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BOPAS Forum and Beattie Passive House Tour

24 May 2023

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Welcome and introduction



Terry Mundy

Consultant

LRQA

Agenda

10:30 – **Welcome and introduction to Beattie Passive**

10:45 – **Welcome and introduction from BOPAS**

11:00 – **MMC market finance and lending – a panel session**

11:30 – **Route to automation**

11:45 – **MMC and digitisation – a panel session**

12:15 – **Q&A and interactive discussion**

12:30 – **Presentation of BOPAS certificates**

12:40 - **Lunch**

13:15 - **Factory tour**

14:00 – **Refreshments and networking**

14:30 – **Forum concludes**

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Welcome and introduction



Ron Beattie

Managing Director

Beattie Passive

BOPAS Forum & Beattie Passive House Tour

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Net Zero is your vision. Passivhaus is our solution.



Welcome and Housekeeping

- We have no fire practice today.
- If we do need to vacate the building, please leave by the door at the back of the room and report to the fire point in the car park.
- This building has been decommissioned and the water has been turned off. Toilets are available at our factory, and we'll be ferrying you back and forth by car (from the entrance to this building, on the right).
- We'll be taking the tours in groups of 20. Your name badge has a sticker to show your tour group.

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Carrow Abbey & Priory

The Benedictine Abbey and Priory date back to the early 16th and mid 12th century respectively



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The History of Carrow Works

- JJ Colman started mustard production back in 1858
- In 1903, the company acquired rival mustard maker Keen Robinson & Company, which also owned a barley water company
- Robinson's production moved to Norwich in 1925
- In 1938, Colman's merged with Reckitt and Sons to become Reckitt and Colman
- In 1995, the mustard and condiment business was sold to Unilever, who own Britvic
- Sadly, in 2019 Unilever relocated and the site was subsequently closed

The Future of Carrow Works



As part of a major plan to regenerate East Norwich, the site is currently awaiting planning for 4,000 homes.

Beattie Passive

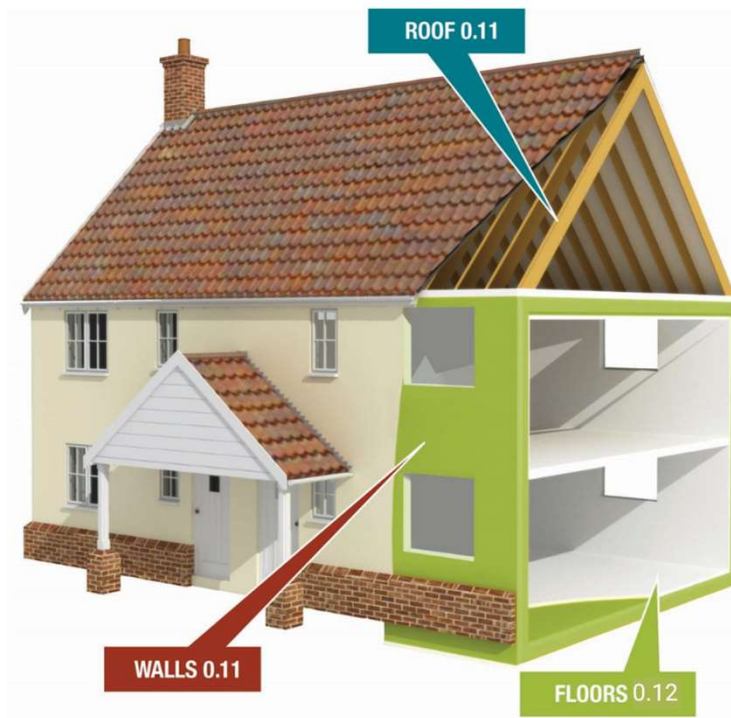
- The UK's first Passivhaus-certified Build System
- Low Carbon and Net Zero homes
- We use Modern Methods of Construction



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The Beattie Passive Build System



UK's First Certified Passivhaus Build System

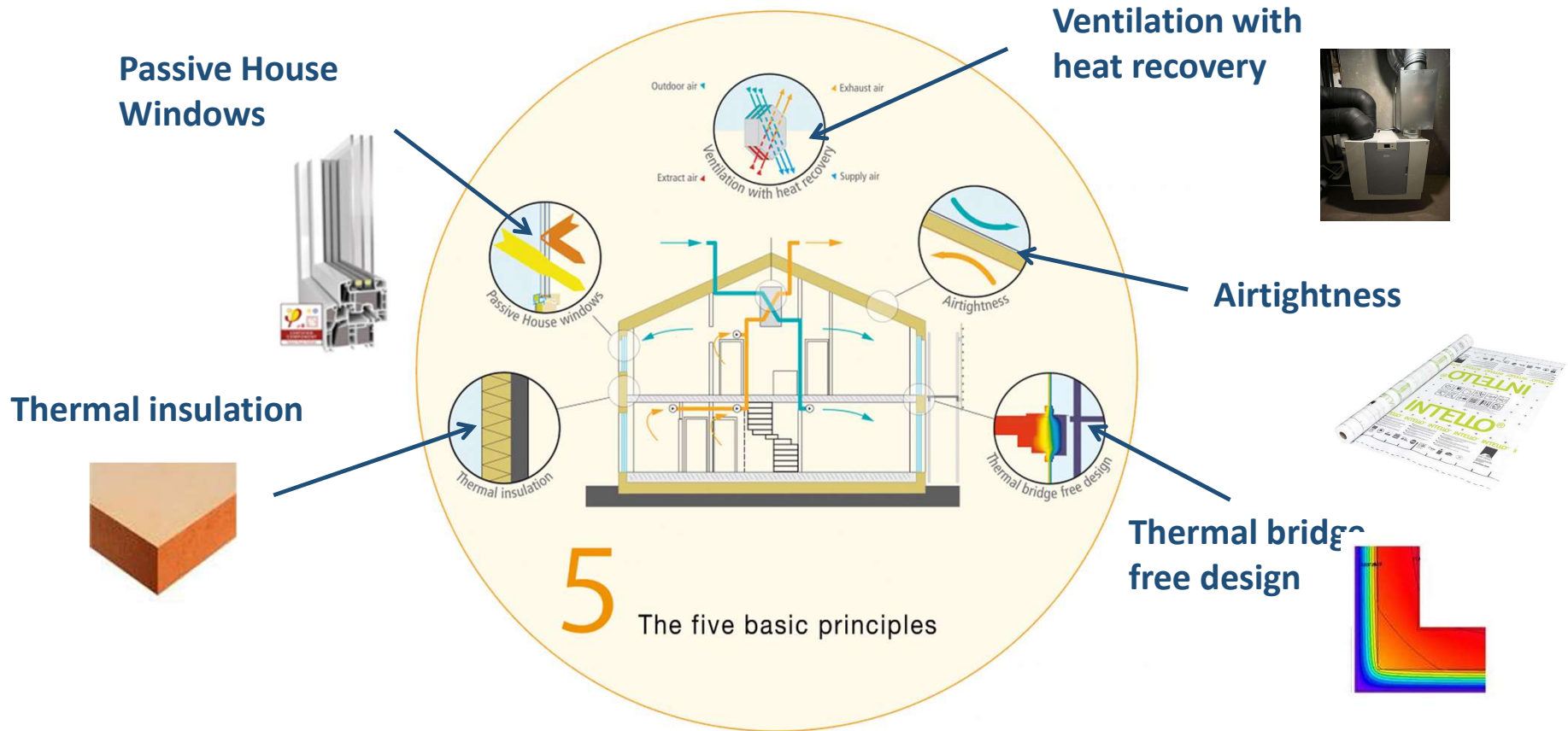
We simplify Passivhaus so everyone can enjoy the extraordinary energy efficiency, comfort and carbon-saving benefits!

We always adopt a 'fabric first' approach, using our sustainable timber frame build system to create a fully insulated Structural Thermal Envelope that prevents heat loss.

Beattie Passive Raises Building Standards

	Semi skilled labour	→	Training and employment opportunities
	Flexible design	→	In house technical design - incorporating your designs into our system
	Guaranteed performance	→	Every house is tested and certified to ensure it is built as designed
	Flood proofing	→	Designed in as standard
	Radon protection	→	Built in as standard
	Fire Protection	→	4 hour fire protection to party wall
	Sound proofing	→	Low sound transmission between buildings
	Easy inspection of buildings	→	All structural parts are open for inspection
	Sustainable materials	→	Materials A rating in BRE Green guides
	Site waste	→	Minimal on-site wastage
	Lifetime home – flexible space	→	No load bearing internal walls
	Longevity	→	60 year+ design life

What is Passivhaus?



1 System. 5 Delivery Methods.

Onsite



Offsite – Large Panel



Offsite – Small Panel



Offsite – STE Volumetric

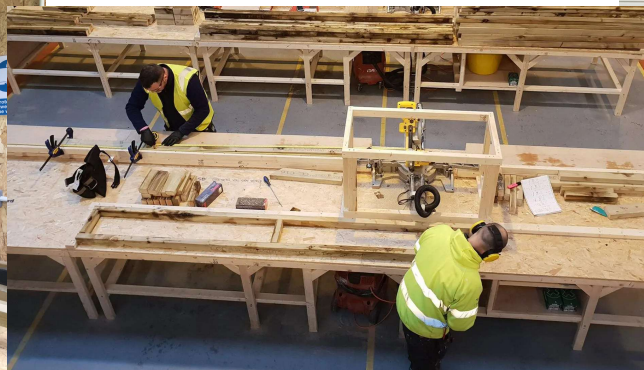


Offsite – Complete Modular

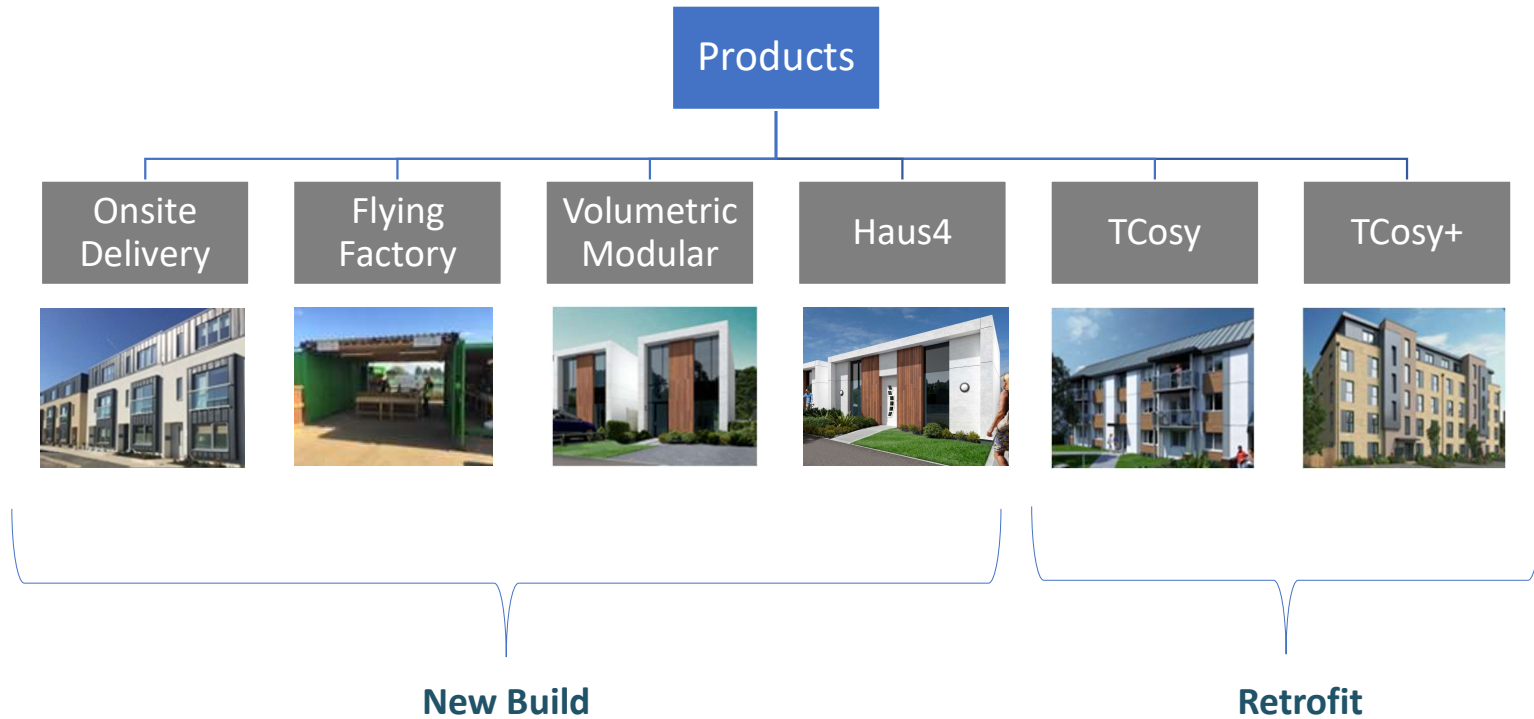


Our Flying Factories

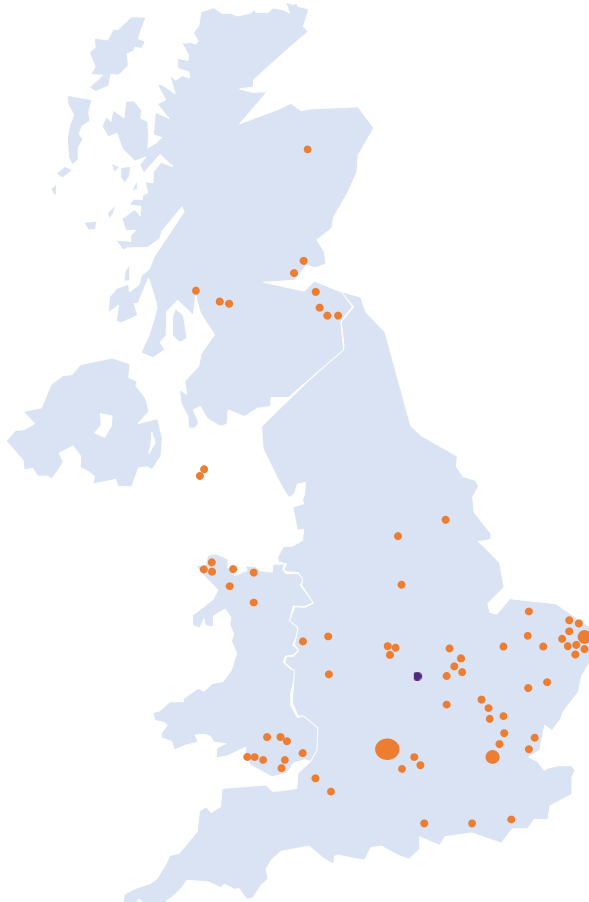
- Flying Factories can be set up anywhere in the country for you to manufacture Beattie Passive homes – either located in warehouses or on the site for development
- As part of the Flying Factory offering, Beattie Passive will train your staff on how to manufacture the Beattie Passive system offsite and erect the panels onsite
- The Flying Factory option allows you to become self-sufficient in manufacturing your own houses to a Passivhaus standard
- The Flying Factory reduces the cost of transport and means local labour and supply chains can be utilised



Our Solutions



Building the Homes of the Future



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Beattie Passive provides an award winning, innovative design and build technology that simplifies the delivery of Passivhaus

- 97 patents for new build and retrofit system in 46 countries
- Only complete build system, certified by the Passivhaus Institute
- British design innovation and manufactured in UK
- Delivered almost 470 Beattie Passive homes across the UK built to Passivhaus standard



TCosy Deep Retrofit System

Beattie Passive's innovative Retrofit product takes existing buildings and wraps around a highly insulated frame ('TCosying' the existing property). The highly adaptable system, deep retrofits the properties, transforming existing properties into high-performance, energy efficient buildings. It provides a fast and highly replicable solution for a wide range of buildings.

- Towards zero carbon
- Eradicates fuel poverty (up to 80% reduction in energy requirements)
- Regenerates local communities through skills development and employment
- Provides a return on capital investment



How does it work?

1. Quick manufacture and erection of the Beattie Passive TCosy™ - either offsite or onsite manufacture

TCosy™ - reduces energy requirement by up to 80%

2. MVHR (Mechanical Ventilation and Heat Recovery System)

Engage occupants on project and cause limited disturbance



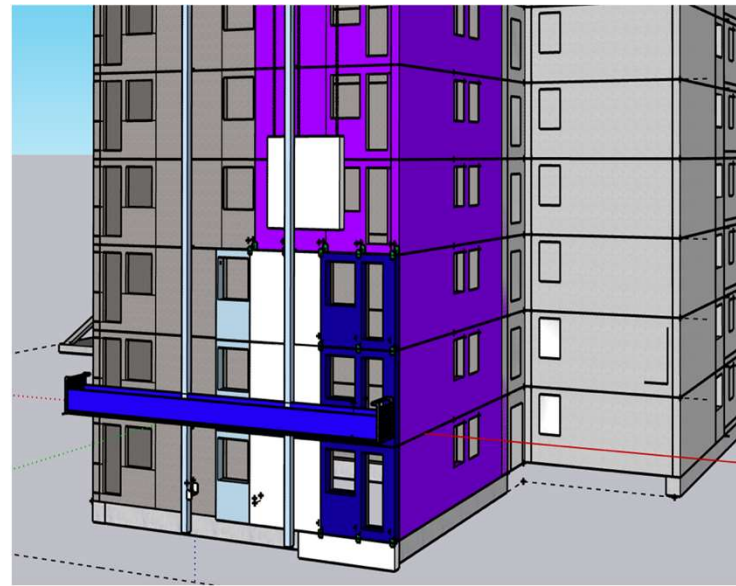
3. 5kW Photovoltaics can be added to the property (Depending on size either all onsite or a mixture of On / Offsite)

4. Triple glazed, passive certified windows and doors are fitted into the TCosy™ frame

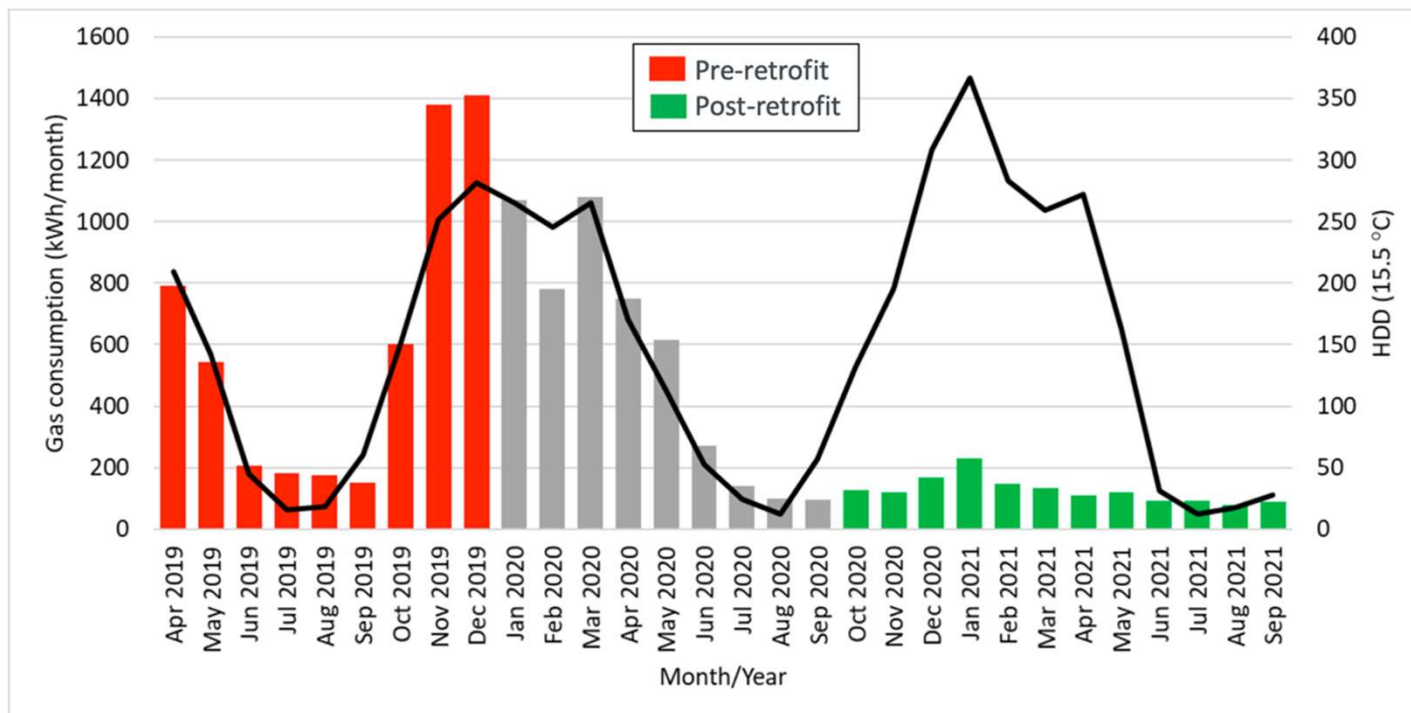
Beattie Passive Testing and Certification is completed on all retrofits to ensure quality is delivered



Tower Block Retrofit



Up to 80% Reduction in Gas Consumption



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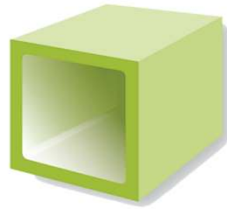
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Beattie
PASSIVE

UK's First Certified Passivhaus Build System



www.beattiepassive.com



enquiries@beattiepassive.com



[@beattiepassive](https://twitter.com/beattiepassive)

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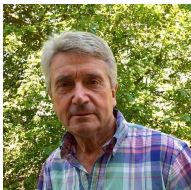
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Dismantling the Zero Carbon Strategy Brick by Brick



Terry Mundy

BOPAS Consultant

LRQA

- Chartered Engineer
- Nuclear Power background
- Involved in the development of BOPAS

Progressive Divergence with Net Zero Target

Embodied Energy



Inherently Inefficient Housing



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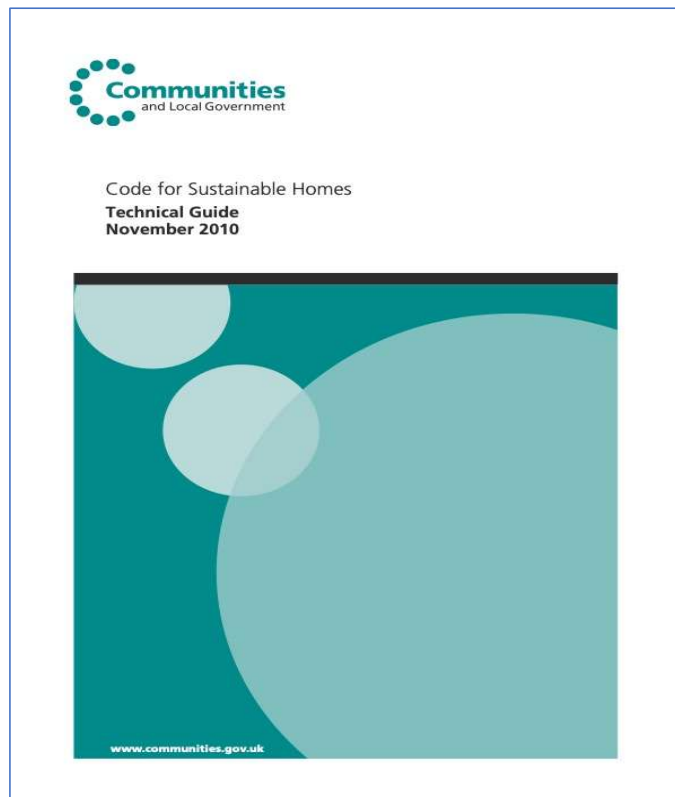
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The Rise and Fall of the Code for Sustainable Homes

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Code for Sustainable Homes



Launch and Abolition

Launched 2006 with announcement all new homes to be Zero carbon by 2016.....

Cancelled in 2015 - part of the government's wider mission to slash housing regulations by 90 per cent.

Plethora of Reviews and Top-Down Standards

‘Modernise or Die’/ MMC



BRE BPS 7014



Call to Action over climate change

How the Nordics do it

**Declaration on Nordic Carbon
Neutrality and Circular Principles
in the Construction Sector.**

January 2019

Outcome:

2023 – 45% new homes
constructed using MMC Systems

How we do it in the UK

**Carbon Emissions Bill –Mandating
declaration of whole life carbon for
properties- Private members Bill**

2nd reading postponed from October
2022 to February 23rd 2023

Outcome: unknown

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Inconvenient truth revealed

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Useful Industry Information - B x Embodied-and-Whole-Life-Car x +

File | /Users/terrymundy/Downloads/Embodied-and-Whole-Life-Carbon-Implementation-Plan-final%20(1).pdf

Embodied-and-Whole-Life-Carbon-Implementation-Plan-final (1).pdf 1 / 24 | - 127% + | [] []

Paused



**Embodied and
Whole Life Carbon:**
2023-2025
Implementation plan for
the homebuilding industry

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Meanwhile what is happening on the Traditional Build Front?



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The Construction Industry is the UK's largest user of natural Resources

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**400
MILLION
TONNES**

of material is used.

**100
MILLION
TONNES**

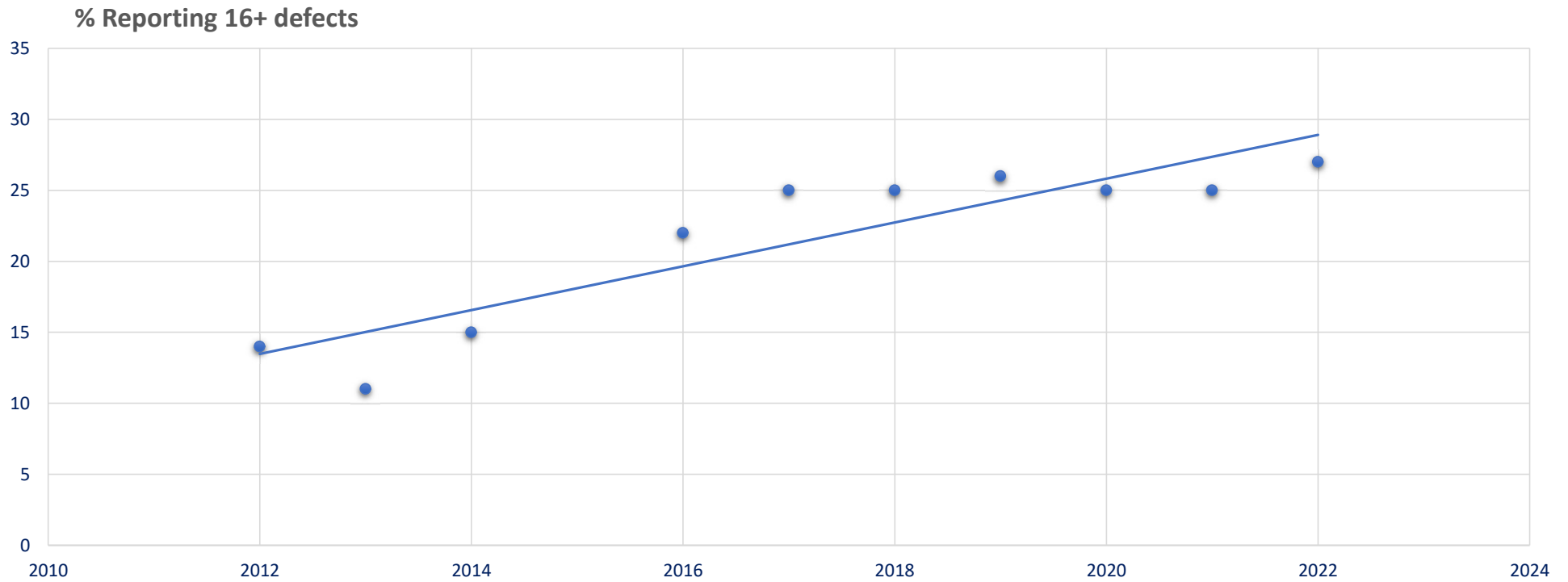
of waste produced:
more than 1/3 of
the UK's annual waste.

**25
MILLION
TONNES**

of construction waste
is disposed to
landfill.

Extract from the WRAP website

Reportable Defects Analysis



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Barriers to the adoption of MMC systems in the UK

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Chat GPT:

Mortgage and Insurance Accessibility:

The mortgage and insurance industries may have limited experience and confidence in assessing and underwriting MMC properties. Limited availability of suitable mortgage products and insurance policies tailored to MMC can pose challenges for buyers and developers. Collaborative efforts between the construction and finance sectors are necessary to develop appropriate financial products and **risk assessment** mechanisms.

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Gold Standard

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- 10th Anniversary April 2023
- Bottom up process of development
- 10th Revision of control measures
- BOPAS +

Lending and MMC Systems

Points for discussion:

- MMC systems in general terms have significantly improved through life costs and associated whole life carbon profiles over traditional build - is this likely to represent a more favourable shift in MMC lending policy particularly given elevated energy costs?
- MMC is recognised as a green and sustainable form of construction will lender policy be swayed by ethical considerations. What about Corporate ESG strategies?
- Will additional risk assessment mechanisms such as have been promoted by Government and described earlier further assuage lender/financier concerns over MMC/offsite systems?

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Buildoffsite

- Set up in 2004 as the voice of the industry, Buildoffsite has sought to promote, support and increase the adoption of offsite and pre-manufactured solutions for the built environment.
- Working in collaboration with our members and influencing government and key industry stakeholders, we seek to remove the perceived challenges, facilitate offsite solutions and deliver guidance, resulting in tangible change.
- We aim to be the trusted independent voice of the construction industry with respect to offsite and pre-manufacturing, and to provide all relevant support to our members and other stakeholders.

A new identity



- Time for a change to BOS.
- Our new brand image reflects who we are today and where we are aiming to be in the future.
- This change represents our community of clients and supply chain members collaborating to deliver standardisation and greater adoption of offsite.

Buildoffsite members



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