

Dear Ateliers;

Thank you in advance for studying my portfolio and considering me for acceptance into your studio. Here is a little bit about me:

Following my undergraduate course, I took time out from my studies to work in a variety of roles in order to gain real first-hand experience of different building technologies in a variety of built environments. I learnt whilst working in different roles from general labourer to carpenter to sub-contractor to main contractor to designer and co-op member. This has given me a greater insight into the deeper workings of the construction industry, including the value of good communication between architect, engineer, builder, planner and the wider community.

In 2018 I was a founder member of a housing co-op, with a group of friends with a suitable mix of skills and talents, that allowed me to get back into larger design projects whilst addressing the real-world housing issues that are ever worsening in London. I am the sole designer with responsibility for all the architectural aspects of our competition submissions. I also came up with the name PØP (people over profit) - a cause I care about! So far, we have been shortlisted but yet to secure a site. We have been told by Tower Hamlets Council that our bids have been strong and that we must continue.

My experience gained by developing schemes for these small community groups of 5 to 10 dwellings fired my interest in the wider ramifications of townscape and urban planning. My hope is to use the opportunity offered in this Masters course to delve further into that area both in terms of architectural imperatives but also into the psychological and political implications of developing much improved housing solutions on the widest stage.

An important element of my original intention to become an Architect was a long-held interest in sustainable building technologies. Consequently, during this time of practical experience I've developed my knowledge and understanding of different ecological building techniques, working with industry leaders on sites across London and the UK. This led to a friend and I starting a company called 'Hemp Shed' in 2017 where we designed and built carbon negative garden rooms, taking advantage of a hole in a growing market providing office spaces in peoples' gardens.

When the coronavirus pandemic struck and work mobility was greatly constrained, I took the opportunity to work on my own house and self-build my design for a major renovation project with a large extension and separate garden room. Phases 1 and 2 of which are now complete with phase 3 on hold pending further analysis of the currently uncertain economic climate.

In 2022, I developed a design proposition for a modular carbon negative structural panel system made from hempcrete that should outperform others on the market maintaining breathability where others do not. The system has a clever locking mechanism to join panels together with steel poles that slot into PVC sleaving cast into the panels. This makes on-site assembly quicker and simpler at the same time as making the whole structure more rigid and wind resistant. My studies have been endorsed by Structural Engineers, but I've found that the testing of structural prototypes comes at a huge cost and am therefore currently seeking funding from various construction bodies.

Thank you so much for taking the time to read my application, and I hope to hear from you soon.

Theo Gush



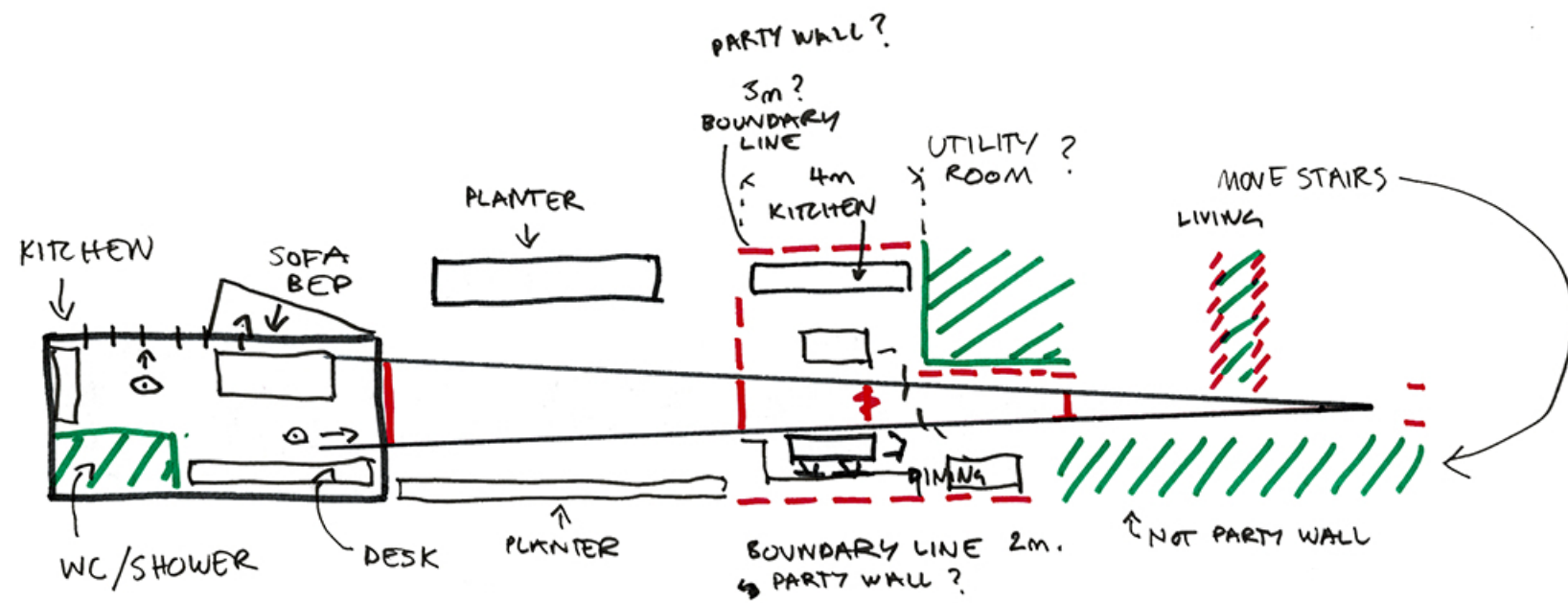
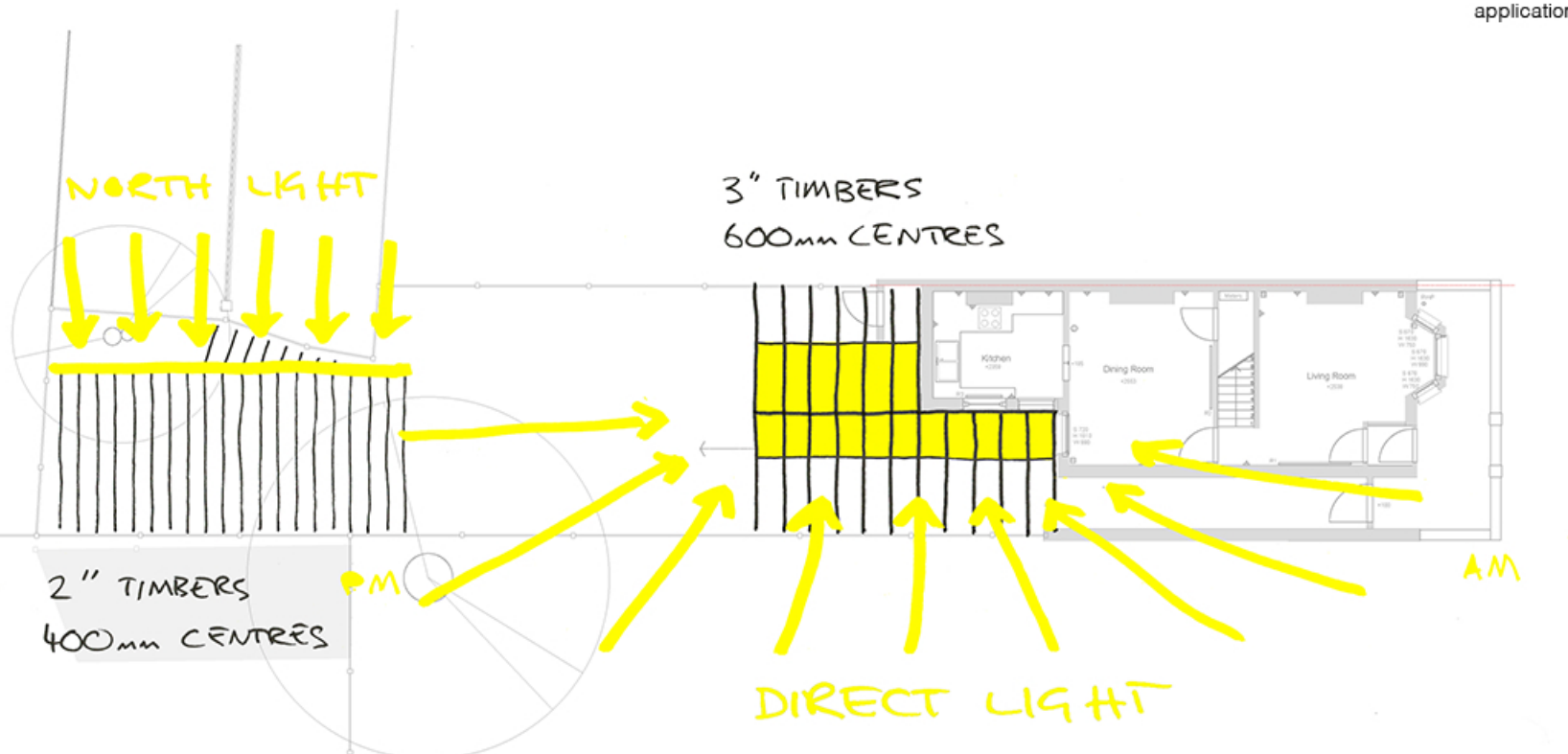
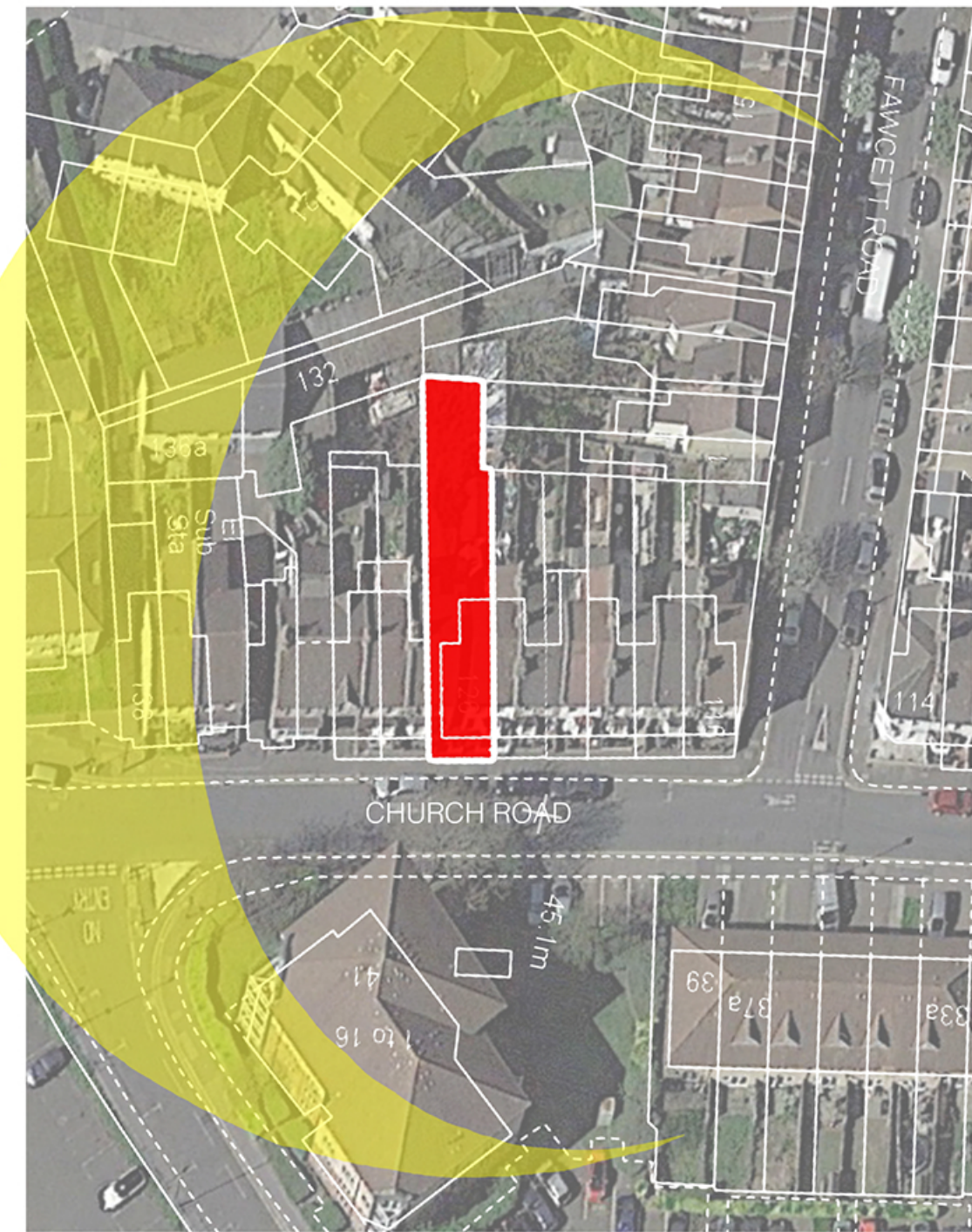


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28 - 29	Duck bench

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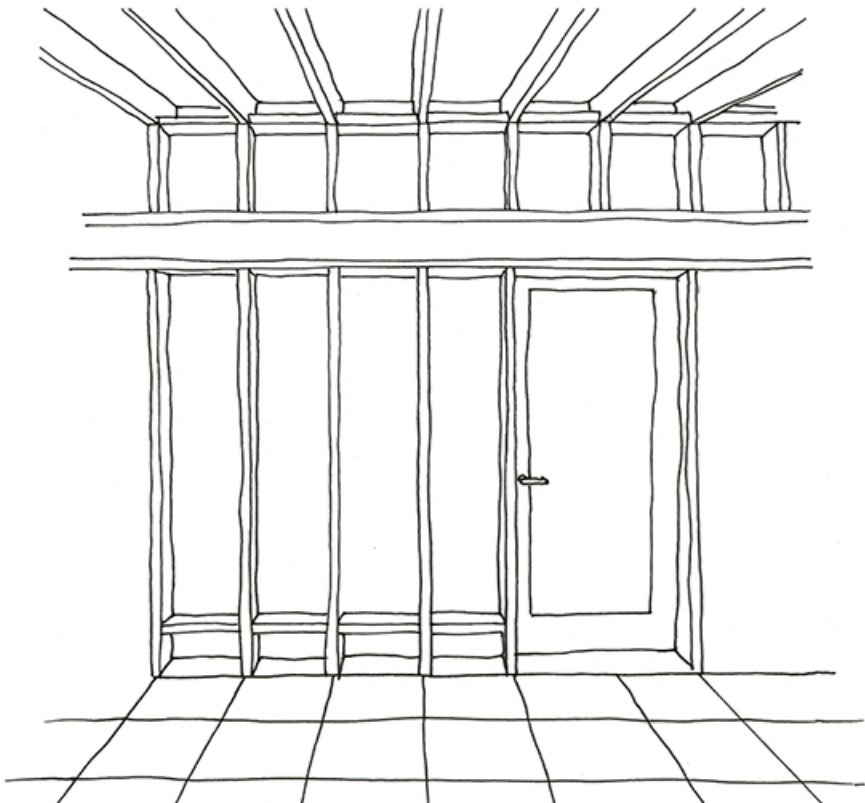








Louisiana Museum of Modern Art - Vilhelm Wohlert



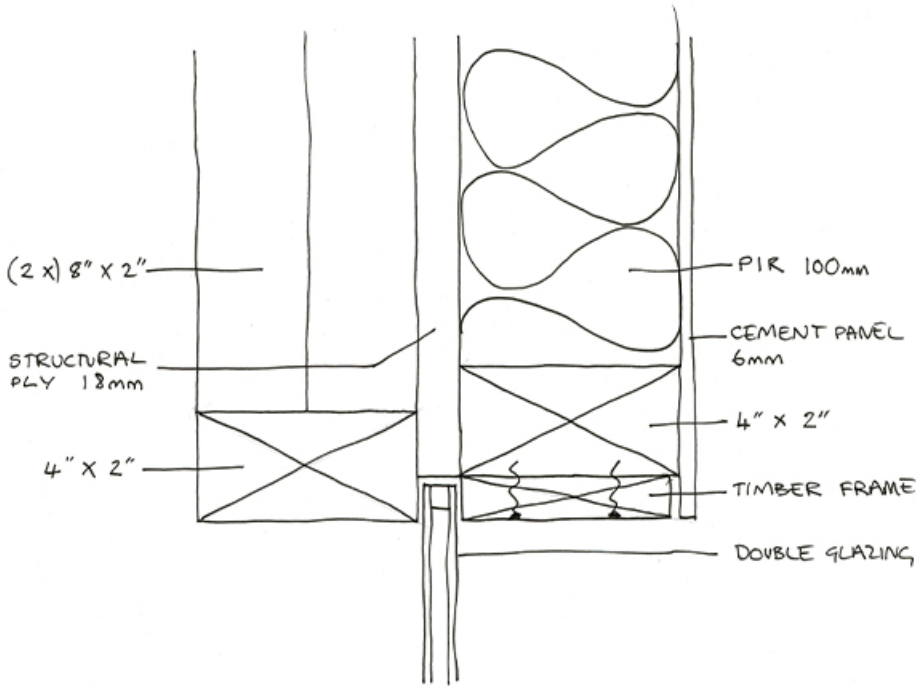
Perspective drawing of the fixed pane glass in the garden office - maximize north light



Photo of the finished glazing



Close up photo of glazing detail - no frame - structure is the frame



My interpretation of the detail



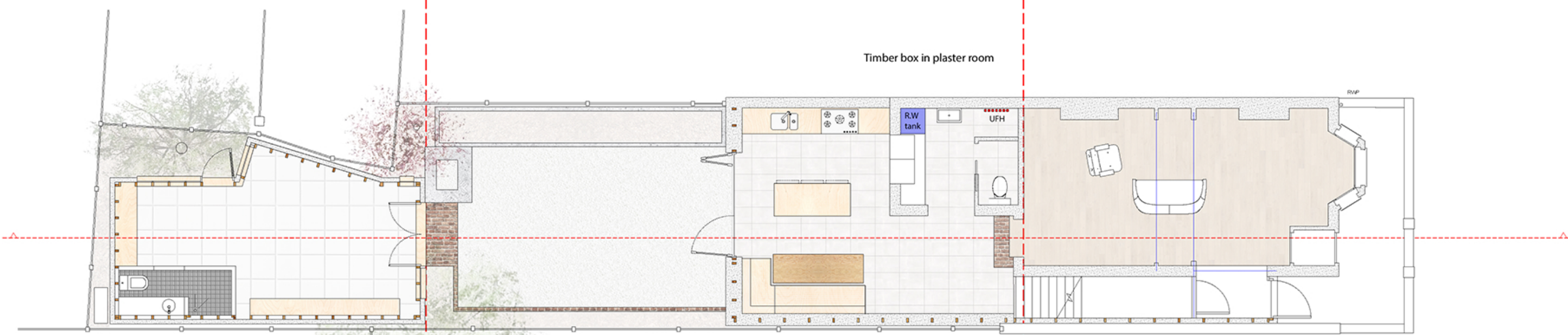
Close up of the finished glazing







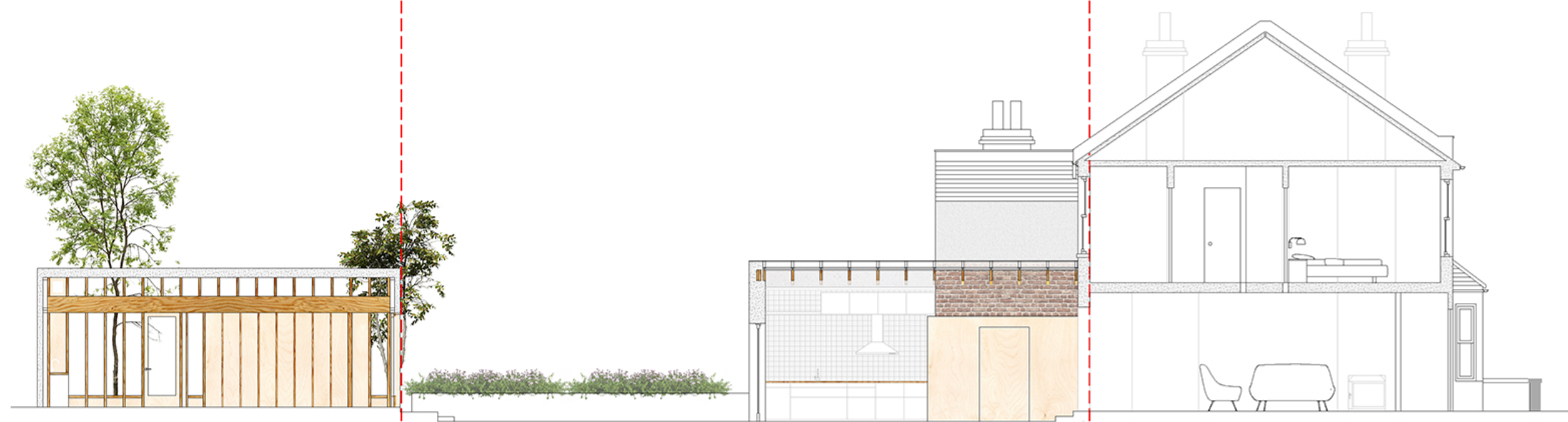
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Plaster box in timber room

Timber box in plaster room

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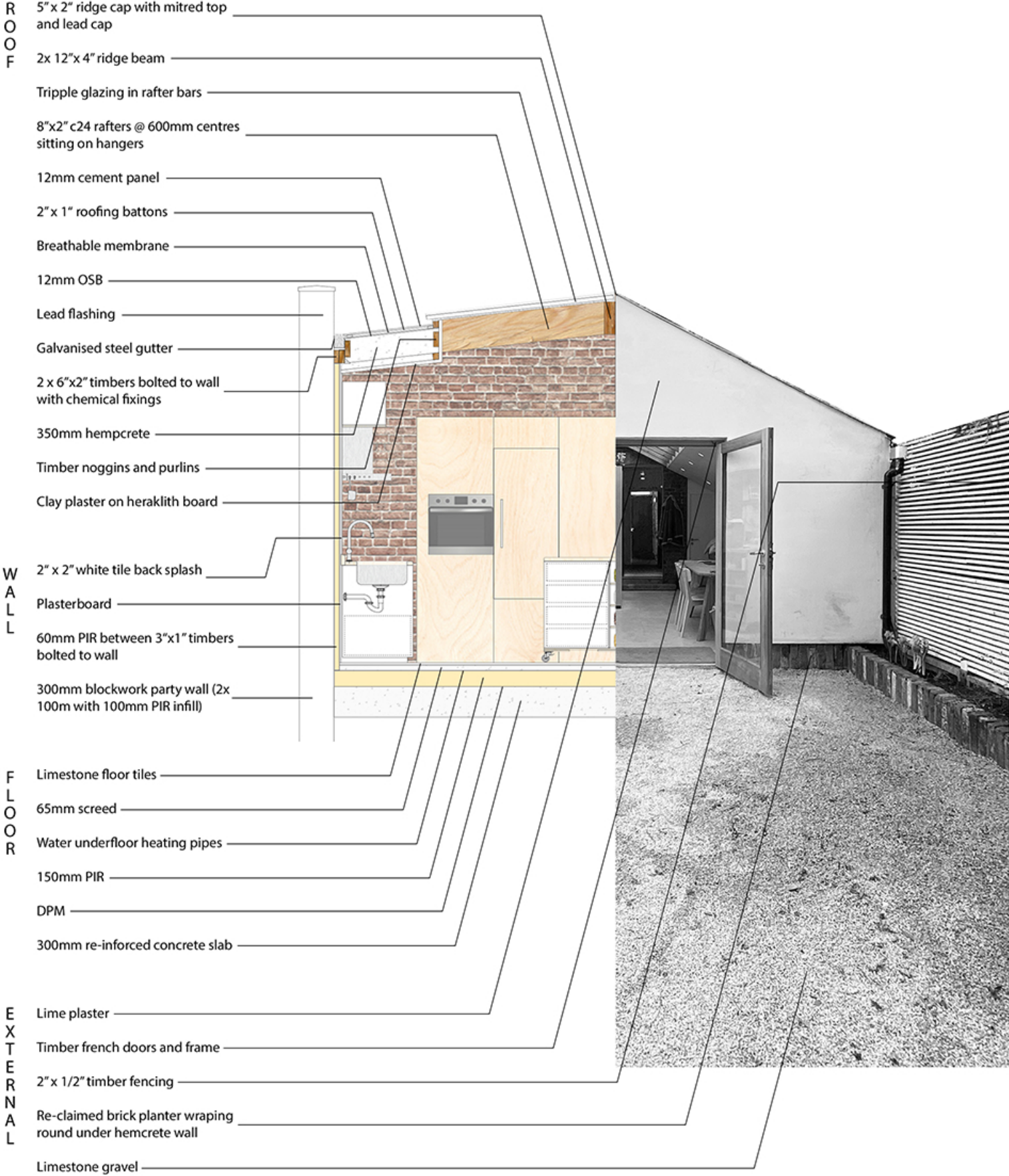
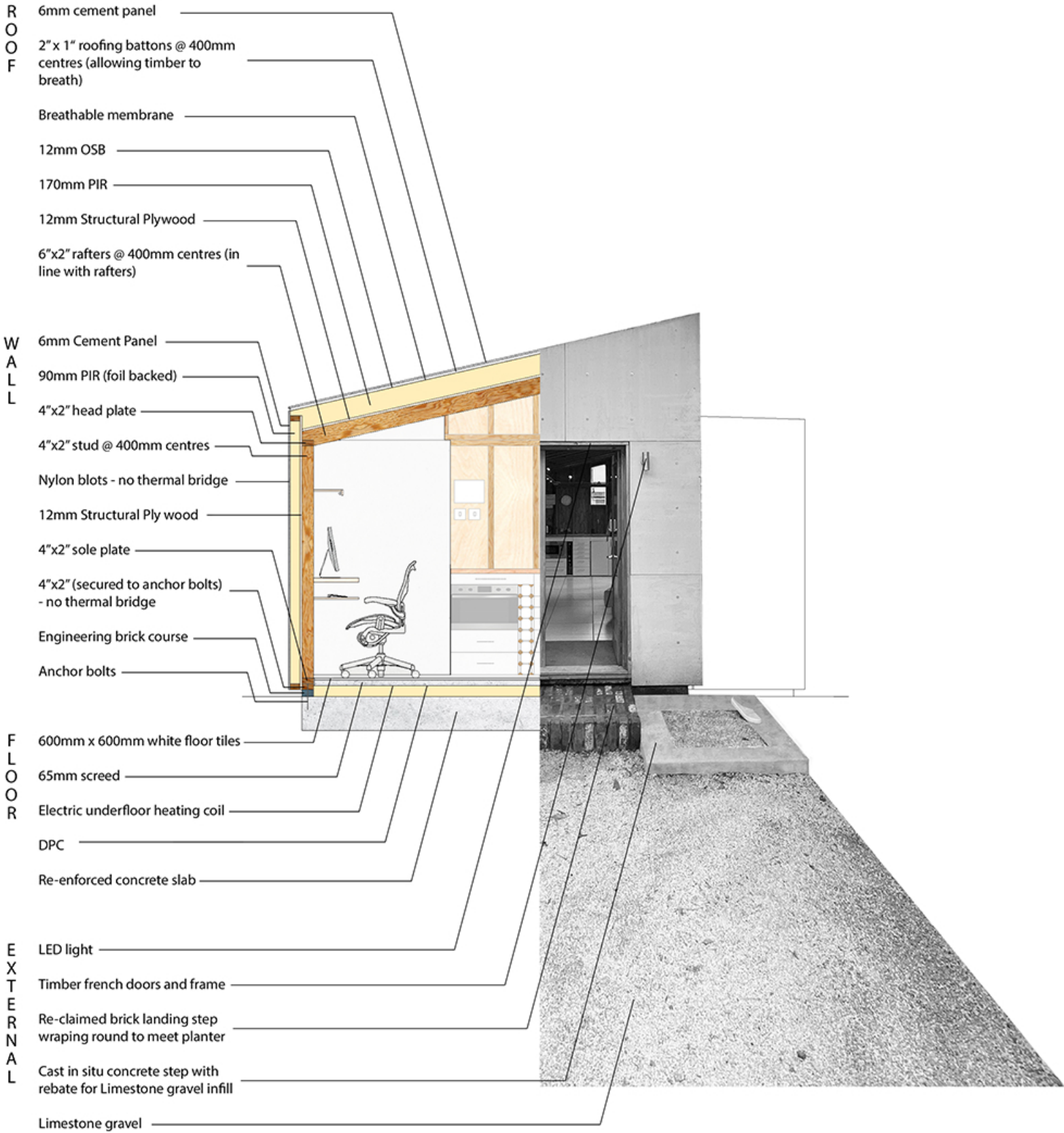


PHASE 1

PHASE 2

PHASE 3

















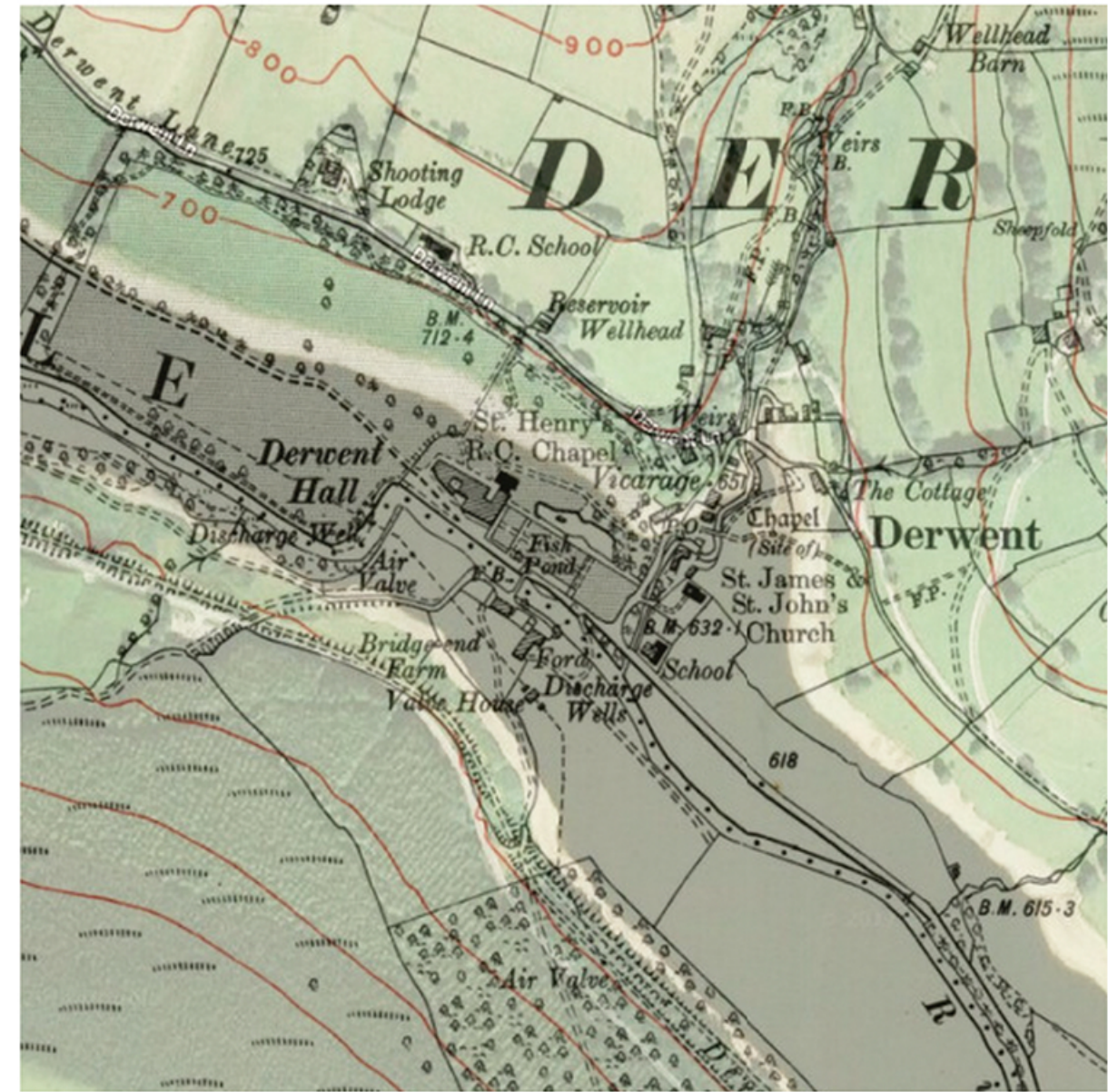












Map shows Derwent village now submerged in water under Derwent Reservoir in the Hope Valley. Built to service the increased water needs as Sheffield city grew in the early 1900's



Photo of Derwent village early 1900's



Photo of Barbara Hepworths 'family of man' at the Y.S.P



Stolen from the park in the 1980's



Image of the reservoir 'plug'

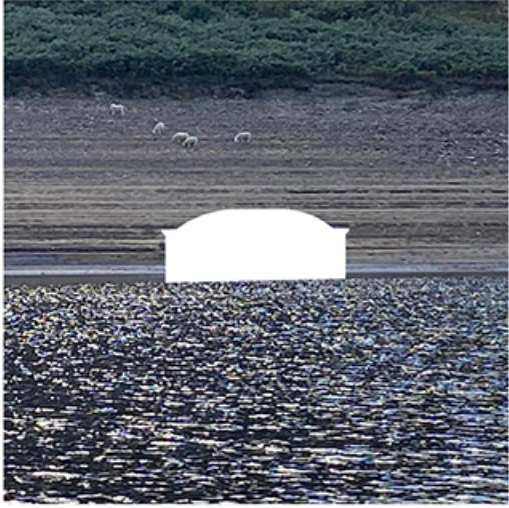


Photo of the Valve house re emerging after a dry summer

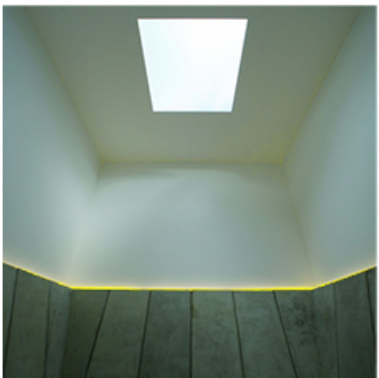


Still intact but lost in the reservoir

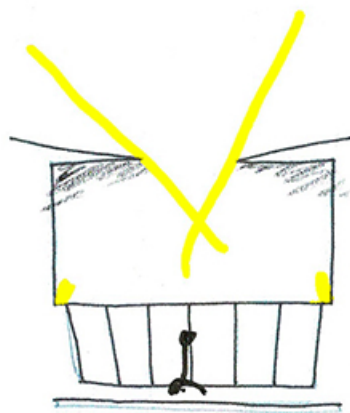


Section showing concept to regain access to the old village with a passage to the Valve house where the stolen sculpture will be exhibited



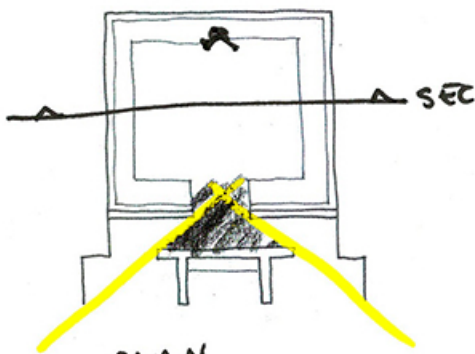


James Turrell's - 'Deer Shelter' at the Y.S.P



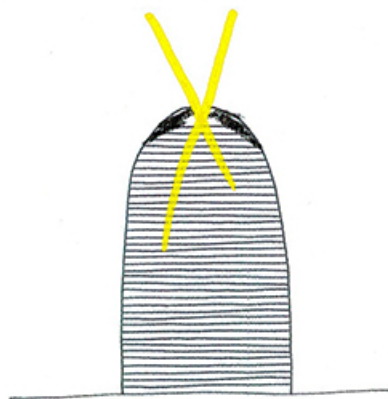
SECTION

Sharp opening on the roof shows no reveals. Like a picture frame.

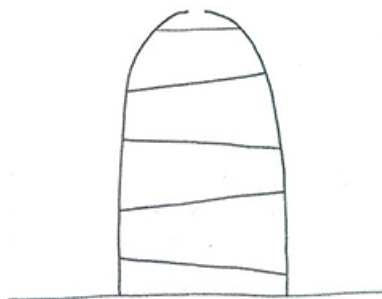


PLAN

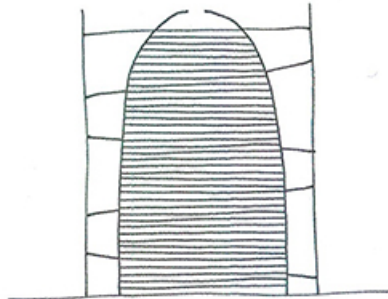
Structure in front of the entrance means no light enters the space other than the ceiling and light strip above the seats.



Cutting opening in vault shap should create a similar contrast of light and dark.



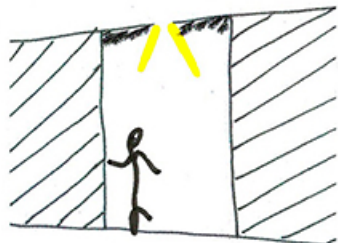
Adding wonky floors and ramps like the Jewish museum to induce disorientation.



Positive negative spaces will add structural stability. Wet and dry?

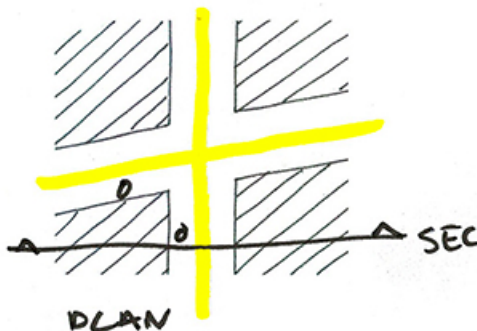


Daniel Libeskind's Jewish museum in Berlin



SECTION

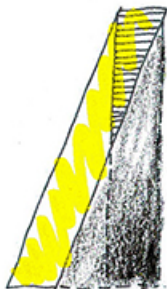
Wonky floor and walls used to induce a feeling of disorientation.



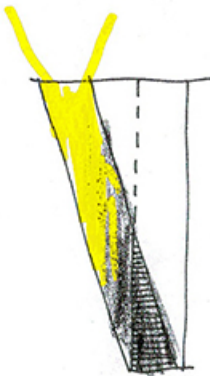
PLAN

Avoids right angles angain for disorientation.

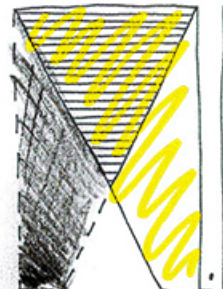
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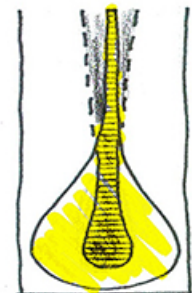
SECTION



Playing with angles similar to Serra's sloping walls. Structurally difficult unless compensated for with weight on the other side.



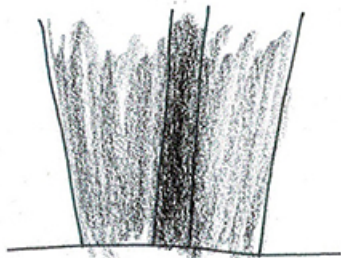
Wide light opening dropping to wonky dark coridor. Again structural issues. Place structure around one side. Wet and dry?



More curvature taking advantage of metals maleable qualities. More like Serra. Structurally sound.

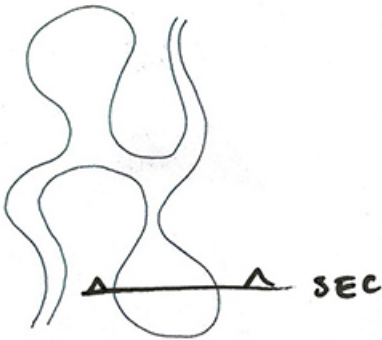


Richard Serra's - 'Inside Out' in New York



SECTION

Contrasting curvy spaces play with emotional responses. Lost and found, trapped and released.



PLAN

Plan resembles a maze where the spaces all link together in a way only understood when looking down from above.

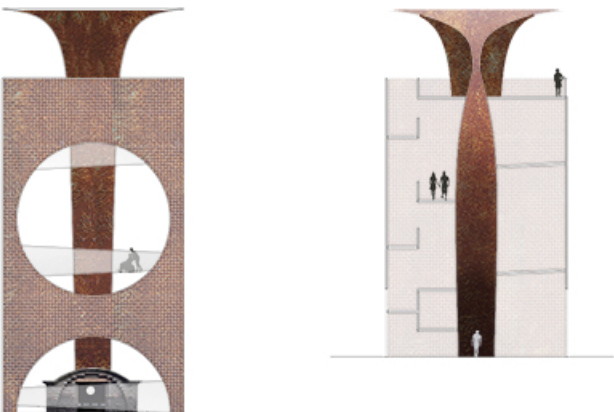




Image shows plan of the pavilion with context of road and path



Elevation of the pavilion show context of the road and footpath at the top and ramps running through the outer structure.



Elevation and section showing people moving around the pavilion.

Central core of the pavilion is always dry allowing access to the Valve house all year regardless of the depth of the reservoir. The outer walkways and ramps will flood limiting access depending on the depth of the reservoir.





- Set backs required by council
- Set backs due to high cost per m2
- Build area
- Existing trees on site
- Change in elevation line

Map show good potential for solar gain with a long south elevation and strong views over the canal with a long north elevation.

Awkward shape of site is likely to increase build cost.

Three of the existing trees are in or close to the desired build area.



Site currently used as a communal garden



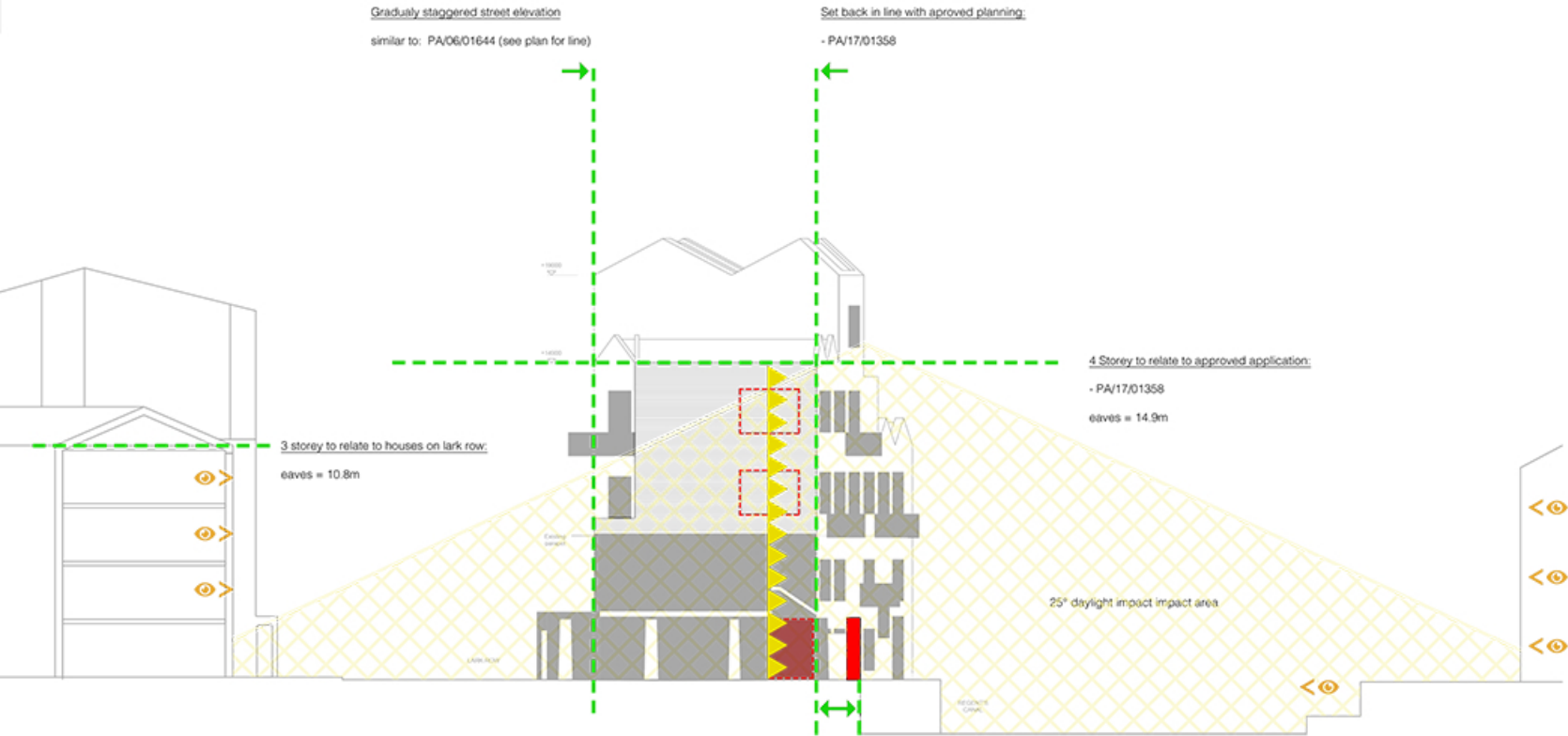
67 Vyner street. Planning approved: PA/17/01358



Pound path today at entrance to victoria park



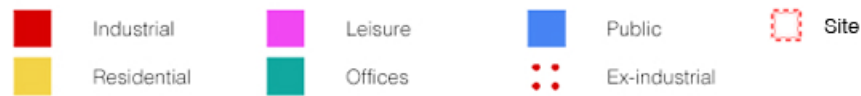
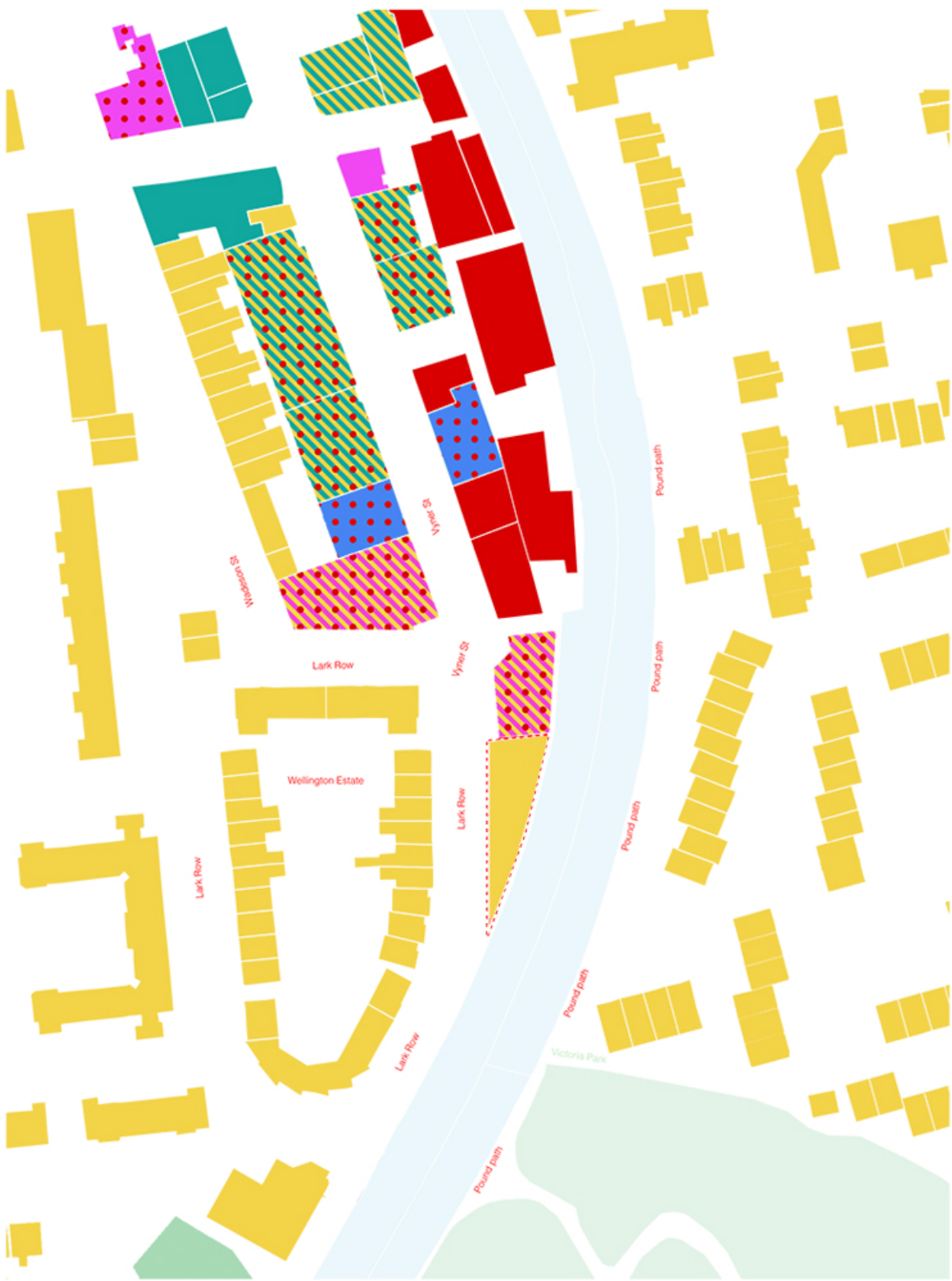
Pound path 1910 in use as a tow path



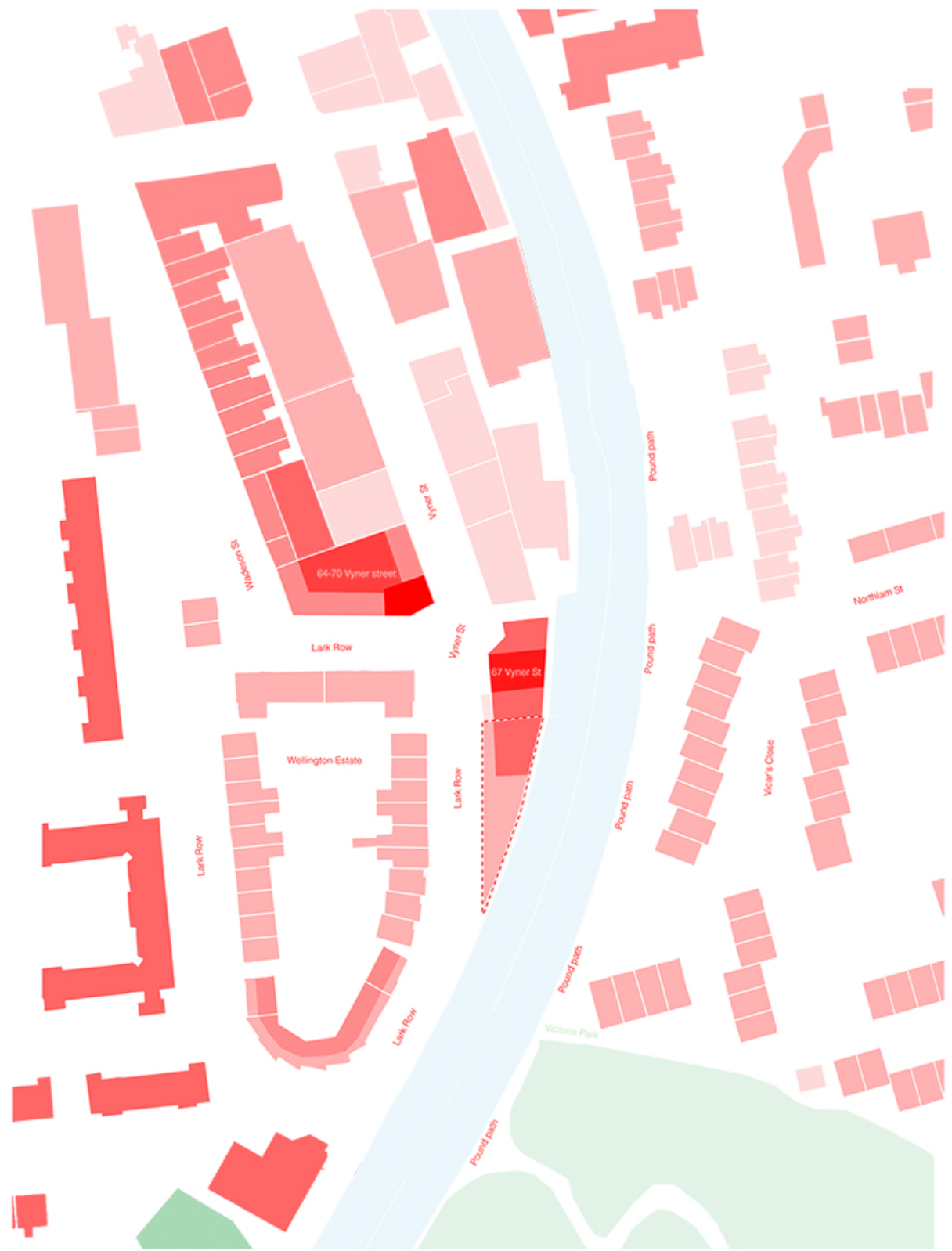
- Reference lines
- Set backs
- Low impact on daylight area (25°)
- Overlooking and privacy
- Minimise light spill onto canal

Section shows further analysis of site introducing 25° daylight study, privacy considerations and light spill over canal to be kept to a minimum.



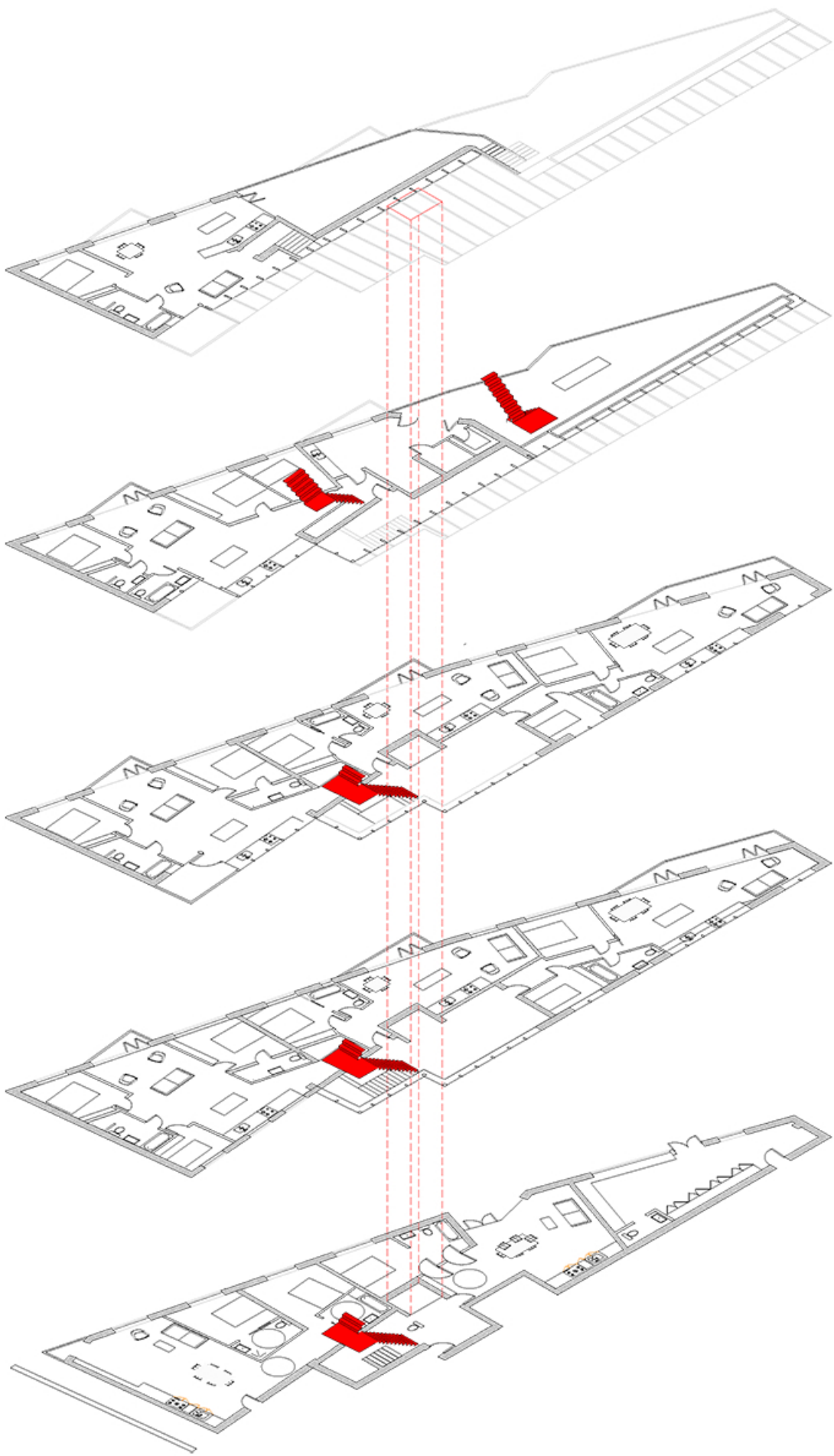
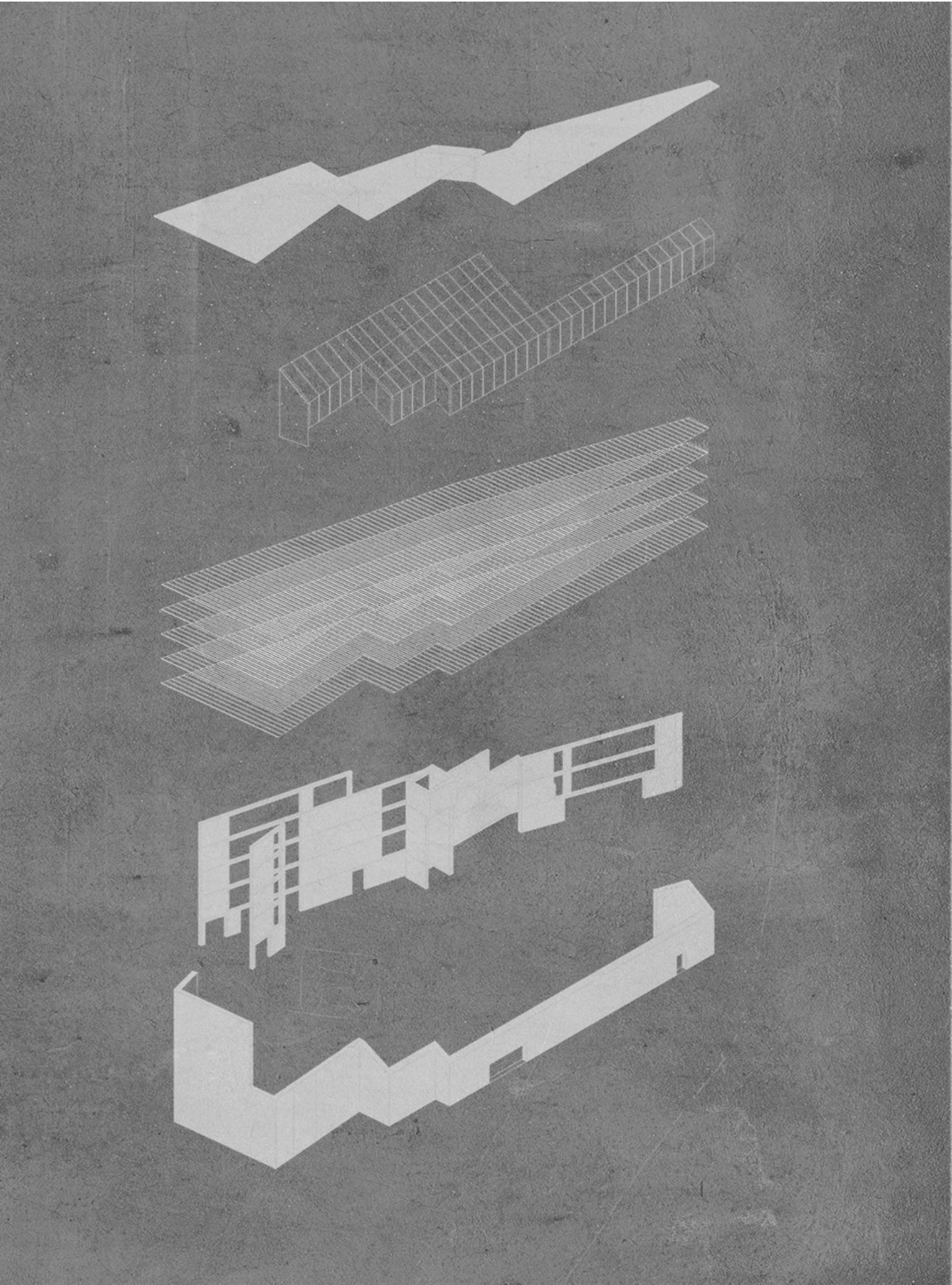


Map shows different building use categories of surrounding buildings



Map shows height of buildings in the surrounding area







aproved planning - PA/17/01358

Site - south elevation



Site - north elevation

aproved planning - PA/17/01358





Image shows POP1 at night - view from Vyner street.

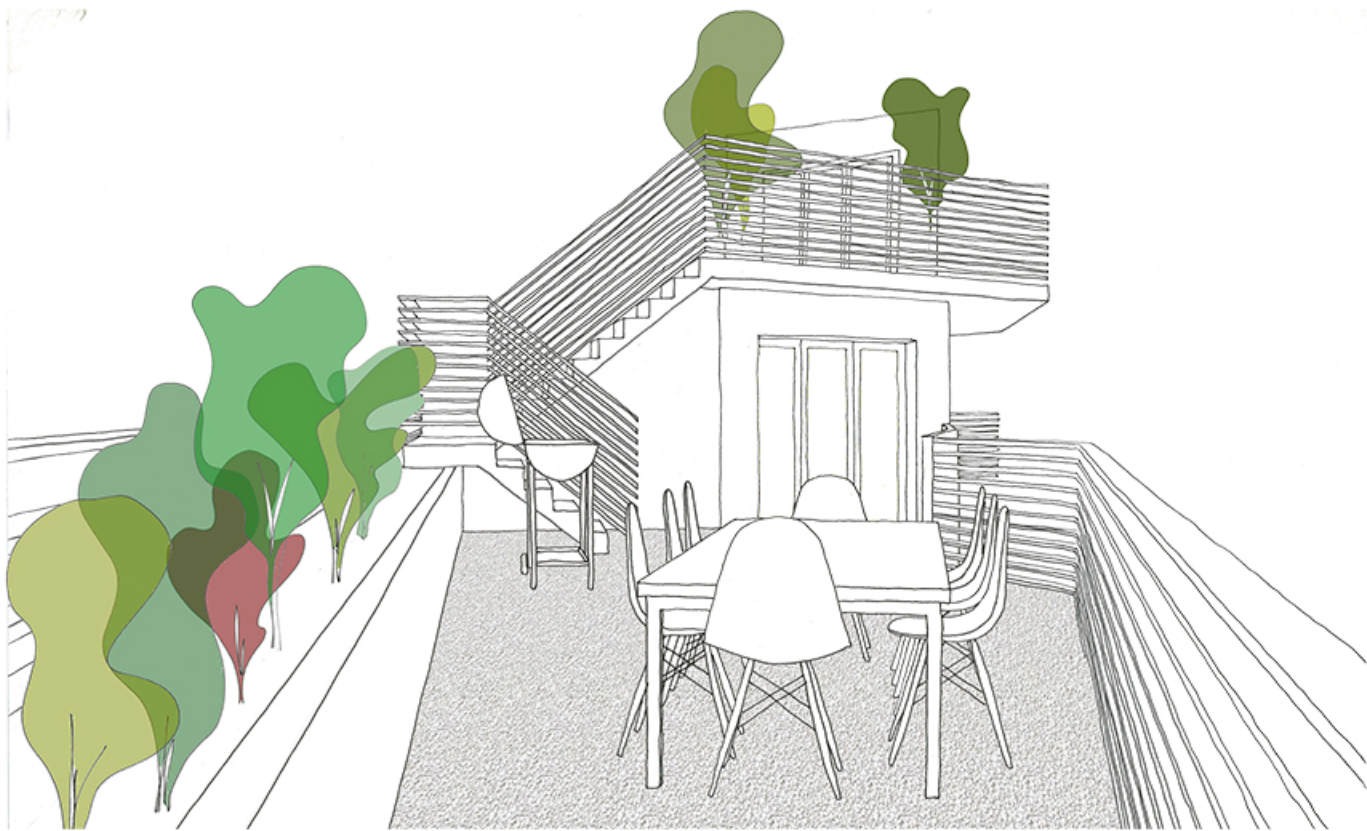
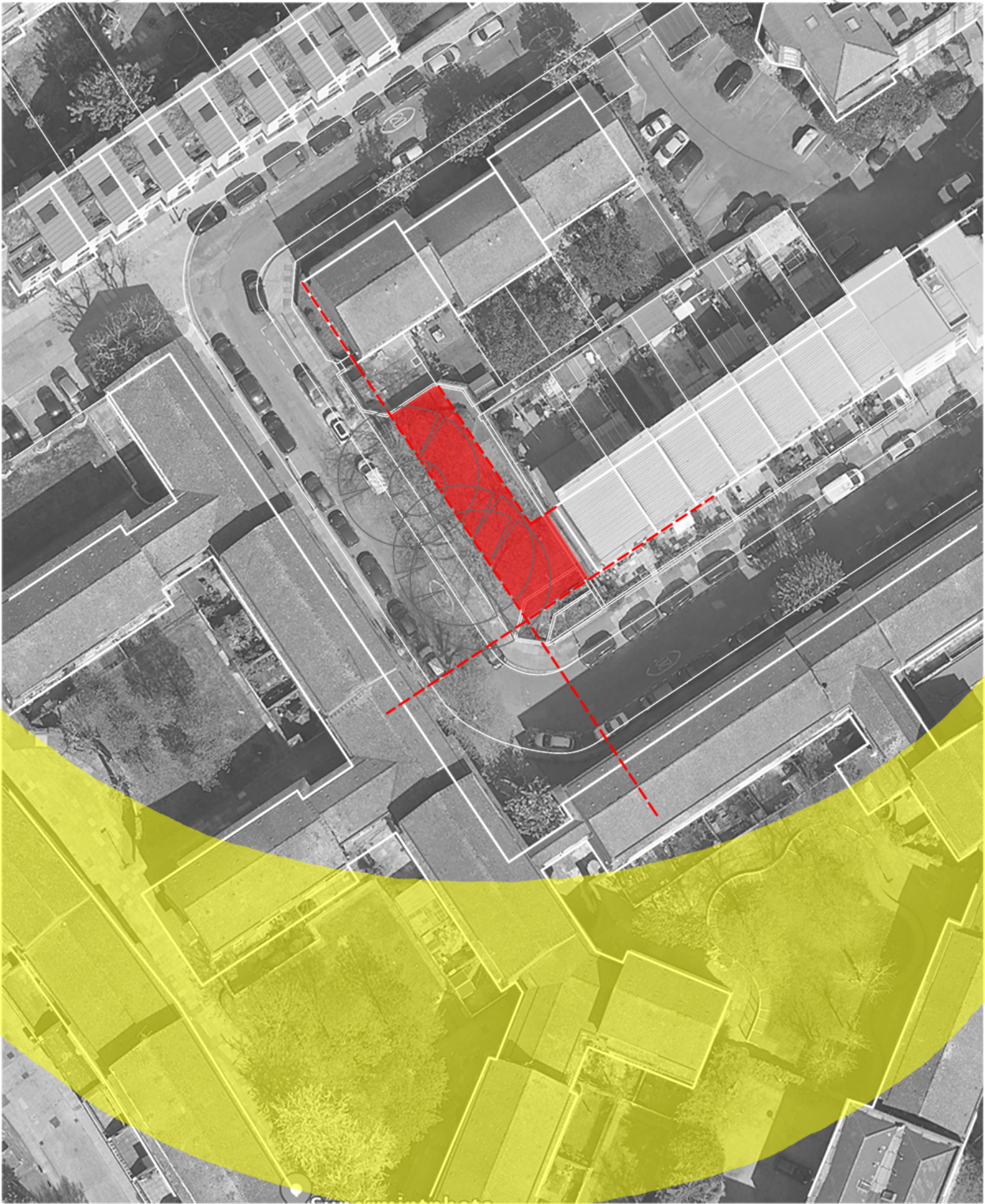


Image shows the roof terrace - view from the sharp east corner of the site.

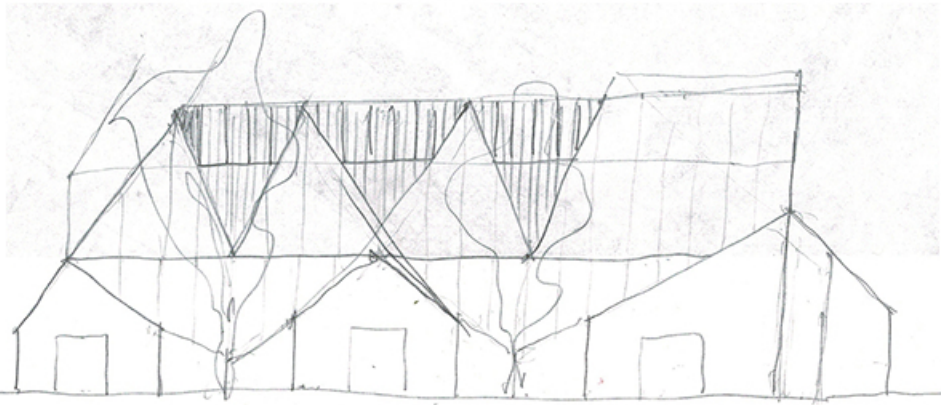




Walter Segal, self build Lewisham - 1988

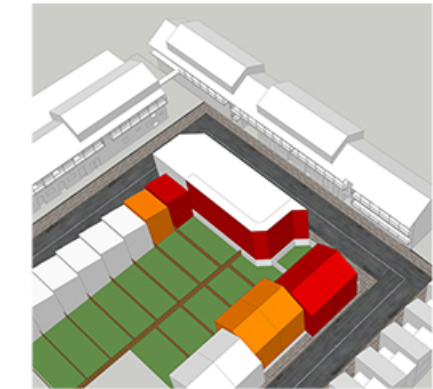


Hempcrete lego style block, idea for revised version of the Walter Segal system.

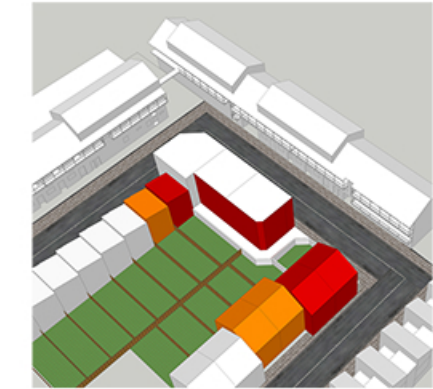


Initial sketch from site visit, working around the trees

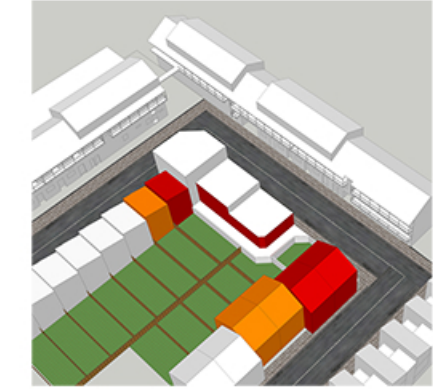




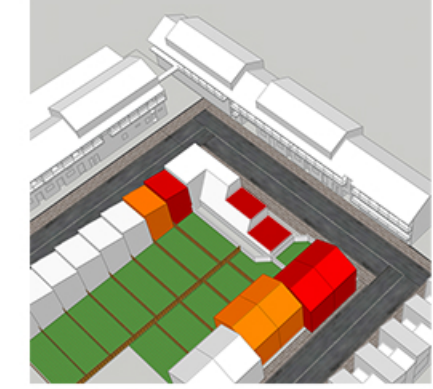
Close proximity to houses highlighted in red and orange requires setting the building back.



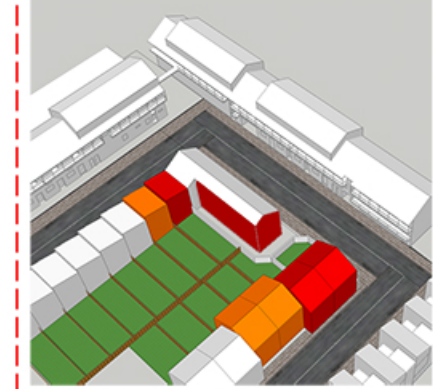
2m has been taken back. Massing is still domineering over the concerned area. Further action is required



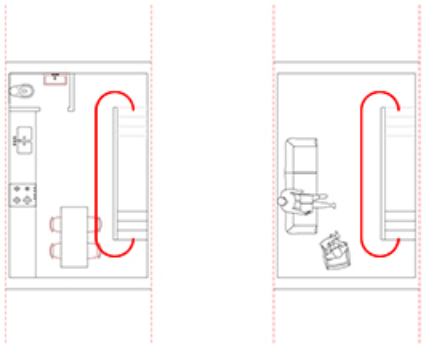
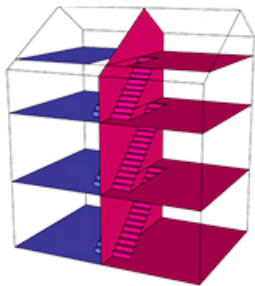
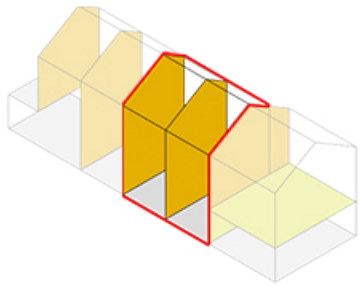
Stepping down of the massing away from the corner of the block reduces domineering effect. Provides potential roof terrace options



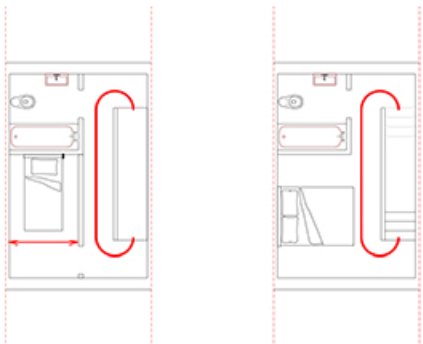
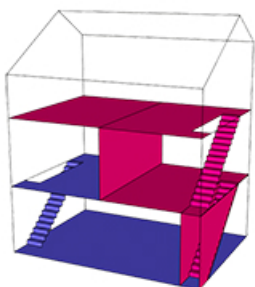
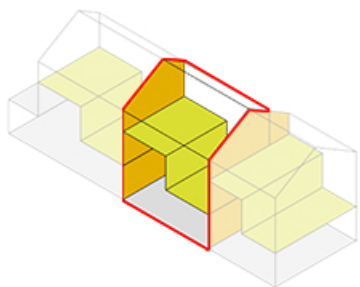
Pitching the wall facing the gardens further reduces domineering effect. Terracing will overlook gardens and will be a considerable expense. Allot of potential space lost, alternative method required.



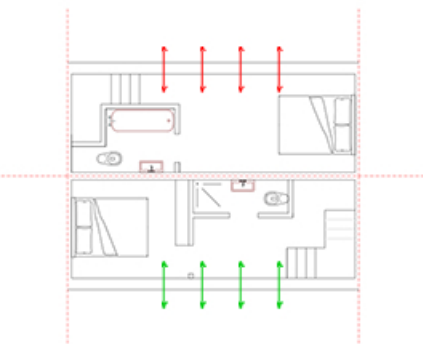
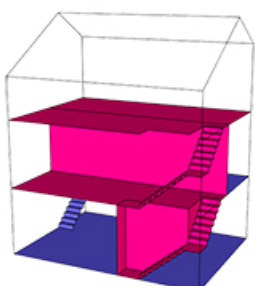
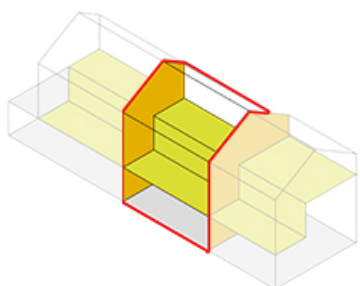
Simple dual pitch with further 1m set back from North end of the site. maintains 3 story over 90% of the site. Balconies to mirror the estate across the road, more cost effective and prevents overlooking of the gardens.



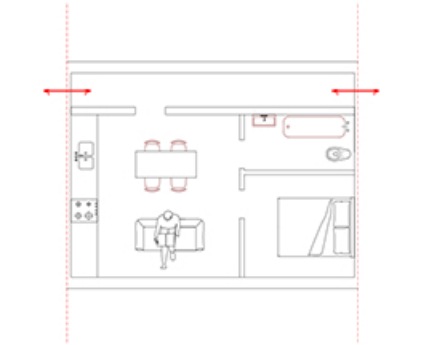
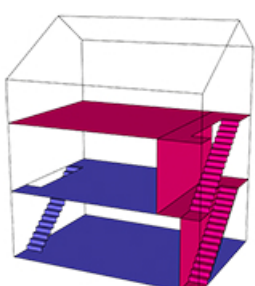
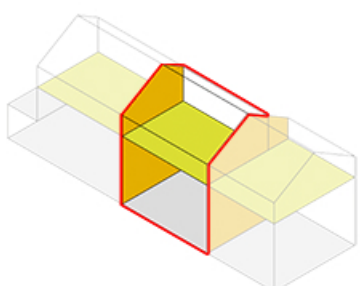
Kitchen and living space must be split onto separate floors. Spaces are very narrow and raise potential issues with blocking of circulation around the stairs leading to potential fire hazards. Issue with bedroom layout shown in figure 2. Double bed would have to be open plan and on the top floor.



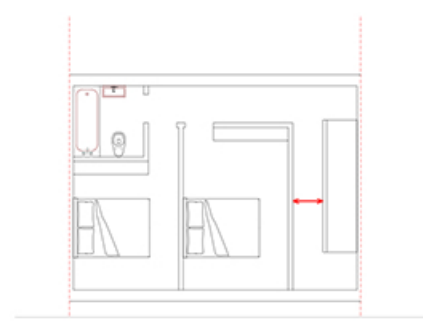
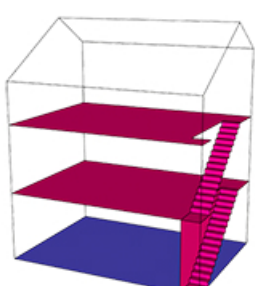
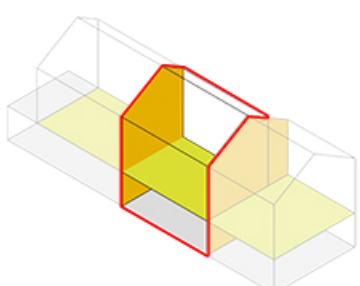
Double bed has to be open plan which is not ideal in the purple apartment where you have to walk through the bedroom to get to the kitchen /living space above. Only 1 bedroom per apartment due to the excessive space given to access. Kitchen and living space oversized for 1 bed apartments.



Should be a limit on overlooking the neighboring houses and their gardens. Makes blue apartment difficult to fenestrate. Only 1 bedroom per apartment due to the excessive space given to access. Kitchen and living space oversized for 1 bed apartments.

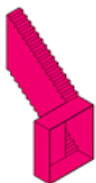
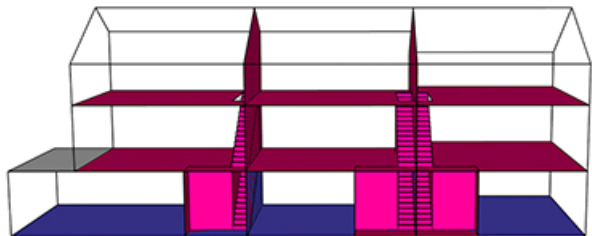


To make the plan work the access stairs to the top floor apartments should be shared. This then requires a long corridor making the central apartment very narrow - doesn't meet minimum space standards

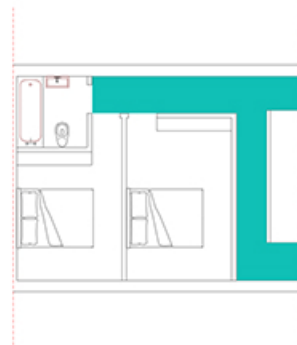
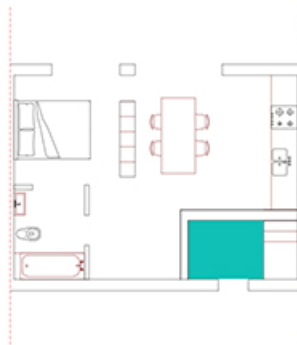


To fit the stairs in the customary manor of stacking one on top of the other space is required adjacent to the staircase to reach the next flight. This narrows the bedrooms even further. Bathroom is tight and limited in its size due to access to the second bedroom

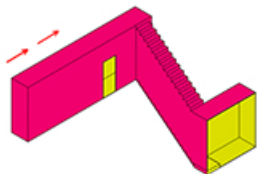
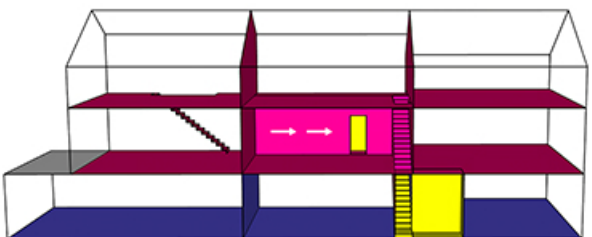




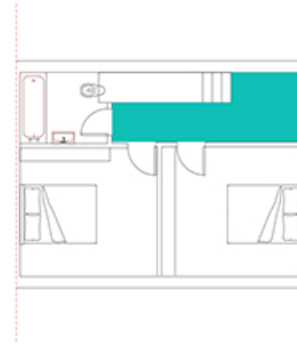
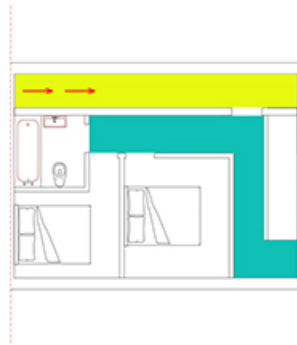
All apartments have individual access  
Staircases stacked for space saving  
Landing space on ground floor for pram storage



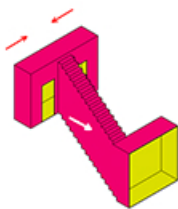
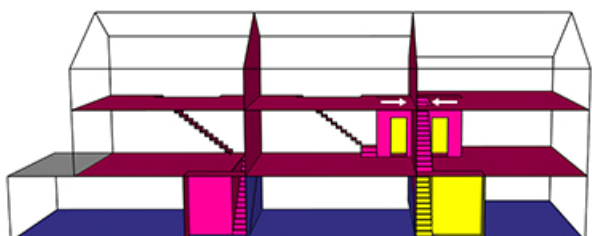
As mentioned on the previous page circulation around the stairs hinders the bedroom floor plan  
Landing on the ground floor central apartment impedes on the floor area making it too small - doesn't meet minimum standards.



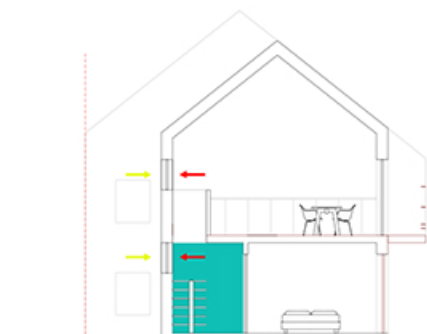
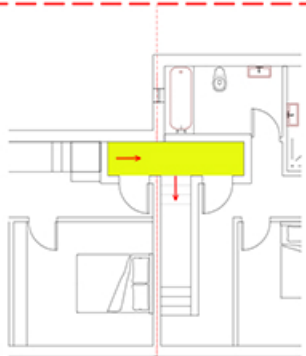
All duplexes share single access.  
Reduces spaces taken from ground floor by 2/3  
Long corridor required on the 1st floor for access



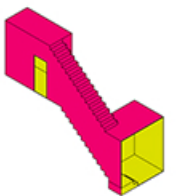
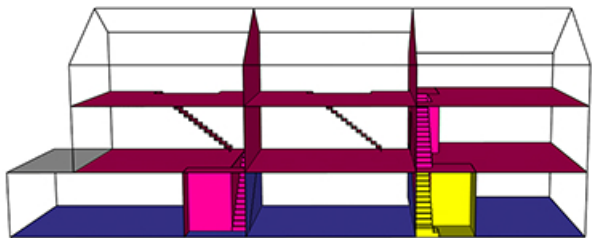
Again circulation hinders bedroom floor plan - even more so due to the long corridor. Central duplex would have one very small bedroom. Bathroom also very tight.  
Moving stairs against the N/E wall improves bedroom plan.



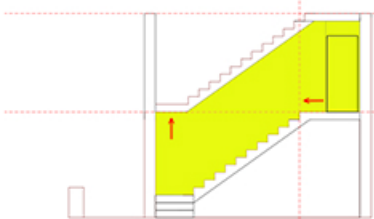
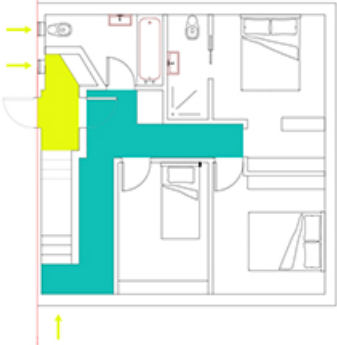
N/E duplex has private entrance whilst the other two share.  
Eliminates need for long corridor  
Increased space taken from ground floor but leaves small central apartment untouched



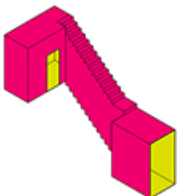
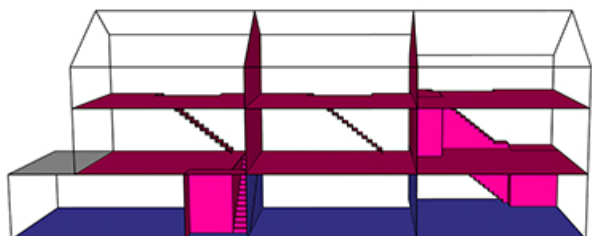
Copying the successful stair arrangement onto the central duplex works well. Further testing proves to work well for overcoming the constraints of overlooking of/from the neighboring gardens to the N/E. Situating windows in a way where light can come in but visibility in and out is restricted by the staircase.



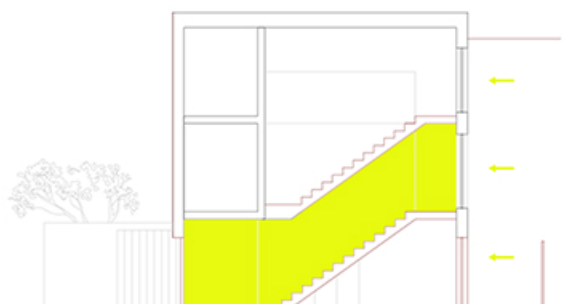
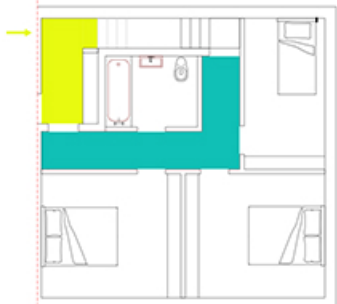
Move stairs reduces landing space  
Maintains small window for natural light ventilation to the shared landing on the 1st floor  
Good proximity of entrances to allow for potential shared bin store



Moving the stairs works well, reduces landing space by circa 2m2.  
Corridor and circulation hold good potential for natural light and ventilation. Approximately 40% dark corridor space necessary for access to bedroom.  
Bathroom arrangement work well being adjacent to each other making for simple plumbing



Move stairs to enter from S/E for better natural light potential to the shared access stairwell  
Poor proximity of access, shared bin store difficult



Best arrangement for natural light on shared staircase.  
Structurally problematic.  
Completely dark corridor space with no fenestration. No natural ventilation. Difficult to ventilate bathroom even mechanically.





West Elevation



South Elevation



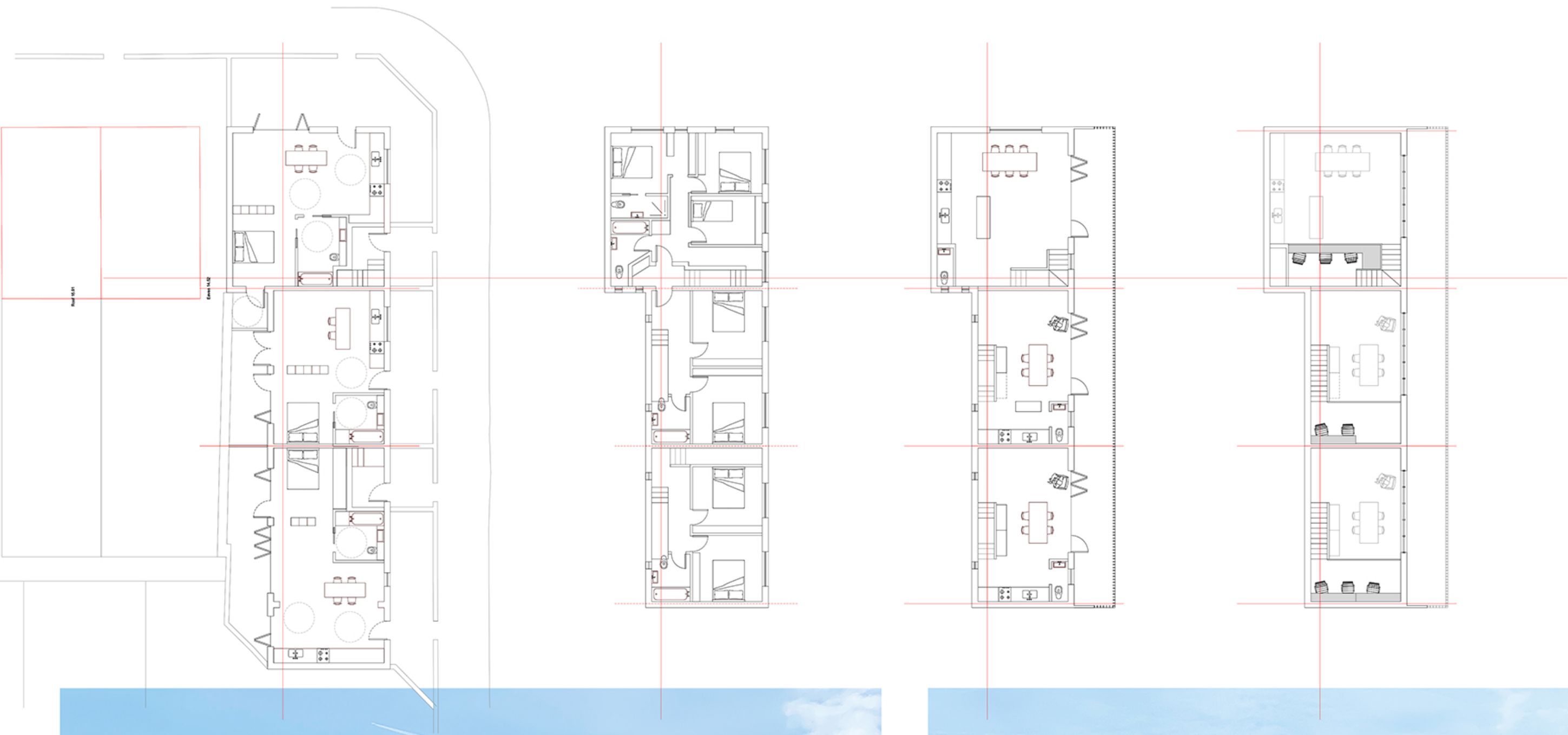






Image shows POP1 in the day - view from the south western corner of Piggot street

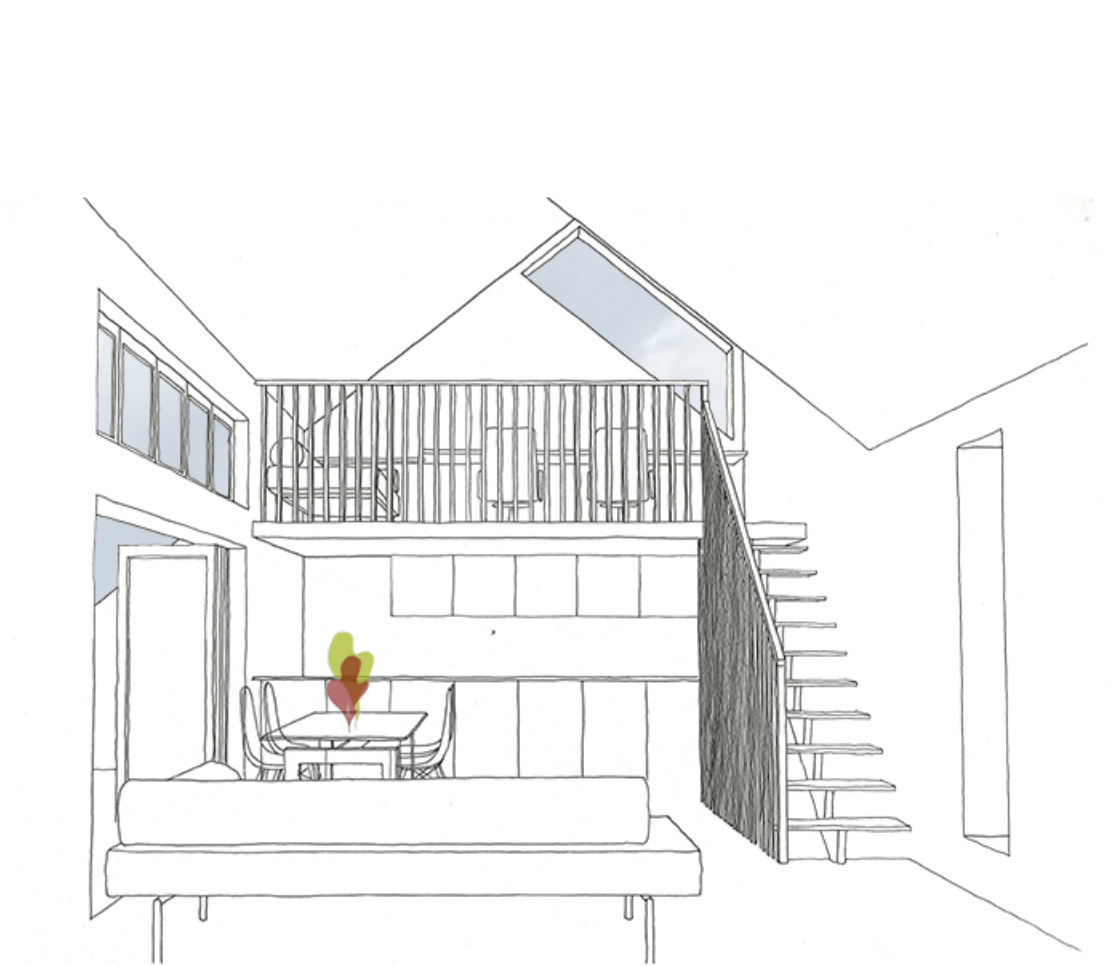


Image shows an internal view of the top floor kitchen / living space of POP 1



Appendix Item 3  
Expanded Risk Register

IMPACT				
Risk Factor 12 and above	Extreme /	5	10	15
Risk Factor between 8 and 11	Major	4	8	12
Risk Factor between 6 and 7	Moderate	3	6	9
Risk Factor up to 5	Minor	2	4	6
Resolved	Insignificant	1	2	3
		1	2	3
		Remote	Unlikely	Possible
				Probable
				Highly
				PROBABILITY

- Process
1. Start of a project create initial risk register
  2. Share in a meeting and receive feedback
  3. Add all relevant actions to project plan
  4. Add new risks as lessons are learned from project implementation
  5. Review at the start of new project phase

Phase	Category	Risk	Consequence	Mitigation	Probability	Impact	Priority (RAG)
Pre-Construction	Legal	Planning permission not granted for our planned build.	Re-designing of build plan causing delays and, if number of flat units is affected then there is a risk of affecting financial viability of plan.	Seek appropriate support to validate plans and designs before planning permission submitted.	3	3	9
	Legal	Unforeseen legal complications in changing land ownership from council to co-op.	Potential delays in planning application approval or transfer of land.	Work closely with the council, third party right holders and legal counsel to monitor, pre-empt and manage unforeseen legal complications.	2	2	4
	Legal	Neighbour private rights for daylight/sunlight affecting planned design.	Re-designing of build plan causing delays and, if number of flat units is affected then there is a risk of affecting financial viability of plan.	Receive appropriate legal guidance on right to light before planning permission requested.	2	3	6
	Legal	Unforeseen delays in council granting planning permission.	Delay to build.	Obtain a time estimation for planning approval and account for significant delays on top of that in our build plan.	4	2	8
	Legal	Unforeseen assertion of third-party rights.	Possible delays, costs or changes to build design.	Obtain comprehensive legal consultation of plan before requesting planning permissions.	4	3	12
	Financial	Interest rates increasing.	Increased cost of development financing.	Aim to obtain a fixed interest rate loans where possible. Financial modelling to be stress tested for rising interest rates in both development and lending stages.	4	4	16
	Financial	Not securing the amount of grant funding projected.	Requiring additional funding from other sources.	Grant funding is not necessary for the viability of the project. Shortfalls may be met through extending loan agreements.	3	3	9
	Construction	Unstable soil due to water content.	Delays to build and cost of repairs to improve soil stability.	Get appropriate contractors to help with repairs such as compacting ground with more soil, building appropriate water drainage systems.	3	3	9
	Health & Safety	Historically present electrical substation and factories nearby causing soil or water contamination on-site.	Possible health risks and cost of repairs incurred.	Intrusive site investigation should be undertaken prior to redevelopment to quantify these risks and collect information to inform redevelopment design. This should include chemical and geotechnical testing of soils, groundwater (if present) and gas monitoring in accordance with best practice and current guidance.	3	3	9
	Health & Safety	UXOs (unexploded ordnances) on site.	Detonations causing injury on-site and damage to property. Cost incurred for repairs and possible legal fees.	Site-specific detailed desk study is undertaken prior to any intrusive investigations or earthworks.	2	3	6
Construction	Ecological	Removal of invasive plant species causes spread.	Negative knock-on affects to local ecology, and cost of safe removal of plants if any begin to grow.	Remove of any invasive plant species with appropriate help to ensure biosecurity measures are followed.	2	2	4
	Resource	Scarcity of appropriate contractors, particularly in relation to building with hempcrete.	May require changing plan for materials to be used may be less environmentally friendly or introducing delays to project build.	Pre-booking contractors as far in advance as possible.	3	4	12
	Resource	Scarcity of appropriate materials possibly affected by supply chain issues.	Unforeseen delays in construction mid-build or costs to source materials elsewhere.	Aim to work with contractors who source materials (especially hempcrete) as locally as possible.	3	3	9
	Resource	Insolvency/bankruptcy of contractor companies.	Switching contractors causing delays and complications with project handover.	Ensure contractors have insurance-backed warranties or guarantees to cover any required cost of finishing/fixing work if contractor is unable to.	3	4	12
	Health & Safety	Contractors injured on-site.	More risk involved for specialised construction like when using hempcrete as this may cause a scarcity of manpower and cause delays. Also possible costs incurred.	Ensure contractors have appropriate insurance such as Contractors Liability Insurance. Check that contractors have proper health and safety procedures in place.	3	2	6
	Health & Safety	Third-parties injured as a result of construction.	Possible legal costs.	Ensure contractors have Public Liability Insurance.	3	1	3
	Construction	Extreme weather / local disasters.	Medium to large-scale damage to construction causing major repair cost and delays.	Ensure contractors have Contractors All Risk Insurance.	1	5	5
	Construction	Builders not building accurately to brief.	Possible breach of planning permission agreement, and repair costs and delays.	Ensure professional supervision throughout construction. Ensure contractors that have appropriate insurances, such as Construction Defect Insurance.	4	3	12
	Financial	Money runs out during the construction phase.	Delays and disruption of construction works potentially incurring additional cost.	Monthly budget reviews by the executive committee to ensure no overspending. Procurement process ensures any unforeseen expenses must go through rigorous approval process. The co-op will maintain a 6-month operational buffer. A review will be carried out monthly and protocol followed if the buffer is under threat.	3	5	15
	Construction	Compromised soil stability due to water content / tree roots in conjunction with building weight.	Damage to building structure from subsidence, settlement or heave.	Periodic tree pruning, regular checking and maintenance of drainage systems and downpipes.	2	4	8
Post-Construction	Financial	Insufficient liquidity in the co-op to meet liabilities when they are due.	Rent shortfalls, unexpected costs.	Robust modelling to predict when these threats are most likely. Reliable short, medium and long term cash flow management and forecasting. Emergency borrowing/fundraising procedures.	2	5	10
	Financial	Inflation increasing at unforeseen rate.	Increased cost of contractors, materials, lawyers and other professional support.	Use top end of assumptions/projections for cost inflation in our planning.	4	4	16
Any	Financial	Budget management issues - potential for POP Co-op to make erroneous decisions or come to incorrect conclusions.	Lack of long term experience, very few reference organisations.	Improving the budget and financial literacy of the finance steering group, seeking guidance from similar organisations, have a transparent and honest approach which flags issues promptly and seeks external support as appropriate.	3	3	9
	Financial	Capped Shared Ownership scheme not as	Ensure to engage with a very wide variety of		2	3	6
	Resource	POP Co-op members decide to leave group.	Scarcity of man-power may require an outreach for new members or incur cost to hire.	The cooperative is designed to outlast its current membership. When members leave they should provide adequate notice and the whole cooperative will follow the membership policy to recruit new membership. If a member leaves after making financial contributions new or other current members will have to buy the shares of the leaving member for their shares to be reimbursed. Shares sold before the completion of the development will receive no interest.	3	3	9

Appendix Item 4  
The Financial Model

POP Piggot Street Overview & Key Performance Indicators

This model does not constitute formal valuation advice and is provided for illustrative purposes only.

Scheme Name:	POP Piggot Street				Option:	4x 30% SO	
Date:	12/04/2022				Version No.:	GB LK v2	
community/housing london							
SCHEME SUMMARY	1 beds	2 beds	3+ beds	Total units	Present Value	Present Value per Unit	Indicative Net Present Value
Open Market Sale	1	1	0	2	£1,045,134	£522,567	£156,801
Shared Ownership	2	2	0	4	£1,232,264	£308,066	-£57,700
Shared Equity / Discount Sale	0	0	0	0	£0	£0	£0
Affordable Rent	0	0	0	0	£0	£0	£0
London Living Rent	0	0	0	0	£0	£0	£0
Social / London Affordable Rent	0	0	0	0	£0	£0	£0
Community Hall				0	£0	£0	£0
Retail				0	£0	£0	£0
Office				0	£0	£0	£0
Other: Use classes E&F				0	£0	£0	£0
TOTAL	3	3	0	6	£2,277,398		

DEVELOPMENT INCOME	Total	per Afford. Unit	Comparative Metrics
Residential	£2,277,398		£7,742/sqm Open Market Sale £5,525/sqm SO incl grant
Non-Residential	£0		
GLA Capital Grant	£160,000	£40,000	
CHF Revenue Grant	£0	£0	
Fundraising	£0	£0	
Other Grant	£0	£0	
Other Grant	£0	£0	
TOTAL Grant Income	£160,000	£40,000	
TOTAL Development Income (GDV)	£2,437,398		GIA: £8,293/sqm NIA: £8,093/sqm

DEVELOPMENT COSTS	Total	per Resi Unit	per Unit (all)	Comp Metrics
Land Costs (gross)	£31,000	£5,167	£5,167	
Land Cost (net)	£25,000	£4,167	£4,167	
Build Costs (incl contingency, demolition, prelims, abnormals, contractor fees, profit & overheads)	£1,788,577	£298,096	£298,096	GIA: £4,471/sqm NIA: £4,622/sqm
Planning CIL & Section 106	£0	£0	£0	
Professional and Other Fees	£249,616	£41,603	£41,603	14% build cost
Revenue Grant Repayment	£0	£0	£0	
Interest	£125,400	£20,900	£20,900	7% interest
TOTAL	£2,194,596	£365,766	£365,766	

DEVELOPMENT PROFIT	Total	per Resi Unit	per Unit (all)
Profit	£242,802	£40,467	£40,467
Profit (% of GDV)	10.86%		
Profit (% of Cost)	11.06%		
Peak Development Debt	-£1,824,164		

Development Phase KPIs	Target	Actual	Viability
Development Profit	0	£242,802	VIABLE
Operating Phase KPIs	Target	Actual	Viability
Debt Service Ratio in First Year	110%	118%	VIABLE
Debt Service Ratio stays above target for Loan Term	Yes	Yes	VIABLE
Long-term Borrowing	-£485,242	-£404,187	VIABLE
Borrowing Shortfall	£0	£0	VIABLE
IRR of development	1%	1%	NOT VIABLE

This table gives an indicative notion of scheme viability based on user metrics only.

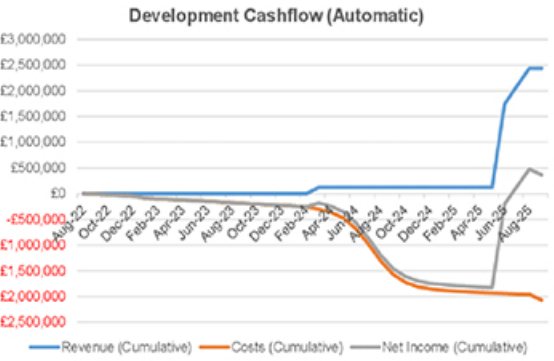
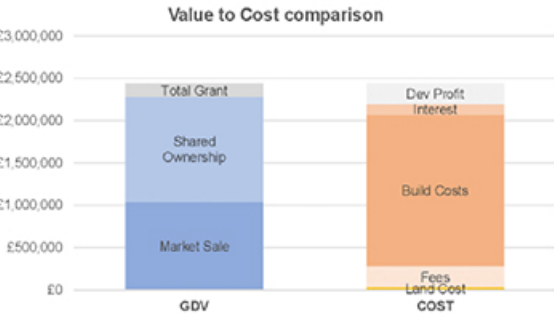
POP Piggot Street Operating Cashflow

This model does not constitute formal valuation advice and is provided for illustrative purposes only.

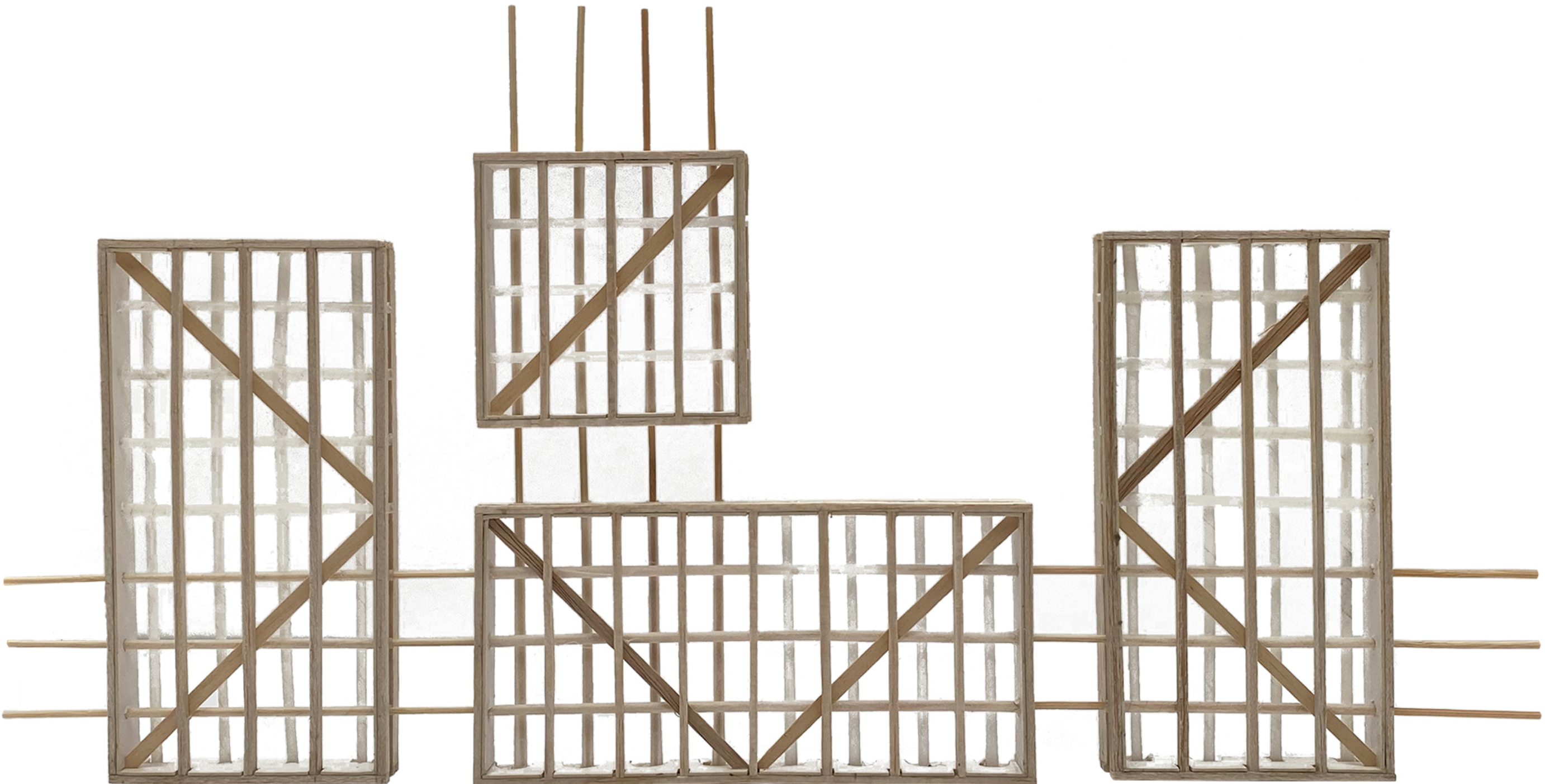
Operating Cashflow Assumptions	
Long-term CPI Inflation	2%
No. of Units	4
Average Gross Income Per Annum	£ 49,992
Average Net Income Per Annum	£ 49,644
CLH Organisational Charge per unit per annum	£ 150
Carry over Development Stage Surplus	Yes
Allow Early Loan Repayments	Yes

Borrowing Assumptions	
Borrowing Amount Needed	-£404,187
Additional Equity (inc. loanstock)	£0
Amount Outstanding	-£404,187
Operating Loan LTV	75%
Amount Which Can Be Borrowed	-£485,242
Borrowing Surplus/Deficit	£81,055
Amount Borrowed	-£404,187
Mortgage Payments per annum	-£22,670
Operating Loan Interest Rate	4%
Operating Loan Term (years)	30
Interest Only Operating Loan	No
Years Interest Only	0
Interest Only Payments	-£15,157

Tables show various calculations made by Gil Brandt, co founder of POP and in charge of making sure the schemes are viable.







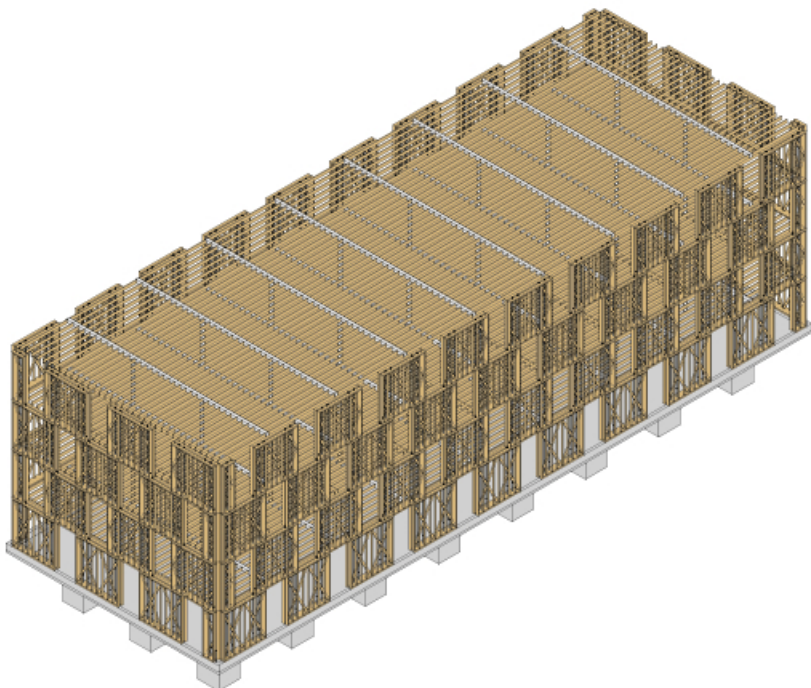
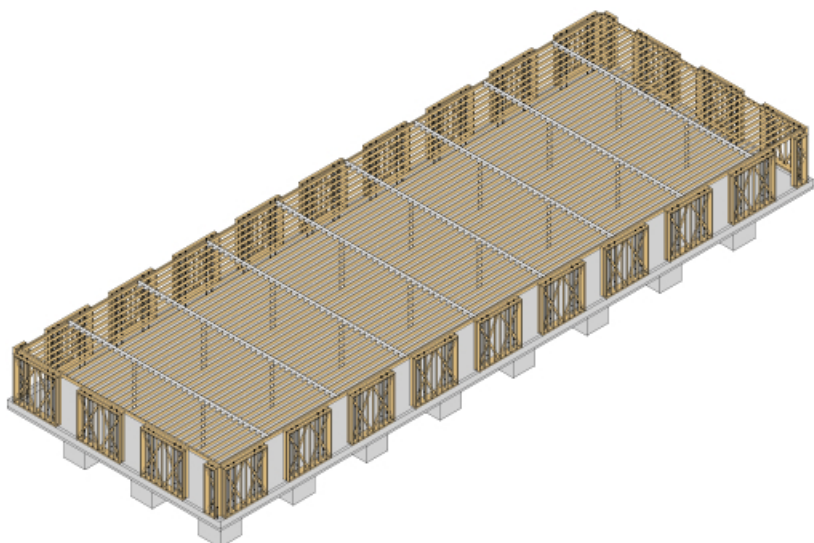
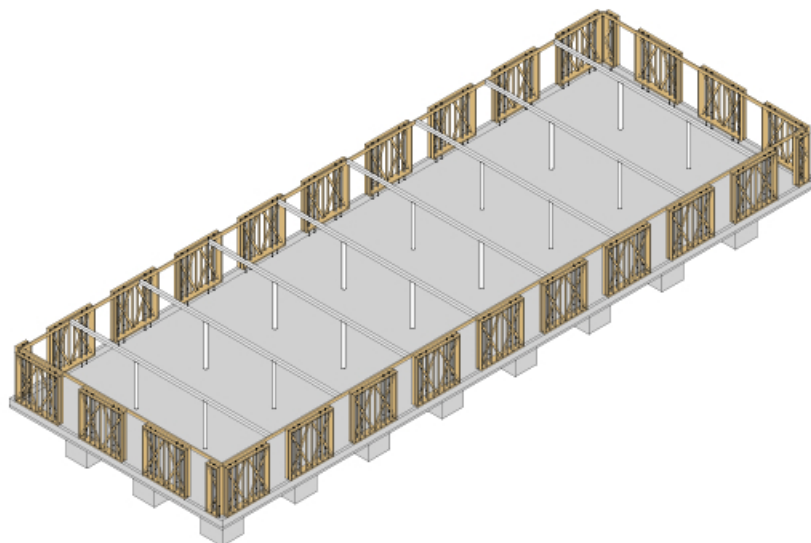
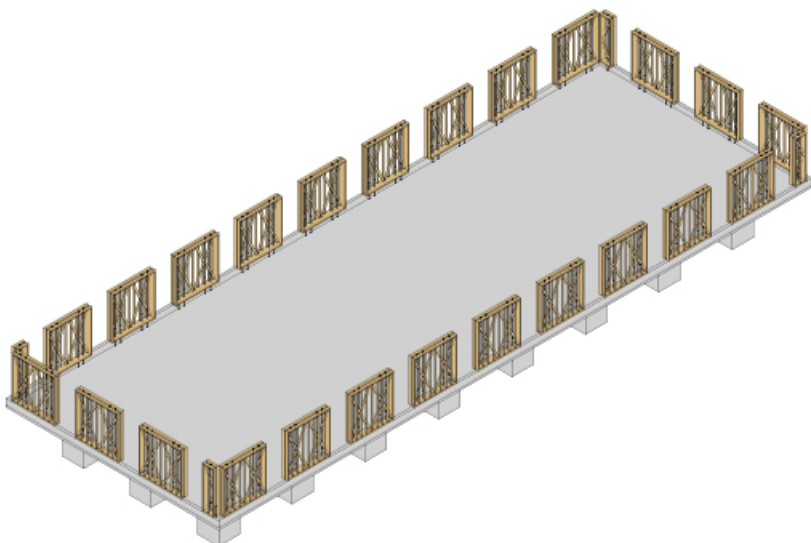
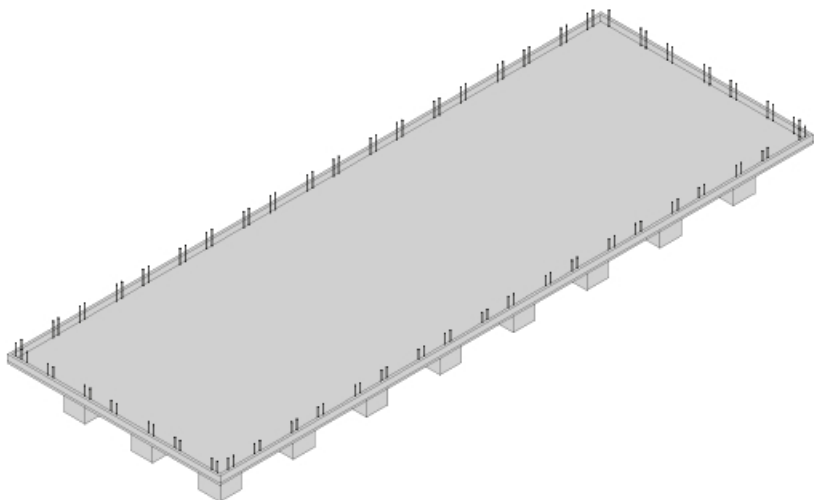
Concept model for modular hempcrete panel system.

Steel poles thread through pvc sleeves cast into the panel, locking the structure together.

The idea is to make assembly as quick and easy as possible whilst adding structural integrity at the weakest points (where the panels join together).

The bracing is necessary to maintain breath-ability where plywood would not.

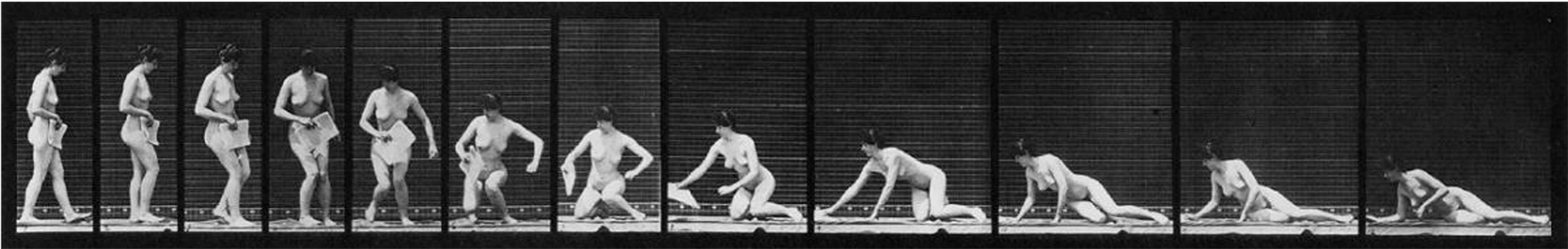




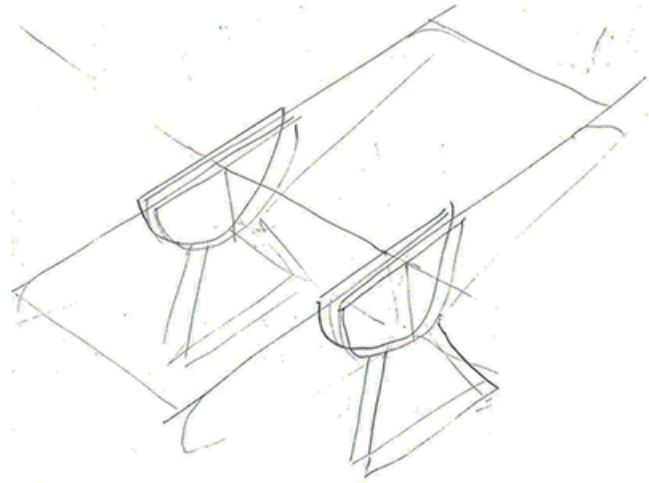
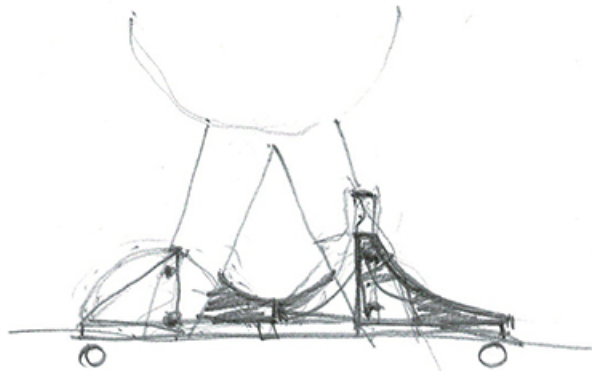
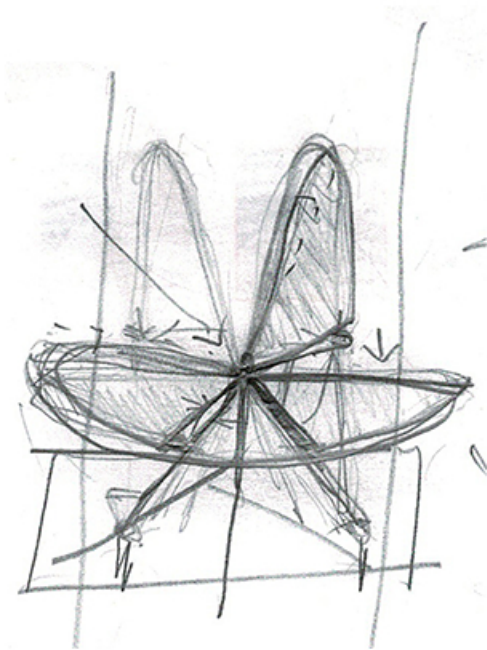
Following consultation with engineers it was deemed that the horizontal steels may not be necessary and that a key to making the system work on a practical level would be to make the panels the size of a typical story ie 3m. This along with the poles would make an extremely strong structure.

For this concept page I've made the panels uniform in size - 3mx3m and staggered to give 0.75m overlap allowing a single steel to thread through each side. This gives a 1.5m opening every 4.5m allowing light ingress/openings over 33% of the shell.

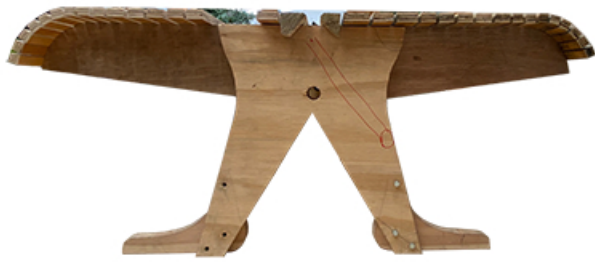




Some of the initial sketches showing the mirror concept and some initial feet ideas.

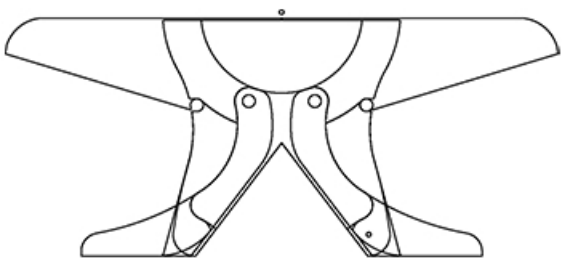
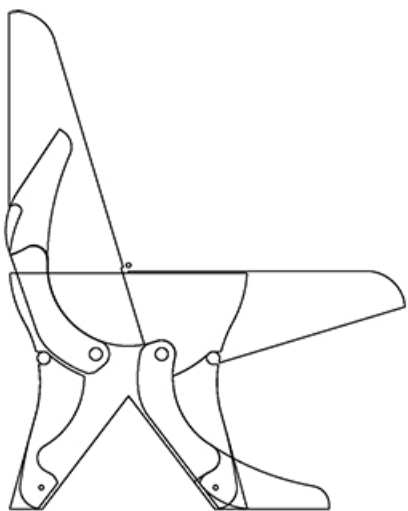
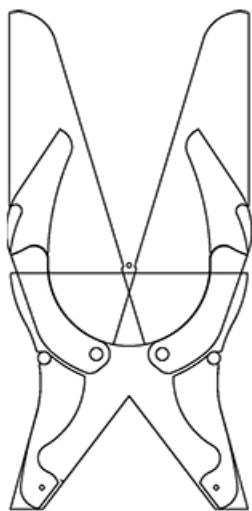


Photos of the 3rd prototype, folding works but the feet needed more refining. They need to change as the bench changes so that the bench can go flush against a wall when the backs up and fold down to provide stability when used as a bench or bed.





CAD showing the final design and its different elements - how they fold - fitting together like a jigsaw.



Photos of the bench in its different positions and showing the different uses



Photos showing the folding and locking mechanisms

