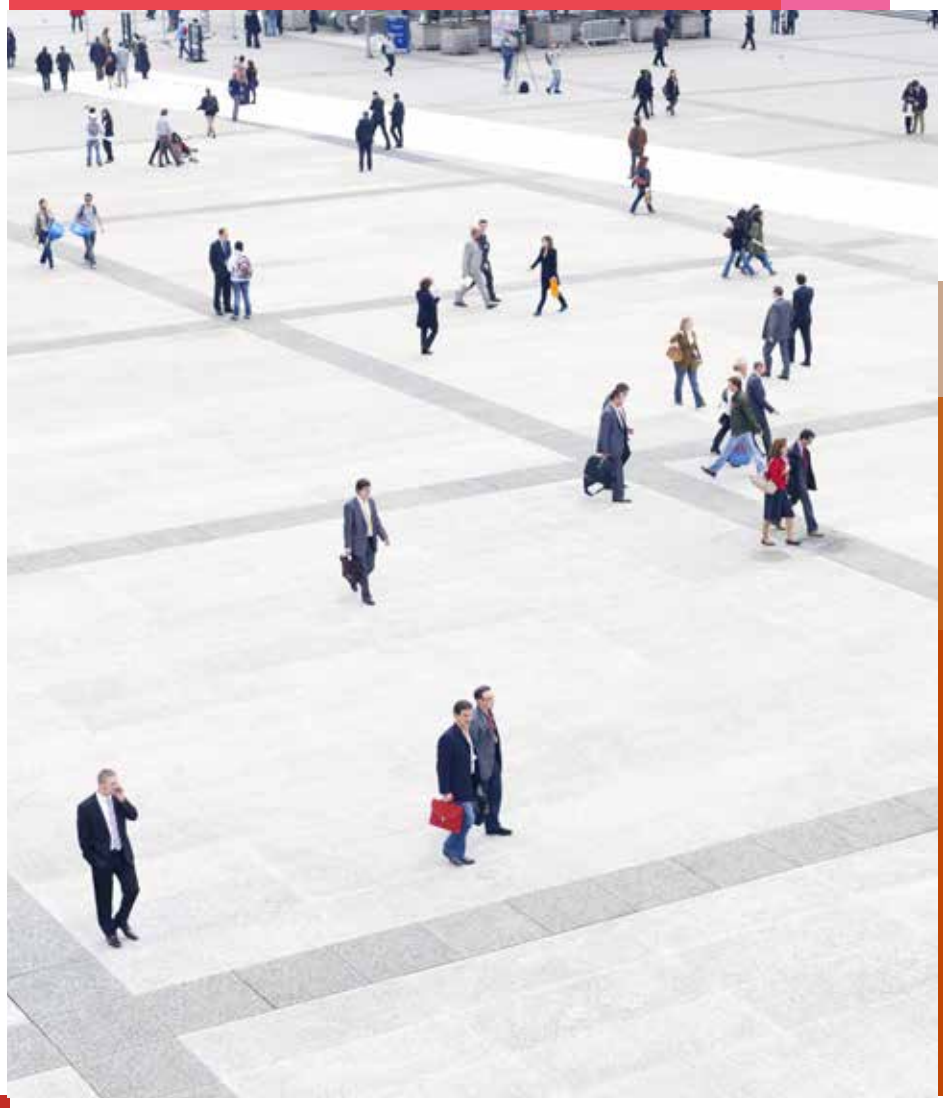
The role and impact of specialist investors in UK infrastructure

A study into the role of specialist investors in UK infrastructure and the impact on performance of vital infrastructure assets over the past decade.

October 2015



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Foreword

A quiet revolution has swept across the UK's infrastructure over the past decade, as a variety of specialist investors have assumed ownership of many essential services, including airports, energy distributors, and water and sewerage companies.

Many of those services had been privatised during the 1980s and 1990s and had sat comfortably under public company or global corporate ownership. But now, they mostly reside in private vehicles, owned by a wide array of investors: Canadian pension houses, Australian-listed vehicles, sovereign wealth institutions, Hong Kong-based infrastructure investors, London-based infrastructure funds, and more.

All of the specialist infrastructure investors share similar aims, with a focus of making stable long-term returns on their major capital investments, and they have been especially drawn to the UK, which has a favourable regulatory regime and has consistently proved among the most fertile hunting grounds.

To our knowledge, no one has evaluated the impact of this sea-change in ownership of the UK's infrastructure to understand how this investor class has responded to the challenges of owning, servicing, and renewing essential (and sometimes ancient) assets, as well as providing consumers good quality and efficient services at a fair price.

This study aims to provide the first steps toward understanding the early effects of the revolution. We have sought to understand the performance of these vital assets under specialist ownership using research focused on evaluating the performance and capital investment in the UK's principal infrastructure assets over the past decade. We have supplemented the research with interviews with industry professionals, from management teams and owners to regulators and industry observers, which has resulted in some asset-specific case studies.

Our thanks to all who have taken part in preparing this study, including our research team and research partner, Brook Intelligence Centre, and to all the interviewees. We hope you find our study insightful and engaging, and we would welcome your comments and feedback.

Colin Smith
Partner
Deals Infrastructure Leader

Executive summary

A period of changing ownership

A large proportion of the UK's major infrastructure now resides under the ownership of specialist private investors. In water and sewerage services some 56% of operating assets are owned by such investors and the UK's major airports including Gatwick, Stansted, Manchester and Heathrow are now controlled by consortia of infrastructure, pension and sovereign wealth fund owners. In other sectors, there has been a recent spate of deals including the sale of rolling stock company Porterbrook to a consortium of Hastings, Allianz, AIMCo and EDF; the sale of the Government's 40% stake in Eurostar to CDPQ and Hermes Infrastructure; and the acquisition of a 33% stake in Associated British Ports by Canada Pension Plan Investment Board and Hermes Infrastructure.

Despite varying backgrounds, these investors' aims are not dissimilar, with a focus on delivering long term returns through investing in stable investment platforms – ultimately their investment 'fire power' is generated from investors in pension schemes, accumulated sovereign capital or private investment, all of whom are looking for stable long term returns underpinned by enduring assets.

Our analysis has focussed on the past decade, which, as well as the shift in ownership, has also coincided with a number of developments in UK infrastructure, particularly in the way that regulation has evolved. Our analysis clearly indicates a notable improvement in performance across all major asset classes, which we consider is in no small part due to the focus and investment capital provided by specialist investors. This appears in contrast to media and public perceptions, which have typically focused on accounting profits and cash returns, at the expense of consumer services and capital investment.

A distinctive approach

From our interviews with investors, management teams and other industry participants, the following have consistently been evidenced when we have questioned the approach taken by specialist investors as custodians of infrastructure assets:

- ***A long term perspective:*** the infrastructure investor community has brought a different mindset to asset ownership – focusing on long-term performance and value creation. Investment decisions will be made based on overall value creation rather than shorter-term views on corporate ratios or immediate earnings generation.

- ***Focus on the underlying asset:*** Across listed and corporate-owned businesses, a common trend was to push expansion around infrastructure assets, often with more volatile and management-intensive businesses. Specialist investor ownership has seen a reversal of this trend, with "non-core" or unrelated business activities being rapidly disposed and management teams focused on driving performance in the core business.

- ***Customer-centric models:*** Investors have clearly recognised that if infrastructure businesses are not well-managed for the benefit of their customers and consumers, the impact will be felt across the business – in increased customer service costs, higher bad debts, poor performance against customer satisfaction measures and potential loss of customers to rival operators.

- ***Alignment of management incentives with asset lifecycles:*** Investors have been able to design management reward structures around regulatory targets and long term value creation, rather than needing to incentivise asset managers

around corporate remuneration structures. This has led to a focus on meeting consumers demands and driving efficiencies aimed at long-term asset performance, rather than short-term profit targets.

- ***Desire to invest to improve performance (and returns):*** Taking a longer term perspective enables specialist investors to make capital investment decisions with significantly fewer constraints than for owners tied to short-term financial metrics.

Improvements in asset and customer performance

The above trends have been noted across a range of sectors, and evidenced using a variety of differing metrics. Examples include:

- Annual capital expenditure across the UK's major airports tracked at around £1.1 billion between 2007 and 2010 but grew steadily to £1.7 billion by 2013, a period during which the ownership of most of the UK's major airports shifted to specialist investors. This has culminated in new terminal facilities at Heathrow and significant terminal enhancements at Gatwick and other regional airports.

- Between 2003 and 2014, electricity distribution operators have reduced the number of interruptions to customer supplies by 29% and the length of the average outage period by 39%.

- In the water sector, investment in network replacement and improved monitoring has seen leakage levels reduce by 13% over the past decade, which equates to a reduction in lost water through leaky pipes equivalent to the amount consumed by the population of Wales.

- Reinvestment of profits by water and electricity distribution companies (via capital and maintenance expenditure) has also increased substantially, with capex on average increasing between 2004 and 2014 by 33% and 112% respectively on a per customer basis. In every year between 2004 and 2014, both water and electricity distribution network operators have reinvested more per customer than has been generated in profit.

The future...

With a widening pool of interested investors, we envisage a strong continuation of interest in UK infrastructure from specialist investors, attracted by stable regulatory environments, a positive UK economic outlook and a growing requirement for improvements in infrastructure across the developed world. Low returns from other investment types have increased the demand for infrastructure, and consequently prices for quality assets continue to rise.

The challenge for this widening investor pool will be to continue to focus on asset performance, in particular in companies with fragmented shareholder bases where, if not managed effectively, management teams can receive mixed messages on investor requirements and management objectives.

Whilst the industry may need to consider new management structures as the investment community evolves, the evidence of recent performance suggests that under specialist ownership, the UK's infrastructure will continue to sit in safe hands.

Utilities

Introduction

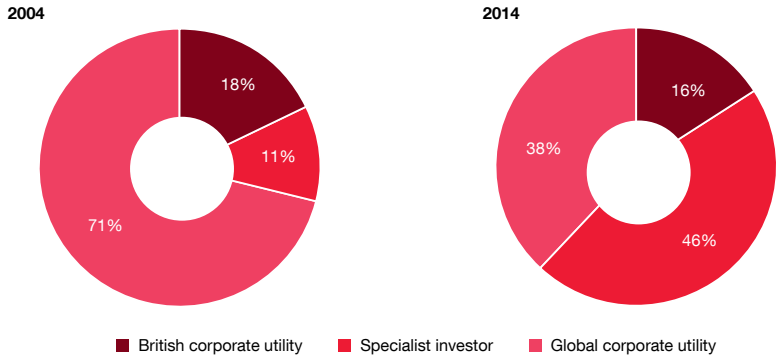
The privatisation by Margaret Thatcher's government of the Regional Water Authorities in 1989 created 10 listed monopoly water and sewerage operators and was closely followed in late 1990 by the privatisation of the 12 Regional Electricity Companies that distributed power to customers. As well as being politically motivated, the passing of the water and power distribution sectors in to private hands was considered the necessary catalyst to deliver greater efficiency, lower customer bills and a means of financing the large capital investments required to improve the ageing asset bases.

The Government's 'golden share' protected companies from takeover for five years post privatisation but in the immediate period post privatisation companies were widely criticised for generating excessive profits, rising bill levels, poor customer service and failing to invest sufficiently in the asset base. In response, New Labour imposed a "Windfall Tax" on privatised utilities that netted the government an estimated £5 billion. However, much criticism was levied at the regulatory bodies for failing to adequately police the privatised utilities. At the PR04 price review Ofwat, under much political and public pressure, refocused its regulatory approach by moving to a more transparent incentive regime to encourage companies to make the necessary investments to improve asset quality whilst introducing deterrents to prevent inflated capex plans being submitted that could easily be outperformed such that shareholder returns were boosted. Other regulators of monopoly utilities soon followed-suit.

Today, it is now widely recognised that the UK's utility regulators set the "gold standard" for incentive based regulation and other regulators across Europe (and beyond) closely track how the Ofgem and Ofwat regimes evolve. The UK environment has subsequently proved attractive to specialist investors, with a stable regulatory environment, inflation protected returns and the opportunities to deliver long term value growth whilst having the ability to generate incremental returns through both incentive mechanisms and delivering efficiency in capital and operating expenditure.

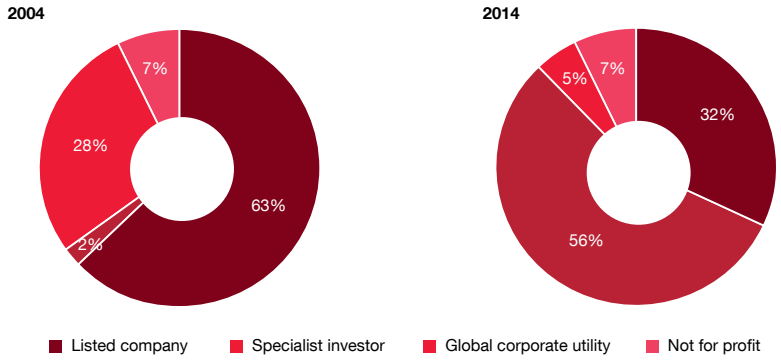
Since the initial post-privatisation period, the utilities industry has undergone a radical shift in ownership, with a general trend of the initially listed companies at privatisation being acquired by large global utility corporate entities and then in more recent years the emergence of specialist infrastructure investors. This is best illustrated by the ownership history of Thames Water which was privatised and floated in 1989, taken private by German multi-utility RWE in 2001 and then following a highly competitive auction process, eventually sold in 2006 to Kemble Water Limited, a consortium of institutional investors managed by Australian investor Macquarie.

Figure 1: Ownership of Electricity Distribution Network Operators – by % of total RAV



Source: PwC analysis

Figure 2: Ownership of England and Wales water and sewerage operators – by % of total RCV



Source: PwC analysis

Today, some 56% of the Water & Sewerage industry is owned by specialist investors (namely infrastructure funds, sovereign wealth funds and pension funds) when measured by Regulatory Capital Value (RCV). Only three companies remain in public hands (Severn Trent, United Utilities and South West Water) and there has been much speculation about possible takeovers of these in recent years. Dwr Cymru has operated a company limited by guarantee since 2001 and has no shareholders, being run solely for the benefit of customers.

In electricity distribution, the 14 regional network operators are held across six owners, ranging from specialist infrastructure investors, such as JP Morgan and Cheung Kong Infrastructure, to overseas energy majors, including Iberdrola and PPL Corporation. Only SSE Power Distribution's North Scotland and Southern networks remain part of a UK listed company, SSE plc.

We have considered a range of financial and operational data over the past decade, a period which has coincided with the changing ownership profile of UK utility assets, as well as seeing Ofgem and Ofwat shifting their regulatory models to incentivise investment in the electrical distribution and water sectors. We focus specifically on the primary measures used to gauge the stability of the infrastructure asset and those that have direct impacts on the quality of supply and service received by customers.

Asset performance and customer service

Water

Ofwat requires that Water Only Companies ("WoCs") and Water & Sewerage Companies ("WaSCs) capture a significant quantity of operational asset performance data each year, on areas that directly impact the service provided to customers. This data covers the performance of below ground "Infrastructure" assets, for example the number of burst pipes, and above ground "Non-infrastructure" assets, for example the number of coliforms in water following treatment.

This data is analysed each year against targets set by the regulator to allow the serviceability of the Infrastructure and Non-infrastructure assets operated by each company to be classified between four categories (Deteriorating, Marginal, Stable to Improving).

Over the last decade there has been significant improvement in the assessment of serviceability of assets operated by WoCs and WaSCs across the sector.

In 2006, only 72% of Great Britain's water infrastructure was classified as 'stable' or 'improving'. By 2013, the entire GB water infrastructure system had achieved 'stable' categorisation, with notable improvements at Thames Water, Affinity (previously Veolia Water) and Wessex Water where the water infrastructure had previously been classified as marginal or deteriorating. A combination of significant investment in mains replacement as well as improved

Figure 3: Water infrastructure serviceability rating for overall network

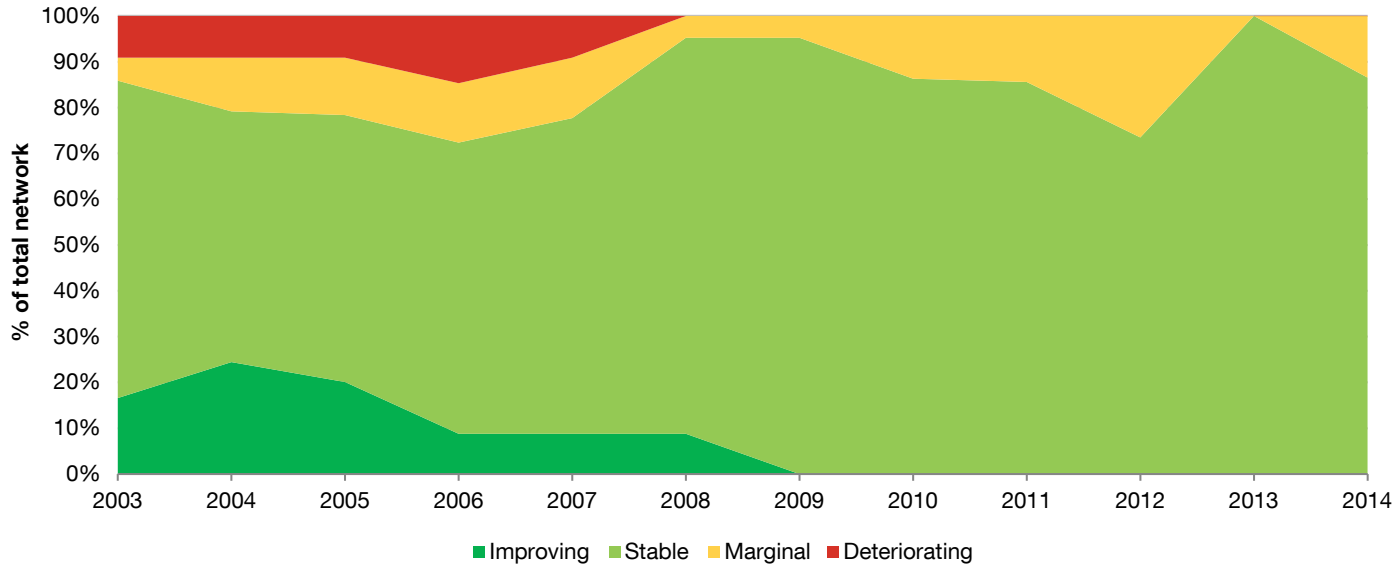
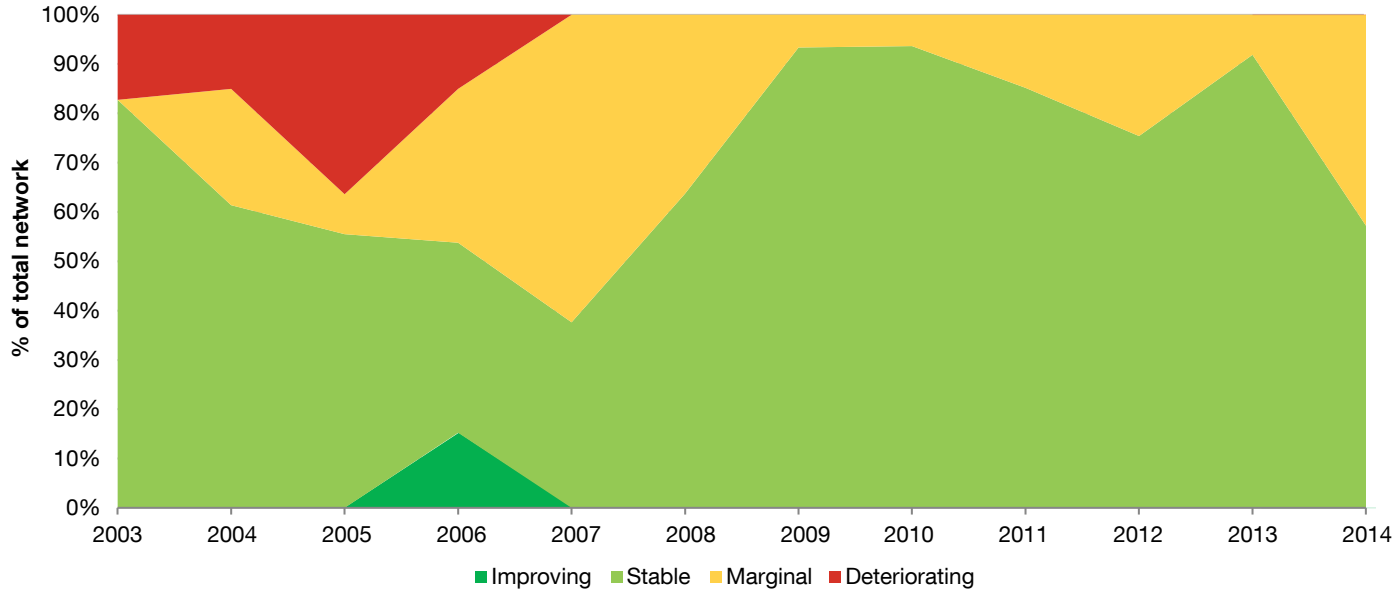


Figure 4: Sewerage infrastructure serviceability rating for overall network



Note: % of total network is calculated based on length of network operated by each company
Source: Ofwat

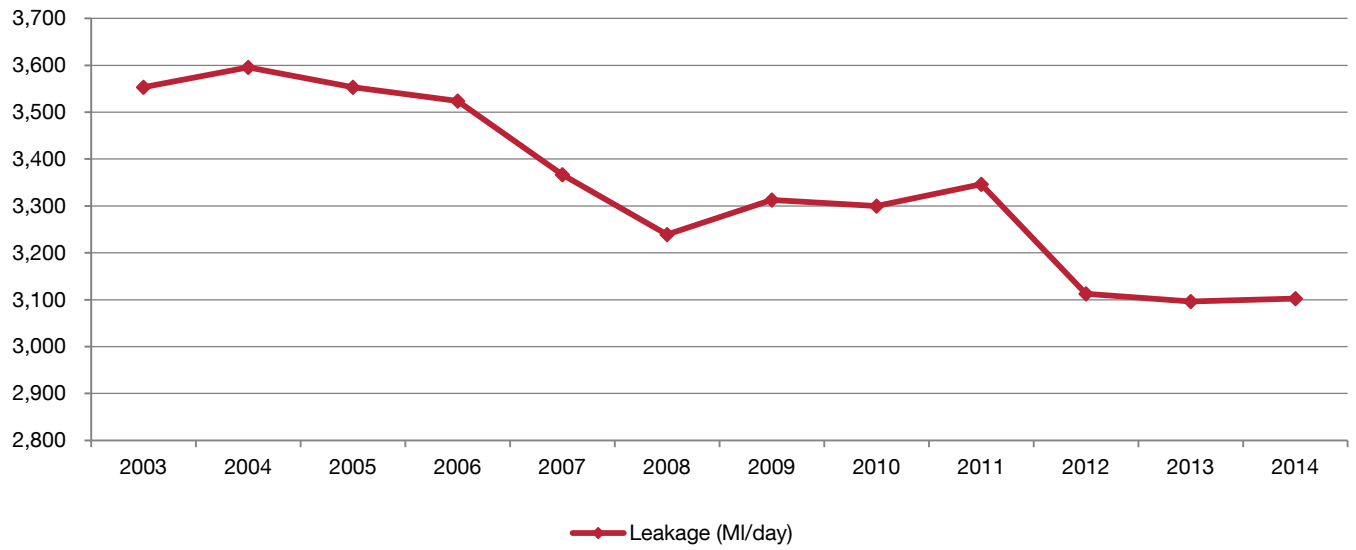
asset management planning to better assess age, condition and asset failure risk have been key contributing factors to the serviceability improvements. The dip in performance in 2014 is attributable to Severn Trent's water infrastructure being assessed as 'marginal'. This is due to worsening performance on customer supply interruptions, which was significantly impacted by exceptional storm levels in February 2014.

Sewerage infrastructure serviceability has improved across the period under review achieving 92% stable serviceability across the GB infrastructure in 2013 (compared to just 38% in 2007). However, this slipped back by 2014 to 57% following downgrades to 'marginal' serviceability ratings for the two largest operators, Thames Water and Severn Trent Water. Both failed to achieve Ofwat's targets for sewer blockages in 2014, but have committed resources to rectifying this in the next regulatory period.

The measure of asset performance that is most widely quoted in the media is leakage. Reducing leakage has been a major focus for many companies in the sector in the last decade. Investors have made significant structural investments in network assets, investments in network monitoring equipment and improved data analytics to target leakage 'hotspots' and reduce overall leakage. This has resulted in a steady decline in leakage across the network over the 10 years to 2014 (around 500 million litres per day – Figure 5), equates to a daily saving equivalent to the water consumed in Wales everyday.

Whilst the approach to water ownership varies between different types of investors, their focus on achieving long term returns, through efficient investing in the capital asset base is a consistent theme. We comment specifically on Affinity Water and our observations following its sale by Veolia in 2012.

Figure 5: Total leakage across England and Wales (million litres / day)



Source: Ofwat

Affinity Water – Case study

In 2012, a consortium comprising Infracapital and Morgan Stanley Infrastructure Partners acquired 90% of Veolia Environment's UK regulated water business for £1.24 billion. The business (since rebranded as Affinity Water) supplies water to some 3.5 million customers in the South of England. At the time of the acquisition the business comprised three separate regulated water companies (Veolia Water Central, Southeast and East), which were subsequently combined in to a single licensed water undertaker to remove the complexity and inefficiency of operating three businesses.

The considerable expertise in regulated assets and the infrastructure asset management capabilities brought by the new investors resulted in immediate steps to refocus the strategy of the business, with this being centred around two principal themes being: putting the customer at the heart of the strategy of the business and placing greater emphasis on long term value creation.

From a customer perspective, the investors recognised that change was needed in the way the business interacted with customers as getting this wrong impacted many areas – increased customer contact costs; higher bad debt levels; worsening performance against customer service metrics and reputational risk with the regulator and politicians.

Improvement in customer service staff training was prioritised and enhancements made in a number of other areas, including providing greater online functionality and investing in call centre processes and upgraded software. A Community Engagement Programme was also established to provide opportunities for charities and organisations in the Affinity region to benefit from the company's water resources and expertise, as well as funding for specific projects. At the 2014 price review (PR14) Ofwat highlighted Affinity's plans to provide community level reporting which is aimed at giving its communities a clear picture of performance against its commitments within their local area and the ability to compare performance across the eight communities.

In addition to enhancing the customer experience and preparing the business for the PR14 price control, the main priorities post acquisition were on ensuring a quick and effective separation of the business from the Veolia group and shifting the focus of business processes and management's decision making to centre on long term value creation and cash management. Key changes have included:

- management incentive arrangements that are more closely aligned with the customer and operational measures monitored and incentivised by Ofwat, as well as creating a Long Term Incentive Plan that is structured around growth in longer term regulatory value;

- modifying governance and reporting structures such that health & safety, customer service and operational aspects are given greatest prominence, whereas previously the focus had been largely centred on financial performance (predominantly EBITDA);

- greater focus on delivering better value for customers, including taking immediate steps to produce further efficiencies such as closing the company's shared service centre; and

- revising the approach to investment appraisal, with increased emphasis on regulatory asset value growth rather than assessing projects on the level of profit generated and investment payback periods

At PR09, the main Veolia Central business was classified as 'Band C Lower' against Ofwat's operating efficiency banding, which meant it was deemed to be the least efficient water only operator. However at PR14, Ofwat awarded Affinity "enhanced status" after it had completed its risk-based review as part of the price review process, with Ofwat recognising the high quality of the company's business plan "that stood out from the other companies". This reflects a significant achievement for the business in a relatively short period since the acquisition by Infracapital and Morgan Stanley Infrastructure Partners.

Electricity networks

Ofgem uses two fundamental measures to both reward and penalise Distribution Network Operators (DNOs) for their quality of service performance, Customer Interruptions ("CI") and Customer Minutes Lost ("CML").

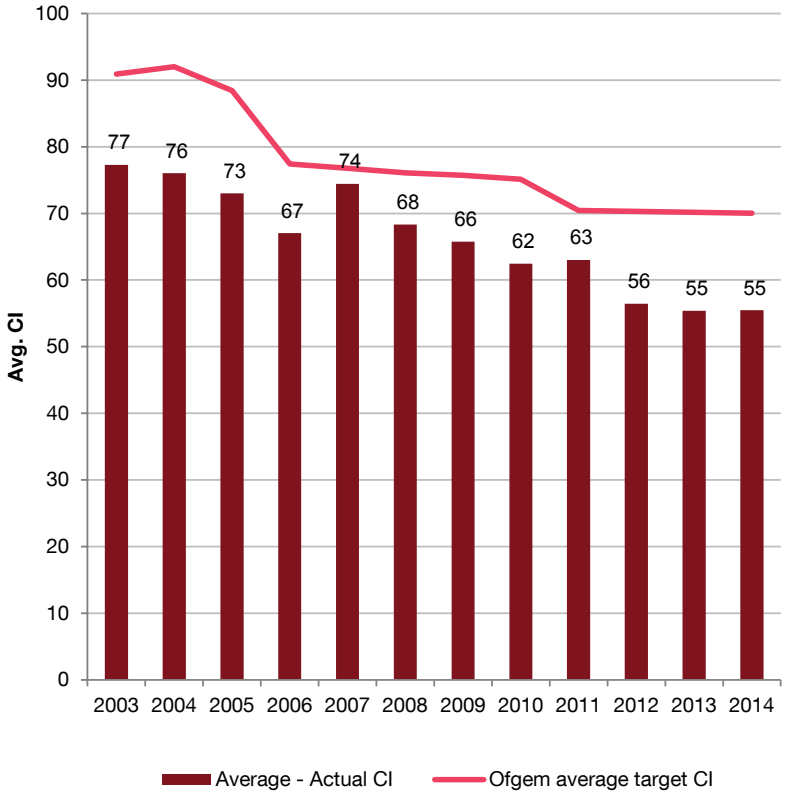
They are key measures of how DNOs performance impacts the end customer experience, as CI measures the frequency of failures of the network, whilst CML measures the length of time that customers are without power.

Ofgem uses these measures both to benchmark the DNOs performance but also as a key measure of the resilience and quality of each network.

CI and CML performance since 2003

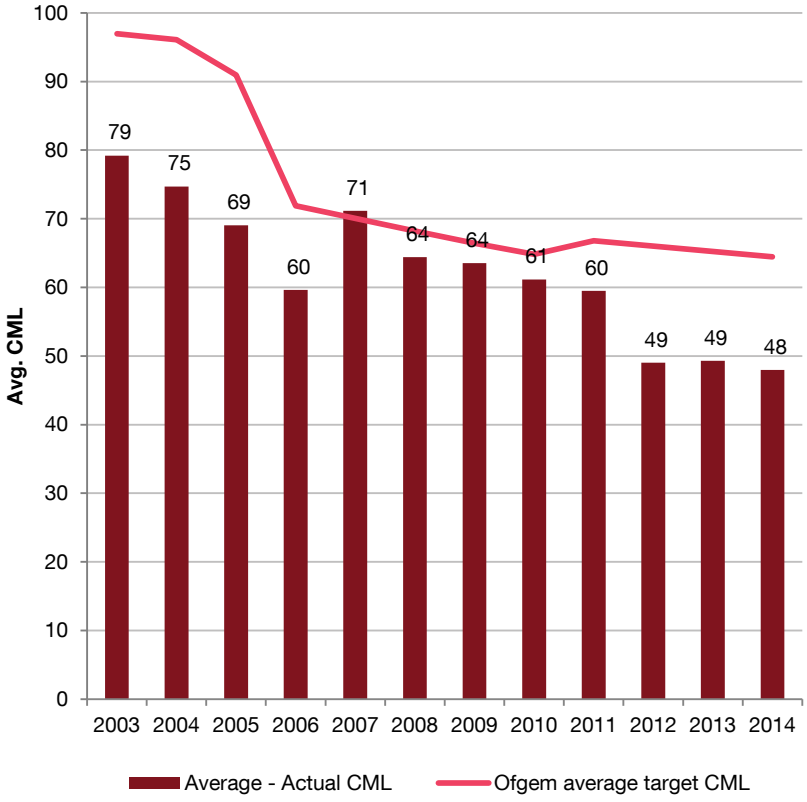
Over the last decade there have been consistent improvements in the DNOs overall quality of service (see figures 6 and 7). Between 2003 and 2014, there was a 29% reduction in the number of customer interruptions and a 39% drop in the duration of these outages. Whilst the effect of regulatory targets cannot be ignored, the combination of both increased investment and focus on operational improvement to achieve and exceed these targets is clearly having a positive effect on overall customer experience.

Figure 6: Average customer interruptions



Note: Customer Interruptions reflect the number of supply interruptions in the relevant restoration stage per 100 customers recorded in a year

Figure 7: Average customer minutes lost



Note: Customer minutes lost reflect the average number of minutes that a customer has their supply interrupted in the relevant restoration stage

Source: Ofgem

UK Power Networks – Case study

In 2010, Electricité de France disposed of its three regulated electrical distribution networks serving 8 million customers across the East of England, London and the South of England, together with its non-regulated distribution arm that included the private networks providing power to a number of customers including London Underground, Gatwick and Heathrow Airports. Hong Kong based investors controlled by the Cheung Kong Group, successfully bid £5.8 billion for the business which was subsequently rebranded as UK Power Networks (UKPN).

The acquisition took place as the industry moved from one regulatory period to the next (DPCR4 to DPCR5) and in its Final Proposals for DPCR5 published in December 2009, Ofgem's analysis showed the three regulated networks of EDF to be lower quartile performers in terms of network expenditure efficiency.

The immediate priorities of the new owner post-acquisition were to ensure an effective separation of the business from EDF and to set the course for delivering against the tough settlement received from Ofgem at DPCR5. In addition, the London distribution network faced the challenge of the upcoming London Olympics in 2012 and keeping the power on was an immediate and high profile focus for the new investors.

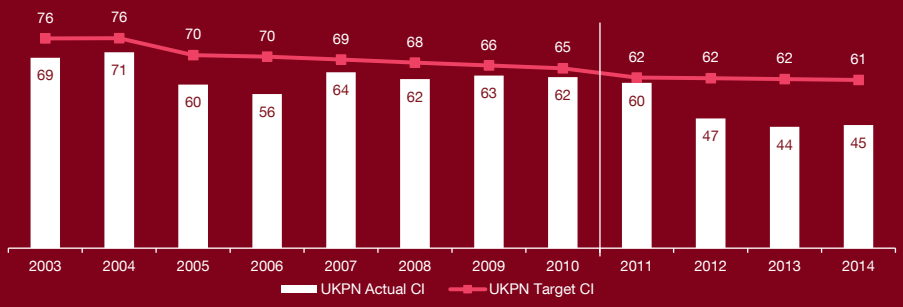
A key objective post-acquisition was to improve the underperforming aspects of the business, most notably to deliver against the efficiency challenge laid down by Ofgem. A number of changes were made to redefine UKPN's strategy and organisational structures through:

- creating a new autonomous management team with independence from corporate parent intervention, together with a shift in focus from near term profitability and cash flow to longer term efficiency drivers and value growth;
- linking employee remuneration to performance against the overall strategic aims and seeking cultural change through greater focus on accountability across the management team;
- reducing costs through a voluntary severance programme that lowered indirect employee numbers by around 600;
- establishing a formal customer services executive position and separating the asset management function from the actual delivery of capital projects; and
- revisiting the operational model in terms of work patterns and automation, with an aim to 'getting the lights back on' more quickly.

Since CKI's acquisition, UKPN has consistently beaten its CI and CML targets and notably since 2012 this has been by some significant margin indicating that the strategy of focussing heavily in improving quality of supply is working. Energy supplies for the London Olympics were effectively managed without any significant concern and by 2013 UKPN's CML score ranked second across the six network operator groups in Great Britain.

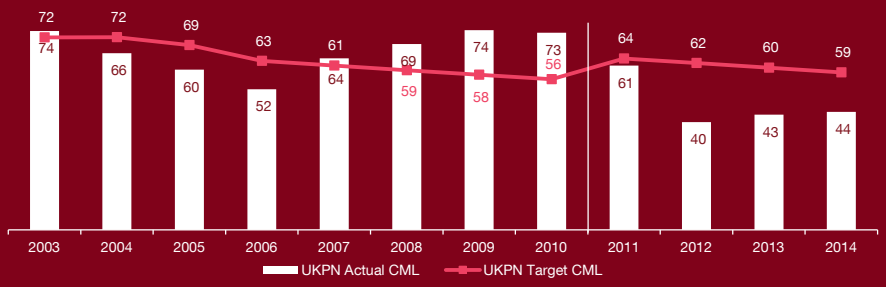
In terms of its cost efficiency, it is still relatively early in to the new ownership regime to gauge the true level of success and in Ofgem's RIIO-ED1 final determination efficiency rankings the three UKPN networks ranked 9, 10 and 11 out of 14 DNOs, but a course has been set for the next 8 year period that anticipates total expenditure levels in line with Ofgem's allowances despite increasing load growth through low carbon distributed generation and a growing network replacement programme. It is clear that the current owners have sought to refocus the business and this appears to be bringing about improvements in the networks' operations which will benefit customers through improved reliability of electricity supply.

Figure 8: UKPN – overall CI vs target



Source: Ofgem

Figure 9: UKPN – overall CML vs target



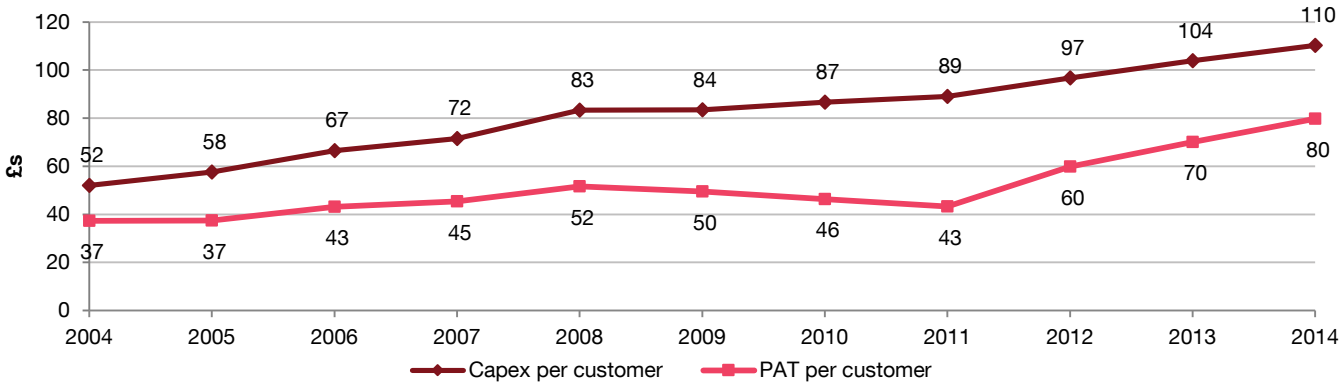
Source Ofgem

The profit argument: Investment versus profitability

Whilst media coverage of both energy and water and sewerage companies (most notably the big six energy retailers) focusses on the level of profits being earned in total £ terms, it is interesting to consider what this reflects at an individual customer level and the levels of investment made across the sector relative to the profits generated per customer.

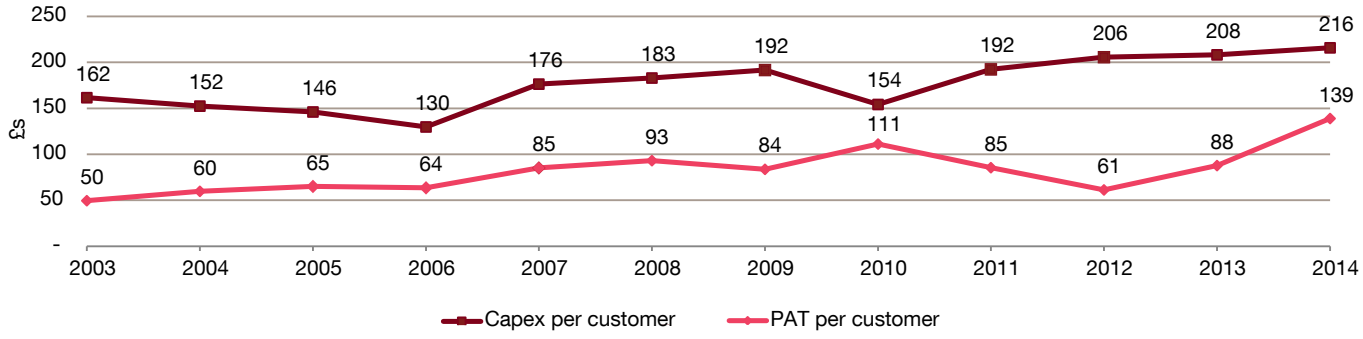
Our analysis of the electricity DNOs indicates that, whilst capex invested per customer has increased 100%, the level of profit per customer has remained largely stable from 2004 to 2011, increasing on average by only 2% per annum, before a sharp increase over 2012 and 2013 driven largely by tariff increases allowed under the regulatory price settlement, together with reductions in operating costs. Revenues and thus the prices being paid by customers have increased by amounts worthy of the attention given by the media, but the additional income is allowed by Ofgem to fund the long term investment in improving asset quality and enhancing customer service, and not to provide the DNO's owners with increased returns. Whilst this is cold comfort for the end consumer who has faced increasing bills at a time of economic difficulties for many households, it is nevertheless a relevant counter argument to the "super profits" view often presented in the media.

Figure 10: Electricity DNOs – Capex and profit after tax per customer



Source: PwC analysis

Figure 11: England and Wales Water and Water & Sewerage companies – capex and profit after tax per customer



Source: Company annual reports and PwC analysis

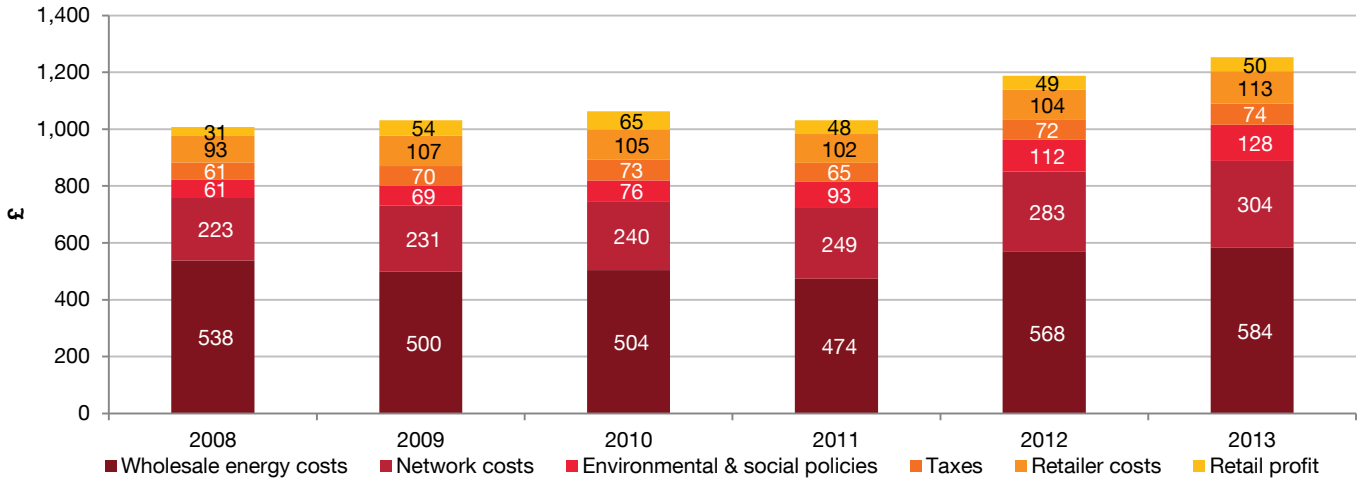
In the gas and electricity sectors media coverage of rising prices fails to acknowledge how the average customer bill is comprised, with the regulated transmission and distribution network component reflecting less than a quarter of the average household dual fuel bill, with the largest percentage increase in individual components of customer bills between 2008 and 2013 relating to levies to cover Government environmental and social policies.

Table 1

Annual average growth in components of average household dual fuel bill (2008-2013)

Wholesale energy costs	1.7%
Network costs	**6.4%**
Environmental & social policies	16.0%
Taxes	3.9%
Retailer costs	4.0%
Retail profit	10.0%
Total dual fuel bill	***4.5%***

Figure 12: Breakdown of average dual fuel household bill



Source: British Gas

Transportation

UK Airports overview

Within Transportation, our focus has been on UK airports and the impact that specialist investment has had on their performance. Whilst other transportation asset classes (e.g. rail, ports) in the UK have similarly been acquired by specialist investors, this has been to a lesser extent than evident in airports and data to evaluate performance is less readily available.

The last decade has seen major activity in UK airports, both in terms of changes in ownership and development of the assets themselves.

All major UK airports have undergone some form of change in ownership over the last decade, many of them on multiple occasions, with a shift from assets being owned by corporates or public markets to being acquired by specialist, private investors. All major UK airports are now, at least partially, in private ownership with investors including traditional private equity funds, infrastructure funds, sovereign wealth funds, pension funds and specialist industry operators.

Perhaps the most notable change from public ownership to specialist investor was Ferrovial's acquisition of the BAA group of airports in 2006, delisting the former government-owned airports authority and taking it private, bringing in new investment from infrastructure and sovereign wealth funds. Public sentiment against the deal initially took some overcoming, with a view that an added debt burden and the requirement for an investor return would be borne by airlines and the public.

Ferrovial and other investors who invested prior to 2008 saw their returns hit and the value of their investments fall as a result of the global economic downturn and resultant impact on passenger volumes. However, overall profitability continued to grow, albeit below expected levels.

Airport passenger volumes have traditionally proven to be resilient to major shocks such as 9/11 and the dot.com crash and, despite the global economic downturn, investors generally remained confident in the long term prospects for their assets and broadly stuck with capital investment plans. Recent improvements in overall passenger volumes (from 161m in 2010 to 180m in 2014) have been matched by a continued improvement in profits across all major airports (with combined EBITDA increasing from £1.7bn in 2010 to nearly £2.2bn in 2014).

Although acquired by a specialist investor, BAA still had the issue of owning and managing seven competing UK airports, three of which served the London market. With Heathrow dwarfing the rest of the group, many observers felt that BAA's other airports weren't getting the prominent management focus they would receive under separate ownership.

Although disputed strongly by BAA, this view was eventually shared by the UK Competition Commission who forced it's break-up In 2009, at the heart of the financial crisis, a consortium of specialist investors led by Global Infrastructure Partners (GIP) acquired Gatwick, the UK's second largest airport for £1.5bn, a discount against its regulated value at the time.

Having been under separate ownership for five years, Gatwick therefore presents a good test-case of how airports can perform under specialist investor ownership. The key critical opportunity the acquisition by GIP gave Gatwick was its ability to run itself, acting purely in the interests of its own airlines, passengers and shareholders.

Recent years have also seen transactions involving Edinburgh (also sold to GIP, in 2012) and Stansted (sold to Manchester Airports Group ("MAG") backed by IFM Investors in 2013), with those airports now able to act in their own interests, without the restraints of being part of a group with larger assets. The period of time with which the new investors have been able to make a difference at these airports is less than we have seen with Gatwick but early indications suggest a similar trend, with Stansted commencing a significant terminal redevelopment (£80 million) and reaching a new agreement with their main airline, Ryanair, both shortly after the deal completed.

Perhaps ironically, despite BAA's fight against the Competition Commission's findings, the enforced break-up does not appear to have been without benefits for it as well. In addition to significant sale proceeds that have reduced its corporate debt, it has also been able to increase focus on Heathrow, its prize asset. Indeed, it is better able to focus on its own airlines, passengers and extensive terminal redevelopment. On the face of it, Heathrow has cemented its position as a dominant force, with passenger numbers growing year on year, increasing from 66m in 2009 to 73m in 2014, a record year for the airport.

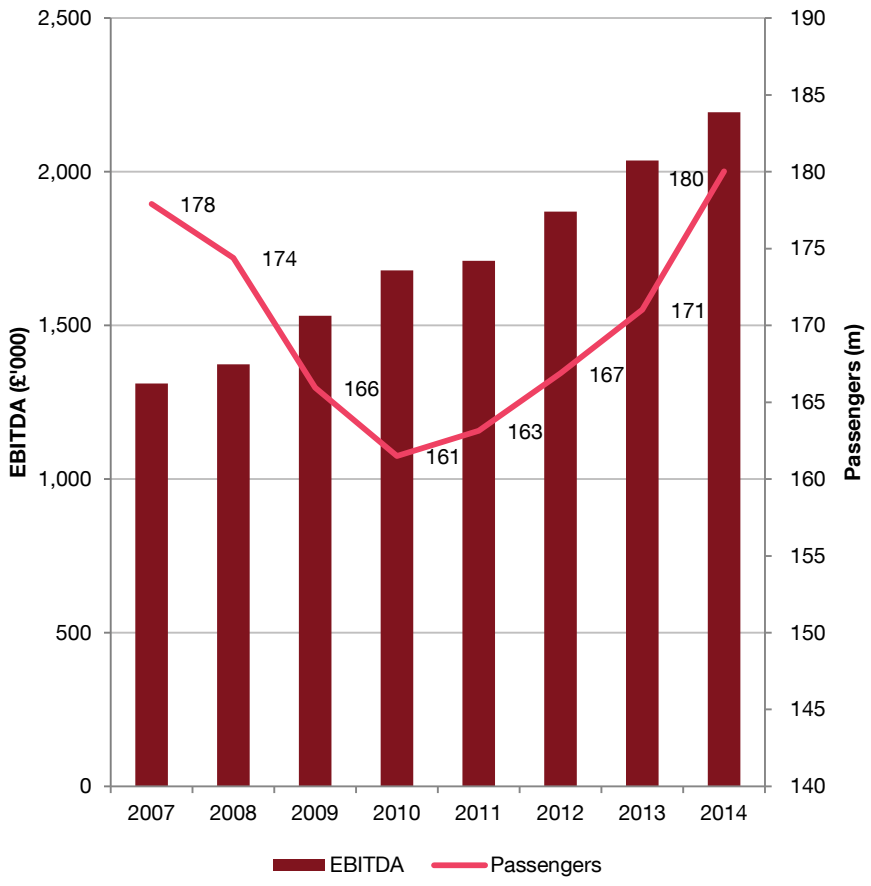
Investing to improve UK airports

A consistent theme we have seen across UK airports in recent years is owners heavily investing in their assets after acquisition. With investors often needing to pay a 'strategic premium' to acquire airports, there is a strong onus on them to improve performance considerably, beyond levels previously achieved. One of the most common ways to do this is through terminal improvement and reconfiguration.

Our analysis of capital investment in UK airports shows, after a marginal reduction during the global economic downturn in 2008-10, a considerable increase in spending can be seen. From a low of £1.1bn in 2010, this increased to a peak of £1.7bn in 2013. Overall investment is dominated by Heathrow, which spent an average of c. £1bn a year since 2007 on its extensive terminal development and refurbishment programme. Other UK airports have maintained a consistent level of investment, ranging from £300m to £400m each year.

The recent level of investment across UK airports has, on the whole, been good for customers and consumers. It is generally acknowledged that UK airports now deliver a much better airport experience than 10 years ago.

Figure 13: EBITDA and passengers – core UK airports



Source: PwC analysis

When considering investment levels, we believe it makes most sense to focus on investment as a proportion of the airports' net asset bases so as to identify those who have been the big investors relative to the size of the airports themselves.

As seen in Figure 15, the percentage of asset base reinvested in capital spending between 2009 and 2014 was greatest at Gatwick (67%), reflecting various initiatives of its new owners, and Heathrow (49%), mainly reflecting the construction of the new Terminal 2 (opened in 2014) together with other terminal development and refurbishment.

Gatwick being the proportionately largest capital investor reflects its acquirer's belief that, after a number of years of perceived lack of investment and focus, short term capital investment had to be significant in order for Gatwick to develop into an airport that could genuinely compete with Heathrow for passenger and airline loyalty.

Between 2010 and 2014, £1.1bn was spent on Gatwick across all parts of the airport to improve the experience for its customers. This compares to investment of just £0.4bn in the preceding four years, prior to change of ownership. The recent level of spend is consistent with the theme seen across Utilities that specialist investors are not afraid to forego short-term returns with a view to investing for the long term benefit of their investments.

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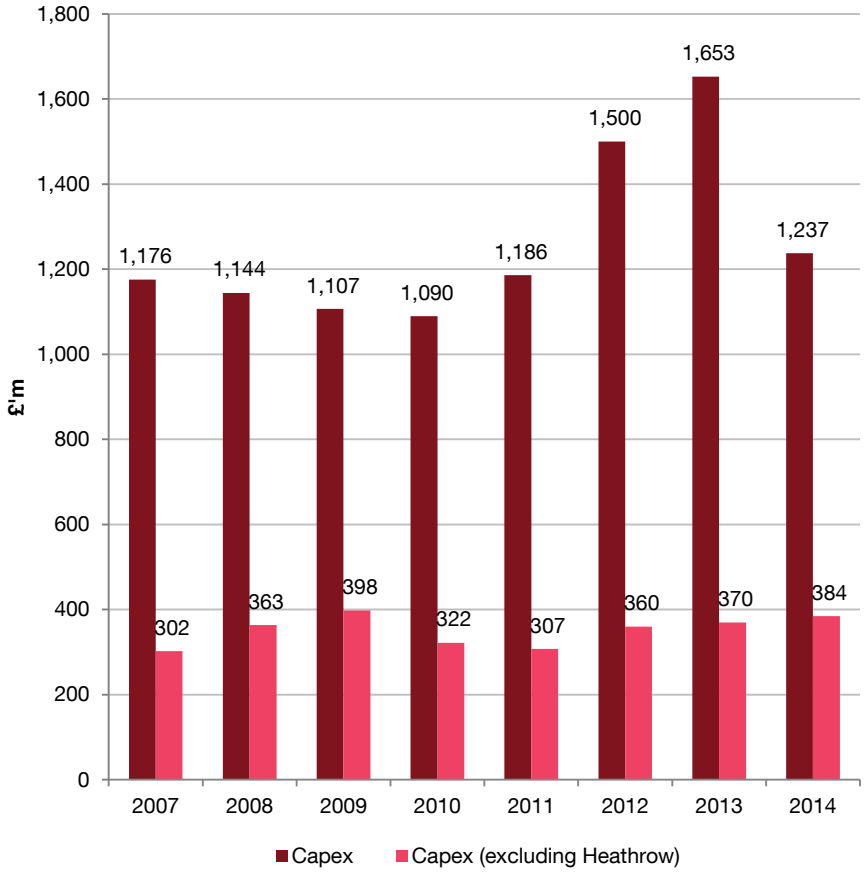
One of the lowest levels of re-investment was seen at Stansted with only 14% of its asset base being reinvested between 2010 and 2014. Like Gatwick, this has changed under new ownership, with the terminal development programme being one of the primary drivers behind plans to improve the overall customer experience at the airport. In the two years since being acquired by MAG/IFM, Stansted has invested £144m in improving the airport, compared to just £60m in the 2010 to 2012 period. By the end of 2015 the airport, with a view to growing passenger volumes by retaining and attracting airlines, will have relocated and extended the security screening area and transformed the departure lounge, expanding its size to upgrade and increase the retail store offering and improving passenger facilities.

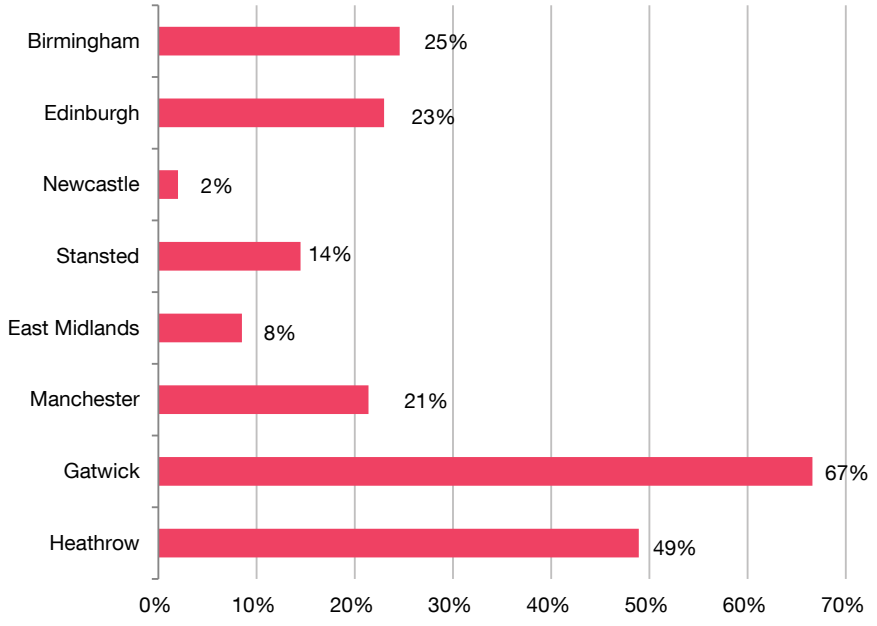
Other specialist-owned airports have also experienced recent improvement plans, with work in many cases already undertaken. Edinburgh Airport (acquired by GIP in 2012) commenced a £25m terminal expansion project in 2013, part of a plan to invest £150m in the airport over the period to 2018. Birmingham Airport (with the primary private stake of 48% held by Ontario Teachers' Pension Plan) recently invested £40m to extend the runway (opened in 2014) to enable it to service more destinations. To conclude, there is clearly a strong desire by owners to continue to invest in UK airports as public expectations increase of the overall 'airport experience' and choice available to them.

Figure 14: UK Airports – Capex



Source: PwC analysis

Figure 15: % Capex reinvested since 2009 (as a proportion of 2009 asset base)



Source: PwC analysis

Operational efficiency

At the same time as investing capex, airports have been under pressure from airlines and regulators to reduce operating costs and improve operating efficiency. With a legacy of public ownership, many airports carried excessive operating costs with a high degree of inefficiency. According to investors, one of the benefits of specialist investor ownership is that they have been able to bring their learnings from other global airports and different infrastructure assets more widely to improve efficiency and deliver better value for money for the customer and consumer.

Performance in this regard appears more patchy, as can be seen in Figure 16 which shows no significant improvement in cost efficiency in the UK's major airports.

However, this should be considered against the backdrop of significant increases in UK security requirements, together with the passenger demands for improved service levels, both of which have added to airports' operating cost bases.

Whilst inconclusive, the analysis does appear to show that airports have been able to absorb these requirements without passing additional costs on to passengers.

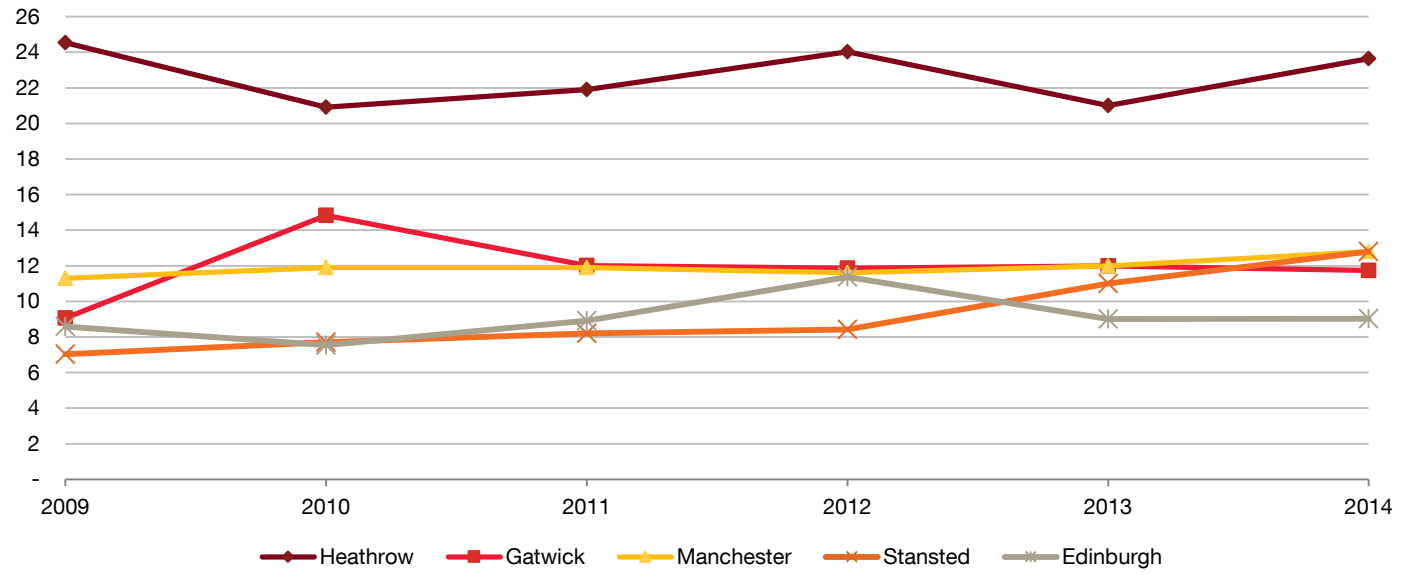
Summary

For the most part, the UK's airports have seen something of a renaissance over the past ten years, a period characterised by the arrival of specialist investors into their ownership structure. Major modernisation programmes have significantly improved the customer experience, with Heathrow and Gatwick reporting record satisfaction levels over the 2013 – 2014 period, whilst innovation in runway utilisation and ground handling, often at the behest of low cost carriers, has enabled London's airports to expand rapidly, even without the new runway capacity they desperately crave.

The enforced breakup of BAA does appear to have had the intended effect of creating competition between London airports and driving standards up. Since 2009, we have seen major new terminal construction or refurbishment at the majority of UK airports, all with (at least partial) private funding through specialist investor sponsorship.

Whilst the story is undoubtedly work-in-progress, with the Airports Commission making its recommendations on runway capacity and major investment plans being undertaken, the trajectory can be seen clearly: the arrival of specialist infrastructure investors has coincided with a distinct improvement in airport performance, investment and satisfaction levels.

Figure 16: Trends in Opex per passenger for major UK airports



Source: PwC analysis

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