From Murray Grove to Dalston Lane

Raimondo Da Col
Waugh Thistleton Architects
London, UK

From Murray Grove to Dalston Lane

1. WTA: who we are and why we build in timber

Waugh Thistleton is committed to the development of architectural solutions using engineered timber as an alternative to concrete and steel, primarily as a response to the multiple ecological crises we are experiencing: climate change, environmental pollution, lack of resources and urbanisation. De-carbonisation, resource conservation and use of natural materials have become modern requirements of construction.

Our practice is founded on the principle of environmental responsibility: decisions that we take when designing buildings have the environment at the top of the agenda. We believe that this ethos is central to the professional duty of the modern architect and does not need to come at the expense of beautiful architecture.

For the past 20 years we have been pioneering the use of cross laminated timber in medium to high density buildings, invested heavily in research and development in this field and encouraged use of timber in construction across the world.

2. The past: pioneering timber developments

2.1. Exton Street

In 2003 we built the first cross laminated timber building in London. This small project was the beginning of our research into how to build and design buildings which minimise their impact on the environment. We built this extension to a Victorian building near Waterloo Station – three stories and 45sqm - on a sunny Saturday afternoon and we fell in love with this technology.

What we discovered was not only a low carbon method of construction but a fast, versatile and accurate means of construction. It also made a great building – a robust and beautiful piece of architecture; and a building that had high acoustic and thermal performance. From the foundation that this small building gave us we began to think about how this material could be used in larger buildings.

Image 1 and 2: Exton Street – under construction

2.2. Stadthaus in Murray Grove

In 2007 we embarked on our project in Murray Grove, sometimes known as Stadthaus - the client called the building Stadthaus in honour of the timber's Austrian origins. Our aim was to produce a building that embodied both ideas of urban densification and low impact methods of construction.

This is a high density residential building for both private and social housing: the first tall urban housing project to be constructed entirely from pre-fabricated solid timber: from the load bearing walls and floor slabs to the stair and lift cores. At nine stories, this was the tallest timber building of its type and a significant step in demonstrating this system as a viable alternative to traditional building frame materials.

This project also suggested a new way of considering the impact of construction on the environment – as part of our proposal we calculated the embodied carbon of our timber building in comparison to an equivalent concrete frame building. This demonstrated that the carbon saved by building in timber was equivalent to over 20 years of carbon emissions needed to power the building.

Murray Grove's Stadthaus was completed in January 2009; the interest in this project has been phenomenal, and has swept us along with it. The building has been published widely and has emerged out of the specialist press into the mainstream with articles published across the globe in publications such as the New York Times and the Observer.

Image 3: Murray Grove

2.3. Whitmore Grove

Another mass timber building was Whitmore Road, a mixed-use, seven-story building adjacent to the Regent's Canal in London.

Andrew Waugh was one of four clients who together developed a brownfield site into a combination of affordable office space, double-height photographic studio, and three triplex apartments. The finished building is timber inside and out, with cladding of British sweet chestnut. It feels at home behind a group of silver birch trees on its waterfront site.

At the centre of the building a double-height photo studio spans over 9m and stretches to 28m of open, column-free space; this achievement shows the huge structural capabilities of modern engineered timber by pushing the boundaries of timber design.
Building in timber reduced the environmental impact of Whitmore Road. The structure includes 499 cubic metres of timber, sequestering approximately 390 tonnes of carbon dioxide.

Image 4: Whitmore Grove

3. The present: Dalston Lane

Dalston Lane represents the next development for mass timber construction in high density urban housing.

It is the largest CLT structure in the world with a gross floor area of around 12,000m^2 and using 4,500m3 cubic metres of timber.

Situated on a former brownfield site, the building is broken into several discernible volumes and orientated to maximise daylight to courtyards and living spaces.

The building's intricate brickwork references the surrounding Victorian and Edwardian housing and detailing of local warehouses and provides a contemporary addition to the local streetscape. Two courtyards bring quality green space to an otherwise hard landscaped local environment and are flanked by 1500m^2 of retail and restaurant space. To the south of the site a flexible workspace hub caters to the growing creative community in Dalston.

The building was conceived of and built in solid timber. Statutory measures in the UK do not consider the embodied carbon used in the manufacture of the building fabric when calculating the carbon footprint of buildings but the use of CLT, a material that locks away carbon during its growth cycle, actually renders this building carbon negative.

Weighing a fifth of a comparable concrete structure the use of timber enabled us to address specific site issues. Constrained by the proposed HS2 train line zone below there was a maximum weight to design to and piled foundations were not an option on the site. Due to the reduced weight of the building a minimal raft foundation was possible and we were able to design 35 more homes than would have been otherwise using traditional construction methods.

The local community benefited from the offsite pre-fabrication not only due to the shortened construction programme and cleaner site, but also the huge reduction in deliveries: around 80% less than traditional sites.

The equivalent of 2325 trees were used to build Dalston Lane. These trees can be regrown in 3 hours in the German and Austrian forests from which they are sourced.

Image 5: Dalston Lane - under construction

Image 6: Dalston Lane

4. The future: modular construction and diversification

We are currently working with two manufacturers on pre-fabricated factory made CLT modular housing systems.

These factories will produce both single family housing and multi-storey apartment buildings. Each one of these buildings can be unique to context, purpose and inhabitant. Gone are the days of homes built to a mundane standard – these will be beautiful, healthy and sustainable homes for the 21st century.

Image 7: prefabricated CLT modules

We have recently been appointed to work on a series of office and mixed use buildings: an opportunity for us to experiment new approaches to suit the spatial and logistical requirements of this building type with a variety of timber structures and to further demonstrate that building with timber can provide many, tangible benefits beyond the carbon savings.

Image 9 and 10: Development House