April and October 2019

2019
Spring and Autumn Conference Proceedings

British Society of Baking
Affiliated to the American Society of Baking

British Society of Baking Spring Conference 2019

10th April, Campden BRI, Chipping Campden

British Society of Baking Autumn Conference 2019

16th – 17th October, Heythrop Park Resort, Enstone

Speakers' PowerPoint Presentations PDF copies of all the presentations can be found on the BSB website www.britishsocietyofbaking.org.uk/category/conference-archives/ While most of the speakers' slides are included in the proceedings, the digital copies allows you to view them much more closely.

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2019 Spring Conference

Richard Hazeldine, BSB Chairman. Good Morning and a very warm welcome to the 2019 Spring Conference. It is good to see so many of you here for what I am sure will be an excellent conference. We have a packed programme, with a variety of interesting topics. I would like to say thank you to our Executive Committee and our friends at Campden for putting on this conference.

For those of you who were at the Autumn conference, you will recall I presented Honorary Membership awards to three members who had made a significant contribution to the BSB and to the baking industry, David Roberts, Jim Brown and Neil Jackson. There was a fourth member who should also have received Honorary Membership at the autumn conference but was unable to attend. He is Paul Heygate and is our longest serving active member, having joined the society on 1st June 1967, some 52 years ago. Over many years Paul served on the Executive and other BSB committees. He was BSB Chairman 1999 to 2001 and was Session Chairman at our 60th Anniversary conference. He is a Past Master of the Worshipful Company of Bakers and is still very active in the family baking and milling businesses. It is also his birthday today! It gives me great pleasure to present Paul Heygate with his Honorary Membership award. *Applause.* I am now pleased to hand over to Gary Tucker as both our first speaker, and the Session Chairman for the morning sessions.

100 years of Campden BRI by Gary Tucker, Head of Baking and Cereal Processing, Campden BRI

It is an honour to be here and lovely to see so many conference delegates. When Jim Brown asked me to be the morning Session Chairman, he also agreed to me giving a short talk on Campden BRI in our Centenary Year, which I am delighted to do. I'll also pick out some of the key events in the baking industry that have involved parts of the Campden family tree.

Slide 1

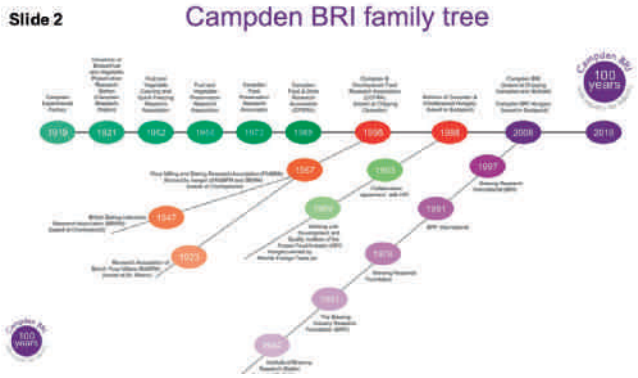
Pheasant egg factory, an original part of the Campden site

The current Campden BRI site (railway line on the right)

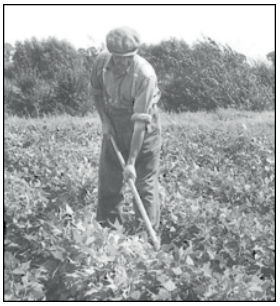
The picture on left of slide 1 leads us into the 100 years of Campden BRI, being part of the original site. The building was a pheasant egg factory and still exists. It was the origin of the buildings which now make up Campden BRI and can be seen on the right of the slide 1.

The Campden BRI family tree is in **slide 2**, shows the years that different groups have come together to make up what is now Campden BRI.

Slide 2



NB It will be best to view the family tree in the 2019 Spring conference PowerPoint slides, which can be found on the archives page of the BSB website. http://britishsocietyofbaking.org.uk/category/conference-archives/



The original site in Chipping Campden started back in 1919 and was called the Campden Experimental Factory. It was then part of Bristol University and was dedicated to fruit and vegetable preservation. The reason it's sited here is because this was one of the main fruit and vegetable growing areas in the country and there were a lot of canneries in the region, which sadly have now all gone.

Over the years, following the green top line on the family tree, different preservation technologies became important and freezing came in. In the early 1950s the organisation, in addition to canning, put its focus on freezing and on other techniques, such as drying. The company then dropped the reference to canning and quick freezing and became generally involved in anything to do with preservation.

Another change of name on the family tree in 1988 and a significant one, because it represented a change in the emphasis of the business. Before 1988 approximately half of the organisation's funds came from the Government and the rest came from membership fees. From 1988 onwards it was very much a change to a more commercial operation, offering services to the food and drink sector.

I joined in 1989 so I've been here for quite a long time and seen many changes. Of great relevance to the baking industry are the bits of the family tree in orange (1923 & 1947) and in red (1967 & 1995) because they represent the cereals and baking aspects of what is now Campden BRI. There were two research groups, the Research Association of British Flour Millers (RABFM), established in 1923 and based at St Albans, and the British Baking

Industry Research Association (BBIRA), based at Chorleywood and established in 1947. The first was effectively dealing with wheat and flour and the second with baking. They merged in 1967 to form the Flour Milling and Baking Research Association (FMBRA) at the Chorleywood site. Then in 1995, the FMBRA merged with the Chipping Campden site to form the Campden and Chorleywood Food Research Association and that's very important because it is where wheat, flour and baking research fits into the Campden BRI family tree.

Just for completeness, there's a couple of other groups have come together. We have a group in light green (1989 & 1993) in the family tree which was the Development and Quality Institute of the Frozen Food Industry (HFI) Hungary. Campden Food and Drink Research Association did a lot of work with Hungary in frozen foods and also through European funding of those days. They merged into Campden and Chorleywood Hungary in 1989, based in Budapest and are still within the Group.

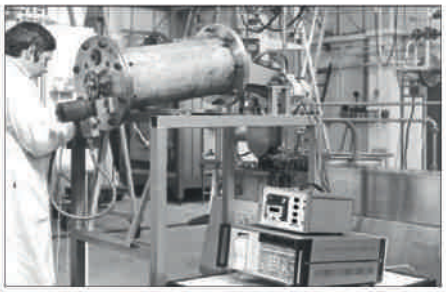
The most recent merger was the Institute of Brewing Research Station, established in 1947 Nutfield in Surrey, close to Gatwick Airport. It had various name changes over the years, the most recent being the Brewing Research International, BRI. It merged with the group in 2008 and that is where the BRI comes from in Campden BRI! So that was the history of the site.

There used to be a van which was equipped with a mobile laboratory and qualified staff, see picture, that went to client's sites to carry our whatever laboratory tests were required by the client.

The two pictures in **slide 3** are closer to what I used to do before I came into the bakery sector. The test kit on the left I find quite astonishing. Does anyone know what it is? It's a pea tenderometer and we still use it. It's a bit like a texture analyser. You put a number of peas in little slots, you pull a handle down and the lever tells you basically how much force is required to squash the peas. Every year that gets used by the pea industry to determine whether a pea has the right level of hardness to go into the food chain. So, when you go to the supermarket and buy a bag of frozen peas, remember that they are grown to a defined hardness standard using that piece of kit!

Slide 3

Pea tenderometer



A thermo-resister used in research work on canning

Then this piece of kit on the right of slide 3 had quite an important part to play in terms of the canning sector. It's a thermo-resistometer and it was built here to measure the heat resistance of Clostridium botulinum spores. The reason we had that built it was because when the UHT system started, temperatures were needed of around 140/145/150°C, and all the data that the industry had on Clostridium botulinum only went up to 120°C. We had to design a piece of kit that allowed us to go to higher in temperatures. The equipment was used to generate a set of temperatures data on Clostridium botulinum that the UHT industry has used since then. Sadly, it was one of those pieces of kit that took several years to build and was then used for a specific piece of work, and once the data it generated was complete, that was about it. It was mothballed soon afterwards but it did what it was meant to do and served the industry well.

Slide 4

Growth of the site

Year	Major Buildings added and their function
1975	Gilliatt process hall
1981	Jubilee – Chemistry and Microbiology
1992	Battlebrook - Processing
1994	Kings Norton - Reception and Training
1996	Chorleywood – Milling and Baking
2000	Millennium – Training bakery and Sensory
2000	Battledene – Chemistry and Microbiology
2006	Nursery
2009	Course of Battle brook changed to original

Campden BRI

In terms of the growth of the site, I've put this down in **slide 4**. You can see that from the 1990s onwards, there's been a significant growth in this site. Several buildings have been added.

From bakery aspects, wheat and flour, and the bakery chain, the main events on the list are as follows: in 1996 the Chorleywood building was opened and that then housed the staff and equipment from the FMBRA, Chorleywood. That building is here, where the conference is taking place; in 2000 the Millennium building was opened and that's where the training bakery is, and there's also a bakery training room in that particular location. So considerable development of the site.

The last item on the list is not a building but is still incredibly significant. We originally had a brook around the site that was diverted through the middle to provide power for the mill. Our site was then prone to flooding and we have had three very significant flooding incidents from the 1990s onwards. Our insurers basically said that we had to divert the brook to prevent the flooding. So, the brook was diverted to its original course around the site and we haven't had any flooding since. I suppose you could call it a stream now and it is quite attractive. I thought it was worth putting this information in because it's an important landmark.

I've pulled out some of the important events that have happened in the baking industry in **slide 5**, although I'm not going to go through all of them. I had to put in 1955 when BSB was founded of course! There is a fair bit about the National Loaf in the list. That's very relevant to some of the early research work that was done in the Chorleywood and St Albans research stations by Doc Hinton on the nutritional properties of the wheat grain. 1961 was the Chorleywood Bread Process. The final item I found

Year	Slide 5 What has happened in the Baking Sector over the past 100 years
1928	Bread slicing machine first used in the USA
1929	Benefits of wholemeal flour and bread published
1942	National Loaf was introduced, similar to brown bread
1955	BSB was founded
1956	National Loaf was abolished, all flour other than wholemeal had to be fortified with calcium, iron, Vitamin B1 (thiamin) and nicotinic acid
1961	Chorleywood Bread Process (CBP) was published, this reduced mixing and fermentation times, and enabled higher amounts of UK wheat to be used
1965	CBP became widely used, with bakeries merging and upscaling production
1987	Genetic modification of wheat possible
2007	Poor wheat harvest forced the price of white bread over £1
2008	Bread Weights Legislation dating back to 1266 was replaced by an EU Directive, allowing bread to be sold in any weight

Campden BRI

fascinating, that in 2008 the legislation was changed to allow bread to be sold in any weight and apparently that over-wrote legislation that went back to 1266. I found that it was staggering, that we legislation that old had dominated the industry for so long.

Year	Slide 6 Noteworthy cereal events at 'Campden' over 100 years
1924	Campden tablets
1959	Doc Hinton's understanding of the wheat grain nutritional properties
1961	Chorleywood Bread Process (CBP)
1987	Evers contribution to our understanding of alpha amylase
1990	ERH Calc
2002	C-Cell released
2009	Radical Bread Process

In terms of some of the notable events, **slide 6**, that have happened at Campden BRI, some of you I hope will have heard of Campden tablets, which originate here, see definition below. It wasn't anything that was ever patented or even published. The name tended to stick from some work that was done on winemaking going back to 1924 but they're still in use today. They are sold by Boots and other companies that supply wine and beer making kits. Campden tablets are a sulphur-based product that is used primarily to kill bacteria during wine, cider and beer making, and to inhibit the growth of most wild yeast. Campden tablets allow the amateur beer and wine maker to easily add small quantities of sodium metabisulfite to protect against wild yeasts and bacteria without affecting flavour.

I mentioned earlier the importance understanding the wheat grain and its nutritional properties in relation to the research work of a scientist called Doc Hinton, Doc being how he was fondly addressed by his colleagues. Doc Hinton did a lot of work on the nutrition of the wheat grain and its component parts. I put the year as 1959, but that was purely the year of one of his published papers, and his work covered a wide span of years. The Chorleywood Bread Process was 1961. Another very significant research contribution was made by Tony Evers, who did a lot of work on alpha amylase, one of the key bread-making enzymes, His work covered natural cereal alpha amylase, and that led to use of fungal alpha amylase, which is now widely used in bread-making processes.

More recently in 1990, ERH Calc, was developed by colleagues who were working on a programme that allowed the equilibrium relative humidity, (or water activity), for a cake to be predicted based on its recipe and processing, and from this, an estimation made of the mould free shelf for the cake, based on the ERH calculation. This is still in use today.

C-Cell, a system which is now used in many companies, was released in 2002 and Martin Whitworth, who is going to be presenting later, was instrumental in developing that

7 Chorleywood Bread Process ca 1961

- Aim was to make better use of UK wheat in breadmaking; 80% of UK bread now uses UK wheat compared with 30%
- High shear mixing to energy
- Shortened the breadmaking process to <4h
- Allowed bread to be made at large scale
- more cheaply
- Required the use of hard fat / emulsifiers and ascorbic acid oxidising agent

- Pressure-vacuum mixing came later
- Four-piecing came later

piece of kit. It measures the bubble size, and the numbers of bubbles, within a slice of bread.

More recently, the last of these developments is the Radical Bread Process, which Campden BRI patented in 2009. This process is based on sheeting and laminating bread dough to create a gas cell structure. After cutting the sheeted bread dough into the weight required, the way that the dough piece is placed in the bread pan, dictates the specific crumb structure of the final bread.

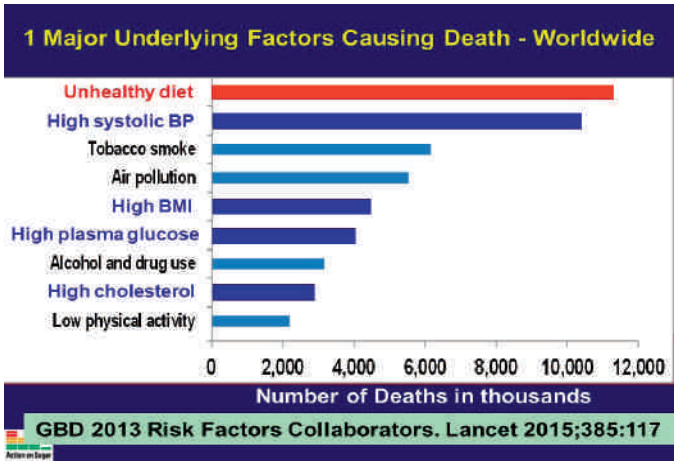
The Chorleywood Bread Process (CBP) has an important place in plant breadmaking, **slide 7**. The top bullet point is important, in that prior to the CBP, a very significant proportion of the wheat used in the UK bread industry was imported. Using the CBP, which allows dough mixing to be more effective in developing the dough than bulk fermentation processes, flour from lower gluten content wheat can be used to make equivalent quality bread.

The situation at present is that approximately 80% of UK bread is made with UK wheat, whereas prior to the Chorleywood Bread Process, it was only about 30%. So that's a significant improvement in the situation which has financially been very beneficial to the UK. Additionally, companies like Baker Perkins, who were involved with some of the later developments of the CBP, have been very successful in selling their CBP mixing and processing equipment in many other parts of the world.

Gary Tucker, Session Chairman Thank you for your attention to my short history of Campden BRI. I will not take any questions but move swiftly on to introducing our next speaker, Professor Graham MacGregor. Graham was instrumental in pioneering salt reduction in processed food, in particular bread, and he will now give medical reasons why consumers need to reduce the amount of sugar in their diet. He is Chairman of 'Action on Sugar', a group of specialists concerned with sugar and its effects on health. It is working to reach consensus with the food industry and Government, over the harmful effects of a high sugar diet and bring about a reduction in the amount of sugar in processed foods, including sweet bakery goods.

The Requirement for Sugar Reduction in Food Products by Graham MacGregor Professor of Cardiovascular Medicine, Wolfson Institute of Preventative Medicine, and Chairman of Action on Sugar.

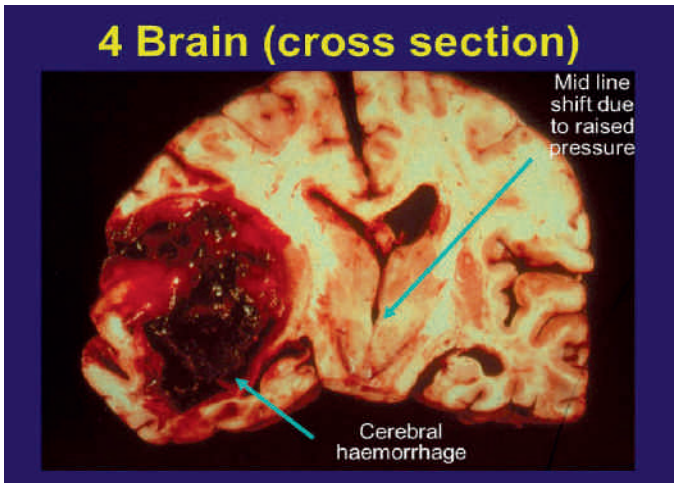
I'm going to talk about salt, sugar and fat, not just sugar and I'm going to start with salt and congratulate you on something you've done. This talk is based on the Global Burden of Disease, that looks at what the underlying factors are that cause us to suffer and die, as shown on **slide 1.** What this slide shows is quite clear - for every country in the world, including the UK, an unhealthy diet is the biggest cause of death. That means that food that that is high in fat, sugar and salt is causing more deaths than any other factor.



You'll also note from the slide that raised blood pressure comes next, and blood pressure is largely dependent on salt, which is again a major factor in the diet. Tobacco is not now such a big cause of early death because fortunately, tobacco consumption is falling in most developed countries. Looking at the other causes of early death: air pollution; obesity; and Type II diabetes. Causes of early death are rapidly expanding, not only in the UK but worldwide. If we don't do something about obesity they will overtake the other ones. Alcohol remains a major cause of death and high cholesterol is often forgotten about, which is largely due to saturated fats, particularly palm oil, animal fat and inactivity. This leads to what is called atheroma that is the narrowing of the arteries which can lead to heart disease and strokes.

These are the major causes of death, premature death and disability in the world. Why is it that our unhealthy diet is killing us? It's quite simple if you think about it. It's largely involved in western countries with processed foods but not entirely. These foods, **slide 2**, have large amounts of salt added which puts up our blood pressure, which as you've just seen is one of the major causes of death from strokes, heart attacks and heart failure. Saturated fat, particularly animal fats and palm oil, puts up our cholesterol, which causes heart disease and strokes. Then fat with sugar, and particularly in products that only have transient fullness or satiation, puts up our calorie intake and not surprisingly we get obese, develop Type II diabetes and now there is strong evidence that obesity is related to an underlying cause of many cancers.

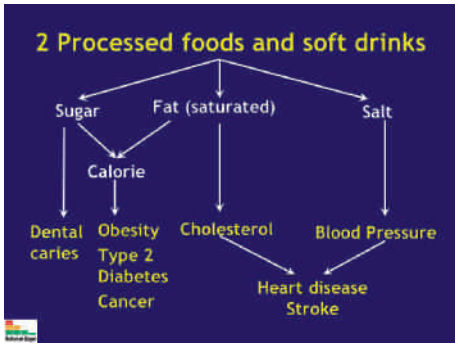
At the same time, sugar, as you all know, is a hidden cause of calorie consumption, so called 'empty calories' and plays a very important role in obesity and type II diabetes. It also has the unique property of causing dental decay and that is a huge burden for our children, the commonest reason for admission to hospital to have anaesthetic to have their teeth extracted and, of course, a burden to everyone in the room who has dental caries and if we didn't eat sugar, we wouldn't. So, you can see quite clearly why these foods are killing us. Unhealthy food is the biggest cause of death in the world.

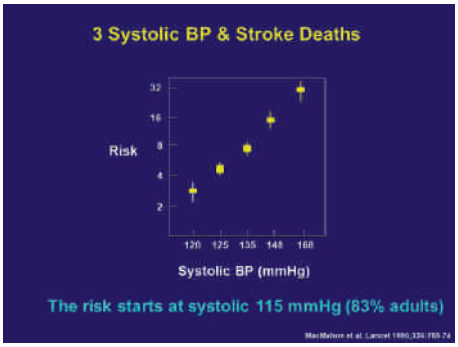


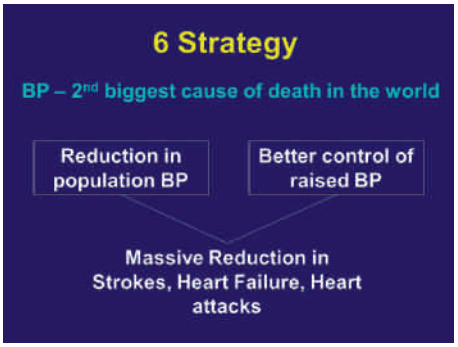
I just want to divert to blood pressure at this point because I want to congratulate you on what you've done about reducing salt in bread. because we were aware that bread was the biggest source of salt in the UK diet. The risk of high blood pressure, just to show you how we understand how these things work, it's not just saying 'oh it's that', we understand why reducing salt is so important, and similarly for reducing fat and sugar. Here is the risk of blood pressure going up in **slide 3**, the systolic pressure against the risk of strokes or heart attacks. You can see it starts at 115mmHg, that's 80% of adults have a blood pressure that puts them at risk. You may be thinking we only have high blood pressure at 140mm Hg, but it can start down at 115mmHg.

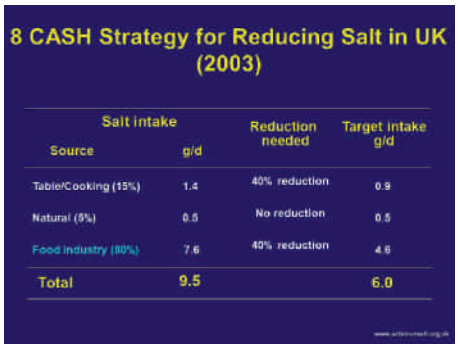
So, nearly all of us are at risk from high blood pressure and it can kill us in two ways. One is the direct effect of the blood pressure. The higher the blood pressure the more likely you are to burst a blood vessel in the brain. **Slide 4** shows a cerebral haemorrhage. A small blood vessel has burst and bled into the brain. The patient has died, and this is a post-mortem picture of a cross section of the brain. You can see the clot in the brain and the fact that the pressure of the blood has pushed the brain across which caused the death as the brain is in a rigid box of skull, this then pushes the brain stem into its base, which is what kills you. Other direct effects of blood pressure are heart failure, kidney disease, swellings of the large blood vessels (aneurisms) which can burst, and these are also major causes of death.

Slide 5 shows carotid artery which has split open and shows very vividly the furring of the arteries with plaques which is known as atheroma. The carotid artery splits into two, one supplies the face and the other is a major supplier of blood to the brain. This patient had very bad atheroma. It shows the plaques, and nearly all of us have plaques like this. They don't do much harm. You have to obstruct the vessel by 70% in order to reduce blood flow.



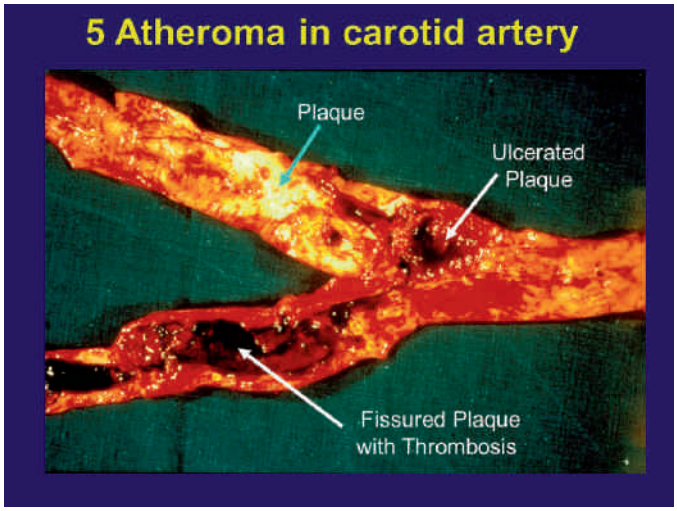






Salt intake Source	g/d	Reduction needed	Target intake g/d
Table/Cooking (15%)	1.4	40% reduction	0.9
Natural (5%)	0.5	No reduction	0.5
Food industry (80%)	7.6	40% reduction	4.6
Total	9.5		6.0

But what can kill us is the fact that there is a fibrous cap over the cholesterol and this cap can become unstable and can either shear off or crack open. The underlying material is very reactive with platelets and red cells to form a clot. This can block the coronary artery, which is what happens in a heart attack, still the commonest cause of death in the UK. However, if the internal carotid artery supplying the brain is blocked, as has occurred in this particular patient, it causes a massive stroke.



You will also see in this slide an ulcerated plaque which is undergoing a healing process with red cells and platelets, rather like if you have a cut in your skin. The difference is that blood is going through the artery at great force and can knock off little bits of platelets and red cells into the artery, which can go into your brain, heart and kidney. This can cause dementia, damage to the heart muscle and kidney disease.

Atheroma, the furring of the arteries, is dependent on the level of cholesterol, the blood pressure and whether you smoke or not. What makes the plaque more likely to rupture is the level of cholesterol, the blood pressure and cigarette smoking. As fat plays an important role in regulating the amount of cholesterol in your blood, you can see how important it is in being an underlying major cause of atheroma.

Reverting back to blood pressure, about a third of the adult population has high blood pressure, many of whom are on medication, including no doubt some people in this room, to keep their blood pressure at a safe level. However, recall that the risk of blood pressure problems can start at much lower blood pressure levels than those we would treat with medication. If we can lower the population blood pressure to a sufficient level to directly prevent problems, or benefit from drug treatment, we would see a massive reduction in strokes, heart failure and heart attacks. We now know what puts up blood pressure – mainly salt intake, lack of fruit and vegetables, obesity and lack of exercise but salt is by far the most important.

Because of the above, we came up with a plan in the 1990s to try and reduce the population's salt intake and had many discussions with the Federation of Bakers and other bakery associations, including the BSB. The reason for this was that the major source of salt in our diet in the UK is from bread, as it is in many other countries, accounting for around 25% of our salt intake. The original plan was to reduce salt from 9.5g a day on average to 6g a day per individual. Rather than telling people to cut their salt intake, which is extremely difficult to do as most of it is already added into the food and indeed could be said to be hidden in our food, we decided on a new strategy and that was not to ask the public to do anything, but to ask the food industry and in particular bakers, to reduce the amount of salt they added to their food and in particular bread, but to reduce it in stages so people don't notice. This has resulted in less salt being added across the board to processed food by the food industry, particularly foods bought in supermarkets.

Salt levels have fallen without the public realising it, **slide 6**. You'll see the fall in blood pressure that has occurred from this. It doesn't cost very much and the brilliance of it is, that consumers do not need to change their diet to reduce their salt intake, much as we would like them to

do, but that would be extremely difficult. Indeed, from a point of view of prevention, it is much better to get a small change in salt intake across the whole population, than a large change in a few individuals. Importantly, the benefits of this strategy affect poorer people most, as they tend eat more processed foods than more affluent consumers.

7 What puts up population BP

- Salt intake
- Lack of Fruit and vegetables
- Weight
- Lack of Exercise
- (Alcohol excess)

We were fortunate in being able to persuade the Government and the food industry to take part in this and, as you know, the FSA set up a plan which was a voluntary approach which needed a lot of publicity**, slide 8**. This was by setting progressive targets for different foods and to ensure a slow reduction in the amount of salt being added to foods. Many countries have now copied the system that the UK devised, and many are regulating the salt targets rather than having them as voluntary reductions, **slide 9.** The problem with a voluntary policy is that it needs a lot of publicity to get it going to force the food industry to change, as well as getting politicians to back it, **slide 10.**

Here is a caricature in a newspaper showing that the salt message is getting through, **slide 11**.

We conducted surveys on the level of salt in bread over this period of time **slide 12**. Although It's not comprehensive, you can see that the level of salt in bread has gradually fallen over time, which is fantastic news. You also may be aware of the salt targets for bread. It started at an average of 1.1g of salt per 100g of bread, which then came down to 1.0g and now 0.9g. These targets have largely been met - if you haven't met them in your own breads you might want to think about how you can benefit public health by doing so! If you have reduced the salt in the bread that you make, I would like to congratulate you on doing this, as it had a huge effect on salt intake. We need to get it lower, but the fact is, you've done a really good job and have led the world.

We were able to analyse the results, **slide 13,** in terms of the fall in salt intake, the fall in population blood pressure and the reduction over this time in the number of people dying from strokes and heart attacks. Clearly, not all of these reductions in deaths from strokes and heart attacks are due to salt, as we've also had a reduction in cigarette smoking. We could calculate from the blood pressure fall that approximately 18,000 strokes and heart attacks were being prevented per year by the reduction in salt intake. With a very large saving in healthcare costs. Again, illustrating how small changes in the whole population are incredibly effective in preventing people dying prematurely, particularly from strokes and heart disease.

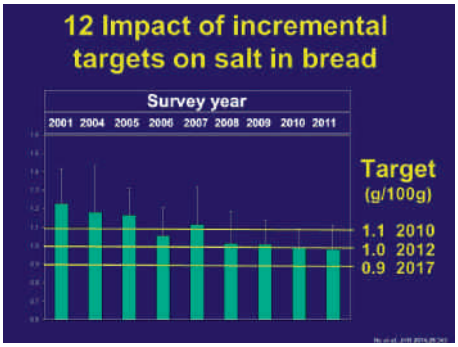
These are countries that have copied the UK programme (**slide 14**), and it's very rare that public health programmes are copied from the UK, as we're usually well behind other countries. So, well done to you.

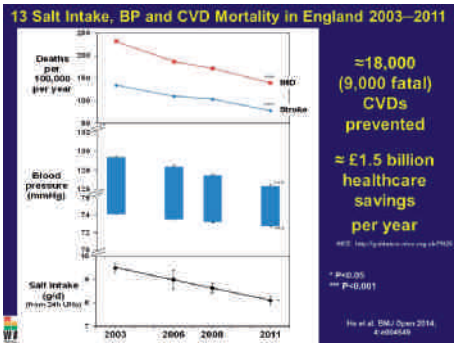
I am going to switch to a completely different but allied subject, 'why are so many people in the UK obese?' I am sure you all know the answer, since you don't need to be a nutritionist or a PhD student to know. It's because we're eating too much processed foods and this slide (slide 15) illustrates it, with Big Mac, large chips and Coco Cola. The problem with this food is that you have no feeling of satiation after eating it. We could go now and have one and then we could have lunch afterwards. There's only a transient sense of fullness and two or three hours later you're hungry again. Look at the calorie equivalent on this slide. This meal contains the calorie equivalence of 11 bananas or 18 oranges - would you be able to eat 18 oranges or 11 bananas and then proceed to have lunch? This is the reason we are all getting obese and particularly our children. Of course, the food industry says we can burn it off, Coca Cola sponsors exercise in parks, but frankly that's a load of rubbish. This child would have to run half a marathon to burn that off. I wouldn't be able to run half a marathon and they would have no hope at all of doing it. How many in this room could run half a marathon every time they have a Big Mac, chips and Coca Cola? The problem **(slide 16)** is calorie dense food, which is very cheap and profitable, only causing transient satiation/fullness, and backed by brilliant marketing. I came up by train yesterday and was presented with all these sorts of snack food during the journey, and it's very difficult to resist. Of course, some of you may be thinking, why is it that some of us are not fat, rather than, why we are fat? This may be a more relevant question.

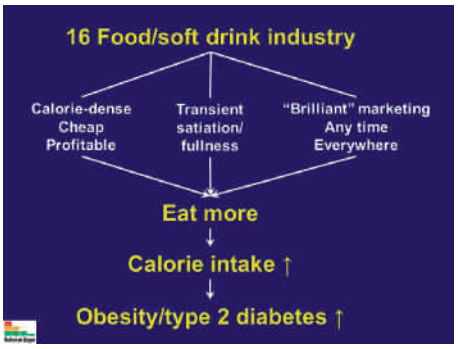
I'm afraid the obesity pandemic is due to the food industry, not you or me, selling us food that is high in fat and sugar, increasing our calorie intake and we get obesity and Type II diabetes.

The next slide (**slide 17)** shows a very obese King George IV, who could afford to be obese, whereas, poor people could not afford enough food to be obese. The consequence of obesity can be type II diabetes, which George IV developed. It is a terrible disease because it causes premature death from heart attacks and strokes. It is also the commonest cause of blindness; renal replacement therapy for dialysis and transplants; and leg amputation due to peripheral vascular disease. So, please avoid at all costs getting Type II diabetes!

We now know that obesity leads to cancer and you can see the types of cancers in **slide 17**. It also leads to fatty







liver, with some controversy on whether it leads to liver disease. From being overweight you get osteoarthritis in your knees and hips and this causes many people to have knee replacements and hip replacements, which the NHS can't afford!

18 Who is responsible?

- Public
- Government
- Food Industry
- Food industry must reduce salt, fat & sugar content of foods

Who is responsible for this? The food industry says you can choose foods that are healthy, you don't have to eat unhealthy food, and then they spend billions of pounds on advertising convincing people to eat it, so they're responsible. The Government has a role in policing the food industry and doing something but it's not the public who are to blame, it's the food industry who are to blame for this and they must start doing something about it.

This is not only in the UK, it's a global problem. Wherever the global food industry moves in, obesity takes off. We're doing work in China. You can see that very low levels of obesity but it's going like this, Type II diabetes going like that because companies like McDonalds and Coca Cola are moving in and the Chinese are now starting to eat all these rubbish foods.

So what can we do? We need to change the food environment and we need to reformulate these products, just like we did with salt, and get the fat and sugar levels down.

19 Change Food Environment

- Reformulation Voluntary/regulatory
- Ban unhealthy food advertising & promotions
- Tax - high salt, sugar, fat foods
- Subsidise healthy food, e.g. fruit & veg
- Restrict availability
- Reduce portion size

We also need to restrict the marketing of these products and when you think about it, we banned cigarette advertising because it's so harmful and yet this is a bigger cause of death now than cigarettes. We also allow advertising to vulnerable children and the most nefarious practices of toys, internet games, all this sort of rubbish to vulnerable children who have no clue about the dangers, pestering their parents to buy this rubbish and no idea and it should be banned, in my view. It is going to take time, like cigarettes. It took a long time to ban cigarette adverts. There'll be a gradual step-wise progression, where in the end unhealthy food will not be able to be marketed or promoted, or any of these things. Only healthy food will be promoted but it will take some time and it may depend on the type of government we have. There'll be taxes, they're coming in worldwide and we've already had a successful sugar levy. You are going to find these unhealthy foods will be taxed just like cigarettes. Presently the sugar levy is around 20%, the cigarette tax at the moment is 700% of the cost of cigarettes. So, if you think if you had a 700% tax on Coca Cola, it would mean a bottle, or a can of Coca Cola would be about £10-15 which would have a huge effect on restricting sales. So, what I'm suggesting to you is you need to do this in the food industry because if you don't, you're going to be hit by this. We can subsidise healthy food, we can restrict availability – very difficult to do in a liberal environment – and we can reduce portion size and again very difficult to do that. People have got used to having large portion sizes at very cheap prices and it's very difficult to persuade people to buy less and have a more expensive product as well.

20 Sugar- Impact on health

- The major cause of dental decay (caries)
- Major source of hidden & empty calories

- Leads to obesity & diabetes
- Direct toxic effects?

What about sugar? I want to put it into perspective because although we used sugar to get an obesity plan in the UK, and we had a huge amount of publicity on it, we weren't really that convinced that sugar was the only thing, it's part of the obesity thing, particularly in sugar sweetened drinks and other products. But it's a major cause of dental decay, it's a major source of hidden calories and empty calories, has no feeling of satiation at all, it leads to obesity and Type II diabetes, particularly sugar in soft drinks seems to lead more likely to Type II diabetes. Whether it has direct toxic effects I think is controversial. Some what I call sugar nutters say yes it does, it causes cirrhosis, it can cause atheroma, it can cause high blood pressure but the evidence for that is not terribly good, to be honest. But there's no doubt it's an important source of empty calories and we need to do something about it.

21 Added Sugar Similar to Salt

- Pure, white
- Makes inedible food palatable
- Only recently part of human diet
- Sensitivity of taste receptor depends on intake
- Hidden

It's very similar to salt. We didn't eat sugar till 200 years ago when the slave trade made it very cheap to import sugar from the Caribbean, and that's when we all got addicted to sugar and we're now all eating vast amounts of sugar compared to what we did during evolution. It's the sensitivity of the taste receptors are much more complicated than the salt receptors, but nevertheless you can get used to eating less sugar and much prefer having things without sugar. I personally don't eat sugar at all. We have pudding last night with our dinner at the pudding club, which was very nice, but the pudding was very sweet. It is a matter of habit, just like salt and it's hidden, as you're aware, **slide 22**. Sugar is hidden in foods, particularly ready prepared meals, soups, etc, it's shoved in there. You'll be aware that many of the coffee and chocolate drinks are high in sugar. The food industry puts sugar into everything it can and not surprisingly, it's become an obesity problem.

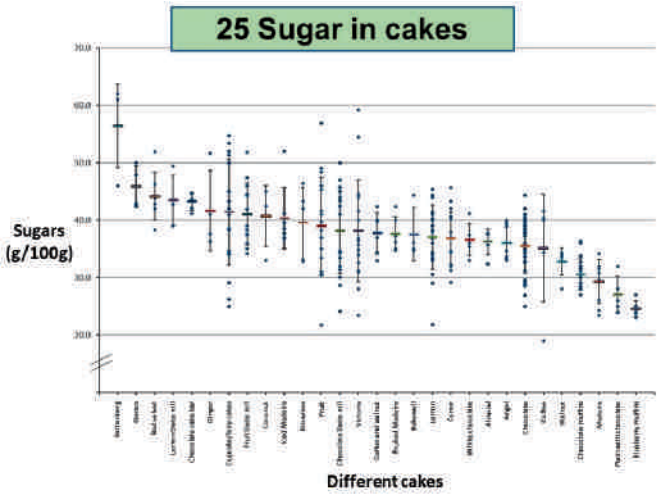
Another problem we face, **slide 23**, is that wherever there are Government advisors, the food industry employs them as consultants, or gives them research funds on advisory boards, and this is from the British Medical Journal looking at the influence of the industry on nutritionists. These are all individual nutritionists who have been paid in some way by the food industry. I'm not saying necessarily it influences them, but it is a problem that the food industry is very powerful and will try and get people to promote some other reason why they shouldn't do something about obesity, Type II diabetes, etc.

24 Incremental sugar targets like salt

- Liquid: easy to reduce
- Solid: ↓portion size, polyols, insoluble fibre
- Incremental targets, aim 50% reduction
- Artificial sweeteners: Need to ↓sweetness

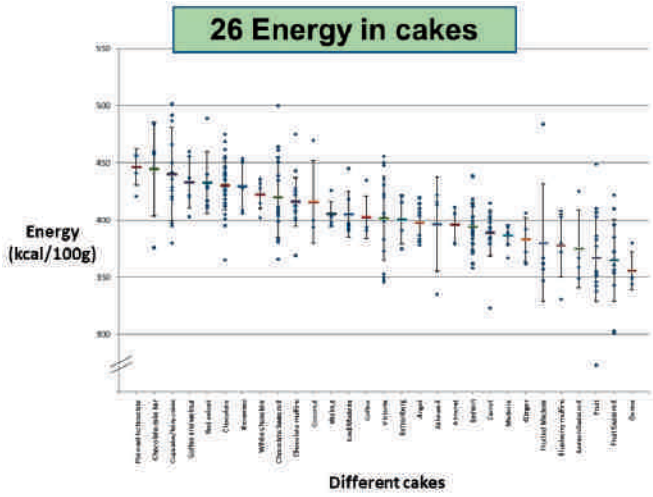
This will reduce calorie intake by >100 Kcal/person/day

We came up with a plan that we wanted to reduce sugar like salt, to get to 50% reduction and that's probably more



than we're going to get. Always ask for more when you go into a bargaining situation than what you think you'll get. We wanted to get about a 30-40% reduction and we could work out that that would reduce calorie intake in the population by 100 kilocalories per person per day which would be enough to prevent, or help to prevent, obesity. It wouldn't treat obesity, but it would help prevent it.

So that was the idea with sugar reformulation which we presented to the Health Minister. This is just showing a survey we did looking at sugar and calories in cakes **slides 25 and 26**, and these are all the different cakes. There's, I think, about 400 cakes that are on the market – not small bakeries but these are large ones you buy in the supermarkets or big outlets, and these are the distribution of sugar in the different cakes going across here. There's a huge range but then within each particular cake, you see there's a huge range of sugar already in the same cake. If we look at energy, which is code for fat of course, the energy difference in these things is due to differences in fat, you'll see exactly the same thing – a huge range of energy in different cakes but a big range within the same type of cake.



If we look at this, **slide 26,** this is cupcakes, fairy cakes, this is the variation in sugar going from around 20 to 60g per 100g in the same type of cake and here's the energy intake going from 380 to over 500. This applied to all of them, whichever ones you looked at. Even within the same category of cake, you had a big variation in sugar and fat, showing quite clearly that you can reformulate those higher ones down without any problem because if one person can make the same cake with less sugar or less fat, so can you, and this is a strong argument we used for salt. I remember when the Federation of Bakers initially claimed in the 1990s they couldn't do salt, it was impossible, etc. and since then they've reduced salt by about 40%. So, we're quite used to hearing that something is technically impossible and then finding that it is not.

The other thing which is forgotten about is that we want to reduce fat intake because this is the main source of calories, **slide 27**. You'll be aware that fat has 2.5 times calories per gram of any other food ingredient. So, it's much easier to reformulate and, of course, if we focused on saturated fat, we'd have a fall in cholesterol which was the underlying cause of that awful diseased artery I showed you earlier.

27 Calorie/Fat

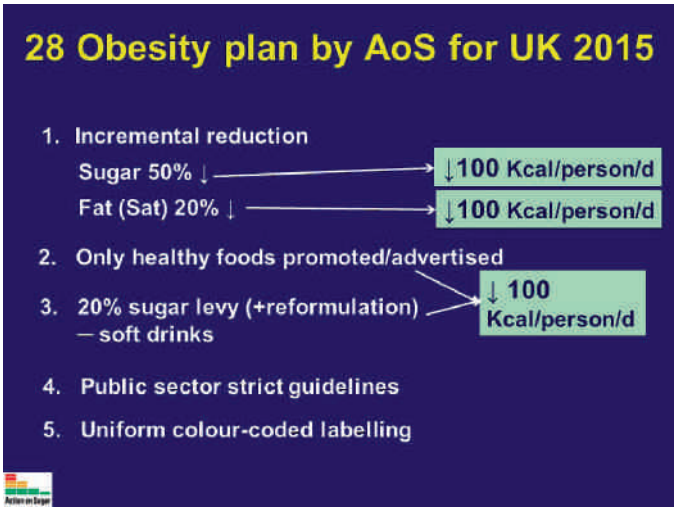
- Fat: Major calorie contributor
- Easy to reformulate (2.5 X calorie/g)
- ↓ Sat fat → ↓ LDL cholesterol
- Incremental targets, aim ↓ 20%

This will reduce calorie intake by >100 Kcal/person/day

If we reduce saturated fat intake, we get a reduction not only in calories but also in arterial disease, atheroma. Again, the aim was to get a 20% reduction in fat which would cause a calorie reduction of 100 kilocalories per person per day.

Now, I should say the problem with sugar, and we'll come back to that, is you can take out liquids quite easily. It doesn't affect the volume but when you take it out of a biscuit which is 60% sugar and you reduce it by 50%, you're going to have a 30% reduction in the weight or in that batch of product. So, what can you put in the recipe to replace the weight of sugar you take out, so that the batch weight doesn't change, and the proportion of the other ingredients doesn't change?

We've got a problem there because if you put back refined carbohydrate instead of the sugar, it would taste less sweet but as soon as it gets into the body, that carbohydrate is converted into sugar. So you haven't really done anything, apart from reduce the sweetness and that means you have to believe that sweetness stimulates appetite which there is some evidence for, that the sweeter something is and the more salt and fat, the more you may eat of it but the evidence for that is not really hard. So, there are problems about reformulation, particularly for sugar and we could discuss that in a moment.



Slide 28 shows a summary of the plan we presented to the UK Government, particularly David Cameron's Policy Unit, who were really quite good at that time. There would be an incremental reduction in sugar and fat in these products, only healthy foods would be promoted or advertised, a sugar levy on soft drinks and confectionary, and this would reduce calories intake by about 300 kilocalories per person per day which would be enough prevent obesity in the UK.

That was largely accepted by David Cameron but then he had to leave because of the EU Referendum. Theresa May came in, her advisor tore up the obesity plan and

we had leaked copies of it, the one before and the one she came out with came down from 36 to 10 pages and a very large number of things were cut out, so it was a very sad time for UK public health but shows the plan, **slide 29**. There was going to be a tax on sugar sweetened drinks, a 20% voluntary sugar reformulation which you'll know about from PHE, but with no reduction in calories. You're allowed to substitute something else for the sugar you take out, which is crazy in my view, and targets were to be set for calorie reduction which, of course, is code for fat. They didn't want to talk about fat but calorie reduction, calorie density, that is fat, (the way you're going to reduce calorie density is take fat out), and hardly any restrictions on marketing and promotion but they've now come back with two further amendments where there are going to be some restrictions.

30 UK Sugar levy Soft Drinks 2018

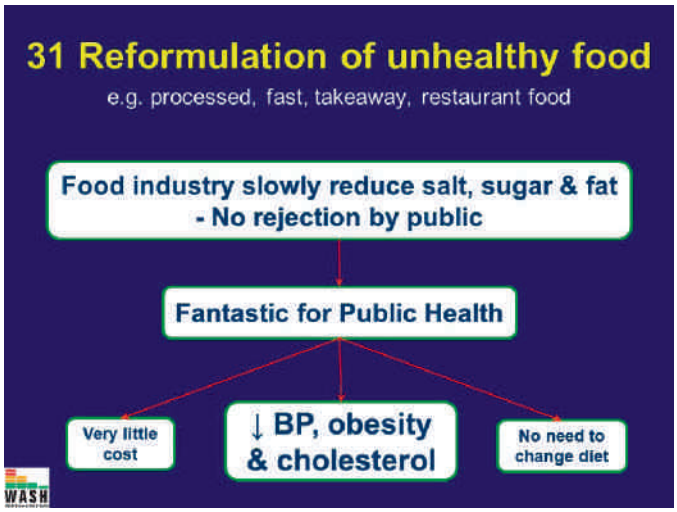
>8 g/100 ml (8% sugar)	tax 24p /L
5-8 g/100 ml (5-8% sugar)	tax 18p /L
<5 g/100 ml (<5% sugar)	No tax

Nearly all branded & supermarket own label have reformulated to <5 g/100 ml. Only Coca Cola and Pepsi have kept full sugar drinks.

The sugar levy is interesting, and this will be a tax that will be applied around a very large number of products in the next few years unless you do something now. It's a tax that comes in at 8g per 100g. Most sugar sweetened drinks were 8g, or more Coca Cola is around 9-10g and if you get it below 5g, you don't pay any tax. Everyone except Coca Cola and PepsiCo, reduced their sugar sweetened drinks below 5g to avoid paying the tax. Therefore, all the soft drinks you buy in supermarkets - Ribena, Lucozade, Barr's, are all now below 5g, using artificial sweeteners, which we don't particularly like because they're not perfect by any means but they're better than full sugar soft drinks.

The sugar levy on soft drinks has had an amazing effect on sugar intake in the UK, reducing it overnight. The amount of sugar in soft drinks was reduced by about 20% in a few months by this tax so it was very successful. Having had such a successful tax, I'm afraid it's likely there's going to be a lot more taxes coming in, particularly as we need more and more money to finance the NHS.

The message I have for you is that you've got a limited time to reformulate your products, **slide 31.** Your baked



products, cakes and those types of things, have a lot of sugar and fat in them, so they're not good news, I'm afraid and you've got to do something about it. Reformulation will have a huge effect on blood pressure, obesity and cholesterol if you get it right. It is not going to cost an awful lot and there will no need for the population to change their diet. It will affect the most deprived people in our community. It's not designed for people like ourselves because we don't eat a lot of these products, but it will have the maximum benefit for poorer people and remember, they die 10 years before you and I do. That's not very fair and we need to do something about that. I would say that you're in the last chance saloon, **slide 32.** If you don't do something now, you are going to get punitive incremental taxes on unhealthy foods and you'll get a ban on marketing promotion, any form of that on unhealthy foods. So, you have been warned!

Gary Tucker Thank you very much. We have some time for any questions – anybody brave enough to ask a question?

Question When you have this conversation in front of the retailers, what's the response because ready meals are prolific?

Graham MacGregor Ready meals are obviously a problem. There's no reason why a ready meal cannot be healthy.

Question They're not!

Graham MacGregor They're not in general but you can search out the healthy ones. The market for ready meals in the UK is huge, much bigger than any other country in the world but I don't think that's ever going to change. People want instant food. There's no point in saying to people, particularly deprived people, cook their own food. We're all for education, better cooking facilities and so on but it doesn't work I'm afraid and that's what we've been doing for the last 50 years and it hasn't worked. Confectionary is a huge problem in terms of sugar and then, of course, fat in chocolates and other things. So it's got to be across industry. We're not just getting at you, don't misunderstand me. But you're right, ready prepared meals is a major source of unhealthy food and I wish they would improve them. They have done, they have reduced the salt levels in these meals drastically. They've come down by 50% over the last ten years, so

it's not as though they're not aware of it but I think they need to take more action.

Question I just wanted to ask about the difference in sugars that are in these kind of products versus the sugars that are in fruits. I do a lot of juicing. If I'm drinking lots of fruit juice which has got sugar in it, then is that potentially also dangerous from a health point of view?

Graham MacGregor It's exactly the same. The fruits may have more fructose in them than glucose and sucrose is a mixture of fructose and glucose. but some fruits have more fructose in. Robert Lustig in the states, who you may have heard of, claims that fructose is toxic, but the evidence for that is not terribly good and of course, when we were evolving, we would have had a higher fructose intake than we do now. Sucrose wasn't available then, we only got sugar from fruit and perhaps honey, but honey would have been expensive or difficult to obtain, particularly in northern climates, so we were dependent on fruit and vegetables.

I'm sorry but fruit juice is not good. It has more sugar in it than Coca Cola and it's not healthy. It's better than drinking Coca Cola because it's got vitamins, it's got potassium in and it's got some fibre in it, but at breakfast I was watching you all drinking your orange juice, if it was fresh orange juice, a big glass of it may be made from five or six oranges, and that's a lot of unnecessary calories. If you ate the whole orange, if you ate five or six oranges, that wouldn't be the same. You can easily drink a glass of orange juice without realising it came from five oranges, because you haven't had all the fibre and other material you get from eating the whole fruit which make you feel full. So, I'm afraid orange juice is out. Occasionally perhaps, as a special treat.

Question A lot of bakery companies have reduced the sugar in products and can make the claim 30% less sugar but if the reformulation means that it equals the same number of calories, is it therefore, in your opinion, almost valueless?

Graham MacGregor You're right and this is where Public Health England are nothing like the Food Standards Agency, unfortunately, and I know I moan about them but they haven't thought things through and they haven't thought through the calorie thing as well, because another problem is if you're reformulating sugar in cakes and biscuits, you won't have to reformulate fat. Well, that's mad, isn't it? You've got to do both. The sensible thing is to say to you, what we want is a reduction in sugar and fat and then you can reduce the calorie density or the number of calories per serving. With sugar it's very difficult and somebody here has told me that he can do it apparently but it's very expensive.

There are ways. I know Nestle have got non-calorific fillers they can put in and you can put higher sugars in, polyols, but the problem with them is if you eat too much of them, they cause diarrhoea because they're not metabolised. You can use fibre and, of course we need to eat more fibre and, of course, the sensible thing to do is to put whole grain in and also more fruit and vegetable fibre and residue. What we want to see with the reformulation is … carrot cake would be a good example of it. That has a lot of vegetable in it with a lot of fibre in it and that's what we should be switching to.

I would very much encourage you where you are reformulating to not use simple carbohydrate because that is, in my view, a complete waste of time but to use vegetable residues. You can already see on the market now there are things; sausages and things that have got much less fat in, have got some meat but have vegetables in the sausage mixed up so that children don't even know they're eating their vegetables. It's quite a good way - give children a sausage and they're having quite a lot of vegetable without even knowing it.

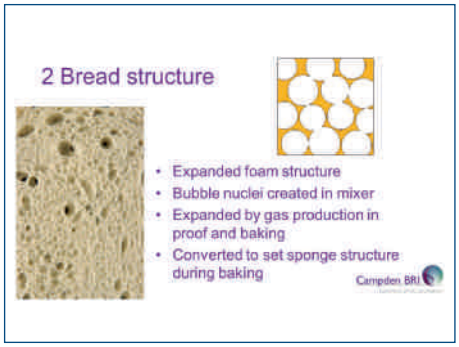
So, you're right, the sugar reformulation I think has been very badly thought out. I don't know if many of you may be taking part in it, I don't know what you're doing. Are you reducing the calorie density? In other words, by taking the sugar out, are you reducing the calories per portion because in a biscuit you can make it smaller or get a different ingredient mix but with a cake, if you make a cake, people are still going to have the same slice of cake, they're not going to reduce the size of the cake they're going to eat. So, what do you do? And I don't think it's been thought out by PHE?

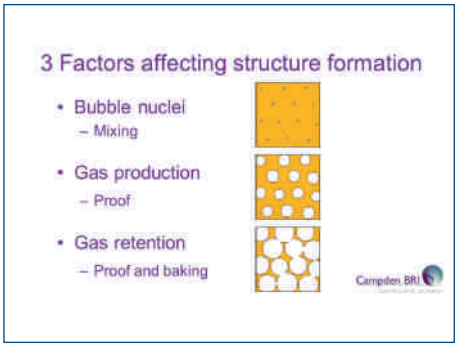
Gary Tucker, Session Chairman Many thanks for an excellent and wide-ranging paper Graham and for answering a range of questions. *Applause*

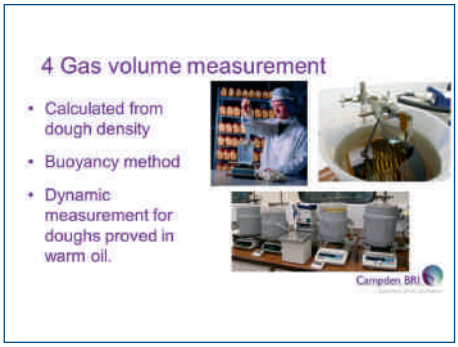
It is now my pleasure to invite Martin Whitworth to give the next paper. Good texture in bread and cakes is taken for granted by the consumer, but manufacturers know that it's vital to mouthfeel and product enjoyment. Martin will take delegates through how bubbles in bread dough and cake batters affect the creation of the cell structure of bread and cakes, and how their final cell structure can be recorded using high-tech equipment such as micro CT imaging systems in order to make high resolution 3D images for different product ranges. The results can then be used to solve faults and provide consistency in creating specific crumb structures in bread and cakes.

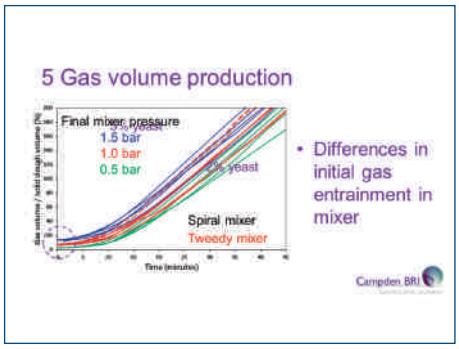
Bubble Structure Formation in Bread and Cakes by Martin Whitworth, Principal Scientist and Imaging Section Manager, Campden BRI.

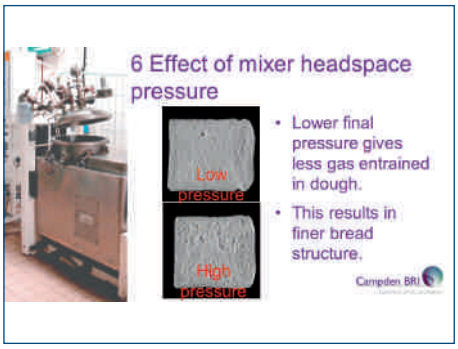
Thank you all for inviting me. As Gary said, I'm going to be talking about bubbles in bread and cakes and they're an important part of their structures. Having just heard that lots of ingredients and other things are bad for you, I am pleased to say that bubbles are very low in calories! They also do not contribute much to the mass of the product but they do contribute a lot to the product volume, and about 75-80% of bread by volume is air. They also make the product softer, so that's a nice characteristic and the scattering of light by all the interfaces makes the product whiter. By understanding something about the mechanisms of how the bubbles are formed and the effects of the ingredients and the process on them, we can control and make lots of different crumb structures.

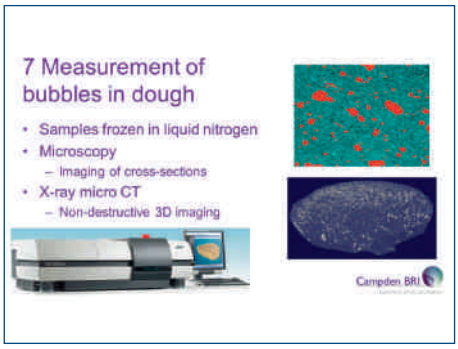






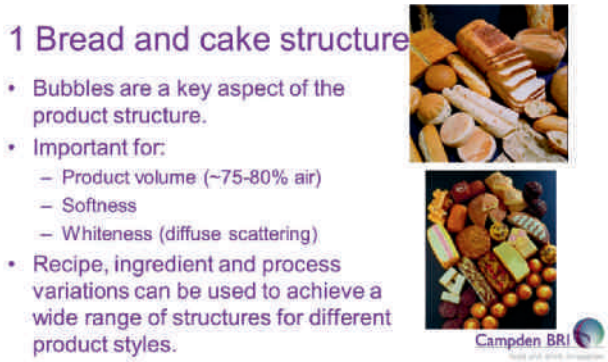






I'm going to start with bread, **slide 1**, and then go on to cakes at the end.

***Note** from proceedings editor Jim Brown. Images from Martin's slides are included in the reproduction of his paper. In many cases the image shown is the end point of a series of actions shown as a video during proof, baking, etc. For instance, fascinating film sequences from X-Ray CT scanning showing the interior of a dough piece rising during proof, and the changes in its structure during baking.*

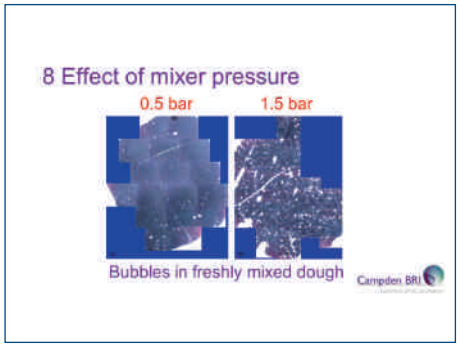


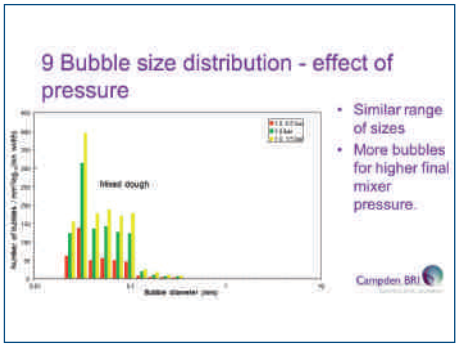
Bread has bubbles in it. It's an expanded foam structure, **slide 2** and the bubbles are formed by initially making little nuclei that are created when we mix the dough and then as we prove the dough, gas production expands the bubbles that are already there. We can't make them from nothing, we have to start with nuclei and then expand those bubbles. Then when we put it in the oven, the structure will rise a little bit more but then set and the bubbles will interconnect. It changes from a foam to a sponge and the structure is then supported by the solid matrix rather than by gas pressure of the bubbles, as would be the case with dough.

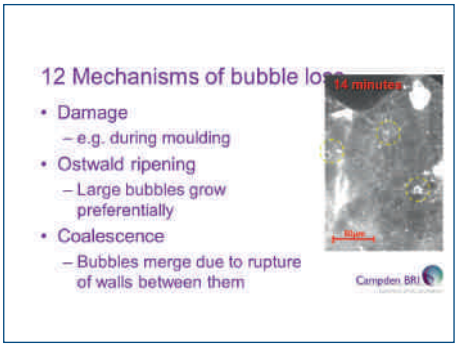
So if we're going to understand and control this process **slide 3,** key steps are looking at the mixing, how many nuclei we form, looking at the proof process to see what rate of gas production we've got, and then throughout proof and baking, making sure that the gas we are producing, we're holding onto it, we're retaining it and the walls between the bubbles aren't rupturing and losing that gas. If we're going to measure this and study it, **slide 4**, one of the techniques we can use is Archimedes' principle. We can weigh a dough in air and in a liquid and determine its density from that and the density is primarily determined by how much gas is being produced. If we do it in water, we can get a measurement but then the dough disintegrates. If we instead put it in oil, we can leave it there and we can let it prove in warm oil and we can see how the gas volume changes.

So that's what we've done in some experiments here. This is, **slide 5,** gas volume as a function of time - some pieces sitting in warm oil – and it takes a little bit of time to get going, maybe for the heat to get right through but then it produces gas at a fairly constant rate, and one of the variables that affects that rate is the amount of yeast you put in. Within this I've got some other variations as well. You can see a lot of lines, so we've got some Tweedy mixed and some spiral mixed doughs there, **slide 5**. It doesn't really affect the rate of gas production during proof, but there is a small difference at the beginning in how much gas the mixer puts into the dough. If we focus on the Tweedy mixer alone, **slide 6**, we can change pressure in that mixer to control that in another way. The mixing action changes the amount of gas initially, so does the pressure we use in a mixer that's capable of changing it. It might look like a small effect when you consider it in the context of how much gas is in there at the end of the proof but as many of you will know, it has a big effect on the final bread. What we're doing in the mixer, that initial gas entrained in the dough is having a big effect and if we use a lower pressure, then we can entrain less gas and that gives us finer crumb structure in the bread.

If we want to study why that is in more detail, it's not enough just to know how much gas is in there but we want to know whether it's made up of large bubbles or

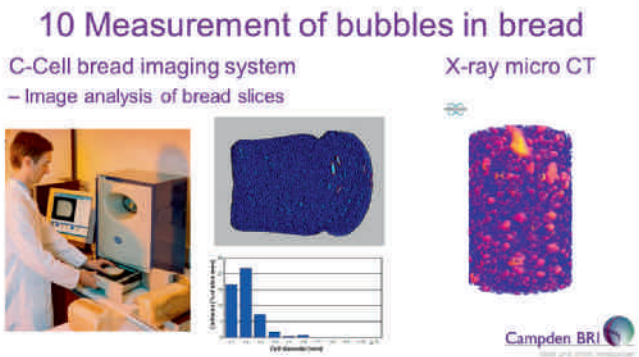






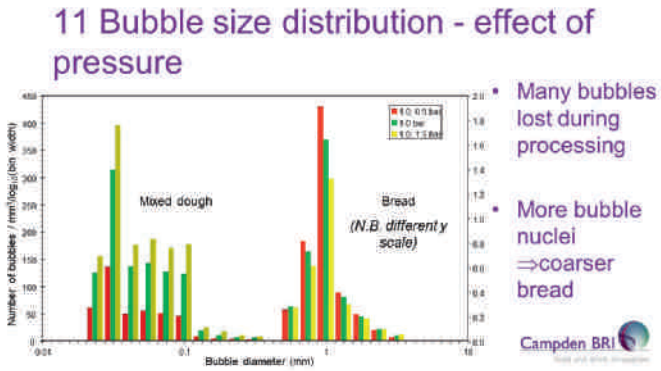
small bubbles and what the bubble sizes are. So the trick we use for this, **slide 7**, we take a piece of freshly mixed dough and we freeze it rapidly in liquid nitrogen which preserves the bubble structure, and then we cut thin sections of it and look at them under the microscope and we can see cross-sections of the individual bubbles, and we can use image analysis techniques to detect them and measure their area to work out the volume for us. That's quite tedious since we have to make lots of slices of the dough.

We now have a new bit of kit called an x-ray micro CT instrument. This is the same sort of technology as a medical CAT scanner but smaller for a bench and we can analyse a sample a few centimetres in size, and we get a 3D image of that frozen piece of dough and we can measure all the bubbles in it much more conveniently. **Slide 8** is one of the examples from the microscopy technique and it's comparing a dough that have been mixed under vacuum with one mixed under pressure, and we can see that the one under pressure not only has more gas but it's made up of more bubbles. It's not just bigger bubbles, there's a lot more of them. And if we measure size distributions for lots of samples like that, **slide 9**, we find it has very little effect on the size distribution of bubbles, but it does affect how many bubbles we get of each size. So, mixing under a higher pressure gives us more bubbles of all the sizes.



We want to understand what effect the above has on the bread, so we need to be able to measure bubbles in bread as well. Gary mentioned earlier that one of the instruments that was invented here, and launched in 2002, was the C-Cell instrument, **slide 10.** This enables us to take a picture of a slice of bread under controlled conditions and it has the software that finds all the bubbles and measures their sizes and we can plot size distribution for bubbles in bread as well. We can also use our micro CT instruments to do 3D scans of bread. We can't fit a whole loaf or a slice of bread in the instrument, but we can look at small pieces of the bread in much more detail and in 3D, and we can make measurements from that as well, so these bubbles are colour coded by size.

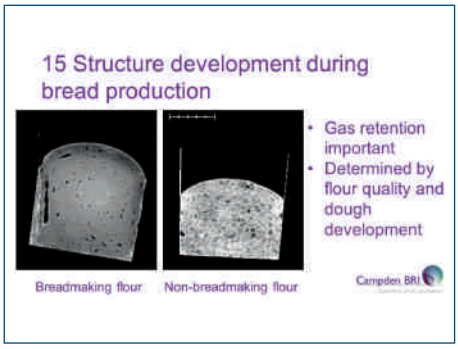
We've got to have a good range of techniques for measuring bubbles in freshly mixed dough and in bread.

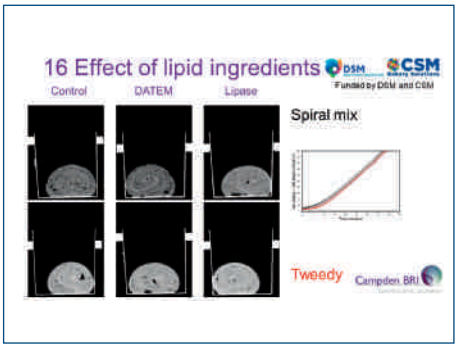


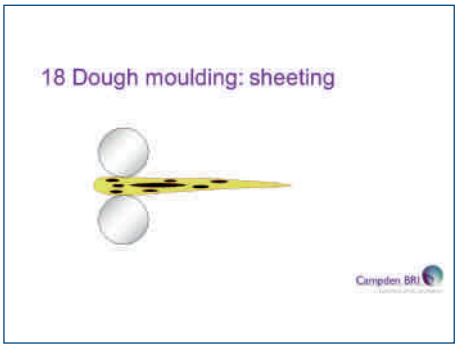
Slide 11 shows the bubbles in dough mixed under a range of atmospheric pressures and the corresponding size of the bubbles in the bread that we made from it. The first thing to note is it's further over to the right, so that means the bubbles are bigger, they're at least a factor of ten larger in diameter. But if you think about that, that means they're at least a factor of a thousand bigger in volume and the total amount of gas hasn't gone up by a factor of a thousand, so we must be losing some bubbles, and, in fact, I had to plot that on a different scale. There are only about 1% of the number of bubbles in the bread as there were initially in the dough.

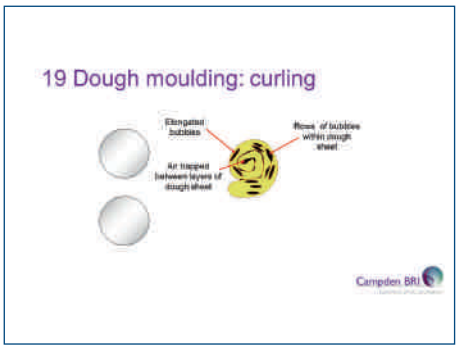
Another effect is the test in yellow in slide 9 that was mixed under the higher pressure and had the most bubbles in the dough but the fewest bubbles in the bread made from it! If you want to retain a lot of bubbles in the bread, you might think, put more in the dough during mixing but that's counterproductive - it goes the opposite way. Putting fewer bubbles in the dough during mixing works better for retaining them in the final bread and to get a finer crumb structure.

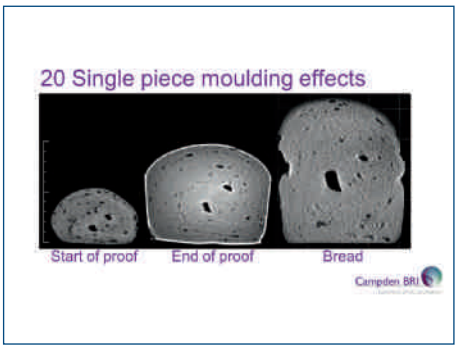
So why might we be losing bubbles during dough processing? There are various mechanisms in foam systems for why you lose bubbles, **slide 12**. One might be damage caused from mishandling the dough, for example during moulding of the dough pieces. At the start of my career I overlapped with Bill Collins, one of the inventors of the CBP, and he used to say to audiences like this, and many of you will have known Bill, that you should treat a bread dough like a basket of eggs, handle it really gently. Now that's appropriate for avoiding damage to the dough during moulding and at other stages of dough processing. However, in terms of removing bubbles from the dough,

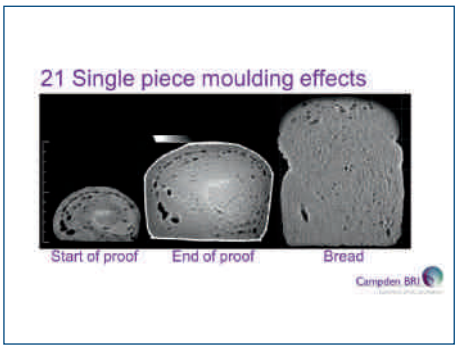










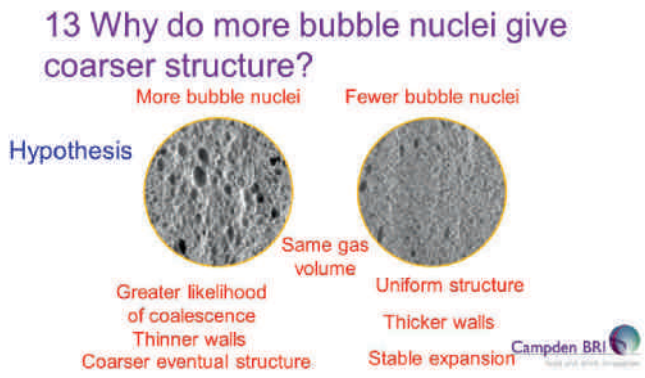


while damage to the dough during processing will cause the loss of some bubbles, it's not really going to remove 99% them!

Another mechanism for the loss of bubbles is a technical term called Ostwald ripening. This is due to the balance of pressure and surface tension in the dough. It's easier for large bubbles to grow than small ones. So possibly the mechanism is that small bubbles aren't growing and contributing to the bread structure.

We've got a microscope image here and most of what you can see there are starch granules but those little things are bubbles and in this technique, they're enclosed within the dough and we're seeing them beneath the surface and over time, you can see that some small bubbles do indeed shrink, but it's only the ones less than about 20 microns in size that do that and most of what I've showed you were bigger than that. So that probably isn't the major contribution either. I think probably the main mechanism is coalescence where you started with multiple bubbles and as they grew and the walls between them got stretched, that can rupture, and two bubbles become one bubble. So that we think is the primary mechanism of why we're losing 99% of our bubbles.

The other thing you have to understand is that if we make more bubbles in the dough, why do we end up with fewer bubbles in the bread? Why does the situation reverse?



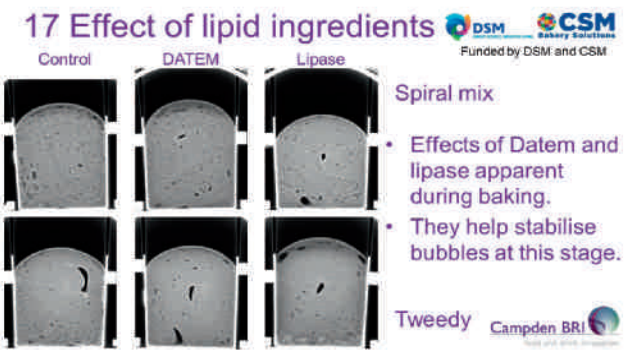
We don't have nice microscope images showing that happening, but we have a hypothesis at least. Supposing we start with more bubbles on the left of **slide 13,** so that might have been made by using a high pressure and fewer on the right and as they expand, I showed you earlier, the volume of gas goes up at about the same rate. I've carefully drawn this so those are the same volume of gas or the same area of white on the slide and if you've got more bubbles for the same amount of gas, that means the walls will be thinner. If coalescence is going to happen with thin walls, it's going to happen earlier in the case with more bubbles. There are some studies that suggest that once coalescence starts, it can cascade into a whole lot more coalescence. That might be the mechanism of why this one overtakes the other one, whereas with the one with fewer bubbles, they may be able to expand in a more stable way. We are losing a lot in both cases but the one on the right is more stable. So that would be the expected result of that and it's a hypothesis, but it's based on what we see – more bubble nuclei give us a coarser structure.

It would be useful to be able to watch what happens between the frozen pieces of dough we looked at the beginning and the bread that we can measure as well. We do have a technique that can do it. It can't see down at the resolution we need to see the individual bubbles coalescing, but we can look at total loaves of bread and this is using a medical x-ray scanner. I said we have a little one on our bench but we can hire a big one, **slide 14**,

and it comes and parks outside Gary's bakery, so we can make the dough and put them in there and we have built an oven that fits inside the scanner, so we can take a non-destructive image through the oven and through the products inside it and we can do that fast enough that we can take pictures as the product is baking and see how it changes.

Slide 15 shows two pieces of moulded dough at the beginning of proof, the one on the left made from a breadmaking flour and the one on the right made from a non-breadmaking flour. They're single piece moulded and you can see it's a spiral structure to it and this is a dough proving, and what we can then do is we swap over the apparatus a bit and we quickly put that into the oven that I showed you. So that's the same piece of dough in the same position and we can them watch it bake and things that absorb x-rays a lot, which are the denser structures, appear white on this image. One feature you can see is it starts to get darker on the outside as the structure's expanding, as the heat comes in and later on, as the heat's getting to the middle, then that expands more. We can see all sorts of fascinating features as to how the crust forms and big holes forming or disappearing.

One of the things I want to highlight in **slide 15** is the effect on the dough of flour quality. I talked about nuclei in the mixer but as we're expanding the structure here, I also mentioned the importance of gas retention. The dough on the left was made with a good bread-making flour milled from a group 1 wheat and the dough on the right from a feed wheat not really selected for its bread-making characteristics. If we watch the one on the right prove it takes longer because it is losing a lot of gas and some coalescence of gas bubbles is taking place and at the end of proof, it has a coarser structure. The dough structure was so delicate that just transferring it to the oven caused a loss of gas and it had virtually no oven spring during baking. So very poor gas retention is the term we would use. So that's another process that is important in getting a good fine cell structure in bread and it's determined by the flour quality. This is why we spend a lot of effort selecting particular wheat varieties for bread-making and also on dough development and in the CBP, that's another function of the mixer. It's not just in entraining those gas bubbles but developing the dough to the correct condition to give good gas retention.



The same technique was used to look at the effect of lipid ingredients in bread doughs, **slides 16** and **17.** These trials were funded by DSM and CSM but we were given permission to show details of them to you at this BSB conference.

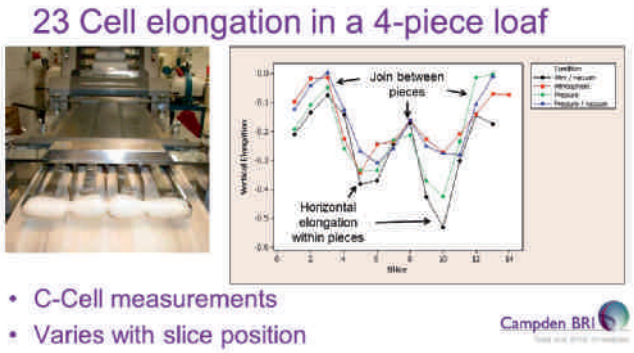
NB *The dough pieces were videoed during proving in slide 16 and during baking in slide 17. The slide does not in fact show the full oven spring that was shown in the video film.*

We were looking at the comparison of a control dough with one that had a datem emulsifier in it and with one that had a lipase enzyme in it. Tests were done using spiral mixed and Tweedy mixed doughs. If you remember the earlier graph, the spiral mixed dough had a little bit more air in it than the Tweedy mixed dough at the beginning of proof and you can see here that's why it appears darker and it's slightly more aeration in those doughs, and we expect that they will expand at a similar rate; they do, roughly. I think something went wrong with the lipase trial and it didn't get all the way to the end but broadly, they've all proved at the same rate.

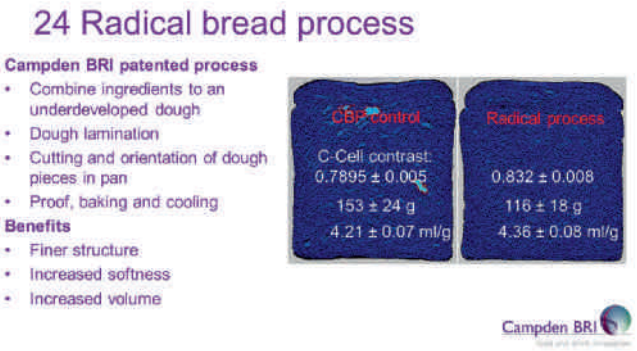
There is a difference between the spiral and the Tweedy mixed doughs, probably due to the number of nuclei we talked about, but the datem and the lipase look very similar to the control one at the end of the final proof. The datem and the lipase haven't really had much effect on the structure at that stage of the process and it's when we put proved dough in the oven that we see how these ingredients work. There is more oven spring with datem and lipase and a finer bread crumb structure as well. So, these are ingredients that take their effect during the baking stage of the process. We already looked at effective mixing, handling of the dough, final proof and baking and you can see different aspects of the process and the recipe that work at different points, and the mechanism of these lipid ingredients is really stabilising the bubbles in the baking stage.

I mentioned that the examples I've shown you were from single moulded dough pieces and I thought I'd say a little bit about moulding, since it's not just about the size of the bubbles but it's about their shape and their orientation in the dough and in the final bread. For single piece moulding, **slide 18**, you start by sheeting the dough piece. The bubbles in it get flattened and then when you roll it up with a curling chain, these are the sorts of structures that you're going to expect to see, **slide 19**, some elongated bubbles arranged circumferentially. If you don't get the moulding quite right, you might trap big pockets of air that could lead to holes.

Sometimes we see long chains of bubbles which were probably one big bubble that got split up when we sheeted the dough. **Slide 20** is an example of one of these phenomena, we see big holes there. They lie on a dense white line, which is probably where we lost a little bit of gas at the surface of the dough in sheeting. So that's where those bubbles are, they're between the interfaces of the dough sheet and they're moulding faults. **Slide 21:** Here's a nice example showing that long chain of bubbles that you see. During baking it's tended to get compressed a bit more into the outer parts of the bread, but you can see it there in the proof dough. And also, there's a neat little hole there and you can even see it in the bread. Sometimes if you look at single piece moulding, you can see a neat little hole. That was where we didn't quite close up the very tip of the dough in moulding. Once you know to look out for it, you often see a little hole in the middle there.



What about four-piece moulding then, **slide 22**? I'm sure you're all familiar with the process. We take the rolled-up piece of dough, chop it into four and turn them round. The reason for doing this is to take those flattened bubbles and present them face on within the slice so that the slice will look white to the consumer. In **slide 23** we can use the x-ray technique to look at what the structure is at different points. In the middle of one of the dough pieces, what you see is all the individual layers. You tend to get horizontal elongated bubbles but the structure we're looking for is in the join between the pieces where they aren't face on to you. That was the moulded doughs, this is after we prove them and then bake them, and you can still see that structure persisting. I mentioned C-Cell and I showed you some bubble size measurements from C-Cell. It can also measure the orientation and the elongation of bubbles. So this is a parameter which is measuring how vertically elongated or horizontally elongated the bubbles are in a slice, and we measured every slice along the length of a loaf and you can see that that alternates all the way along because there is a four-piece structure. So four-piece loaves, the slices aren't all the same, there is a periodicity in that structure.

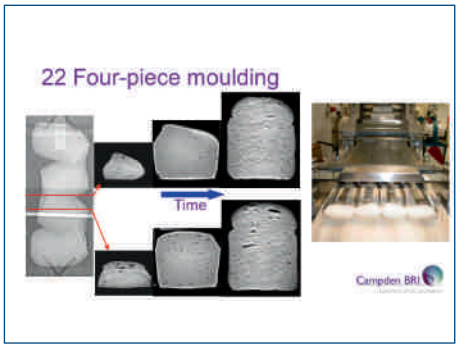


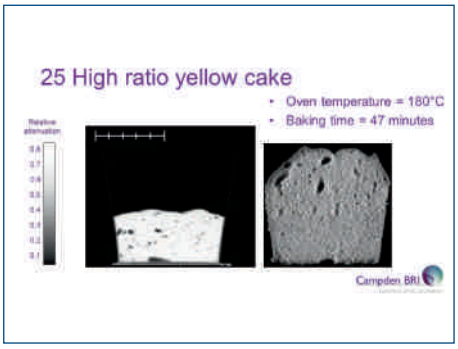
Gary mentioned earlier that Campden BRI have invented a new baking process which we call the radical bread process and this is what it is, it involves a lamination stage and it's designed to do even better than a four-piece moulding in getting those bubbles oriented flat and vertically, all the way along the loaf in this case. The benefits are a finer crumb structure, increased softness and higher volume. There is C-Cell analysis of bread made with new process on the slide. The colours represent size of the bubbles and the number here is a measure of the contrast between the cells and the cell walls. A high number basically means it's looking nice and white and uniform and before this, we tended as a rule of thumb to say that number for typical white sandwich bread would vary between about 0.7 for a budget type loaf and up to 0.8 for a premium loaf. We've never seen figures this high before, so we really think we are onto something with the new process. The softness is also better, and we get a slightly higher specific volume with the process. The Radical Bread Process come from some of our design and understanding of these structures.

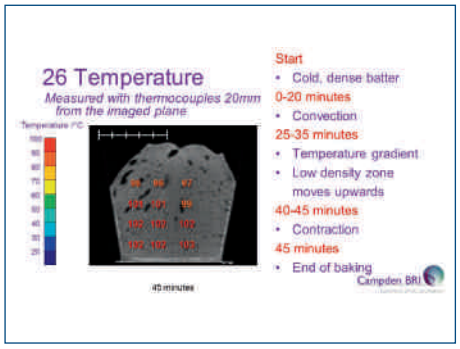
Cake I will now talk about cakes. We haven't got a proof process here, so we're straight into putting the batter in the oven and we can use our x-ray baking techniques to look at what happens, **slide 25.** On the right we see a piece of High Ratio yellow cake and on the left we see the batter that made the cake. High ratio means a high sugar content and we've been told by a previous speaker that high sugar is bad for us, so there may be less of this type of cake in future. So let's watch this one and you see lower viscosity than dough and we get convection happening, and some of those big bubbles that you can see in the cake at the end, they started at the bottom and they grew, became buoyant and floated to the top.

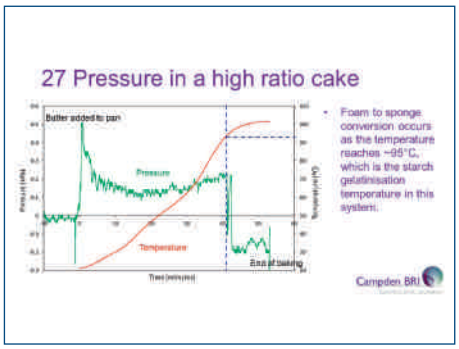
We put some thermocouples in this cake as well, **slide 26**, not in the same plane we were in but a little bit further along and assumed it was relatively uniform. So early on, the dense batter that we can see, white on the x-ray, is cold and over time, we saw the convection going on and the temperature measurements are confirming that the bit in the middle that's dense is, indeed, cold and the bits that are rising round the outside are the warmer bits, just as you would expect convection to happen. After a while, that tends to stop and we begin to set up more of a temperature gradient with high temperature at the bottom; we've got good heat transfer from the tray the cake is sitting on and less from the air, so we get a gradient. There is a low-density zone, there's a dark band there where it's 90°C, so that's a local reduction in the density, the thing is expanding a little bit there and as we go through, that moves up so it's now about here. So it expands locally and then sets back and that seems to keep pace with the 90° isotherm. So at 90° something is happening and locally it expands and when that gets to the top of the cake, then we're pretty much done, the whole thing settles back a little bit and contracts towards the end and we finish with a temperature of about 100°C limited by the evaporation of water.

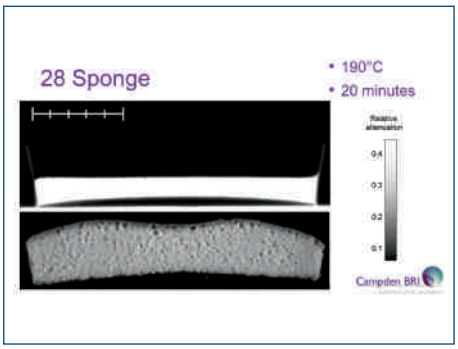
With a replicate of that cake batter, we also made some pressure measurements, **slide 27**. We put a thermocouple and a pressure sensor into the cake, and this is pressure as a function of time during baking, or pressure in green and temperature in red. We started with no batter in there, we poured the batter in and you can see the pressure starts at the beginning because there's now a hydrostatic pressure of some batter above the probe. It's very sensitive measurements so I wouldn't read too much into the variation along it, it's quite noisy but you'll see that there is a point where the pressure suddenly drops towards the end of baking, and that's just over 90°C that that happens at. So we think that is related to the phenomenon we just saw in the x-ray images and we think that's the foam to sponge conversion happening when the bubbles interconnect, and at that temperature, it's about the starch gelatinisation temperature in this cake. It's a high ratio cake which means it's got lots of sugar so starch gelatinises at the higher temperature in the presence of sugar, and we've done other recipes with less sugar and that temperature changes and so does the temperature at

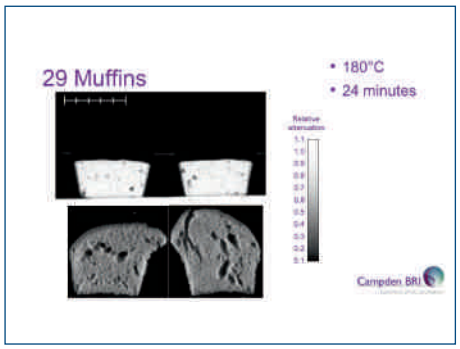








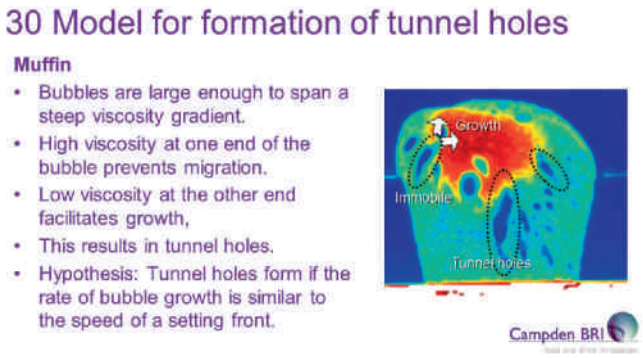




which that phenomenon happens. So we think that's what's going on.

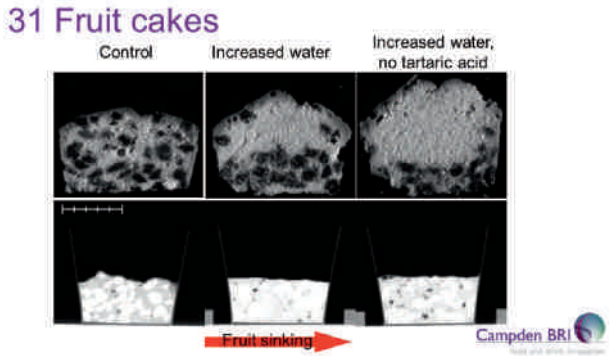
A different style of cake is a sponge, **slide 28** so it's a different shape of cake, it's also a different recipe and this one's a much shorter bake, the other one was about 45 minutes and this is about 20 minutes. So we don't get convection here, it just expands a little bit fairly quickly and the structure sets and nothing moves around very much. So a rather different structure as a result of that.

A nice example is muffins, **slide 29**. These sit in between these situations and we get those long tunnel-like holes, those vertical holes in a muffin, and this is really the experiment that showed us how those formed. So there is a dense white bit of batter which we think is still liquid and there's a lower density grey bit which we think is set, and you will see that these bubbles are growing in the interface between those two regions.



This is the same image that I've just used with colour instead of different grey scale. So our proposed mechanism is that bubbles span that gradient, the bottom end of that is setting so it holds the bubble in place and it can't float away. The tip is protruding into the liquid bit so it can grow and gas can add to that, and that's what's forming those tunnel holes.

Our hypothesis is if the rate at which the structure sets keeps pace exactly with the rate at which the bubbles grow, they can just grow indefinitely like that. If it sets much faster, you get something like a sponge and the bubbles don't grow much and they just set in place. If it sets too slowly, they grow and they become buoyant, they're still in the liquid and they float to the top and we get the mechanism like the high ratio cake.



I thought I'd finish with another example of a cake – fruit cakes. It's quite fun when we've got this technique which allows you to see the interior of cakes during baking. Here are some cakes where we've deliberately adjusted the recipe to induce sinking of the fruit and with this technique, we can see what sinking of fruit in cakes looks like. In fact, towards the end, you're even seeing the moisture boiling off in the fruit and the fruit's popping up a little bit. So it doesn't really sink, it just never rises. If you want to see the fruit cakes rising in slide 31, the video is on our website. Just type the link below into your website browser:

https://www.campdenbri.co.uk/services/structure-of-food.php.

32 Conclusions

Methods such as X-ray tomography enable us to study the mechanisms of structure formation in bread and cakes.

Bread

- The number of bubble nuclei formed in mixing is critical.
- Gas retention during proof and baking depends on flour quality and dough development.
- Ingredients such as Datem and Lipase exert their effect during baking.

Cakes

- The structure depends on the balance between the rates of bubble growth and setting during baking. Tunnel holes occur when the rates are similar.

Gary Tucker, Session Chairman Many thanks Martin. We can now take questions.

Question Will these techniques help explain some common faults that bakers experience, such as coring in cake?

Martin Whitworth I'm not sure we've studied coring. The problem with coring is it's rather elusive and reproducing it when you're doing your experiments is a hit and miss affair, but we have done studies looking at other faults. I showed you an example of moulding faults in bread. We've also looked at the collapse of high ratio cakes if you don't use a heat-treated, or formerly a chlorinated cake flour. When we were replacing chlorination with heat treatment, the hypothesis was that you didn't get foam to sponge conversion. We've got some separate measurements where we show that yes, you do get foam to sponge conversion but once it's happened, the structure is just too weak to hold up the structure and the collapse happens like that.

We've also looked at what they call sad streaks in cakes and there are a number of mechanisms which cause it. Sometimes if you get contamination of mineral oils and things in there, you can do it but another mechanism is very similar. It's a mechanism that happens during cooling of the cake, that the structure is a little bit weak, typically associated with higher moisture, and you can get collapse there. I'm sure we've looked at some others but those are the ones that come to mind immediately.

Question You've done some very good work on bread, mainly on how to achieve a fine crumb structure. There are some product that require a very open crumb structure with large holes, like ciabatta, on a consistent basis? Have you done work on this?

Martin Whitworth Yes, Gary's team do lots of work on all sorts of styles of bread. For example, I showed that with a pressure vacuum mixer, you can use positive pressure to make bigger bubbles in the dough if that's what you want. We've used it experimentally to understand what's going on but that's a way that you can use the mixer to control crumb structure. There are, of course, other mechanisms. I think we tend to focus on this because it's probably the most challenging thing to do. Retaining the gas depends on the quality of the flour and the level of dough development, so understanding that, I think, is the more challenging thing to achieve.

Gary Tucker That is a very interesting question. The answer is really dictated by who funds the work. A lot of our work on bread dough has been funded by the plant baking sector, which is why it's tended to go down the pressure vacuum mixing route but the techniques for producing other crumb structures are now available for anyone to use.

Martin Whitworth Yes. In fact, to do a little commercial advert since Gary's given me a prod there, that medical scanner is mobile. It comes to our test bakery, but it can go to commercial bakeries for trials and it has done so already.

Gary Tucker It's going out to Spain quite soon as well.

Question I just wondered if you'd looked at different oven profiles and how that affects the bubble formation in bread. Also, perhaps what effect different proving and baking temperatures may have on the final crumb structure?

Martin Whitworth All of these are things we have looked at but I am somewhat restricted on which studies I can tell you about because many are funded by the client and are confidential. Oven profiles have featured in one club project that we've been doing recently but it's confidential for the club members so I can't give you the details of that. Gary, in his former life he talked about previously, Gary is a chemical engineer with an expertise in heat processing. He used to work in one of our other departments in that field, so he has experience in temperature profiles for provers and ovens. Do you have any examples you can talk about Gary?

Gary Tucker One thing that we did find, that we can maybe say about using this technique for looking at different profiles, is that with the dynamic scanner, we're very limited to what we can achieve within the oven that goes in the scanner. It has an external heat source but that's air convection from one direction. So it's very different to the industrial situation but I'm a great believer in that the way that you set up your oven will have a significant impact on the way that your bread looks like, but trying to prove it with these systems really is quite a challenge.

We did find with that same project that when we moved our work into the ovens that we have here, the real problem we had was how do you stabilise a structure within the oven so that you could put it in the micro CT imaging system? And we haven't come up with a good solution for that yet. It's all soft and collapses as soon as we take it out of the oven, so we can't image it. We can do it before, and we can do it at the end when it have cooled but not straight from the oven.

Martin Whitworth It's not quite as bad as it looks but we can, to some extent. We create a little bit of damage in the process of freezing a very delicate dough. Yes, we do work on it but the nature of our work means that sometimes we can't give out all the details.

Gary Tucker, Session Chairman Many thanks Martin. *Applause.* Our next paper is by James Astor, who has an interesting background. After four years in the British Army he embarked on a career in food and drink - successively milking cows, brewing beer and blending ingredients, as well as becoming MD of La Fornaia bakery for 5 years. He has spent 20 years as a senior executive in SMEs,

developing strategies, building teams and raising finance to deliver business turnarounds and profitable growth, so quite a varied experience. James is now Chairman of Regan Holdings and he is going to talk to us about waste management in food production and how it relates to bakeries.

Waste Management in Food Production by James Astor, Chairman, Regen Holdings

I last gave a talk to the BSB at the 2001 spring conference at Campden BRI, so it is nice to be back. Some things don't change, since around that time the BSB conference programmes included discussions around health - things you could put in bakery products and things you could take out, to make them healthier. Organic was covered, which in those days was relatively nascent and has grown since. I remember a fascinating talk about *glycaemic index, including satiety, and the impact that that can have on children's ability to learn in classrooms in the morning and the net reduction in calories that they ate at lunch. *(*Glycaemic Index of Foods: "Challenges for the Food Industry & Human Health" by Professor Jeya Henry, Spring Conference 2006, Jim Brown)*

There was a similar theme around efficiency in bakery production and it was interesting to see that Stan Cauvain, a pillar of this podium in imparting knowledge, was talking at the autumn 2018 conference about process efficiency and energy usage, some of the themes of which I'll pick up in my speech.

It was interesting to see in Gary's paper that the situation on maintaining bread weights changed in 2008. When I was MD of La Fornaia, bread weights for a hand-crafted bakery were an issue. We were making hand-turned ciabattas and I learned as I entered the industry, that if your 300gm loaf was overweight, legally you could be prosecuted for selling an underweight 400gm loaf! We were cutting the ciabatta dough by hand, so maintaining the correct baked weight became difficult. It sounds like some of those rules have been tidied up now, but these were things that were all good fun.

Today we're going to talk about waste, but I am not going to tell you how to avoid waste. Those of you work in the production and supply of bakery products will spend a lot of time thinking about how to avoid waste, as will those of you who work in retailing. You will know more about it than I do.

I have the privilege to be Chairman of a company called Regen, **slide 1**, which owns a number of businesses related to waste management: a) a speciality company which handles hazardous waste b) a speciality company which manages liquid organic waste and c) and a third company which handles waste using an anaerobic digester. Hopefully, we'll be adding to these companies by acquisitions.

We have two principal goals 1) to help the industries that we service reduce costs by increasing the value of some of the waste that they produce; and 2) to reduce the environmental damage waste causes – we are trying to do our bit to save the planet!

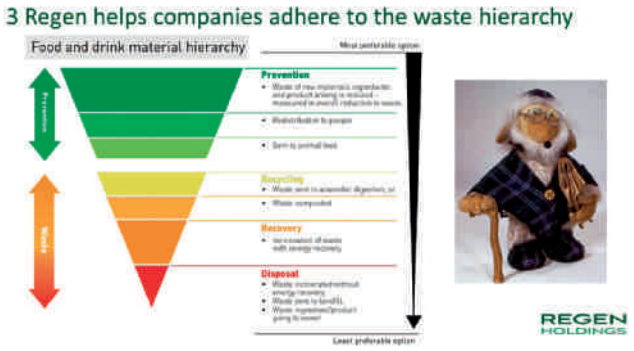
Slide 2 shows the range of customers we service, the type of waste they produce, and how we deal with it. A lot of our customers are food and drink manufacturers and for many of them we provide liquid organic waste management services.

What is liquid organic waste? It's everything. If you were washing down your factory and all the liquid then goes into a drain, not everybody is connected to a water company which treats the liquid waste. In this case, you ask a company such as Whites to come along with tankers to remove the liquid organic waste. The destination for most of it, I'm glad to report, is farmland, with a lot of organic waste being recycled to farmland. That is in fact getting more difficult and I will touch on that later.

There's another company called Axil who does much more than just collect liquid organic waste. They provide what we call a total waste management service to large business such as those shown on slide 2: Bombardier, Aesica Pharmaceuticals, etc. Bombardier for example, makes trains and has a very large production site. They have a lot of boxes coming onto site with engine components, and they generate oily rags and other waste materials when they are building trains. So, they have a number of different waste streams that have to be dealt with.

Often when we go to a new site, the customer will have many companies handling different aspects of their waste. What Regen offers to do is to coordinate all their waste management requirements, meaning they are only dealing with one supplier. We become involved with the business, very often putting our people on site to ensure the waste management operation run correctly and efficiently.

We need sites of a certain size to achieve cost savings, which arise from better management of waste on site –



segregation and processing. We don't try to compete with (for example) Biffa on skip rates – but rather we attempt to take cost out altogether. With many of our customers where we are active on site, we have achieved total cost reductions of 30% and more - by helping customers to think about their waste management differently.

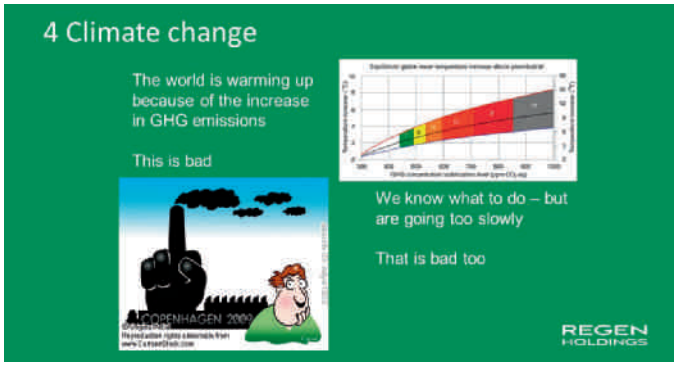
Why is this important? Many of you will be familiar with the waste hierarchy as shown on slide 3. This version is done for food & drink, which seems appropriate for this audience, but the same rules apply to all waste materials. What we're trying to do for the good of the planet and for the benefit of our P&Ls, is to prevent waste happening in the first place. When you can't stop the overstock of food products happening, you try and recycle some of the food to alternative routes. A lot of supermarkets at the end of the day discount products which are going out of shelf life in order to clear the shelves, because what they can't clear becomes waste.

What everybody's tried to avoid is taking large bins of waste and sticking it down here through disposal, which historically was landfill. The Government has over time ramped up something called the Landfill Tax - so it isn't free any more to send waste food into landfill. They tried the carrot approach originally, saying "This is good for society, do it". But business only really understands the stick - and as the cost of putting waste into landfill rose, so over time the levels of recycling rose as well – one led strictly to the other.

The Government have just announced their intention to divert all organic waste from landfill. The Scottish Government has already done it, they're trying to do it in Wales and they're now doing it in England. That puts a real burden on industry, customers, consumers and, indeed, county councils. For county councils (unitary or two tier), if you want to minimise costs, you're really got to look end to end. The cheapest way to collect is one single lorry, one big black bag. However, the cheapest way to "dispose" is to aggregate and recycle as much as possible.

So, disposal is what we're trying to avoid; and there are different ways to recover and recycle. None of this is new. We've been talking about it for a long time, but we've been slow to act on it.

Does anybody remember the fictional creature in **slide 3**? He is a womble called Great Uncle Bulgaria Coburg, since he has German ancestry. The Wombles are fictional pointy-nosed, furry creatures created by Elisabeth Beresford and originally appearing in a series of children's novels from 1968. They fictionally live in burrows on Wimbledon Common, where they aim to help the environment by collecting and recycling rubbish in creative ways. Therefore, the wombles were early recyclers!



Things have moved forward slowly waste reduction wise. Why should we care and why in particular, is landfill bad? The answer is to do with climate change, **slide 4**. I have never looked at the primary evidence for climate change but we're a scientific body here. so I suspect that most people like the scientific approach to data. There is a broad consensus amongst the majority of scientists that climate change exists and it's to do with the level of carbon in the atmosphere and that this is reaching historic high levels, and which is bad - or is it? We're getting beautiful summers. I barely had to mow my lawn in Berkshire last summer. We're getting milder winters, although we get extreme events as well. We've had snowfall for the last three years, which was unusual when I was growing up. Is it good or is it bad?

We think it's bad and we also know what to do about it. There are things that we know that we can do. However, as Professor MacGregor said earlier, we may know, but are still reluctant to act. I think that there are two main drivers for the reluctance, particularly in this country.

Publicly listed companies must report on a quarterly basis, so every three months they have to demonstrate to their investors the progress that they're making – whereas action against global warming requires investment over a much longer time frame. Governments are the same. We've managed to get through the whole morning without talking about Government and I'm not going to do so here - but Governments try to be re-elected every four to five years. Economically we're in a challenging position. It is very unselfish – and may make re-election difficult – to divert cash towards preventing global warming from pensions or healthcare. So, for all these reasons, there's less going on to address climate change than there ought to be and that should concern us all! Don't take my word for it. There may be climate change sceptics in this room, but the consensus is that we should be very concerned indeed! I went to a talk the other day where a lady stood said "we have 11 years to change our behaviour such that we can mitigate the worst effects of global warming." Warm summers, as we said, are very nice but warming temperatures melt the ice and rising sea levels are a consequence of that. Where it will hit all of us is just not with flooding, we can survive that, but with the following. 200 million people live within a couple of feet of sea level in Bangladesh. If the sea levels rise, 200 million people will have to move out of Bangladesh, and

they will migrate west into India. Migration is all over the news and some people blame it for Brexit. I'm not wise enough to know if that is correct but what we do know is Angela Merkel will likely not continue with her leadership of Germany because a million immigrants into Germany was considered a disaster and politically catastrophic. If we're talking about mass displacement of people across the world, there are going to be some serious political consequences and unrest from that. On top of that, very extreme weather events are taking place in certain parts of the world which are causing a lot of problems. So, climate change is a serious issue.

Climate change is one angle we're keen on, and the environment is another. We're facing extraordinary levels of species extinction. These aren't necessarily creatures that you'll be familiar with and some are at the bottom of the food chain but it should still be a concern. Global warming has happened before. There have been five occasions where carbon levels have reached where they are now! They are associated with significant events - asteroid strikes; methane release; and end of the dinosaurs, part of that driven by methane. So, we just need to be cautious. When I was a soldier long ago, someone sent me a very short message. It said: "Start panicking, details to follow!" Climate change should cause us all great concern.

5 The challenge of plastics

There's another challenge. We were being told earlier by Professor MacGregor about the dangers of eating too much salt, sugar and fat and the science on it is well-documented. What is not well documented is the consequence of the biggest marine animal problem we have ever encountered, which is the ingestion by them of thrown-away plastics, **slide 5**. The first picture in the slide is a bin liner being removed from a whale's stomach. To a whale with poor sight, that is indistinguishable from a giant squid. That whale had over 40kg of plastic taken out of its stomach when it was beached. A huge issue.

Now on the right, more pernicious in some ways and more contemporary, are small fishes carrying microbeads. I'd never heard of a microbead five years ago. Microbeads are tiny plastic particles that are added to personal care products. They are commonly used to scrub the skin or clean your teeth. Microbeads is a marketing term introduced by the cosmetic industry. Their use is now banned in the UK, but rivers and seas are already contaminated with them. The water companies don't take them out in the water treatment because they are too small for that and they get into the rivers. Most of our rivers now contain significant levels of micro-plastic and they get washed into the sea. You don't directly eat them, but fish and other marine creatures do, and they enter food chain that way. When you're having some fish and chips, you are probably ingesting micro beads!

There is a lot of plastic in compost and that can get into land where it can be absorbed by the soil mass. Therefore, there are suggestions that micro plastics could come up through the food chain on land as well. The risk is not well-known understood, but the emerging science suggests that injecting plastics could lead to a range of illnesses such as like cancer and others, because these plastic particles attract and carry harmful bacteria.

I know that reprocessing waste is good for industry and good for the environment. I'm passionate about it and we need to start sorting it out. Part of it is behaviour, some of it is industry and a lot of innovation is also required. Plastics take a long time to break down. Therefore plastics are an unwanted legacy we will leave for our children - and their children. Another is spent nuclear fuel, which takes millennia to break down.

6 The challenge of waste crime

REGEN HOLDINGS

If you're in the waste business, you are quite rightly heavily regulated, and our regulators are the Environment Agency mainly. They are continually, in a way that all of us in this room would support, attempting to raise the environmental bar. Nobody's going to argue against that since we are all residents of the country and we'd like it to be better. Unfortunately, increased regulation typically means higher costs. This at a time when industries around the country are under financial pressures, which means that the incentive for waste crime is rising. So that's a real challenge. I hope none of you have ever seen this sort of stuff on the left in **slide 6,** but waste crime often manifests itself as fly tipping and if people offer you a price to remove waste that seems too good to be true, it normally is! Be very careful because ultimately the cost of waste crime may come back to you.

The example of the fraud on the right of **slide 6** is clever. Farming is under pressure at present with lots of farmers wishing they had a bit more cash. Three men may turn up to a farm dressed in suits looking very smart and say to the farmer "Do you have any spare land for storage that we could use? We have some bales that we need to store for two months and we'll pay you £10,000 for using the land." £10,000 additional income, a useful diversification for the farmer, so bring it on. In come the bales, he gets £10,000 in cash, it's real cash. What he doesn't realise is he'll never see the people again and he's been left with a clean-up bill of probably £250,000!

This is going on around the countryside. It's a particular issue on the south coast but not just there. These are

criminal gangs and there was something in the Sunday papers, you may have seen it, a lot of the guys who were involved in this as criminals have other links into drugs and prostitution, gambling. They're like the people who call you on the phone and try and mis-sell you stuff, they can be very convincing. This is a major issue that's giving the Environment Agency a real headache. So - beware unscrupulous waste companies.

Slide 7 shows the type of dry recyclable dry waste you may have, and you will be familiar with most of it. Whether you are a retailer, a supplier or a manufacturer, you are going to have a range of waste material. My advice to you is that the more you segregate at source, ultimately the lower the disposal costs will be. On the right-hand side, if you have separate piles of clean paper, clean cardboard, clean tin, whatever, some of those will have a value. The market goes up and down, it's a commodity price so it varies. If you mix everything together, the price is driven down to the value of the lowest priced component. The mixed components might be disposed, in which case you're paying Landfill Tax and the rest. Landfill Tax and the costs of sending it to incinerators are similar. So, if you can strip out the stuff that doesn't need to be burnt, you are probably creating value for your business.

If you stick all of those things together, so that's dry recyclables, so the common things that don't have food or anything that will contaminate, there are brilliant factories and if you're a nerd like me, you go online and have a look at the MRCs, material recycling facilities, where the smartest technologies are used to take those which might be mixed and to separate them into the separate streams. I was talking last night to somebody about one that I visited in Bow where, having separated stones (heavy), and paper (light), they were left with a stream of coloured plastics. These were put on a conveyor belt traveling at extraordinary speed and were lasered. The laser interpreted the colour of the plastic – and when the plastic was launched into space, and an airblade lifted the different colours of plastic onto different conveyors. The result was steams of different plastics sorted by colour – really, really smart.

Fake News If the Daily Mail tells you that all your segregation is wasted effort since it's all going to be mixed together and buried in the ground, please don't believe them. They might be right in one or two incidences, but recycling is good, and it does help the environment. If you get fed up doing it, think forward to the next generations, they will thank you for it.

Within this industry, there are lots of people who are being very innovative. I took this Hovis feature, slide 8, from the website www.letsrecycle.com/, one of whose members is in the audience today. This is something that Hovis is doing in respect of plastic packaging. These are important initiatives.

8 Innovation

Hovis and TerraCycle launch a bread bag recycling scheme

Bread producer Hovis has launched a recycling initiative for its LDPE bread bags in partnership with the specialist recycler TerraCycle. According to Hovis, all its bread bags are recyclable through plastic bag collection points at major retailers' stores. Recently, Hovis has started rolling out clearer recycling labels on packs to encourage more people to dispose of their bread bags through these channels.

Research commissioned by the bread producer suggests that a third of people continue to find recycling challenging as they are unsure of what they can recycle. Hovis said figures from Recoup also highlight the fact that one-in-ten local authorities currently accept film plastic such as bread bags for recycling. Post-consumer film-plastic is seen as challenging to recycle, as it can be difficult to separate from higher value rigid plastics, and due to contamination levels.

The partnership with TerraCycle aims to address this and make it easier for people to recycle used bread bags from home within their community.

None of these initiatives on their own are going to save the planet but collectively, it's a drive towards a more responsible sort of living. I remember that my mother didn't throw tinfoil away. She would wash it because if you folded it after it dried, you could reuse it. I've seen one or two smiles in the audience, so you might remember something similar. You might also remember washing out plastic bags. Now that was a cultural thing. It was a post-war generation who just didn't like throwing things away. They had been taught to scrimp and save and would reuse thing automatically in a way of which Uncle Bulgaria would have been very proud. But that's not society today. The young 'uns' are being taught about recycling and about things green and environmental. Things like this are very helpful but it's behavioural change, as well as legislative changes, which are required.

Hopefully you won't be throwing away much of this, **slide 9**. If you are, there's a number of things you can do with it. There was a time when a lot of this would have been fed to animals, but the outbreak of mad cows' disease resulted in a tightening up of legislation. Belatedly, society

realised that feeding ham sandwiches to pigs probably wasn't the smartest way to generate a healthy food chain. Anaerobic digestion is one way to deal with food waste. You won't see the detail in the top central picture on **slide 9,** but this is food waste from Oxfordshire, particularly high quality waste full of fillet steak and good stuff, but also lots of plastics, so biodegradable bags, all sorts of things in there, knives, forks, spoons, occasionally plates.

So when you take possession of this stuff, the first challenge is to clean it to produce a high quality soup which you can then put into the digesters – where the bugs eat it in a way that any bread baker would understand better than I do. They chomp away at the soup and they release methane. The methane's captured at the top, put through either an engine on the right hand-side to generate renewable energy; or more frequently, injected directly into the gas pipeline. 80% of what goes in comes out as a liquor which is rich in nitrogen phosphate and potassium. That is recycled to land and as a fertiliser where farmers are grateful to have it.

There are other routes for organic recycling. We talked about composting. If you segregate it, and to a bakery this may be relevant, you can, of course, also send that to pig food. They can take that but not if it's got meat in it.

You may also have some hazardous waste (such as oily rags, chemicals). That too, slide 10, is highly regulated. It needs to go through properly authorised and regulated disposal outlets in order to reach a happy home.

So, what are we trying to do? Source segregation, **slide 11**, is your route to lower cost waste management. We don't want to go to landfill. We would like to avoid incinerators if we can. (The second picture **slide 11**, is the Grundon incinerator at Heathrow. It's a fantastic plant, and works very efficiently, but it will have to be moved if Heathrow expansion takes place).

We have an issue with our top-soil in agriculture, so recycling food waste to the land is "good". Anybody recognise the bread in slide 11? That's Gail's bread, but that could just as easily have been used to make beer and I'm looking forward to hearing about brewing beer and lager from waste bread in Chris Head's presentation this afternoon.

I've tried not to lecture on how to reduce waste and I am certainly not going to tell you who you should work with. But slide 12 gives you some questions you should be asking of your waste provider, whatever size of business you are. By doing waste management correctly you will make some money and you'll help to save the planet. What's not to like about that?

Gary Tucker, Session Chairman Thanks very much James. I will take the chance to ask the first question. You talked very generally about waste management. Is there anything you can give us that's perhaps specific to bakery and this audience?

James Astor I didn't really develop that theme but I think most of the waste coming out of bakery, at least when I was there, is biodegradable waste.

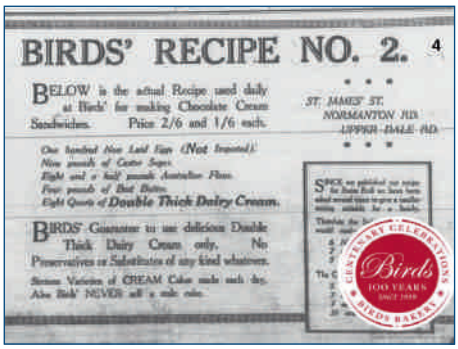
I think that anaerobic digestion (AD) is a fantastic way to deal with bakery waste. Waste goes in and you get renewable energy and fertiliser coming out. Much of Oxfordshire is now fuelled by renewable energy from AD; and local farmers get a cheap organic fertiliser. So good for the environment and much cheaper than landfill.

Gary Tucker That's very good. Many thanks for an excellent paper James. *Applause*

Gary Tucker, Session Chairman Mike has been responsible for all aspects of Birds' retail estate for 25 years. The company has grown to encompass 62 shops, with a turnover of £22 million per annum in its Centenary Year. Mike's talk will tackle current challenges, including Brexit.

What Makes a Successful Centenary Year Bakery? by Mike Holling, Sales and Marketing Director, Birds Bakery, Derby.

Good morning everybody, it is a pleasure to be back with the British Society of Baking to talk about Birds in our centenary year. I last spoke at your 2005 conference with a paper entitled "The Survival of the Craft Baker on The High Street" and it is something all craft bakeries still have to



address. I am going to cover the following in my talk this morning:

Introduction

- Craft bakery career spans over 40 years
- 27 years with Birds
- Represented the industry on many occasions via the trade Associations
- Company History – Overview
- Brand Redevelopment – Key Areas
- Centenary Activities – Product of Yesteryear, Seasonal Campaigns
- Marketing Improvements & NPD in Key growth Areas

I started in the baking industry in 1987 with a company called Skeltons Bakery in Hull. This was a large family owned retail bakery similar to Birds, which make superb products and had excellent shop layouts. Sadly, although Skeltons celebrated their 70th anniversary in 2001, they went out of business in 2007. I moved from Skeltons to Birds in 1992 and we had 32 shops when I started.

I've also been involved with the National Association of Master Bakers (NAMB), now the Craft Bakers Association (CBA) since 1993. I started at our local Nottingham Association and over the years I took on various positions, including Chairman and I was very privileged to be CBA President in 2013 - 2014. I then became the Chief Executive on a part time basis.

Rebranding of the NAMB One of the reasons for rebranding the NAMB was indirectly the pasty tax, when the Government decided they were going to put VAT on freshly baked savoury products, having already imposed VAT on reheated savoury products. I was part of a group of leaders from the baking industry that were invited down to the Houses of Parliament to discuss it. We went to a meeting with civil servants in Portcullis House and they introduced us to a couple of MPs as 'master bakers'. This title can be pronounced as a less complimentary name, which is what the MPs proceeded to call us, as a joke of course, but it is difficult to be taken seriously in this type of situation. You would also be amazed at the kind of hits we got on our website, masterbakers.co.uk, on the same theme. Some were sent in the middle of the night from people who really did think we represented the other way of pronouncing 'master bakers', replacing the k for a t in bakers! So, to be taken seriously by government and other organisations, we needed to rebrand to a new title and in 2013/14 we became the Craft Bakers Association. I continued running the Association as Chief Executive for a few more years after that.

I was very fortunate to have a very good CBA Board of Directors during this time and we really took the CBA forward. We produced a new image, we fostered better links with other trade organisations, including Scottish Bakers of course. Their Chief Executive Alasdair Smith has been down to see us and it was a pleasure to show him round. I would also like to mention the BSB's Conference Coordinator, Jim Brown, who was instrumental in updating and rewriting the Master Bakers Book of Breadmaking, first published in 1982, into the Craft Bakers Association Book of Breadmaking, published in 2015. We are very thankful to him for doing a fantastic job, that made the book 'fit for purpose'.

History of Birds Bakery Let me tell you a little bit about Birds and where we are at this moment. In 1919 this is where the business started**, slide 1**, 234 Upper Dale Road in Derby and the bakery is bang in the middle of the slide. To the right was the Cavendish Hotel, which is no longer there. To the left is the first Co-op in Derby. To the left of the tram is the side of the building which housed the ovens and on a very cold morning you'd see people waiting for the trams and buses getting warm from the heat from the ovens coming through the walls. That was our start of the business 100 years ago,

Birds Bakery business was started by three brothers, Frank, Thomas and Reginald when they returned from the First World War. It was good fortune in itself to get three brothers back from the First World War alive. With their war payment they bought 234 Upper Dale Road and that's when Birds the Confectioners was founded. Now as the business moved through the 2nd World War years, it was quite interesting. This is one of our stores, **slide 2**, during 1939 when we were rationing and had a problem with ingredients. Brexit is with us and we're probably going to be in the same situation fairly soon – hopefully not. This was our shop in the centre of Derby and again the customer, even in 1939, was absolutely loyal to the business.

This is an interesting one, **slide 3**, – this is one of our first vans. The brothers were a little bit dubious about it because, as you can see, it's left hand drive – they didn't realise that was happening until somebody pointed it out to them. Again, it's part of our history and heritage. Just out of interest, we also have one of our recipes, slide 4. Unfortunately, we can't find recipe no. 1, this is recipe no. 2 and it's a shame because in the business in the early days, we didn't really keep a lot of memorabilia and a lot of history. I think what it shows is we're always talking about the key to Birds is freshness and quality. We have a great team, of course, who made us but anything it says, it's saying about fresh laid eggs. This is what the Birds empire is all about – freshness and quality. Just to give you a bit of information on where we are at present.as regards stats on the business. Today we have 63 shops, our 63rd having opened last Thursday! We have 700 team members within the business, and we serve 120,000 customers a week. We're still very much a baker and confectioner and each week we will sell 35,000 loaves, so 1.8 billion a year, it's still an important part of our business. Our bread rolls, again we sell roughly around £70,000 worth a week and that's 3.6 million. Confectionary-wise, again 72,000 units and quite interesting, I had my chief egg custard tart taster here this morning, who is Paul Weston. We sell roughly around about 12,500 custard tarts a week. If we get a complaint, it's down to me if its right or wrong, and that's great. One interesting fact is that Birds as confectioners, didn't start to sell bread until around 1962. So, being pastry cooks was very much our era and part of the business. What has always been remarkable is our cream cake sales. Cream cakes have always been an important part of our business and represent, believe it or not, 14% of our weekly sales. We make roughly 80,000 cream cakes a week, that's 4.1 million a year. Our bestseller is our caramel doughnuts, which is our iconic product at 15,000 units, and our cream slice at 9,500. One of the key things about this is that we do not start creaming any cake until 1am. We don't hold anything back, so we have a very tight window to deliver. That is interesting because when we speak to a lot of craft bakers within the UK, a lot of them have decided to come away from cream cakes and things like that but freshly made for us is absolutely paramount.

Regional Based So just to give you an idea of what we've looked at over the company's years, we're very much established in the community within Derby. We are regional based, and we have no plans to go further but we have plans to move into different locations.

Need for a Brand Renewal We were concerned our existing brand had begun to look quite tired. It was a beige colour, yellow and I tried to get hold of some of our old packaging before I came down yesterday, but it is all gone. I am in fact, quite pleased to say that it's fully out of the system. With regard to brand changes, we were always classed as a confectioner and we needed to get this changed because we are much more than that. Going back ten years, we didn't have a defined marketing strategy and we had to kind of combine both the traditional way we communicate and also very importantly, new ways the internet with social media. We used hardly any social media and had very poor communication in this area. Even on our vans, we had no coherence as to what the message on the vans was going to be.

Therefore, four years ago we rebranded the business and we now have everything based on Birds Bakery. We rebranded all our shops over 18 months, starting in 2017, to make sure we've got it right for our centenary. So even with our centenary boxes and packaging, as you can see, that's everything out there, our paper bags, everything that has got Birds on is now centenary but more importantly, the burgundy and the white.

Bird's brand development We didn't want to reinvent everything, but we needed to take a look at it and look at the history, as we were coming to the 100 years. The aim of that was to make sure our existing customers were still happy with what we were doing but more importantly, attract the new customer on the high street and, as some of you will know if you're in retail, the high street is very, very difficult at the moment but we persevered with it, we persevered staying in retail and we've never diversified into the wholesale market, and I don't think I'll ever see that in my time.

We used definitive words in the logo, it's Birds, it's Birds Bakery and what we wanted to do is try and just get the rollout of the Birds name and start to get it to the customers and get it on the packaging, so people started engaging with us through the web page and social media. It's adopting this simple square Birds Bakery logo on the packaging to see how we could develop the brand further. So fantastic, we're 100 years old, a great achievement and it's a pleasure.

One interesting thing – we spoke to our customers earlier last year and there was a request went out saying the products of yesteryear, so will you bring these products back on? And we thought this would be an interesting way of generating business and sales.

We started this and our first product was the dear old orange Danish, a product we took off nearly ten years ago, **slide 5**. We brought it back on for the month of January and every week we sold 2,500. Prior to that we used to sell about 1,000, so we thought okay, we're onto a winner here, let's carry on! We then went on to look at a product which used to be called the mushroom pasty but then we called it mushroom vol au vent, **slide 6**, and it's a

product which was very unique to us, made fresh daily and again we sold during the period of time around 4,000 It has stayed on and is selling well. This is now into March and this is our shortcrust pasty **slide 7**, and again the customers enjoyed it. We took it off after the four weeks and if we want to bring it back, we can judge that.

This is April and our coconut tart **slide 8**. The coconut tart went off in 1998 so we thought we'd buried it forever. It was a popular request from our customers in the poll. The Derby Telegraph has helped us as well. This is on the first week and already we'd sold 2,500 so it's great. It's nice and interesting to bring something into the business.

We also have got what we call our centenary activities and we've done quite a bit on our seasonal campaigns and we've invested a lot in the business as regards the marketing side, the image, the photographs. This, **slide 9**, would be for a Christmas, a pork pie.

This is an interesting one – Santa, plus a carrot for Rudolf, **slide 10**. We sold 3000 in two weeks, so innovation yet again coming through. Then our traditional mince pie **slide 11**. We're trying to give it a much more professional look as regards the marketing of the product.

Seasonal platters **slide 12**, went online and were successful. We then go into Valentine, **slides 13 – 14,** and we overhauled all our Valentine products for this year. Generally, Valentine is an important sales window for us, and we sell round about £15-18,000 during that window. This year with our new products we brought in £34,000 from the Valentine cakes. These are the kind of products which we brought through and we put these onto the social media side, it goes onto the web page and also we've got LED screens in the shops which can show them, instead of having posters as such. We can change the content screens and make it different. Valentine frogs, **slide 15,** are a very successful line. Our gingerbread men, **slide 16,** are also very popular. We then come onto Mother's Day **slide 17,** and the imagery and the stock of the photographs is all professionally done and taken for us and, of course, as we come to Easter, **slide 18** traditional hot cross buns, **slide 19.**

One other area within the business as regards advertising and trying to get more coverage, is our fleet of 23 vehicles which go out on a daily basis through the East Midlands. We felt that we needed to see what advertising we could do on them. They are literally billboards and they're out there a lot of the time. The fleet were kind of a beige, dark brown chocolate colour and we needed to do something different. We used images from our photo stock and most importantly, the key message is 'Fresh from Birds,' and building on this brand partnership of freshness and quality of products. .We started off with a couple of vans and we liked it so much, we changed all our vans, slides 20 – 22. The vans now have our products on them. Even on social media they will refer to the cream doughnut van and customers will text in and say I saw that van today! Slides

20 and 21 have our wheatsheaf field van with 'Fresh from Birds' all the way through. We have our centenary year van as well slide 22, and it shows the products of yesteryear and the two charities we're supporting.

We are 100 years old and still growing and that will always be the case. We've now got a really good library of photographs which we can bring out at any time. This allows us to put them into the web pages, into the POS and onto the social media, as you've already seen, with the delivery fleet and it is advertising and promotion all the way through.

Our website was poor, and we had it totally revamped. It now has store locations, opening times, and a great deal of product information. With regard to allergen information, we have every product listed and any new product has to have its own allergen information displayed before it goes out to shops. Customers and shop staff use the allergen information.

We can advertise job vacancies on our website; we've got question and answers; our charity update; and it gives us extra sales as well because we now sell platters online, gift vouchers and other things to do with the centenary, such as aprons and things like that.

Sales Growth We also wanted to look at growth areas within the business, including the food-to-go market. We had this as a project starting in 2018 and we literally rebuilt our brand. We reviewed the product offering required and it wasn't just filled rolls, it wasn't just sandwiches, it had to be more than that. We now have a very good breakfast offering. We have two coffee partners now, one is a local Nottinghamshire based company who are artisan coffee roasters, a company called 200 degrees and they're moving into the market in a big way and more importantly, we offer healthy options and we had to make sure this happened with all the publicity about obesity and healthy eating. We have our under 400 calorie product range, and that is increasing all the time.

Soft drinks selection. Prior to the sugar levy coming in, we looked at our range of drinks and took off a lot of the high sugar ones and brought in low sugar varieties to replace them all the way through.

Slide 23 just shows you the amount of product thinking we're doing at the moment. Our spicy Cajun chicken rolls in the chia bread which we developed and that has been rolled out to all the 400 products Then we have Bird's coffee, **slide 24,** and Multiseed bread, **slide 25**, building on that brand all the way through.

Bird's Charity For the last five years, we've had a Bird's Bakery charity of the year and this year it resulted in something special for us. One of the previous charities we worked with was Guide Dogs for the Blind. We sponsored two guide dogs to be trained to the standard required and brought through the system ready to be given to a blind

person. We found out just before Christmas that David Plunket's old guide dog had passed away and that one of our dogs, which is called Barley, is his new guide dog. We had a lovely letter from David about it, thanking us for sponsoring his new guide dog. So, it was nice to see first had one example of the good our charitable efforts can bring.

This year out charity is called Well Child and it's great to have the charity, but we also try and make sure we engage with the charity. We had our Well Child event on Mothers' Day. Customers could come into our shops with their children between 1pm and 3pm and decorate their own hand for a donation to the charity, **slide 26**. During the course of the 2 hours nearly 600 hands were decorated and that was a great achievement and raised money for the charity.

We're also selling at the moment gingerbread hands, **slide 27**. You can see that the logo is a big handprint with a small handprint within it. which our development team have devised as something different. We make donation to the charity for every gingerbread hand sold.

One other charity that we decided to work with this year was SSAFA, the Armed Forces charity, **slide 28,** and the reason we chose SSAFA was its link to the three Bird brothers who came back from the First World 100 years ago to start the business and open the first bakery. We felt that this was the year to do it. We work with SSAFA on various projects to raise funds. Our target this year for each charity is to raise £50,000 and I think with the team we've got, I have absolutely no doubt we can do it.

You might ask, what makes Birds continue to be successful after 100 years in business? There isn't just one thing, it's a team effort and certain criteria that comes together to make it happen. We're very lucky to have 700-plus employees who work in this business and they are all fully committed to it. We have a lot of families within the bakery and their generations have worked through, so we have a wealth of knowledge and experience. The key part for us has always been to give the customer good product quality, service and freshness and service. and that is important. We have 63 stores and we endeavour to deliver our products to the same standard of quality and freshness to every morning six days a week. We don't trade seven days but that may come sooner or later, and the same quality and freshness criteria will apply.

That was a video of our latest shop-opening. You can see from the video that it's very busy and for the future, Birds will continue to be on the high street. There's no question about that but the high street is changing. It is a challenging area to be in so we're now our changing our view slightly and we're moving to what's called smart locations and come September this year, on an industrial estate in Loughborough. We are having built at the moment a new build and this will be just literally food-to-go operations. It'll still be Birds, there's no doubt about it, the quality and the freshness will be there, but it is the market we're looking at.

We've survived 100 years and I think we should be pleased by that. We are very fortunate in that we have great support from our customers. We don't have a magic wand, or all the answers but we try our best and that is the most important thing for me. I've been in this industry for so many years and I think it is unique. If a bakery business gets into trouble or has a problem, it's remarkable how many people from other bakery businesses are willing to help. That is not common in other industries and we should be proud of it.

For us, we may just be a retail bakery business, but we like to think that we're a nice retail bakery business with a great heritage and that we will continue to prosper.

Gary Tucker, Session Chairman Thanks ever so much, Mike. That really was fascinating and a perfect presentation to have just before lunch, even though our lunch will not include any of your fabulous products! Do we have any questions?

Question Thanks for sharing with us why Birds are so successful. Could you say something about staff skills, training and apprenticeships, which must contribute to your success?

Mike Holling I will answer your question in two ways. We have some great craft-skilled people working in the business but when they become older and retire, we

want their skill and knowledge to pass on to younger employees, because we need to maintain the quality of our products. We announced last week on our web page and also on our social media side, that we're taking on two more apprentices so that works well.

It is very hard at the moment to find the training for these people. We're working with National Bakery Training, a branch of Scottish Bakers, and they've helped us out tremendously over the years with our retail NVQs as such and we're now developing our manufacturing side with them as well. So that's one thing and I think it's the best thing. But it's important that we also try, and as the older craftsmen retire, we make sure that their knowledge is passed down too, so the skills will continue.

Question Congratulations indeed. I've seen so many retail businesses go by the wayside, but I've watched you go from 32 shops to 63, that's really good. You are obviously having to invest as you expand. What effect is Brexit having on investment?

Mike Holling That's an interesting one. Two aspects for us. On our ingredients side at the moment, 50% are UK sourced and 25% of that are locally sourced. We take in roughly 108 sides of pork on a weekly basis, with a local butcher suppling us. But 40% of our ingredients are sourced from the EU and going back last October, we set out within the bakery to monitor what's happening, for Brexit purposes, speaking to our suppliers all the time, and we did buy ahead for March. We did an interview with Sky news in mid-March, saying that we've bought ahead, we've invested in ingredients just in case there is disruption, and, of course, nothing happened.

It's uncertainty, that's the problem. The shopfitters for our new shop in Chellaston import from Italy and the counters left Italy in a container which was delayed, and the blame was put on Brexit, because everybody is trying to get deliveries through at the moment. Okay, delays can happen but that has made us think twice.

It hasn't stopped us investing in the business. Last year we put £2.2 million into our retail estate - we opened three new stores and refurbed four new shops in two new locations. We have invested in the bakery as well. The business will continue, as it always will. If we ran our business like the politicians run the country, maybe we wouldn't be here!

Question Just thinking about competition really and I guess 15/20 years ago you'd have seen the in-store bakeries and the retailers as massive competition and being a huge threat to retail bakery. Do you now see something like Greggs as your main threat as you're moving into food-to-go?

Mike Holling No, not at all. We feel Greggs is a different business model, a very successful business model, you can see what they're doing. They trade near us and they've closed shops near us as well. I think what's changing for them and maybe we're catching up a little bit, is they do not want to be on the high street any more. They want to go to the smart locations with the pods that they're developing and things like that. It's very clever and working well and for us, we need to be there as well.

What I find disappointing is the other craft bakers like us who have ceased trading. We've lost of lot of what we would call partners, friends and colleagues in the industry through this happening. But for us, we will continue to invest in the business. and if that means competing with Greggs, so be it.

Question Mike, that was an excellent presentation. If you fast forward, say, ten years, what do you think the high street's going to look like?

Mike Holling That's a difficult one. I think the biggest problem with the high street is the shopping centres because the shopping centres, and we were involved in both Derby and Nottingham, and I'm quite alarmed to see what has happened. The valuation of retailers' properties is going all the time. Now, high street is evolving all the time. High street, we have to make it positive for people to come back and vibrant is the word.

Where we are situated in the East Midlands, you can tell the councils who got it right, who promote it actively and then you can tell the councils who are very negative and they'll say you put your parking up and things like that. Yes, I agree, parking is not a good thing. I think parking can have some issues but it's not all about the high street. The high street's got to be vibrant, got to be safe, you've got to feel comfortable in it and it's got to offer what the customer wants. When stores which are 5,000sq feet to 10,000sq feet, go out of business they create a massive hole in the high street or the shopping centre. What's going to happen with Debenhams for example? In ten years from now we'll still be there, I know that for a fact. I hope you'll be with us as well, but we'll wait and see.

Gary Tucker Thanks for superb presentations Mike. *Applause*

David Hall, Session Chairman Toast Ale produces an award-winning craft beer brewed from unsold bread that would otherwise be wasted. All profits go to charity, says Chris Head, who has the envious job of managing brewery collaborations. He laments the fact that in the UK, bread is top of the list of our most wasted household food items, with 900,000 tonnes of bread wasted every day. Chris poses the question, "how can we do things better?"

Beer from Waste Bread by Chris Head, Global Partnerships Manager, Toast Ale.

This is my first time presenting at a formal conference, so I am a little nervous. I used to be a teacher in secondary school, so I've talked a great deal to students, and I quite often give talks at breweries to slightly intoxicated adults.

I am going to talk you through how Toast Ale began and how we are now.

We brew all our beers using one third surplus bread and two thirds grain. I'm going to talk about our sustainable mission, our impact, and how we brew beer with bread. I will speak about our collaborations - how we work with smaller breweries, local bakeries and charities on a local level to brew amazing beers. I am hoping that a good handful of people listening to me now will contact me saying that they'd be interested in having a beer brewed with their bread. So that's my mission for the end of today, so that will be when I'm talking about you guys getting involved. I do believe in a bit of audience participation but no one's going to have to come up on the stage. or anything. From my days as a teacher I found that engaging with audiences is something that I really enjoyed. However, if I go to teacher mode, use my teacher voice, or threaten to phone your parents, I apologise in advance.

So why a beer made with bread? 44% of the bread baked in the UK is thrown away. It might go to anaerobic digestion or landfill, or to animal feed, as James was telling us earlier in his Waste Management paper, but it won't be used or eaten as bread. What we really want to do is utilise surplus bread, particularly the stuff that's going to go to landfill and rot, because as bakers you take pride in what you're creating, the idea of that rotting in the ground surely doesn't sit well?

We take that waste bread and make something equally delicious out of it. The stat for the USA is around a third. That's part of a bigger global problem, that one third of the food produced on this planet is wasted, which seems fairly when there are so many people living in poverty who haven't got enough to eat on a daily basis.

That statistic particularly resounds with our founder Tristram Stuart, who is an internationally renowned food

waste activist and published author on the subject. In 2015 Tristram was in Brussels and they have some very good beers in Belgium are normally quite strong. He was in a pub enjoying an 8% beer called Babylon. He was told that it was brewed from bread, and he had a lightbulb moment. He thought, "we waste 950,000 tons of bread in the UK and we drink millions of pints of beer, surely we can put the two together and create something awesome in terms of saving waste bread!"

That was just over three years ago, and he founded our company as a social enterprise. We were the first B Corp brewery in the UK. There are two of us now, Toast Ale and Stroud Brewery, and 20 worldwide.

He based the company on four principles:

1) Great beer
2) Surplus Bread
3) Awareness
4) Charity

All beer is beer - lager is beer, fruit beer is beer, cask beer is beer, it's all beer and you have basically three types of beer:

Lager, which is made with bottom fermenting yeast **ale** which is made with top fermenting yeast as a general rule.

The yeast is what makes the difference. Ales are not just old man pubs on a pull pump, they can also be fizzy, they can be carbonated. The difference there is you basically have cask beer where you have to pull it and you have keg beer where it comes carbonated from a tap. Tristram Stuart's first priority therefore was to brew great beer, since nobody will buy the beer if it doesn't taste good.

Number two was this must be brewed using **surplus bread.** He didn't want to just buy bread from a bakery and brew beer with it. As a food waste crusader, it had

to be surplus bread and lots of it comes from sandwich makers. If you think about the sandwiches that you buy in Marks and Spencer's or in Waitrose, they come in a nice plastic packet and generally people don't want the crust. Some people do want the crust but the likelihood of those people being the exact people that pick up the packet that has the crust in it is fairly limited. So, a lot of crusts go into our beers.

The third principle was **awareness**. Beer is a pretty cool thing to talk about since it's a brand. Food waste is not quite so trendy, so he thought if we can use beer to really bring the message about food waste and create awareness with a really cool brand, that's what we should do. We were luckily enough to launch with Jamie Oliver back in 2016 and since then, because what we do is quite unique, we've been really lucky to be covered by BBC1.

You can see all the names at the bottom of slide 6. We have had some really good international press which has helped us launch internationally. Toast Ale beer is brewed now in six countries and hopefully in ten years, we'll be brewed in many more countries.

The fourth founding principle was charity. So all of our profits go to the food waste charity, Feedback, and a percentage of all of our sales from all of our special edition collaboration beers go to various local charities and abroad. The profits from those beers that we make abroad go to local charities in those countries, and there generally food and environmental charities.

I am not an expert on our environmental impact or on how these figures are calculated so please don't ask me. The big news is we just brewed our millionth slice of bread, which you guys will know is not a huge amount of bread in the grand scheme of things but for us it was a pretty big milestone. Our next target is to brew one billion slices, globally. In the next 5 – 10 years, our plan is to brew a thousand times what we've done in the last three years! We want loads of different breweries to do this as well. As one medium size brewer working in England, with some subsidiaries around the world also that are quite small, we're not going to have a huge impact on what is a huge problem of global food waste and bread waste. We're building a movement to achieve it. The recipes for our beers are available online for everyone to use, both home brewers and commercial brewers. They've been downloaded almost 50,000 times, because we want everyone else to brew beer using bread. So far, we have donated £25,000 to charities. Mike, was talking earlier about the great things Birds Bakery does in supporting charities, and that's amazing. At the moment we're a small company, so £25,000 doesn't sound a lot but in start-up mode we weren't making a lot of profit. We were donating to charity even though we weren't making profits but we're hoping to see that donation increase substantially in the next few years.

Brewing with bread is really quite straightforward. The most important ingredients in brewing amazing beer

are hops; malt; barley and general grains; yeast; water and bread. There are now five ingredients that go into every great beer in my opinion and we're calling it the fifth element, which that's bread. Our beers are brewed in Yorkshire in a very sustainable brewery called Wold Top Brewery, and some of you may have heard of it.

Our bread suppliers donate the bread free of charge. We work with Adelie Foods, the Eat chain of cafes, and Bradgate, who are a big supplier to Tesco. In fact, our CEO is, I believe, at Tesco's today talking to Bradgate about supplying us with more bread.

So that all goes up to Wold Top. They then put it in a machine like a big industrial wood-chipper that breaks the bread down into smaller manageable chunks. It then that all goes into the mash tun with hot water, grains, barley malt, wheat and oats sometimes, and it is all stirred in and the mash then sits there at 68 deg. C for about an hour and what happens during this time, and I don't know all the science, is that the malt enzyme starts to break down the starch in the bread and in the barley and releases sugars which can be used by the yeast during the fermentation stage. What you get after that hour is basically a sugary liquid which you transfer into a metal vessel called a copper. You add hops and boil it, which releases more sugars. You then transfer the liquid into a fermentation vessel, when you add (pitch) the yeast. At that point the sugary liquid becomes a wort. Enzymes in the yeast start the biological reactions which converts sugars in the wort into carbon dioxide and alcohol. Once it starts fermenting the wort technically becomes a beer! Remember, beer is the all-encompassing term for beer, lager, ale, etc. After about two weeks or more in the fermentation vessel, perhaps five weeks if you're brewing lager, the beer is ready for putting in bottles or kegs for sale to supermarkets, independent retailers, pubs and restaurants across the UK and you get a nice cold bottle or pint of beer. So that is a very basic explanation of how brewing beer works.

With regard to bread, you add it in with the grain. You just have to make sure you break it down to small enough pieces to allow it to be hydrated and the sugars extracted from the starch it contains. If you put in a put in a whole loaf, you're not going to get much extraction. If the bread pieces are too small, they tend to clog up the mash and the filtration system. So, getting the size of the bread pieces right is important.

Toast collaborations. Collaborations are quite a big thing in the craft beer industry. I don't know if there's an equivalent in the baking industry but if you're used to drinking real ale, you probably know that a lot of the breweries do a monthly special or a seasonal beer. What we do is quite a lot of special edition one-off beers. It's a real trend in the craft beer industry. We get a local brewer and a local baker, or bakers, to cooperate on producing their own craft beer with the bakers bread and donate the proceeds to a local charity.

On the 29th January this year, **slide** 10, we teamed up with Windsor and Eton Brewery and the bread was supplied by Celtic Bakers in North London and by the Waitrose in Windsor and Eton. A percentage of the sales from that beer are going to help the Plastic Free Windsor organisation.

We put together a local brewery, a local bread source and a local charity. We coordinate it, we tell them how to brew with bread and what you get is a load of people having a lot of fun on brew day, literally breaking bread together. If you're putting 150 kilos of bread into a 3,000 litre brew, it's going to take an long time to break up the bread. We all get together, people from the brewery, from the charity, local press and we break the bread together and put it in the mash tun. It's a real collaborative process with everyone getting hands-on.

Have any of you tasted this beer, Toast and Marmalade, slide 11, it is fantastic? Toast and Marmalade was launched at Craft Beer Rising, the UK's biggest craft beer festival, in February this year. It contains waste bread and surplus citrus fruits.

We've worked with just over 30 breweries to do 45 different collaboration beers. Ultimately, the aim is to work with every brewery in the world to get them brewing with bread. Some of the breweries that we work with on one-off collaborations have gone on to brew it regularly as their core beers. There's a brewery in Birmingham called Craddocks, which brews a beer with us called Wasted every six weeks. The Essex Street Brewery, which is part of Temple Brewhouse, the City Pub Group, brew a Toast beer every couple of months.

What we want is people to brew bread beers regularly. It's great bit of PR if you do one bread beer, even a small batch but it doesn't do a lot for taking on the problems associated with food waste and bread waste, so we need lots of bread beer being produced.

Now, whether you are the biggest baker in the UK, or the smallest baker in your town, you can get involved with this. There's a little craft bakery in Marlow on the

Thames called Burgers. They have very little surplus bread because they have a pretty good idea of how much they're going to use every day, so their weekly surplus is about eight kilos. They donated that, **slide 11**, as one of a number of bakers that donated bread for a brew that we did. We get tons of bread from our big suppliers, which we use it for our core beers, as well as for collaboration beers, but we need more.

My message here is that if any of you have surplus bread you could do something different by donating some of it to us, or work with a local brewery to produce your own beer and support a local charity. You probably have existing arrangements for your bakery waste, where it's going to anaerobic digestion or to animal feed, but you could supply it to us as a one-off. I will give my email address at the end, so please contact me if you are interested.

We have some exciting things coming up with our collaborations and we do roughly one a month. For this summer we're going to be working with the Tiptree World Bread Awards. They came to us and said, "how would you like to brew a beer using the best bread in the world"? And we thought that sounded like a pretty good idea. So we're going to be working with one of our partner breweries to do a brew for the World Bread Awards, so if any of you are there, I will see you there and you'll be able to try the beer.

We're also working with the National Bakery School and I think Elaine Thomson from the NBS is here today. We are doing a beer for their 125th anniversary, and hopefully on an ongoing basis if it's a success. So those are two of the very bread relevant collaborations that we've got coming up.

If you live anywhere near any of these locations, **slide 13**, we've now got breweries actively looking to brew with us and we would really like to work with someone who is near to them. If we can't find a local bakery, we will use one of our national distributors but if anyone has a bakery or knows a bakery near to any of those locations, please get in touch with me. We are also going to be doing some international collaborations in Amsterdam, Brussels, Melbourne and Sweden. If you have any contacts with bakeries in those countries, please let me know as well. I you would like to be involved with any of our activities, please email me at Chris@toastale.com

Our motto is:

To change the world, you have to throw a better party than those destroying it!

and that's what we want to do.

Before I tell you our big goal, can you guess how many breweries there are in the UK? Your closest guess was 2000 and it's hard to get an exact number but at last count there were about 2,200 craft breweries in the UK. We have the largest number of breweries per capita of any country in the world, including the US. It's a saturated market, to be honest. We're really lucky. People love our brand. We've grown about 50% in the last year. Last month we had our highest month of sales ever, which is bucking the trend. I think will likely to see more breweries closed than open in the next five years or so.

Final question, there are 2,200 breweries in the UK, have you got any idea how many there are in the whole world? There are in fact about 19,000 breweries in the world and our **big goal** is that in ten years' time, every one of those breweries will be brewing at least one beer with bread!

David Hall, Session Chairman Many thanks for an excellent presentation Chris. Are there any questions?

Question What do you do with the deposit that is left in the fermentation tank after the brewing process?

Chris Head The spent grain will go as animal feed or for anaerobic digestion. Please note that we can only send it for animal feed if the bread producer has guaranteed in writing that the bread has not come into contact with animal products. It is basically the ethical idea that meat should not end up being fed to animals. So anaerobic digestion or to animals if you've got the certification.

Question Just an observation. The vast majority of waste bread is from consumers at home and is not in the bakery supply chain. Does that not affect the amount of waste bread that is available for producing beer?

Chris Head My understand is that it is about half wasted by consumers and half is either wasted at point of production, or unsold in supermarkets when its best before date expires.

Question There's a huge economic advantage in not wasting bread in the supply chain, but you still large supply of waste bread from it for brewing beer.

Chris Head Completely agree. I think there was some back of a napkin calculations that if every brewery brewed one of their core beers in the world with bread, essentially you could eliminate bread waste but the logistics around that would be crazy. At the moment, bakeries are happy to donate waste bread to us but a lot of bakeries will be selling the surplus bread surplus on for animal feed or for other processes. So that's a hurdle that we will have to overcome at some point. If we can get the movement big enough, we might find that there's a problem with the supply of waste bread but hopefully by that point, we will have figured out how to make brewing bread so efficient, that even if it is a cost rather than free, we'll still be an attractive proposition to a brewer. We're quite early on our journey, we're only three years, in so there's food for thought.

Question Just following on from that thought really, are there are other waste products that you could be thinking about for the future?

Chris Head There are two things I will mention. there. We do work with other producers to use surplus fruits in our beers, and we have used coffee that's past it's best-before date. If we can take bread that will go to landfill, brew it into beer and then use that surplus spent grain either as animal feed or to go back into baking bread again, that would be amazing but obviously these things aren't infinitely recyclable, not as efficient, but I know at least one brewery down on the south coast has been doing, using their spent grain to then make flour for baking.

Question I guess you've tried brewing with different types of bread? Would sourdough bread impact on the flavour of the beer?

Chris Head Those of you who've had the beers can probably attest to the fact that when you drink it, you can't really taste the bread. In beers in general you do get bread flavour notes, but our beers don't particularly taste of bread. We've done quite a few sourdough-bread brews that have been lovely. We did a very citrusy summer ale with sourdough bread. It affects the taste very slightly, but we take that into account. The things that you really have to avoid are seeded bread, and any bread with nuts, fruits or cheese in it. Croissants and pasties are out because there's too much fat in them.

David Hall Many thanks for an interesting paper Chris. *Applause*

David Hall, Session Chairman Mike qualified in microbiology and his research areas include dietary fibre, ingredient functionality and product shelf life. Having led the development of own label products for a major high street retailer before he came to Campden BRI, he is especially qualified to talk about clean label for bakery products.

Clean Label: What Does It Mean for Bakers? By Mike Adams, Bakery Science, Section Manager, Campden BRI.

I'm going to talk about what clean label means. It's a phrase used a lot in the food industry, and it is often done for the benefit of consumers, but do we know what they think clean label means? It is quite difficult to get the consumers' view, but we've tried to do that at Campden BRI with a consumer survey and I'll share some of the results of the survey with you.

1 What does clean label mean?

- Do we define it the same way that consumers do?
- Is there a legal definition of clean label?

2 What clean label means for a baker.

- Additive replacement
- Sugar reduction
- Salt replacement

3 Clean Label

- Demand for "clean label" has seen tremendous growth, and brought the need for new ingredients, manufacturing processes and communication strategies
- It is a very ambiguous term
- It is seen as an industry standard, but it has no clear definition

Is there a legal definition of clean label? If you put on your product labelling that it's 'clean label', is Trading Standards going to be knocking on your door to query it? So, we'll talk about some of the legal aspects of clean label. I'll try to inform you as best I can but please don't take what I say as professional regulatory advice. We have a regulatory team Campden BRI who will be happy to answer any regulatory queries you have on clean label.

Very much from a bakery perspective, we will look at three topics – additive replacement, sugar reduction, and salt replacement. We'll talk about how we can replace certain functional ingredients that are not considered clean label with clean label alternatives.

We've seen tremendous progress in clean label products over the past decade and it has really come into the consciousness of the food industry, but 'clean label' is a very ambiguous term. We get asked a lot for solutions to clean label problems here at Campden BRI. A client may say "I want you to reduce the fat in my product, but I want any replacement for the fat to be clean label". Our first question back to them is "what do you mean by clean label"?

So, what ingredients are allowed and not allowed for clean label, because every manufacturer we work with has a slightly different definition of the term? If you speak to customers about clean label, be it supermarkets, or co-manufacturing partner for a brand, whatever, you need to understand exactly what they mean by clean label.

Is the baking industry prioritising the correct areas when developing clean label products? Could you be developing products that you think are clean label but that consumers don't think are clean label because are not experts on food ingredients. They rely on the press and TV and we've all

cringed at Daily Mail front page headlines claiming some ingredient causes cancer, or cures cancer, and sometimes does both! So, it's quite difficult to know what consumers' think about clean label.

4 Campden BRI aims to better understand the industry's position on clean label and how consumers understand the term

- Does clean label mean anything to consumers?
- Do consumers care about clean label? What do they expect?
- Does the industry have a definition for clean label?
- Do consumers and industry have the same understanding of the term?
- Do industry's efforts on clean label match consumers' expectations?
- What are the implications of clean label with regard to sugar reduction?

We have a Consumer Research Panel at Campden with 2500 members across the globe. We therefore did a survey last year where we asked consumers what clean label means to them, and a second survey with people from the industry asking what clean label means to them and their businesses.

5 a) Campden BRI consumer survey

We asked 252 consumers (April 2018), who were; responsible for the main grocery purchasing in their household; who had no allergies or adverse reactions to food or drinks; and who do not limit their intake due to health issues or formal diet; to respond yes or no to the following statements. The percentage who said yes is given below.

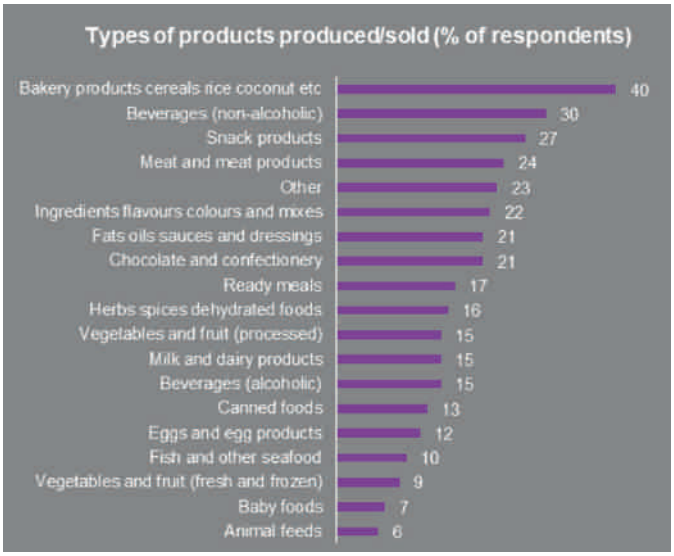
- I know the main ingredients of my routine food product purchases. 85%
- I consciously try to consume enough fruit and vegetables to ensure I reach my 5-a-day target 82%
- I consciously choose healthy foods and healthy meal options in main grocery shopping. 82%
- I buy certain foods because I believe they help maintain healthy bodily functions. 77%
- I consciously buy foods that are lower in fat, salt and/or sugar 76%
- I prefer to buy foods that are free from artificial colourings and preservatives. 75%
- I always look at the list of ingredients when buying a food product for the first time. 74%
- I pay attention to health and nutritional information on food packaging. 74%
- I tend to buy foods that help me to lose weight 38%
- I tend to buy whatever food is cheapest 27%

75% of the people we asked said they preferred to buy foods that are free from artificial colourings and preservatives. Now, that's a fairly accepted definition of clean label. Artificial colours and artificial preservatives have been on the way out in the food industry, certainly in the UK, for a number of years.

27% of consumers, however, said they tend to buy whatever food is cheapest. Now, that's a fairly low number. I thought it would be higher than that and I think maybe in the wider population it is. We didn't ask what socioeconomic groups our people were from so we don't know if that's skewing it, but that is certainly something, with the rise of the discounters, we're seeing more people who are not necessarily checking what the food is, the only thing they look at is the price.

5 b) Campden BRI food industry survey 100 industry members (April-May 2018):

- ✓ 73% Manufacturers
- ✓ 12% Distributors
- ✓ 6% Retailers
- ✓ 6% Caterers



Then we asked 100 representatives from the food and drink industry in the UK a number of questions about Clean Label, and about three quarters were manufacturers and, as you can see, the bakery industry, or bakery supply chain, was the most widely represented part of the sector, so 40% of the people we asked were involved in bakery. So, it really makes some interesting perspective and these results are relevant to you guys.

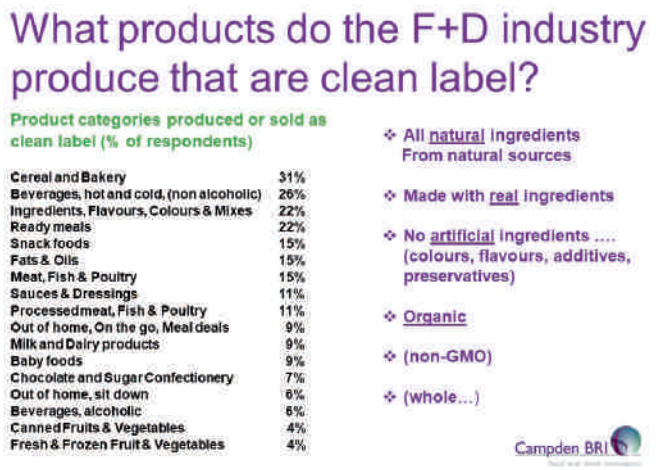
6 Consumer awareness of the term 'clean label'

Had heard the term	25%
Had heard it was less healthy	15%
Had heard it was more healthy	32%

Clean label statements are incredibly common:
Low sugar! Gluten Free! 96% Wholegrain! High in fibre! No artificial flavours, colours, or preservatives

7 What Clean Label Products Does the Food Industry Produce?

What did it tell us? We asked the industry "do you have a clean label definition in your company"? Of the respondents, only 20% said that they had a formal clean label policy in their business. The 20% fell into three main categories in terms of what they meant by clean label, as shown below.



8 Lots of products, little clarity

NATURAL

'Natural'
'No additives, no E numbers'
'Free from artificial preservatives, sweeteners, colours & flavourings'
'Free from artificial colours & flavours, non-modified starches, "store cupboard" ingredients'
'Without ingredients that would look like a "chemistry set" on the back of packaging ingredient declaration
Only natural additives, no artificial colours or flavours allowed'
'Does not contain artificial colours, preservatives and flavourings. No added sugar'
'Free from artificial colours, flavours and preservatives'
Minimum number of ingredients. Natural or from natural origin (no chemicals)'

Familiar to Consumers

'Ingredients normally available in a domestic kitchen'
'Product made from natural ingredients and ingredients that consumers can identify with and
understand when reading the label'

Depends on the product

'Depends on specific claims, e.g. preservative free, free from dairy, etc'
'An unprotected claim. Short as possible ingredient list, use of natural sounding ingredients, ideally
no e-numbers, salt targets below FSA 2017, no preservative where possible and GMO free'

'Depends on the product' above is a fair point. A lot of the people we speak to make more than one category of product, so it very much depends on the product, and some areas of the food industry are much hotter on clean label than others.

Following on from the audience participation by the last speaker, I have a question for you all. If you know that your company has a clean label policy, please put up your hand? (*rough count of hands*). Considering how widely represented we are from the baking industry, that's not a large number of hands! In fact, it's even less than we found in our survey, so it's certainly something to talk about. If you've got product development technologists and test bakers making new clean-label products, it's good to have consistency between them, because clean label is a very subjective term.

The thing to consider when you're writing a clean label definition is to understand what consumers and the industry think clean label is. There's no point having a clean label definition if consumers don't think it's clean label. So we asked the industry and consumers, which of the characteristic's in the table below they associate with clean label products?

Product characteristics associated with 'clean label', industry vs consumers

Product Characteristic	Consumer %	Industry %
Free from artificial ingredients	89	90
Without E numbers	77	79
Without GMOs	79	76
No sweeteners	63	68
Simple product/short ingredient list	79	76
Produced without hormones	80	43
Made with ingredients that can be found in the kitchen	69	56
Produced without pesticides	80	43
No added sugar	62	33
Free from allergens	64	31
Minimally processed	60	28
Produced without pesticides	80	45
No added sugar	62	33
Free from allergens	64	31
Minimally processed	60	28
Gluten free	37	26
Healthy products	66	23
High quality products	39	22
Freshly produced	56	20
Sugar free	48	18
Ethically produced	48	18
Produced in hygienic conditions	44	17
Nutritious products	56	17
Dairy free	27	17
Safe to eat, not contaminated	50	15
Locally produced	29	9

The table gives the % of consumers and industry personnel who associated the phrases on the left with clean label products. As you can see in the top four, there is good consensus between consumers and industry on free-from artificial ingredients, E numbers, GMOs and sweeteners. What's interesting though is that as we go further down

the list, we see a divergence from what consumers think and what industry thinks. 80% of consumers think that a clean label product should be produced without pesticides, whereas only 43% of industry does.

Free from allergens, is another interesting one. 64% of our consumers thought that free-from allergens is clean label but only a third of the industry did. That's another term, because 'free-from' is a different thing to 'clean label'. A product can of course be free-from *and* clean-label but they're separate terms. It doesn't matter if you think your product is clean label, or if the buyer at the supermarket thinks it is clean label, what matters is what consumers think is clean label. So, we can summarise this section.

10 Summary of clean label

- Most businesses don't have a clean label policy
- Those that do may not be in line with what consumers actually think
- Consumers and industry have different definitions of "clean label"

11 Is there a legal definition of clean label?

There isn't a single piece of legislation that covers clean label. Legal definitions or guidance exist for a number of areas that have been highlighted:

- Free-from Regulation (EU) No 828/2014
- Low/Reduced fat/sugar/energy Regulation (EU) No 1047/2012
- No added….. Regulation (EU) No 1047/2012
- GMO labelling Regulation (EU) 1169/2011 and Regulation (EC) 1830/2003
- Organic labelling The Organic
- Products Regulations and Regulation (EC) No 834/2007
- Natural FSA Guidance Document

There is a lot of harmonised EU law – well, harmonised at the moment – and it covers a number of areas that we just talked about. But there's no specific legal definition of clean label. I'm not saying you can't put a clean label on your product, a lot of people do but you have to be able to justify why it's 'clean label' for consumers.

12 An important principles of food labelling is:

> **Do not deceive the consumer. Products must be what they claim to be!**

I'm not going say any more about the regulations because I'm not an expert. Seek independent advice if you're not sure, because it is something that catches a lot of people out.

13 Clean label and bakery

Additive replacement: 79% of consumers think that no e-numbers in a product ingredients list is 'clean label'.

Typical e-number additives used in bakery products are:
E282 (calcium propionate)
E300 (ascorbic acid – vitamin C)
E422 (glycerol)
E450 a, b and c Diphosphates
E471 (glycerol monostearate);
E472 a, b, c, d and e, (various esters of mono and di-glycerides of fatty acids).

14 Additives Most additives fall into one of six categories:

Colourings; emulsifiers; preservatives; raising agents; dough conditioners; and humectants.

There's quite a lot of crossover between them but for simplicity sake, I've split it into these six categories.

15 Emulsifiers, preservatives and dough conditioners

For the following reasons, I will now concentrate on the above three categories.

Colourings are interesting clean-label wise and the legislation on them has changed recently. The food industry has almost universally moved to using natural colours derived from fruit and vegetables in its products. You have more natural colours in foods now which are based on spirulina (green) and black carrot extract (purple), beetroot (red) than previously. This will include, for example depending on the natural colours required in the final product, natural colour combinations such as: Anthocyanin, Beetroot Red and Riboflavin; Spirulina Concentre, Riboflavin, Beetroot Red and Iron Oxide; and Anthocyanin, Beetroot Red and Riboflavin, Curcumin and Iron oxide

So, this is one part of the industry where clean label really has come to the fore over the past few years due to legislation, so it is not as big an issue as it was a few years ago. Some natural food colours, like annatto and beta carotene, have e-numbers, so they do not tie in with clean labelling? As we saw from the survey, E numbers are a "no-no" for clean label products for consumers.

Humectants Sugar is in cakes to make it sweet, as well as do a number of other things. There may be more sugar in the cake than is required to make it sweet, and the extra sugar improves the mould free shelf life of the cake. There are other humectants that can be added to cakes, such as glycerol and polyols to improve mould free shelf life, by reducing water activity, but there's a limit to how much you can put in before you get rather unpleasant side effects. It's an area that Campden BRI is actively researching at the moment.

Raising agents tend to be sodium based and consumers are being advised to reduce the sodium in their diet. You can replace sodium bicarbonate with potassium bicarbonate but there's some question marks over the potassium. Glucono delta-lactone (GDL) is another alternative raising agent but again it is not particularly clean label. The alternative raising agents also have to be suitable for your range of products. Raising agents are therefore complicated, clean label wise.

16 Emulsifiers

Let's talk about emulsifiers. I've picked out three below and some of the things they do.

DATEM - Stabilise dough and softens crumb

Mono and di glycerides – allows fat reduction and increases product shelf-life

SSL - increases product volume and crumb structure

These emulsifiers are incredibly useful. DATEM's dough stabilisation and crumb softening properties are why pretty much every loaf of bread you pick up in the supermarket contains it. Likewise, most industrial cakes have mono and di glycerides in them because their functionality.

Clean label alternatives to emulsifiers What can we use to replace of emulsifiers? In his earlier presentation Martin presented some of the work that DSM and CSM have done comparing lipase, DATEM and a control recipe for bread production. There are some enzymes on the market, such as lipase, that produce surface active compounds, which have the functional properties of an emulsifier. It stabilises gas bubbles in bread and cake batter. The advantage of using enzymes is that currently they do not have to be declared on the ingredient list and because of that they are theoretically clean label. That legislation may be changed but the moment enzymes don't have to be labelled.

There are natural emulsifiers available and lecithin has been used in the baking industry for a long time. Lecithin is a natural emulsifier extracted from sunflower seeds and eggs, but do consumers think it's clean label? We haven't asked them that question but it's certainly one to think about.

Gums and proteins There are gums and proteins which can be used as emulsifiers if a clean label issue comes up. Xanthan gum is often seen as the most 'clean label' of the gums. It can be natural, and the Soil Association allows xanthan gum to be used in organic products.

With regard to proteins, we've recently done a lot of work looking at the potential of proteins to produce a foam. Chickpea protein, which some of you may be familiar with, is used a lot in vegan baking could be used as emulsifiers in commercial baking.

Extra Cost The extra cost of replacement ingredients is one of the big issues of producing clean label but that's the decision you have to make. Does clean label add value to your products and make consumers more likely to buy them at the higher price?

18 Dough Conditioners

We move onto dough conditioners now and I have picked out two of the most common.

L-cysteine - improves dough extensibility and handling

Ascorbic acid – helps create gluten development during dough mixing and from this improves dough gas retention.

19 Clean Label Alternatives to Dough Conditioners

- Enzymes
- Natural Emulsifiers
- Proteins
- Gums

Protease enzymes can be used instead of L-cysteine to make bread dough more extensible and they do not have to appear in the ingredient list. A specific autolysed yeast derivative can also be used to modify the gluten as a replacement for L-cysteine, and there a number of flour-based L-cysteine replacers on the market which alter the ratio of gliadin and glutenin in the gluten to make it more extensible.

A simple clean label replacement ingredient for ascorbic acid is not available at the present time. Solutions to the replacement problem based on enzymes and on processing changes may be found in the future.

20 Preservatives

- **Potassium Sorbate** – increases mould free self-life.
- **Calcium Propionate** – prevents rope disease in bread and increases mould free self-life.

Then we get onto the preservatives, the two main ones used in bakery being potassium sorbate, which is most effective against moulds, and calcium propionate, which also prevents mould growth on bread. However, it was originally added to bread to prevent' rope' disease. Rope is not as big an issue now as it was many years ago because hygiene standards have improved in the baking industry. For whatever reason, calcium propionate is still seen as preferable to potassium sorbate for increasing the mould free shelf life of bread.

21 Clean label alternatives to calcium propionate and potassium sorbate

- Fermented flour
- Essential oils
- Fruit extracts
- Non-standard fermentations

Fermented flour has been on the market for some years and can act as an anti mould agent in bread. Many supermarkets prefer it in their bread instead of propionate and sorbate, because it does not have to be declared as a preservative.

There are a number of other interesting alternatives to propionate and sorbate that are being looked at. Essential oils, which again have been around for a while - cinnamon, garlic, onion extract all show very potent anti-fungal properties. The big issue with these, cinnamon as an example, you get a loaf of bread that tastes of cinnamon, (or whatever other essential oil you have used)! If it's in a cinnamon and fruited bagel, brilliant, but if it's a white sliced loaf, it's not wanted. Therefore, essential oils are interesting as preservative replacers but not are particularly practical.

Fruit extracts is another area that we've looked at recently. Raisin juice and raisin extracts are used quite commonly in the US for their anti-fungal properties. Again, interesting but a very specific product usage. If it's a fruited or dark coloured loaf fine, but it is not practical for white bread.

One area that we're doing some active research in at the moment is non-standard fermentations. Specially produced bakers' yeast in the baking industry, using yeast strains that are suitable for a wide range of products and processes. However, brewers use hundreds of yeast strains and a lot of research is going on at present to see if fermentation by-products from some of these yeasts when used for bread production, have the anti-fungal properties and could replace preservatives by using a combination of baker's yeast and a brewer's yeast. That's an interesting area that we're looking at, at the moment.

To now get onto some of the current pressing subjects.

22 Additive Replacement

Sugar Reduction

Sugar is clean label
Some sugars more than others

- Coconut sugar
- High fructose corn syrup

We heard earlier today from Professor Graham MacGregor, that the over consumption of sugar by people in the UK is the cause of many medical problems and early death. It is therefore important that the food industry reduces the level of sugar in some of its products.

One of the issues with sugar reduction is that it is clean label. Everyone knows what sugar is, it's natural. Yes, it goes through a process, but some sugars are more 'clean label' than others. We've got coconut sugar which seems to be one of the fashionable sugars at the moment, very clean label, we see it in wholefoods and in organic products.

Then high fructose corn syrup which to the food industry is not particularly seen as clean label. We asked our consumers and only 20% of them thought high fructose corn syrup wasn't clean label, meaning 80% of our consumers thinks that high fructose corn syrup would be acceptable in a clean label product. So again, confliction between what the food industry thinks about an ingredient and what consumers think about it, in relation to clean label!

23 Our consumer research shows what consumers think about sugar reduction

They do not want as replacement ingredients:

- Artificial sweeteners
- E-number ingredients
- Artificial ingredients
- Added sugar

Options

- Inulin and chicory root fibre, are common approaches to replacing sugar
- A reduction of 20% of sugar, with no replacement ingredient, may be possible in many sweet bakery goods without significantly affecting consumer acceptability.
- With the above sugar reduction methods, the recipe may require re-balancing to ensure that the calorie and saturated fat levels in the product do not increase.

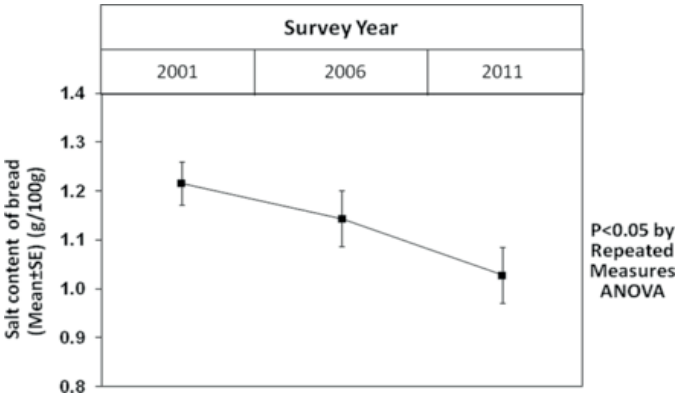
There are many things you can do to reduce the sugar content of cake products and biscuits, but to get to the 50% sugar reduction that Professor MacGregor talked about this morning is going to be a huge challenge. The main one for cakes is the reduction in mould free shelf life that reduced sugar brings.

With regard to flavour and eating quality, we looked at how much sugar can you take out of a product before consumers find it unacceptable. We did a big baking study looking at biscuits, doing tests with sugar reductions of 10%; 20%; 30%; 40%; 50%; 60%; 70% and 80%. We then did taste tests_with_consumers, asking them to say at which level of sugar reduction does the biscuit become unacceptable as a biscuit? We found that we could make a 20% sugar reduction without the consumers being able to tell the difference! Therefore, if a customer wants you to reduce the sugar content of one of your products, just try taking some of it out without making any other changes and see what happens, because often sugar is added to excess in terms of sweetness. It might affect the texture, it might affect the shelf life but there's a lot of sugar reduction you can do on a low water activity product like a biscuit, before consumers can tell the difference.

It was mentioned earlier that you may have to rebalance the recipe after reducing the sugar level in a product to ensure the calories and fat level do not increase, and there are plenty of products on the market that can be used to replace the sugar you have taken out weight for weight, so the batch weight remains the same and the % of fat remains the same.

25 Clean Label Salt Reduction

- The baking industry has taken massive strides in reducing salt in bread
- Reduction, not replacement, has been main tactic



I'm going to echo what Professor MacGregor said today – reduction and not replacement has been the main tactic over the past couple of decades for the baking industry, and it's worked. Salt levels in bread have dropped significantly. Slide 25 is a survey on the salt level of bread bought in UK supermarkets, and it really does show that the level of salt has fallen significantly. 2011 is its most recent year, so it's quite outdated and more recent data will show a much further reduction. As Professor MacGregor said, salt reduction in bread has been a great piece of work by the bakery industry.

26 Sodium reduction There are, however, other ingredients used in the bakery industry that, like salt, contribute sodium to the diet. Raising agents and dairy products are significant sources of sodium. Replacing sodium with potassium in raising agents has long been a fairly controversial issue because there were concerns about what adverse effect the excess potassium would have in peoples' diets. SACN, the Scientific Advisory Committee for Nutrition, are a group of academics who don't work for the Government, but they advise it, and the Committee on Toxicology in food as well. SACN have said the replacing 30% of the sodium in the food industry with potassium, could be beneficial to health, because in general, the population does not ingest enough potassium

in its diet. Potassium based raising agents may therefore be a option there.

Summary

- Clean label is not a consistent term. It means many things to different groups
- Baking industry may be missing areas that consumers consider important
- Communicating clean label credentials can be tricky, as numerous pieces of legislation apply
- Many functional ingredients used in baking are not clean label, and alternatives are predominantly less effective, and more expensive

The above does make clean label a challenge but there are options out there. They're getting cheaper and they're getting better, as ingredient suppliers and universities and people like Campden do the research. Anything is possible and if you want it, you can do it!

David Hall, Session Chairman Thanks for a superb paper Mike. Do we have any questions?

Question This is slightly off clean label but the use of the words hand-crafted and hand-made, again many years ago that was an issue. Is there any greater clarity on what that means?

Mike Adams There is. So, on the Food Standards Agency (FSA) website there is quite clear guidance on farmhouse, hand-crafted and things like that. So, yes, it used to be an issue. I don't think it's a legislative issue and the FSA will give guidance on what they will and won't accept in terms of these types of product descriptions. I know there are a number of product descriptions on the FSA website, so that would be a good way of getting further information.

Question Is there a particular definition that resonates with you for describing clean label?

Mike Adams What would I describe as clean label? I think I the top four boxes that I showed in slide 9 - no E numbers, no artificial ingredients, no GMOs and no sweeteners.

A lot of people think E numbers equal artificial, but they don't. Natural ingredients have E numbers and there is no real problem with E number ingredients. But people that aren't in the food industry associate E numbers with being artificial and bad for you.

David Hall, Session Chairman Thanks again for a very informative paper Mike. *Applause*

CONFERENCE PHOTOGRAPHS

Laura Gambrell presents a surprise birthday cake to new BSB Honorary Member Paul Heygate

Elaine Thomson, National Bakery School, with Gary Tucker

James Astor answers question at the end of his paper on Waste Management

Laura Gambrell looked after the speakers' PowerPoint presentations and microphones during the day.

2019 Autumn Conference

Richard Hazeldine, BSB Chairman First and foremost, Good Morning and a very warm welcome to the British Society of Baking's 2019 Autumn Conference. I would like to give a special welcome today to Colin Lomax - President of the Craft Bakers Association, Ronnie Miles, President of the Scottish Bakers, and Keith Houliston President of the ABST. We were also joined at the conference dinner last night by Paul Morrow, Master of the Worshipful Company of Bakers and Mike Roberts - Chairman of the Federation of Bakers. Unfortunately, neither of them could attend the conference today due to other commitments. I would also like to welcome Vince Bamford and Matthew Bingham from British Baker, and Alice Cooke and Sam White from Bakery Business.

Those of you who were here last year will have heard me say that while we have forged closer links with the ABST and bakery colleges, we believe that there is a need for us to support and engage with young people who are working in the industry at the outset of their career. Therefore, it gives me great pleasure this year to welcome as conference guests Christina Gibbons, the ABIM young Baker of the year and Morris Owen, the CBA Young Baker of the Year, both worthy winners. Also attending from Kudos Blends is Natalie Brown, who was UCB's top student and was awarded the Freedom of the Worshipful Company of Bakers on Monday 7th October. Natalie is the first recipient from outside the National Bakery School. I am also very pleased to welcome Steve Russell and his bakery students from Moulton College. This is their first visit to one of our conferences and I trust they will find it useful and inspiring. I will now ask Megan Roberts to read the creed, (see picture).

Our first Session Chairman, Stan Cauvain, a Past Chairman of the BSB. Stan was at FMBRA, Chorleywood for 35 years in various roles, and was Director of the Cereals and Cereal Processing Division at CCFRA, Chipping Campden for 10 years. Stan has a wide experience of milling and baking and runs his own consultancy company BakeTran. He is the author of 15 technical books on baking, his latest offering being "Baking Technology and Nutrition: towards a Healthier World", which chimes in very well with several of today's presentations.

Stan Cauvain, Session Chairman Good Morning. I am delighted to introduce Paul Baker, who will tell us how he carried out a multi-million pound rebrand of the British company Carrs Food into the St Pierre Groupe, he will speak about their range of branded products, and how they broke into the US market.

Company and Product Rebranding by Paul Baker, Managing Director, St Pierre Groupe

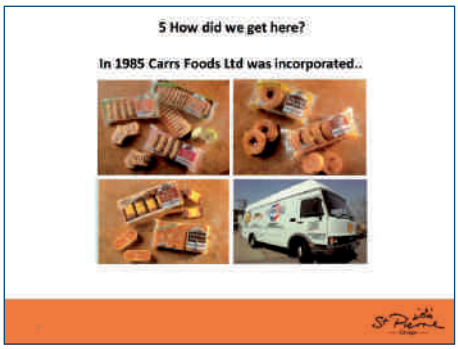
Good morning everyone. My name is Paul Baker and I am the founder of the St Pierre Groupe, an international market leader in branded bakery products. I should also point out that I'm a third-generation master baker after my dad and granddad, so I didn't change my name by deed poll! I'm going to explain how we evolved from Carrs Foods International to the St Pierre Groupe. We are in fact the best kept secret in British baking, **slide 1** and have been under the radar for quite some time. I should point out at this stage that we don't own bakeries, we own brands, which is an important distinction to make. We do however fully understand bakery, manufacturing, retail, marketing, sales, logistics and, most importantly, we take a lot of time to understand consumers.

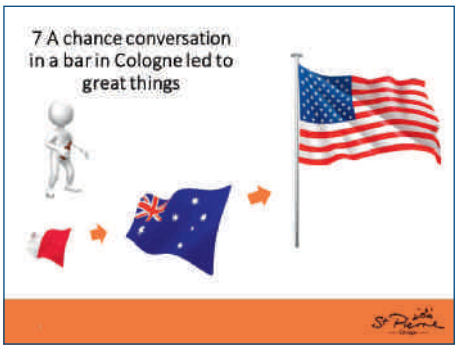
We specify product production with our manufacturing partners, working with about 25 of them in Europe and internationally. Basically, we focus on what we're good at, which is marketing and sales, and our manufacturers focus on what they are good at, which is making products to our customers' requirements.

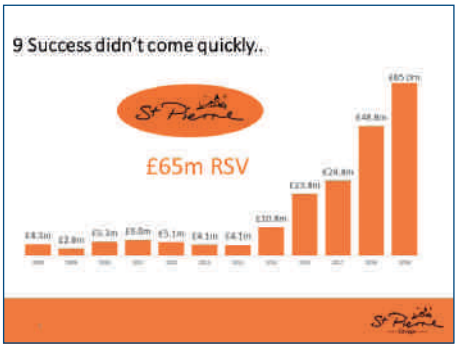
In terms of who we are, we have impressive credentials, **slide 2**. Our turnover is about £90m turnover and I'll go through that during my presentation. We've won many awards, including the Queen's Award for Export, and this year we are Bakery of the Year in the USA which is quite an achievement. We have 150 products in 35,000 stores worldwide, a world-class team of 40 people, and three brands with explosive growth.

What about customers, **slide 3**? You will know many of these names, good quality retail companies, including lots of small customers as well.

Slide 4 Our three dominant brands, St Pierre, Baker Street and Paul Hollywood. St Pierre is about authentic European morning goods and brioche is the core of the brand. Baker Street is very much a brand for convenience stores. That sales channel has been very good for us and we've developed products specifically for it. Then the Paul Hollywood brand. We all know Paul from TV and, to be







fair, I think he's doing a great job. He is a first-class baker and deservedly has had great success as a celebrity baker, particularly with the Great British Bake Off.

So how did we get here, **slide 5**? In 1985 Carrs Foods Ltd was incorporated into the St Pierre Groupe and we became a small distributor. We had vans and did wholesale and were basically set up to sell cakes in Europe.

By 2004, **slide 6**, through a series of buyouts and mergers, we became part of the Harry's Group, a big brioche manufacturer in France. Shortly after that however, the French company wanted to sell us! My co-founder and I decided to buy them instead, which we did. The bakery world was now ours for the taking, or so we thought!

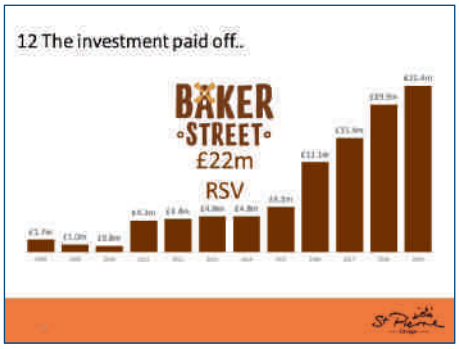
It worked very well for about three years and then, in 2008, the financial crisis happened. We very nearly lost the business, which was both humbling and daunting! We managed to turn it around however, but we realised that we needed a new strategy if we wanted to survive and progress.

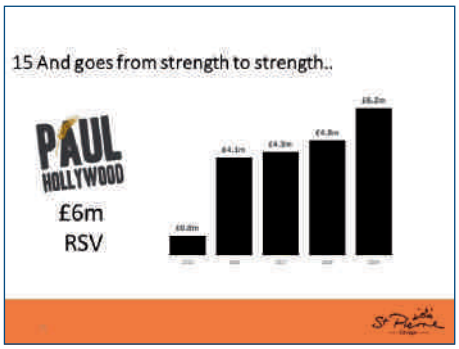
We decided to broaden our horizons and go from import to export, although we didn't have a clue how to export. I then had a chance conversation with two Maltese businessmen in a bar in Cologne, **slide 7**. After an enjoyable evening I gave them my business card and said, "if you need some brioche, give me a call". In the morning they did and wanted to order brioches and other new products. So, we soon had to learn how to export!

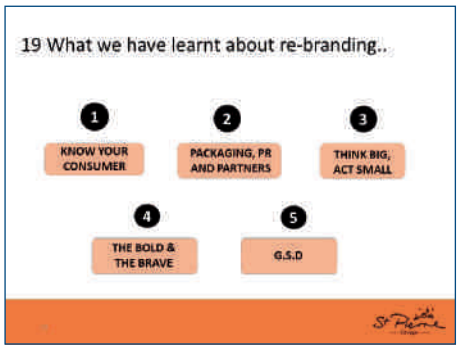
We had another stroke of luck when an Australian distributor, when on holiday in Malta, saw our products and asked if we'd do some export work to Australia. We said yes and for three years it was very successful. and we launched brioche into the Australian market. Unfortunately, not long after that the market changed radically and we pulled out.

We decided that we needed to take a closer look at our brands. We learned from Australia that we should be ourselves, St Pierre, and that is the brand we took to America and it was a natural fit. You will see on **slide 8** how it looked in 1986, very French, very literal, and on the same slide, how it looked in 2000 after we re-branded it.

Success didn't come quickly and **slide 9** shows how long it took, 2008 to 2015, then upwards from there. People







think we were an overnight sensation, but as you can see, it was a bit up and down, but we're doing pretty well now.

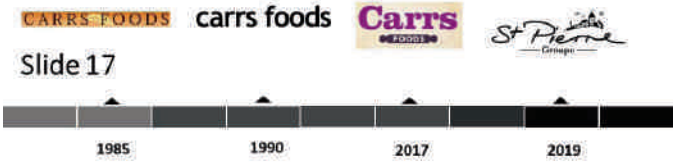
Slide 10 shows some of today's products and our stand at a food exhibition. Incidentally, St Pierre in America is very different to what it is here and one of the things we're doing now is bringing that success into the UK. One of the key things I'd say with brands, is that you've got to have confidence in your brand, you've got to be the best. You've also got to have a good connection with consumers, since reaching out to them is really important.

Baker Street, **slide 11**, is very much a convenience brand. The slide shows how it looked in 2002, 2012 and in 2017 and we're just about to evolve it again and taking this brand over to the US. When you do something like this in the US, the interesting thing there was we can strip our brand back and say what it is about this brand. We don't assume consumers know about the brand, we have to tell them about it in a very simple way. **Slide 12** shows that investment in the Baker Street brand paid off!

Baker Street today is a very powerful brand with a strong identity, **slide 13** which is really important. You've got to make a very strong identity and a strong proposition, and keep it simple, don't complicate the brand.

The Paul Hollywood brand is our youngest brand. Paul came to us about four years ago and said he wanted to do something with us. He had already had a failure in bakery by going too high end. We said that we could see an opportunity for him in part-baked breads. We therefore evolved this range of part baked breads, **slide 14**, and it's going from strength to strength, **slide 15.** The UK market tough and but we managed to carve out a niche for Paul's bread, and now it is the biggest brand in part-baked bread. We have brought that brand to life for consumers, **slide 16**, and we do a lot of media work as well with Paul.

We have talked about our brands and you'll recall that we were called Carrs Foods, but this gave us a bit of an identity crisis really and you had to explain that before you got down to doing any business! We got a new Chairman in, David Milner and he queried why we were called Carrs Foods and suggested we change the name. So, we did, and it makes a lot more sense now and it was such a simple thing to do.



This is how we used to look, **slide 17**, and you can see how we've evolved, and are now aligned with our brand, and it's a lot easier to talk about our business.

So that's how Carrs became St Pierre! We do £90m of sales with 40 people, but they really are a crack team. They are really very good at what they do, and we could not do it without them, **slide 18**. We are in the process of just setting up a team in the US now along the same lines.

So now a few golden nuggets about branding and re-branding, **slide 19** and below,

a) Know your consumer and that really is vital. We spend a lot of money and time understanding customers. It is

a rapidly changing world and with Amazon online, it's changing very quickly. If you can take the time, there's so much information out there. Don't get paralysis with it. Look at it, understand it and deploy it.

b) Get your packaging right. Really take a lot of time with it because that's the one thing that the customer is sure to see and touch. They may or may not, see you on social media but they going to see the product. so really take some time to get your packaging right.

c) Use public relations, enhance the media and raise your profile. It's a very straightforward way of raising your product profile and your brand.

d) Make sure you get really good partners as well. We are fortunate in having fantastic partners around the world and without them, we wouldn't be where we are, quite frankly.

e) Think big and act small. When we started trading in America, when we got a new customer, I would write them a personal letter thanking them, because I think it's important to have that personal touch. It's a very simple thing to do but these personal touches are really important in any business.

f) You do need to be bold and brave, leading your own business and your own products, and you need to G.S.D! What does G.S.D. mean? It stands for "get shit done", in other words, get all the difficult jobs done first, and make all the difficult and uncomfortable decisions first, for the good of the business.

Thank you very much for listening and hopefully you will get something out of my talk. Let me finish with this guy in the next slide Don Draper, because he is my mentor and as he says, "Make it simple **but** make it significant!"

Stan Cauvain, Session Chairman I am sure you will have been inspired by that excellent start to the day, particularly the younger members of the audience. Paul's talk illustrated that it is not just about being a good baker, you also have to get somebody to buy your products! Are there any questions?

Mike Bagshaw, Newbury. A great presentation Paul. Could you give us a few tips for doing business in America, because what you've done there is remarkable and it's not easy.

Paul Baker The first one, be British. They have an expectation and a perception of us that we're very polite and have an upper-class accent and if you live up to that it helps. When I go to the States, I do clip my English a bit more. I'm ultra-polite and very, very British, and they love it. It sounds very glib, but it really does work.

The second thing is you've got to follow through with anything you agree to do. America is a very big place, it's immense. So, you have to understand distribution. It's not like the UK, where you can have your manufacturer go direct to the retailer. In the US distribution is key and brokers, distributors, mass distributors, mass brokers, they all have a place and they all take a slice of the pie and that's accepted. It's an accepted way of doing business and it's a very different way of doing business than in the UK.

The other thing is to understand what you're getting into. Quite naively, when we started, I said to our distributor we'd like to go national in America and he said, of course you do, and he knew what that meant, we didn't, we were completely naïve about it. But know what you're getting into. Look at your capacity, look at your product, look at your brand and just make sure you know what you're getting into because they're very slow to react but when they switch the taps on, it's like a tsunami, it really is. The volume that you generate is unbelievable.

We've just scratched the surface, we're only at the start. We are the fastest growing bakery brand in America. We are the fifth bakery brand in America within four years. but it's taken us many years of work to get there. It's not an overnight sensation so you've really got to be prepared, really do your homework and don't go over there and just think it's going to happen overnight. It won't, it'll take time and dedication, and you do need the right partner.

Question Thank you again for the presentation. Just thinking about America and the brand that you've got there, are you doing any above the line advertising?

Paul Baker No but get out and let consumers access your brand. The golden nuggets I have put up there are important, particularly PR. You can get a lot of return for your buck with PR.

The one thing I would say that are going to spend money on is consumer experience with marketing, where you bring your brand to life.

We're doing marketing stuff in Chicago and Milwaukee at Christmas and that's where it does start to get expensive, but you can repeat what you do all over America. Next year we're going to invest £5m in marketing in the US alone and see what we get from it. That's a big budget and none of it will be above the line. It will be with our retail partners in store. One way we do marketing in America is to make or have new products in-store and give them away to consumers to try.

Stan Cauvain I'm going to take Chairman's privilege and come back to the younger members of the audience. There'll be someone sat there with an idea for a new product in their mind. What advice would you give them in trying to grow that idea into a brand?

Paul Baker The first thing it's got to be exemplary quality. I think simple products in bakery work really well. We trial

a lot of products and we probably have a better hit rate than most. Do some consumer research and that doesn't have to be expensive - speak to your family, show it to your friends, get them to taste it and get their comments If you're a baker and you make something new, you know if it's good or bad but if you're going to do it as a brand, it's got to be the best. The next thing is you've got to be able to produce that product on a big scale. It's one thing to make it in a test kitchen, but can you make it in a factory, and can you make it profitably?

All these things are vitally important when you're developing a new product and forgive me if I'm speaking to the converted. Even though we're all consumers, people are very discerning now. They have a lot of choice, so you've really got to come up with something special. Product development is tough and getting a product that works on to the market takes a lot of effort.

Stan Cauvain Thanks for the advice, both to the younger delegates and to the rest of us. Life in the bakery business in America is tough and you do have to be persistent, be there, and be seen. I liked your comments about the English accent because I get that all the time when I'm in the States and I too do tend to play it up, just to get their attention. Ladies and gentlemen, will you please join me in thanking Paul for an excellent start to the day. *Applause.*

Stan Cauvain, Session Chairman Our next session takes, in some ways, a theme that Paul introduced and that is the world of the consumer and at the end of the day, we always have to remember that while we make products, and we may make great products like Paul and his team do, but someone has to eat them and enjoy them. So understanding the consumer is a very real issue for us and sometimes bakers tend to stop thinking once the product is in the shop or store, but there's a world beyond that and it's the world that Dominic Allport is going to talk to us about. He's going to address the eating-out-of-home bakery market, what the reality is and where the opportunities might lie.

Bakery Market Information by Dominic Allport, Insights Director, the NPD Group.

Good morning, so over the next 30 minutes or so I'd like to talk about the eating-out market, particularly in the UK. So, it's quite a different market to eat at home and you'll see that it's a pretty tough market at the moment, but bakery is doing slightly better than the rest of the market, so there are opportunities there for you.

So, a packed agenda - five things to get through and the first is to introduce the NPD group. NPD in this context stands for National Purchase Diary and not as might be thought, new product development!

We're an American owned company, set up in the sixties and apparently we are the eighth largest market research company in the world, and we cover about 13 or 14 of the

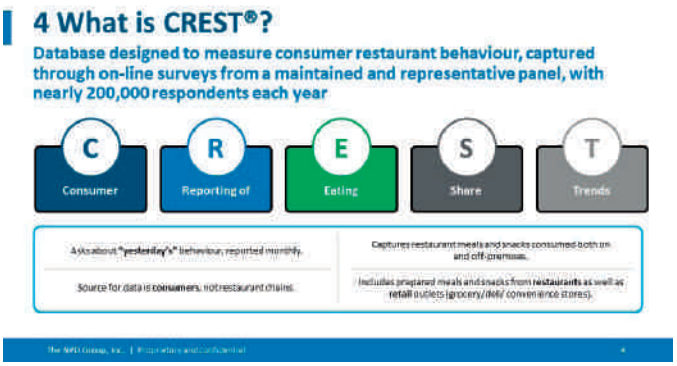
world's most important food service markets. In total we cover about 65% of global food service, so we know the food service market very well.

Slide 2 Two Facts about the NPD Group

- The NPD Group, Inc. is an American market research company founded in 1966 and based in Port Washington, New York.
- In revenue terms, NPD ranks as the 8th largest market research company in the world

What we do is track the market, largely through a consumer panel called Crest, and again this is a strange acronym, Consumer Reports on Eating Share Trends. The key thing with Crest is the recollection by consumers of what they have eaten in the last 24 hours. We think that they quickly forget what they've eaten, so it's really important to get the in-moment feedback as soon as possible.

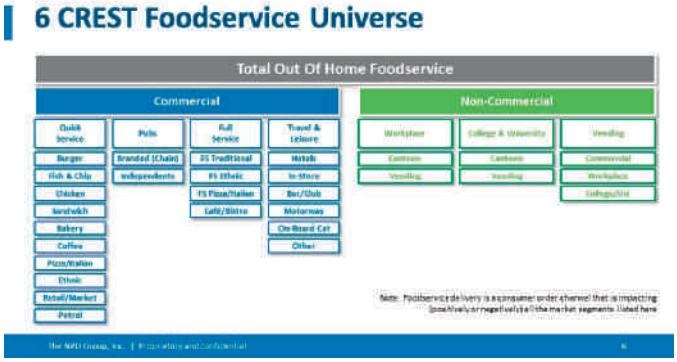
Crest allows you to size a market, it allows you to look at long term trends.

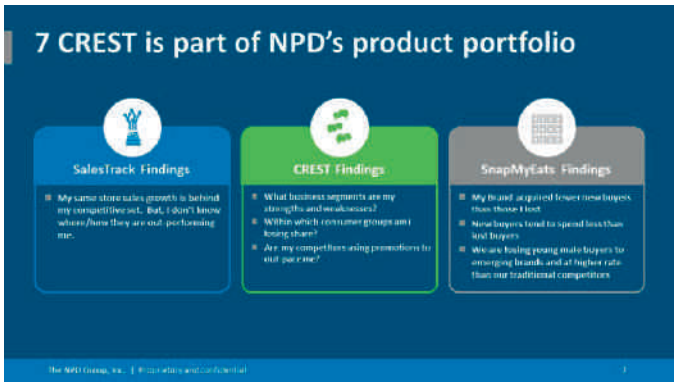


We have data going back to 2008, so back to the last crisis, and that can be quite interesting to compare where we are now versus where we were previously and whether we're seeing some early warning signs of similar issues.

Slide 5 this gives you an overview of the detail you can get to within Crest, from understanding the market size and structure to measuring operator strengths and weaknesses. So, all the way down to information on petrol stations, catering, what the opportunities are in individual market areas. that we look at as well as just more generally commercial versus non-commercial.

As well as Crest, we have Sales Track. Key operators give us on a weekly basis their sales, and we amalgamate them out, we anonymise them and we feed that back. So, at-the-moment tracking of the market. I've talked about already. The recording of sales app which we launched last year, and we have 6,000 of them in operation, can capture about 70,000 receipts per month. It's mainly out of home food product sales and it's about understanding how consumers are switching their brands and why they're switching. You can get a view in terms of who your high, medium and low frequency customers are, what sort of impact a new product launch has had, how important menu pricing is and whether your share in customers is satisfactory



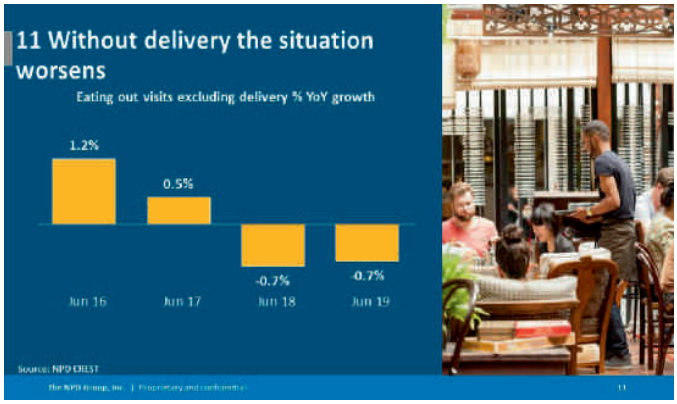


Onto the eating out market itself now. Before I go into the detail of what's going on in it, I want to say that it's a big market and I think it's important to throw some light on that. There are 11 billion visits in the UK eating out market every year and as consumers we spend £57 billion on

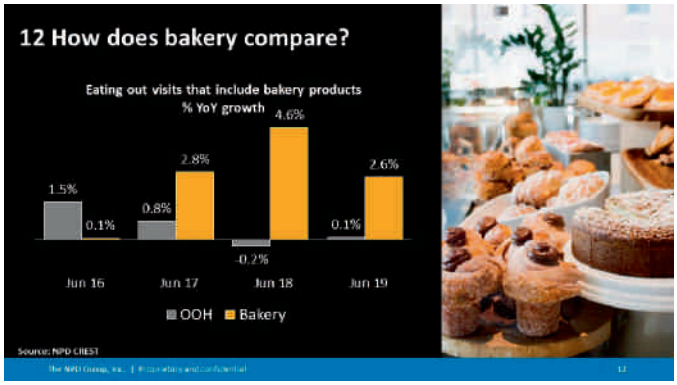
eating out food, which is more than the Government spends on welfare. But the eating out market, as you'll see in **slide 9**, is not doing so well at present. It was fine up until June 2016 and we progressively see the downward path. There's been a bit of a rebound in the latest year.

We're okay in terms of spend and that's been driven by mini price inflation as well as the proliferation of both technology and the upselling that operators are managing

to roll out into their networks, and I'll talk a little bit more about that. Delivery is such an important part of the market and I think we need to focus on it. It represents 8% of the retail market at the moment and if you took out delivery, this would be the state of eating out, **slide 11.**

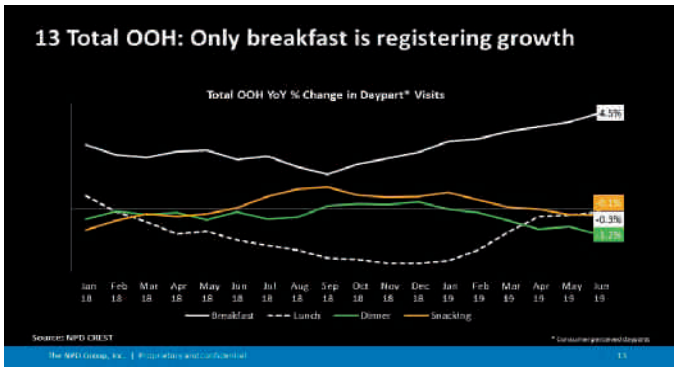


This isn't bakery, this is just to give you an idea of the total market. We have had two years of negative growth and that means that there's 17 million fewer visits in the market than there were a year ago.



Let's put that in the context of bakery. This was the total out of home in slide 12, so bobbing along not particularly well. Add in bakery and you have a much healthier picture.

This is both sweet and savoury bakery and any visits a consumer has out of home, where a bakery product was consumed.



When you move back to the whole of the market again, **slide 13**, you can see what is driving the growth in the market and this is even more important in bakery and I'll go into it in a bit more detail later. Consistently, breakfast has been the main growth area in the market. Since June 2016 it's grown by about 12%, it represents 13% of the market and you can see why there is such interest in breakfast because consumers' lifestyles are changing. People are travelling very early in the morning and they need breakfast to sustain them away from home. Lunch is quite mature. Dinner doesn't really play into bakery that well, although it's quite important in sweet bakery and generally, people are just trying to manage their expenditure but they're happy with breakfast because breakfast offers a lower price.

So even though breakfast is growing strongly overall, breakfast for bakery is growing 20% more in absolute terms than the rest of the market. So obviously croissants and pastries and other products are driving that. Another element which is behind the growth of bakery is off-premise eating. Off-premise is really where most of out of home growth is at the moment and in bakery products, this is growing seven times faster than the rest of the market. And then with economic uncertainty and the need for convenience, sandwiches are growing three times faster than the rest of the market. Again, three ticks in the bakery box and this is helping to propel growth.

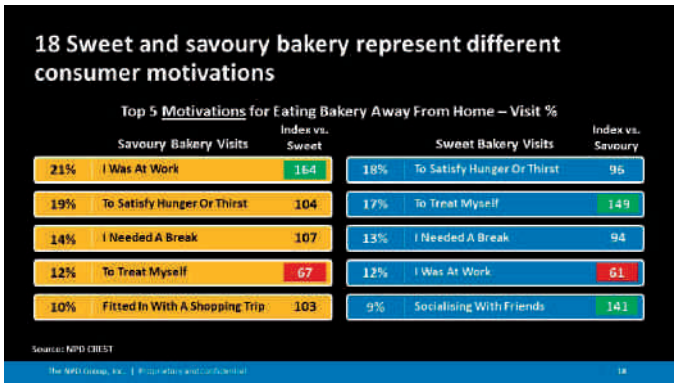
We like to know how big out of home bakery is, **slide 15.** It represents almost five billion visits per year which is about 40% of total out of home. Servings are less and they represent about one in five servings and consumer spending is quite low as a proportion of the whole bakery. So, there is an opportunity to grow bakery in terms of premiumisation and we're seeing spend on bakery growing by 6% per year, so people are responding to the trend towards premiumisation.

To split it out a little bit further, within total bakery, you've got savoury and you've got sweet, **slide 16**, and this just highlights the importance of savoury, particularly at lunchtime. It's effectively all about sandwiches. Both of them are in a good position to be in, considering where the market is.

To understand why it's in growth, we probably need to understand a little bit more about consumer attitudes and behaviour when they're having their bakery 'moments' out of home. To just explain the consumer journey, **slide 17**, and how we capture it in Crest.

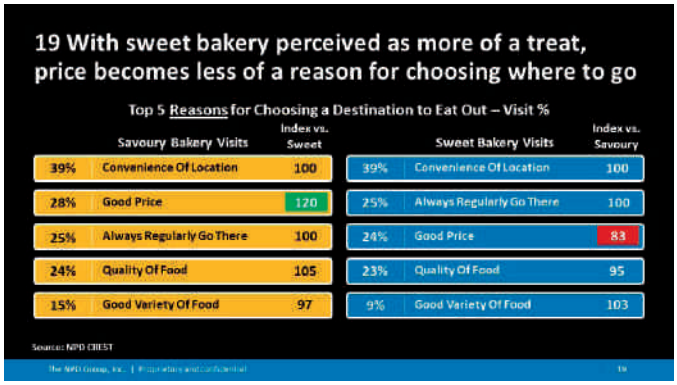
Firstly, it's the trigger moments – what is it that motivates people to go out and eat? That's the number one question we ask them and then when they go out and eat, why do

they choose a particular outlet? Then once they had been there, you can ask: how satisfied were you with the eating out occasion; would you go back to this place in the next month, or where else might you go? So, you get an idea of how people consider brands when they go out and eat.



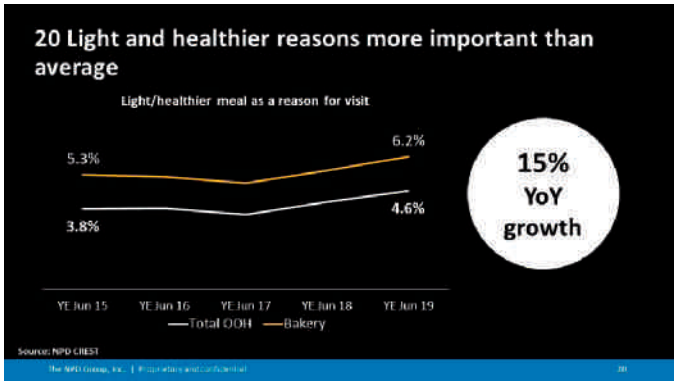
Slide 18 gives the top 5 motivations for savoury bakery visits and for sweet bakery visits

So, this tells you a pretty stark picture that savoury bakery is effectively very functional, and it's seen as functional by consumers. It's about when I was at work, when I was just needing something to keep me full during the lunchtime.



Slide 19 gives the reasons for where to eat out for savoury bakery visits and for sweet bakery visits. But if we then index the savoury scores versus the sweet bakery scores, you can see that savoury is much more focused towards an at work occasion and it's much less perceived to be a treating occasion. And then the opposite happens when you then look at sweet bakery versus savoury. You see that is not necessarily about being at work, it's about a treat and it's much more about socialising. So, in the minds of consumers, savoury bakery products fulfil a certain need. Sweet bakery products fulfil quite a different need.

Slide 19 gives the reasons for where to eat out for savoury bakery visits and for sweet bakery visits. We've done motivations and now we're looking at consumers' reasons for choosing a certain place, and I will talk a little bit more about convenience in a second, since convenience is key for both savoury and sweet bakery. 40% of all visits are driven by convenience and people are quite habitual in terms of where they go, and this is why, always regularly go there is important. Good price is also important. So those three reasons are really key to why the place is chosen, less so why the product is chosen, it's more about what compels people into that outlet in the first place. Savoury, back to that functional view that consumers have of savoury, it's good price linked back to hours at work, probably related to a high proliferation of locations and sweet bakery is less focused on price.

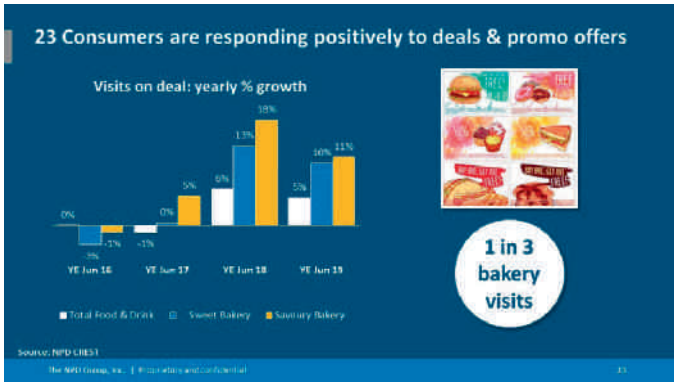


What is increasing for both sides of bakery is healthier reasons for including bakery in one of their visits, **slide 20**. This is not just about having less sugar and having less salt potentially in their diet, but it's more an interest in calories and it also taps into the fact that consumers are becoming more interested in exotic flavours and new choices. You'll see when I touch upon product innovation, there's a lot of interesting developments that are occurring in there which feed into this healthier side of things. I think veganism is one of those things that bakery as an industry is beginning to respond well to, and the importance of it should not be underestimated. Lighter healthy meals, as a footfall driver into an outlet, have grown by 15%.

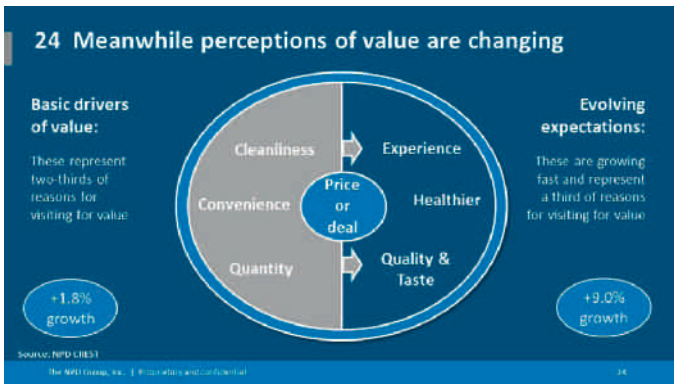
So just to summarise on those points, **slide 21**, are three key drivers which are in the minds of consumers. When consumers are going out and eating, not just bakery but generally in the market, they're thinking about value, **slide 22**, they're thinking about convenience and they're quite habitual in their behaviour, although there are exceptions to the habitual bit, which I'll also go into.

So just a little bit more on value, **slide 23**. It is partly to do with price and here's some data. This is from the US, from our US colleagues, this isn't UK data but it just highlights the global emphasis on counting pennies, counting

dollars, and you'll see that deals are a big motivation in bakery.



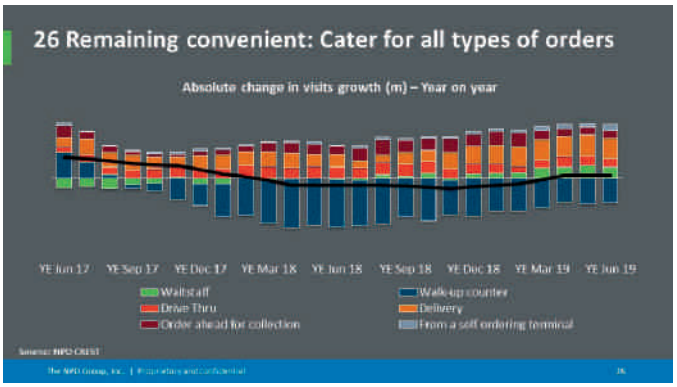
They represent a third of all visits and this is much larger than the rest of the market. You'll see that deals have grown throughout the time period we were looking at. When you start looking at sweet bakery, they've really grown and if you look at savoury bakery, they've really, really grown. This is to do with the meal deals and the fight for market share that is out there. We've got a low growth market with all sorts of key drivers and still operators are struggling to grow their share of total visits. So, they're resorting to meal deals to get people in-store.



But value as perceived by consumers is changing, **slide 24**. At the heart of value, it's still all about price and deal but on the right-hand side, these are the old basic value drivers. As well as price and deal, consumers when they go in-store are thinking what's the cleanliness of the place like? How convenient is it for me to get in and out? Can I order ahead and pick up? And in the minds of consumers, quantity and taste comes into play as peoples' perception of value. Increasingly however, consumers, are also considering the healthier side of the product that they're eating, and also the experience that they're having in-store. You can see that this is leading to greater growth. So you've got 9% growth on the right-hand side and only 1.8% growth on the left-hand side and I think this is just the direction of travel that peoples' perceptions of value are moving in. So again, it's something to be mindful of when you're positioning your products and you're focusing on the operators that are distributing or supplying them.

You're probably aware of some of the big moves that some operators have been making in using technology to improve customer's purchasing experience, McDonalds in particular, **slide 25.**

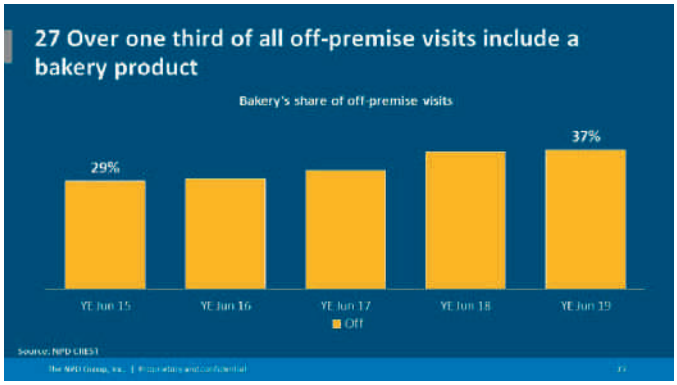
McDonald's has been buying up tech companies and these technologies are equipping operators with a huge amount of data, which is allowing them to understand customer behaviour much more so than they were able to in the past. This allowing them to understand what customers typically buy and from this to offer purchasing suggestions. It's allowing them to upsell and potentially increase average share. A consumer might give a perception they shop on deal and are price conscious, but once they've been confronted by these technologies such as this, they end up spending a little bit more. They don't realise because right at the moment of purchase, they're encouraged increasingly by technology to buy a little bit more, and bakery plays well in this kind of role because it's not generally part of the main meal. Why don't you add a muffin or a croissant, or whatever it might be, to your meal order? We will increasingly see this technology being used in food service.



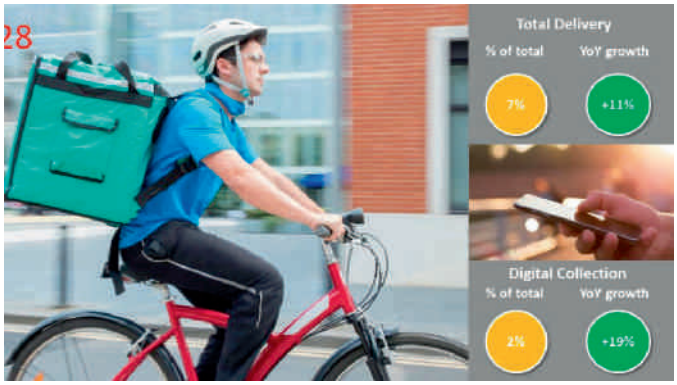
The reason I'm talking about convenience so much, **slide 26**, is because it taps into the off-premise side of purchasing, and all the colour bars, the reds, the oranges, the purples above the line are all what you might call off-premise visits and they're the ones that are really growing the market at the moment.

So, you're seeing channel deliberation in terms of routes to market and the way that operators interact with consumers. This means that if you are supplying products to these sales outlets, you need to make sure that your products are featured on the menu that customers use to key in their orders, and that you negotiate with operators

to make sure that they have a fair share of screen time when people are ordering via a kiosk or via their app, for example, because this is where growth is in the market.



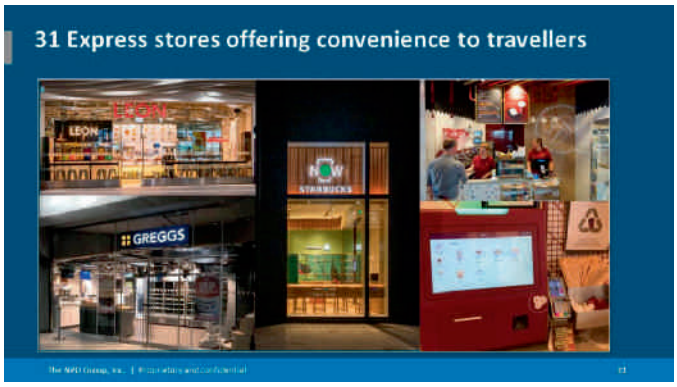
And you can see that bakery is over here towards off-premise. These figures show that 42%, which is higher than average for the rest of the market, and you can see how strongly off-premise is growing in general, and part of that is through delivery. Delivery, **slide 28**, as I said, is about 7% or 8% of the total market. When you have a top line, you have 0.1% growth in terms of market and in delivery, you have 11% growth.



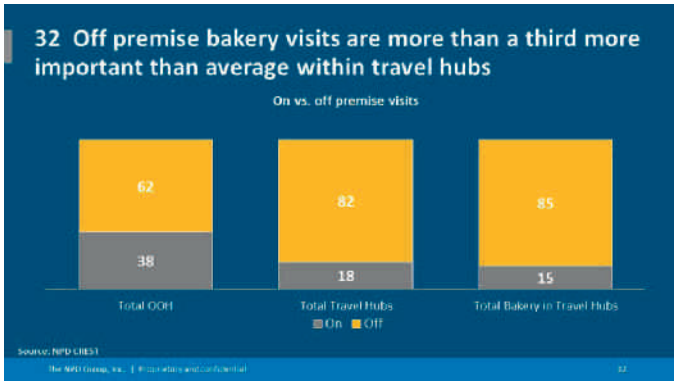
So, a little bit of what delivery means to bakery. £0.5 billion worth of spend on bakery products in the out of home market and it's growing faster in bakery than it is the rest of the delivery market, but it only represents about 5% of the total bakery market, so it's below the 7% or 8% I was talking about a moment ago, which means you have an opportunity to catch up and be as important in delivery as delivery is in the rest of the market.

An opportunity to grow. I know it's easy to say hit £21 million and you'll be fine but it's just through maths that you can see that there is that opportunity there and this would mean that growth becomes sweet bakery, savoury bakery but in particular sweet is under-indexed. So, think in terms of how you can increase sales, personally I think coffee has an understated role to play within delivery at the moment. This seems to be rapidly changing with Starbucks and Greggs and others now actively trying to push coffee through delivery aggregators. What role does sweet bakery have to play in such moments? I think that as delivery matures, you're going to see that the cost of delivery will go down. So lower priced items will then increasingly come into play in the delivery market.

Another area which is growing strongly where bakery plays strongly is travel hubs, **slide 30**. This is airports, train stations, motorway service stations, petrol stations, that sort of thing and there are 11,000 travel hubs in the UK. It's interesting to see that, even though people are on the go and in a rush, healthier is high on the agenda here. So again, what is it that the bakery industry can offer to tap into this strongly growing market? It's growing about 7% a year and what can it offer in terms of healthier choice?



Already operators are looking into this space. In **slide 31** are pictures of operators in train stations and motorway service stations and the interesting one is Starbucks in the centre of the slide. This is from China and it's now moving over to the US. I am fairly sure it will come to the UK next. There is no seating, or limited seating. You order

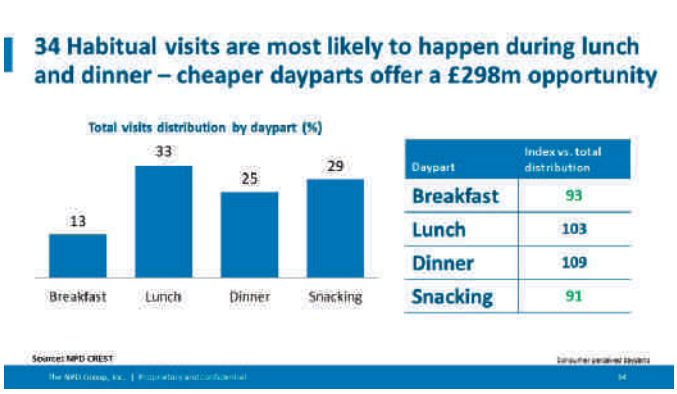


ahead and by the time you arrive, your order is ready. You just walk in, pick it up and walk straight back out. There's no queueing, so it's all about convenience and the key driver for those units is coffee and bakery can benefit from that.

Just to emphasise the point, **slide 32**, off-premise is even more important in travel hubs than it is generally across market, and bakery is even more important in travel hubs as well.

Another key area to talk about is what I call the habitual consumer, **slide 33**.

This is the person who's going out there on auto pilot and not really thinking about what they're eating every day, and this represents about a quarter of all visits and it's a substantial amount of spend. What you're seeing is that, in terms of peoples' habitual behaviour, there is an opportunity, particularly in breakfast where habitual behaviour under-indexes and in snacking occasions, again where habitual behaviour under-indexes, to try and disrupt peoples' behaviour and get them in store and to try your products, because breakfast has been shown as one of those fast growing areas, particularly growing fast in terms of families, it's growing fast in terms of coffee, as I've mentioned, it's also growing fast in terms of recommendations and if you can get people by social media or word of mouth to recommend your product or your outlet at breakfast, they're less habitual at breakfast and they're more likely to think, why not, let's give it a go. Again, there's about 300 million in terms of opportunity if you can better target these habitual behaviours, **slide 34.**

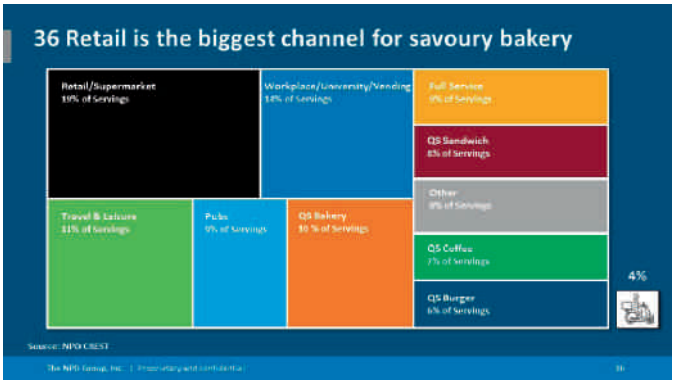


Daypart	Index vs. total distribution
Breakfast	93
Lunch	103
Dinner	109
Snacking	91

What is happening in bakery?

Firstly, **slide 35**, sandwiches and wraps represent still the lion's share, about a third of all savoury bakery products, and wraps in particular are growing strongly, as you might expect. There's an opportunity to turn sausage rolls around of the back of the success we've seen with the

vegan sausage roll at Greggs and they're moving to a more vegan space. I think those sorts of bakery products are not dead, they have an opportunity to perhaps modernise their appeal to some extent.



Within savoury, **slide 36**, as you might expect, it's retail which is the biggest part of that. Savoury plays into lunch and it's all about the big retailers and the meal deal offers that they have. Delivery is still under-represented within savoury, hence the opportunity to expand. But pubs are smaller within bakery than they are in the rest of the market, so again perhaps is an area to focus on.

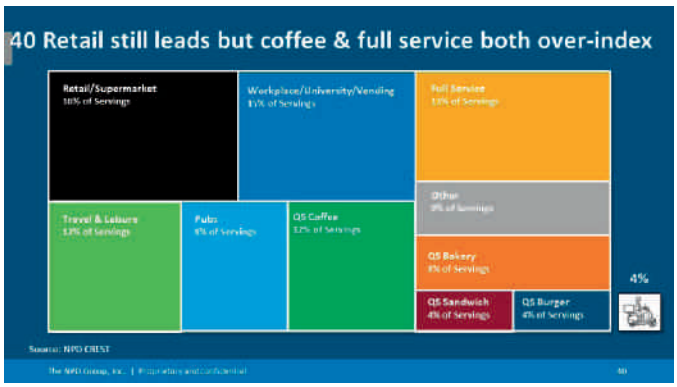
In terms of innovation, **slide 37**, earlier this year Pret introduced open sandwiches on gluten free bread, which is an increasingly big thing. Then you Simit Sarayi, a Turkish bakery chain which I think they're being aided by the Turkish Tourist Board, are expanding rapidly in London and other places and they are increasingly tapping into exotic flavours in bread products. Their product in slide 37 like a croissant but with a spinach filling. The middle product is Homeslice, which is not really necessarily doing anything innovative in terms of its products but it is in terms of its delivery. You can skip the queue, you can get a side order hatch where you can just tap, grab a piece of pizza and you can go off and

it's tapping into the convenience side of things. Perhaps a more interesting one is Maitre Choux, which is a new savoury open sandwich and they've launched about four different products, which are all coming as savoury rather than sweet.

As I said, I think there are some opportunities here in **slide 38** to improve the performance of a couple of key products. Sausage roll has dropped off in terms of its importance within off-premise sales. It's currently strong with habitual visitors but there is an opportunity to grow it more at weekends, more amongst families and as a result of that, maybe we need to think a bit more about the healthier side of things when it comes to the sausage rolls. Wraps again not performing strongly within off-premise, so maybe they need to be made more portable, and their distribution area widened. Wraps are still under-represented at breakfast and other key day times.

Now onto sweet bakery, **slide 38**. I know we're not supposed to be eating much in the way of cake because it's apparently not so good for us if we eat too much of it but cake is still number one.

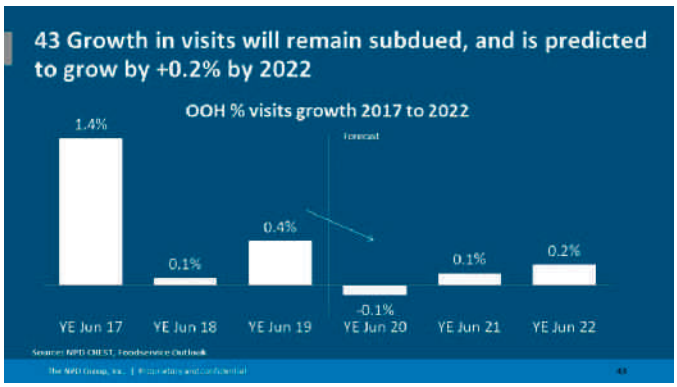
There are still over 300 million servings of cake per year in the UK, **slide 39**, but cookies are catching up on that. What's interesting is sweet bakery is much more focused towards the end of the day, much more dinner. So that's



why full service, **slide 40**, has a much more significant presence within sweet bakery than was the case with savoury.

In terms of innovation, **slide 41**, Crosstown Marylebone are now doing vegan sourdough doughnuts at 7am in the morning. Other outlets are doing similar things and are tapping into vegan, including Starbucks, so it's not just independent cafes. The other interesting one in slide 41 is Caffe Nero which is back into promoting healthier products with smaller portions sizes. Cake may not be healthy if you eat too much of it but they're giving you smaller portions to help prevent this. Perhaps smaller portions is a way of keeping your profits up but responding to consumer needs at the same time!

And in terms of sweet bakery opportunity, **slide 42**, the whole of the pastries, Danish and croissants seem to be lacking in terms of innovation at home and there seems to be this opportunity to grow them as an off-premise option. Maybe turn a croissant more into a savoury option. I know you have a sandwich at breakfast sometimes but maybe that needs to be a bit more throughout the day.



So final thoughts – with regards to Brexit, I don't know if a decision's been made today yet or not, but I think

we're already seeing a slowdown in the market. We saw at the start of the presentation that it's struggling with growth and what growth that we have had has been in the second half of the year. So I think we're maybe going to slip back into negative territory but any growth that does happen, I can guarantee it's going to be predominantly via off-premise.

With this increasing focus on convenience, on delivery, on faster pace of life, it's where a lot of operators are standing and trying to tap into all the different routes to market which includes apps, because if you have an app and it's not run by a third party applicator, you as an operator get all the profits of that. So, there's a lot of development going on there and the data capture behind that means that people can do precision marketing to customers.

Summary Currently the eating-out world is slow growth. But there is still growth, particularly in off-premise bakery.

Focus on value Remain prudent on pricing, while looking for other ways to offer value.

Use technology to encourage additional purchases. Focus on offering "value plus" and encouraging the consumer to expect more.

Remain convenient Become a multi-channel operator. Focus on technology and secondary tertiary locations. Offer consumers a seamless experience across all channels. Delivery will remain important and 'click n collect' apps will grow

Balance new opportunities vs. maintaining a strong core offer Attract new buyers by widening menu choices to include healthier and vegan options. Core menu items continue to have a role but add a twist or tell a story. Habitual customers remain your core audience – keep them happy!

Stan Cauvain, Session Chairman Thank you for that very insightful and thoughtful presentation Dominic. We still have a few minutes for questions?

Question Artisan bakery. Do you see strong differences in the demographics and eating habits and how we can tailor our offer to different ages?

Dominic Allport Yes, we see a difference in terms of ages but also increasingly, I think the industry is thinking more in terms of discrete segments or occasions. So while I think there's a part to play in terms of looking at, say, 16-24s, the young demographics and families, and using them to differentiate between younger families and older families, I think the way to start thinking about the different demographics and occasions that you want to target is about whether are they going to be consumers in-store or on-the-go? Are they going to eat by themselves or with others? And below that sort of general segmentation, you can get into the different groups, the different age groups and look at that. An example I'd give you is the sausage roll – still in the top five, as we saw. Still very popular with the 50-plus and the way that Greggs have tried to make that a lot more relevant in the younger demographic is by producing their vegan version of that using Quorn instead of meat. So, I think it's understanding initially the core demographic that your product appeals to and then understand where that demographic is going in terms of, are they growing? Are they declining? How important are they in the market? Do I concentrate on that core customer? There are some good examples of other products which are classics with a twist. Sainsburys have a range of three products, one of them is standard. Add an interesting new flavour to the second and then maybe make the third variant, a limited time offer variant, just to get that footfall in, to get that interest in and to get that conversation going and so that consumers recommend it to other consumers.

So I think it's not necessarily just about age groups and thinking you have to be a little more sophisticated in terms of how you do things but it varies very much in terms of savoury or sweet, and also below that, there's a lot of… for example, within sweet, you've got up to about ten different sub-categories, a similar amount in savoury. So each one of those niche areas is going to be somewhat different in terms of their core demographic I haven't got any straight answers, just some ideas of how I would approach it.

Stan Cauvain Thank you Dominic. I think what we just heard reminds us of a couple of things. First of all, we may be concerned with one of the oldest and most honourable professions, but we do need to embrace new technologies, and we do need to look to future opportunities, whether it's product development, or whether it's embracing the concept of healthier bakery products. Please thank Dominic for his presentation. *Applause*

Stan Cauvain, Session Chairman. So far we've looked at branding and we've looked at some consumer insights into the marketplace and now we need to move on and look at what it means to us, particularly in the retail environment, and there is no better person to talk to us about that than Ian Cummings, who comes from not just Asda but also from a family of bakers, and he's going to talk to us about the in-store baking activities and bakery products within Asda and hopefully will continue to inspire the younger members in this audience.

Asda Bakery Products by Ian Cummings, Senior Director of Bakery, Asda.

Thanks for having me. I was meant to speak in April but due to a major traffic accident, I spent the day stuck on the M1, so apologies I didn't make it. I got here last night in good time to give my talk this morning. To give you my background, as Stan said, I come from a family of bakers and I think, like many in the room, once bakery's in your blood, it's quite hard to leave. Started at Warburton's on their graduate scheme, on the sales side of the desk, learning my trade at probably one of the biggest bakers in the country from a manufacturing perspective and from a sales perspective. And then as poacher turned gamekeeper, whatever way you want to look at it, I moved to Morrisons. I was really intrigued about the retail environment and what did a buying role look like versus a selling role within bakery.

I then had a bit of a moving around career wise – two years in Iceland learning the discounter trade and then most recently of course, 14 months as Senior Director of Bakery at Asda. If I look tired, it's because I've got a seven months old baby girl, so it's nice spending a night in a hotel without being woken up three times during the night. I also enjoy golf, so I hope to play in the 2020 BSB golf day, as promoted earlier by organiser Keith

Houliston.

I want to talk to you about the retail environment in Asda, and how important bakery still is to retail. I'll give you a bit of an overview of our business and how important bakery is to Asda. A bit about route to success, so we won the Bakery Industry Award in 2018 and I will get there again. However, I want to talk to you about how we did that, how important bakery and in-store bakery is to Asda and I suppose the key values that we pull through on a daily basis, and a bit about what's next for us.

ASDA Overview

Route to Success

- Understanding our customers
- Investing in our bakeries & colleagues
- Innovation
- Supplier partnerships
- Multi format approach

What's Next?

I suppose the main thing to say is that bakery is now a gold category within Asda That basically means that we are spoken about at the Board meetings every week on a Monday. That's got its good points because you get the focus, but it's got its bad points because it puts quite a bit of pressure on us on a daily basis. From a sales perspective circa £850m a year, so quite big numbers. In-store bakery is probably £250m of that. So, when you put that in scale, that's a lot of bakery goods going through baskets on a weekly basis, just over £16m a week going through the tills.

We spend a lot of time investing in the customer and I'll come onto this a little bit later. Just through Paul's presentation earlier, the customer, (the consumer), is the most important person within bakery and we really need to understand that, and I'll tell you a bit about how we've investigated the customer in a little while. In-store bakery, it's the third customer reason for visiting a store, so it just shows how important bakery is to the retail market. Once customers are through the doors, bakery is the first-choice service for them, ahead of deli counters, ahead of meat, ahead of produce. This really showcases how important bakery is from a freshness value to our customers.

Market share Total bakery we're flat, just ahead of the market. In-store bakery we're running about 14%. We have a slight decline at the moment, which if I'm honest, is coming mainly from bread. Our in-store cake business is growing about 8% year on year. I am proud of our in-store bread sales, and when I say in-store bread, that's bread and rolls, about 54% of our weekly volume for in-store bread comes through rolls so we're over-indexed on the roll sales and we're up 0.5% year on year. So, quite an achievement, if you look at what we had last year with the World Cup, a really hot summer and everyone having barbeques, so quite a decent position to be in.

We run quite a complex model. So, in my view, we've got a lot of complexity within in-store bakery. So we've got three in-store bakery models which ultimately deliver three customer offers which is not a great place to be as a baker. However, we make it work for us at the moment. So we've got 334 scratch bakeries, so preaching to the converted, they're bakeries that make most of the products from scratch when we talk about bread and rolls, and then we've got 56 pre mix. So pre mix is where a superstore that the volume doesn't require a full scratch operation, so they have a scratch element for bread but we bring rolls in through a bake and serve basis, and that's just basically through volume. Then we've got 210 bake off stores, so these are primarily our supermarket stores, so the Netto conversions when we took Netto over. So too

small to have a scratch operation, but obviously in-store bakery being such an important part for our customer and we need to have an offer in those stores.

We've got 1400 skilled bakers within our estate. I suppose talking about the skillset in bakery, it's great to see the younger guys coming through. I'm a massive supporter of the baking industry and want to see it grow. One struggle that we have as a retailer is trying to recruit skilled bakers into retail. Long hours, a tough role, maybe the money's not as good as it could have been, and we've lost 500 skilled bakers over the last 18 months now which makes the job harder when you talk about the customer requirements and what the customer wants.

Adding more challenging complexity to instore baking, we still have 600 hot plates operating, so we're quite unique

in that respect. The hotplates are mainly used for the production of pancakes. We also put our loaf cakes and ring cakes, which are unique to Asda in-store bakery, into the hot plate category sales mix. That's an area that's driving significant growth for us at the moment, and 75% of our sales come from scratch products. We've reduced that over the last 18 months by about 6% and that was a conscious decision based on quality. So there were certain lines we were pumping out from a scratch bakery perspective that we felt we weren't giving the right quality to the customer, so we brought scratch production down, brought a little bit more bake off in but we are still proud that 75% of our products come from scratch.

A bit of a route to success. I know it was 2018 when we won the award, but I was meant to be talking to you in April before the 2019 awards this year. Awards are really important to our business and this allows me internally, as

Senior Director for Bakery, to go and shout about bakery within Asda and basically I get a half share of the pie when it comes to investment, whether that's investment in growth for kit or whether it's through marketing. So, the more awards we can win, the better from my perspective. It gives us something to shout about and it is a recognition of the hard work of those 1400 skilled bakers, the team within bakery in Asda House, and the work that goes on through the year. It's great to get that accolade and makes everything we've done throughout the year worthwhile. Within our industry, it's one of the most prestigious awards to win, so we are disappointed not to win it again this year but we will be back competing for the 2020 award.

Going back to what the customer wants, this has been a theme through the last two presentations. We needed to understand more about consumers and their requirements going forward, **slide 4**. So back in 2018 we invested in some consumer research and interviewed 1500 Asda customers to really understand what drives them into in-store bakery, and it's not rocket science. We basically had a 300 page check and this is the one page that stands out, so you do get a lot of insight. However, you've got to cherry pick the bits that really hit you. So I don't think this has really changed over the years but it's something about getting back to basics, and that's what we are focusing on as a team, really focusing on simplicity and getting back to basics and delivering freshness and quality but the important thing is making it a consistent quality. If you go back to saying we've got three models delivering three customer offers, it's quite hard to get that consistency through your estate but that's one of the most important things you can do. And when we get onto availability, that's availability throughout the trading day.

We were stuck in this old-world mindset of bakers still coming in at 5am and leaving at 12 noon. However, our shoppers don't shop like that. They are more promiscuous; they're moving round the retail market and that shopping trip has moved towards the afternoon. We were seeing a 6% drop in availability from morning to afternoon which, ultimately, is a massive loss in sales. For 2% availability is 1% sales loss, so you can work out from £850m worth of sales a year, you're missing out on quite a lot of sales if you haven't got your availability right.

We invested time through the customer research to change the shape of the working day of our bakers. Quite a hard job to do and we had to do it respectfully for our bakery colleagues. They have been within the baking industry and within Asda for a long time and to change their shift pattern was quite difficult. We managed to do it we now have bakers available throughout the trading day to make sure we have products available for customer.

We invest a lot in our bakeries. I suppose it's quite easy to say we invest £90m a year in our in-store bakery operation but when you look at where it is spent, £60m of that is probably in wages, so quite a big chunk of investment going into our bakery colleagues at the stores. Our production model is evolving, and it needs to evolve. We've reduced the amount of scratch baking in-store, but it is still high at 74%. However that is mainly customer focused to make sure we're giving them the quality that they deserve, but as the skillset falls out of the retail market within bakery, it's how do we evolve and how do we make our offer customer focused but also easier and simpler for stores to manage?

Tools and training We spend a lot on tools and training, and we have what are called our product implementation guides (PIGs) at store. They basically mean that anyone can walk into our in-store bakery, pick up a PIG Guide and be able to bake our product from scratch following the instructions in the guide.

I think it's such a simple tool but a really important asset to our business, to allow us to drive that consistency through our store. So something like Hot Cross Buns, for instance, probably one of the most complex products our scratch bakeries will make, you could go in and hopefully any one of us in this room could walk in store and pick up

the Product Implementation Guide and it's a step by step instructions on how to make out hot cross buns.

This year, to improve things, it's about simple steps. We sent product proof height guides out to all our bakeries, which are simple metal proof height templates. The biggest issue we have with waste is caused by over-proved or under-proved product and it's a simple guide which shows the bakers that the product's reached its required proof height and is ready to bake, so get into in the oven! We've dramatically reduced our waste bill with this.

Going forward, 20% of my time is now spent working with a colleague, looking at our in-store bakery equipment and how it is used by our colleagues, to consider improvements in training to ensure we maintain product quality for our customers.

Workshops and regional roadshows Again really important to get awareness of bakery to customers and what we can offer as a retailer from the in-store bakery. We did roadshows in 2019 at the big agricultural shows, the Yorkshire Show, the Royal Highland and the Royal Welsh show. The Yorkshire Show is really important for us and Asda will have a tent there showcasing produce, meat and instore bakery products. We take products there and we also make products from scratch, including hot plate goods cooked on one of our hotplates. We hand out free samples to really just get that awareness of what food products Asda supply and telling consumers that we still bake from scratch in-store and showing them the quality of product that Asda can deliver.

I've spoken about the shape of the working day there, because it is really important to align to that customer need, and the big thing for me is pride in what we do. I suppose I would say that coming from a baking family and hopefully I'm doing a good job in Asda as Senior Director in Bakery for it, but I think you need a bit of pride in what you do. I think you really need to enjoy the industry you work in, to push that offer through to stores and through to the customers and that's something that we're spending a lot of time doing. We listen to our colleagues.

So, times are changing, I'm useless at social media but I know Instagram's big out there and Twitter and Facebook and all that is good stuff. Communication in retail can be pretty stale and pretty boring and if I'm honest, there's generally a big clash of heads between trading and retail operations within retailing, which is a shame because we all work for the same business. But we've tried to change that communication from a bakery perspective and tried to just basically lighten it up and engage our colleagues better.

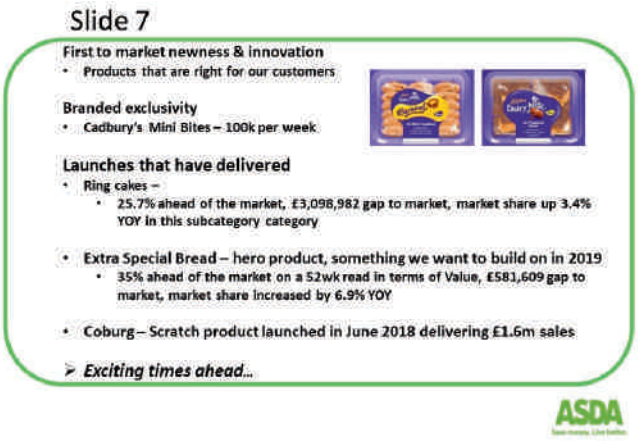
So, we've invested in a field team. We used to have 25 bakery coaches around ten years ago, that were our custodians of quality, going around all our stores. As the industry gets tighter and it is more of a struggle, you start to lose important resource like that but in bakery, we've reinvested back into retail. I've got three guys that work for me who are field based, retail focused, going out upskilling colleagues, making sure we've got the right quality in store and also driving new communication.

So really simple but through Instagram we'll put a new Instagram video out every week for our colleagues, which is a sales-driver. but it can be also focus on quality and we're getting really good engagement. One of the guys put an Instagram video out the other day at midnight and by 3.00am he had 1,000 Likes on it, which just shows that our colleagues are really engaged in what we're doing and we're seeing that come through in the results of our in-store bakery. I've just got an example of a video to show that Nick White, who works for me, has sent out. It's more of a sales incentive video.

<video plays>

That was a very low budget video but it just shows something simple can resonate with our bakery colleagues and we are getting that engagement and that excitement back within in-store bakery now and within bakery in totality in creating that halo effect. So, it's really working for us and we can see it coming through in sales.

So, I know in a couple of presentations we talked about innovation. Innovation's really important with in-store bakery still but it's not just about scratch products and baking products from scratch, it's also about branded products, **slide 7**.



We partnership with CSM and we have exclusivity for a period of time on a number of Cadbury's brands, whether that's Mini Bites, whether it's doughnuts, whether it's muffins, but it shows the power of driving brands as well as scratch, and I don't apologise for putting that up there because I know the challenge of bakery own brand versus brand can be a challenge at times, but we were driving £100,000 a week of sales through Mini Bites and that wasn't about push and promotion, that was about just giving the customer something new and exciting. I suppose the more pleasing areas of growth

and innovation are the three things at the bottom of slide 7, ring cakes, extra special bread and Coburg. So two out of the three there are scratch products, so our ring cakes and our Coburg, and you can see driving great growth in sales. So ring cakes over £3m and Coburg £1.6m in a year, that's £1.6m at 55p a loaf so you can see the volume that is going through these products. And then extra special bread.

The presentation before was about premiumisation and we've got to be careful about premiumisation at the moment within the retail market and inflation, and it's something that I get knocked over the head with every Monday in our sales meeting, because the market's tough out there. If you talk about the growth of high street discounters, personally I think they've done a very good job, the Aldi, Lidl and the B&Ms of the world. However, it's given us a big headache for the traditional big four, as you would call it. But it's an area that we need to focus on and extra special bread within in-store bakery is a growth area for ourselves, and we're growing ahead of the market and it's an over-trade. We had a range review back in June and we gave extra special 50% more space within our estate and we're seeing the benefits of that coming through now. We have some more exciting new stuff coming out in 2020, looking at more bespoke artisan products and how we drive that from a scratch perspective in store.

Supplier partnerships are really key, and I know certain retail partners have got bad press about how they can push suppliers to the brink and it's all about short term gain. It isn't about that at Asda, and I'm not just saying that. You will have that element at times, whether it's through bought in or in-store bakery. However, my strategy for the team and with the area that we're pushing this year is about longevity, so trying to move all one-year deals to a three-year deal.

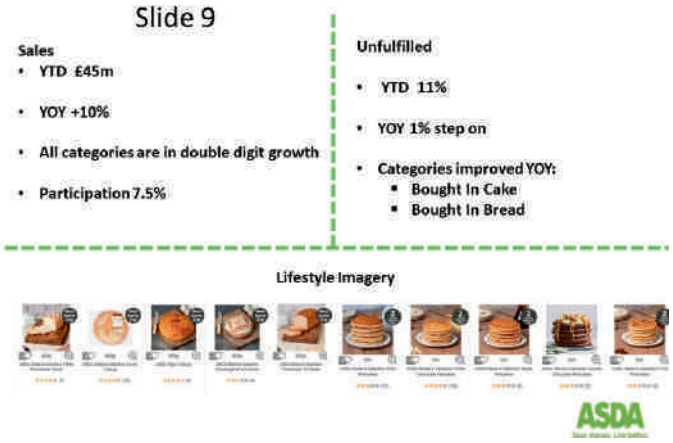
Some examples of category partners are in **slide 8**. We had a 25-year relationship with Rank Hovis before their demise and we have had a 25-year relationship with CSM, which is ongoing. We bring in new partners in as well and we start working with Whitworths in 2020. So hopefully we have that longevity in supply, because it gives us security as a retailer, knowing that we have the partnership. We can secure the volume for the supply base which ultimately should give us a better cost price which then ultimately we could invest back into the price for the customer.

We value supplier relationships. I'd rather have less suppliers but with longevity, rather than more because I think we're going to get a better relationship and a better outcome for both parties, and that comes through an open and honest approach and I think that's something within the retail industry, stood up here and being very honest with you, that I don't think we've particularly had in certain areas. I want to make sure that we drive that culture into Asda, especially into the bakery industry now, to make sure we're open with the supply base, meaning that we all know where we stand and we can drive mutual business plans going forward.

But it's not just about big stores. Just to mention the growth of the high street discounters. Our operating models versus high street discounters is about an 8% disconnect at the moment. So, if you think about Asda big stores, a lot of resource, a lot of staffing is required to run them on a daily basis, a big logistic operation. If you look at the Aldi, Lidls, B&Ms of this world, smaller stores, more streamlined logistic operation, probably easier to deal with. So, we've got that 8% differential that we need to make up.

Now we're not going to get all our growth from selling in our normal big stores, or the out of town superstores. We need to focus on multi-format. We're getting some of that through our supermarket stores, which are the biggest growth area from a store perspective in our business. Online shopping is however our biggest growth area as a business now, and it's really important for bakery. So, we have quite a high unfulfilled rate, which is a problem and it's our biggest headache that we're trying to work on from online. We run circa 11% unfulfilled which, if you think about it, you're disappointing 11% of your customers every time they place an order.

Standard for our fresh business, including meat and produce, is around 6%. So we've got quite a way to go to get that differential down and we're currently running in the last three weeks, through some work we've done, at 9% so we are improving but year to date, we can see £45m worth of sales come through. So not a massive part of our business when you put it in the context of £850m a year. However, it's a really important part that's growing at 10%. If we could get everything growing at 10% I think we'd be all happy, so it's an area that we are focusing on, whether that's through our supply partners or whether that's direct delivery to store every day, whether that's process at store.



We have a tool we use called BPP, which is bakery production planning, which sends information every morning to each our bakeries, which tells the bakers what

the demand is for that day and what they have to produce to meet it. We've not got the BPP process just right at the moment, which is causing quite a lot of shortages through the bakery categories. But all categories, whether that's bought in bread, bought in cake or in-store bakery, are now in online with double digit growth and that is a really important area for us to focus on. So, going forward, when you think about retail, it's not thinking about the big stores, putting product on shelf, it's also about how you drive that multi-format approach as well.

Slide 10

So, what's next for us? The picture in slide 10 was from back in September 2018, when we were named Supermarket Bakery Business of the Year at the British Baker's 2018 Baking Industry Awards. It was a wonderful celebration of our achievement and a memorable evening. I am now trying to drive that fun culture back into bakery in Asda. It's a great industry to be in and I get excited and animated about it. I get the mickey taken out of me a lot in the office for it.

Slide 11

However, winning the BIA award was a great accolade and we publicised it a lot.. We put it on social media out there, we had six sheet posters, a lot of above the line promotional activity on winning the award and it just shows it's a prestigious award and we can see that transpiring through into sales.

So what's next for us from a strategy viewpoint? It's all about the customer and it's about keeping it simple. It's not rocket science, it's focusing on freshness, consistent quality and availability throughout the trading day. I suppose the most important one for me in there is "consistency of quality in everything that we do" and that's probably the hardest. Simplification, multi-format,

Slide 12

really focus on our colleagues and of course, you can't forget innovation. So that's me, I hope you enjoyed it and any questions.

Stan Cauvain, Session Chairman Thank you, Ian, another facet of this wonderful industry that we're involved in and a very important one. As Ian has opened the opportunity for questions, the floor is yours.

Alice Cook, Bakery Business Ian, you said that you had lost quite a lot of skilled bakers. I don't know if that was in the past year or just recently, but why do you think that was and are you trying to re-recruit? Are you getting skilled bakers back in and if not, how do you plan to tackle this problem?

Ian Cummings That's a good question, since 500 bakers lost in the last 18 months is a substantial number when you think that we've only got 1400 skilled bakers overall in the business! I suppose it's one of our biggest challenges and yes, we are trying to recruit but it's quite hard to recruit within the retail industry. My honest view on why they left? It is because retail's tough to work in, whether you're working in a head office, or in-store. the store environments are a really, really tough environment to work in. It can be long hours and hard graft, and the remuneration probably isn't high enough to compensate for that. The bakers who left have probably been able to find easier and less stressful work and get paid the same money for it. So that's the reasons why they're leaving.

To get them back in is proving quite difficult and I think we're not probably alone in that within the retail sector. I don't have an answer to the question of how we're going to get them in? Bring the youth through perhaps. It's something that's quite close to my heart. We need to work closer with Bakery colleges. At Asda we don't do that at the moment. I know through the millers, we used to have certifications to upskill colleagues and that's something that I'm trying to push to get back to. We do not have a plan to do that at present, but we hope to do it in 2020.

David Wright, G.W. Wright You mentioned extra special bread, could you give us a bit more detail about how you make that and what you sell it for?

Ian Cummings All our extra special bread in in-store bakery is bake off. We don't make it from scratch just because of the complexity of production, particularly with us losing some of our skilled staff.. And when I talk about reduction in scratch baking, that was an area that we really focused on going towards bake off, if I'm honest, to

make sure our bakers can focus on the core products that are going to drive the volume.

We sell the extra special bread at £1.60 a loaf, and within in-store bakery, we see that our customers are willing to pay a little more for extra special products.

The flipside to that on the bought-in bakery products, is we're seeing deflation in extra special which is generally driven by the high street discounters. So, our extra special bread at the moment in bought in and is selling for 84p for an 800g loaf which is ridiculous really, that should be a £1.20 loaf really when you're talking about the quality of the product. As we're seeing inflation coming through in in-store bakery, we're seeing loads of deflation coming through in bought-in and we're not seeing the volume growth to offset that deflation. It's causing us quite a problem. However, we have got 14% participation, so 14% of our range in bakery is extra special and it's there that we're going to continue to innovate and grow next year because we think that is the growth area for our customers.

Helen Ross, Fine Lady Bakery No mention of health, is that part of your next strategy?

Ian Cummings Healthy products are part of our strategy and it's trying to find a balance in how we drive that. On a serious note, although it's quite funny, last January we tried to drive up sales of healthy products. However, the main product that we got double digit volume growth in was doughnuts, so customer demographic is quite focused on sweet treats and when we talk about sweet cakes, they're driving the sweetness.

We are partnering up with certain suppliers now to talk about health and how we drive that going forward. I think as an industry, to be fair, we need to do a better job at driving the health message through bakery. Certain food areas, such as meat and dairy, get quite a hammering health wise, but they are very vocal about how they support their areas and counter unfair or inaccurate criticisms. I think we need to drive. and support bakery in a similar way. Whether that is through branded partnerships, in-store marketing, in-store bakery, whatever, it's something that we are focused on and we're trying to drive a plan for next year on how we deliver it.

Peter Baker, Finsbury Food Group Could you tell us a bit about how you control your quality; do you do mystery shopping, or other techniques to make sure the quality's right?

Ian Cummings We have a product development team that get products in every month, so we have an extensive range of test kitchens at Asda House. So our development team will go out and shop the product, so they're not just picking off shelf, we have got shoppers that go out and bring product in, so just as a normal customer would buy them. We ask our supply partners to do the same, so on a monthly basis to benchmark our products and give us honest feedback. And then purely, a bit like we said before about testing innovation, about asking friends and family. I'm out there probably two or three days a week buying product and I ask my family to do the same. A few of you know my dad, he did my job a few years ago so I get dragged round every week by him, telling me how poor my quality is at times which is a bit of a problem. So, we have a structured approach to it on a monthly basis, and then it's ad hoc through just consumers and talking to people.

Stan Cauvain I think it's only fair to give Ian a rest after handling a number of challenging questions which he coped with very well indeed. Ian, thank you very much for your presentation and may I wish you the best of luck with the awards next year. Please join me in thanking Ian. *Applause*

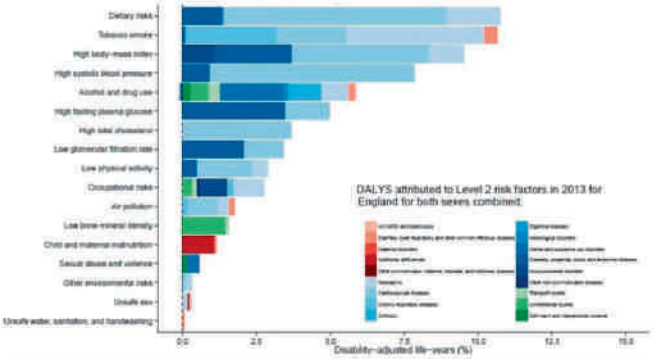
Stan Cauvain, Session Chairman It's perhaps appropriate that the final presentation before lunch is around the healthy eating message! We've heard of a number of issues related to healthiness in the previous presentations. Our next speaker is therefore Sam Montel and she comes to talk to us about the Government's approach to obesity. I know, from having had a few words with Sam, that she's going to take quite a sharp view on how we, as an industry, are part of the solution to the issues related to obesity and healthiness in the future.

The Government's Approach to Obesity by Samantha Montel, Registered Public Health Nutritionist, Public Health, England

It's a real pleasure to be here today so thank you for the invitation. I'm a Registered Public Health Nutritionist and I have been involved in for nearly 20 years. I started off in the Food Standards Agency, moved to the Department of Health and I now work for Public Health England, which is an Executive Agency of the Department of Health and Social Care. It is an evidence-based agency that provides information to Government, local authorities, the NHS and so forth.

Today I'm going to give you an overview of the Government's approach to childhood obesity, and take you through where we are with the reduction and reformulation programme that PHE takes forward on behalf of Government. Firstly, **slide 1** shows the global burden of disease. This tells us what makes us ill and what can kill us. The implication of what you see before you is very serious, because we see that dietary risks

1 Global Burden of Disease: Changes in health in England



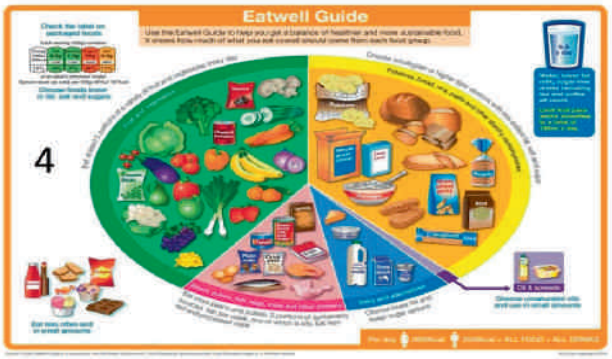
Newton JN et al., (2015) Changes in health in England, with analysis by English regions and areas of deprivation, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet; S0140-6736(15)00195-6

are now competing with tobacco as the leading cause of premature death. We can see that over half of those risk factors up there are related to diet and nutrition.

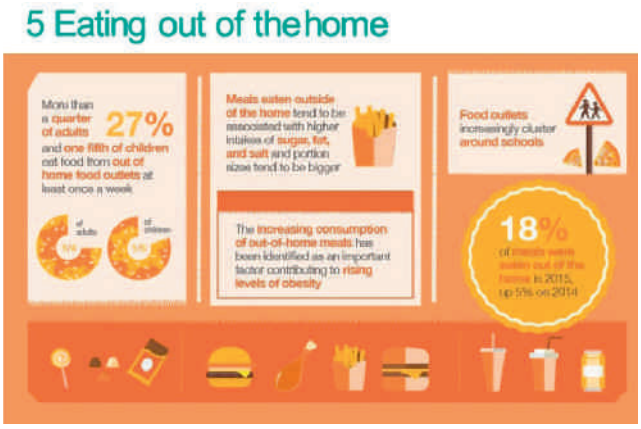
You will be aware that obesity is now one of the biggest public health challenges that our country faces. We can see from this slide that it is really an important issue that we now need to take forward and the Government are responding appropriately. There's a common thread that I want to take through this particular presentation, which is that changes in the composition of food can equate to changes in the diet, and that's a really important thing that I want to come back to. The majority of the adult population are now overweight or obese, **slide 2**. We recognise the impact that obesity has on us all as individuals, as families, as employers, as taxpayers, as well as the pressure this puts on the NHS.

Obesity significantly impacts on lifespan, disability, quality of life and productivity. In short, obesity affects us all. Too many children remain overweight and obese and that is likely to follow them into adulthood.

Recent figures from the National Child Measurement Programme, **slide 3**, illustrate that 135,000 five to six-year olds in England are now overweight and obese. For the 10-11year olds that have just started secondary school, over 200,000 are now overweight or obese. Rates for obesity for 10-11year olds have risen by almost a third in the last decade and doing nothing about it is not an option! The rate of childhood obesity in areas of most deprivation are more than double those of children who live in less deprived areas. In the CMO's report on obesity that came out recently, there is an estimation that 1.2 million children in England now require weight management services. These are shocking statistics, but they show why it is so important that the Government is taking forward a reduction and reformulation programme to change the compositions of foods that children most consume.



It will come as no surprise to you that our diets do not equate to what is depicted in the Eatwell Guide, **slide 4**. We eat too much saturated fat, sugars, salt and not enough fibre. However we know that changes businesses have made to foods they supply to make them healthier, can make a real impact in the foods that families buy regularly. We've seen this through our work with salt reduction, which has resulted in an 11% reduction in the population's intake of salt.



We've had a lot of information today on out of home eating, and as other speakers have alluded to, the food environment is constantly evolving **slide 5**. There are now more opportunities for what we eat and when we eat it. We consume around a quarter of our calories from the eating in the out of home sector.

Eating out of home is no longer a treat, it is more of an everyday occurrence. We can be eating breakfast, snacking, having lunch and evening meals out of home. The CMO's report I spoke of earlier, talks about children having a right to live in a healthy environment. We hear that we are principally living in an obesogenic environment now, which promotes obesity. 'Eating out', 'eating in', 'food on the go', 'ordering and delivery more accessible' and with 'increasing portion sizes'.

Food supply businesses have a clear responsibility in making the healthier choice the easier choice for consumers, in a whole systems approach **slide 6**.

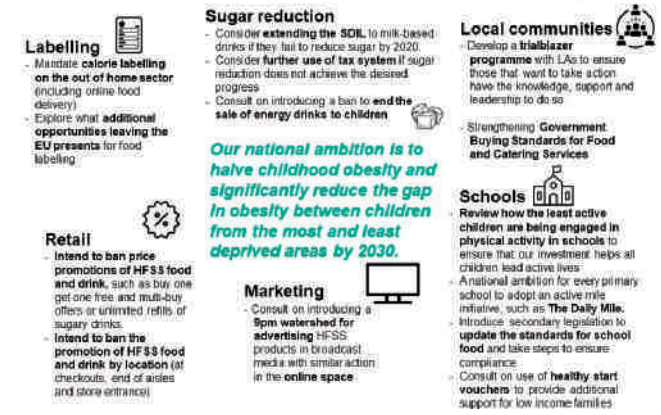
Childhood Obesity Plan, you will have noticed the first one was published in 2016. The Government is taking this public health challenge very seriously, as is detailed

6 Whole systems approach

in these plans and has been further committed to by the Prevention Green Paper which was published last summer.

7 Childhood Obesity: a plan for action Childhood Obesity Plan Chapter 2 sets out the Government's ambition to halve childhood obesity by 2030. It illustrates, in **slide 8**, a comprehensive plan which includes actions taken forward by schools, by local communities, as well as those actions for the food industry, **slide 8**.

8 Childhood Obesity: a plan for action, chapter 2



The Prevention Green Paper, **slide 9**, signifies a shift from us just growing old and living longer but for us to live longer in good health,

9 Prevention Green Paper – Advancing our health prevention in the 2020s

"We've published "Chapter 3" of the Childhood Obesity Strategy, including bold action on: **infant feeding**, clear labelling, food reformulation improving the nutritional content of foods, and support for individuals to achieve and maintain a healthier weight. In addition, driving forward policies in Chapter 2, including ending the sale of energy drinks to children.

Foods for infants

"We will challenge businesses to improve the nutritional content of commercially available baby food and drinks. PHE will publish guidelines for industry in early 2020. Industry's progress will be monitored and reported to the government. If insufficient progress is made, the government will consider other levers. PHE will also explore including baby food within the popular Change4Life Food Scanner app to help parents and carers make healthier choices for their infants."

Food reformulation: improving the nutritional content of foods

"Our ambition is to reduce the population's salt intake to 7g per day. To help achieve this, revised salt reduction targets will be published in 2020, for industry to achieve by mid-2023. We will report on industry's progress in achieving this in 2024. Salt reduction by consumers will be encouraged by marketing, and by providing advice on the benefits of reducing salt intake, including within the NHS. We will keep all options open if a voluntary approach does not demonstrate enough progress by 2024!"

The above builds on the childhood obesity plans and it includes further ambition around looking at the root causes of obesity and includes building on the work that's been taken forward by salt, which you can see in that final paragraph there, to reduce the population's salt intakes to 7g a day.

10 Reduction and reformulation programmes

I want to go through briefly the work that Public Health England oversees on behalf of Government around the reduction and reformulation programmes, **slide 10**, that relate to sugar, to salt, and to the work that we are developing on a calorie reduction programme. The sugar reduction programme, **slide 11**, looks at those products that contribute the most sugar to children's diets. Children and adults are consuming more than double the recommended amount of sugar per day and PHE is working with all sectors of the food industry to reduce the amount of sugar coming from those foods. For children up to the age of 18, that is a 20% reduction in sugar by 2020.

11 The sugar reduction programme

- Food industry challenged to reduce 20% of sugar from the food categories contributing most to children's diets
- The reductions in sugar should also be accompanied by reductions in calories where possible
- Three options for taking action: lowering the amount of sugar per 100g, reducing portion size, and/or moving towards lower/no added sugar products

12 Second year sugar progress report, Sept. 2019 We published our second-year progress report in September.

This includes for the first time an assessment of sugar reduction progress for cakes and morning goods between 2017 and 2018, and it also includes an assessment of progress by the out of home sector, which we were unable to do in the first year progress report. It also covers sugar reduction in drinks which are covered by the soft drinks industry levy and there's information on the slide about the commercial datasets that PHE uses to monitor that progress.

The Report looks at progress across categories, by businesses and in top selling products based on analysis of data for the year ending August/September 2018 compared to the baseline year of 2015.

There is also an assessment of changes in sugar level in drinks covered by the soft drinks industry levy (SDIL) during the same period.

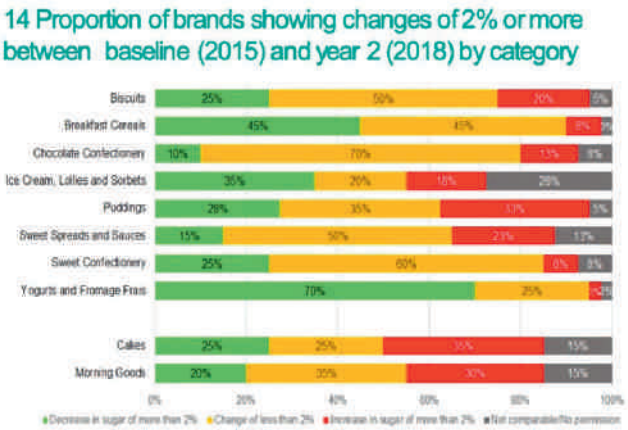
Data used comes from commercial datasets:

- Kantar Worldpanel for retailers and manufacturers, including volume sales and nutrition data
- MCA for food and drink purchased and consumed outside of the home for volume sales; nutrition data has been collected from information given on-line, on menus and some data supplied by businesses

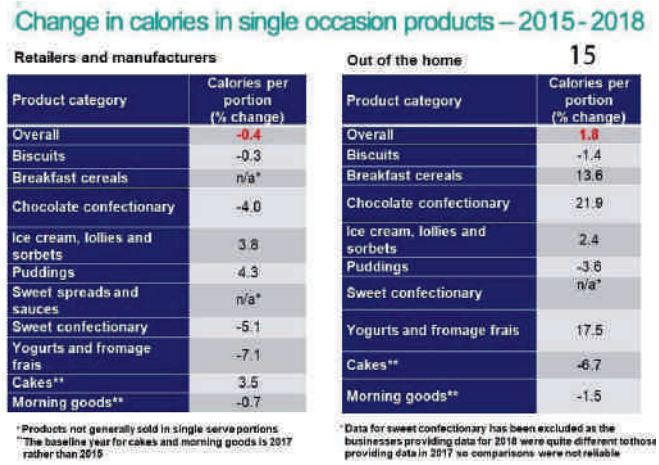
Key findings from the sugar report from year two.

It shows a mixed picture. Sections of both in home and out of home, are continuing to make progress. Reformulation does work. Families can now purchase products with lower levels of sugar than before the programme began. However, with current levels of obesity and children consuming too much sugar, the Government has been clear that inaction is not an option and action needs to be deeper and broader.

I'm going to take this moment just to reflect on some of the data limitations that we have for cakes and morning goods, for example. Only a small amount of data was able to be collected for the 2015 baseline, which is what all the other categories have, and so progress for those categories are compared to a baseline of 2017. Progress for the out of home sector generally is also monitored against a baseline of 2017. The out of home sector is monitored using a simple average rather than a sales weighted average because that is how we are able to use the commercial dataset. That means, from using a simple average, it does not have a relation to the sales.



Slide 14 features the different brands that show changes of 2% or more between baseline (2015) and year 2 (2018) by category. You can see where the progress that has been made and where it hasn't been made. This is looking at it by category, but I was looking as well within the report at what it is showing by brand level and if you look at it by brand level, 47% of brands had a change of less than 2%. I can say therefore that there have been successes but there have also been missed opportunities.



Change in calories in single occasion products – 2015 - 2018

15

Retailers and manufacturers

Product category	Calories per portion (% change)
Overall	-0.4
Biscuits	-0.3
Breakfast cereals	n/a*
Chocolate confectionary	-4.0
Ice cream, lollies and sorbets	3.8
Puddings	-4.3
Sweet spreads and sauces	n/a*
Sweet confectionary	-5.1
Yogurts and fromage frais	-7.1
Cakes**	3.5
Morning goods**	-0.7

*Products not generally sold in single serve portions
**The baseline year for cakes and morning goods is 2017 rather than 2015

Out of the home

Product category	Calories per portion (% change)
Overall	1.8
Biscuits	-1.4
Breakfast cereals	13.6
Chocolate confectionary	21.9
Ice cream, lollies and sorbets	2.4
Puddings	-3.6
Sweet confectionary	n/a*
Yogurts and fromage frais	17.5
Cakes**	-6.7
Morning goods**	-1.5

*Data for sweet confectionary has been excluded as the businesses providing data for 2018 were quite different to those providing data in 2017 so comparisons were not reliable

Slide 15 shows you the change in calories because when the sugar reduction programme was developed, we not only looked at the reduction in sugar per 100g but we were looking at those products which were likely to be consumed in a single occasion and we were looking at the change in calories and the reduction in calories also. So this shows you for those product categories that are included in the sugar reduction programme the percentage change there, and you can see, particularly for the out of home sector, there has overall been an increase in calories in those products that are consumed in a single occasion.

If you look at that left-hand table for retailers and manufacturers, we can see that there has been no overall reduction in calories in the programme also. I'm not going to spend too long on these slides because they will I'm sure be circulated and there are plenty of other case studies in the report as well, but when PHE takes forward its monitoring, it acknowledges that not all reformulation progress will be captured within the dataset and, therefore, it invites businesses to share with us those case studies that support the progress that's been taken forward. We ask them to provide quantitative analysis between

particular time frames. This is industry data and PHE does not take forward any calculations within it. We had a total of 156 case studies across 48 categories that are included within the report, so thanks to those businesses that have taken steps to produce these case studies and for their commitment to the programme of work.

Case study examples 16

Greggs

Category	Timeframe	
Biscuits	Between Year 1 and Year 2	In November 2017, reformulation of 3 Greggs Cookies (Milk Chocolate, White Chocolate, Triple Chocolate) was achieved. The sugar content ranged from 38.8g to 39.9g sugar/100g before reformulation compared with 27.1g to 28.0g sugar/100g after reformulation. This resulted in a sugar reduction of between 28% and 30%.

Pladis UK

Category	Timeframe	
Biscuits	Post-Year 2	The portion size of McVitie's Iced Gems reduced from 25g to 23g, and the portion size of McVitie's Choc Gems and 3 Mini products (Gingerbread, Chocolate Digestives and Penguins) all reduced from 25g to 19g. The average sugar content per serving reduced by 19%; ranging from 7.5g to 12.9g/serving, to 5.7g to 11.9g/serving. The calorie content across the products reduced from 100 to 124 kcals/serving, to 88 to 94 kcals/serving.

I think it's useful to highlight because we've talked a lot this morning about innovation, we've talked about responding to consumer demand, we've talked about where it's possible and this starts to show you where businesses… and I've taken some of the higher percentage reductions from the report but, as I said, there's about another 150 other case studies within it, and I think it's useful to see what businesses have done in their response.

Case study examples 17

Costa Coffee

Category	Timeframe	
Cakes	Post-Year 2	In February 2019, Costa introduced a new Gluten Free Vegan Fruity Flapjack to replace the Fruity Flapjack and the Nutty Flapjack. The portion size and the amount of sweetened dried cranberries used in the new recipe were reduced. This resulted in the sugar content reducing by 25% from 26.5g to 20g sugar/portion.

Premier Foods

Category	Timeframe	
Cakes	Post-Year 2	In January 2019 30% reduced sugar Angel Slices were launched reducing the sugar content from 39.0g to 25.1g sugar/100g. The sugar reduction is achieved by reducing sugar in the batter and mallow as well as removing the icing topping. The portion size was reduced from 33g to 24g resulting in 28% calorie reduction per slice.

So here a couple of case studies showing the response on biscuits. I've included a couple of case studies on cakes as well, **slide 17**, you can see there, from Costa and also from Premier Foods and you can see here the Costa one, for example, that's a sugar reduction in their flapjack of 25% of the content and there a portion size reduction in the Premier Foods for their Angel Slices below as well,

Case study examples 18

ASDA

Category	Timeframe	
Morning goods	Between Year 1 and Year 2	In April 2018, the recipe of the Smartprice Sultana Scone was reformulated reducing the sugar content by 42% from 25g to 14.6g sugar/100g.

Sodexo

Category	Timeframe	
Morning goods	Post-Year 2	Sugar reduction was achieved in 19 morning goods. The percentage sugar reduction achieved was from 2.9% to 30.9% per 100g; with the sugar content across the range reducing from 5.8g to 41.4g sugar/100g before reformulation, compared with 5.3g to 34.5g sugar/100g after reformulation. Portion size reduction from 1% to 4% was completed in 10 of the 19 products in the range.

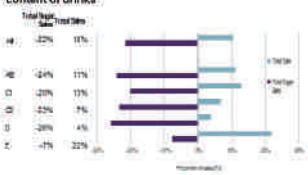
and if I flick through to morning goods and Asda, a case study there for their scones in a sugar reduction content of 42% and in morning goods there also.

At the same time, as I mentioned, in that sugar reduction progress report, we also reported on progress that can be seen from the soft drinks industry levy.

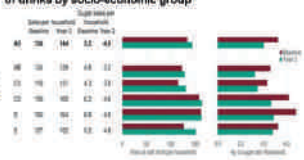
19 Soft Drinks Industry Levy(SDIL)

- There have been continued reductions in sugar levels in drinks that are subject to the SDIL
- The total sugar content decreased by 28.8% per 100mls for retailers and manufacturers between 2015 and 2018
- Results for drinks consumed out of the home are similar with simple average total sugar per 100mls reducing by 27.2% between 2017 and 2018
- The sugar sold in soft drinks subject to SDIL has decreased by 21.6%. Equivalent figures for the out of home sector are not available
- Socio-economic group analysis using data for retailers and manufacturers shows the sugar purchased from these drinks has decreased in all socio-economic groups, although the decrease is smallest in the lowest socio-economic group. Although this analysis has not accounted for other factors that could be causing some of the differences between groups

Change in sales (litres) and change in total sugar content of drinks



Change in sales (litres) and change in total sugar sales of drinks by socio-economic group



This soft drinks levy, as you will recall, came into effect in 2018 and even before it came into effect, the majority of soft drinks manufacturers had reduced the sugar content. There have been continued reductions in sugar levels in drinks that are subject to the levy. You can see there for those top few bullets, that sugar content decreased by 28.8% for retailers and manufacturers. For the out of home market, it was a very similar figure. We have also done some analysis looking at socioeconomic groups and it shows that the sugar consumed from these drinks has decreased in all socioeconomic groups, although the decrease is smallest in the lowest socioeconomic group. We also haven't looked at a full analysis of some of the other factors that could have impacted on the reduction. Interestingly, there has also been a shift in the volume of sales toward those products which are below 5g of sugar per 100ml and don't have a levy attached to them.

I wanted to touch briefly on salt reduction and you'll know that intakes of salt have reduced significantly since the voluntary salt reduction programme began. There have been four sets of salt reduction targets and in 2014, the last set, there was the aim that these would be achieved by the end of 2017 and at the end of last year in December, PHE published a progress report towards the salt targets and work is now underway to revise the salt reduction targets, as mentioned in the Prevention Green Paper. Just for information, there will be a new

20 Salt reformulation

Intakes of salt in the UK have reduced significantly (by around 1g/day or 11%) since the voluntary salt reduction programme began

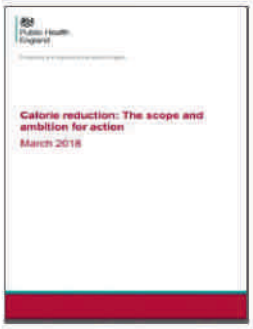
- In 2004, the Food Standards Agency and Department of Health commenced a voluntary programme to reformulate foods focusing on reducing the salt content.
- This followed recommendations from the Scientific Advisory Committee on Nutrition (SACN) that adult population salt intakes should reduce to 6g per day (children were set lower limits)
- Four sets of salt reduction targets (published in 2006, 2009, 2011 and 2014) have been set for around 80 different food categories. Backed up by public awareness campaigns, these have resulted in gradual, stepwise reductions in salt levels across each category with reductions of up to 50% in some products.

In 2014, average salt intake was estimated to be 8g with 33% of the population estimated to be meeting the 6g target.

assessment of current salt intakes for adults in England and that's underway and anticipated next year.

21 Calorie reduction: The scope and ambition for action

- Requires all sectors of industry to achieve a **20% reduction in calories by 2024** in products that contribute significantly to intakes
- Same mechanisms for taking action as sugar reduction – reformulation, reduce portion size, shift consumer purchasing towards lower calorie options
- Progress will be monitored in a similar way to sugar (first report 2021: progress towards the 20% in mid-2025)



The calorie reduction programme, slide 21, as I said, is undergoing and consuming excess calories, we must remember, is the root cause of unhealthy weight gain.

The Government is clear, and it has always been in the Childhood Obesity Plan, that sugar was just the starting point. Certainly, the prevalence of overweight and obesity, signals that the majority of the population are consuming more calories than they need. PHE are working to develop calorie reduction guidelines, again based on those foods that contribute the most calories into children's diets. This will go wider in breadth than the sugar reduction programme and certainly for the eating out of home sector, will include far more categories than there were for sugar and will cover more menu items and savoury goods, as we've been talking about today.

22 Overconsumption of calories

- On average, compared with those with healthy body weights, overweight and obese children consume between **140** and **500** excess calories per day for boys and **160** and **290** excess calories per day for girls, depending on their age

Gender	Age	Overweight or obese: excess calorie intake
Boys	4 to10	146
	11 to 15	498
	16 to 18	505
Girls	4 to 10	157
	11 to 15	229
	16 to 18	291

We can see in **slide 22**, that boys in particular, are consuming the equivalent of almost an extra meal a day in calories. For adults it's an extra 200-300 calories per day, which is contributing to that gradual increased consumption calorie creep. These figures are an underestimation of the increased calories, because they do not take into account the time we are putting on weight.

Part of the calorie reduction programme, **slide 23**, is where we have looked at the economic and other benefits of the programme. If the programme is achieved within five years, you can see the significance of that on how many premature deaths this will prevent!

23 Calorie reduction – economic and other benefits

Based on achieving the ambition within 5 years, and outcomes spread over a 25-year period, the calorie reduction programme would:

- Prevent 35,370 premature deaths
- Save the NHS £4.5 billion in healthcare costs
- Save social care costs of around £4.48 billion

I now have the opportunity to talk through what leadership looks like, slide 24 regarding all this, not just for your sector for the wider sector as well.

24 What does leadership look like?

- Meet PHE guidance on sugar and salt reduction ambitions
- Commit to the calorie reduction programme
- Support PHE data requests
- Calorie labelling to be consistent, visible, clear
- Reformulate the healthier option as the default
- Encourage other businesses to show leadership
- Trade bodies galvanising members

I think there's a definite sense of recognising your responsibility and to do the right thing, and that comes into the first bullet point there, to start looking at what the ambitions are for the reduction and reformulation programme and meeting the guidance and the ambitions on those.

PHE works with the largest market share businesses because they contribute the most sugar, the most calories, the most salt into the diet but this is a responsibility of all businesses now. We all have a role to play and you can see from what I was showing earlier on the Childhood Obesity Plan, this isn't just targeted at the food industry. This is a whole systems approach. Our prevalence of obesity now needs a multifactorial approach and that's certainly the stance the Government is taking.

25 Reduction and reformulation: the next steps

The next steps for the upcoming months of the reduction and reformulation programme include:

- Calorie reduction guidelines are due following further stakeholder engagement later in 2019
- Following publication of the report detailing progress towards the 2017 salt targets, work is now underway to revise salt reduction targets
- The second sugar reduction progress report was published in September 2019 and the third progress report is due for publication in 2020
- The next phase of engagement with specific parts of the out of home sector has commenced with a specific focus towards engaging travel and leisure businesses
- A report on food and drinks aimed at infants and young children: evidence and opportunities for action was published in June 2019. PHE will publish guidelines for commercial baby foods and drinks in early 2020, and monitor industry's progress

The calorie reduction programme is a commitment now. Last year we talked to businesses about our initial draft

proposals for the calorie reduction programme. We have led a comprehensive engagement with stakeholders on what they should look like for all those categories. We are continuing to review that stakeholder feedback and we'll be continuing to develop those categories as we go forward and what those guidelines will look like. We do issue data requests for the out of home to help us in monitoring. You will be aware that the data that we have from our commercial data provider for the out of home isn't as equivalent to the in home dataset, and so we do ask for data to be provided for us so that we can monitor it effectively, and we also ask for case studies as I've shown.

Calorie labelling in the out of home sector has been signalled by Government by its consultation this year on mandating calorie labelling in this sector and I think we find that that doesn't just translate to the out of home sector, as you would imagine, but even to in store bakeries, are often information free zones. There was a study not so long ago showing how many more calories there are in in-store bakery products compared to their equivalent packaged products. If the information on the instore bakery products is not available, consumers don't know what they're getting. Certainly when you go to the out of home sector, you won't know how many calories are in that sandwich or that wrap or that bagel compared to when you go into a retailers and you can have a look the nutritional information on the front of the pack.

Reformulating the healthier option as the default.

Certainly, there are healthier options available in businesses, we appreciate that, but they're not usually the ones that are the biggest sellers. So it's looking at your products and what is the biggest seller, and thinking about the action that can be taken with that product to make it healthier. I know we've been talking about innovation and creativity today and I think this country has a good track record in looking at how this can go forward. We've seen from the case studies that UK food businesses are looking at ways they can do it. I agree it goes back to consumer focus and taking the consumer with you, and that it doesn't happen overnight. Encouraging businesses to show leadership, we have seen examples of leadership across the food industry in developing healthier products, but, as I said earlier, it needs to be broader and it needs to be more fast paced.

Next Steps I'm going to conclude with some 'next steps' just to bring you up to speed. My specific role is working with the out of home sector as the team lead. We continue to take a phased approach to our engagement with the out of home, since, as you will know it's much broader, much more diverse than retailers and manufacturers. So we have a specific phased approach to targeting them and, at the moment, we are engaging travel and leisure businesses.

We are also looking at opportunities of working with businesses around commercial baby foods and drinks. Although I don't think this will really cover your sector, it is useful for you to know. We regularly provide updates as well. The spring 2019 update was published, and it gives you a top summary on where the programmes are, as well as we always detail which stakeholders we have met with and on what subjects we have talked to them about. Many thanks for your attention and I'm happy to take questions.

Martin Poole, Heygates Some information came out recently about the relationship between calorie reduction and metabolic rate, and also between glucose and sucrose. How is Public Health England taking that into account in their programme?

Samantha Montel We're taking that into account more in the sense that the high prevalence of obesity in the UK indicates that the majority of the population is consuming many more calories than they need, which can cause serious illness and early death. So although, yes, there are teams who will be looking at scientific aspects of obesity, metabolic rate and different types of sugars, at the moment the calorie reduction programme is being driven by the fact that the majority of the population urgently needs to consume fewer calories than we are at the moment.

So although the above doesn't specifically answer your question, I think in a sense we have got to a point where we have to have bold action across all of the food industry to resolve the problem and perhaps not necessarily get into other aspects which might deviate from that, however important they might be. The bottom line is that we are consuming too many calories.

Jules Darvill, Puratos Given that you're talking a lot about manufacturing and most of the people in the room dictate reformulation and innovation, what is the Government doing for retailing and point of purchase? And by that one of the examples you gave in the case study, a reformulation relates to reductions of sugar but the actual individual you're talking about added two to a pack structure, so people are consuming more rather than the reformulation being the focus.

Samantha Montel You'll tell me if my answer doesn't totally answer your question but PHE doesn't dictate to businesses how they are going to reach the ambition. So they have a number of options through specific main mechanisms on how they can go about achieving the ambition, and so that's either reducing sugar per 100g, or it's reducing portion size and then looking at calorie content, or it's shifting consumers onto a healthier alternative.

If what you are saying is where businesses have reduced the sugar but have then added another couple of particular products into a particular pack size, then it's an interesting point, isn't it? It comes back to businesses recognising the responsibility that they have in this agenda and looking at how we can support families really to make the healthier choice and I think that's for businesses to recognise. We want to avoid any unintended consequences around the fact that if you've reduced sugar in a product, someone's going to now eat more of them. So I absolutely recognise the point you've made.

Stephen Ville, Bread Roll Company Given the obesity crisis that you very clearly described, do you think we've reached the stage where we need more legislation from the Government to deal with the problem, and if so, do you think that's likely?

Samantha Montel That will be for the Department of Health and Social Care to decide, very much for the Government, for Ministers, etc. to make that decision. They have been very clear on their ambition to halve childhood obesity by 2030. It will be up to the Government to then think about how it best wants businesses to be able to reach that ambition and to support them in doing so. PHE's role is very much to monitor the progress of industry in this and then Government will review it and make the decision. They've been very clear in the Childhood Obesity Plan that they will not shy away from other levers. So we have seen in Chapter 2 of the Childhood Obesity Plan where there have been a number of consultations, which have now closed, on particular aspects of promotions, etc., mandating calorie labelling in the out of home sector, and we are waiting for the responses to that from the Department.

Sylvia Macdonald, BSB Executive Committee In a way you've answered my question but is it just monitoring that you do? How influential is your role? Do you feed into the Department of Education? I feel that education on nutrition is seriously lacking.

Samantha Montel I think that the answer to your question on nutrition education goes back to one of my first slides, stating that the majority of the population are now overweight and obese, so nutrition affects us all. Regarding your other questions, PHE has autonomy in its own right. We are an executive agency, but the autonomy exists there. We do advise Government and we advise Ministers, on the programmes that we are taking forward. As far as the other Government departments that you mentioned, it's worth mentioning that the Childhood Obesity Plan is a cross-Government plan. It covers all of those Government departments that have signed up to that plan. It is very bold if you look at it internationally about what is being taken forward and if it is realised, it will significantly impact on childhood obesity. So, yes, we work very closely with our other Government department colleagues and that includes a range of Government departments in the work that we do.

PHE holds the expertise on nutrition when you're looking at it from public health. There are number of teams in the nutrition department at PHE, so the team I sit in is only one of about six or seven teams of nutritionists who work very much with either academics to look at what the evidence base is, who work with local authorities to look at what local authorities' role is, ourselves who work with the food industry, and I have colleagues who work the same as me working with out of home, working with retailers, and they work with manufacturers, and we are also looking at the national diet and nutrition surveys, so very much the team there looks at monitoring what people are eating. So, it's very comprehensive in the work that we are taking forward, not just within PHE but also in our work and how we support the Government and how we work closely with other Government departments.

Alex Waugh, Nabim, Flour Millers' Association An interesting presentation Sam, thank you. I just want to ask a question to bring it back to fundamentals. Essentially you're asking food businesses to sell less, since if people are going to eat less, here will be less food sold. So coming back to your information on the calorie reduction programme, it sounded to me like a blanket approach to reducing calories across the board, and I wondered if it was going to be subtle enough to deliver what you wanted, because persuading businesses to sell less is a tough proposition.

Samantha Montel It's a good question. We very much support a vibrant food industry, so our business is not about you selling less. We want to have a vibrant food industry, we want to have a vibrant out of home sector, we want vibrant high streets – it's very important but we also recognise within that vibrancy is businesses' role to recognise they need to be providing consumers with what they want. We are hearing very strongly from the surveys that we've taken forward that consumers want the Government to be working with the food industry to make their food healthier. In the last survey that we did it was nine out of ten consumers wanted that. They support businesses making healthier options and we are looking to businesses to use their innovation and their creativity to think of how best they can do this. So the calorie reduction programme, we are currently reviewing the feedback that we've had from the comprehensive stakeholder engagement that we've had, and very much we ask for that feedback to focus on what businesses felt about the initial draft proposals that we are putting out for each of the categories and that includes not just the guidelines that we produce but also the categories that we have suggested as well, and we are at the moment at the stage of reviewing those comments within that.

I totally get your point of view and that's why around different categories it's a blanket approach and that's why for retailers and manufacturers we have a sales weighted average because we are looking at the biggest sellers. That doesn't mean to say that you can't produce a product perhaps which has higher calories but you need to think about the biggest seller and there's work to be done in that so that you can have a range across your portfolio. So that's, in a way, how it works. The programmes very much work on an iterative basis so we do have a lot of stakeholder engagement within that and we talk to businesses and we listen to businesses, and that's how the programmes are developed until a line in the sand comes to the point where we need to report back to Ministers on what we think those proposals are, and that's generally the process that is taken. Ministers are very interested in how this progresses, and we report regularly back to them on who we have met and on the discussions we have had.

Alasdair Smith, Scottish Bakers My wife's a primary teacher and she can ask her pupils what constitutes a healthy snack and they will reply with an apple, a banana and a bottle of water. Yet when they line up for playtime many will have things like crisps and chocolate. The children are not buying them, it is their parents, and their parents could also tell you that a healthy snack is an apple or a banana or a bottle of water. Does this not suggest that the obesity issue that we're facing is a people problem and not a product problem?

Samantha Montel It's a problem for all of us. We spend a lot of time thinking through these particular issues and we have our own social marketing campaign that we work with families and we support families on how

they can make the healthier choice. I think the work that we've done on Change for Life has been really important, because it has looked at supporting families to choose those products they regularly consume but to choose a healthier alternative to it.

We've worked, for example, with the sugar swaps or the apps that we have that look to support those families to do so. I think it's very important about thinking about where the consumer is at, so that you're not looking for a swap from confectionary to an apple or something, you are looking at supporting them to be able to choose the healthier choice to meet their five a day and all of those aspects.

We are aware of the conversation around education and, as you say, most people can tell you what a healthy balanced diet should look like but in reality, that doesn't happen. As I've said, we're not meeting what is depicted in the Eatwell Guide and we have to do more to support those families be able to do so, and whether that's by health by stealth approach, so you are looking at those products they most consume and you are working to make those products healthier, then that's a really important thing to be doing.

Stan Cauvain I am going to draw it to a close because I think Sam's coped very ably with the challenging questions that you've placed before her. I think it's important to recognise we all have a role to play and I think that's very much been the theme of Sam's presentation. The baking industry should pat itself on the back, not least for its successful implementation of salt reduction in bread progressively over the years, and it does take a responsible attitude to its product development, particularly in the context of the consumer. Please show your appreciation for Sam's presentation in the usual way. *Applause*

Richard Hazeldine, BSB Chairman Thank you for re-joining the Conference in good time after lunch for two more interesting papers. Our Session Chairman for the afternoon is Alasdair Smith, Chief Executive of Scottish Bakers. Alasdair joined Scottish Bakers in January 2018 after many years working in Scotland's vibrant skills and learning environment. He is responsible for overall leadership of Scottish Bakers, setting the strategic direction and ultimately ensuring that the Association serves its membership effectively in all aspects of its work.

Session Chairman, Alasdair Smith

Thank you Richard, it's a real pleasure to be here. Our first speaker this afternoon is Mike Bagshaw, Founder and Managing Director of International Taste Solutions, a thriving flavours business. Mike is going to tell us how he took his business from his kitchen table to a full-scale global trading organisation in just ten years, quite an achievement. He will also give us a heads up on what he sees as the next bakery innovation to take the market by storm. I know that a lot of the bakers in this room will be keenly waiting for that and to take advantage of some of Mike's insights.

Mike, who's a supporter of sugar reduction, will also discuss how the industry can play its part in making foods which are healthier but without sacrificing quality or taste.

My Decade of Deliciousness by Mike Bagshaw, Managing Director, International Taste Solutions

Good afternoon everyone and thank you for having me today. I've been involved with the BSB for over 10 years and served as Chairman in 2014 – 2016. I'm going to tell you a little bit about myself and my upbringing, about ITS and some of the things that we're up to, and then give you a view of the future and what I think is going to happen in the food industry in general.

Liz and Adam are here from ITS to give me a bit of support, although they are far better than I was at their age! I'm 42 years old and I've been in the food industry for 20 years. I did a degree in biotechnology at Reading University. I got a 2.2 degree in the end and I missed out on a 2.1 by a couple of percent. But that was a good thing, because I had to go out and get a job!

I did a food consultancy placement for what is now Mondelez and I fell in love with the food industry. I loved it and I learned so much about food production. A lot of youngsters today don't realise there's a food industry out there, which includes a bakery industry, and that's something that I think we need to look at. I was fortunate in learning about it early on.

Childhood memories Being one of six children, we were fairly poor during my childhood. I think of it often, since I have three children of my own now, aged 15, 10 and seven. I remember going to bed hungry when growing up, which I don't think many kids do now. We did eat of course but we were growing children and there wasn't what much food to go around. They talk about the meat alternatives now and putting vegetables in products to replace meat. We used to put carrots in mince for shepherd's pie and for eating on its own, to make the mince go further. Didn't we all? Some people are nodding. So that's not a new innovation really, is it?

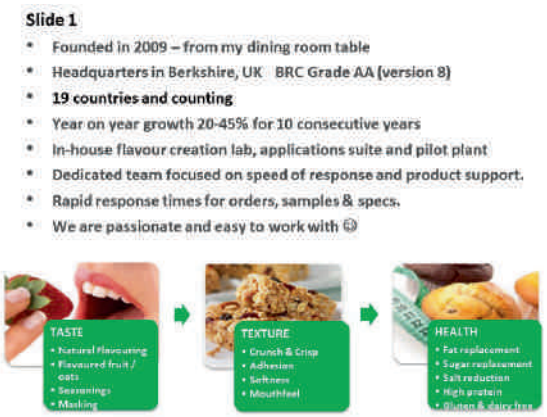
When I think about growing up, it did make me more determined as a kid to make the best of things. When I was seven years old my dad worked in a factory which made Kenner Parker toys and he came across bins of rejected toy figures for a board game based on Spitting Images from TV. There were pigs, which were the press, and world leaders of the day, including Thatcher, Kinnock, Gorbachev and Reagan. I think there was eight of the press and then the individual characters. They all had little imperfections and that's why they were in the rejects bin in the factory. So, at seven years of age, I got my dad to bring home a bag of the reject figures because I thought I could sell them at school. I priced them by importance, 10p for the press, 30p I think it was for Kinnock, Thatcher

was 50p, Reagan was a pound, Gorbachev was a bit rare, so he was £2! The first day I sold four of them, the next day ten, and by the end of two weeks I had sold two carrier-bags full of them. I made more money in the two weeks than my dad made at work in a week! But the school then clamped down on it, so you can't beat schools, can you? They kill entrepreneurism if they have a chance.

So, growing up was interesting for me and it also helped to develop some of my own values and beliefs. At one time my dad had a grotty job in a factory that made parts for helicopters. He didn't make much money, but the owner had a Ferrari, and I thought it was unfair that the guy who owned the factory did not look after his staff. I always knew if I had a business I wouldn't do that. I used to visit my dad at lunchtime, and you could just see this rich guy making a load of money but not looking after his staff. I then realised that because he wasn't being looked after properly, my dad didn't put his full effort into his work. So, if you're tough on money with your staff, then they're going to be tough on their time and attitude to the job. So that was a real learning point for me.

As I said earlier, I have three children and my 15-year-old daughter is where I think most of my research into what's going to happen in the world is coming from, because she is there on social media! Just a little tip if your children are on social media. My daughter's on Instagram and I'm on Instagram. Do not 'like' anything they post and do not comment on it. I got blocked by my daughter, then she came back to me and now she's unfriended me, so the pattern continues! I think Instagram's a bit old hat now and that Snapchat, Tiktok and others, are coming ahead, but definitely, social media is something to consider for your business.

I'm going to tell you a little bit about ITS now, **slide 1**, and what we're up to and what we're planning to do.



Some of you will know us anyway but I founded the business in 2009 from my dining room table, and the inspiration for that came from a holiday that I had in Ireland, more of which later. Our headquarters are in Newbury, Berkshire and I live about ten minutes from the office, which is good and bad. We're are now in 19 countries and counting. Around 65% of our business is in the UK and the rest of it is export and we're doing some really cool stuff. We've started shipping product to the Middle East, a really interesting market. People tend to shy away from doing business over there, but they really love bakery products and the quality is improving. There is lots of opportunity there if you're prepared to invest and put people on the ground to make it work.

Our year on year growth has never dropped below 20%. We've been between 20% and 45% for ten consecutive years in the business, which I am so proud of and it is in a market that isn't easy. We haven't always made money doing that. You can grow but also there are times where margins are tough. We have in-house flavour creation labs, an application suite, and a pilot plant. We've got a BRC grade AA factory. We got BRC a couple of years ago and that was another experience, moving our mindset towards manufacturing.

We don't make everything. We couldn't have done what we've done and been the success we are, without people like Mark and Simon Young up at Ingram Brothers in Paisley and with some of our other partners that produce products for us. So that's another watch-out. You can't make everything in today's world. You also need to find good partners who have the skill and the equipment to make products to your specification and concept.

We're a dedicated team which is focused on speed of response, product support and rapid response times on our orders and samples. We're passionate about what we do. Someone asked me recently, if you could sum up our business in less than a sentence, what would it be? I said, "we're just great fun and easy to work with". I go into big accounts and they say, "why should we work with you when we can work with a big flavour house", and I say, "we're just really easy to work with!" and that's become our strapline – nice flat structure, real people, and easy to communicate with.

We specialise in taste, texture and health, but we're predominantly a flavour company and most of our business is in flavours. We do a little bit in texture, especially with sugar reduction, binders for bars and things like that, and I'll come onto sugar in a bit as well but there's a lot of challenges there and obviously health, so sugar reduction plays a big part in that.

Our amazing team – this was us prior to going off on our annual day at the races, which is always good fun.

Our business year is August to July. I chose to do that because I'd set the business up around the summer and I quite like it. We straddle two years, so we get to see what's happening in the world. Plus, we party in July, and then we get our heads down after our summer holidays and start thinking about what we're going to do for the year. This year, because we were ten years old, we had

family day down at a pub. We played games and had some food and drink. I gave the staff the afternoon off work as well. They're a great team and it was a good day down at the pub.

Let me just tell you a bit about starting the company up, see slide 3, which has some relevant pictures on it.
Duncan Bannatyne was an inspiration for me. I had always wanted my own business and when I was in Ireland on holiday with my then wife one year, I read his book and it's a really great book. He didn't get into business until quite late on. He had ice cream vans. He then got into care homes which you probably remember from Dragon's Den. He said one thing in the book that inspired me; "you don't need a great idea to have a business, you just need to do one thing better than the competition and you have a business". Don't make it complicated, just have a look at what's going on in the market and just decide that you're going to do one thing better. A great example today of the above is mixer-drinks producer Fever-Tree, who were established in 2004. They have taken mixer-drinks business from Schweppes and now have a substantial share of the market in bars and at home.

So, Duncan Bannatyne's book inspired me, and I decided that I was going to start my own flavours business. I then looked at getting investors, but they all wanted too much equity and it was getting complicated. I went to Lloyds Bank, but they wouldn't lend me any money because it was 2009, and right in the middle of the recession.

So, I went into the Halifax and said, "I'm a sales director and I'm looking for a loan for an extension to my house" and they agreed to give me it! I could have got caught out on the real reason I needed the loan because a friend of my brother's was working for Halifax and he told my brother later that my name came up at one of their meetings. He knew I was going to start a business and he was in a Halifax business review meeting when a girl colleague reported that 'Mike Bagshaw is a sales director and he's the type of customer the bank needs. He's going to have an extension to his house built with a loan from us and he's safe money', and my brother's friend is sitting there thinking to himself, "no he isn't, he's taking the loan to start a business"! So, I want to thank the Halifax for this. I remember telling this story at our ten-year anniversary party and the Regional Director from our current bank Barclays who was there, just gulped a little!

The third picture on the slide is Richard Branson. When I first started I needed cash, so I applied for credit cards online. I think the stars were aligned at the time because I got a £20,000 interest free credit card from Virgin. I got it and used it and at the peak of starting the business, I had eight credit cards! I remember spending quite a bit of my time looking for new means of getting interest free money, because I needed it to get things moving. Now the business is established I don't have any credit cards now, which I'm proud to say.

I put a Marmite picture on the slide because when I started in business I had to keep my costs down so I had Marmite sandwiches, which I love, and a thermos flask, with me when I went out to see customers. In fact, some of them felt so sorry for me, they topped up my flask before I left to go to my next appointment!

The beat-up car on the slide was my Vauxhall Vectra Life. When I was a sales director I had a Passat, beautiful car. The Vauxhall Vectra Life was £5,000 and I drove that around at the start of the business. I managed to crash it in the hills of Wales in the snow and I got a £1000 more than the value of the car for the write-off!

There is a Homebase truck on the slide. I built the business up from home and it got to a point where the business was really growing, and I thought, I've got to get a business unit to work from. I had a guy working for me and I found some units near home. A guy, called Carl, and who is now our head of innovation, wanted a job with us and he came to see me at a weekend. I'd spoken to him on the phone and said, 'you need to come down, I've got an innovation kitchen and you're going to be at the centre of it.' He turned up on a Saturday and went, 'where's the innovation kitchen?' I said, 'it's still on the Homebase truck', and we unloaded the innovation kitchen units together.

There is an early picture of the team on the slide. We had a small factory unit at Greenham in Newbury, and we were also having products manufactured for us in the north with Ingram Brothers and others. The factory units were small and basic, but they suited us as we were growing the business. We had many challenges to overcome in those early days, but we had really good times as well. It was a nice little group of people working together to develop the business. As we became more established, we started to apply for some awards.

4

NEWBURY NEWS

The Taste of success

Greenham company scoops top prize at West Berkshire Business Awards

As we were a growing business, we won the West Berkshire Business Award, **slide 4**. We also won the Innovation award and the Business of the Year award. For the Innovation Award, we were up against a hairdresser and a solicitor, so it was pretty stiff competition. The organisers of the awards couldn't believe there was a food ingredients manufacturer in Newbury! I am very

proud of our success with the above awards. I also ended up getting on Newbury Radio and I have been in New magazine, so it has been really great.

I was the Chairman of the BSB in 2014 – 2016, see pic, and I remember that very vividly as well.

So, some really interesting times and out of that, lots of growth and success. Then, one of the things that you see happen with people in a new business, tough times, **slide 5**. I've seen it so many times now, the moment you're successful in one thing, you think you're untouchable and that you can do other things and be equally successful.

I thought that a great new business opportunity for my new company would be to do small bottles of flavours for home baking and go after the Dr Oetker retail home baking business. Unfortunately, it was a disaster, an absolute failure!

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The only thing that was funny about the above was going to an exhibition and taking home cash for the home baking stuff we were selling. I was bringing home around £8,000 in £5 & £10 notes and £ coins and tipping it all on to the kitchen table in front of my kids. It was like counting the proceeds from a drugs den! But it had cost me £10,000 to have the stand and everything else, so we were losing serious money. It clearly didn't work, so we shut down production, although we learned a lot from it. Producing the product was just fiddly and difficult compared to the rest of our operation, so we cut our losses. It was also diverting our attention and energy from the part of the business we were being successful in.

Still on slide 5, I went through some legal challenges after I left my previous company, including litigation, court appearances, etc and it was an unpleasant and draining experience. It all got resolved in the end, but it was an example of how careful you have to be with the decisions you make and the situations you get yourself into. I was 32 years old and the one thing I got from it all was a very expensive education on legal matters in business. When we have contracts to deal with at work now, who do you think reads through the terms and conditions? Me, because I learned a lot about the importance of the small print in contracts.

The 'it hurts' picture on the slide is because I went through a tough time personally around the same time with getting divorced, which I'm sure has happened to other people in the room. It really was tough, particularly with three children involved but I have to say that my ex-wife's a great mum. I did some things wrong and I have concentrated very hard on the business since then to grow it. We've all moved on now, my ex-wife's great and the kids are great, but it was a tough time.

The bottom right picture is me parachuting out of a plane in Dubai. I dressed up as superman and my poor staff were like, "what if something happens to you?"

So then other great examples from the slide. 'Never get complacent'. I call it black Monday but around seven years ago, I thought I was going to lose three of my major customers in one day. One phone call, then another one and then another one and I thought, this is it. I was driving home in pouring rain and I remember how absolutely dreadful I thought things were. Fortunately, it was not as bad as I thought and with a little work and discussion, I held on to the three customers

Surround yourself with good people. All entrepreneurs will say this, and Paul Baker said it in the first presentation this morning. One of the hardest things of course is finding good people. They come out the woodwork every so often, but it is really hard to find good people and everyone around the room is nodding in agreement.

6

One of the biggest changes in my life was a major personal discovery, slide 6. Although the business was doing well, I was working very hard in it and finding it tough to enjoy the success. I therefore got myself a life coach and it was the best thing I ever did! I had a guy as a life coach for about four months. He saw me a couple of times a month and we just got back to basics a little bit. We sort of looked at the past, looked at some of the things that had gone wrong. Got into journaling, took up some new hobbies, and I started to become more grateful for the things I had.

How many of you saw the mist over the golf course this morning? How many were out walking this morning? Some of you have indicated yes. I was up in the gym. So, teaching you to appreciate what you have around you is the job of a life coach, since it is easy to forget and to think your life's not going well when in fact it is going well. My life coach got me learning again. Another interesting thing is, having the life coach really got me into books again and I've got a real love of reading. One bit of advice I will give you is to keep learning. There is a whole world out there now and I'll come onto AI and the computer

companies and the tech companies later, but you've got to learn. There's a statistic that says if you read for one hour a day, seven days a week on your chosen field, in five years you will be a world expert. How simple is that? Just pick one thing that you're interested in.

The other thing that I learned, **slide 6**, is to work harder on yourself than you do on your job, because your job is set, you've got to work on yourself. So, if you want to run a business or you want to manage a team, you've got to do it correctly, because the way you are projects back to the people that work for you.

The last one on the slide, which I love, is 'you can have more than you've got because you can become more than you are.' Life is hard, business is hard, don't wish it was easier, just wish you were better and concentrate on getting better at what you do.

So, for me, fascinating times and some amazing books. I read Steve Job's book, has anyone here read the Apple story? He says one particular thing which is great, "find your passion and you'll never work another day in your life".

Our new home We bought the land and we now have a new home for ITS. We have flavour laboratories, innovation centres, test bakeries, state of the art production equipment, everything you can think of on the site. It was really exciting moving into the new factory. It was so expensive though. I'm sure the builder used to look at our nice big factory and decide "I'll double my price; they can afford it". We had a couple of really good examples of this. The first was we had to have a drain cut in our factory floor and found that apparently, the hardest substance in the universe was used for our factory floor! They started off with a disc cutter, but it couldn't cut into the floor! In the end, after further failures, we had to get a specialist company in to cut the floor for the drain. The drain cost £5,000, so I said I wanted it all the way down the factory, just to get my money's worth.

7 A new home for ITS

The second example is that we found a food grade partition wall in Essex we though would be ideal as part of our production area and bought it for £10,000, it cost us £20,000 to fit it and even now we've done the whole factory in white cladding, a different material and we did that for a fraction of what the partition wall cost, so it was not one of our best decisions. I tell visitors on a tour of the factory, in colourful language, that this one wall cost £30,000! I remember when it arrived and it had to be fitted, it was like, oh man, what a bungle up, crazy.

We decided to enter the Thames Valley business awards and we did really well. We entered the Export award and we got runner up and we got runner up in Highgrove, but we were up against tech companies and all kinds of computer businesses, etc. At the awards the organisers said they liked the fact thar we were in the food industry. Paul, the Chairman of Thames Valley Commerce came up to me and said, 'how is it all going?' and I said, 'look, Paul, if I don't win, I'm going home. I want to win, I'm not here just to make up the numbers.' Anyway, whether or not it changed the result, we won the Small Business of the Year, which was zero to £20 million, a really proud result.


Business
online newburytoday.co.uk

ITS named region's best small firm

Chamber of commerce business awards

8 But with growth came more pain

We got runner up in Export this year, they asked us to enter and we got runner up again. Awards are important and they can do wonderful things for your business. Your staff need to be part of it and celebrate it. If we win an award, as many of us as possible go up on stage to get it and that's something of which I'm proud.

Our 10th Anniversary Party!

We decided for our ten-years anniversary to have a party. It was like organising a wedding, with similar problems with invitations, availability, etc. I thought I was going to have a stroke at one point because I had loads of stuff going on at work and I thought, this is just too much pressure. In the end it was very successful and was enjoyed by our staff and many of our customers. We're now going to do one every five years since the cost is not high – it's about £60 a week over the five years, if you think of it like

that. The important thing is that it was a brilliant event and did so much for staff morale. It really made the day very special and hands up anyone here that managed to make it. Pretty good day I think, there's a few nods.

I also said I would put a few secrets down on what I think makes our business successful, **slide 10**. For me it's all about people. I set the goals for the business every year and our number one goal is our people and their development. Number two is our customers because if our people are right, they'll look after our customers and our finances are number three, as long as we've got cash coming in and profit. I'm more interested in the people of our business and I challenge the heads of our business to develop and look after people and that's my focus. See the other secrets on the slide.

The other thing that's really important is to try and promote from within. Liz, for example, joined us working three days a week and she is now our bakery specialist. She's been with us nearly seven years. Recruit on attitude would be one of my secrets. Don't worry about whether they've got the relevant experience, you've got to get the right attitude, and you can teach the rest.

The other thing I'm really big on is tackling corrosive behaviour. It's really important in a business. Our corrosive behaviour is quite mild, but you see it in many companies and one of the things you need to watch is I'm always interested in how people leave a business. When someone decides they're going to leave, have a look at the leaving do. If they want a leaving do, see who's coming up and who isn't. My heads of department have to attend leaving dos. If they can't make it, they must take that person out for a drink or a coffee or lunch. And the reason I do that is, whether you like someone or not, they're leaving. You should say, "I know we didn't see eye to eye, but I wish you all the best in the future", and I think that says a lot about a company when you make that very, very important. It's incredibly important because corrosiveness does eventually kill the morale in a business.

Develop everybody. Everybody wants to do something development-wise.

Kill the gossip by telling the team the truth. So, every quarter we go through the profit, the sales, I tell them everything. Make it part of what you do.

Upside-down management. Your people are in front of the customers. Your job is to make sure their life is easy, and they can help the customer. It doesn't have to be any more complicated than that. The guy at Timpson does it, Richard Sands, if you read his books, it's all he talks about, facilitation, enabling them to do their job. Apply common sense as well. Don't get drawn into loads of grievances. Have a chat with people, try and fix the problem. The first thing I always say to my management team is when they sit down with their teams, ask the team how they're feeling, how they're getting on, what help do you need from me? Three very simple questions.

The other thing you must do is you've got to give back and you've got to encourage that in your business. We've done all kinds of things, like Christmas two years ago I took all the homeless people off the streets of Newbury, there were 14 of them and bought them Christmas lunch at the local pub and got them off the streets for the day. I've recently done a sleep out, I slept rough. If you are on LinkedIn you probably saw some photos that. As a charity event, we slept out for homeless teenagers. It's really important to do stuff like that.

We give all our staff one paid day off a year to do something good in the community. We also give them a paid holiday on the day of their birthday each year. If their birthday is on a weekend, they get the Friday or the Monday off. I jokingly tell everyone that it's a sackable offence to come in on their birthday.

You also have to look after them your employees as well as you can. This includes good pay and conditions, but it is not all about money. You need to give them opportunities for advancement according to their ambitions. One other tip is keeping your structure as flat as possible because big issue are towers of hierarchy. Keep it nice and flat.

I could talk all afternoon on this sort of stuff. People ask me how I keep on top of everything? The most important list to write is a not-to-do list. Think about the stuff you don't want to get involved in. The other thing is the 80/20 rule – it applies to everything apparently.

My favourite at the moment is the 'one-thing'. You write a list for the day, put a circle round the one thing you must get done and do it, and just do one thing. If you do one thing, and all of your team do one thing, if you have got 29 staff, then 30 one-things are done every day, which is a lot of progress. So that's important, because if you have a focus on one thing and you get distracted, you can still go back to that one task and make sure you complete it.

Trust your gut instinct and think long term about retaining customers for a long time. We're going through a re-brand which will be coming out soon and some of the people that made the ten-year party saw the first part of that, which we're very excited about. Be open to anything new as well. Don't assume that business has to be done a certain way and that's how it's always got to be done. Always be open to considering new ways of doing things.

The last bit of advice I will give you is that if you've got a difficult thing to deal with, deal with it as soon as possible. Don't hesitate, pick the phone up and deal with it, t's amazing when you get it out on the table what happens with people.

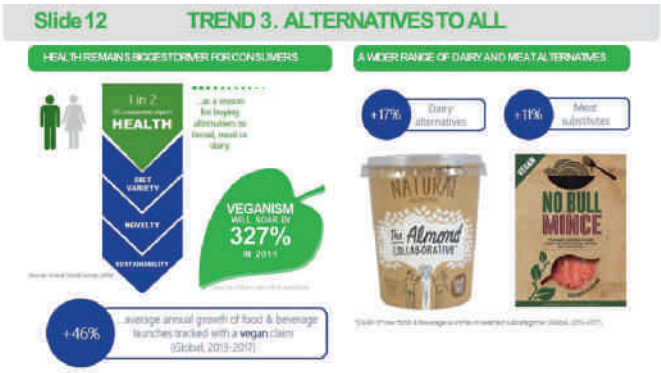
Where do I see the future? Alasdair said in his introduction that I'm a fan of sugar reduction in bakery products. I do think it's important but at the same time, I

also see a massive growth in premium bakery products. I think that most people would agree that taking sugar out of premium bakery products is a mistake because, for the consumers, eating a premium product is an occasion and not a regular part of the diet.

I think reducing portion size and calorie reduction are important. I went to Parliament, see picture, for a Sugar Wise debate on sugar reduction in processed foods, including bakery products. There's a lot of work to be done to achieve this, since sugar is very functional in food products and reducing sugar without taking any other action, can affect other product qualities, not just sweetness.

Mike Bagshaw with microphone at the Sugar Wise meeting.

So, reducing sugar in food products, particularly in bakery products is very challenging, we all know that. I think there's going to be a mixture of products and perhaps we need premium products and reduced sugar products. The guys in the US have said the same thing. Research over there is saying youngsters, if they're going to have a doughnut, they want a great doughnut that looks fab, so they put it on Instagram. They don't want a healthy doughnut; they're getting health somewhere else. I think that's something to really bear in mind and I think if it was me, smaller sizes, lower calories, nice decorations but focus on the occasion.



Other things that are happening - veganism. It's still quite small on the scale of things but it is going to continue to grow. We've got a full presentation on all this stuff so if you'd like to see it or catch up, let me know. Green appeal, plastics, that's a big challenge I think coming up for bakery and for long life bakery in particular. Fighting food waste, being creative and finding uses for some of your waste products. Read the papers from the 2019 spring conference on Waste Management in Food Productions and on Making Beer from Waste Bread for inspiration.

Other things to look out for – 3D printing, that'll definitely come. It's happening in other industries. Complete meals – you've probably seen these meal replacements. This business here is £75 million at four years, Huel Online, amazing business and you are consuming nutrition rather than having a meal and it's where things are going, I think, in some shape or form.

Smart shopping You may have seen this if you have shopped in an Amazon Go store. You need an Amazon account and the relevant Amazon App to shop there and this registers you when you walk through the entry point. Anything you take from the shelves is then automatically charged to you and you leave the store with your purchases through an exit point but without going through a checkout or scanning anything!

AI – if you've never done this definitely get on YouTube and start looking at it.

The other thing I would recommend is to go to a tech conference. I went to one with Microsoft Oracle, Thames Valley tech conference. I was lost within ten minutes of the conference starting but what they're doing and what those companies are going to do, they will own most industries in some way, shape or form. They're incredibly clever people.

This one you cannot ignore. Home delivery, £350 billion growth opportunity. In the next ten years that's going to be the biggest thing in the world in terms of growth. So keep that in mind because it isn't going to change and it's getting more and more mobile. I think bakery has a great role. You can get bakery products into these channels and I think that's a really great place to go and with great opportunities. I think it's really, really important as well to get on and research this sort of area and the technology behind it and see what role you can play in it.

To finish is a photograph of me with some of my production guys and gals having a bit of fun.

Alasdair Smith It was great to hear all of those insights Mike. I've got one quick question myself and we've maybe got time for a couple of really quick ones from the floor. You started at the kitchen table and you're now a global business in ten years, you've recorded 20-45% year on year growth, you're only 42 years old. What's holding you back? *Laughter*

Mike Bagshaw I think with all things, we are trying to do it the right way. We could go out and make acquisitions and then we bring in other cultures. We might look at it but there's plenty to go at and we want to try and do it home-grown really. We want to bring our founding team in ITS and put them in different countries. It's quite exciting that's our plan.

Alasdair Smith Maybe a question from the floor. No takers? I had one other slightly more serious question than my first one. We heard this morning from Paul Baker that developing new products is really, really tough and making them a success I suppose is even tougher. So how do you make it easier for businesses to find those successful new products?

Mike Bagshaw I think it's a mixture of market research and we use a lot of innovation We also look across categories, so when we go and see bakery companies, we'll show them things from other sectors, and when we go and visit countries around the world, we'll bring things from other countries as well. I think the future probably is to try and get stuff online because the online thing and delivery means there's more opportunities to test. You could come up with a strawberry and black pepper muffin and it might fail but you haven't got a lot to deal with. You could simplify it and you could test it quicker. I think the secret is you need to implement a product, you need to test it, you need to adapt it and you need to do that quickly and that's like the lean start up model. You need to be prepared to adapt because all the tech companies are doing it. What you start with is not really what you're going to end up with and don't be frightened to make changes as you go along.

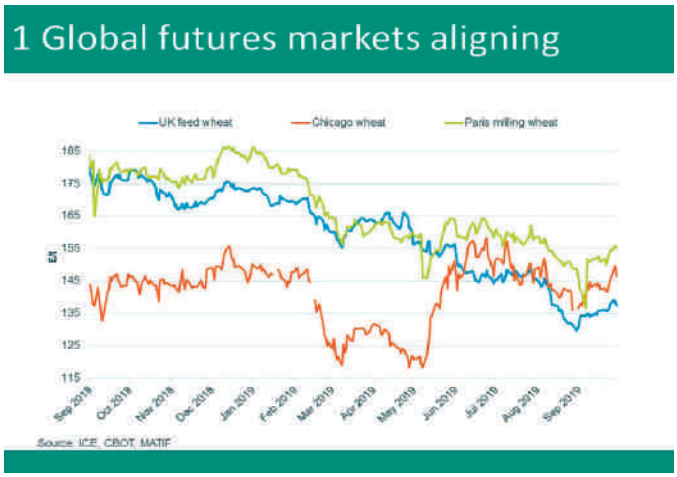
Alasdair Smith, Session Chairman Thank you for a great presentation Mike. *Applause.*

Our last speaker this afternoon is Alex Waugh, Director General of the National Association of British and Irish Millers. Alex has a long history of involvement in the cereals sector with Nabim and the Flour Advisory Bureau, and also as a Council Member of Campden BRI and a former member of the AHDB, cereals and oil seeds board. He also chairs the Defra Brexit Arable Group. Alex is going to provide us with a review of the 2019 harvest, wheat market developments and reflect a little bit on the health credentials of bread. Since we seem to have had a bit of a development Brexit wise today, Alex has rewritten the part of his presentation which is on the implications of Brexit for the UK flour market.

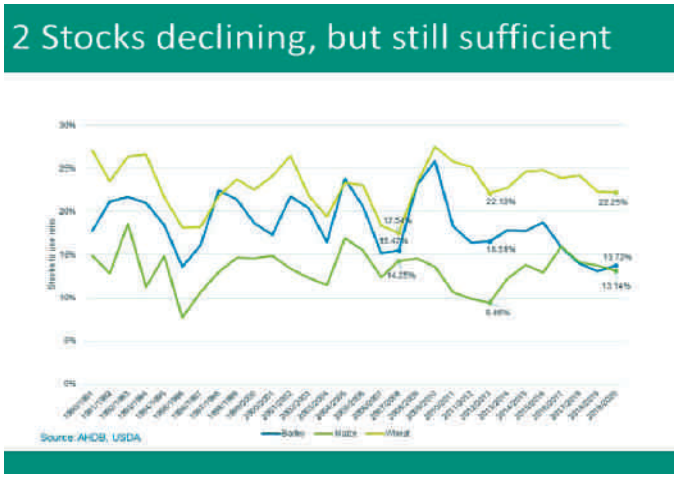
The Good, The Bad and The Ugly! by Alex Waugh, Director General, National Association of British and Irish Millers (nabim).

Good afternoon. The reason for the unusual title for my paper is because your Executive Committee member Sylvia (Macdonald) rang me and said, "can you give a talk at our BSB autumn Conference Alex"? I said yes, what do you want me to talk about? There was a brief pause and she said, "can you talk about the harvest please, and whilst you're here, the effects of Brexit would be good as well? Also, Sam Montel's talking about the need to reduce obesity in the UK, so you can you talk about how bread and flour fits into this as well please!" I said let us stop at that Sylvia otherwise we're going to be going on forever!

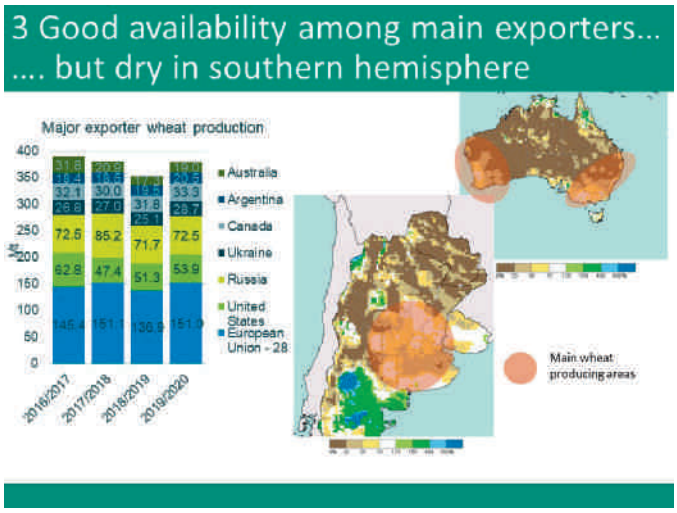
What I want you to decide by the end of my talk is which part is the good, which is the bad and which is the ugly, or are they all mixed up together?



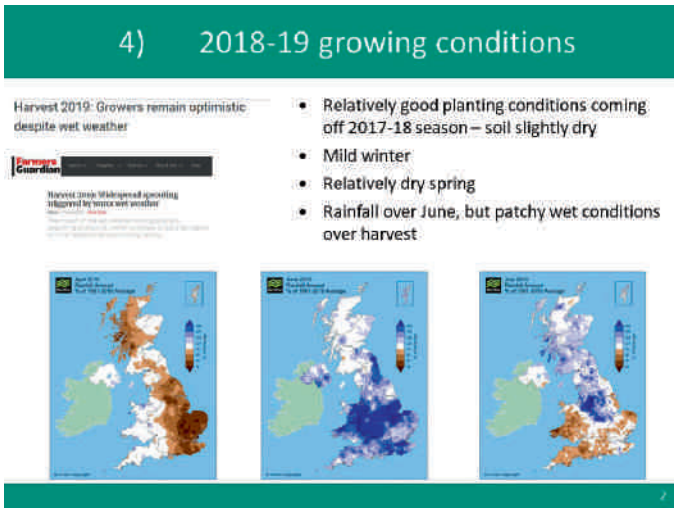
Starting off with the harvest, I have to say thank you to my friends at AHDB, who do a lot of work in this area, for supplying information on the 2019 harvest, **slide 1**. If you're in the bakery sector you really should be signed up to AHDB for information on crops. This slide and the ones that follow are all pretty techy, so forgive me. We're moving from a situation where globally, grain prices were quite high. You should be able to see that the top two lines there are UK and Paris wheat prices and the bottom line, which is in red, is US wheat prices. The lines are all converging and from our point of view, that's pretty good news if you're buying wheat, not so good if you're selling it, and that reflects on very good harvests around the world.



Importantly as well, in **slide 2** are charts of stocks related to the amount of grain that gets used and wheat is the top line there. Around the world we've got reasonable stocks in relation to the amount that is required. That means that should things go wrong, as they might do later on in the year in the southern hemisphere where quite a lot of grain comes onto the market, there are decent stocks there to buffer supply if it is required. That means to say that not only have grain prices come down but there's a limited risk of them rising significantly during the course of the season because of a shortage of supply.

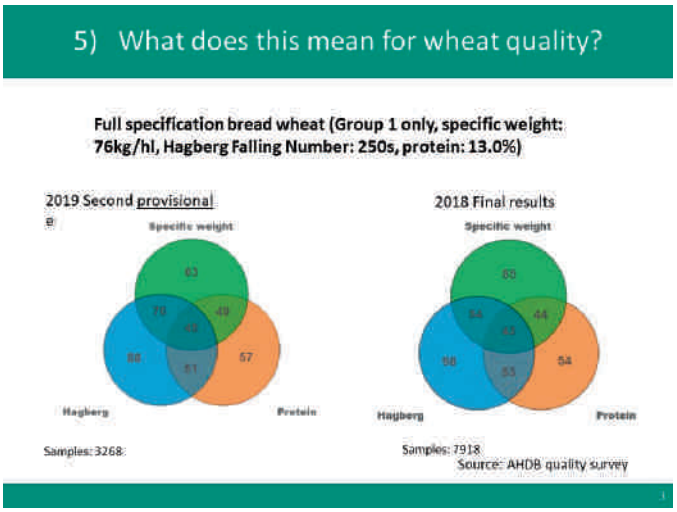


Slide 3 is probably difficult to follow but essentially it is highlighting some of the risks that we have coming along elsewhere in the world. So on the slide is the main wheat growing areas in Argentina and those two in Australia, and they're very dry. The expectation is that we're going to see less grain coming from these areas than we might have done, but because overall stock levels are so high, we should be okay. So that's the very quick run through of the global situation.

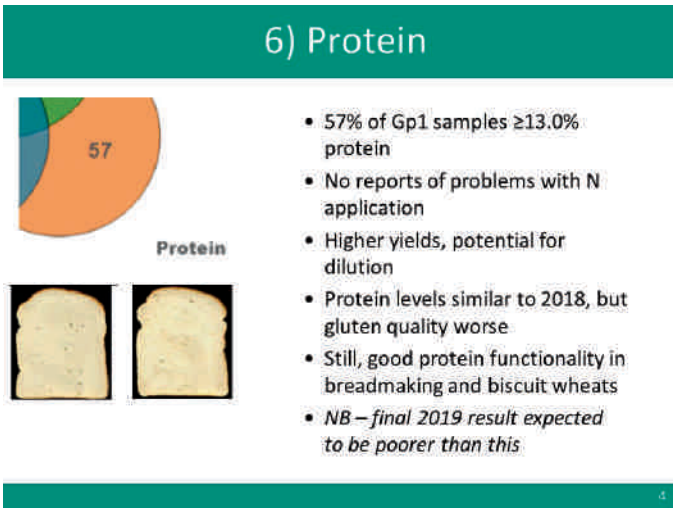


Now just coming back home to the UK because most of the grain that we use for making flour in the UK does come from these shores and these weather maps in **slide 4** are showing you how the situation's been in April, June and July on those two charts

Basically, blue means wet, brown means dry, so we had pretty good conditions this year. A relatively dry spring which probably helped because then the plants put down good roots. It was wet in June, but the harvest started off okay although it was a bit patchy towards the end.



What does this mean for wheat quality, **slide 5**? This is data produced by AHDB when they do a crop survey, and it comes in three stages. Second provisional is after stage two, so it's roughly speaking about halfway through their full set of samples. What you can see on the left-hand side is the scores on three main characteristics: specific weight which is how full the grain is: Hagberg, which is how close it is to sprouting; and protein. which is going to deliver performance for bread flours. You can see that halfway through this survey, the results are quite similar to the final results from 2018, shown on the right-hand side. It is important to take into account that these are provisional results, halfway through the survey, against the final results from last year. We tend to see is a decline in quality as you get towards the end of this survey. Nevertheless, the survey results to date are not looking too bad!

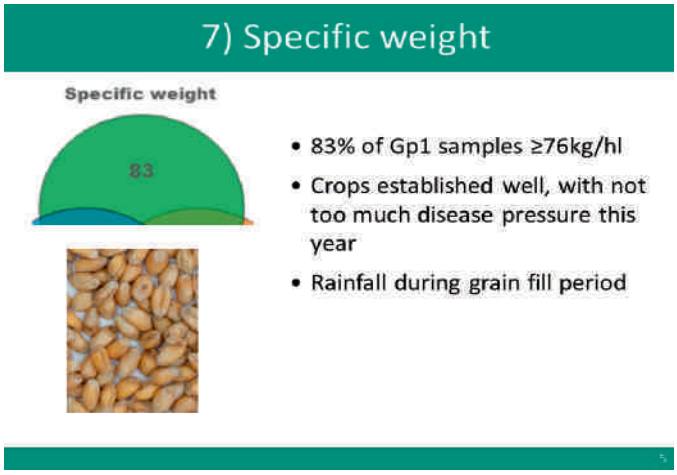


If we look specifically at protein, **slide 6**, what was planted as good quality bread wheat has a decent quantity of protein, even though there are, broadly speaking, high yields.

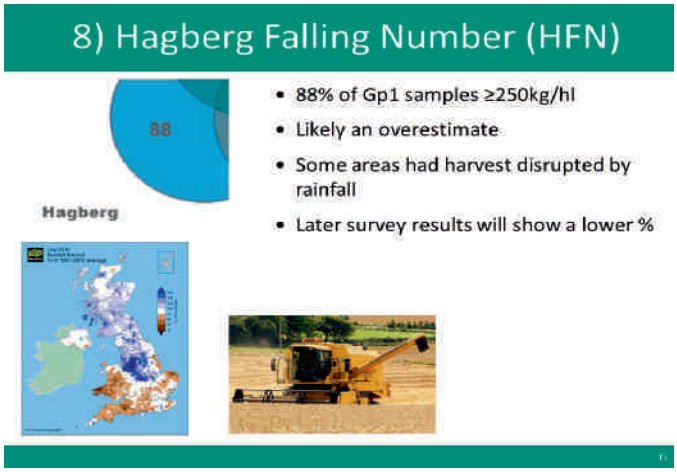
The millers in the room will tell you that they saw a good performance from the crop but as we're getting further into it, it seems like the protein is falling away a bit.

For the improver manufacturers in the room, there might be some opportunities for you there. Nevertheless, pretty

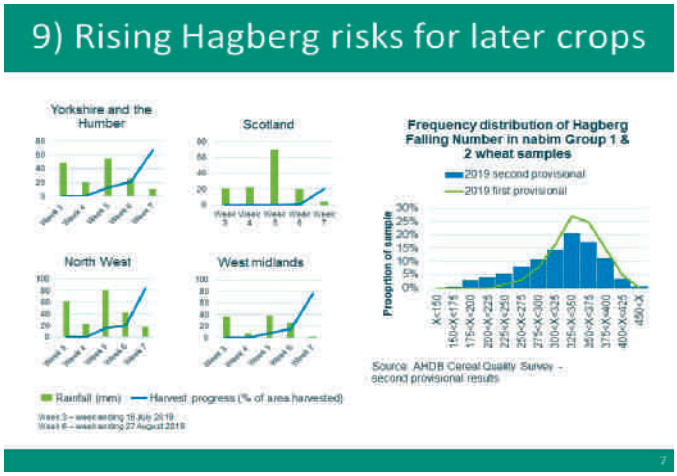
good functionality overall. Perhaps some concerns about biscuit to come up and I'll come back to that in a minute. But just to note the warning that our final results are probably going to be a little bit poorer than that.

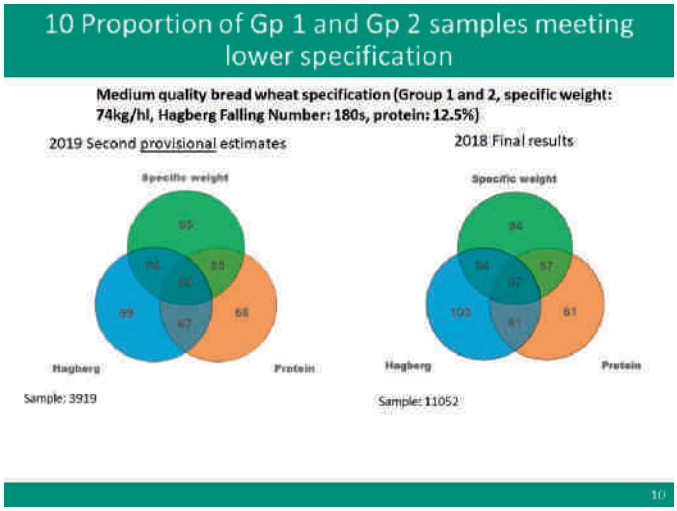


It's the same story on specific weight, **slide 7**, starting off good but as more and more of the wheat is being delivered into flour mills, we're seeing a slight decline in specific weight - in other words, less flour from the grain.

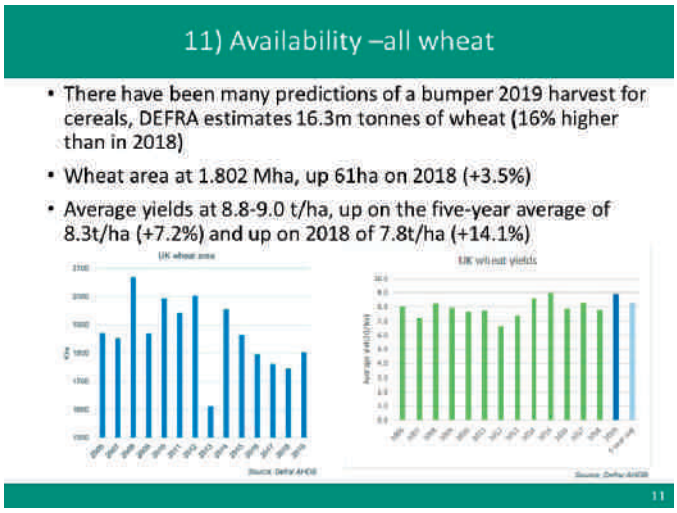


With regard to the Hagberg falling number, **slide 8**, those of you who live further north will remember how much it rained in August and that has been quite challenging Hagberg falling number wise. Quite a lot of our biscuit group three wheat, comes from that part of the country. I think the millers are finding it quite difficult to get exactly what they want on that side of things and here's an illustration of that change in **slide 9.**





You can ignore the charts on the left which just tell you it got wetter as we went through the harvest time. If you look at the chart on the right, that shows a decline in Hagberg Falling Number between the first tranche of this AHDB survey and the second. The first tranche is the green line and the second tranche is the blue bars and we're moving further to the left as time goes on. So that was on the higher specification. If you look at the moderate specification bread wheats, **slide 10**, there has been a decent performance so far.



The good news for everyone is that it is a big crop, **slide 11**. Defra is estimating 16.3 million tonnes of wheat, which is getting on for two million tonnes more than last year, so a lot of wheat. So even though it might be poorer quality, there's plenty to choose from for millers. Perhaps the biggest challenge is getting the good wheat to the right places. A lot of the better wheat is in the south of England and it is a big cost to move that wheat to the north where there's a lot of millers who want it, and I think that's probably one of the biggest challenges for this year.

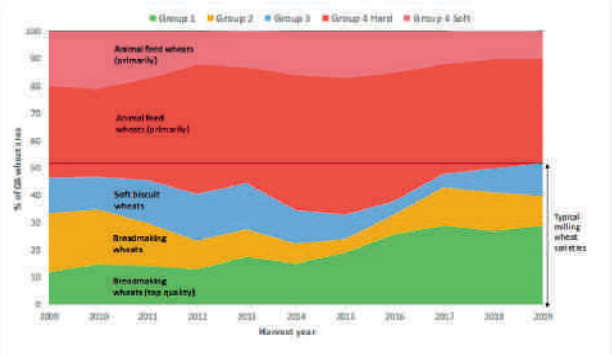
Slide 12 shows the availability balance sheet for the stocks of all wheat. The important line here is the bottom right hand corner, where you've got the surplus which is either going to go into stock or be exported. What you're looking at there is 2.75 million tonnes of grain compared with 700,000 tonnes for last year, so a lot more grain is available for millers to use. One of the challenges that is going to link into the next part of the my paper about Brexit, is that people are struggling to get that grain out of

12) Availability – 2019/20 balance sheet

	2017/18	2018/19	2019/20 - 8.9t/ha
Opening Stocks	1755	1718	1911
Production	14837	13555	16000
Imports	1793	1658	1600
Total availability	**18386**	**17131**	**19511**
Human and industrial consumption	7816	6976	7400
Animal feed	7515	7403	7384
Seed	271	271	271
Other	74	68	68
Total domestic consumption	**15675**	**14718**	**15123**
Balance	**2711**	**2413**	**4388**
Exports	448	358	2388
Commercial end-season stocks	1718	1911	2000
of which operating stocks	1600	1550	1600
of which free stocks	118	361	400
Surplus for free stock or export	**566**	**719**	**2788**
residual	544	144	

the UK before 31st October because, in the event of a no deal, there's a tariff which will apply if it's imported into the EU, which is our biggest market, after that date.

13) Availability – milling wheat



Slide 13 is telling you more of the same thing really.

14) Availability – milling wheat

- Quick estimate of Gp1-3 production quantity: 8.35 Mt tonnes, compared to 6.78Mt in 2018 (+22%)
- Proportion meeting moderate specification continuing to rise

Slide 14 gives a quick estimate of Gp1-3 production quantity. On the right-hand side of the chart you can see a big increase up in the volume of grain which is likely to meet the specification that we need to deliver flour of the appropriate quality for bakers.

Slide 15 Key Points

- 2019/20 UK wheat quality broadly acceptable and supply good
- UK expected to have a significant wheat surplus
- Quality less good than initial figures suggest, owing to delays in harvest. More variability becoming apparent as later crops delivered
- Mycotoxin load low
- Global wheat surplus, capping international prices
- Some market disruption from Brexit

16) Brexit – the players

Brexit See in **slide 16** some key players who have been involved in the Brexit negotiations. Can anybody tell me how many of them were elected? And more to the point, how many of them were elected by a majority of their voters? The answer is John Bercow. He the only one that has been elected by a majority of his voters, yet he is the one that gets most of the criticism!

Can you name them all? Probably the ones that you might struggle with are on the right-hand side. Top right is a woman called Sabine Weyand, who was the Chief Advisor to Monsieur Barnier, an absolute star who really knocked our team into a cocked hat because she knew what she wanted, and they didn't. On the bottom right is Gina Miller, and it is Gina Miller 2 Government 0 in terms of cases won and you may not come across that in the coverage. Gina Miller is neither a Brexiteer nor an anti-Brexiteer, but what she is a believer in is the rule of government and that, if you're going to bring things back home for a decision, then let your elected people decide. It's interesting though in that what she epitomises is something that we're not used to in the UK, and that is the involvement of the courts and legislation in Government and that's very much American.

So those are the players. There's news today that a deal's been done. I think this cartoon still applies; we'll see. And what are the problems? Well, essentially we've got our Parliament with a different opinion to the Referendum outcome, you've got big regional differences in the UK, so Scotland, Northern Ireland, London, quite different to the rest of England, and we don't have and haven't tried to forge a consensus in the UK about

what is the way forward. What you've seen is people moving more to the extreme than to the middle and that's very, very difficult for our system of Government which has been built largely on consensus. And nor do we know what we think we want to do.

Theresa May negotiated a deal which is very similar, except in one respect, to what appears to have been struck with the EU this time but her deal was that the UK, if nothing else could be agreed, would stay in a Customs Union with the EU. Boris' deal is that England, Wales and Scotland will not stay in the Customs Union if nothing can be agreed, so that's really the key difference and then there's a bit of a mess about Northern Ireland which I'll come to in a minute.

Going along with that is an argument about whether the UK, should be aligned in regulatory terms with the EU or diverge and what does that mean? The answer is, effectively, do you need to have exactly the same rules on labelling in the UK as you do in the EU and if you don't, how can that diverge and what does that mean for consumers? Do we need to have exactly the same VAT rates in the UK as in the EU? And if we don't, how are we going to manage those differences?

There's a whole bunch of stuff to do with technical standards between the UK and the EU. For your business in terms of flavourings for example, what exactly would be the rules for the UK compared with the EU? And what does that mean for products which might move from one jurisdiction to the other? And that still isn't clear. These are all things that are left to the next stage for decisions to be made. So even if there is a Brexit solution today, or at a later date, that's only act one of a three or more act drama. The next one may be on our future relationship and what does that mean? And believe me, I think it's extremely unlikely that that'll be sorted out within the next 12/14 months. It takes years for these things to be worked through.

Then there's the Irish question – our Government is walking a very narrow line between, on the one hand, the desire to maintain a close relationship, which I think is a genuine desire, between the UK and the Republic of Ireland and, on the other hand, to be different from the Republic of Ireland and the EU and as we're hearing today, it's not a compromise that's easy to reach. So Mrs May's answer, which the DUP bought, was that in the event of no deal, we'll all stay in the Customs Union and Boris Johnson's answer is the opposite. So you've got the DUP agreeing to Mrs May's solution and saying we're not sure about this to Boris' solution today. So that's one of the big challenges and there is uncertainty, so people are going to flip-flop one way or the other.

For those of you who haven't been following it today, evidently a deal's been reached. My understanding of that agreement is that, if you want to ship goods from Great Britain to Northern Ireland, effectively you're going to have to… we'll see how it turns out but it's going to be along the lines of putting up a financial guarantee that those goods are not going to go into the Republic of Ireland. I should just take one step back – all these provisos are in the event of no final deal being reached in 12 months' time. So the fallback would be if we can't reach an agreement with the EU, we're leaving and your goods will potentially be subject to tariffs going from Northern Ireland to Southern Ireland, and that goods going from GB to Northern Ireland will have to effectively pay a deposit on that tax in case they go there.

So, in other words, quite a big barrier down the Irish Sea and if you think it's easy enough and you know what the tariff is for grain, if anybody's ever looked at what the tariffs are in relation to import of bakery goods into the EU, it is fantastically complicated. You have to make a balance between the flour element, the sugar element, the fat element and I think the dairy bit in a product and consult something called the Meursing Table and, effectively, you've got for each product a flat rate plus a percentage element. That varies, depending on exactly what's in it. So every muffin wouldn't have the same tariff and if you've got a multipack, god knows, don't go there. So it's a bit complicated, to put it mildly.

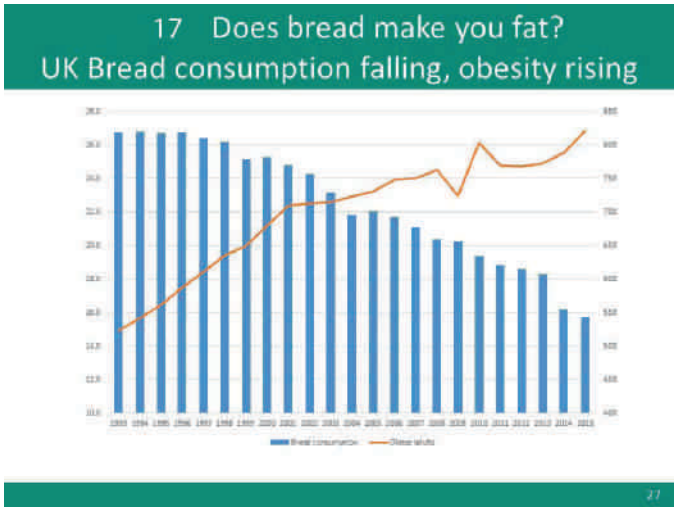
So in the end, what does that leave us with? That in the event of no deal, exports to the EU are going to be a lot more difficult. In the flour milling sector, we export a quarter of a million tonnes of flour to the EU. The tariff on flour is about 50% of the value. If it's no deal, we're not really going to do that trade. There are ways you can kind of work around some of it but it's not good for business. There's another £800 million worth of bakery products that go from the UK to the EU. They're in the same boat – tariff rates between 15% and 50%. It's unappealing.

If there is a deal and it's a slightly distant relationship, as our Government wants at the moment, there may not be tariffs but there will be regulatory checks and you're going to have to deal with those. In your businesses, you're going to have to build in those costs and so that's not an insurmountable challenge but it's a challenge and increasingly, those kinds of checks are going to apply to goods coming into the UK from the EU as well. So if you're an importer, at least in our sector to begin with, you're not to be faced with tariffs because our Government has said in the event of no deal, there'd be no tariffs and I think their objective will be to avoid tariffs in future but there will be more checks and we need to think about that.

So that presents some opportunities and as always, if you're going to mess up a supply chain in that kind of way, that there are going to be opportunities potentially for businesses based in the UK to supply more of the UK market. We import more than we export in the bakery sector but that's going to require investment. So you're going to need to consult, go and see the man in the Halifax and tell him you're building a massive, great palace! Or money's relatively cheap but you've still got to get it and you're going to have to have a vision as to how that's going to work.

Probably it means if you're in the export business, you're going to be looking, as I guess everybody is already, about maybe I should move my export production somewhere else so that I'm not confronted by these barriers, which isn't great when our whole purpose should be to create and add value and jobs and enterprise in our country. That should be our purpose. So that is frustrating. But of course the tariffs , and these difficulties, bear less the higher the value of the product that you're exporting so

that probably is an incentive to focus on our quality and what we can do to really stand out in our export markets and by the way, that standing out will also help us in the home market. So I think we should have been doing this



anyway and I'm sure most of the businesses in the room were, but this whole Brexit situation should make us focus on what can we do to be different, to be special, to stand out, to make our businesses hard to displace and that's what we should be doing.

Obesity I think Sam Montel has left so I feel less worried about putting up this chart!

This is the only thing I was going to put up in relation to obesity, but I think it is significant. The blue bars are bread consumption per capita and the red line is percentage obesity rate. To begin with, I was thinking bread's not the problem but then I was thinking, hang on a minute, maybe bread isn't the problem but maybe we failed because the reason, presumably, bread consumption is falling is because we're not producing the products that people want? And that in other countries, like Germany or Scandinavia, bread consumption's not falling. Therefore, on the one hand, it seems right that bread is not the cause of people getting fatter but maybe that, by not producing the products of the right quality that people want to buy at the right price, maybe we have been complicit in this because we've left the space for these other products to come in that are more appealing and do you know what, they fit with the lifestyle and they end up being more obesogenic.

I know that arguably, food's not the main cause of this epidemic but there's an opportunity for us I think to produce better quality products in bread that might encourage people to come back to us, and that might ultimately help with at least flattening off that rising red line which is what we have to do. Nobody wants to have unhealthy customers, unhealthy children and all that time, wasted time spent feeling under the weather, in hospital and money spent on diabetes and managing health problems.

So that's it, a bit of a canter through a lot of things. It's lucky Sylvia didn't give me a fourth topic, otherwise you'd have still been here tomorrow but thanks very much.

Session Chairman, Alasdair Smith Thank you very much Alex. We've still got time for a few questions from the floor?

Nick Donovan, Allied Mills You said Scandinavia and Germany are making different products to the UK in relation to the range breads they produce. Do you have any examples of their products that could be produced in the UK?

Alex Waugh I think there are other people in the room who could answer your question better than me, to be perfectly honest. I think they have a slightly different attitude to bread. Especially in the Scandinavian region, there's a many more mixed grain and whole grain type products. I remember talking to a man from Zeppelin a few years ago who built bakeries around Europe. He said, in Europe we're not building any bakeries like the ones in the UK. In Europe it's all about the process before baking the bread. That's where we're investing so much in that part of the process before we get to baking goods and his view was then – and I don't know if it's true or not – that there wouldn't be another plant bakery built in the UK, that the whole investment had to be in pre-baking activity to create differences in the bakery goods coming off the end of the line.

Alasdair Smith I wonder about the reduction in bread sales statistic and about what we've heard about today from a number of speakers of the importance of knowing your market and spotting the trends. Do you think enough of the players across our industry are yet good enough at doing that to perhaps try and tackle that decline in bread?

Alex Waugh Yes, I'm sure there are plenty of good people around in the industry. You look around and you can see businesses that are growing. Not every business is growing but the market is certainly not static and the structure of the businesses is certainly not static, neither in flour, nor in baking, nor at a retail level. So, yes, there's plenty of change. I think, looking back and turning inward on flour, we've done a really poor job at telling people about the nutritional value of flour and many of the products made from flour.

We've allowed the space to people who are kind of anti-gluten, who talk about white bread and sugar in the same breath, saying it's all empty calories. I think there's a challenge for us in the way that we go about promoting what is essentially the good qualities of bread. As for business innovation, I think there's plenty of it. It just needs more dynamism and it's been inspiring to hear about people here today talking about their enterprises and what they put into it, and if there's one thing that could come out of Brexit, it would be renewed energy and vigour and saying look, here's an opportunity, let's go for it!

Alasdair Smith Many than for an excellent presentation Alex. *Applause.*

One or two thoughts from myself before passing over to Richard for some closing remarks. One of the things I often find myself saying about our bakeries is that you're all magicians. Every single day you create the most beautiful daily bread and savoury snacks and sweet treats for us from the humblest of ingredients and there's kind of a simplistic beauty in what you do and you should all be congratulated for that craft. It seems to me that the other aspect of it which I just touched on there is that it really is important to continue to look at how we can innovate with these simple ingredients, how we can identify new

markets and new customers and keep on satisfying them in new and different ways to ensure that this fantastic ancient and noble trade of ours continues to flourish, and from this point on, it continues to grow. So those are my final thoughts. It's been an absolute pleasure. Thank you very much for allowing me to chair these afternoon sessions and I'd just like to welcome Richard for some closing remarks.

Richard Hazeldine, BSB Chairman Thank you very much Alastair for chairing this afternoon's sessions. I'd just like to thank all our speakers today. I think it's been truly inspirational, very informative and worthwhile and thank you all for making the effort to come because, as we've said earlier, business is challenging at the moment and very often it's not the cost of being here, it's the personal and the time element that really comes into play. We do appreciate your participation.

I hope to see as many of you as possible again in April next year at Bicester for our spring conference and all that remains for me to do is to thank Stuart and the guys on the AV, and Brian and Paul with the roving mikes, for making the sessions run so smoothly today and we will now close the conference and I wish you all a safe and onward journey home. *Applause*

CONFERENCE PHOTOGRAPHS

David Hall, Tony Fennell and Steve Fulford

Devon Petrie, NBS, Natalie Brown and Danielle Tuffin

Donna Roper, John Langton and Michellle Briggs

From left BSB Executive Committee, member Brian Clarke with speakers Mike Bagshaw and Paul Baker

From left Mike Roberts Chairman and Gordon Polson, Chief Executive, Federation of Bakers

From left students Molly-Jane Calvert, Isabel McNamee, Lauren Butler, Dion Attwell, Katrina Fuszard, Colleen Berridge and Maria-Theresa Ao, Moulton College

CONFERENCE PHOTOGRAPHS

Louise Smith, Ame Miles, Keith Houliston, Ronnie Miles, Matthew Bingham and Alasdair Smith

Megan Roberts, Andy Taylor and Pooja Patel

Moulton College, Steve Russell, Tutor, Alex Burt, student, and Amy Wightman, Technician

New Vice Chairman Mark Young with Richard Hazeldine

Owen Morris, Alice Cook, Owen's pal Tom Roberts and Christina Gibbons

Peter Thomson, Luke Nesbitt, Richard Ball and Mark McCormack

Stan Cauvain, Richard Hazeldine and Paul Morrow

Stephen Neil, Dinnie Jordon and Paul Dean

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Autton	Sara	Lesaffre UK & Ireland
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Bagshaw	Mike	International Taste Solutions Ltd
Baker	Peter	Finsbury Food Group
Baker	Paul	St Pierre Group
Ball	Richard	Edme Ltd
Balzan	Eric	Montana Bakery
Berryman	Alex	British Bakels Ltd
Bingham	Matthew	Wm Reed Business Media
Blissett	Kevin	Doronwell Ltd
Bodman	George	Vandemoortele UK Ltd
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Carr	Daniel	Warings Master Bakers Ltd
Cauvain	Stanley	Baketran
Chell	Mike	Lallamand
Clarke	Brian	Europea Food Consultants
Clarkson	Tim	Dawn Foods Ltd
Cliffe	Paul	Calibre Control International
Cockrell	Andrea	Synergy Flavours Ltd
Cook	Tim	ADM Milling Ltd
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Cox	Chris	British Bakels Ltd
Crowe	Andrew	David Wood Baking Ltd
Crown	Jeremy	Rademaker UK
Daly	Patrick	Daly Foods Ireland Ltd
Day	Adam	International Taste Solutions Ltd
Davage	Lewis	Zeelandia Ltd
Dean	Paul	KaTech
Dean	William	Deans
Ditty	Robert	Ditty's Home Bakery
Dobbie	Ian	Delifrance (UK) Ltd
Dobbie	Neil	Allied Bakeries Ltd
Drake	Nicola	Synergy Flavours Ltd
Duckworth	Graham	Campden BRI
Dyson	Martin	Tomn Chancley Ltd
Egginton	Peter	Sonnevewld UK & Ireland
Ellis	Jill	AAK
Evans	Chris	Applied Data Corporation
Evans	Robert	Bako Wales
Favager	Jane	KaTech
Ferguson	Ross	Sudzucker UK
Fletcher	Simon	Synergy Flavours Ltd
Flounders	Andy	DuPont Ltd
Flower	Helen	AAK
Foster	John	Foster's Bakery (Staincross) Ltd
Freeman	Christopher	Worshipful Company of Bakers
Fuller	Ashley	ADM Milling Ltd
Fulford	Steve	British Bakels Ltd
Galizzi	Manon	Synergy Flavours Ltd
Gambrell	Laura	Zeelandia Ltd
Gelley	John	Arla Foods Ltd
Gibbs	Claire	Danisco UK Ltd
Glover	William	Glover's Bakery Ltd
Glykys	Evelthon	The Model F/Sta Bakeries Ltd
Goddard	David	
Godfrey	Cheryl	Julias Bread Cakes & Preserves
Grout	Giles	B B Grout Ltd
Hall	David	The London Baking Co Ltd
Hall	John	J Hall & Sons (Bakers) Ltd
Hallam	Stephen	Dickinson & Morris Ltd
Hanspal	Sat	Finsbury Foods plc
Hazeldine	Richard	Zeelandia Ltd
Heygate	Paul	Heygates Ltd
Heygate	Tom	Heygates Ltd
Hodge	Kevin	Bakery NPD Ltd
Hooper	Andy	British Bakels Ltd
Houliston	Keith	British Bakels Ltd
Howarth	Simon	NPD Consultant
Howe	Suzanne	Suzanne Howe Communications
Hull	Martin	Maison du Pain Ltd
Hutchinson	Ben	Calibre Control International
Inglis	Brian	Fritsch Group
Irons-Young	Tara	Ingram Bros (Glasgow) Ltd
Irwin	Brian	W D Irwin & Sons Ltd
Jarman	Mike	E Botham & Sons Ltd
Jedlovec	Roman	Flour and Spoon Artisan Bakery & Café
Jones	Brian	Allied Mills Ltd
Jones	Philip	Gerrards Confectioners (Nth Wales) Ltd
Jones	Robin	The Village Bakery (Coedpoeth) Ltd
Jordan	Dinnie	Kudos Blends Ltd
Kueckes	Chris	Toolbox Software GmbH
King	Nigel	Cereform Ltd
Kinney	David	Irish Bakels Ltd
Kirkwood	Gordon	Eccelso Ltd
Laidlaw	Ken	Bakernology
Mladek	Leon	Anneliese Bakeware
Littler	Darren	Warburtons Ltd
Lomas	Michael	Spooner Industries Ltd
Lund	Desiree	The Bread Roll Company
Macdonald	Sylvia	Executive Committee
MacFarlane	Duncan	Scobie & McIntosh Ltd
March	John	Dawn Foods Ltd
Marriage	George	W & H Marriage Ltd
Matthews	Paul	F W P Matthews Ltd
McCormack	Mark	Almarai
McCabe	Douglas	Sudzucker UK
McKane	Ivor	CSM (United Kingdom) Ltd
McIlwrick	Andy	Baker Perkins Ltd
McPhie	Craig	McPhies Craft Bakers
Montagu	Robert	Walkers Midshire Foods
Moore	Patrick	More? The Artisan Bakery
Morrow	Paul	British Bakels Ltd
Mullally	Martin	Kerry Ingredients
Niccum	Clay	63 Borough Road
Norris-Small	Rebecca	Caldic (UK) Ltd
O'Grady	Brian	Panelto Foods
O'Neill	Steohen	Katech Katharina Hahn
Ordonez	Alison	Frank Roberts & Sons Ltd
Osborn	Kim	Whitworth Bros Ltd
Parker	Bob	BTS International
Pearson	Laurie	Heygates Ltd
Peate	Andy	CSM Global
Petrie	Devon	National Bakery School, LSBU
Pollard	Andy	A B Mauri Ltd
Polson	Gordon	Federation of Bakers Limited
Poole	Mervin	Heygates Ltd
Powell	David	Consultant
Pugh	L J M	The Village Stores
Quinn	Sean	Lallamand
Riley	Nicola	KaTech
Roberts	Mike	Frank Roberts & Sons Ltd
Roberts	Megan	A B Mauri
Roberts	Adrian	Vandemoortele UK Ltd
Roots	Darren	Danisco UK Ltd
Roper	Donna	IMCD Ltd
Ruck	Martin	Maxtone Ruck Ltd
Sarafilovic	Andre	William Stephan (Bakers) Ltd
Schofield	Michael	British Bakels Ltd
Short	Adrian	Ulrick & Short Ltd
Sibley	Hannah	New York Bakery Company
Schmal	Bart	Hovis
Smart	David	Greenhalghs Craft Bakery Ltd
Smart-Stanton	Georgie	Greenhalghs Craft Bakery Ltd
Smink	Erik	AMF Bakery Systems
Smith	Alisdair	Scottish Bakers
Smith	Laurence	Fatherson Bakery Ltd
Somal	Aja	Consultant
Spencer-Calnan	Stuart	Frank Roberts & Sons Ltd

Staniforth	Tony	Hovis
Taylor	Lee	AIB International
Tearle	Richard	Rondo Doge
Teasdale	John	B S Teasdale & Son Ltd
Thomson	Peter	Du Pont Nutrition and Health
Tucker	Gary	Campden BRI
Turlej	Mike	Flour & Time
Turner	Paul	DuPont Ltd
Tyler	Jane	RedBlack Software Ltd
Uddin	Kamal	Kulmediia Ltd
Van Amburg	Kent	American Society of Baking
Van Tongeren	Maurice	Ireks UK
Ville	Stephen	Executive Committee
Warburton	Brett	Warburtons Ltd
Ward	S K	Ambit International Ltd
Ward	K J	Ambit International Ltd
Ward	C J	Ambit International Ltd
Webb	Ian	Whitworth Bros Ltd
Wertheim	A	Chalfont Products Ltd
Westaway	Richard	Cereform Ltd
Weston	Paul	Romix Ltd
White	Sam	Bakery Business
Whymark	Ian	W & H Marriage & Sons Ltd
Wood	Joe	Country Style Foods Ltd
Wood	Jemima	Jemima Bakes
Woods	Neil	Consultant
Woodgate	Julian	G R Wright & Sons Ltd
Wright	David	G R Wright & Sons Ltd
Wright	Peter	Wrights Pies (Shelton) Ltd
Young	Mark	Ingram Bros (Glasgow) Ltd
Zackey	David	Tamar Foods

HONORARY MEMBERS

Grieves	Jean
Jackson	Niel
Roberts	David
Brown	Jim
Heygate	Paul

RETIRED MEMBERS

Charman	G A
Greenwood	A
Grieves	J L
Hurtz	E G
Hastie	N W
Haynes	J
Jackson	N H
Lomax	C
Melling	I K
Moss	T
Packham	J W
Pendlington	A W
Pennington	M
Slingsby	T J
Waterfield	A

CONFERENCE PHOTOGRAPHS

Two audience views. Top picture, Scottish Bakers President Ronnie Miles, extreme left, front row, is looking happy. Bottom picture, front row, Session Chairman Stan Cauvain and Speaker Ian Cummings, are looking forward to the action. On the chairs are orange goody bags kindly supplied to the delegates by the St Pierre Groupe.

Sessions Chairman Alasdair Smith opens the afternoon conference sessions. On the screen are the logos of our Supporters, the donations from whom we use to support students and young people in the baking industry in various ways.