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ARCHITECTS



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STRUCTURES

The Integrated Design Team

What is the role of both the architect & engineer and how do you get the most out of their involvement through the project stages?

Jenny Chandela

Associate at AC Architects

Paul Chambers

Structural Design Engineer at AC Structures





The Design Process



Who do I need to work with?

Basic –

1. Architect or Architectural Designer
2. Structural Engineer

Might need –

3. Planning Consultant
4. QS
5. Heating Engineer
6. Project Manager
7. Landscape, lighting or interior designers
8. Principle Designer



Design process overview -

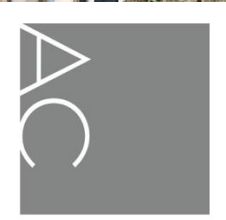
Stages

1. Initial Design & Site Overview
2. Planning Application & Initial Overmarks
3. Building Regulations & Calculations
4. Production Drawings
5. On site
6. CDM



Benefits of early engagement -

1. Site suitability
2. Building orientation/ siting
3. Refinement of brief
4. Consideration of building envelope
5. Integration of systems
6. Developing a relationship





Early Site Review





Initial Design

ACA Appointed

Stage 1

Stage 2

Stage 3

Confirmation of brief - including project performance

Develop & review of design variations

Consideration of other systems

Design with consideration for construction method

Outcome: agreed design approach that meets client brief

Site overview

ACS Appointed

Stage 1

Stage 2

Stage 3

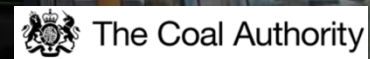
Preliminary desktop evaluation of Site

Specification for site investigation & coordination of third-party testing

Site visit / inspection

Review of site investigation findings in report format

Outline recommendations and next steps



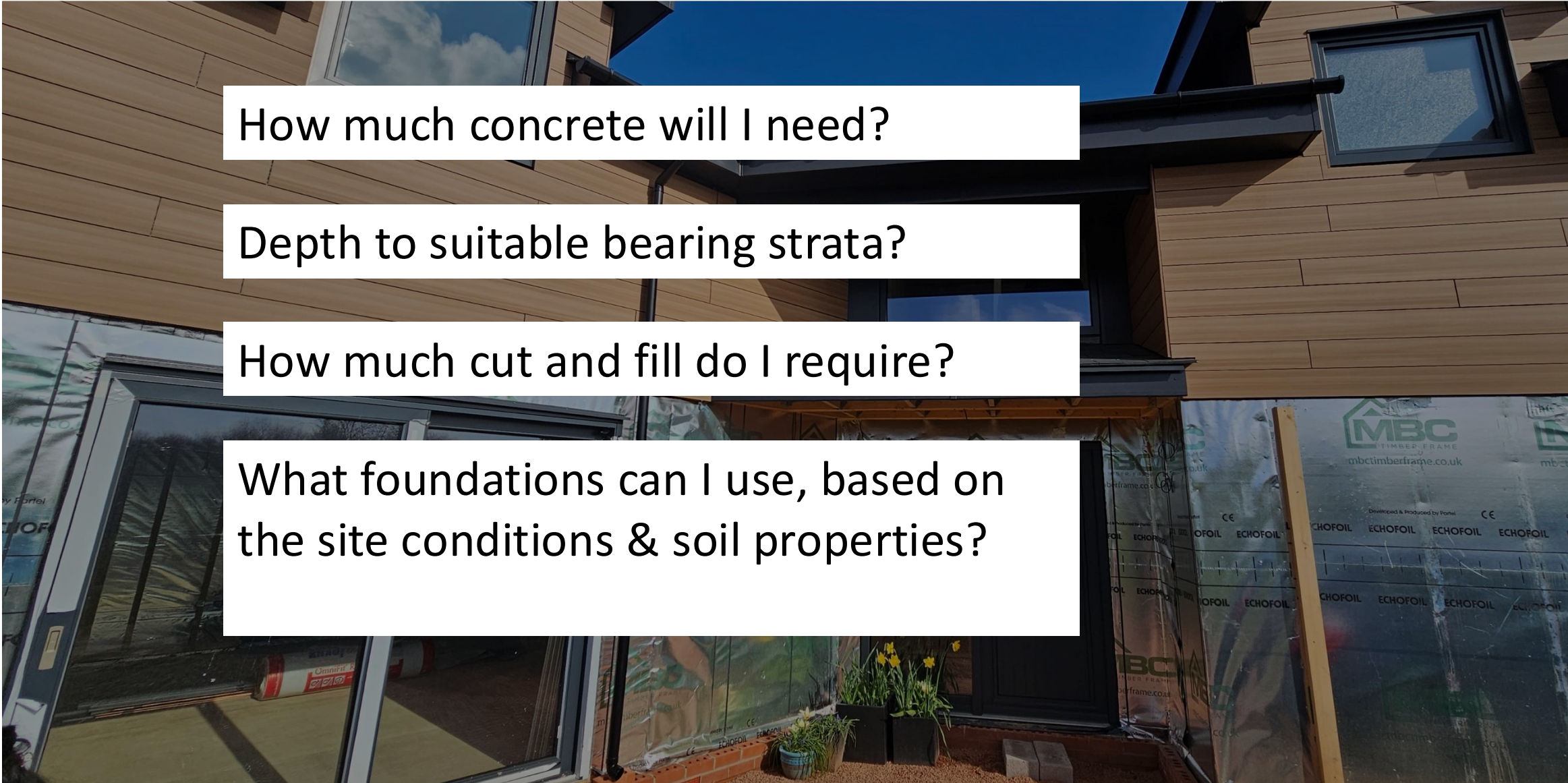
Understanding ground & cost

How much concrete will I need?

Depth to suitable bearing strata?

How much cut and fill do I require?

What foundations can I use, based on the site conditions & soil properties?



Trial Pit & Borehole locations



Site Investigation

In order to provide accurate foundation design and to satisfy planning conditions Phase I and Phase II Site Investigation report is required. We are happy to coordinate the appointment of geotechnical engineers to provide assessment of the plot's ground conditions. We have indicated the possible location of boreholes & trial pits. Locations have been set out in order to avoid the footprint of the existing building and allow progression of investigation.

Trial Pit TP1 to expose Tank foundation bearing depth to allow design of the proposed dwelling house.

Borehole ● Trial Pit ■

Flood risk

The plot is in flood zone 1. The development does not a flood risk assessment as part of a planning process.

What flood zone 1 means

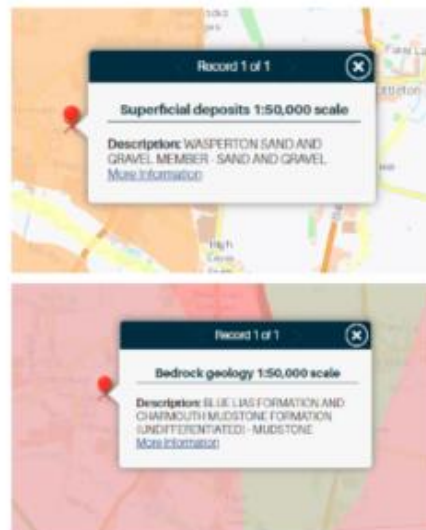
Land within flood zone 1 has a low probability of flooding from rivers and the sea.

Most developments that are less than 1 hectare (ha) in flood zone 1 do not need a flood risk assessment (FRA) as part of the planning application. The site you have drawn is 0.1 ha.



Desktop Geology Report

According to BGS geotindex information there is no artificial deposit present. Sand and gravel overlaying mudstone formation. Confirmation trial pit required to confirm ground conditions.



Borehole records

No current borehole records on site or located within a close proximity.

UK radon

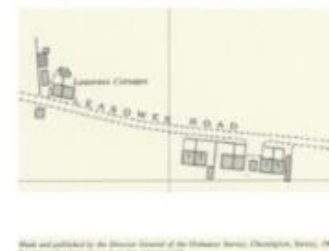
The property boundary falls into bands of elevated radon potential of 1-3% and therefore check for potential radon presence to be carried out. The additional design input is potentially required for additional radon protection measures.



Existing Plot

The existing buildings and tank indicated on a present maps and architectural drawings have been found to be not present on a historical Ordnance Survey maps up to year of 1965. Historic logs do not suggest any other use prior agricultural & existing buildings and tank.

Information provided by the client for the use of the tank was to be shallow surface water tank container. The use of the tank and its depth to be confirmed during the site investigation.



Coal authority report

The property is located off the coalfield and therefore does not require a coal report or mining considerations during foundations design.

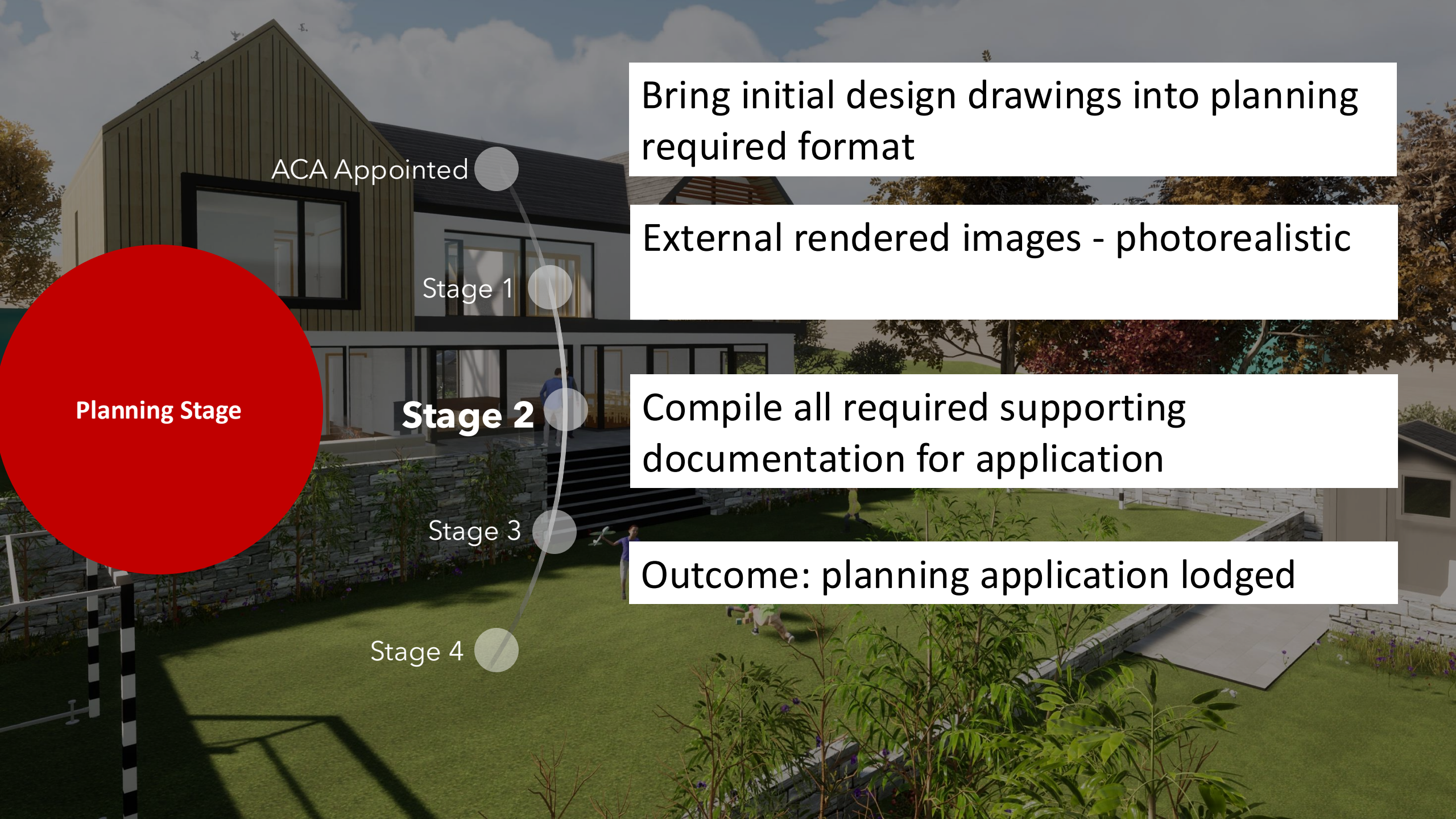


We can confirm your boundary is:

- located off the coalfield
- not within the Cheshire Brine Compensation District

Existing foundations

The existing building and tank foundations to be grabbed and removed from the site prior to commencement of works.



Planning Stage

ACA Appointed

Bring initial design drawings into planning required format

Stage 1

External rendered images - photorealistic

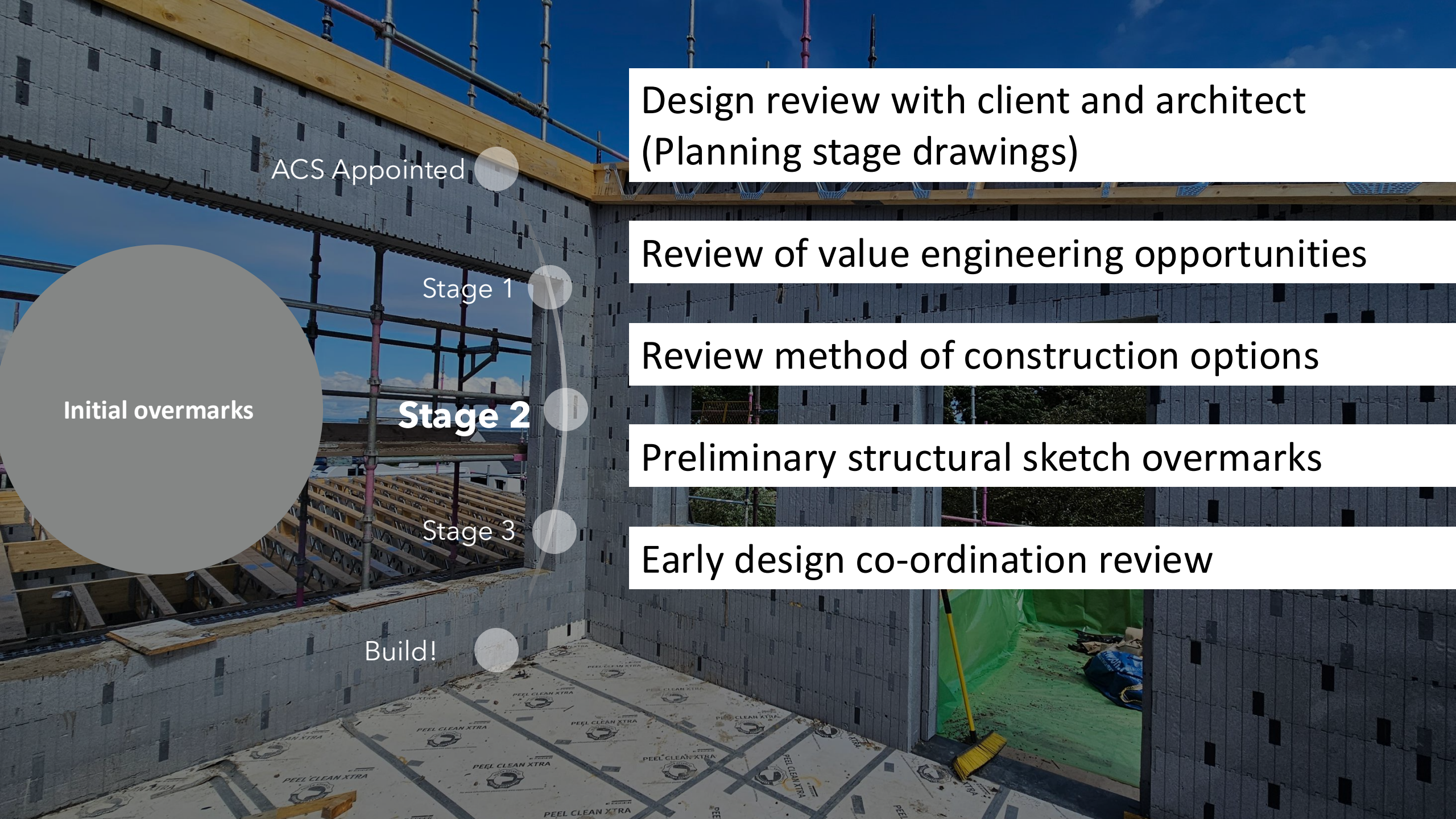
Stage 2

Compile all required supporting documentation for application

Stage 3

Outcome: planning application lodged

Stage 4



ACS Appointed

Design review with client and architect
(Planning stage drawings)

Stage 1

Review of value engineering opportunities

Review method of construction options

Initial overmarks

Stage 2

Preliminary structural sketch overmarks

Stage 3

Early design co-ordination review

Build!



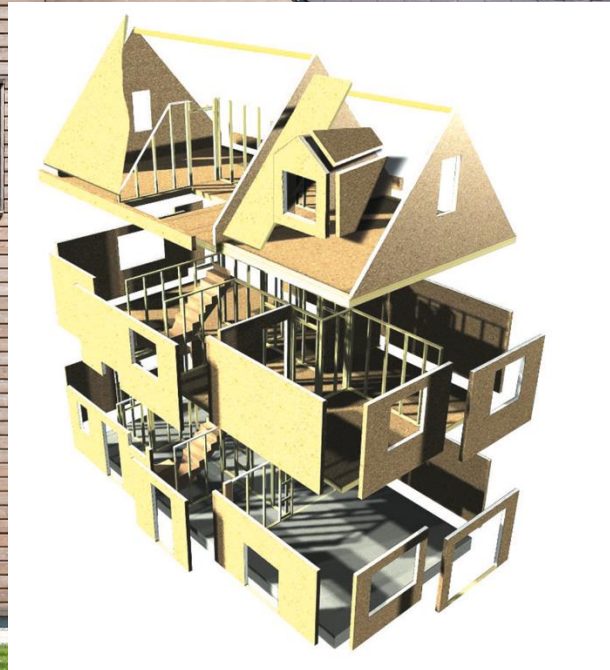
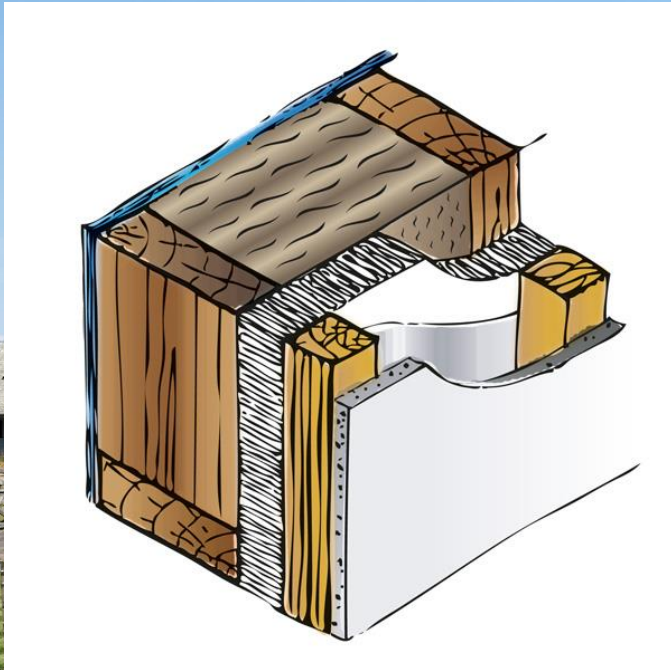
Early Design Review



TIMBER FRAME

SIPS

ICF



Build type



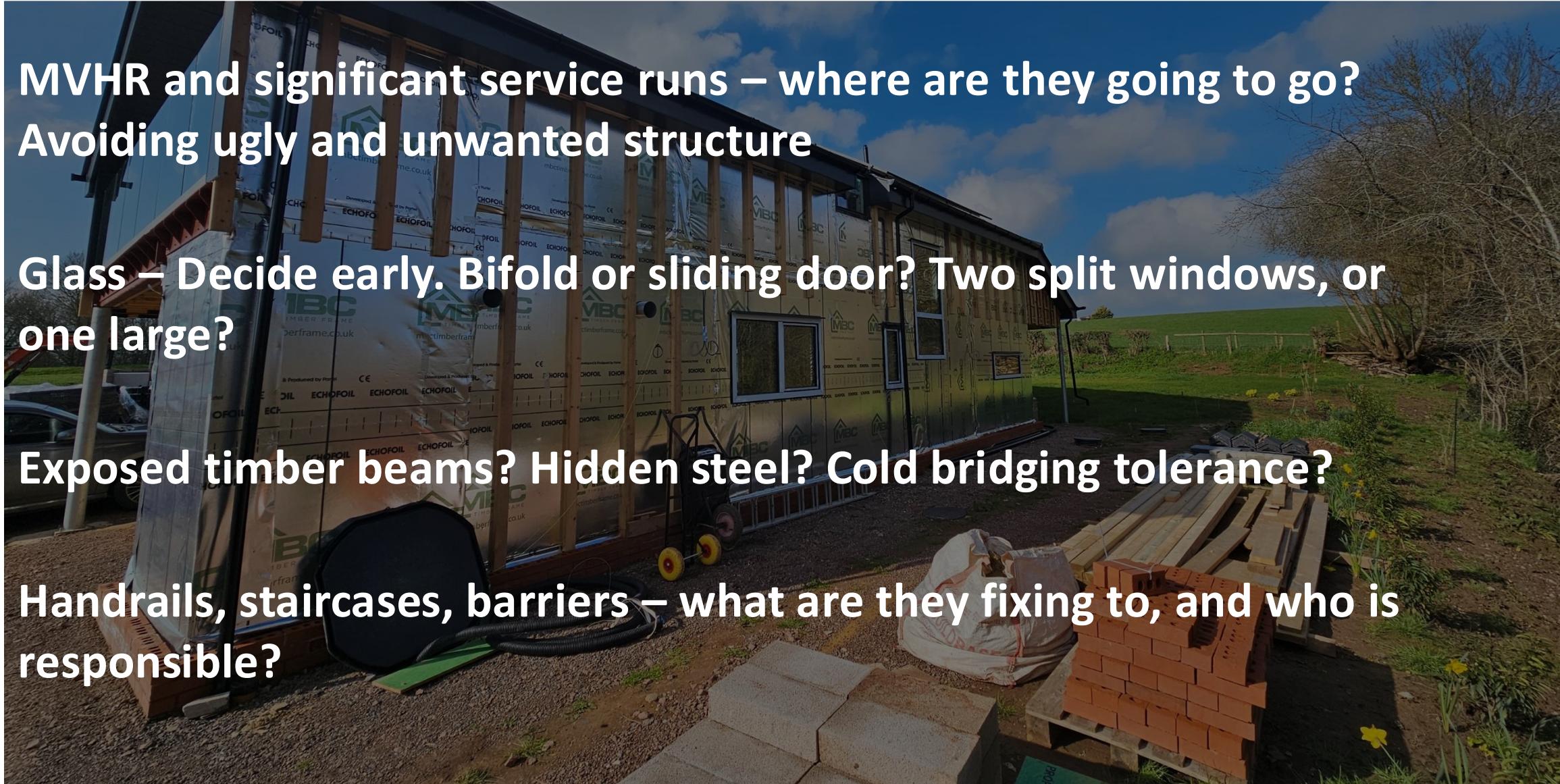
Collaboration

MVHR and significant service runs – where are they going to go?
Avoiding ugly and unwanted structure

Glass – Decide early. Bifold or sliding door? Two split windows, or one large?

Exposed timber beams? Hidden steel? Cold bridging tolerance?

Handrails, staircases, barriers – what are they fixing to, and who is responsible?



Sto Rend Flex System on Ventec Carrier Board & ICF to be installed strictly in accordance with manufacturer written instructions and requirements and leaving 50mm ventilated cavity to 217mm SIPS panel - with Tyvec Re... and approved internal Tyvec Airguard or similar and approved re... vapour barrier - all junctions at SIPS panels to be securely lapped before the membrane is... 12.5mm Gyproc Wallboard Ten (10kg/m2) on 25x50mm battens.
External walls within 1m of boundary to achieve medium duration fire resistance.

Preformed powder coated aluminium cill with RAL colour to match Alu-clad windows and doors.
Preformed powder coated aluminium cill with RAL colour to match Alu-clad windows and doors.

Connection between SIPS structure & ICF to be as per structural engineer specification and details.

Skirting Board to Clients Specification
Plasterboard to be dressed to head of Skirting with 10mm Gyproc Styletrim Shadow Gap detail

Kingspan K18 insulated plasterboard.

10mm Engineered timber ceramic tile
performance acoustic insulation (10-60 kg/m3). Finished with 2 no. layers of 12.5mm Gyproc Wallboard Ten (10kg/m2) to provide... insulation value of 43Rw met. Fixed using... resilient bar acoustic ceiling system (16mm depth) at 400mm ctt.

Air tight sealing tape and lapped up and over int and external face of SIPS panel, at cill and head. All other membranes... to provide air tight construction.

Kingspan K18 insulated plasterboard.

15mm laminated glass sheet as protective barrier to be 50mm from... with BS 6399-1:1996.

Primary structural steel section back to steel section.

10mm Glasroc plasterboard as edge trim forming shadow gap to ceiling junctions.

10mm Engineered timber ceramic tile with plated UHF system over min 25mm rigid insulation.

22mm chipboard with high performance acoustic insulation (10-60 kg/m3). Finished with 2 no. layers of 12.5mm Gyproc Wallboard Ten (10kg/m2) to provide... sound insulation value of 43Rw met. Fixed using InstaCoustic RB16 resilient bar acoustic ceiling system (16mm depth) at 400mm ctt.

Rigid insulation to be packed tight between 300 JLI full depth between... Tyvec Re... approved re... performing breather membrane. Min 50mm ventilated cavity to be provided to the underside of the insulation.

Sto Rend Flex System on Ventec Carrier Board to be installed strictly in accordance with manufacturer written instructions and requirements in colour as specified to allow min 50mm of ventilation to the underside of insulation.

Technical review & documentation of construction methods

Integration of S/E design information

Confirmation of heating requirements, energy performance & SAP calc

Discharge of planning conditions

Outcome: building control application lodged

Detailed Design

Stage 1

Stage 2

Stage 3

Stage 4

Build

1:10 DETAIL 04

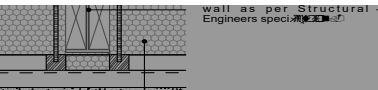

1:10 DETAIL 06

1:10 DETAIL 05

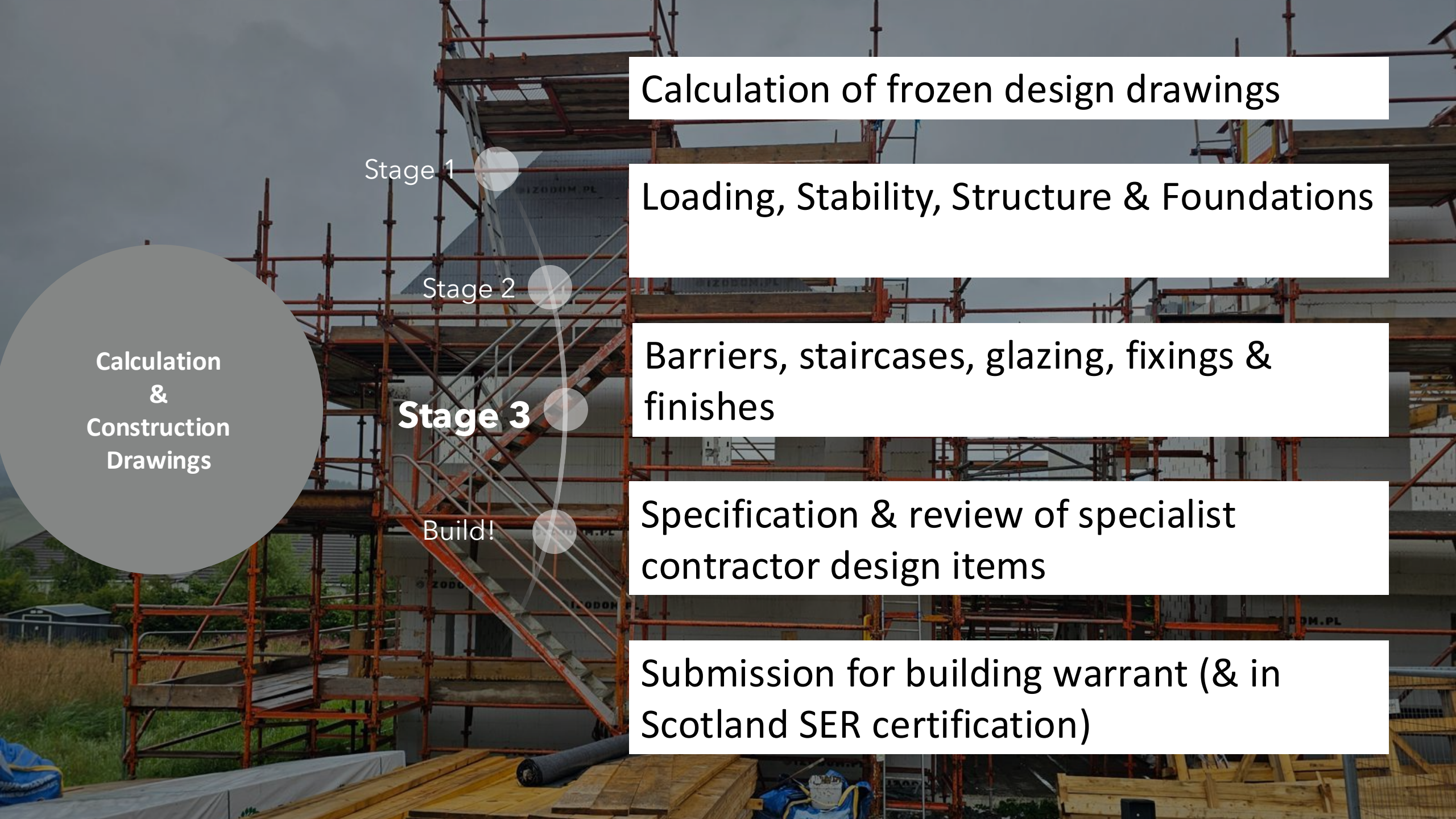
11.03.17	Amendments per building control report dated 26.01.17	SPH	15.03.17	A
SUFFIX				

1:10 DETAIL 21 STRUCTURAL STEELWORK GENERAL

Allan Cornield Architects
The Self Build Experts

		<p>wall as per Structural Engineers spec</p>	
		<p>requirements.</p> <p>Rigid insulation packed around structural steel/timber to have resistance min 1.14 (m2K)/W to reduce cold bridging.</p> <p>min 25mm</p> <p>STO Edge Protection Pro. Ventilation pro. Flex System on Ventec Carrier Board to be installed strictly in accordance with manufacturer written instructions and requirements in colour as specified by the client.</p>	
1:10 DETAIL 06		1:10 DETAIL 05	

Details Walls/General STAGE 3 DETAIL DESIGN DEVELOPMENT			
SCALE @ A2 1:10	DATE 06/12/16	DRAWN IP	CHECKED ACC
No. 187 - BW 13			
REV. B	<div>LEWIS HOUSE, UNIT 213, EAST WAY HILLEND IND EST, DUNFERMLINE FIFE, KY11 9JF, SCOTLAND</div> <div>t - 01383 737101 e - info@acarchitects.biz w - www.acarchitects.biz</div>		



Calculation of frozen design drawings

Stage 1

Loading, Stability, Structure & Foundations

Stage 2

Barriers, staircases, glazing, fixings & finishes

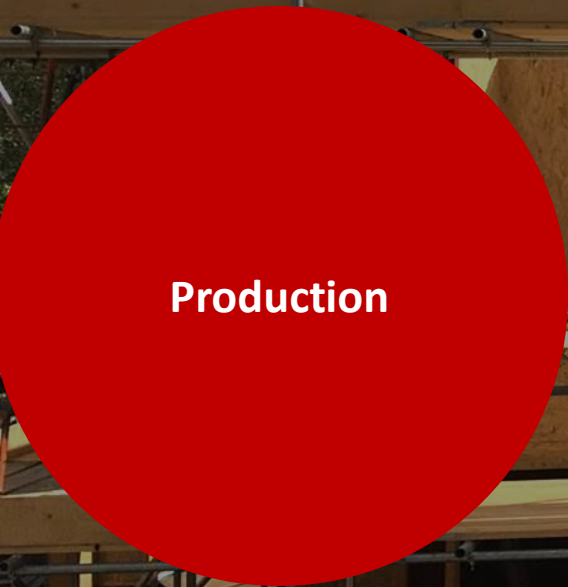
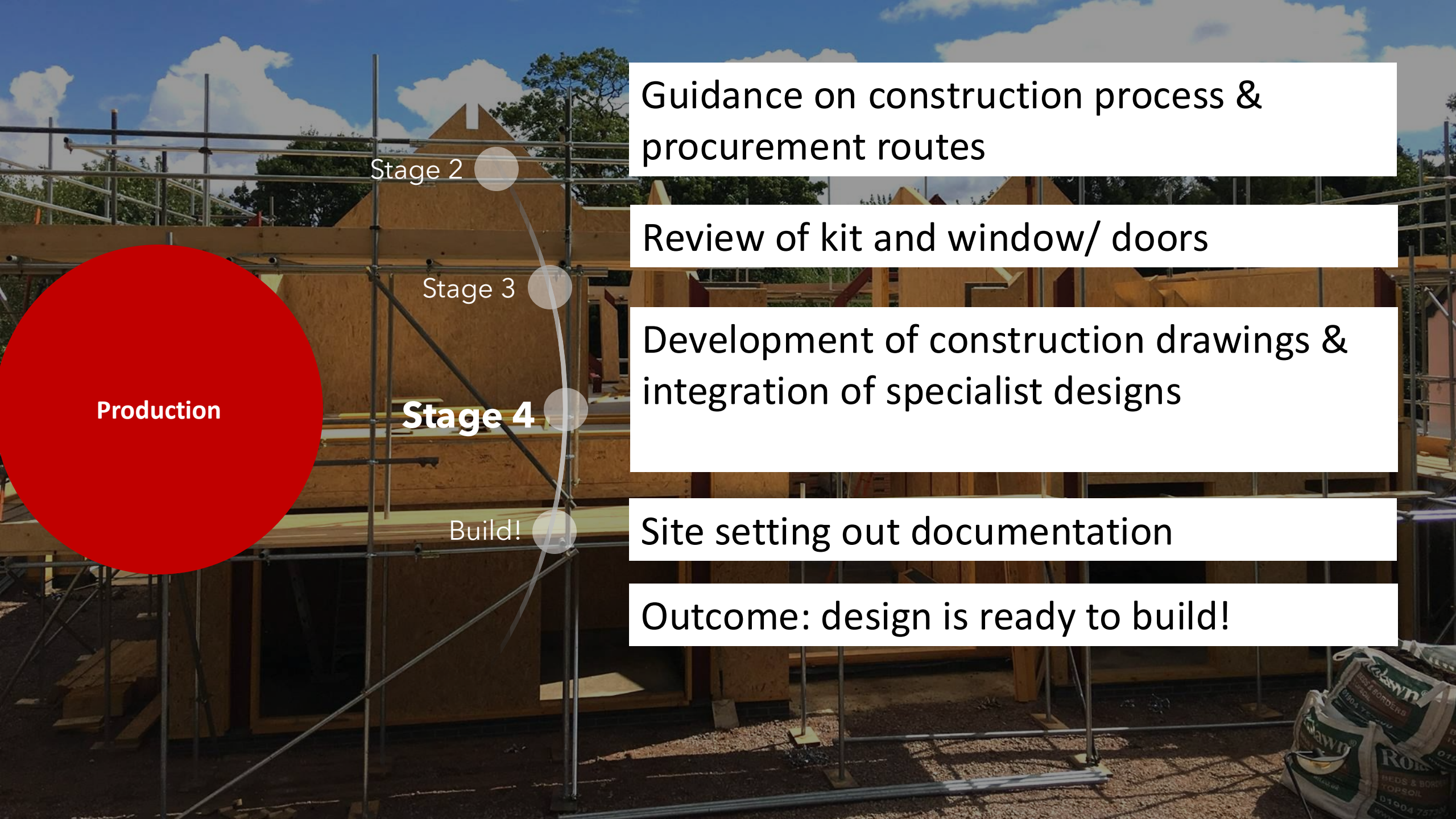
Stage 3

Specification & review of specialist contractor design items

Build!

Submission for building warrant (& in Scotland SER certification)

Calculation
&
Construction
Drawings



Stage 2

Stage 3

Stage 4

Build!

Guidance on construction process & procurement routes

Review of kit and window/ doors

Development of construction drawings & integration of specialist designs

Site setting out documentation

Outcome: design is ready to build!



On-Site

Stage 3

Stage 4

Build!

Confirmation that all conditions have been released

On site assistance

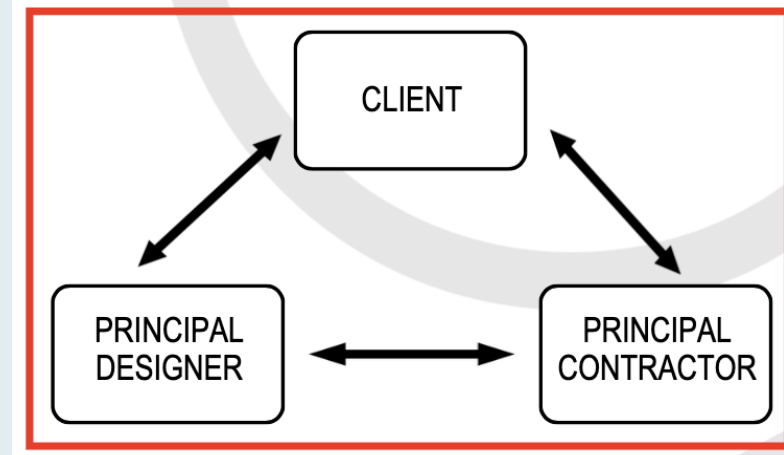
Site visit / checkup

CDM 2015-

The **Client** has overall responsibility for the successful management of the project and is supported by the **Principal Designer** and **Principal Contractor** in different phases of the project.

The Principle Designer will:-

1. Provide pre-construction information to appointed designers and Principal Contractor
2. Assist the client in provision of pre-construction information
3. Gather information for the Health and Safety File
4. Liaise with the Principal Contractor
5. Update to CDM Matrix where design work is carried out after the construction phase has commenced



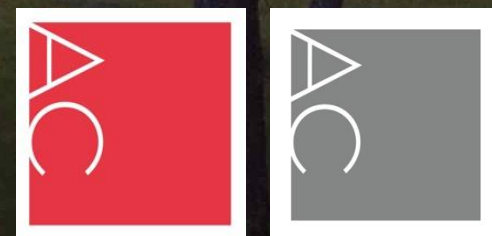


Appointing your team





Portfolio of works





Experience





Ability to listen





Chemistry and trust





Ability to visualise



Top tips on appointing your design team

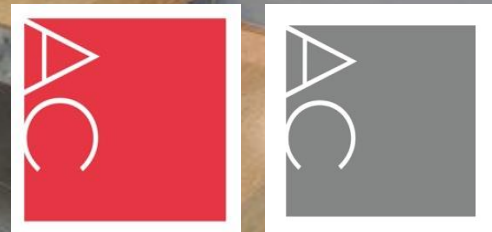
1. Interview each profession required **ask for references.**
2. Provide your **detailed brief.**
3. Obtain **written quotes** & ensure they are **fixed fees!**
5. Speak to professionals are **Self Build specialists**, these professionals will be part of your life for at least 18 months, so **you need a good relationship too!**
6. Don't fight costs down **too much**; you want a good service – they are a business after all!
7. If the relationship turns sour, **be aware of your options for parting ways!**





TOP TIPS

1. Do your research about potential sites.
2. Develop your brief early on and commit to it.
3. Be the best self-builder or client you can be!
4. Prioritise your goals and integrate from the outset.
5. Hire the right team to design in more complicated features.





NSBRC Festival of Sustainable Homes
16 & 17 May 2025, NSBRC

AC Architects, Trade Village Stand 63
www.acarchitects.biz

VR Demos
Everyday at 11.00 & 14.30, TV Stand 63

Self Build Seminar
Friday 13th June, Dunfermline
Friday 4th July, NSBRC

