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brewing green/  
our commitment  
towards a sustainable  
future for Britain's beer



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# foreword/ commitment for the long term



**I welcome this opportunity to provide a foreword to the brewing industry environmental commitment. The brewing sector plays a significant role in the UK economy and, like other parts of the food and drink supply chain, is a significant user of water, energy and raw materials.**

I have been impressed by the steps already taken to address these challenges by the BBPA and its members but, as always, there is more that we can do. This commitment sets hard targets to reduce carbon emissions and the pledge to obtain baseline data on renewable energies. Once this data is to hand, it can be used to monitor progress and show how the sector is helping the UK to move towards our renewable and CO<sub>2</sub> reduction targets.

The need to reduce packaging waste, yet maintain food safety and quality, is particularly challenging and I am pleased to see the BBPA's commitment to reduce the weight of bottles and cans. This Government understands that improving material resource efficiency is important as a way of moving towards a zero waste economy and building a more sustainable society.

The brewing industry needs to be part of a vibrant and competitive food and drink industry and must continue to grow sustainably, producing more with less. By taking advantage of the savings from using less energy, water, and minimising waste, the sector can become even more competitive, saving money and contributing to its economic performance while reducing its impact on the environment.

I don't doubt that this is a tough challenge, but with the enthusiastic and innovative support of the BBPA's members, I am sure that you will achieve the brewing industry's environmental commitment. I wish you every success with this.

**Jim Paice MP**  
Minister of State for  
Agriculture and Food



**The UK brewing sector has a long history of reducing its impact on the environment. Since the mid 1970s, we have made huge progress.**

This booklet highlights what the sector has done over the last three decades, but more importantly sets out what we will do over the next ten years.

While much of the progress in recent years has been on reducing the energy and water in our brewing and packaging processes, we are also determined to look at our wider impact.

That is why we will continue to work with partners, upstream and downstream, to ensure that we also help to reduce emissions in the wider supply chain.

The commitments we set out aim to make a real difference. The environmental challenge, however, is constantly evolving, and so will our environmental commitment.

Where new areas of improvement are needed, these will be included, as we continue to meet the challenge.

**Brigid Simmonds OBE**  
Chief Executive,  
British Beer & Pub Association

# our commitments/

## #01 carbon emissions/

To reduce carbon emissions by 67 per cent by 2020 compared to 1990.

## #02 water efficiency/

To achieve an industry average of less than four litres of water for each litre of beer produced, a reduction of 42 per cent by 2020 compared to 1990.

## #03 renewable energy/

To increase the use of renewable energy within the sector.

## #04 waste reduction/

To continue to reduce the amount of waste sent to landfill year on year and increase the amount reused.

## #05 packaging waste and recycling/

To play our part in the reduction of packaging waste from our products.

## #06 packaging reduction and 'lightweighting' of containers/

To minimise the use of packaging without compromising the safety and quality of our products – through lightweighting and working with the wider supply chain.

## #07 use of raw agricultural materials/

To continue to improve the efficient use of raw materials.

## #08 environmental management systems/

To ensure appropriate environmental management systems are in place, covering carbon, energy, water, effluent, waste minimisation and packaging to reduce the environmental impact of brewing and in support of brewers' environmental policies and operating permits.

## #09 sustainable production/

To develop plans to ensure the sustainable future of brewing in the UK, by monitoring and managing potential supply-side risks.

## #10 accountability and transparency/

To produce an annual report that sets out progress against agreed plans and targets, and to enhance the quality and quantity of data available to monitor progress against all targets.

# #01 carbon emissions

to reduce carbon emissions by 67% by 2020 compared to 1990

For all major industries, reducing the release of greenhouse gases into the atmosphere is our greatest challenge. While huge progress has been made, the challenge is to reduce energy use whilst still being able to brew beer in an economically viable way.

Carbon emissions from the UK brewing sector have fallen hugely, by 60 per cent from 1990-2009. While these reductions have partly been the result of falling beer production, they have mostly been achieved through large-scale investment in more efficient plant, and savings through rationalisation.

Given the huge strides already made, our target of a 67 per cent reduction in CO<sub>2</sub> emissions by 2020 is going to be tough to achieve. Most of the major efficiency gains have already been achieved, and many brewing sites are close to their optimum performance without major new step-changes in technology.

The challenges of continuing to improve energy efficiency are greater than ever. With production volumes in decline, the amount of energy per pint a site uses becomes greater, as the site's energy 'baseload' becomes a greater proportion of total energy use.

The consumer's move away from draught beer accentuates this challenge, as extra energy is needed to package beer in bottles and cans, rather than through traditional kegs and casks. Retrofitting new technology into what are often historic buildings can also impose major technical constraints and costs.

Despite all of these challenges, the sector hopes to exceed the two-thirds reduction in emissions pledged in this commitment.

## Carbon Trust – working towards a step change

### Industrial Energy Efficiency Accelerator

The brewing sector is currently working on a project with the Carbon Trust and consultants CAMCO that aims to “bring about a step change reduction in CO<sub>2</sub> from industrial processes by accelerating innovation in process control and the uptake of low carbon technologies”.

Five sites in the sector have signed up for the first phase, which started in the summer of 2010. The main focus is on packaging, both in kegs, casks, bottles and cans and the boiling stage of production. These will be metered and measured to help gain a deeper understanding of the key causes of carbon emissions. The project will investigate alternative technologies and quantify potential energy savings.

The project is collaborative with results being shared across the sector. A benchmarking exercise of the wider industry will also run alongside the more detailed on-site work to establish which technologies are being used across the sector and any potential barriers to wider uptake.

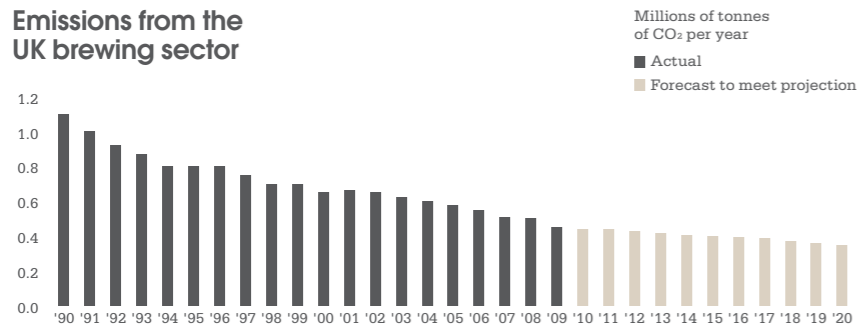
## Plant improvement at John Smith's brewery

Heineken UK's John Smith's brewery in Tadcaster has recently replaced a refrigeration plant that was over 30 years old. The 20-month project has delivered a system that consumes about half the energy of its predecessor.

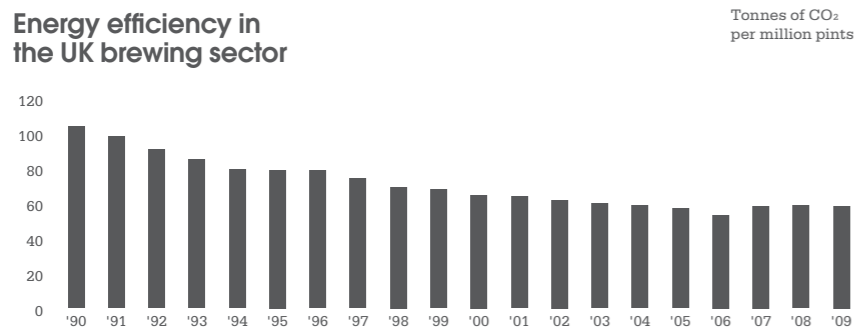
The old plant continued to supply the brewery during the installation, which began in 2008. This involved underpinning the building to accept the new unit. Soundproofing was also installed to ensure noise from the new plant did not exceed the strict limits laid down by the Environment Agency.

The new refrigeration plant has a capacity of 5.2MW, and has resulted in savings in excess of £70K in electricity consumption in the first year. It is fully electronically controlled and sequentially shuts down parts of the plant when not required. Energy efficient motors are used where appropriate and chemical consumption for the cooling towers has been reduced.

Emissions from the UK brewing sector



Energy efficiency in the UK brewing sector



# #02 water efficiency/

to achieve an industry average of less than four litres of water for each litre of beer produced, a reduction of 42% by 2020 compared to 1990

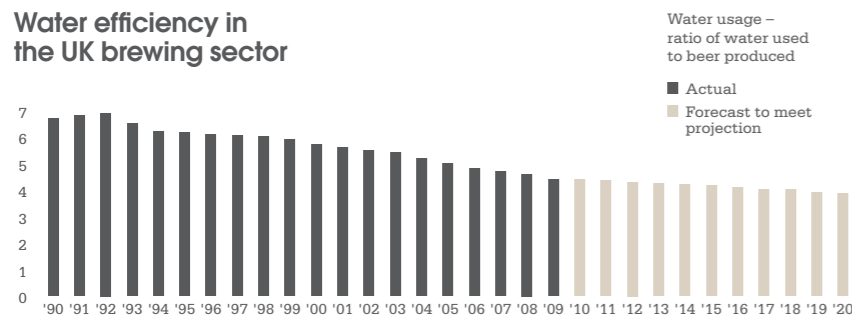
**Water is the major ingredient of beer. It is also vital for ensuring the highest standards of hygiene in the brewery. Approximately 62 per cent of water used in the brewing process is extracted directly from a borehole on site, with the rest being brought in from the mains supply.**

Water usage varies considerably from brewer to brewer, depending on the type of beer, the brewing style and the method of packaging – but with water resources becoming increasingly scarce, even in certain parts of the UK, all brewers are committed to minimising water use.

Since 1990, water efficiency has increased dramatically, by 33 per cent. In 1990, producing a typical litre of beer required 6.7 litres of water. This had fallen to 4.5 litres by 2009, with some brewers achieving even greater efficiencies – the industry's reduction in water use equates to over 7,000 Olympic swimming pools at 2009 production levels.

Since 1990, additional legislation on food safety has required further water to be used for cleaning. This makes the progress shown in the chart particularly impressive. The target of using less than four pints of water per pint of beer by 2020 will build on these achievements.

Water efficiency in the UK brewing sector



## Bigger is not always better – brewing at Batham's

Much can be said for the added efficiencies delivered from bigger production sites. Yet smaller sites can also deliver water savings. Daniel Batham's brewery in Brierley Hill, West Midlands, is a case in point. Their water usage rivals, and in some cases beats, that of many of the largest brewers in the UK and worldwide.

Much of this is down to the manual approach to cleaning taken in the brewery. The mash tun, the copper and all fermentation vessels are cleaned by hand.

The brewery only packages beer in casks, reducing the need for pasteurisation and other water-intensive processes. The washing of the casks upon return is carried out with water recirculated from the cooling of the beer earlier in the process. All the water used for controlling temperature during the fermentation process is also reused after being returned through an ice bank.

## Water efficiency at Heineken UK's Royal Brewery

Heineken UK's Royal Brewery in Manchester has a very low water usage ratio, about 3.2 pints of water for every pint of beer it produces. The site uses mains supplied water which represents a significant cost and numerous process improvements have been implemented over the last 20 years.

A system to recover the water used in the brewing process was first installed in the 1980s and this has been continually improved since. It currently supplies water to the air compressors, refrigeration plant compressors and refrigeration plant defrost system and saves in excess of 62,000 cubic metres of water every year.

The site also recovers 70 to 80 per cent of the steam it produces which saves a further 67,500 cubic metres of water each year. In the canning department, water recovery was first installed in 1999. Further improvements have been made since, including the replacement of the two pasteurisers in 2006.



# #03 renewable energy/

to increase the use of renewable energy within the sector

**The European Union is committed to increasing the proportion of renewables in our energy supply to 20 per cent by 2020. The level of take-up in different member states varies considerably and so do their targets. The UK is expected to increase its level to 15 per cent by 2020.**

Brewers are keen to play their part, and have embarked on substantial investment projects into clean technology. Data is not yet available on an industry-wide basis, but will be collected from 2011. The examples below show the substantial steps companies have taken.

**Biogas** – The Molson Coors (UK) site in Tadcaster and the Heineken UK site in Manchester generate biogas through the further purification of their waste water. This energy is then used to power the site boilers. Estimates suggest that this has reduced natural gas use by up to ten per cent. It is hoped that the Heineken UK site in Tadcaster will also be using biogas in the site's boilers shortly.

**Renewable electricity** – The electricity supply to the Diageo packaging plant in Belfast is provided through a third party supplier, Airtricity. All the site's electricity needs are now met by wind power.

## Adnams – providing energy back to the Grid

Adnams Bio Energy Limited has announced the completion of the construction phase of a groundbreaking anaerobic digestion (AD) plant. It will be the first in the UK to use brewery and local food waste to produce renewable gas for injection into the national gas grid as well as providing gas for use as a vehicle fuel.

In partnership with British Gas and the National Grid, the facility has started injecting renewable gas into the grid. It will generate up to 4.8 million kWh per year – enough to heat 235 family homes for a year or run an average family car for 4 million miles. In the future, the facility will produce enough renewable gas to power the Adnams brewery and run its fleet of lorries, while still leaving up to 60 per cent of the output for injection into the National Grid.

By using brewery and local food waste to generate biomethane, the plant will make a contribution to decarbonising the gas grid by delivering renewable heat to households through the existing gas network and central heating boilers. It will also prevent the release of highly-polluting methane to the atmosphere, through diverting the waste from landfill.



# #04 waste reduction/

to continue to reduce the amount of waste sent to landfill year on year and increase the amount reused

**The brewing industry is striving to reduce the amount of waste sent to landfill each year. This makes economic sense, with landfill tax becoming more of a financial burden – but it also increases opportunities for innovative ways to dispose of waste, such as converting it to energy.**

Data provided by the Environment Agency shows that significant steps have been taken to reduce the disposal of waste, as shown in the table below. Waste recovery includes positive actions such as recycling and reusing materials.

A wider definition of waste has led to a nominal increase in waste volumes from breweries between 2006 and 2008. However, despite this increase, the amount of waste sent for disposal has more than halved, as the percentage of waste recovered has risen sharply, from 71 per cent to 89 per cent. Figures for waste will continue to improve, through increased use of technology and innovation.

### Waste production, disposal and recovery, permitted installations (tonnes)

Year	Waste production	Disposal	Recovery, recycling and reuse	Recovered
2006	95,178	27,689	67,489	71%
2008	118,881	13,244	105,637	89%

## Waste recycling at the John Smith's brewery

For some time Heineken UK's John Smith's Brewery in Tadcaster has been recovering or recycling more than 95 per cent of the waste it produces. These operations include spreading organic waste materials separated from beer during maturation to agricultural land as a soil improver and recycling packaging waste.

However, the site was still sending 212 tonnes of general mixed waste to landfill in 2008. In spring 2009, a project was begun with waste management contractor Sita UK, to analyse the waste sent to landfill to identify further recycling opportunities.

This led to the recycling of plastic strapping and increased quantities of cardboard. The remaining unsorted waste, which was previously sent directly to landfill, is now sent to a waste transfer station where additional materials are separated and recycled. The remnants are then incinerated in an 'energy from waste' station.

The outcome of the project is that the site has reduced general, unsorted waste by 31 per cent, from 242 tonnes in 2007 to 168 tonnes in 2009. Of the remaining general, unsorted waste, 50 per cent is now segregated for recycling at the waste transfer station and the remainder incinerated for energy recovery.

# #05 packaging waste and recycling/

to play our part in the reduction of packaging waste from our products



**Brewers are increasingly looking beyond the brewing process for environmental gains. Looking at their wider impact means focusing on the supply chain. Brewing companies will demonstrate this commitment through work with key stakeholders, such as WRAP, an organisation working with industry and Government to reduce waste.**

A number of brewing companies and brands have supported WRAP's Courtauld Commitment, designed to find practical solutions to reduce packaging waste. Both Molson Coors (UK) and Stella Artois were signed up for the first phase. The initial target was to design out packaging waste growth by 2008, to deliver absolute reductions in packaging waste by 2010 and to help reduce household waste. Phase I was a huge success with over 1.2 million tonnes of food and packaging waste prevented from 2005 to 2009.

Phase II has now been launched, with Molson Coors (UK) (as founding signatory) AB-Inbev, Miller Brands and Heineken UK all signed up. The new phase will run until 2012 and 'aims to achieve more sustainable use of resources over the entire lifecycle of products, throughout the whole supply chain.'

AB-Inbev is also advancing in its re-use of recycled material. The recycled content of Stella Artois cans and bottles was a major part of its marketing campaign during 2009. Cans are made up of 50 per cent recycled aluminium, with bottles made from 75 per cent recycled glass, above a very high industry average of 71 per cent. All cardboard and paper point-of-sale material, as well as all corrugated packs, are made from 100 per cent recycled material.

# #06 packaging reduction and lightweighting of containers/

to minimise the use of packaging without compromising the safety and quality of our products - through lightweighting and working with the wider supply chain

**Beer comes in one of three main forms of packaging; large containers (such as kegs and casks), bottles and cans. Around 97 per cent of beer in pubs, restaurants and clubs (approximately half of all beer sold) is sold through kegs and casks. These, for the most part, are fully recyclable and can last for over 30 years - and over their lifetime each one will remove the need for around 26,000 bottles.**

As beer sales have moved increasingly to the off-trade (shops and supermarkets), more focus has been put on ensuring the sustainability of sales through bottles and cans - which in the vast majority of cases are used only once. The BBPA will continue to report on developments in this area, at both company and sector level.

## Brewing industry lightweighting project with WRAP

With the assistance of WRAP, UK brewing companies have made substantial reductions in the weight of their bottles and cans. Known as 'lightweighting', most major UK brewers have now gone through initiatives that have dramatically reduced the amount of packaging they are using in their products. Some of the results have been very impressive. Overall, WRAP's GlassRite project led to 31,800 tonnes of beer and cider bottles being removed from the waste stream. This does not include brands that have lightweighted their products independently of WRAP.

Carlsberg reduced the weight of its bottles by approximately 17 per cent, reducing the amount of glass by approximately 7,300 tonnes per year. The results are impressive, and the process involved overcoming a number of potential problems. Bottle strength had to be retained, as did the appearance standards expected of the brand, and bottles still needed to be filled through existing Carlsberg production lines.

Heineken UK also undertook a similar exercise with a number of its beer and cider brands, including the iconic Newcastle Brown Ale.

Reductions in weight of 14,000 tonnes were achieved.

# #07 use of raw agricultural materials/

to continue to improve the efficient use of raw materials

**Brewers are committed to improving the efficient use of raw materials and report individual statistics contained within environmental permit returns to the Environment Agency. This monitoring of resources enables brewers to measure their impact in the early stages of the supply chain.**

Beer is a natural product that would not exist without the agricultural raw materials of barley and hops that go into the brew. Ensuring the efficient use of these raw materials is an integral part of the brewing process, and helps to reduce costs.

Once used to produce beer, brewers' grains from barley do not go to waste, but provides a valuable by-product that can be sold by brewers as cattle feed, starting a completely new supply chain and reducing the environmental impact of meat and dairy production.

Brewers will commit to report their use of agricultural raw materials in the brewing process and the productive use of co-products over the next ten years.



## Molson Coors (UK) achieves Red Tractor Barley Accreditation

Molson Coors (UK) has achieved 'Red Tractor' certification for the barley used in the production of its Carling lager. Carling now carries the Red Tractor mark on all its multi-pack boxes and will be carrying the logo on its cans from October 2010. This use of locally sourced products reduces food miles and consequent carbon implications. It also enhances food security through lowering the brewer's dependence on imports.

The Red Tractor mark now appears on over £10 billion worth of fresh food and drink in the UK and is an independent verification that the product has been made to high quality standards from farm to shelf. The Red Tractor logo gives consumers complete confidence about the strict standards of production. The inclusion of the Union Flag ensures it was farmed and processed in the UK.

Jerry Dyson, Carling's Sourcing Manager said: "We're proud to be able to tell our customers that 100 per cent of our barley has met the high quality standards set by Red Tractor throughout its production, from grain to glass".



# #08 improved environmental management systems/

to ensure appropriate environmental management systems are in place, covering carbon, energy, water, effluent, waste minimisation and packaging to reduce the environmental impact of brewing and in support of brewers' environmental policies and operating permits

**Many environmental management systems (EMS) are in use throughout the brewing sector, aimed at controlling energy and water use, effluent production, waste minimisation and control of incidents.**

These management systems allow brewers to monitor environmental policies, operating permits and other wider environmental responsibilities. At the largest companies, ISO 14001 and other systems are widely used, as well as alternatives. The complexity of EMS tends to be proportionate to the size of company. The brewing industry, through the BBPA, intends to report on the type of EMS used by companies in coming years.

The Environment Agency (EA) rates the management systems in place at its regulated sites with an OPRA (Operational Risk Appraisal) score from A to E. Of the 23 sites in the brewing and cider sectors, 18 have a rating of A or B.

The BBPA has been working with the EA to produce an environmental management toolkit to promote the efficient management of energy use throughout the sector. This has been widely shared throughout the industry.

One of the principal reasons for having a robust EMS is to minimise the risk of pollution in the vicinity of the brewery. This is subject to monitoring by the Environment Agency which found no serious pollution incidents in either 2008 or 2009.

# #09 sustainable production/

to continue to develop plans to ensure the sustainable future of brewing in the UK, by monitoring and managing potential supply-side risks

The climate has a major impact on the country as a whole. Brewing sites are no exception, particularly due to the proximity of many to rivers. The industry was vividly reminded of this in November 2008, when the Marston's-owned Jennings's brewery was flooded. Companies are actively taking steps to reduce the risk of climate-related disasters in the future.

The brewing industry is supportive of Defra's bid to make companies aware of the risks and potential opportunities that can arise from climate change. They are committed to working with Government and other stakeholders to ensure we can all make the best of the environment we live and work in.

## Molson Coors – brewing sustainably

Without great water brewers can't make great beer. As water is the number one ingredient in beer, examining water use and availability is just one example of how Molson Coors needs to plan for the medium and long term effects of environmental change.

Their UK Sustainability Team, an integral part of supply chain operations, is leading the company's approach to sustainable production. Their current focus is to measure and truly understand the business's environmental risks and opportunities in detail. The process involves conducting detailed studies across the whole supply chain in areas such as water use, carbon and climate change, reliance on natural resources and material use efficiency.

Ultimately, all areas of the business will use this insight to take informed decisions that will reduce the impacts associated with Molson Coors's operations and products. That way the company can explain to its customers how it will keep brewing great beer, while remaining competitive, and continue to meet expectations about the company. All of which will help Molson Coors take great strides in its journey towards world class corporate responsibility.

# #10 accountability and transparency/

to produce an annual report that sets out progress against agreed plans and targets, and to enhance the quality and quantity of data available to monitor progress against all targets

When it comes to making a commitment, ten years into the future can seem like a distant promise. The brewing industry is committed to providing annual updates on progress against the targets set out in this document.

We intend to enhance our data recording on all the issues in which we have made commitments to ensure we are meeting our targets and obligations.

The environmental issues affecting the industry are not set in stone. New environmental challenges will arise and we commit to embrace each challenge presented to us.

Whilst this commitment is on behalf of brewers in the UK, it is important to realise that each of the BBPA's brewing member companies are making their own statements of intent and action. Most major companies now publish either sustainability reports or devote a section of their annual reports to this area.

## Marston's – meeting the standard

The Midlands brewer and pub owner Marston's has clearly demonstrated its sustainable credentials by joining the FTSE4Good financial index. This index measures the financial performance of companies that 'meet globally recognised corporate responsibility standards'.

Inclusion in the index is dependent on meeting a number of standards, with an emphasis on the environment, with regular reporting requirements. Marston's used this opportunity to more closely monitor energy use throughout its pub estate and implement more stringent environmental management tools at brewery sites.



# BBPA Members – 2011

Admiral Taverns Limited  
Adnams plc  
Anheuser-Busch InBev  
Arkell's Brewery Ltd  
Barracuda Group  
Black Sheep Brewery plc  
Brakspear Pub Company  
C and C Group plc  
Camerons Brewing Ltd  
Carlsberg UK  
Charles Wells Ltd  
Company Value Ltd  
Daleside Brewery  
Daniel Batham & Son Ltd  
Daniel Thwaites plc  
Diageo plc  
Elgood & Sons Ltd  
Enterprise Inns plc  
Everards Brewery Ltd  
Felinfoel Brewery Co Ltd  
Frederic Robinson Ltd  
Fuller Smith & Turner plc  
George Bateman & Son Ltd  
Gray & Sons (Chelmsford) Ltd  
Hall & Woodhouse Ltd  
Harvey & Son (Lewes) Ltd  
Heavitree Brewery plc  
Heineken UK  
Heron & Brearley Ltd  
Holden's Brewery Ltd  
Hook Norton Brewery Co Ltd  
Hydes Brewery Ltd  
iNTERTAIN Ltd  
J.C. & R.H. Palmer Ltd  
J.W. Lees & Co  
Joseph Holt Ltd

Kurnia Licensing Consultants  
Liberation Group  
Maclay Group plc  
Marston's plc  
McMullen & Sons Ltd  
Miller Brands UK  
Mitchells & Butlers  
Mitchells of Lancaster Ltd  
Molson Coors Brewing Company  
(UK) Ltd  
Punch Taverns  
R W Randall  
Robert Cain & Company Ltd  
Route Organisation  
S.A. Brain & Company Ltd  
Sharp's Brewery  
Shepherd Neame Ltd  
St Austell Brewery Co. Ltd  
T & R Theakston  
Thomas Hardy Brewing &  
Packaging Ltd  
Timothy Taylor & Co Ltd  
Titanic Brewery  
Wadworth & Co Ltd  
Weston Castle  
Young & Co's Brewery plc