

2441

Sunte House & Outbuildings: Initial Structural Assessment

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GARDEN WALL & PROPOSED SWIMMING POOL

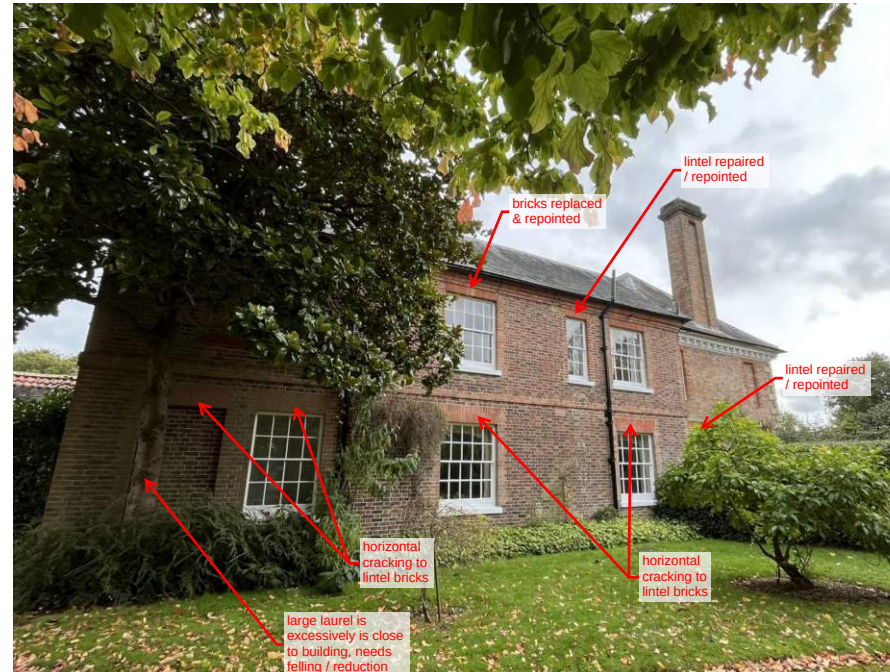
11.0

LISTED WALLED GARDEN

1.1 Photographic Survey: External



1 South Elevation



2 West Elevation

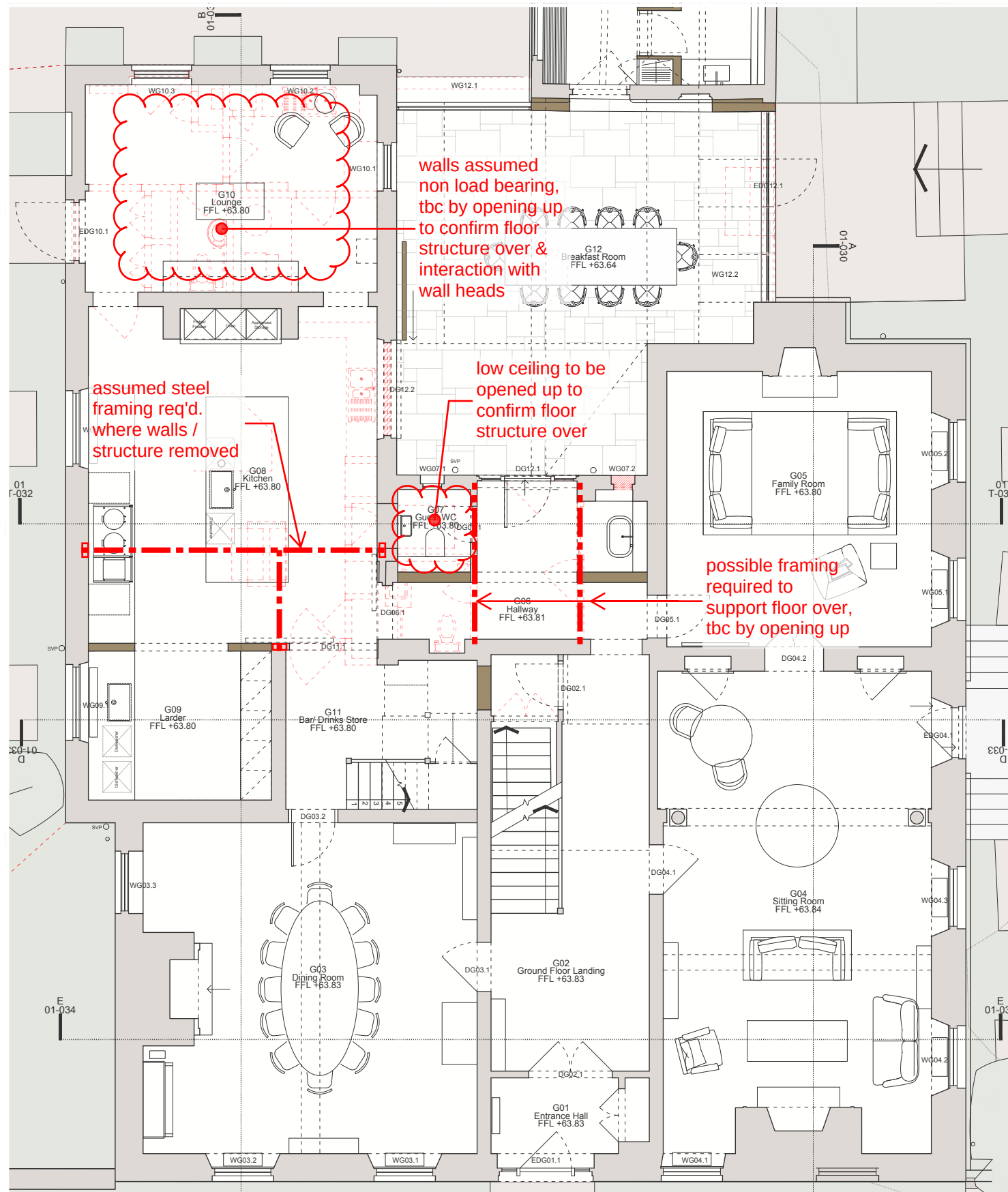


3 East Elevation



4 Composite North Elevation

1.2 Initial Structural Assessment & Design Drivers: GF



External Elevations

440mm solid brick walls to original construction, 330mm solid brick walls to late 19th Century addition.

Structural Fabric Condition

Generally in good condition with some areas requiring repointing

- vegetation to be carefully cut back, trees growing too close to building to be pruned, close proximity can cause damage to windows, paintwork, and roof eaves carpentry etc due to root invasion and also physical damage in high winds
- horizontal cracks to arch lintels requiring repair: 1no. east elevation, 3no. to south elevation, 3no. to west elevation
- vertical crack to first floor lintel on west elevation requiring repair
- previous repairs to arch lintels: 1no. on south elevation, 3no. on west elevation, 4no. on north elevation
- heavily spalled brick under eaves on SE corner of south elevation

Foundations

- assumed large sandstone block base course as seen in cellar area, or corbelled brick footings on assumed sandy soils below, to be confirmed by Site Investigation

Ground Floor

Internal Walls

- altered historically, assumed load bearing pier in kitchen to be removed, will required steel framing
- wall heads to be opened up to confirm interaction with floor over and to verify if currently load bearing

1.3 Photographic Survey: 1st Floor



1 Boxed out downstand beam & column



2 Main & secondary stair



3 Main stair



4



5



6



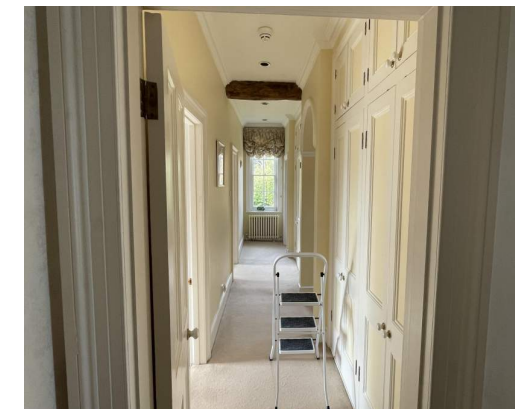
7 Downstand timber beam



8 Downstand timber beam



9 Downstand timber beam

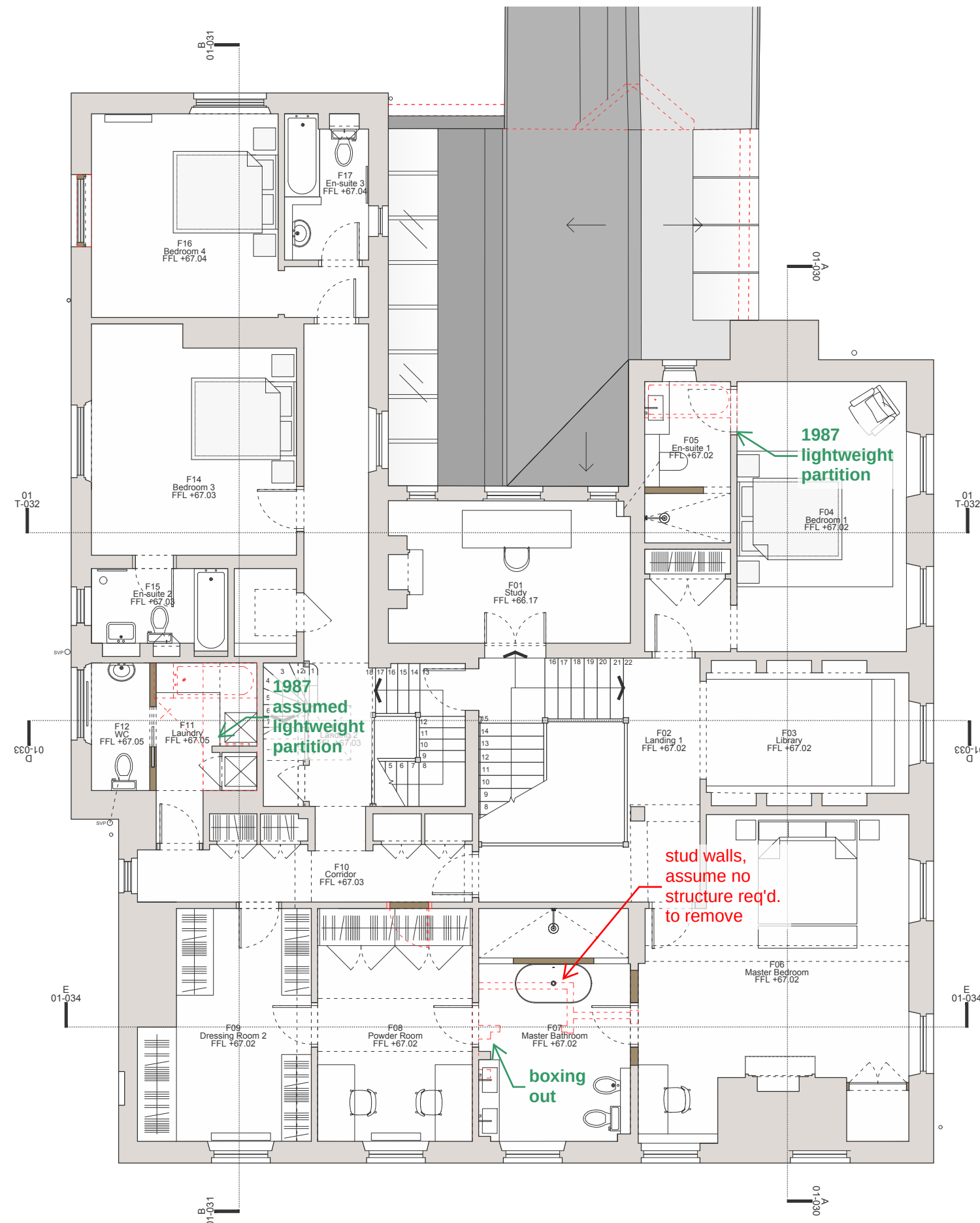


10 Downstand timber beam



11 Non-load bearing partition built to underside of downstand timber beam

1.4 Initial Structural Assessment & Design Drivers: 1st Floor

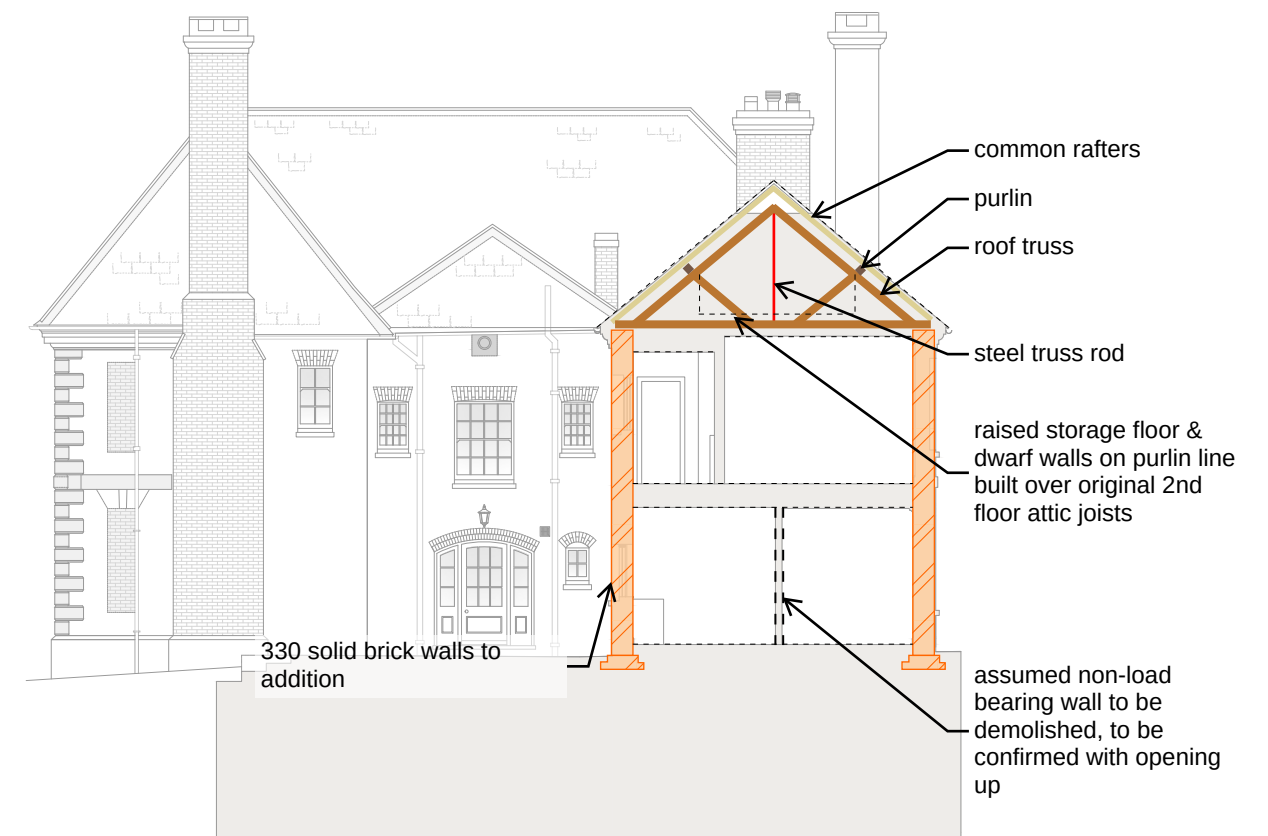


First Floor

Heavily altered historically with considerable remodelling in the late 1980s.

Internal Walls

- steel framing required where load bearing walls removed
- areas to be opened up to confirm if partition line in C19th addition supports roof trusses over, if so steel framing required where walls to be removed



C19th Addition Section

1.5 Photographic Survey: 2nd Floor



1 Late C19th addition roof truss



2 Purlin & truss



3 Typical addition roof framing



4 Original early main house roof framing



5 Staggered butt purlin roof with oak pegged tenons



6 Principle rafters, purlins & ties partially visible below plaster



7



8 Hip truss framing



9 Areas of excessive decay and infestation particularly to sap wood sections of timbers detailed condition survey of attic timbers required by infestation specialist!



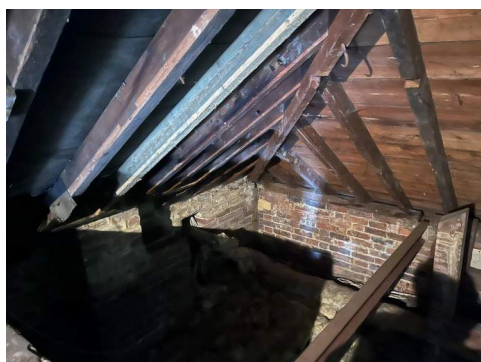
10 Underside view of severely depleted timber section



11 Illustrating varied surface conditions of timber elements, signs of natural drying splits, decay and infestation



12 Full timber sections not visible, ideally during works all plaster soffits to be fully stripped to allow full inspection & treatment / repair of all primary framing



13 C19th central roof in good condition



14 Suspected support structure to early clock



15 Original external wall parapet with later roof addition beyond



16 C19th infill section adjoining existing

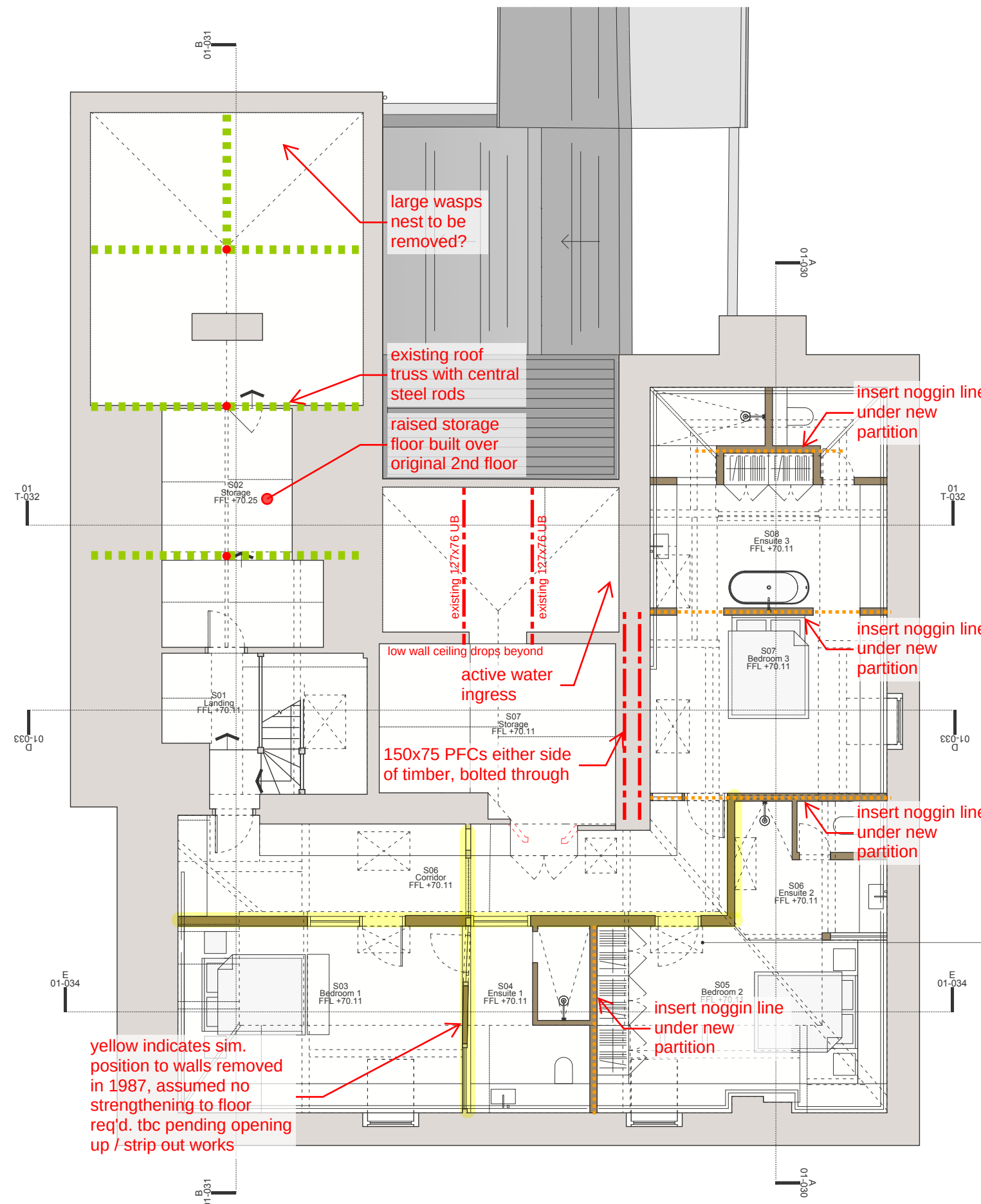


17 Previous strengthening with PFCs



18 PFC either side of timber

1.6 Initial Structural Assessment & Design Drivers: 2nd Floor



Second Floor

Full detailed condition survey of attic timbers required by conservation timber decay and infestation specialist.

Structural Fabric Condition

- floorboards in a poor condition: loose, gaps, unstable
- lift all floor boards to enable full survey of second floor framing and to facilitate installation of new noggin lines supporting sill rails of new lightweight partitions, also to enable thorough refixing and sympathetic patch repairs of floorboards

Internal Walls

- noggin lines assumed under new lightweight timber partitions that don't align with historic partitions shown in 1987 record drawings

1.7 Initial Structural Assessment & Design Drivers: Roof

Roof

Full detailed condition survey of roof timbers required by conservation timber decay and infestation specialist, extent of opening up to be confirmed with Architect.

Structural Fabric Condition

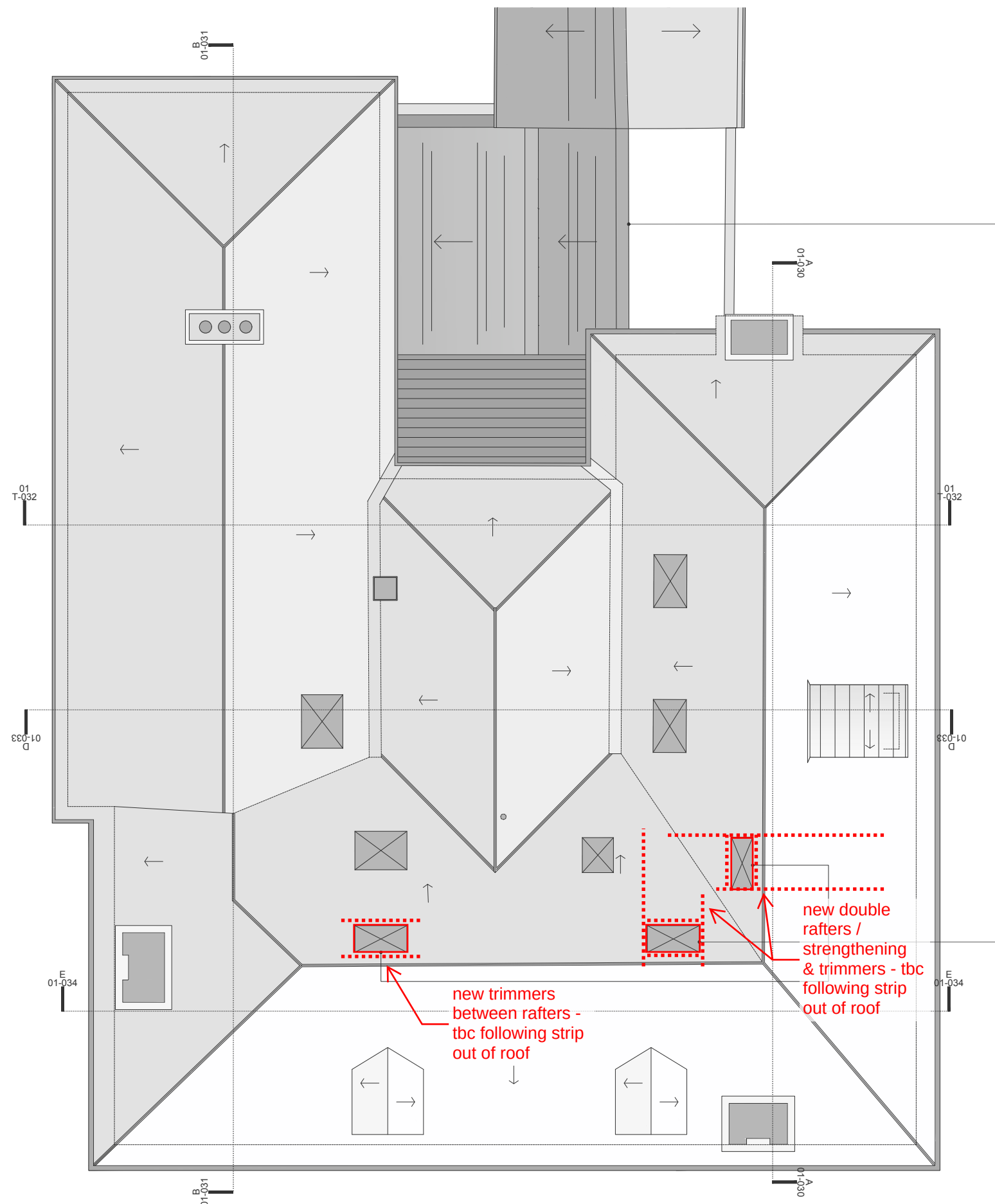
- generally in a good condition though with widespread historic woodworm infestation
- staggered butt purlin with principle rafters, ties and purlins partially visible below plaster
- water ingress to C19th central infill roof space, requires urgent repair to be made weathertight

Internal Walls

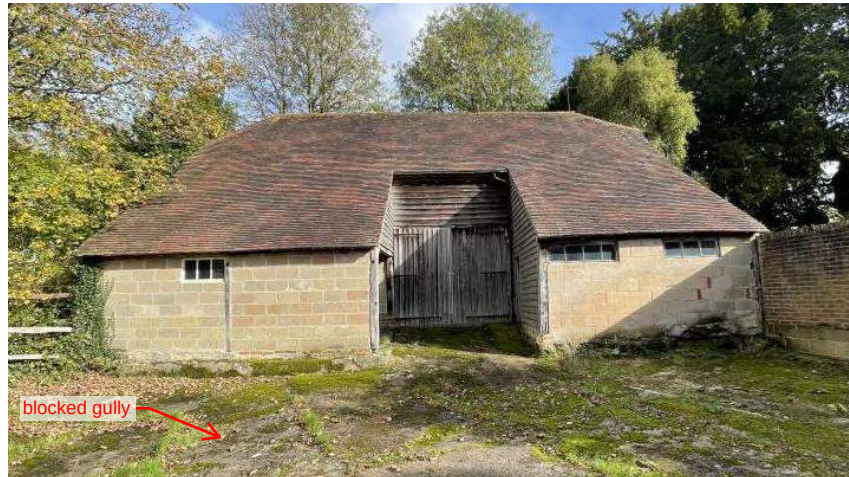
- lines of head rails to new partitions will require noggin lines fixing between existing rafters and ceiling joists

Roof

- new rooflights likely to require double rafters and trimmers between rafters, to be confirmed following opening up



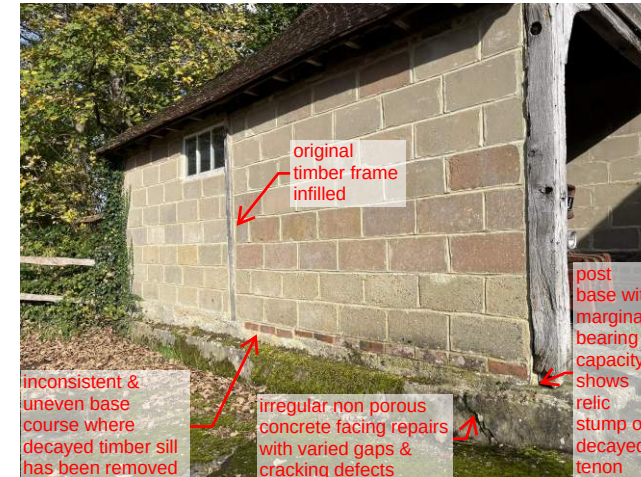
2.1 Photographic Survey: External



1 Front elevation



2 Rear East Elevation - concealed by vegetation, planting is too close to building face



3 Front Elevation



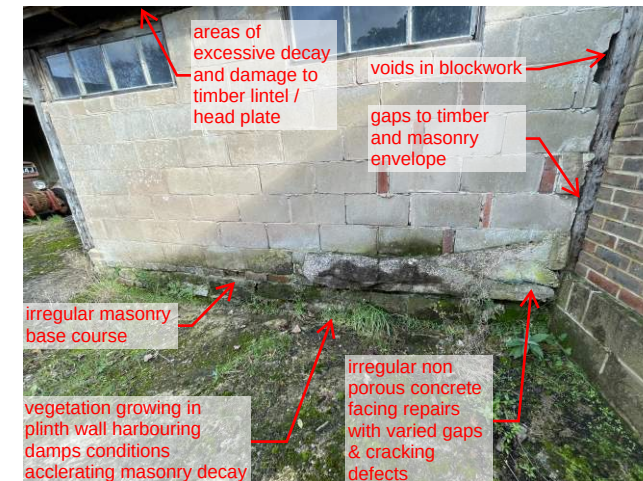
4 Open store at front of barn



5 Closed store at front of barn



6 Closed store front elevation



7 Closed store front elevation



8 Side elevation



9 Side elevation

2.2 Photographic Survey: Internal



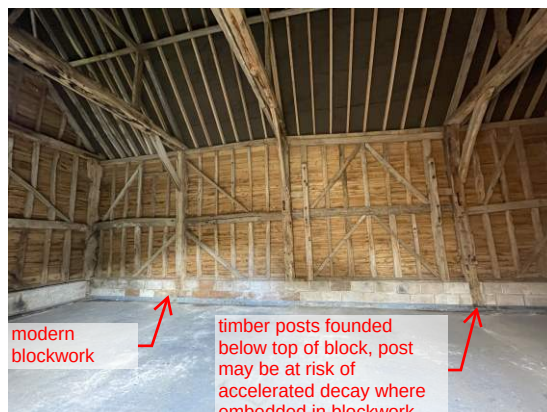
1 Front store



2 Barn entrance



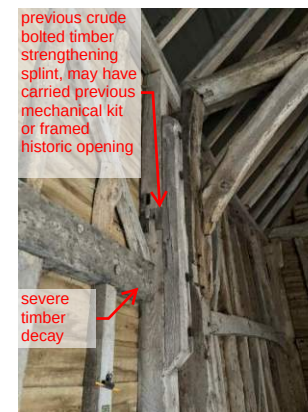
3 North gable wall



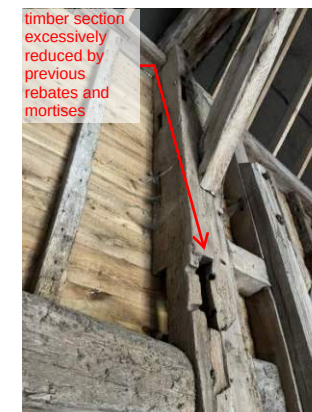
4 East wall



5 East & south gable walls



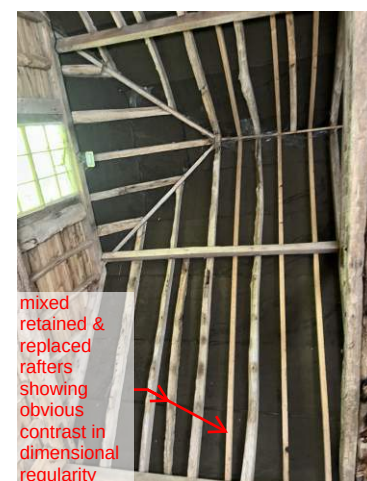
6 East wall



7 East wall



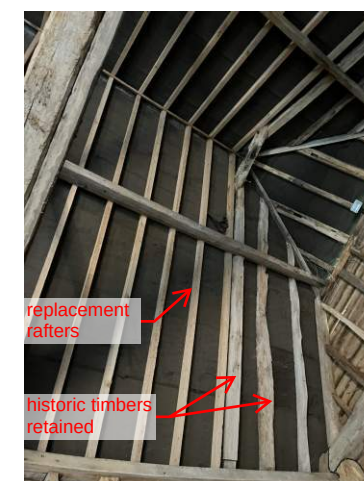
8 South gable wall



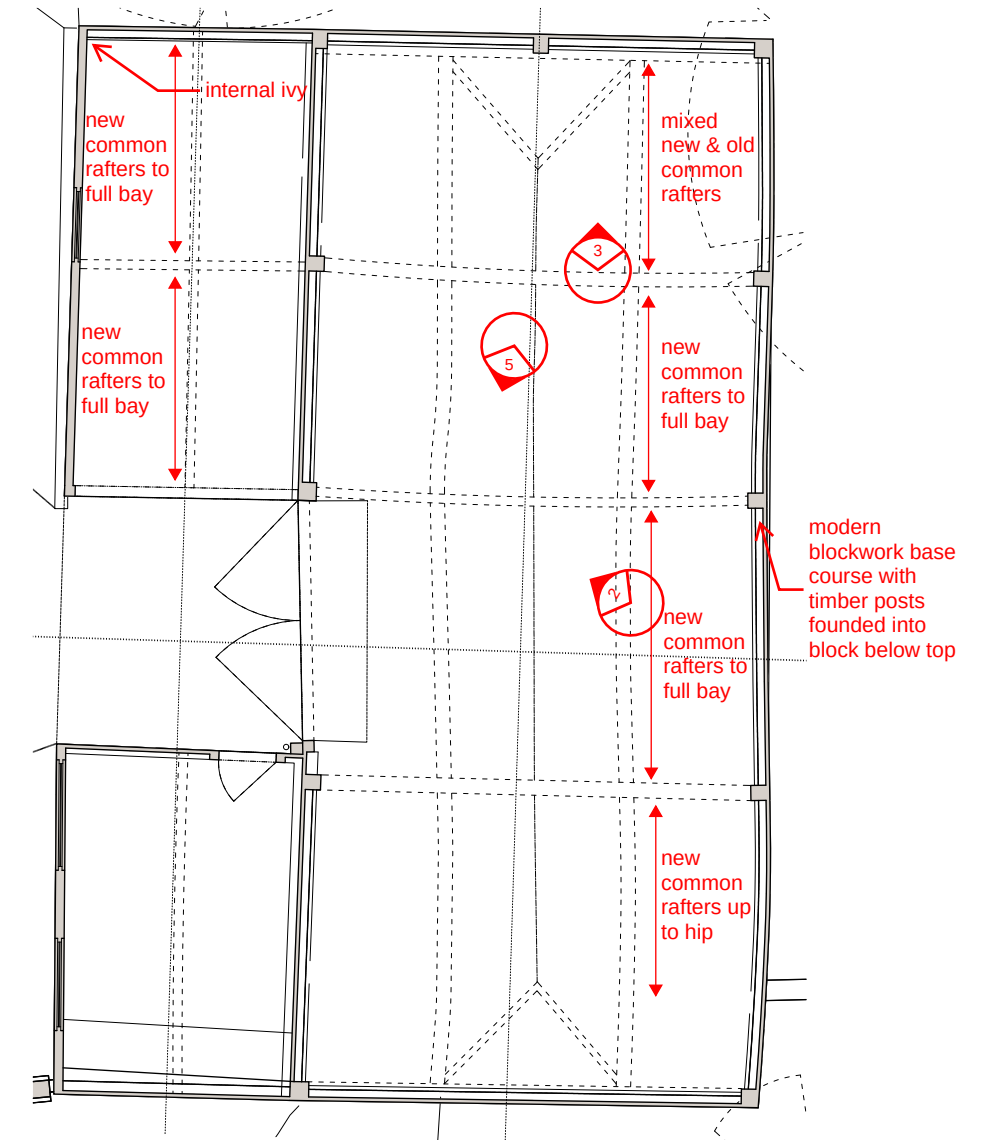
9 Northern end roof



10 Roof



11 Southern end roof

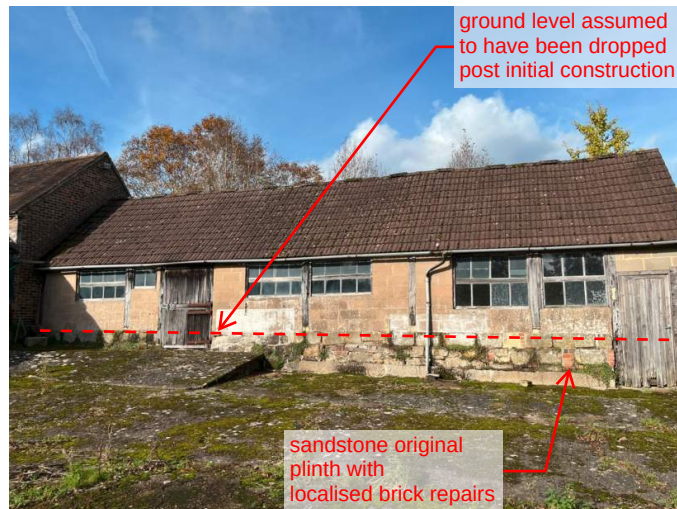


Initial Outline Commentary on Structural Condition

Timber superstructure is generally in a reasonably serviceable condition due to recent full refurbishment and re-roofing, serviceable concrete slab appears relatively flat, defect free and without damp ingress.

Plinth walls visible externally are in a varied and dilapidated state, harbouring damp and vegetation which should be remedied by full repointing and improving surface water management generally throughout

3.1 Photographic Survey



1 Farmyard elevation



2 Gable elevation



3 Northern elevation with extensive vegetation & Cottage gable wall



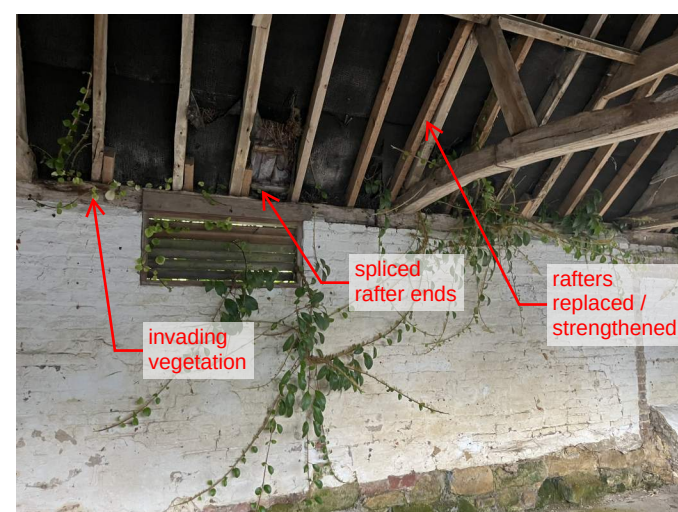
4 Step up to new slab



5 Timber framing



6 Original timber framed stable external wall, cottage wall built against stables



7 Typical timber framing on southern wall



8 Internal view



9 Typical timber framing on southern wall

3.2 Initial Structural Assessment & Design Drivers

Vertical Load Paths

due to decayed state of timber columns and absence of cill rails, existing vertical load paths are impaired, load transfers through blockwork infill, loadbearing brick to northern wall

Lateral Stability

due to altered and decayed state of timber framing, missing and asymmetric elbow braces (**B**) etc, existing lateral stability is impaired, building currently stabilised by extensive blockwork infill, stiffening effects of tertiary cladding eg roof battens, and brick gable wall of the cottage constructed against the original stables timber wall

Foundations

depths & stability of existing foundations not known, tbc by site investigation
external ground level may have been lowered after initial construction
low plinth walls to farmyard side composed of sandstone with varied irregular repairs of brick and concrete with defective pointing, inconsistent wall base detail around internal perimeter - see details

Structural Fabric Condition

heavily altered historically, some rafters repaired or replaced, generally in a poor state:
- envelope needs to be made weather proof as a matter of urgency
- infestations of damp, beetle and wood worm to be surveyed by conservation specialist
- previous repairs to the roof timbers with some rafter ends spliced and some timbers replaced
- widespread areas of timber element repair and replacement will be required using sympathetic conservation repair methods maximising retained fabric where possible; using reversible repairs with mechanical fasteners with matching quality material eg solid seasoned oak and stainless steel hardware
- areas of vegetation along the northern wall invading roof verges harbouring damp and causing physical damage, to be carefully cut back and managed as a matter of urgency with the external northern wall then inspected
- cracking (**C**) to solid brick northern elevation: internally visible below eastern window and in NE corner, brick stitching repairs will be required
- modern slab throughout: level accuracy, dpm, reinforcement and sub base unknown

Ground Slab

existing sandstone plinth walls repaired and stabilised, internally projecting concrete and sandstone elements carefully cut back & wall surface stabilised
interaction between slab and footings and plinth walls to be confirmed following site investigation, also see preliminary proposal as per section markup and footing details
existing slab assumed retained pending SI & opening up, see preliminary section markup

External Walls

elements of blockwork to be replaced with insulated timber framing details to be developed with Architect, timber columns to be replaced with seasoned oak as required, see also section markup

localised brick stitching where cracking (**C**) in retained brickwork

denotes blockwork infill to original timber framed end gable wall, opposite end gable also timber framed but without blockwork infill, sits in front of later gable brickwork to cottage

Internal Walls

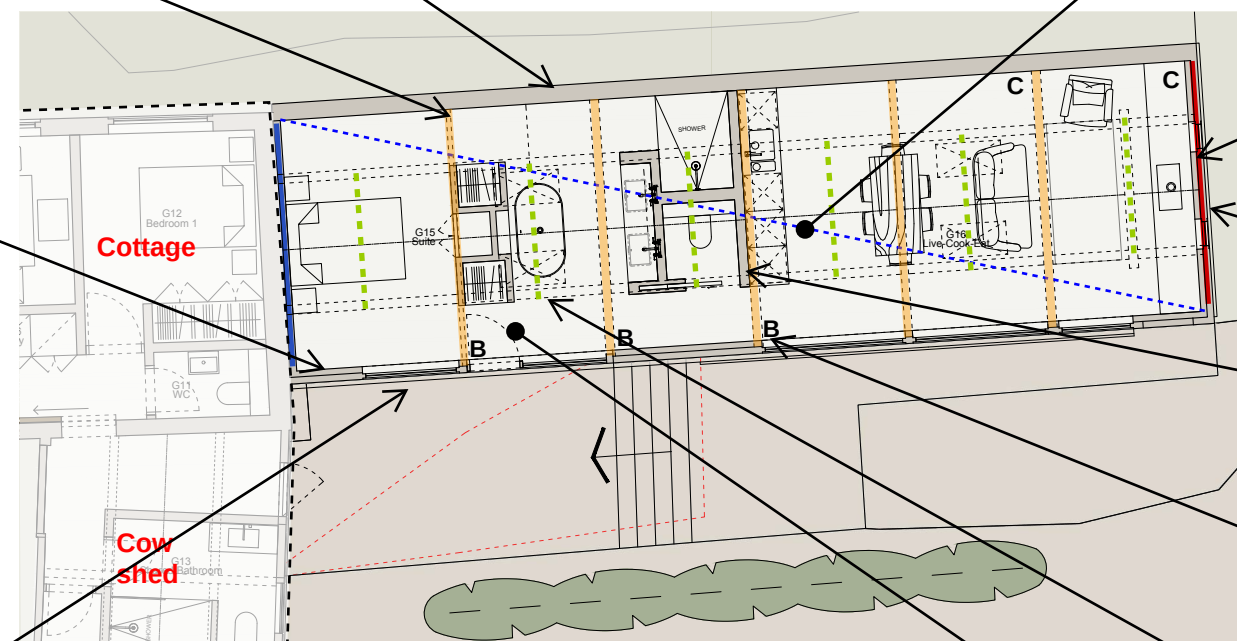
to comprise of lightweight blockwork or insulated timber studwork, details to be developed with Architect

Roof

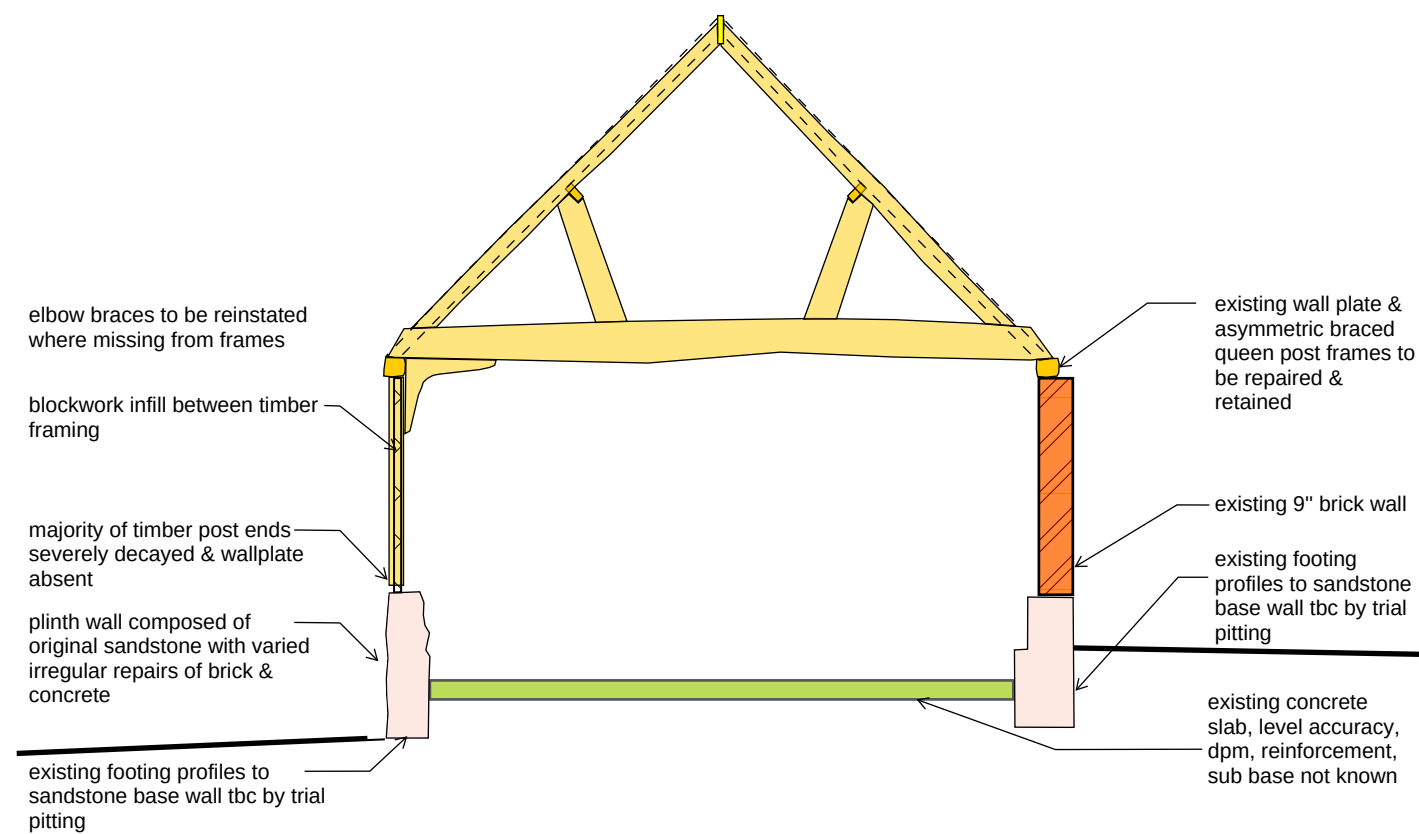
denotes positions of original braced queen post frames, to be repaired and reinstated with new oak wall plate to base of cut back repaired / replaced columns, curved elbow braces to be refixed and new braces installed where missing

denotes positions of assumed later raised collar rafter A-frames, inserted to relieve purlin spans, may be possible to remove these if original roof frame is stabilised and purlins strengthened

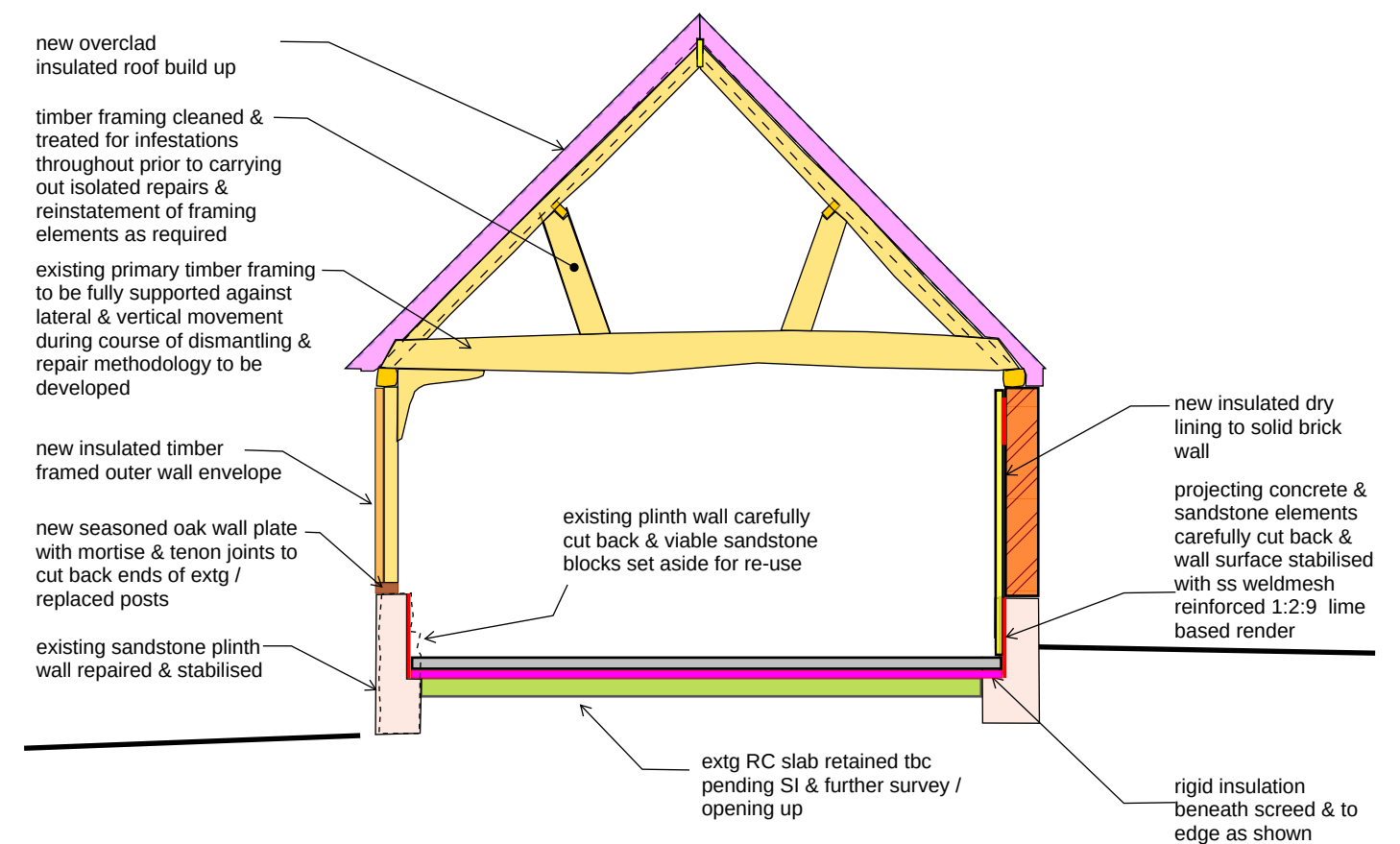
lateral stability of roof to be enhanced by constructing new WBP plywood roof diaphragm throughout, condition and dimensional flatness of existing rafters to be reviewed with Architect, allow for replacement or provision of extensive firrings



3.3 Initial Structural Assessment & Design Drivers - Sections

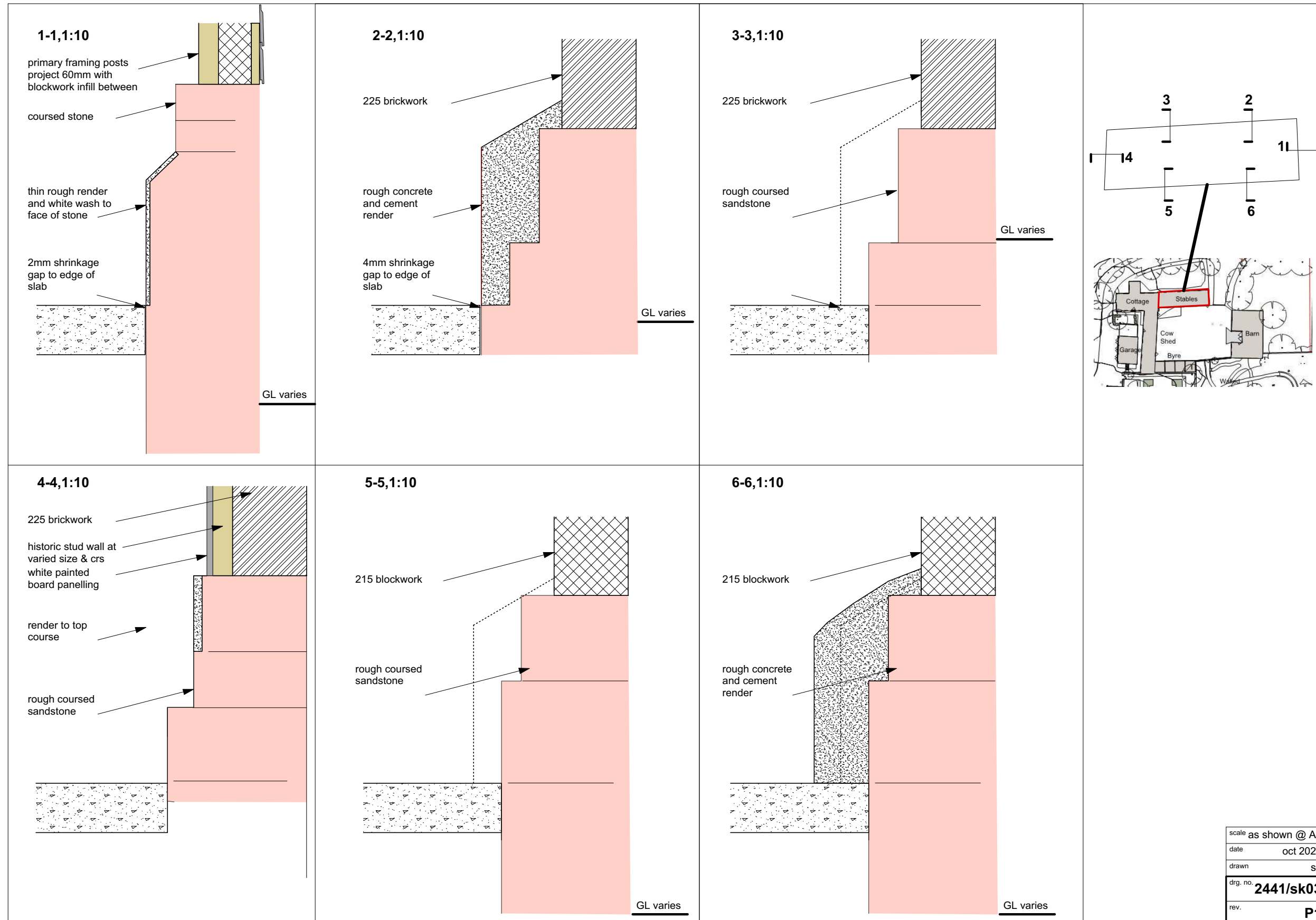


Stable as Existing - Typical Transverse Structural Section, nts



Stable as Proposed - Typical Transverse Structural Section, nts

3.4 Initial Structural Assessment & Design Drivers - Internal Existing Footing Details



4.1 Photographic Survey



1 Farmyard elevation



2 Cottage end gable wall



3 Byre end gable wall



4 Internal



5 Internal



6 Vegetation on western elevation

4.2 Initial Structural Assessment & Design Drivers

Lateral Stability

due to altered and decayed state of timber framing, missing braces etc, existing lateral stability is impaired, building currently stabilised by extensive blockwork infill and stiffening effects of tertiary cladding eg roof battens

Vertical Load Paths

due to decayed state of timber columns and cill rails, existing vertical load paths are impaired, load transfers through blockwork infill

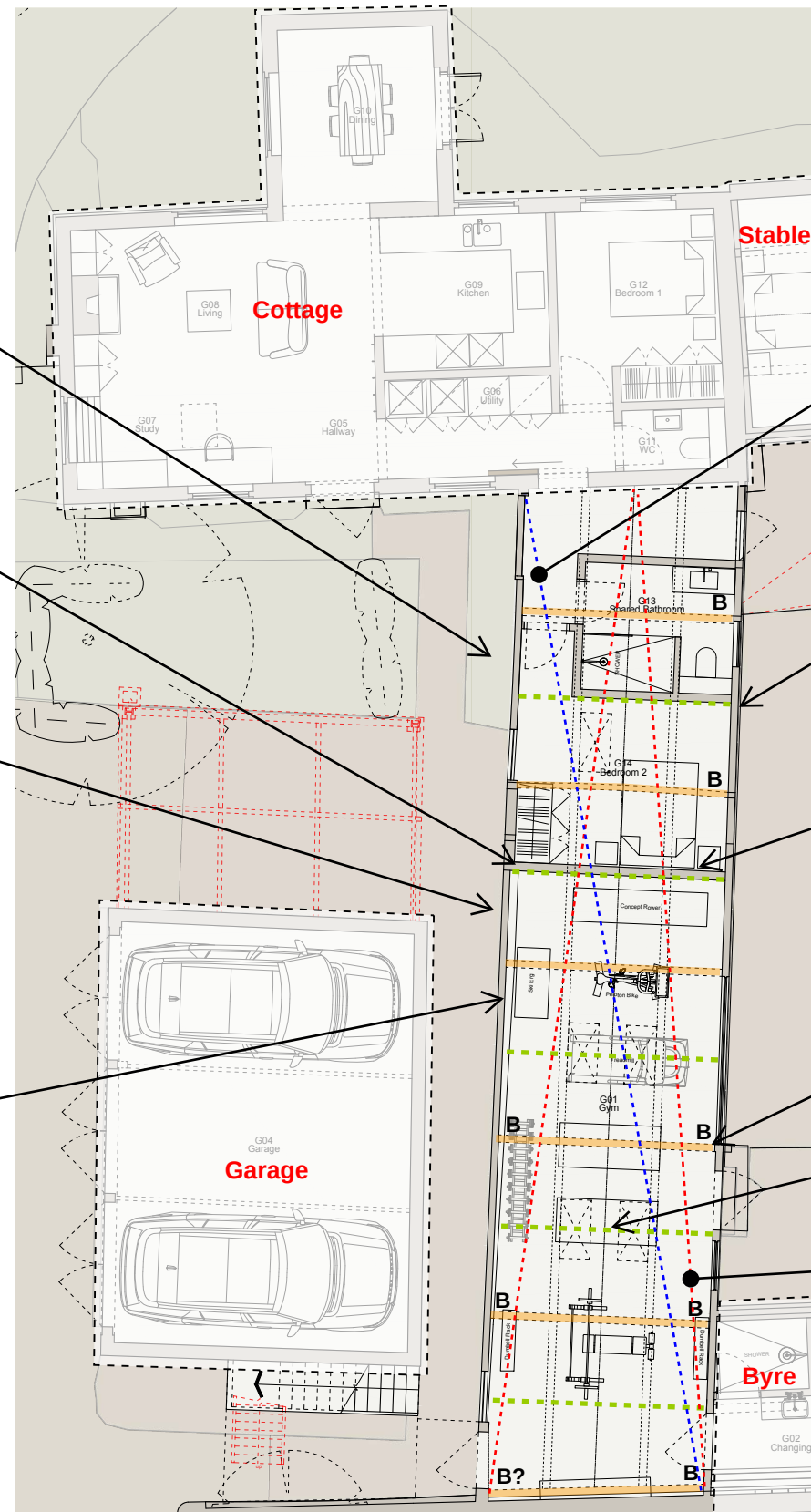
Foundations

depths & stability of existing foundations not known, tbc by site investigation
low plinth walls to farmyard side appear to consist of brickwork in a heavily weathered condition, may have replaced the original? sandstone visible on other farmyard buildings

Structural Fabric Condition

generally in a poor state:

- area of roof covering missing for some time as evidenced by temporary tarpaulin repair which is also now in a weathered and ineffective state
- water ingress causing accelerated building decay, envelope needs to be made weather proof as a matter of urgency
- infestations of damp and wood worm to be surveyed by conservation specialist
- areas of vegetation also invading roof verges harbouring damp and causing physical damage along west wall roof edge needs to be carefully cut back and managed as a matter of urgency
- widespread areas of timber element repair and replacement will be required using sympathetic conservation repair methods maximising retained fabric where possible; using reversible repairs with mechanical fasteners with matching quality material eg solid seasoned oak and stainless steel hardware

**Ground Slab**

new RC ground slab required throughout, see marked up typical section
interaction between slab and footing and plinth wall to farmyard and low retaining wall to west side to be confirmed following site investigation, also see preliminary proposal as per section markup

External Walls

elements of blockwork to be replaced with insulated timber framing details to be developed with Architect, see also section markup

Internal Walls

to comprise of lightweight blockwork or insulated timber studwork, details to be developed with Architect

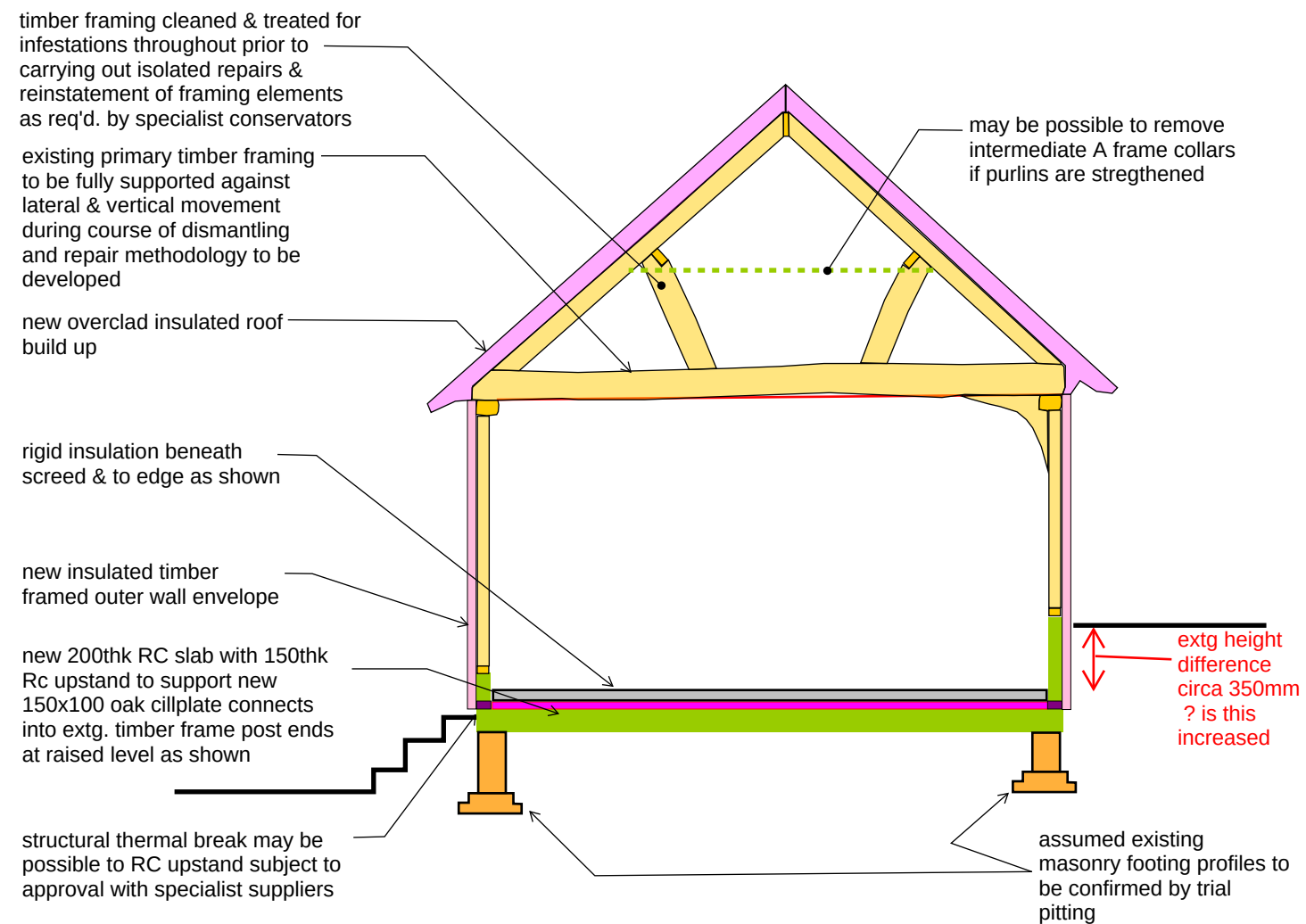
Roof

denotes positions of original braced queen post frames, to be repaired and reinstated with new oak cill rails to base of cut back repaired columns, curved braces to be refixed

denotes positions of assumed later raised collar rafter A-frames, inserted to relieve purlin spans, may be possible to remove these if original roof frame is stabilised and purlins strengthened

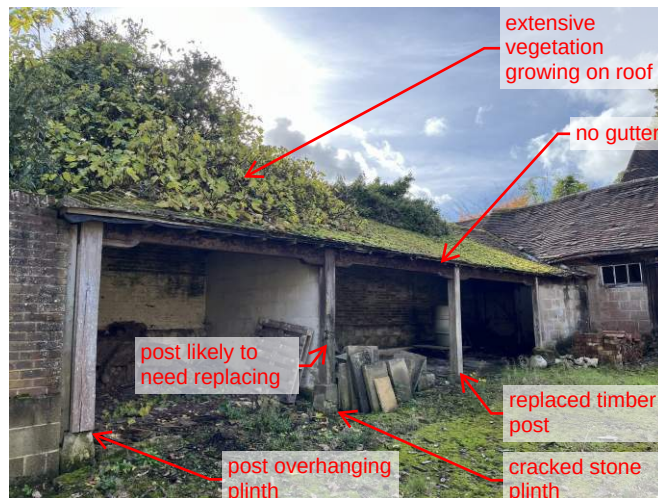
lateral stability of roof to be enhanced by constructing new WBP plywood roof diaphragm throughout, condition and dimensional flatness of existing rafters to be reviewed with Architect, allow for replacement or provision of extensive firrings

4.3 Initial Structural Assessment & Design Drivers - Section



Cow Shed - Proposed Typical Transverse Structural Section, nts

5.1 Photographic Survey



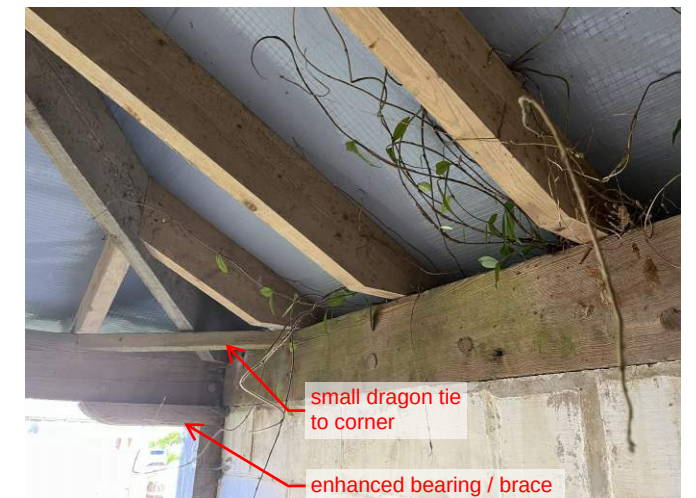
1 The byre



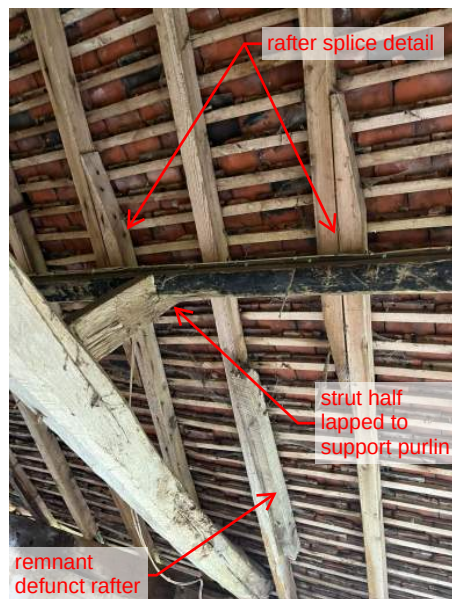
2 Eastern end



3 Hipped eastern end bay



4 Vegetation ingress



5 Rafter splices



6 Typical roof construction & rear wall



7 Wall to cow shed & collapsed roof



8 Failed rafter splices

5.2 Initial Structural Assessment & Design Drivers

Lateral Stability

due to decayed state of timber framing and minimal bracing, existing lateral stability is impaired, building currently stabilised by blockwork partition infill and blockwork infill adjacent to the cow shed (shown in yellow) and stiffening effects of tertiary cladding eg roof battens, mutual restraint between roof and rear wall

Vertical Load Paths

due to decayed state of timber columns and failed rafter splices, existing vertical load paths are impaired, load transfers through blockwork infill in places

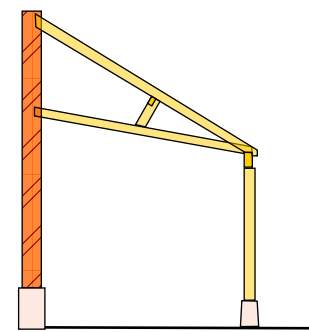
Structural Fabric Condition

generally in a poor state apart from recently replaced hipped roof framing to end bay:

- hole in roof at end adjacent cow shed where rafter splice has failed, water ingress causing accelerated building decay, roof needs to be made weather proof as a matter of urgency
- infestations of damp and wood worm to be surveyed by conservation specialist
- areas of vegetation also invading roof harbouring damp and causing physical damage along rear wall, needs to be carefully cut back and managed as a matter of urgency
- widespread areas of timber element repair and replacement will be required (including where previous rafter splices have failed and rafters may be undersized for proposed loading) using sympathetic conservation repair methods maximising retained fabric where possible; using reversible repairs with mechanical fasteners with matching quality material eg solid seasoned oak and stainless steel hardware

Foundations

depths & stability of existing foundations not known, tbc by site investigation
heavily weathered stone plinths below timber posts with large crack to one and one not fully aligned with the post it supports, weathered sandstone plinth to rear brick wall (forms boundary of formal gardens)



Schematic existing section, nts

Ground Slab

new RC slab required throughout
interaction between slab and timber post plinths footings to farmyard side, and slab and rear brick wall plinth footing to be confirmed following site investigation

Internal Walls

to comprise of lightweight blockwork with timber infill above raking beams propping purlins or timber studwork, details to be developed with Architect

External Walls

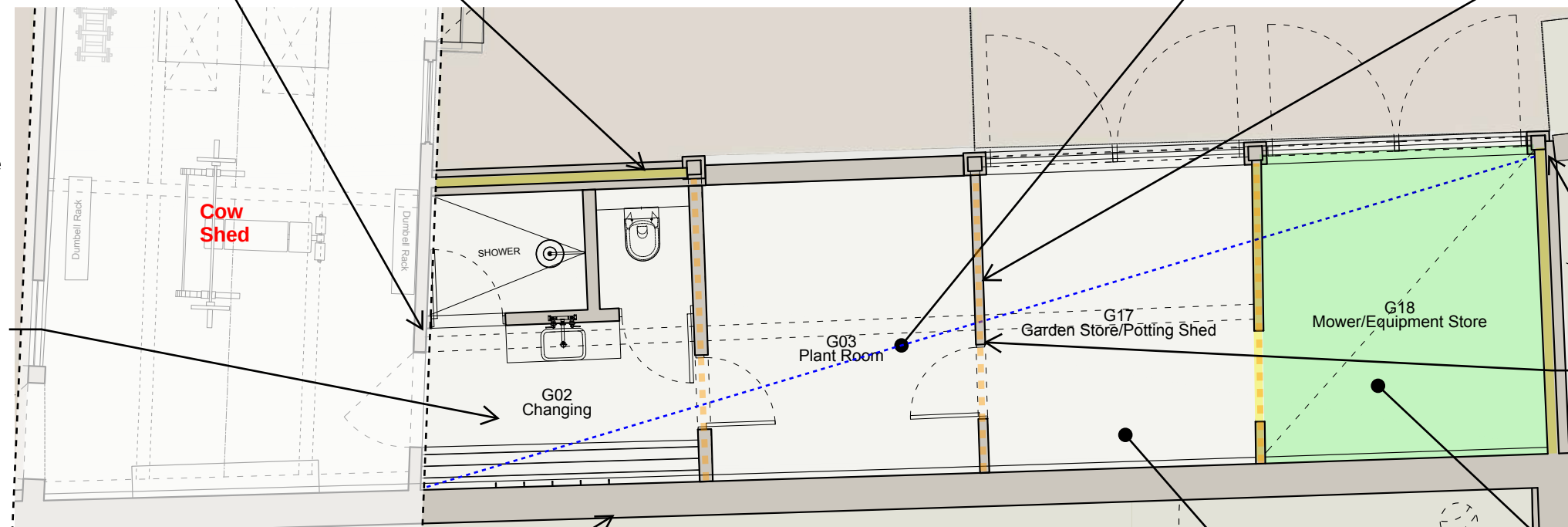
elements of blockwork to be replaced with insulated timber framing - details to be developed with Architect, yellow denotes existing blockwork infill, allow for replacement of timber posts

Roof

denotes positions of original roof frames consisting of raking beams with props to the purlin, to be repaired and reinstated

denotes area of recently replaced hipped roof framing, assumed maintained subject to confirmation of proposed roof loading and careful removal of vegetation, may require strengthening

lateral stability of roof to be enhanced by constructing new WBP plywood roof diaphragm throughout, condition and dimensional flatness of existing rafters to be reviewed with Architect, allow for replacement or provision of extensive firrings, failed splices rafters over proposed shower to be replaced
mutual restraint between roof and wall to be considered during reconstruction of the roof



6.1 Photographic Survey

1 Northern elevation abutting stables, vegetation has grown excessively & is on brink of causing damage to roof eaves



2 Northern elevation



3 Gabled extension; appears to be a later addition in cavity masonry



4 Extension - roof hipped onto original



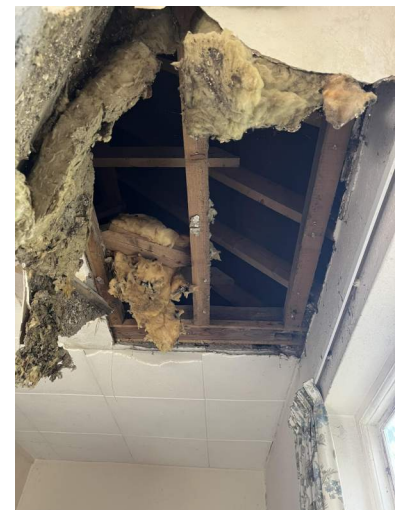
5 Cracked render



6 Gable end with chimney



7 Southern elevation facing garage



8 Damaged ceiling



9 Roof framing



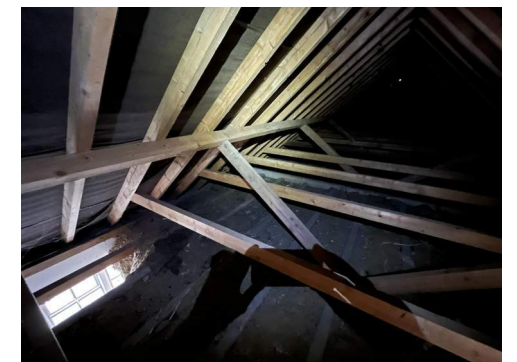
10 Purlin



11 Collars to every other rafter

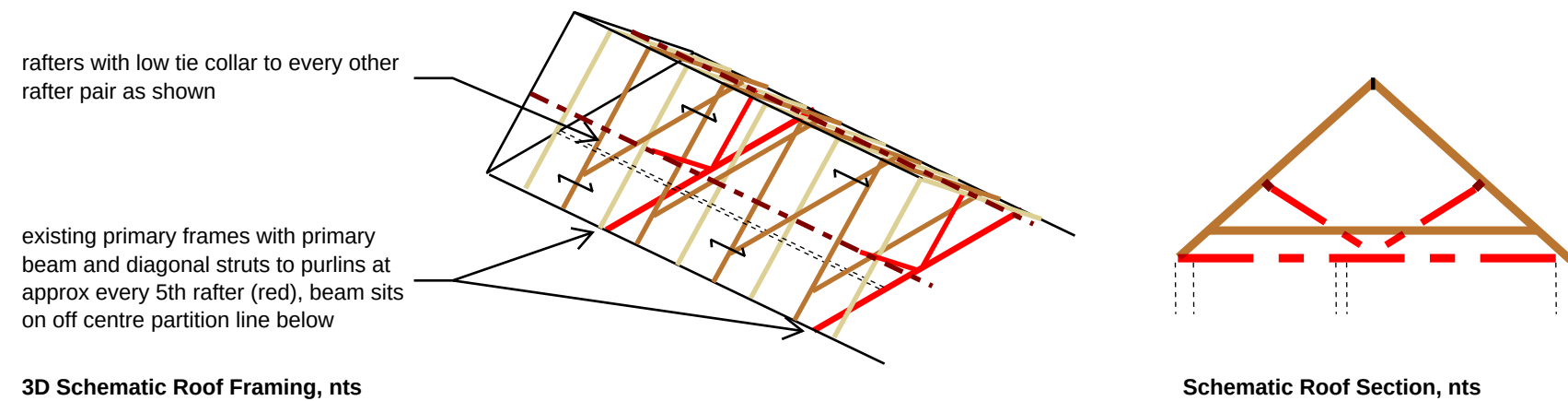


12 Props to purlin



13 Roof framing

6.2 Initial Structural Assessment & Design Drivers



Lateral Stability

existing lateral stability of single storey building is provided by the diaphragm effects in the horizontal ceiling and inclined roof planes providing head bracing to the masonry perimeter walls which transfer lateral forces via in-plane shear to the assumed corbelled brick and mass concrete footings below

Vertical Load Paths

existing gravity effects are resisted by the roof frames spanning onto the external masonry and internal timber walls, walls carry loads to direct bearing on the assumed sandy soils beneath the site (tbc)

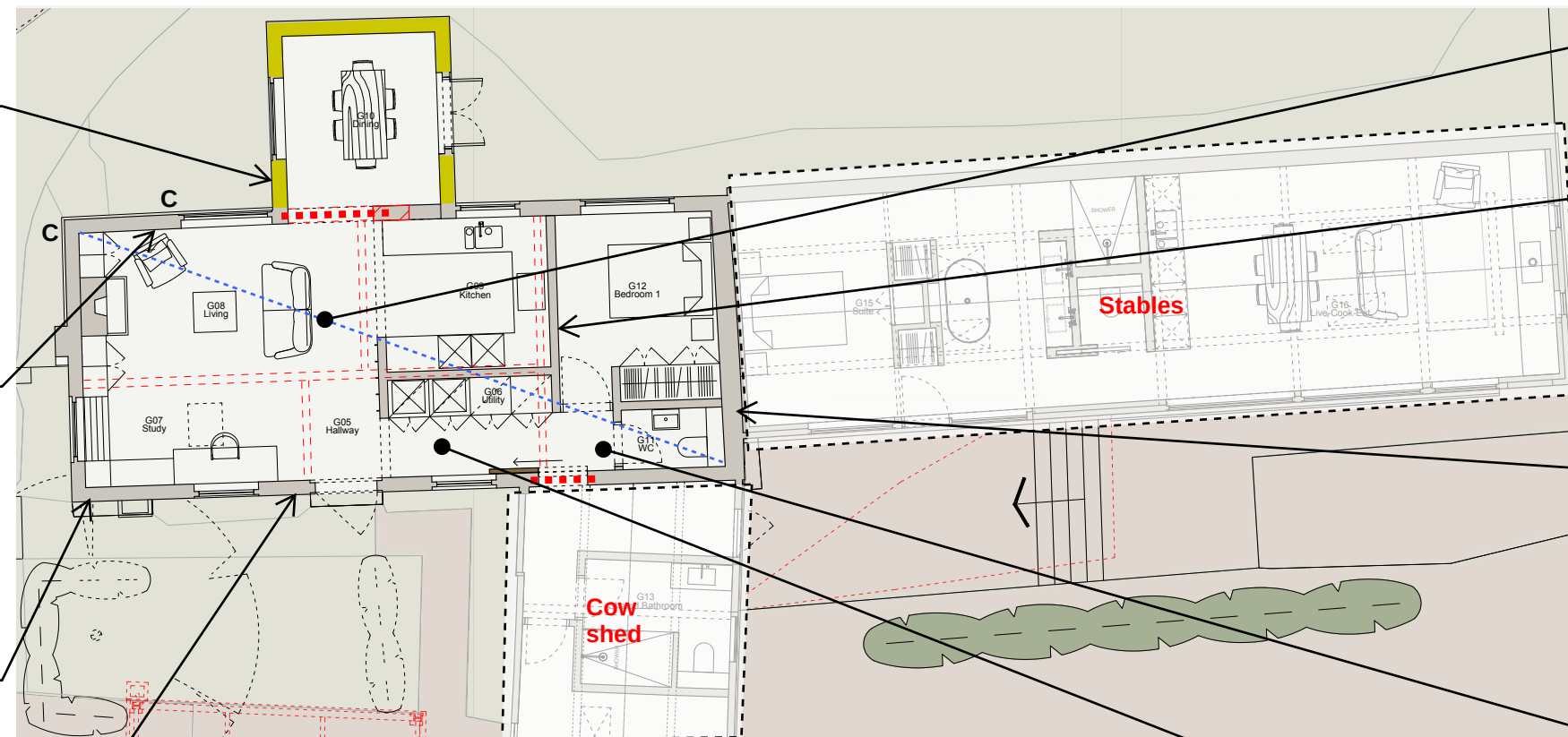
Structural Fabric Condition

generally in a good condition:

- hole in ceiling in north western end of cottage assumed to be due to previous water ingress, possible infestations of damp and wood worm, to be surveyed by conservation specialist
- areas of vegetation invading eaves on northern elevation, needs to be carefully cut back and managed as a matter of urgency

Foundations

depths of existing foundations not known, tbc
by site investigation



Ground Slab

- assumed suspended timber floor maintained, air bricks visible around external perimeter

Internal Walls

existing timber stud partitions demolished, new lightweight timber partitions will require strengthening of suspended floor construction below, new lintel and brick infill where opening into extension adjusted

External Walls

solid 225mm bricks in Flemish bond to original cottage, extension in assumed cavity stretcher bond (shown in yellow), visible cracks (**C**) in the render around the corner at the wall head on original NW corner of the cottage and above window, render to be removed to reveal masonry, local brick stitching repair may be required

East end wall built against timber gable wall of the stables, cow shed abuts cottage, new lintel for new opening into cow shed

Ceiling

- ceiling joists generally span longitudinally between ceiling beams on position of primary roof frames - an area of severely water damaged ceiling to be repaired locally

Roof

- ceiling beams to be strengthened by addition of back to back channels to enable primary frames to span across full width of cottage detail tbc

7.1 Photographic Survey



1 Rear elevation



2 Carport & side elevation



3 External cracking



4 Front elevation



5 Side elevation



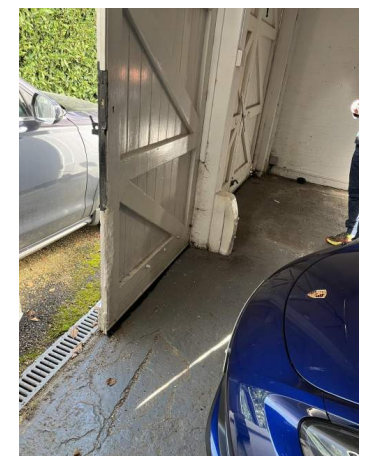
6 2no. downstand beams into timber columns



7 Downstand beams bear into rear elevation masonry



8 Repair splice to base of timber post



9 Double splice to base of timber post



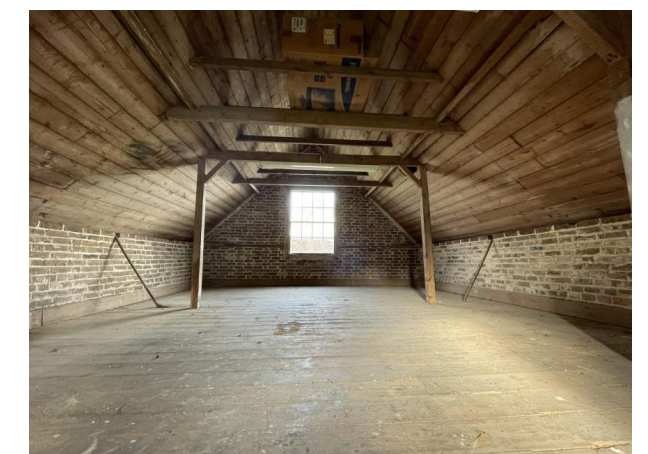
10 1st floor & roof framing



11 Historic ties from roof to floor



12 Remedial struts & timber structure



13 Remedial ties & timber structure

7.2 Initial Structural Assessment & Design Drivers

Lateral Stability

floor and roof planes act as diaphragms permitting distribution of applied wind loads into in plane shear in external orthogonal solid brick walls, force is then distributed to base shear and passive earth resistance by building foundations

Vertical Load Paths

existing gravity effects are resisted by the roof frames spanning onto the external masonry walls, walls carry loads in direct bearing on the assumed sandy soils beneath the site (tbc)

Car Port

heavily corroded and generally in poor condition, to be carefully demolished, attention required to securely prop beams before cutting and extraction in order to limit risk of severe damage from beams rotating during demolition

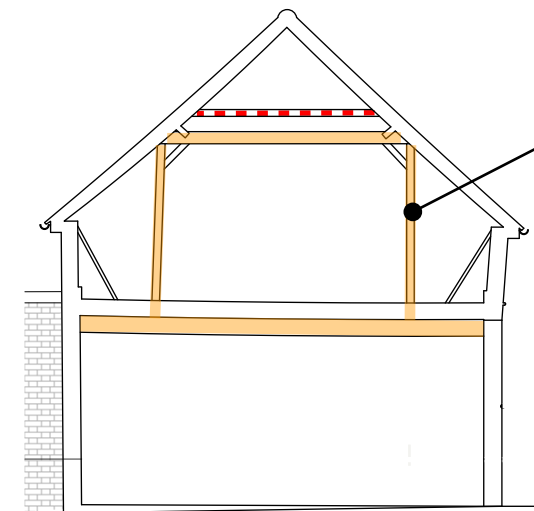
Foundations

assumed corbelled brick and mass concrete footings below depths & stability of existing foundations not known, tbc by site investigation

Structural Fabric Condition

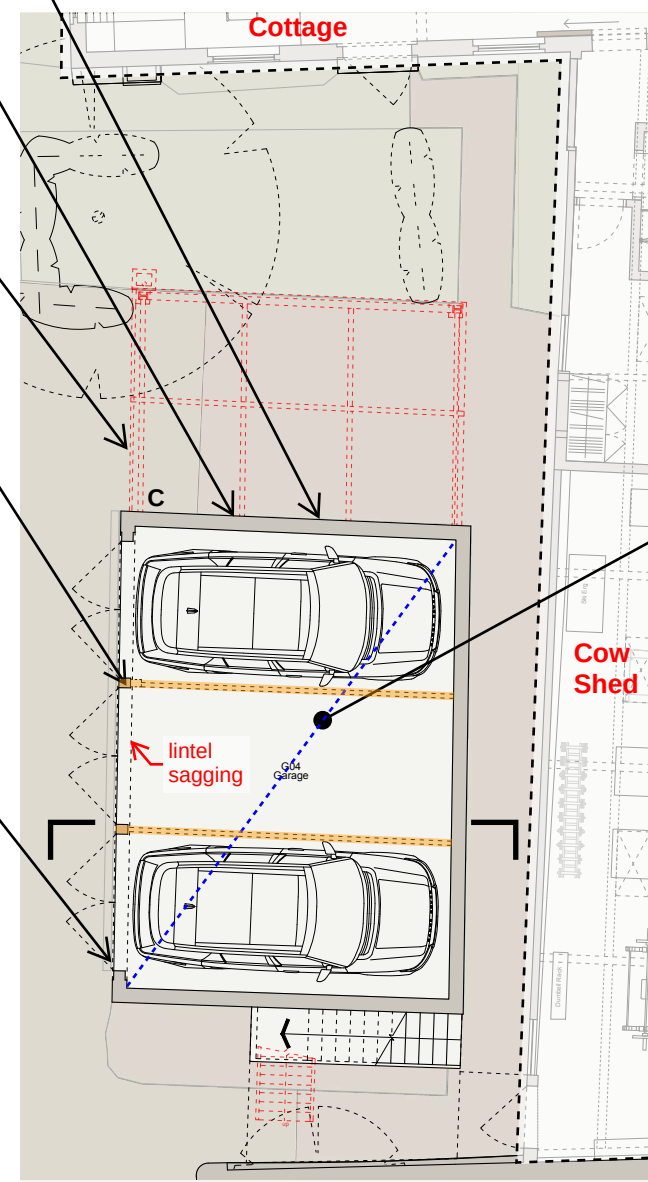
generally in a fair condition:

- historic remedial work to restrain the flank walls and prevent outwards lateral movement, with steel diagonal ties from the top of the flank walls to the floor
- infestations of damp and wood worm to be surveyed by conservation specialist
- areas of vegetation also invading roof verges harbouring damp and causing physical damage along south & east walls roof edge needs to be carefully cut back and managed as a matter of urgency
- cracking (C) to solid brick northern elevation: brick stitching repairs will be required
- slab throughout: level accuracy, dpm, reinforcement and sub base unknown



Roof Frames

aisled A-frame roof has been subject to multiple remedial alteration most of visible deformations have been caused by severe decay to timber post ends between garage doors causing front elevation to drop leading to sagged lintel line and roof frames also dropping and pushing out parapet walls



Ground Slab

existing ground slab to be retained

External Walls

localised brick stitching where cracking (C) in retained brickwork, visually sagging lintel to front elevation to be replaced with localised brick repairs above

1st Floor

timber floor to be retained, condition and dimensional flatness of existing joists to be reviewed with Architect, allow for replacement or provision of extensive firrings, historic ties to be retained, floor feels springy underfoot and may require structural strengthening if more permanent residential usage function required

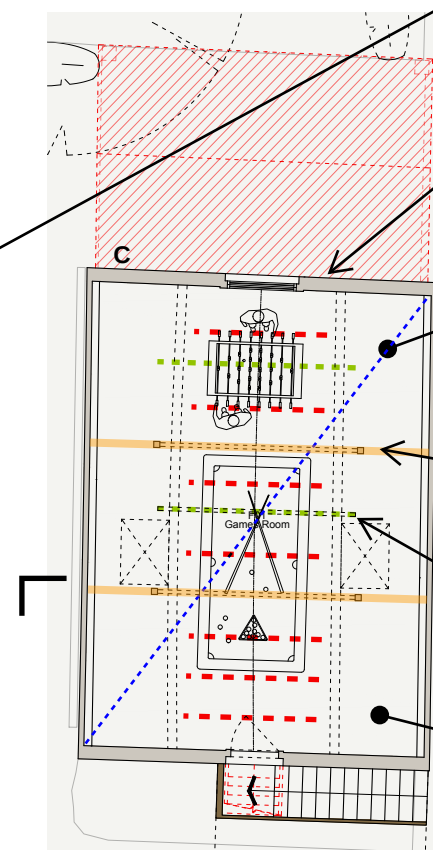
Roof

rafters not visible due to timber boarding

denotes positions of aisled A-frames onto downstand beams in first floor, collars above purlin level

denotes positions of assumed later raised collar rafter A-frames, inserted to relieve purlin spans, may be possible to remove these if original roof frame is stabilised and purlins strengthened

building can be largely maintained in current form if no increase in load bearing / change of use required to upper floor



8.1 Photographic Survey



1 North elevation



2 Front elevation



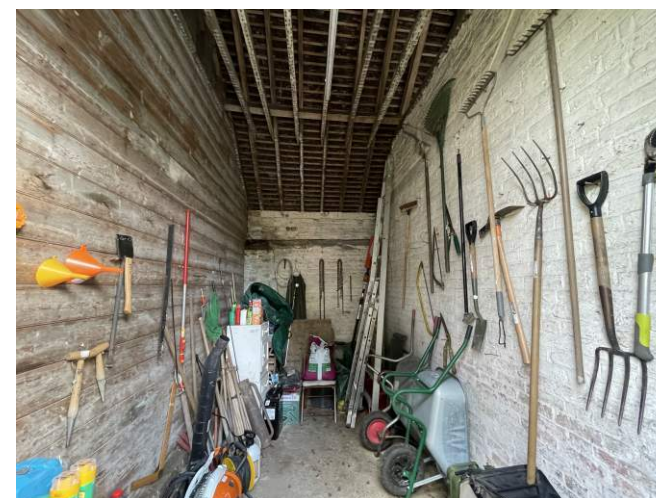
3 South elevation



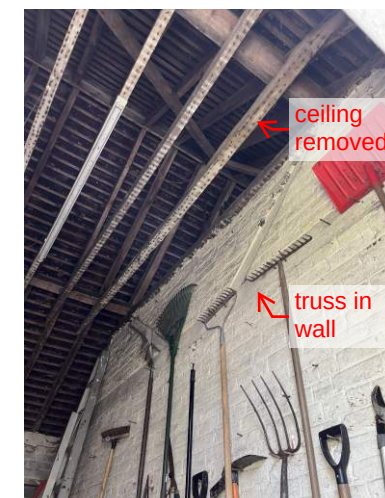
4 Rear elevation



5 Northern wall



6 Northern end



7 Northern side internal wall



8 Southern side internal wall



9 Southern wall



10 Hole in southern wall

8.2 Initial Structural Assessment & Design Drivers

Lateral Stability

existing lateral stability of single storey building is provided by the diaphragm of the inclined roof plane transferring lateral forces to the masonry perimeter walls which transfer lateral forces via in-plane shear to the assumed corbelled brick footings below

original diaphragm effects are weakened due to removal of lath and plaster ceilings

Vertical Load Paths

existing gravity effects are resisted by the roof frames spanning onto the internal masonry walls and external assumed timber gable walls, walls carry loads in direct bearing on the assumed sandy soils beneath the site (tbc)

Structural Fabric Condition

generally in a good state:

- masonry typically in good condition but some local repointing required, with loose joints specifically noted on the rear wall
- hole in southern wall, to be made weather proof as a matter of urgency
- timber walls and roof framing generally in a good condition although infestations of damp and wood worm should be surveyed by conservation specialist

Foundations

assumed corbelled brick and possibly mass concrete footings below depths & stability of existing foundations not known, tbc by site investigation

Ground Slab

existing slab assumed retained pending SI & opening up, existing sandstone plinth walls repaired, interaction between slab and footings to be confirmed following site investigation

Internal Wall

existing wall assumed maintained with timber infill above existing brick as required, details to be developed with Architect

External Walls

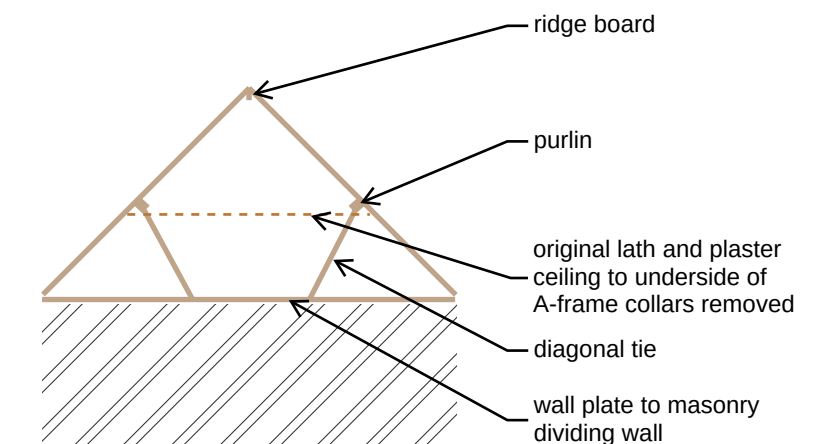
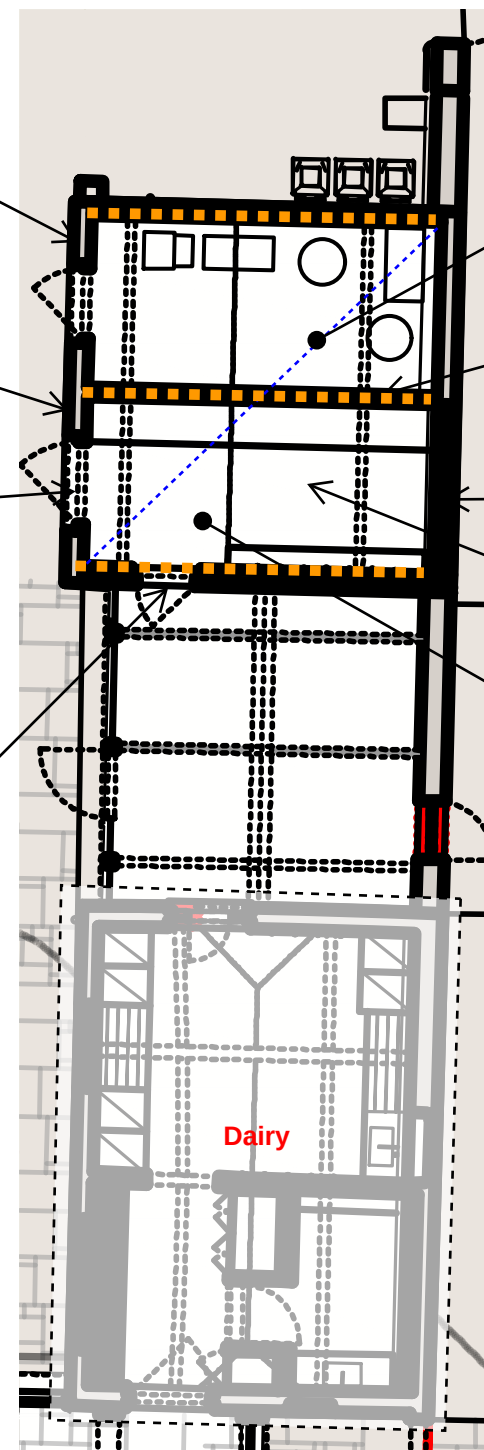
solid 9" brick walls on front and rear walls, allow for repointing locally assumed timber framed gable walls clad in weatherboarding, new insulated timber framing inboard of existing walls - details to be developed with Architect

Roof

purlins span between assumed timber framed gables and solid brick dividing wall

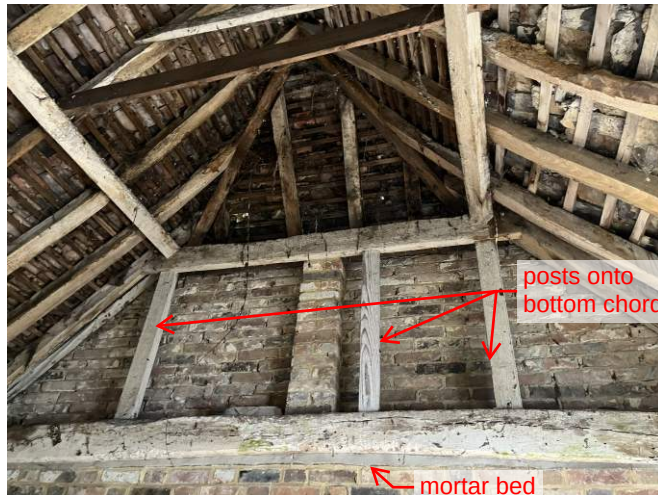
purlin and rafter structural capacity to be checked for increased applied loads due to new ceilings, insulation and ply sarking board etc

lateral stability of roof to be enhanced by constructing new WBP plywood roof diaphragm throughout, condition and dimensional flatness of existing rafters to be reviewed with Architect, allow for replacement or provision of extensive firrings

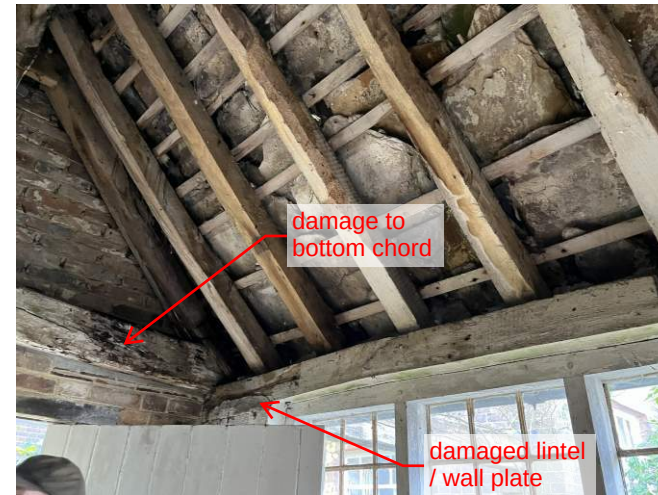


Middle wall frame configuration

9.1 Photographic Survey



1 Gable end wall



2 Timber rafters & wall plate



3 Internal dividing wall with timber framing over



4 Timber wallplate



5 Timber framing & internal wall



6 Internal wall



7 Lintel in internal wall



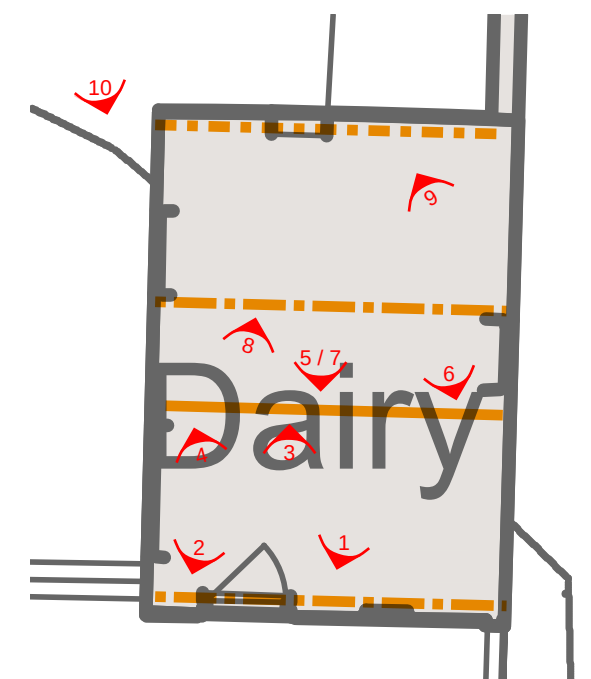
8 Internal timber queen post truss



9 Northern gable end wall



10 External view



9.2 Initial Structural Assessment & Design Drivers

Vertical Load Paths

existing gravity effects are resisted by the roof frames spanning onto the external and internal masonry walls, walls carry loads to direct bearing on the assumed sandy soils beneath the site (tbc)

Lateral Stability

existing lateral stability of single storey building is provided by the diaphragm effects in the inclined roof plane providing head bracing to the masonry perimeter walls which transfer lateral forces via in-plane shear to the assumed corbelled brick and sandstone footings below

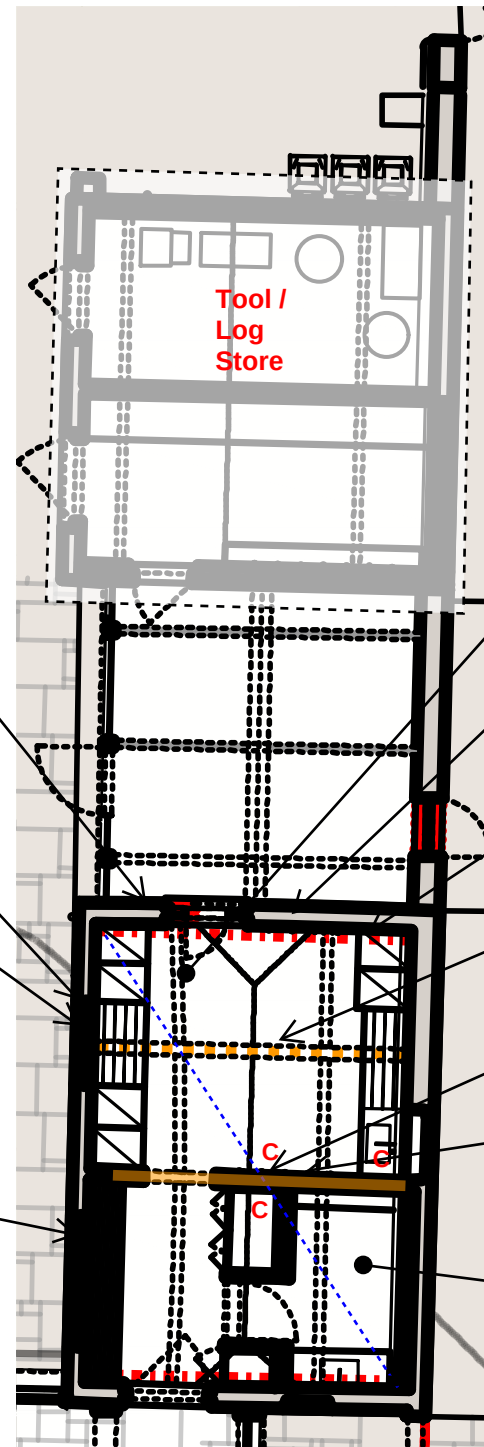
Foundations

depths & stability of existing foundations not known, tbc by site investigation
heavily weathered sandstone plinth to wall base, requires repair

Structural Fabric Condition

heavily altered historically, generally in a poor state:

- external walls require localised repointing, sandstone plinth heavily weathered in places, will require repair
- infestations of damp, beetle and wood worm to be surveyed by conservation specialist
- areas of vegetation also invading roof verges harbouring damp, needs to be carefully cut back and managed as a matter of urgency
- hole in roof at northern end adjacent, water ingress likely to cause accelerated building decay, roof needs to be made weather proof as a matter of urgency
- previous repairs and modifications to the roof timbers with some timbers replaced and some collars and dragon ties added
- widespread timber element repair and replacement required using sympathetic conservation repair methods maximising retained fabric where possible; using reversible repairs with mechanical fasteners with matching quality material eg solid seasoned oak and stainless steel hardware
- cracking (C) and open mortar joints in internal dividing brick wall, brick stitching repair / rebuilding will be required

**Ground Slab**

existing slab assumed retained pending SI & opening up, existing sandstone plinth walls repaired, interaction between slab and footings to be confirmed following site investigation

External Walls

localised repointing required, new insulated timber framing inboard of existing masonry walls - details to be developed with Architect, damaged wall plate / lintel to western wall, to be repaired and reinstated with seasoned oak

Roof

denotes positions of original Queen-post truss spanning onto flank masonry walls, during later remodelling / repositioning of building gables, truss has been modified by addition of a dysfunctional corbelled central half brick pier, restoration of correct timber truss function should be developed during next stages
rafters and framing in some areas requires repair and reinstatement, purlin and rafter structural capacity to be checked for increased applied loads due to new ceilings, insulation and ply sarking board etc

denotes position of internal spanning Queen-post truss

denotes position of Queen-post truss over internal brick wall

Internal Wall

existing brick wall under truss, plastered on northern face, damage / cracks (C) over door lintel - plaster to be removed to fully reveal condition of wall and the requirement for repair / remediation to suit the proposed scheme, assume opening infilled in fully toothed and bonded matching brick with cracked areas rebuilt and timber lintel removed, lightweight timber infill to truss above existing brick wall, new lintel to new opening

lateral stability of roof to be enhanced by constructing new WBP plywood roof diaphragm throughout, condition and dimensional flatness of existing rafters to be reviewed with Architect, allow for replacement or provision of extensive firrings

10.1 Photographic Survey



1 Wall behind green houses, to form rear wall of swimming pool building



2 Laurel tree at wall end has grown against wall & is causing wall to lean



3 Visible excessive lean to wall end, not measured but approx 50-75mm over full height



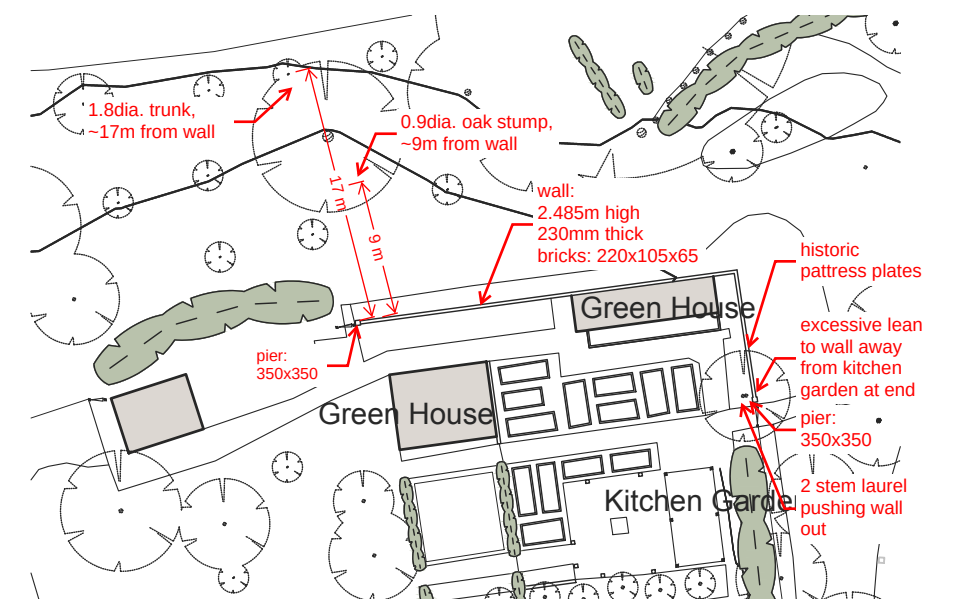
4 2no. ties / pattress plates in wall



5 Area of proposed swimming pool



6 Area of proposed swimming pool



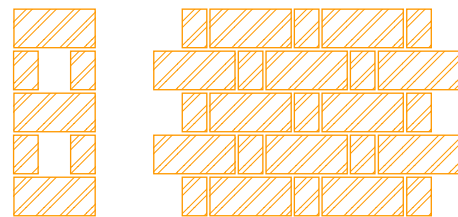
Existing Site Plan Extract, nts

10.2 Initial Structural Assessment & Design Drivers

Existing Wall

A 9" brick wall forms the boundary on two sides to the kitchen garden. The length of the wall appears to have been constructed with the bricks on edge leaving a cavity behind stretcher bricks with the headers tying the leaves together. The bricks in the piers are conventionally orientated creating solid brick piers. The wall is generally in good condition along the northern boundary but there is evidence of previous stabilising measures with 2no. pattress plates on the eastern wall. The wall end is unstable at the end where the close proximity to a Laurel tree has caused the top of the wall to lean out.

Urgent stabilising work is required to the wall end where damaged and leaning due to the laurel tree.

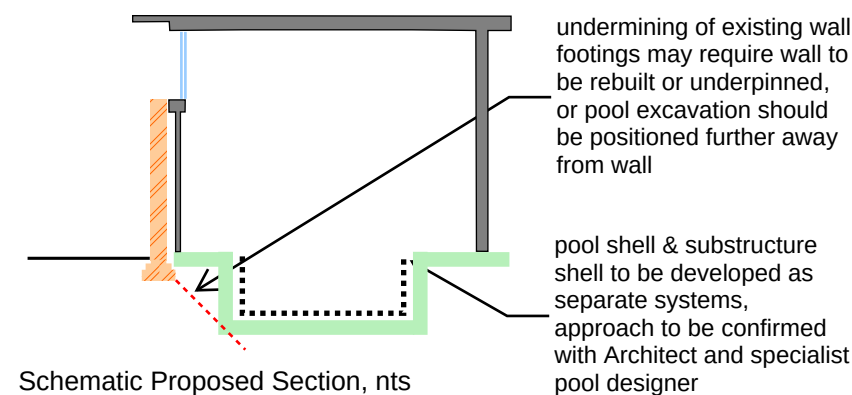


Section Elevation

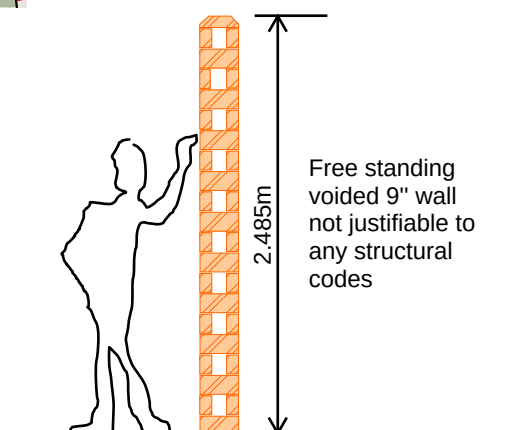
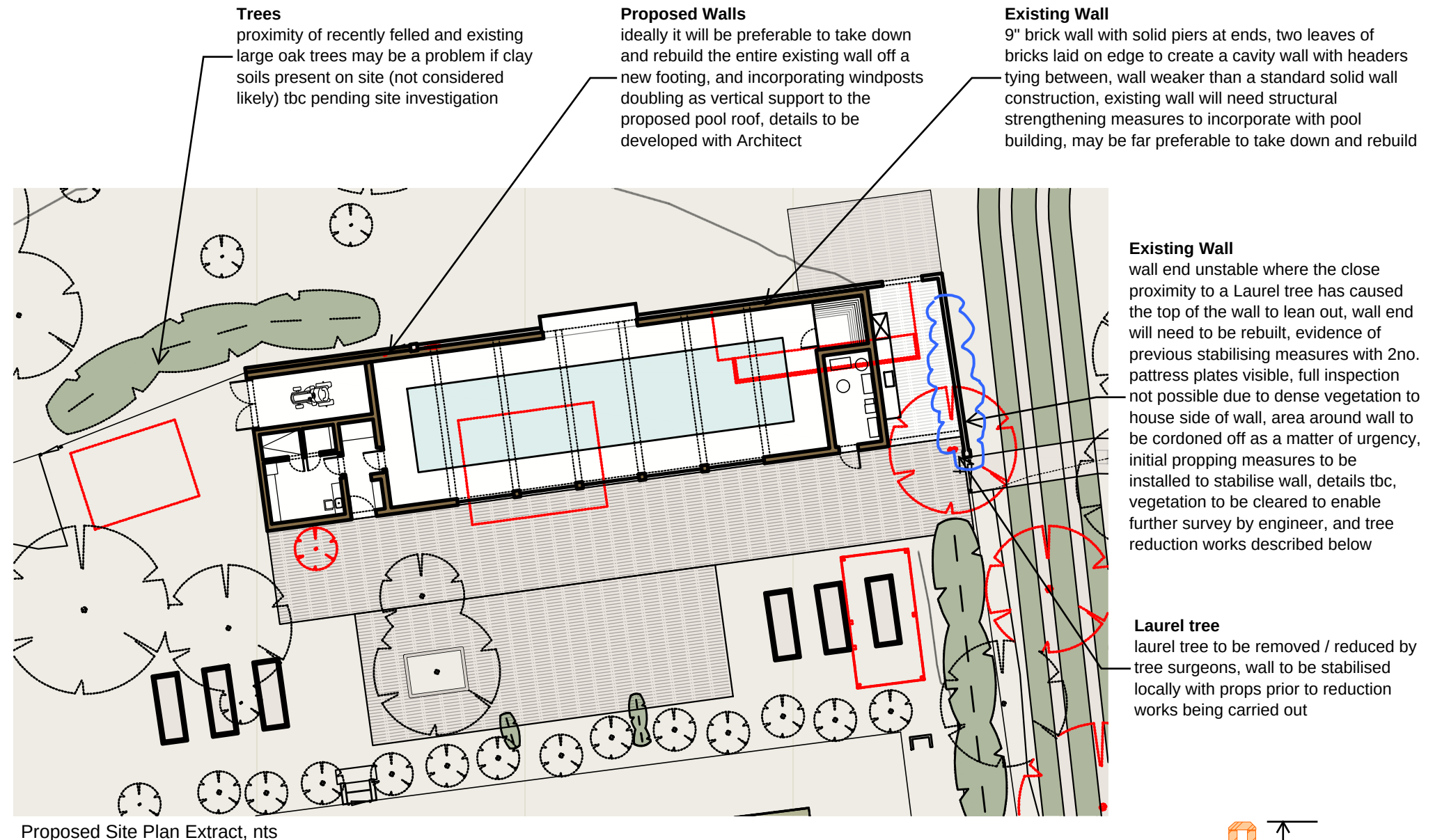
Swimming Pool Building

Intrusive site investigation to include 2no. trial pits on the wall to establish the ground conditions and profile of wall foundations and 2no. window sample boreholes under the proposed swimming pool with ground water monitoring.

RC pool substructure and steel/timber superstructure framing to be developed in ensuing design stages



Schematic Proposed Section, nts



11.1 Photographic Survey

1. Western Wall



1.1 Severe defect in the stone base to the wall



1.2 Multiple cracks in the brick wall above the stone base

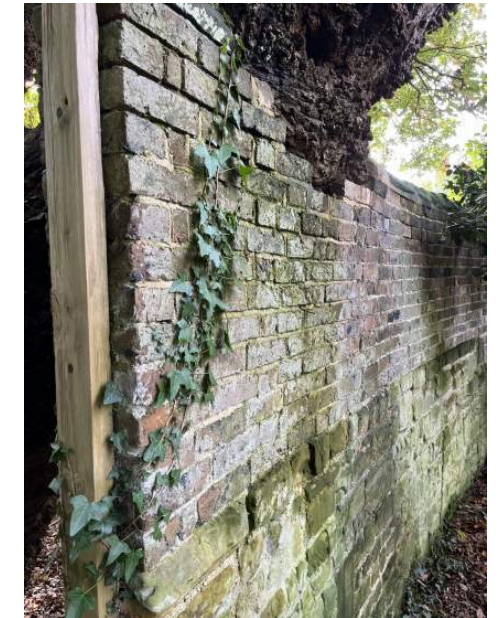
2. Southern Wall



2.1 Large 3-stem oak tree at wall end, extended sandstone base



2.2 Visible distortion of wall by the oak tree



2.3 Unstable wall end where oak has grown

3. Garden Store



3.1 Pattress plates visible on external southern wall of Garden Store



3.2 Garden store with struts from wall head to timber beams



3.3 Garden store

11.2 Initial Structural Assessment & Design Drivers

1. Western Wall

Structural Fabric Condition

generally in a varied condition requiring areas of repointing throughout, with two areas requiring substantial repair:

- heavily spalled and weathered sandstone base to wall with severe defect as indicated
- localised brick stitching where cracking (C) in retained brickwork

3. Garden Store

Structural Fabric Condition

appears to be historically altered, with evidence of previously altered rooflines, generally in fair condition, with roof rafters recently replaced:

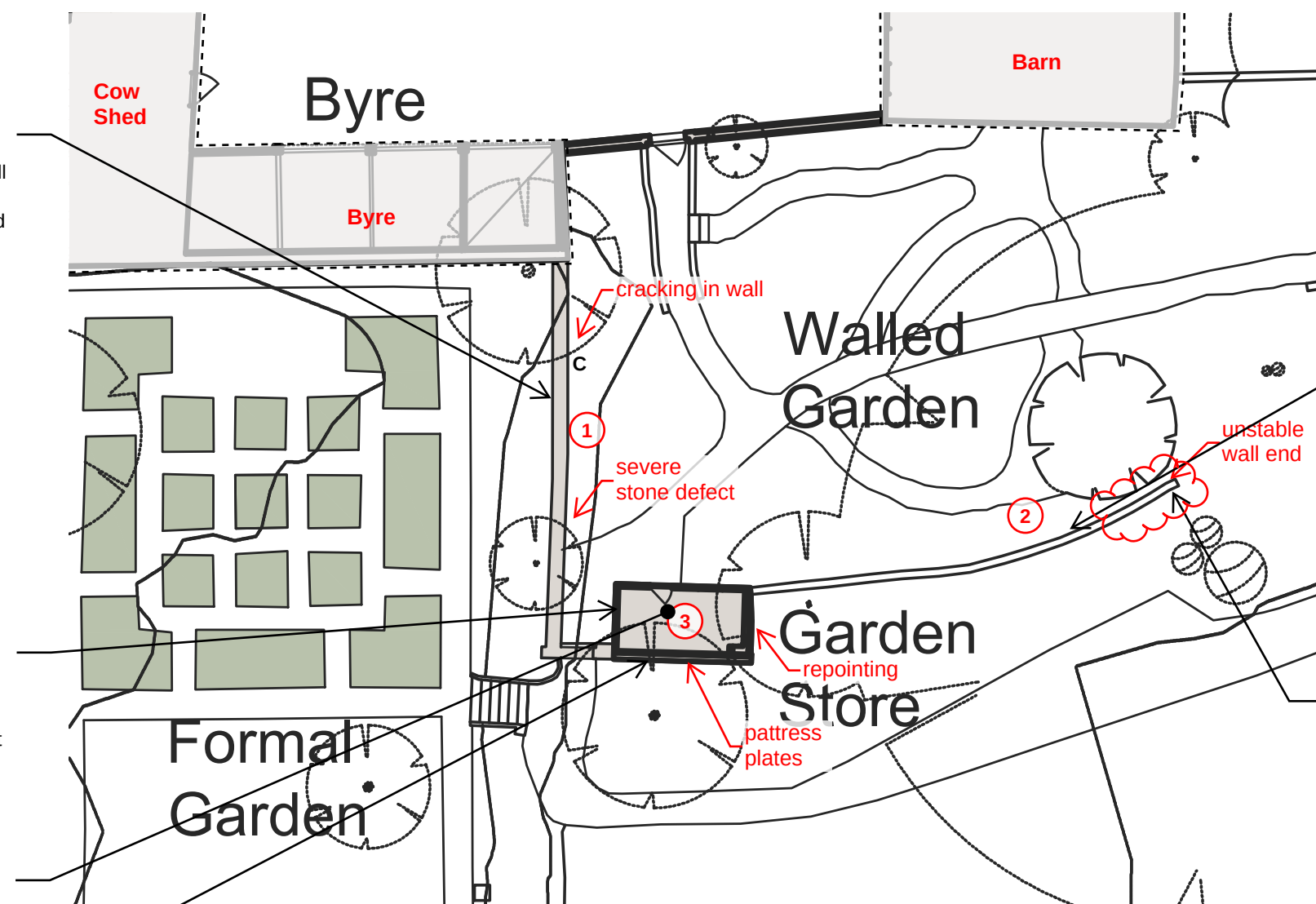
- vegetation to be carefully cut back from the wall and managed
- evidence of previous stabilising measures with 3no. pattress plates on the southern wall act to tie the internal horizontal timber roof ties which in turn support mild steel diagonal struts connected to the top of the stores inner wall, brickwork repointed on the eastern store wall

Roof

rafters recently replaced, appears in generally good condition

Foundations

assumed corbelled brick footing, depths & stability of existing foundations not known



2. Southern Wall

Structural Fabric Condition

generally in a varied condition requiring areas of repointing throughout, isolated brick and stonework repairs to heavily spalled and weathered areas, detailed proposals to be developed

- 9" solid brick over an extended stone base, 13 courses of brick over 7 courses of sandstone above ground, brick courses assumed added later to raise wall height

wall end is severely leaning and unstable due to the close proximity of a 3-stem veteran oak tree which has grown into the wall

- the oak has 3 substantial main stems growing out of a hollow and decayed main trunk and these 3 main stems and the wall appear to be at risk of collapse
- it is recommended that the tree be stabilised by insertion of steel tie bars or cables
- the advice of a specialist tree surgeon should be sought, area around wall to be cordoned off as a matter of urgency
- further measure for the repair and stabilisation of the wall to be developed in ensuing design stages