methodology Notes

The Data Set

In 2016/17, data for 813 properties was submitted by BBP members, however only 683 met the necessary data quality criteria to be included within the analysis. The criteria for excluding properties are:

- Properties with missing data that are vital to the analysis.
- Properties that show abnormal changes between years or data anomalies that cannot be explained or confirmed by the submitting participant.
- Properties with energy intensities below the following thresholds:
 - Non-air-conditioned offices: $30 \text{ kWh}_{\text{elec-eq}} / \text{m}^2 / \text{yr}$,
 - Air-conditioned offices: $50 \text{ kWh}_{\text{elec-eq}} / \text{m}^2 / \text{yr}$,
 - Enclosed shopping centres: $30 \text{ kWh}_{\text{elec-eq}} / \text{m}^2 / \text{yr}$.

Separable Energy Uses

Certain office assets may exhibit abnormally high energy consumption due to the presence of large energy consuming functions/spaces such as data communication rooms and dealing floors.

To accommodate these assets and allow for them to be comparable with standard offices in the data set, the annual metered consumption is reduced where validated metered energy consumption for one or more of the allowed separable energy uses is provided.

Electricity Equivalent (ele-eq) KPI

In Charts 1, 4, 5 and 6, energy is represented as electricity equivalent. Electricity 'equivalence' is calculated to reflect the approximate thermodynamic differences between electricity, fuels and heat. The ratio for fuels is the same as the ratio of Climate Change Levy rates for gas and electricity from 01 April 2019.

The kWh of electricity equivalent metric can be applied temporally and geographically, thereby facilitating historical and international comparisons of energy efficiency. The conversion factors used for $\text{kWh}_{\text{elec-eq}}$ are: Electricity = 1, fuels = 0.4 and thermals = 0.5

Energy Costs

Energy savings calculations are based on the following tariff rates:

2015/2016 onwards

Gas: 3p/ kWh
Electricity: 11p/ kWh

2010/2011 to 2014/2015

Gas: 3p/ kWh
Electricity: 10p/ kWh

Calculating Indexed Intensity Trends (Chart 4)

An indexing approach is used to enable property owners to assess performance for continuously changing portfolios over time. By taking the average energy intensity of the portfolio

from a baseline year of 2010/11 and selecting a starting value, in this case 100, the percentage change in energy efficiency can be tracked over time. This can illustrate, regardless of portfolio churn, comparable energy efficiency performance across whole portfolios.

In calculating the energy intensity, the following normalisations and adjustments are applied:

Appropriate floor areas to calculate energy intensity:

The following floor areas are used for the energy intensity calculations.

- Offices: Net Lettable Area (NLA)
- Shopping centres: Common Parts Area (CPA)
- Retail/ Leisure Parks: No. of car parks
Car Park spaces are then converted into area by multiplying it to 25m^2 (based on BCSC Guidance Note 76 – Construction Costs of Shopping Centre Car Parks)

Whole building data and vacancy rates: Only offices where whole building energy performance data is provided and occupancy rates are at least 75% are included when calculating energy intensity performance.

Weather adjustment: Weather-driven consumption has been taken into account by adjusting natural gas consumption to the UK 20 year degree-day average. It is assumed that 10% of natural gas consumption is for hot water, which is not significantly affected by weather, and is thus not adjusted using degree-days.

REEB 2017 Participants



Acknowledgements

This report has been developed through the work of the BBP Sustainability Benchmarking Working Group. Data collection and analysis has been undertaken by EnergyDeck.