



Muntons

PASSIONATE ABOUT MALT SINCE 1921

2021
Sustainability Report

Setting the Bar high

The British Government has a target to reduce greenhouse gas emissions by 78% before 2035. Here at Muntons, we have proudly challenged ourselves to be well ahead of the curve on carbon savings. Learn more about our science-based targets and our alignment with the Race to Zero for greenhouse gas reduction.

our Approach

We believe in taking action and making responsible choices for a sustainable future, we call it Practical Sustainability.

Carbon Footprint Data Analysis

As the first to produce carbon calculators that determine the intensity of carbon footprint across the supply chain from farm to malting barley and onward to beer and whisky production, we believe in open and transparent data to support the industry.

2020 Highlights

2020 saw us continue to progress with our sustainability targets and deliver on carbon reduction. Read about some of our key achievements of the last year noted by our Director of Technical and Sustainability.

Demystifying Sustainability Language

Learn about the various approaches and terminology used. Read our guide demystifying the world of sustainability language.

HELPING CUSTOMERS TELL THEIR Sustainability Stories

As pioneers of sustainability in the malting industry we can help customers do the same, demystifying the jargon and providing insight into technology and verification.

INTRODUCTION

*from Dr Nigel Davies, Muntons
Director of Technical and Sustainability*



Welcome to our 2021 sustainability report, which covers the latest and continuing environmental related activities undertaken by us at Muntons. We have made good progress on setting our near-term and longer-term ambitions and we continue to work on the areas where there is still more to do.

The COVID-19 pandemic presented significant and unpredicted challenges to our business and stakeholders. However, **2020 continued the reign of over 20 years of positive sustainability behaviours in the business and we did not delay any of our green plans.** We are well on the way to reducing our scope 1 and 2 carbon emissions by at least 60% compared to 2010. The UK has set a reduction target of 78% by 2035. We are confident we will meet that goal and plan to find more practical solutions to further reduce greenhouse gas emissions.

Since 2014, we have been on a path to generate as much of our own heat and electricity as possible. Doing it in a way that utilises renewable resources and has a real, verifiable and positive impact on the environment. In 2020, we built on the success of our anaerobic digester in Stowmarket, **and opened a brand-new biomass heating facility at our Flamborough maltings in Bridlington.** The biomass plant uses locally sourced, verifiable and sustainable

wood chip to reduce GHG emissions by 90%. For business continuity purposes, the previous highly efficient gas Varicon burners were retained, and now act as a reserve supply. We stipulated that the wood sourced must be FSC certified, available within 70 miles of the plant and to have no useful purpose other than heating.

As I write, **we are nearing completion of a bio-energy centre at our Stowmarket site, that will allow us to achieve and likely exceed our science-based target for scopes 1 and 2.** Our malt and malted ingredients facilities at Stowmarket will become self-sufficient for heat by switching from natural gas systems to highly efficient and almost carbon zero biomass-fuelled boilers that will co-generate electricity. In total, the energy centre will deliver a saving of carbon equivalent to the running of 6,000 cars annually.

We are proud to lead by example and offer practical guidance around technology and carbon footprint impact assessment to many of our customers.

Sharing best practice and encouraging innovation and involvement is key to achieving global carbon reduction in a debate which can often become embroiled in politics and dispute. With the support of our supply chain and team members, we can

reduce our impact on the environment, protect financial stability in our operations and continue to enthuse those who work with and for us. This approach is recognized as the triple bottom line approach to sustainability with benefits for people, profit and planet.

As the leading maltster championing sustainability we tackle the big issues of our time such as climate change not just as the right thing to do, but essential to the success of our business, increasing our value and presence within society and supporting those within our supply chain. That is why we have it at the forefront of our business planning and say, **"Practical Sustainability - making responsible choices for a sustainable future"**.

Dr Nigel Davies
Director of Technical
and Sustainability



For further information on anything in this report please contact: nigel.davies@muntons.com

Our Targets and Achievements



	TARGET	2020 ACHIEVEMENT	
GREENHOUSE GAS EMISSIONS	Science Based Target 2010-2025	Scope 1 & 2 27%	AHEAD OF TARGET
	Scope 1 & 2 45% reduction	On track for >50% in 2021	
	Scope 3 30% reduction	Scope 3 32%	AHEAD OF TARGET
WASTE	0% non-hazardous waste to landfill	0% to landfill achieved	ACHIEVED IN FULL
FOOD WASTE	To align with the Target, Measure Act food waste reduction scheme: <2% food waste	0.51%	ACHIEVED IN FULL
WATER USE	< 4.8m ³ /tonne for malting	4.3m ³ /tonne for malting	ACHIEVED TARGET
	< 7.0m ³ /tonne total products	5.9m ³ /tonne total products	ACHIEVED TARGET
SUPPLIERS ETHICAL DATA EXCHANGE (SEDEX)	Management score above average with target of 4.0/5.0	4.62	ACHIEVED IN FULL
CLIMATE POSITIVE AGRICULTURE	To reduce scope 3 carbon emissions from growing of malting barley by 30% by 2030	New target this year	

2020 Highlights

As a business, sustainability is at the core of our mindset. We look at all areas to implement improvements both big and small.



SOME OF OUR SUSTAINABILITY HIGHLIGHTS FROM ACROSS THE BUSINESS:

- ◆ **Construction started on our bio-energy centre in Stowmarket:** Featuring a 14 MW biomass boiler, which will enable us to utilise a renewable energy source.
- ◆ **Recycling scheme for malt sacks at breweries launched:** We are acutely aware that while our malt sacks are made of polypropylene (PP), which is a fully recyclable material, the infrastructure within the UK is not readily available. To help solve this, we have partnered with QCR Recycling Equipment. Balers installed in the breweries consolidate the finished sacks which are then collected by QCR as a pure source of PP and recycled into pellets to be melted down and used again. Not only does this streamline waste, but it often streamlines the brewery's waste management saving them time and money.
- ◆ **A new recycling scheme for our obsolete IT equipment was implemented:** expanding on our zero-waste to landfill remit.

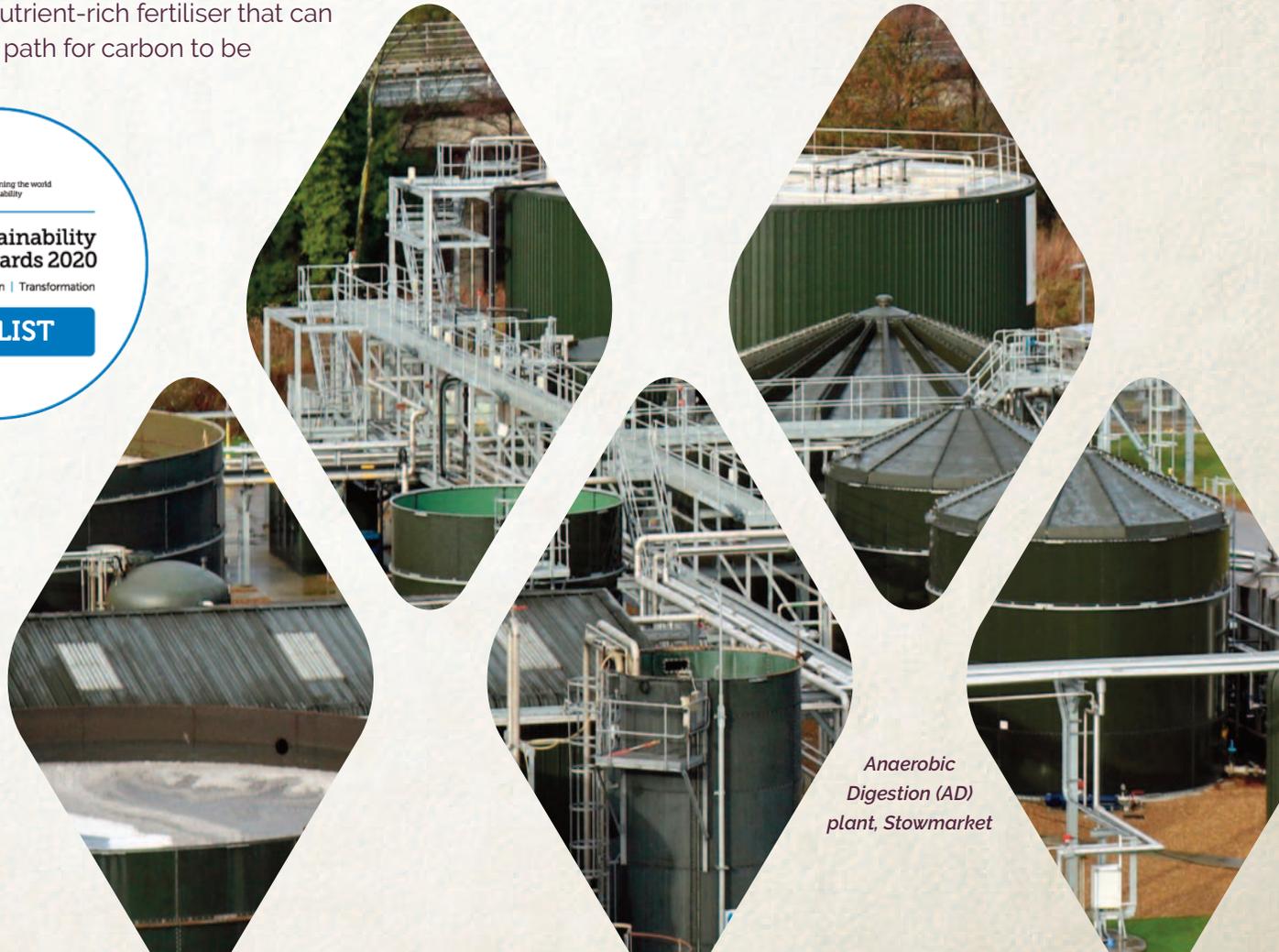


2020 Highlights

...more

OF OUR SUSTAINABILITY HIGHLIGHTS:

- ◆ **ISO14001:2015 has been awarded** at our Peated Malt site in Tithe Top and both of our UK maltings. All our sites now operate to this standard.
- ◆ **We were proud to be selected as a finalist** in the Energy and Carbon Transition category at the IEMA Sustainability Impact Awards 2020.
- ◆ **Our Anaerobic Digestion (AD) plant in Stowmarket** continues to provide us with green energy on-site, as well as a nutrient-rich fertiliser that can be used by local barley growers, creating a circular path for carbon to be recycled within our supply chain.



SETTING THE BAR *high*

Our passionate drive to proactively minimise our environmental impact has been a significant part of our ethos since we began in 1921. This has crystallised in the last two decades as the impact of industrialisation on our planet becomes more apparent and it has become clear there is limited time to act. **There is a triple bottom line benefit to sustainable business that now takes centre stage: people, profit, and planet.**

One of the most notable commitments we have made is in setting globally relevant targets that are independently verified. The internationally recognised standard for greenhouse gas saving is to set a **science-based target*** that ensures emission reductions are in line with keeping the global temperature rise within acceptable limits of well below 2°C.

We are one of just over 500 companies in the world across all industries to have set a target which has been approved by the science-based targets organisation.



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

sciencebasedtargets.org



We are one of only 500 companies in the world across all industries to set a target which has been independently approved

OUR TARGETS:

- ◆ Reduce on-site scope 1 and 2 emissions by 45% from 2010-2025
- ◆ Reduce scope 3 emissions by 30% from 2010 - 2025.
- ◆ We have made significant progress, already saving 27% on Scope 1 and 2 since 2010 and are on our way to reach and exceed our target well ahead of the 2025 milestone.

SETTING
THE BAR

high



RACE TO ZERO:

The United Nations Framework Convention on Climate Change (UNFCCC) is promoting a fast track approach to GHG reduction to be carbon neutral by mid-century and halfway there by 2030.

Muntons target for carbon reduction is aligned with the Race to Zero and through the Global Climate Action portal the UNFCCC recognises our targets as being world leading in this regard for both the absolute emissions of GHG and the amount of energy per tonne of product.



Muntons target for carbon reduction is aligned with the Race to Zero

Telling a sustainable story becomes easy when you can prove your work

United Nations Sustainable Development Goals

We are a strong supporter of the United Nations Sustainable Development Goals (UN SDG), recognising that sustainability has many more facets than carbon and water and that we need to work with our supply chain to have the greatest impact. Some of the key areas we reference in the UN SDG are shown below and indicate our desire to describe specific actions that relate to the UN SDG's rather than a general acceptance of them.

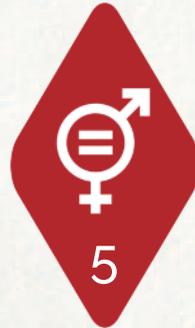


OUR GOALS:



GOOD HEALTH & WELLBEING

GOAL 3: Ensure healthy lives and promote well-being for all at all ages
Malted ingredients are a rich source of vitamins and minerals low in fat and high in fibre. Our new product development process looks for new ways to use malted ingredients as nutritionally superior sources of texture, flavour and colour.



GENDER EQUALITY

GOAL 5: Achieve gender equality and empower all women and girls
Muntons has a policy of equal rights and opportunities irrespective of gender.



CLEAN WATER & SANITATION

GOAL 6: Ensure access to water and sanitation for all
Muntons has a policy to reduce water consumption and to recycle as much water as possible to avoid depletion of fresh water and protect natural water resources.



AFFORDABLE & CLEAN ENERGY

GOAL 7: Ensure access to affordable, reliable, sustainable and modern energy for all
We have installed clean energy generation to provide heat, steam and electricity for our factories and reduced our GHG emissions by up to 90% in some areas of operation. Biomass as a replacement for natural gas and use of Anaerobic digestion to provide electricity rather than transport material off site as waste are great examples of our decarbonisation strategy.

OUR GOALS (CONTINUED):



DECENT WORK & ECONOMIC GROWTH

GOAL 8: Promote inclusive and sustainable economic growth, employment and decent work for all
Muntons is an ethical company having been verified by the Suppliers Ethical Data Exchange 4 pillar audit for Labour standards, Health and Safety, Environment and Business practices.



INDUSTRY, INNOVATION & INFRASTRUCTURE

GOAL 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation
Innovation drives our process efficiencies to be best in class and to continually develop new and innovative ways to use our products and develop new products.



SUSTAINABLE CITIES & COMMUNITIES

GOAL 11: Make cities inclusive, safe, resilient and sustainable
Muntons has won many national and international accolades and awards for sustainable leadership.



RESPONSIBLE CONSUMPTION & PRODUCTION

GOAL 12: Ensure sustainable consumption and production patterns
Muntons provides clean label ingredients produced in hygienic, food safe and highly efficient factories using ethically sourced raw materials.



CLIMATE ACTION

GOAL 13: Take urgent action to combat climate change and its impacts
Muntons has an externally verified science-based target for GHG reduction to ensure we play our part in minimising global warming to well below 2C.



LIFE ON LAND

GOAL 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
Muntons has a programme in place to work with farmers who grow our malting barley in a way that minimises fertiliser use or uses abated nitrogen fertilizers such that soil structure is improved, water courses are protected and very soon our malting barley will be climate positive (carbon negative). Farm practices that encourage biodiversity are encouraged in our suppliers



PARTNERSHIPS FOR THE GOALS

GOAL 16: Revitalize the global partnership for sustainable development
Muntons recognises that we will make better progress by working collaboratively across our supply chain. We promote sustainable practices in our suppliers by requiring them to adopt reduced resource use and recycled content and with our customers by helping them understand how our actions reduce the embedded impact in the products they make using our materials. We work internationally with the Sustainable Agriculture Initiative Platform to promote sustainability best practice in agriculture.

ethical SUPPLY



Sedex

We have been successfully certified as an ethical supplier since 2009 through external verification via the **Supplier Ethical Data Exchange** four pillar audit (SEDEX, SMETA audit). The four pillars are: Labour Standards; Health and Safety; Environment; Business Practices. Our audit has 2-year cycles. We have also reinforced our ethical trading status by formally adopting the **Modern Slavery Act** (Human Trafficking) and a public statement is available on the website.

Our Ethical Supply Statement is available here:

www.muntons.com/wp-content/uploads/2020/11/201118-Ethical-Statement-2020.pdf

**Target
Measure
Act**

We are proud to be part of the Food Waste Reduction Roadmap (part of WRAP) to minimise food waste and are in fact the first maltster to sign up to it. The initiative encompasses the entire supply chain from field to fork. Our food waste is minimal at 0.51% and as a business, the ethos of looking for further waste reduction opportunities and sharing our actions through case studies is consistent with our company values. Action by individual businesses to 'Target, Measure, Act' on food waste is critical to the UK achieving its national targets as well as the UN Sustainable Development Goal of a 50% food waste reduction by 2030.

#1: Demystifying Sustainability Language

Climate conscious terminology:

Climate Positive

When greenhouse gas removals, internal and external, exceed its emissions. Sometimes called "net negative" but Race to Zero prefers the term "climate positive"

Carbon Zero

A company that produces no greenhouse gases from its operations is qualified as Carbon Zero. This is sometimes referred to as an Absolute Zero target.

Carbon Neutral

Some greenhouse gas emissions are generated but are offset elsewhere to make overall emissions balance zero.

Net Zero

A combination of reducing and offsetting carbon emissions GHG reductions follow science-based pathways, with any remaining GHG emissions being fully neutralized by like-for-like removals within the value chain or through purchase of valid offset credits.

Carbon Credits

Carbon credits are measurable, verifiable emission reductions from certified climate action projects, such as wind energy, biomass, or forest conservation. These projects reduce, remove or avoid greenhouse gas (GHG) emissions. An organisation can purchase a carbon credit, which allows them to emit a certain amount of carbon dioxide or other greenhouse gases. One credit permits the emission of a mass equal to one tonne of carbon dioxide.



As a basic rule, it is recommended that companies start on the continual reduction of their own emissions, with offsetting used only to counter the balance. Only then will a commitment to climate change reduction be truly credible.



#2: Demystifying Sustainability Language

Climate conscious terminology:



Science-based Targets

These are the globally accepted standard for companies setting their carbon reduction goals. Targets are considered science-based if they align with the objectives set out by the Paris Agreement. This treaty, which came into place in 2015 and was signed by almost 200 countries, has the **aim to limit global warming to below 1.5°C - 2°C, from pre-industrial levels.**

A science-based target has to be set with a start date no further than 5 years back and with a 15 year window. Globally manufacturing requires an almost 80% reduction in emissions from 2010-2050. Muntons was recognised as having taken early action to reduce prior our base year of 2010 hence our target was ratified as being 45% reduction in scope 1 and 2 emissions and a voluntary reduction in scope 3 of 30%.



At Muntons, we have committed ourselves to science-based targets. We believe we have taken the harder, more enduring route, of looking within our own business for real opportunities to make innovative and continuing improvements. This is an extensive process, but in doing so, our high standards are externally verified, providing us with a clear route to reducing our greenhouse gas emissions. Muntons target is to be Net Zero by 2050 at the latest although some parts of our supply chain may be able to claim a target of climate positive e.g. carbon negative barley and climate positive nitrogen fertilizers within the next 5 years.



#3: Demystifying Sustainability Language

Climate conscious terminology:

Carbon Footprint:

The amount of carbon dioxide released into the atmosphere because of the activities of a particular individual, organisation, or community. Carbon footprint is a generalised term that converts all six greenhouse gasses (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride) into a CO₂ (carbon) equivalent value based on global warming potential (GWP). The GWP values for each of these gasses is shown in the table. Whilst methane potentially holds 28 times the heat of carbon dioxide in the atmosphere it is now known to persist for only short periods in the atmosphere hence its impact is much less than previously estimated.

Greenhouse Gas (GHG) Global warming potential (GWP)

Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	28
Nitrous Oxide (N ₂ O)	265
Sulphur Hexafluoride (SF ₆)	23,500
Hydrofluorocarbon (HFC)	4-12 400*
Perfluorocarbon (PFC)	7,190 - 17400*

#4: Demystifying Sustainability Language

Climate conscious terminology:

CARBON FOOTPRINT SCOPE BREAKDOWN:

Carbon footprint is the impact of these six gasses in different parts of the supply chain, broken down into three scopes:

SCOPE 1 (Direct Emissions):

Emissions from plant or assets that you own and directly control e.g. gas usage for kilns.

SCOPE 2 (Indirect Emissions):

Emissions associated with consumption of purchased electricity, heat, steam, and cooling.

SCOPE 3 (Other Indirect Emissions)

These are a consequence of our actions, but occur at sources we do not own or control directly both upstream and downstream (it is however possible to impact through influence or choice) e.g. Upstream; growing of malting barley. Downstream; transportation to our customers.

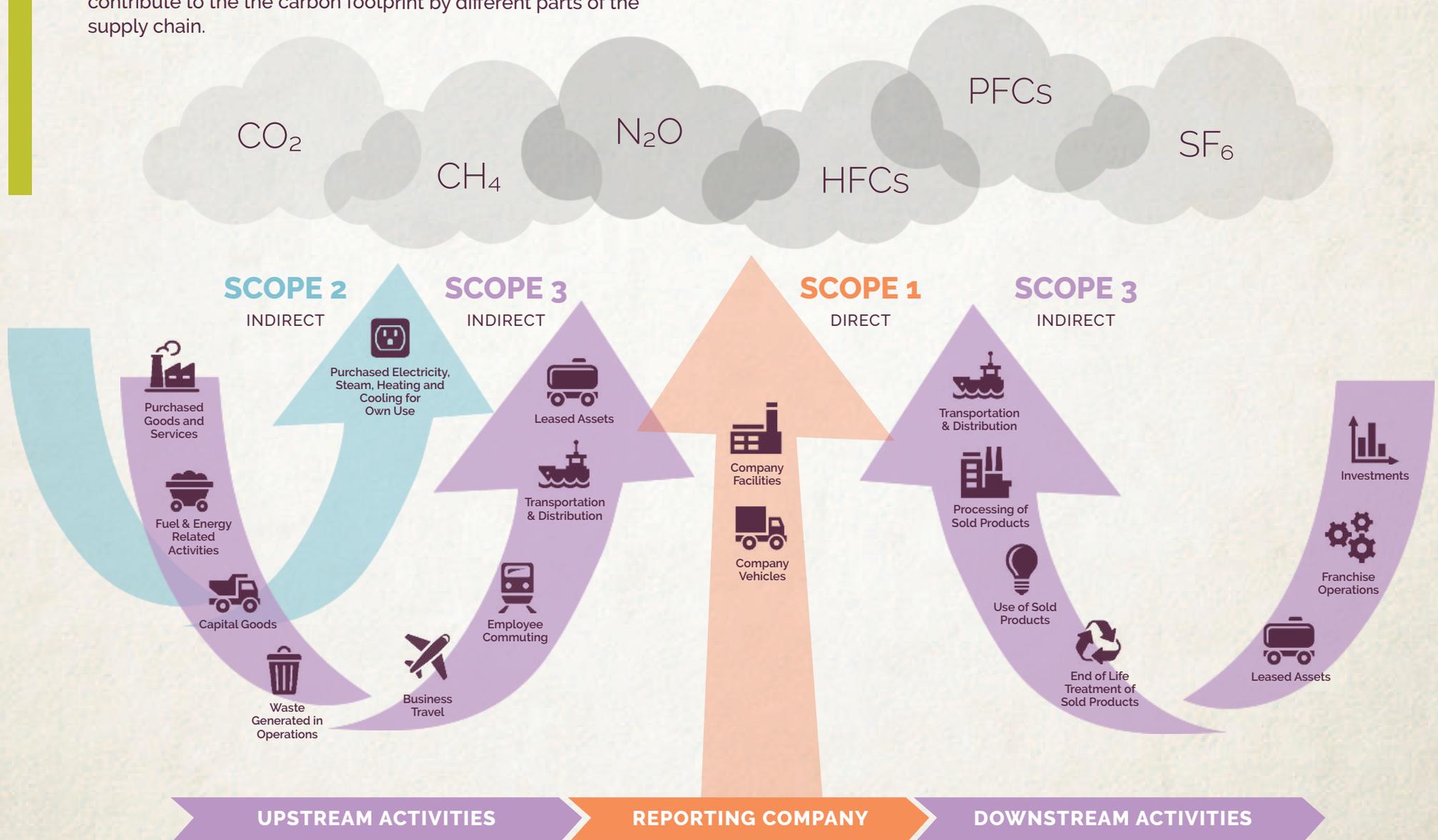


For malting operations, most of the emissions impact are due to CO₂ and N₂O from combustion activities or the manufacture and use of nitrogen fertiliser on the grain we buy.



CARBON FOOTPRINT SCOPE BREAKDOWN: (continued)

Infographic* showing how the six gasses are emitted and how they contribute to the the carbon footprint by different parts of the supply chain.



*Infographic approach inspired by Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011)

Our Approach



There are four tenets to Muntons' approach: all wrapped under the ethos of **Practical Sustainability**:

1:

Actions Not Words.

We look for the triple bottom line benefits of environmental protection (**planet**), cost reduction (**profit**) and inspiration of our team members, those who work with us now and in the future or buy from us (**people**).

2:

Empowering Employees.

We believe the whole organisation must be engaged and empowered to drive the sustainability vision and look for improvements. Some of our actions are company-wide and require significant investment, but we are just as proud of the small changes as we seek tangible practical ways to minimise our environmental impact.

3:

Simple and Accountable:

It is essential that we translate the often-complex scientific debate into an understandable dialogue for our stakeholders such as team members, shareholders, and businesses within our supply chain. Our bespoke carbon tools and supplier assessment schemes allow us to track our progress and support our suppliers and customers.

4:

Collaborative:

We are aligned with the United Nations Sustainable Development Goals (SDG) which drive collaboration (e.g. SDG17 Partnership) and impact (e.g. SDG 8 Climate action). Likewise, we believe in collaborating with our suppliers and our customers to maximise the impact we can have.

Our Approach (continued)

Whenever we promote sustainability in the food and beverage and wider supply chains we recommend the following approach:



Carbon Efficiency:

Map your operations and your supply chain. Where are the hot spots? What can you do to facilitate GHG reduction?



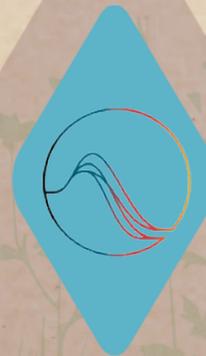
Look for specific and measurable change:

Align with the United Nations Sustainable Development Goals



Energy Efficiency:

In-depth measurement and action plan. We do not need to wait for new technology to make a step change now



Get a science-based target:

Plan to achieve Carbon Zero or better. Offsetting should be your last option.



Drive your business strategy to address:

**People,
Planet,
Profit**

We can help you tell your **SUSTAINABILITY STORY**

If a customer is looking at their sustainability story, it is essential that data is transparent, accurate and verifiable. We have helped many customers map their carbon impact and look at potential mitigation options. Furthermore, customers can have confidence that the malt sourced through Muntons is 100% sustainable. This claim is unique to us and is further proof we are committed to making industry-leading changes in aligning sustainability with verifiable action.

The grain we purchase is 100% sustainable as defined by the Farm Sustainability Assessment; a globally recognised target developed by the Sustainable Agriculture Initiative Platform (SAI), which we have been part of for over ten years. The majority of our grain is grown within 70 miles of our malting sites and each batch of product can be traced back to farm.

Our revolutionary carbon calculator for malt, was the first of its kind, developed by **Muntons Director of Technical and Sustainability** and mapped the impact of emissions from farm to beer.

We have helped many customers map their carbon impact and look at potential mitigation options by buying 100% sustainable malt from Muntons. This is proof we are committed to making industry-leading changes in aligning sustainability with verifiable action.

Our barley purchasing is 100% sustainable as defined by the Farm Sustainability Assessment a globally defined sustainability target developed by the SAI which we have been part of for over 10 years.

For UK operations the approved FSA standard is the Red Tractor (Assured Food Standard) Scheme.



As pioneers in the malting industry we were the first to:



- ◆ Turn carbon speculation into accountable credible facts
- ◆ Look across our whole supply chain – from farm to finished ingredient
- ◆ Create a supply chain of 100% sustainable barley enabling us to offer 100% sustainable malt
- ◆ Sign up to science-based targets
- ◆ Establish carbon calculators

If you would like help with your sustainability story / credentials, then reach out to us hello@muntons.com

Streamlined Energy and Carbon Reporting Data (SECR)



2020 was the first year it became a legal requirement to report SECR data in our public accounts.

For reference it is replicated here.

	2020	2019
UK Energy use		
Gas (GWh)	195.19	196.51
% renewable	20.3%	0%
Electricity (GWh)	24.99	26.17
% renewable	11.2%	2.5%
Greenhouse Gas Emissions		
Scope 1 (to CO2 e)	28611	36128
Scope 2 (to CO2 e)	5831	7202
Scope 3 (to CO2 e)	51194	60199
Total (to CO2 e)	85636	103529
Intensity metrics Scopes 1+2		
to CO2e per £000 turnover	0.364	0.438
to CO2e per employee	101.90	129.73

Energy efficiency action taken

A new biomass plant at our Bridlington plant came online during 2020, using waste woodchip from forestry activities. This reduced GHG emissions from the heating of the kiln by up to 90%.

Commentary on the data

- ◆ Our energy management system continues to be verified to ISO50001
- ◆ We report energy efficiency metrics at management meetings and track against targets
- ◆ Our project appraisal system evaluates capital projects for reduced GHG emissions and environmental impact
- ◆ Our anaerobic digestion plant continues to provide electricity at our Stowmarket plant and the biofertiliser produced from the wastewater treatment is approved to be sold to farmers growing cereals

Conventions and conversion factors. We follow:

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard

Conversion data from Department for Business, Energy & Industrial Strategy Greenhouse gas reporting: conversion factors 2020

CARBON FOOTPRINT *of malting barley*



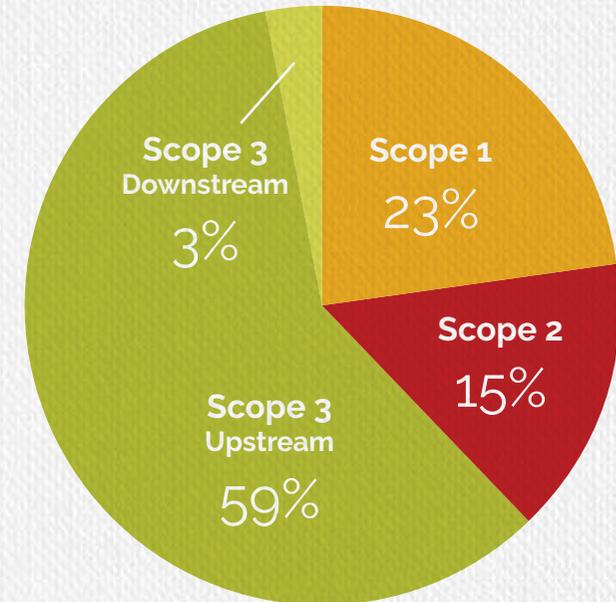
The greatest proportion of a malting barley carbon footprint is Scope 3 at approximately 60% and the biggest contributor to that is the Scope 3 upstream emissions from raw material (barley) sourcing. It is worthwhile engaging with farms to establish what can be done to reduce this. Data from our monitoring programme has shown around 30% reduction in its scope 3 carbon footprint over the past 12 years. The most significant contributor to that reduction has been the development and use of abated nitrogen fertilisers. Attention then focused on minimising the input of inorganic fertilisers and use of cover cropping. This analysis is what drives the involvement of many brewers and distillers to show an interest in the impact and availability of raw materials and the contribution they make to beer right back at farm level. We are pleased to be a lead maltster in many programs to reduce carbon emissions in brewing, distilling and supply of food ingredients.

The specific value for malting barley production can be greater where it is made in environments in which refrigeration is necessary. It is also affected by where the barley is sourced from (17% potential increase) and if abated nitrogen fertilizer is not used (20–40% potential increase).

If the heating technology used is entirely low carbon this value will dramatically fall by as much as 75–90%, depending on the technology adopted. This level of understanding of carbon footprint has proven valuable in discussions with supply chain partners concerned about the accuracy and variability of carbon data for embedded carbon in malt that we supply.

The area we will see much more focus on is scope 3 emissions. For many companies scope 3 can represent as much as 90% of its carbon footprint. For malting barley, the figure is around 60–65%. The Greenhouse Gas Protocol has established four levels of certainty for emissions defined as going from most accurate to least:

- 1) Supplier specific method
- 2) Hybrid method
- 3) Average data method
- 4) Spend-based method.



FAQ:

What is the Carbon Footprint of Barley and Malt?

Malting Barley Production: **293** kgCO₂eq/tonne²

Malt Manufacture (additional): **127** kgCO₂eq/tonne³

TOTAL MALT CARBON FOOTPRINT: 420 kgCO₂eq/tonne

² Includes 6% uncertainty factor and is SCOPE 3 upstream. Data from AHDB carbon support tool, Cool Farm Tool and the Euromalt Carbon Calculator

³ Includes 105kgCO₂eq from Gas (scope 1), 21kgCO₂eq from electricity (scope 2 + scope 3 transmission and distribution loss), 15 kgCO₂eq (scope 3 downstream)

CARBON FOOTPRINT

of malting barley (continued)



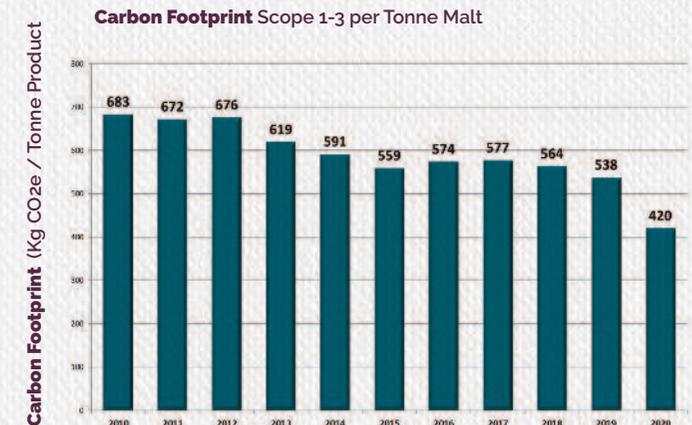
For malt the largest part of scope 3 is upstream hence supplier-based methods are best and can track changes in farm practice methods. Scope 3 upstream for most maltings will be largely about barley growing and there are several calculators available for that purpose. It is important to use one that considers all factors and references the most up to date internationally agreed conversion factors. That could remain a contentious issue as even averages on a country or continent basis can be quite different to those calculated specifically on farm, but that's not insurmountable and if its defined in your scope it is transparent. In this category we have, through attention to malting barley carbon foot printing, achieved over 30% reduction in barley carbon footprint over 12 years. The biggest contributor to that reduction has been the development of abated nitrogen fertilisers which reduce the impact on fertilisers applied by around 40%. Muntons require our suppliers to use abated nitrogen fertiliser where they use solid applications. For liquid variants, this does not have the same impact. In addition, our farmers are supported to minimise their inputs to barley growing through the education and peer to peer learning that is made possible through our Sustainable Futures farming group.

Scope #	Example of what is in scope	CO2e tonnes 2010	Carbon 2020	Reduction
Scope 1	Gas, own transportation	34417	28611	17%
Scope 2	Purchased Electricity and Heat	12885	5831	55%
Scope 3	Barley bought in; goods when sold	69563	51194	26%
Total		116866	85636	27%

It is important to recognise the impact of materiality in data accuracy for carbon modelling. Use of a financial model as permitted by the GHG reporting guidelines estimates scope 3 downstream at 3%. Thus, the potential for significant leeway in estimating data is much less critical for a small contributory part of the overall footprint and a financial model is adequate. For scope 1 and scope 2 data these are highly accurate based on invoiced consumption and other recorded data. Using a reputable carbon calculator for barley is essential to be certain of the 60% contribution to overall footprint and this is the area that we have focused on intensely for the past 15 years.

Muntons has made significant reductions in all three carbon footprint scopes in the past 10 years achieving almost a third reduction already but with much more to come in the next few years.

Data in this table is for our malt and malted ingredients operations combined. Progress on malting alone is shown in the graph below.



CARBON FOOTPRINT *of malt in beer and whisky*



Alcoholic beverages are estimated to contribute 0.7% to GWP and cereals 3.8%. A 2012 report from the BIER industry roundtable group graphed here indicates that malt contributes a significant proportion of around 39% when in bottles and 33% for cans. Therefore, a reduction in the carbon footprint of malt would be beneficial to beer.

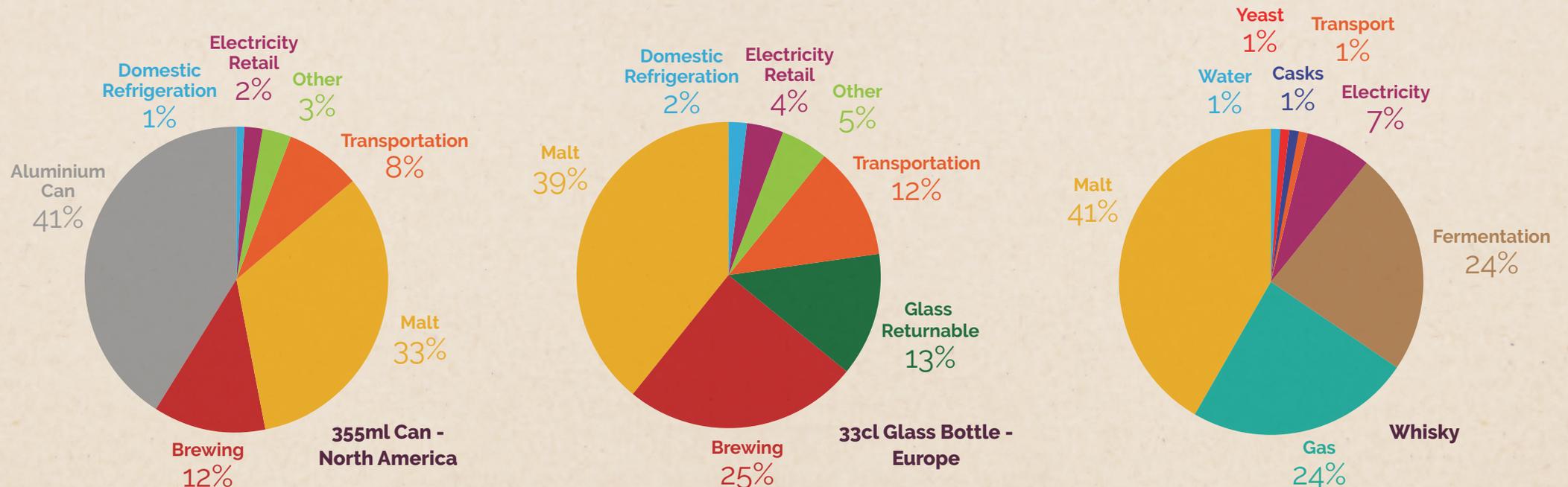
Clearly, much energy is used in making malt, which makes it a major contributor to the carbon footprint

of beer and whisky. This can place it under threat of replacement in centuries old heritage beer brands as brewers look for opportunities to save embedded carbon in their raw materials. There are compelling arguments that there is no need to make such a draconian move.

With novel technology and more to come we are already able to achieve significant reduction in the carbon footprint of malt and indeed it could in the

longer term approach zero as the race to carbon zero brings on stream new technologies such as hydrogen power. Malting will necessarily be energy intensive, which is inevitable presently to create the flavours we all love, but the energy will be provided in a much more environmentally friendly way. Already Muntons malt is a super low carbon option for reducing the embedded carbon in beer, whisky and other foods and beverages.

The contribution of supply chain and process to carbon footprint of beer and whisky





Muntons

PASSIONATE ABOUT MALT SINCE 1921

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 @MuntonsPlc

 MuntonsPlc

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