

Pop-Up Ute 21 Ferdinand Street London



New affordable two storey house extension with roof terrace_South Elevation

Project

Pop-Up Ute
Pop-up live-work up-cycles historic brownfield site deploying off-site manufacturing and frugal technologies available to self-builders to make homes faster and more affordable without need to modify host building foundations.

Typology

Affordable 2 storey house extension to existing live-workspace

Client

Photographer Jonathan Root

Duration

Competition: 2008, Planning: 2009-2011, Realization Phase 1: 2012-2013, Phase 2: 2017-2018, Phase 3: 2022

Value

£90,000.00

GIA + Capacity

90 sqm

Project Team

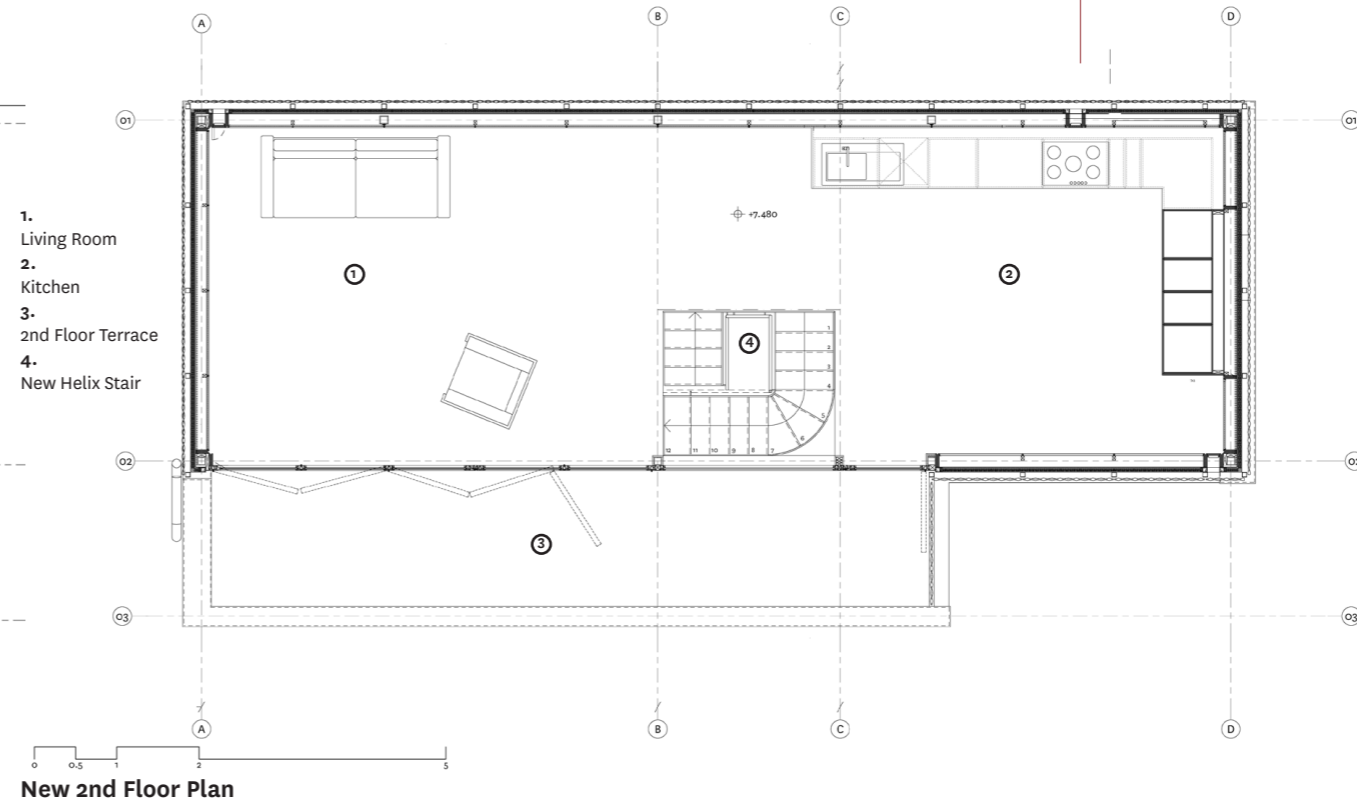
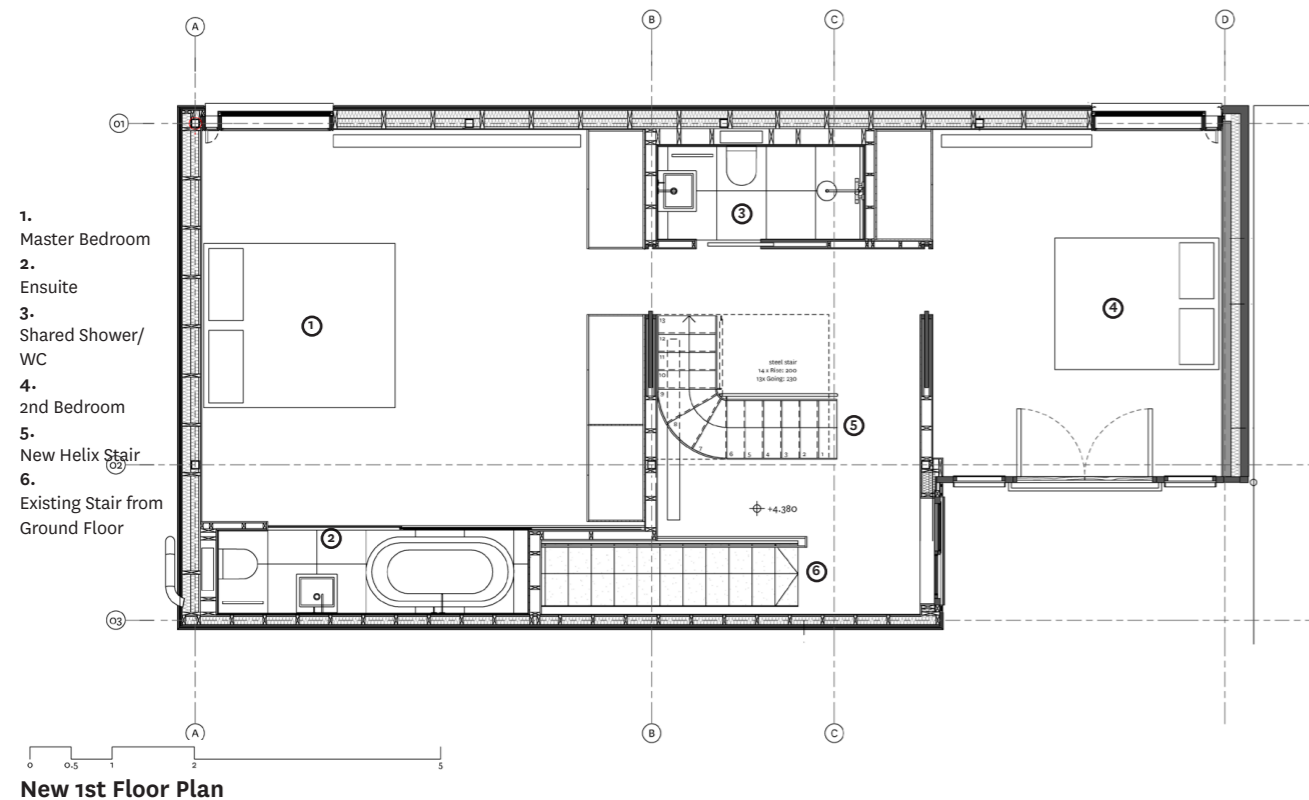
Adrian Friend, Felix Xylander Swanell, Esko Willman, Marcus Todd

Consultants

MaxFordham - Environmental Consultant
Timothy George - Structural Engineer

Photography Credits

Agnese Sanvito
Juliete Murphy





Existing two storey workshop_South Elevation

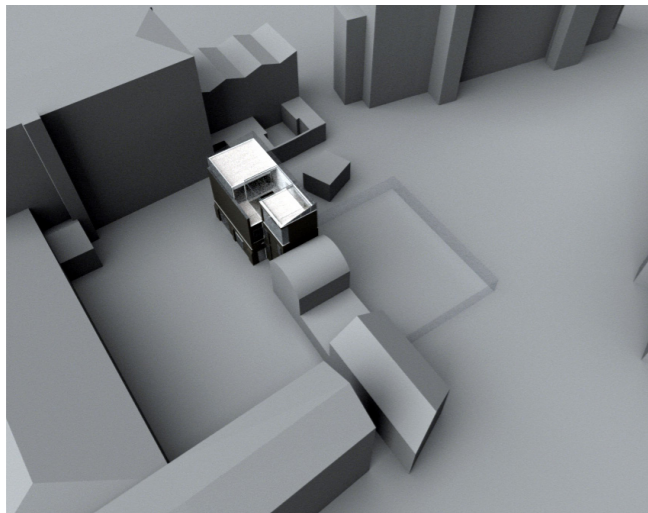


New Concept Perspective Drawing

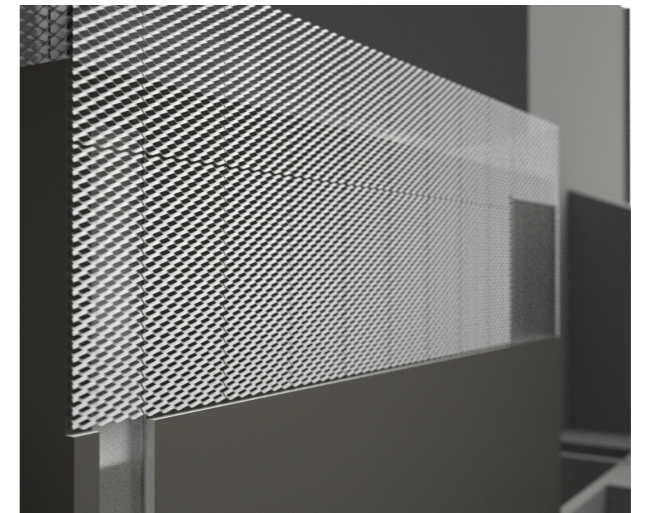
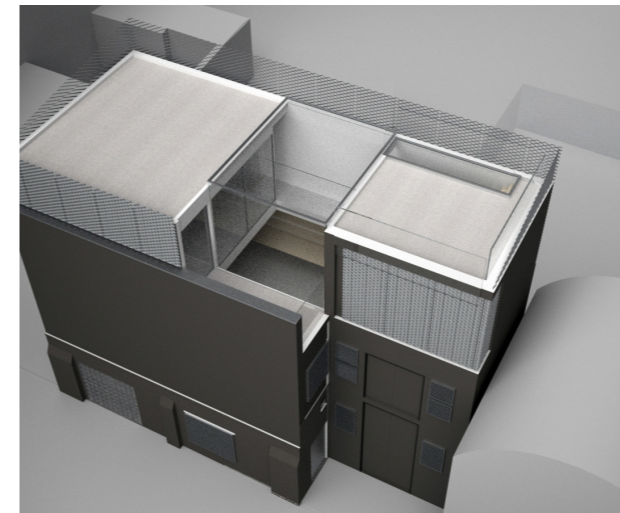
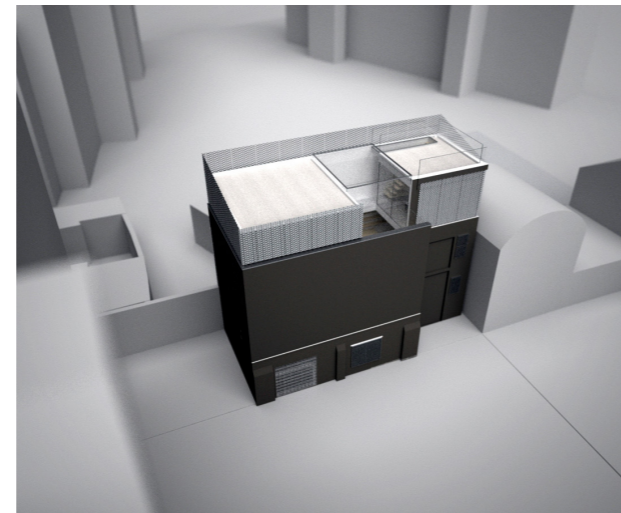
Brief

Inspired by self-builder client, photographer Jonathan Root's, interest in custom finishes of mid-century modern furniture and automobiles, the Pop-Up Ute* drew on practice research into designs for manufactured assembly (DfMA) to make a custom-affordable lightweight single storey roof extension. This modest reuse of an existing brownfield industrial heritage site, dating from 1860, part of the Chappell's Piano factory, attempts to evoke the host DNA deploying contemporary industrial brick materials with target utilitarian precision, similar to how the original piano factory was extended and added to. First converted into an artist studio in 1980s by sculptor Tim Scott then subsequently altered into a live work space with no light apart from a first floor rooflight the brief was to add an additional light filled lantern storey and roof terrace.

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Concept Studies Massing and Lighting Models



Ultra Lightweight Structural Concept

Made from a kit of lightweight parts and brick slips to speed up the assembly and reduce construction waste the project was a testbed for some of the latest circular economy techniques including manufactured assembly processes encouraged by the London Mayor in recent initiatives to make additions to the built environment quicker and more affordable through self-build kit assembly and off-site manufacturing. Owing to the uncertain status of the existing foundations, the new addition was designed to balance the overall weight of the host building, requiring a concept of subtracting the heavier historic construction elements to the existing first floor. This freed up existing foundation loadings to rebuild the first floor and extend a new second floor and roof terrace with ultra-lightweight facade additions.

Self Building Ethical and Sustainable Development

Existing heavy brick walls were demolished and replaced with lightweight super-insulated panelised timber walls clad in lighter brick slips to retain heritage appearance of the brick host. Super insulative recycled frosted polycarbonate kit assembly walling wraps the light filled living room, overclad in analok bronze-coloured aluminium rain baffles that form a privacy screen and balustrade to a new stair and roof terrace. The custom kit build components were scaled to fit the site allowing the client to self-build with ease over a ten year period, reducing costs, construction waste and minimising the carbon footprint, super green qualities from knowledge gained from Founding Director Adrian Friend's participation and contribution to the ground breaking RIBA Ethics and Sustainable Development Consultative Group in 2015.



New Helix Stair



2nd Floor Living Room - from kitchen



New affordable two storey extension with roof terrace_North Elevation



New affordable two storey extension with roof terrace_South Elevation

Maker Architect Practice Research

Friend and Company's practice research on collaborative inter-disciplinary practices help define Maker Architects' exploring the art of assembly and tactics that extend authorship through the workshop as a site of production in 'hot-rodding' by component designed, citizen build kits. Awarded an Innovate UK grant, 'Flying Factory Autonomous Housing Construction' (2015), for feasibility into multi-author prototypical systemised construction, practice research was in partnership with the Manufacturing Technology Centre (MTC), High Value Manufacturing Catapult. Latest 'robotic craft' prototypes designed by Founding Director Adrian Friend include the Robotic Craft Tile (2017), recently exhibited at 'Hand Held to Super Scale: Building with Ceramics' (2020), and research on robotic materialisation of architectural hybridity – the gizmo gumption that fuels processes of amelioration, extending our knowledge of ethical construction methods and practices of repair. Shortlisted for Young Architect of the Year 2008, practice work was selected by the Architecture Foundation in 2016 for publication in New Architects 3 (2018), a showcase of Britain's best emerging practices and bringing our material experimentation to a wider audience.



New 1st Floor Helix Stair



New 2nd Floor Terrace



New 3rd Floor Sundeck

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New 2nd Floor Helix Stair



New 2nd Floor Living Room

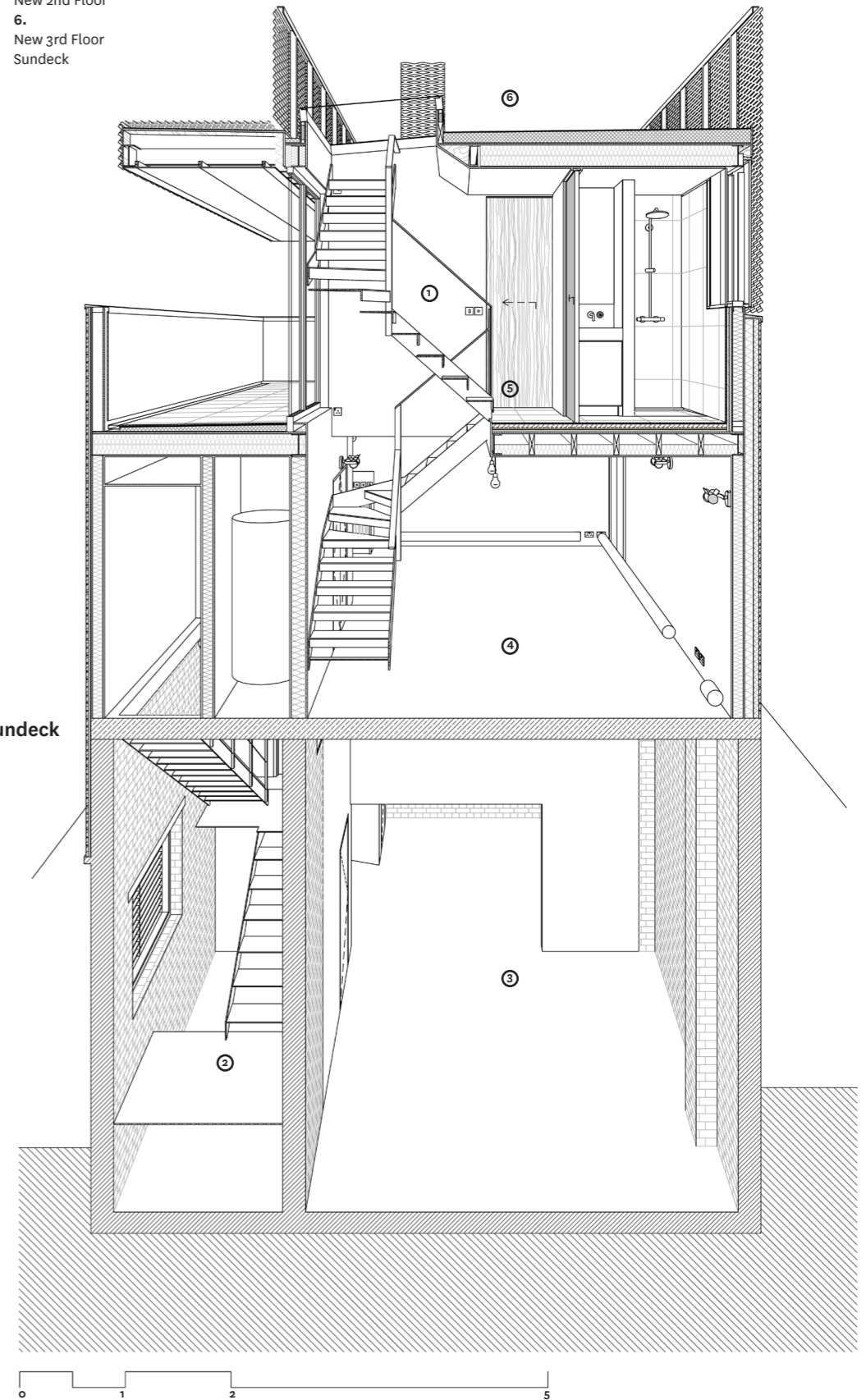
Robotic Craft Self-Build Assembly Jigs

PopUpUte makes use of practice based research into robotic craft whereby systemised assembly techniques deploying pre-sized affordable components are used in construction of bespoke houses. Our robotic craft first funded by Innovate UK in 2015 to work with Advanced Tooling and Fixturing department of MTC (Manufacturing and Technology Centre) helped us develop and deploy an affordable and lightweight prefabricated self-build kit comprising of expanded metal mesh and super insulated polycarbonate wall panels that are easy and quick to install. Manufacturing in architecture, was first deployed in prefabricated components, such as curtain walls in 1950s and has fuelled the prospect of autonomous construction. Prefabricated building components are no longer mass manufactured but made using shared digitally controlled fabrication methods often in different time zones. The adoption of Building Information Modelling (BIM) in this house makes design productive through greater accuracy and tolerances, yet the speed of on-site construction remains unchanged due to little or no investigation into how self-build construction of the built environment can be designed for manufactured assembly (DfMA). This contrasts with other types of automated volumetric manufacture (automotive / aeronautical) where designing mobile assembly jigs instigated automated construction techniques both in a factory environment and on site by way of 'flying factories'. In this project the architects provided the self-builder with the assembly jigs needed to deploy DfMA on a sub £100k London house.



View up Helix Stair to 2nd Floor Living Room and 3rd Floor Sundeck

1. New Helix Stair
2. Existing Stair from Ground Floor
3. Ground Floor Existing Workshop
4. New 1st Floor
5. New 2nd Floor
6. New 3rd Floor Sundeck



Concept Section Drawing



2nd Floor Living Room_Detail

- 1. New Helix Stair
- 2. Existing Stair from Ground Floor
- 3. Existing Workshop
- 4. New 1st Floor
- 5. New 2nd Floor
- 6. Mezzanine Studio
- 7. New House Entrance
- 8. Existing Workshop Access



Concept Sectional Elevation Drawing

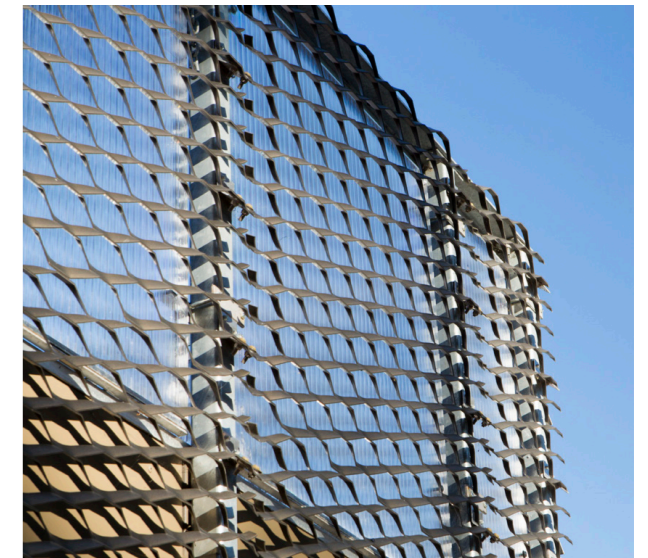
100% Recycled Super Insulative Polycarbonate Facade

The exterior facade consists of transparent or translucent glass panels, depending on whether the space behind them requires a view. 50mm Translucent polycarbonate panels mounted in front of two layers of 40mm polycarbonate and behind an aluminium expanded mesh rainscreen that serves as a rainwater baffle as well as protective shield against sun, glare, heat radiation and contribute to the overall energy system maintaining a comfortable internal mean temperature in both summer and winter .

The rainscreen acts as both a rainwater baffle attenuating rainwater into gutters as well as a solar louvre reducing heat gain details developed through practice based research first tested on the award winning Darlaston Swimming Pool when Practice Director Adrian Friend was the project architect 1996-2001.



New lightweight translucent façade_Detail



New Rainwater Baffle Aluminium Mesh façade_Detail



New 2nd Floor Kitchen



Workshop Main Entrance (Previously for sculptor Tim Scott)