



WILLMOTT DIXON

SINCE 1852

Good afternoon ladies and gentlemen,

I'm Steve Cook, Product Improvement & Innovation Manager from Willmott Dixon, and I am delighted to be here to speak about our approach to offsite.....and some of the challenges around the materials we use.

I work for the National Product team.... which is responsible for driving our approach to offsite construction.

Just a little bit about us.....Willmott Dixon is one of the country's largest privately owned contractors.

We currently have a turnover of £1.3 billion, and employ 2000 people across England and Wales working in a variety of sectors from Blue-light, Education Commercial, Residential, to Leisure and Healthcare.

Willmott Dixon are the promptest payer to our supply chain, we were ranked the 4th best company to work for by The Sunday Times....we have two Queen's awards 1 for sustainable development and one for social value.....and have been carbon neutral since 2012.

We have reduced our carbon emissions by 58% since 2010 and maintain the only contractor to hold the Carbon Trust Standard for our approach to carbon management.

There is an increasing noise around offsite construction.... in all corners of the industry, and it has the potential to help address the ongoing skills and capacity crisis.

It has been estimated that for every for every one person joining our industry..... five leave.

This is against the backdrop of one of the lowest levels of unemployment in history. Even the job centres are closing...

Over the next few years the skills shortage has the potential to create a huge pressure on our ability to deliver cost effective, quality products for our customers.

The Government has recognised this, and is actively promoting offsite construction through its procurement of future frameworks, and funding of the Construction Innovation Hub which is developing a platform based design solution for use by 5 Government Departments. The aim is to drive reduced costs, increase a greater level of standardisation, and to benefit the our economy through improved productivity levels.

Offsite is not new.... but due to technological improvements, economic demands, and changing mind-sets, it is attracting an unprecedented wave of interest and investment.

There are a growing number of businesses, ours included, that are seeking to capitalise on the growing offsite market.

Our offsite rule is: Use MMC - as opposed to traditional - wherever it can be proven to add value - whether time, cost, quality, sustainability, etc. or a combination.

As a main contractor, we do not own a factory, and have no ambition to in the short term.

We are very much focussed on increasing standardisation through design, which involves creating a growing catalogue of standard building components, and stimulating our supply chain partners to reduce the onsite labour through the increased use of Pre-Manufactured components.

We are adopting the Governments broad definitions of MMC issued in April. Which shows that offsite is so much more than just volumetric and modular....For us, it is anything that reduces onsite labour.

We are also adopting the Pre-Manufactured Value metric on our projects recently issued by the Department of Education, This is a percentage calculation between the cost of offsite labour + materials, and the cost of the onsite labour.

Pre Manufactured Value (PMV)

Calculation

PMV is the value created as a result of completing works 'offsite'

$$PMV = \frac{(\text{Materials} + \text{Offsite labour})}{(\text{Materials} + \text{Offsite labour} + \text{Onsite labour})}$$

All materials are classified as offsite

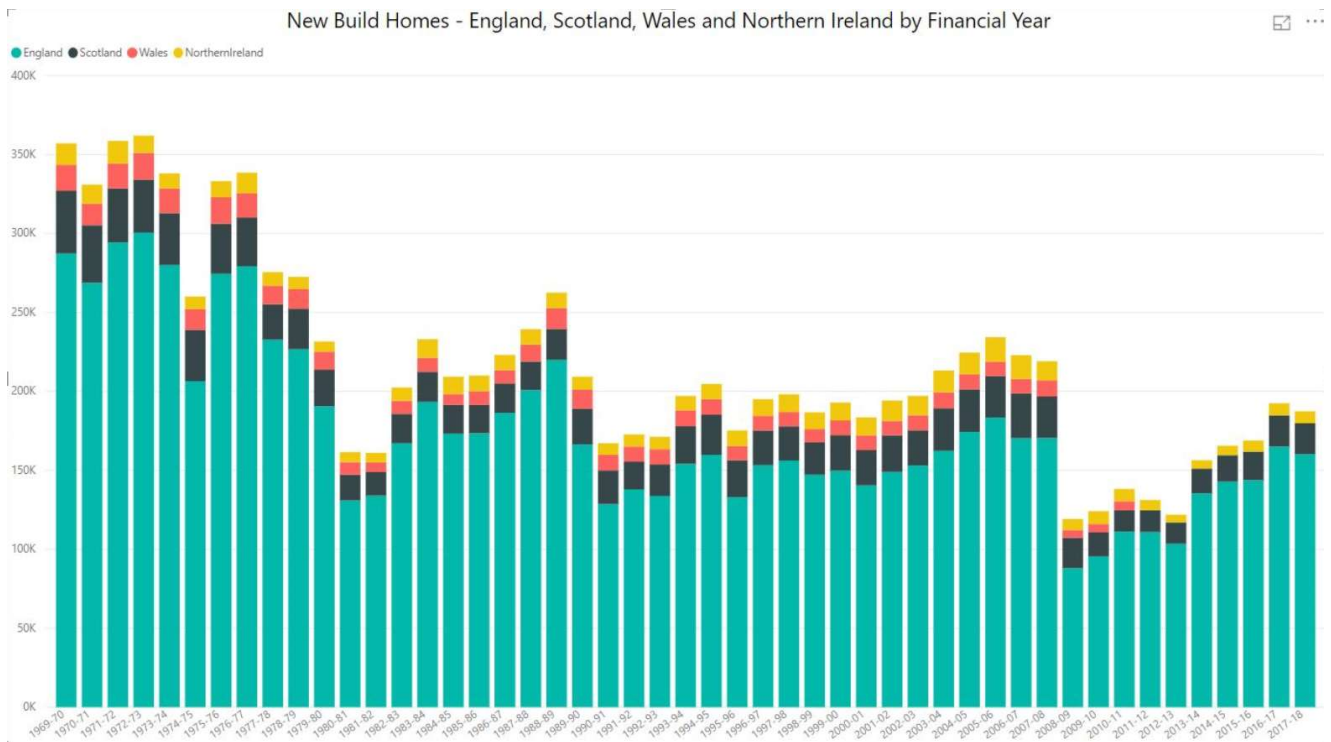
Any works on-site including: assembly, forming, joining, finishing etc is classified as on-site works



If we all get this right, this will enable the industry to take advantage of the efficiency, quality and sustainability benefits that standardisation and digital construction can bring, and will significantly reshape the way we build today.

If we get this wrong... we will have built a legacy of buildings that could damage the industries reputation, and have severe environmental and social implications.....

The Government's target for new build homes is 300k a year, a figure that was last met in 1977.



In the financial year 2017/18 - 187k homes were built in the UK.

So...looking at this through the other end of the lens.....there are 25m homes in the UK, if each home lasted 100 years, we would need to build 250,000 homes just to stand still.

There is... an accepted expectation....that a new build home should last for at least 60 years....

To maintain a stock of 25m based on a 60 year life we would need to build 416k each year.....We really should be aiming to build homes that will last much longer.....

This brings me onto cladding, we know that clay brick walls can last 100's of years, even with a potential re-use the bricks if lime mortar is used.

However we are all chasing a limited labour resource, bricklayers in London are earning upwards of £300/day and whilst brickwork is desirable, it is not aligned with offsite fast efficient approach.

In my view....there is much more innovation and development required to create an offsite alternative to brickwork.... that does not rely on glues and adhesive, or comprise of combustible materials.... And has a life expectancy significantly greater than the 30 years that can be expected by most of today's systems.

Timber, if procured sustainably, it's a fantastic renewable resource and one of the best building materials known to mankind

Over the last decade or so, millions of pounds have been spend trying to capture and store carbon burned from fossil fuel.

All the time....this is what our trees have quietly been doing.....

To meet future carbon budgets we will need to lock up more timber in our buildings for significant periods of time.

And for this BANKED sequestered carbon to count on the UK's carbon accounting.... the timber will need to have been Grown in Britain.

This brings us onto a hot topic of combustibility....in recent years there have been some truly devastating fires which we must learn from.

As of last December, legislation banned the use of combustible materials in the walls of new residential buildings with an upper floor over 18m (which is about 6 stories).

Following a balcony fire in Barking last month on a 5 storey block of flats, the use of combustible materials is now being reviewed for smaller apartment blocks which could see a further limit on the use of combustible materials.

Building Regulations only focuses on life safety – and we are seeing increasingly stringent measures from our's and our customer's insurers who are also concerned with Property Protection. There are actually looking at introducing a rating scheme similar to the automotive EURO ENCAP safety rating system for resilience of buildings

And the materials we construct with need to be selected and assembled in a way that allows their re-use or recovery.

With regards to the circular economy – without legislation, we need to be clear on incentives for the various stakeholders.

Typically materials make up around 40% of a construction projects value, we need to look at how we maintain as much of that value as possible and consider buildings as long term material banks.

There is a very good recovery of high value materials such as Copper, Lead, Aluminium and Steel. The challenge comes with some of the lower value building materials, especially where they are compositely bonded with other materials. It's like a Whole Foods approach vs. Ready meals. (DEMOLITION)

There is a real opportunity to upcycle waste to form new materials and I have much hope for additive manufacturing through 3D printing.

The evolving legislation, the technological advancement, the changing demographic of UK workforce and the climate emergency are all huge issues to grapple with.

The pace of change has never been this fast, yet it will never be this slow again.

To wrap up, we need to build sustainably with materials that are non-combustible and last a very long time.

There is much to do, with developing the next generation of construction materials for an offsite future.

Thank You