

Summary Of Structural Assessment And Strengthening Works Required

The capacity of the existing structural elements have been checked against the required loadings to the Eurocodes. Below is a summary of the assessment identifying any elements which require strengthening as part of the refurbishment works:

Existing Timber Spine Beam Assessment:

The spine wall has been removed at ground floor level so the existing timber floor beams at each level have been assessed.

Bending Stresses @ 230% capacity => strengthening required
Deflection @ 200% limit => strengthening required

Refer to S-0001.1-Detail 1

Existing Timber Floor Joist Assessment:

The existing floor joists vary in both depth and width, typically they are 160x60 at 380 c/c. They have been assessed for their maximum span.

Bending Stresses @ 98% capacity
Deflection @ 160% limit => strengthening required

Refer to S-0001.1-Detail 1

Existing Stair Beam Assessment:

The stair wall is not supported below first floor level so the existing timber floor beams at each level have been assessed.

Bending Stresses @ 140% capacity => strengthening required
Deflection @ 200% limit => strengthening required

Refer to S-0001.5-Detail 6

Existing Floor Beam Assessment:

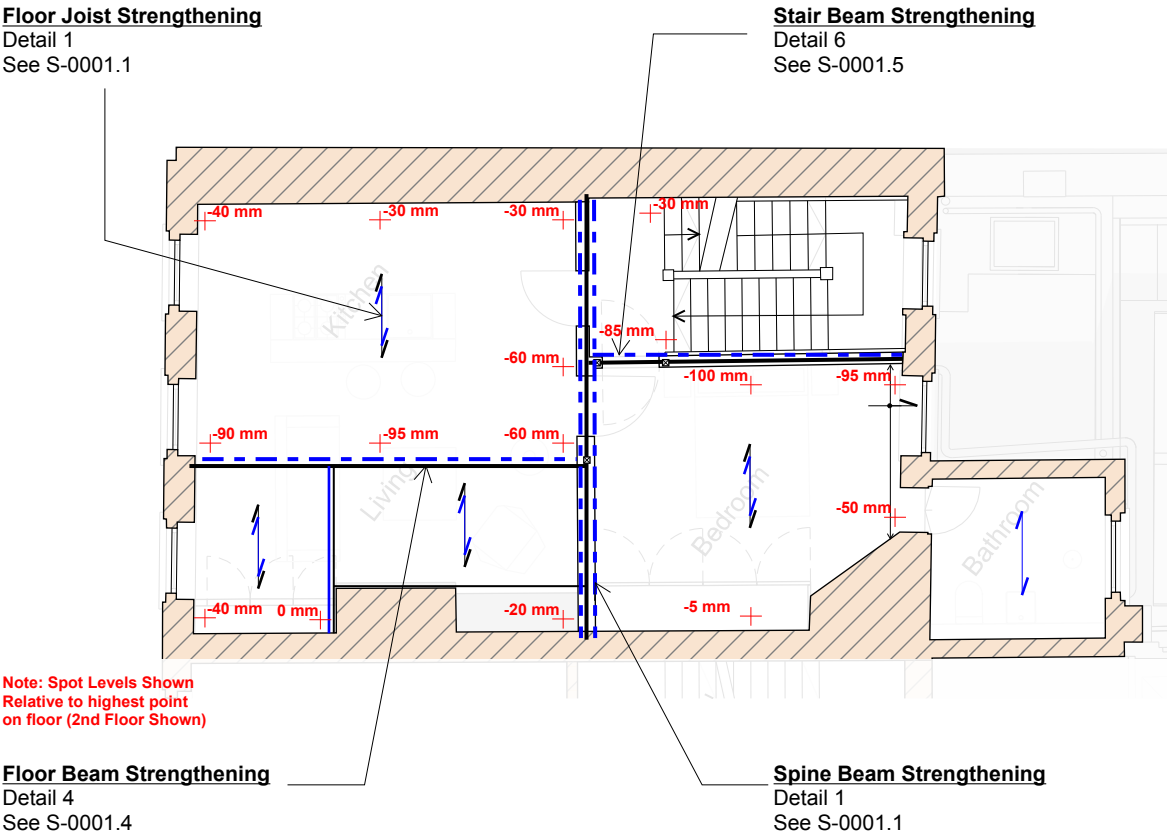
The existing timber floor beam at each level have been assessed.

Bending Stresses @ 110% capacity => strengthening required
Deflection @ 200% limit => strengthening required

Refer to S-0001.4-Detail 4

Existing Floor Movements:

From survey spot levels the existing floor structure has settled/deflected by up to 100mm at each floor level. Strengthening Works are required to ensure to further settlement occurs



TYPICAL FLOOR PLAN 1ST TO 3RD

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project no 879	sketch no 04-XX-LB-S-0001.0	rev 01	by RK

- This option provides the required strengthening to the existing spine beam while minimising impact on the historic finishes.
- This option does require the existing floor beams to be trimmed and re-supported on the new steelwork
- Option A is considered to have the least impact on the historic building fabric while achieving the required structural strengthening

Existing timber spine wall beams to be strengthened with pairs of PFC steel beams - through bolted to spine beam with pairs of bolts at 600mm c/c

Existing joists to be strengthened with 200x50 C24 timber joists - bolted together at 400mm staggered c/c

Proposed spine beam strengthening allows for finishes to remain largely undisturbed

New plywood sheathing fixed down to new timber joists - resilient bars to tops of joists to Architects specification

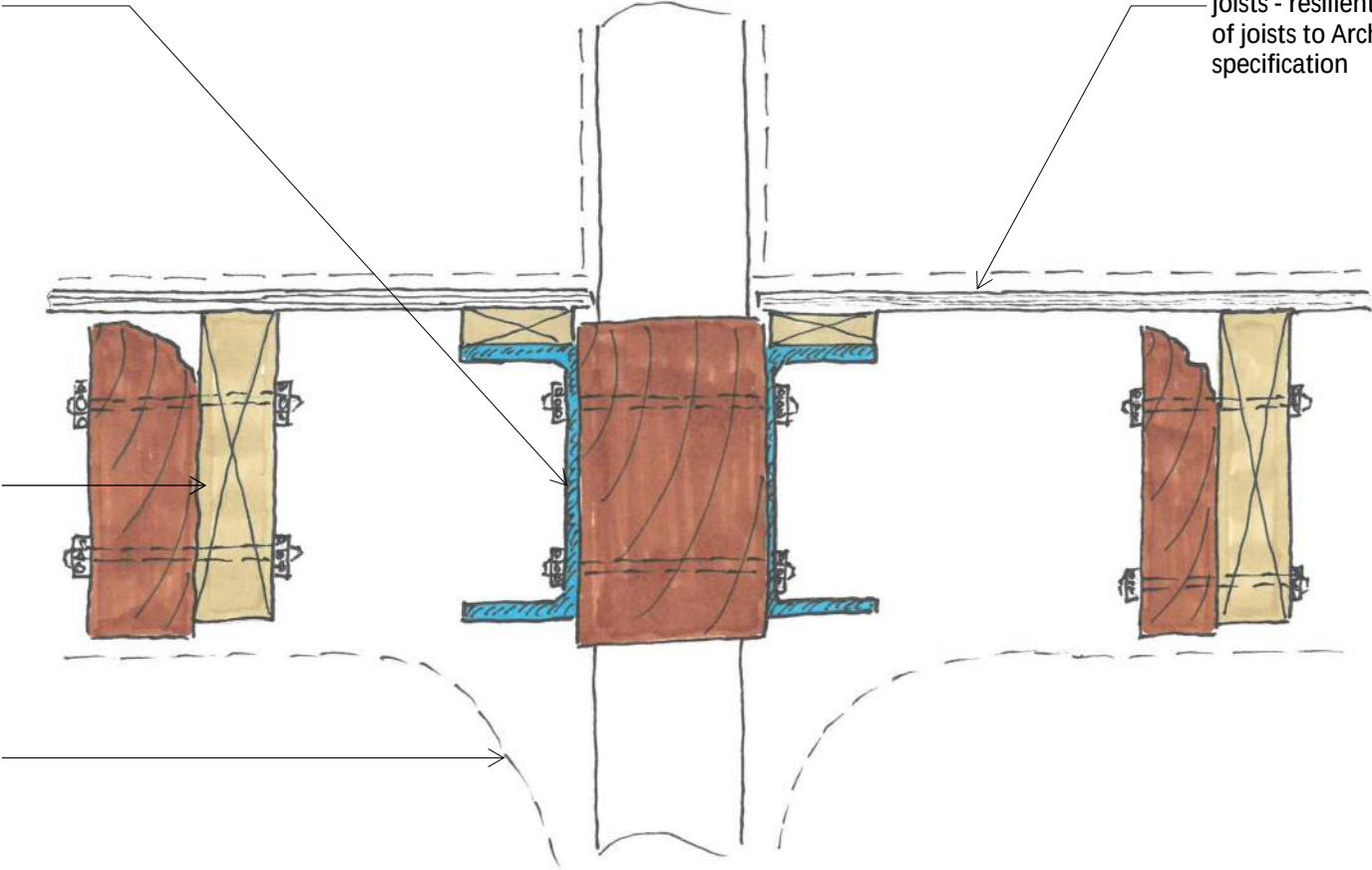


Figure 1, Spine Wall Strengthening Location (Indicative)

Detail 1: Spine Beam & Joist Strengthening Requirements, 1:10

Structural Strengthening Requirements:

- The existing spine wall beam can not be justified to support the required residential loadings to current standards therefore strengthening is required.
- The existing floor joists require strengthening due to comply with current standards and allow for levelling of existing floors
- Generally all structural strengthening proposed will reduce deflections and movements within the building to protect the historic structure and materials from further damage
- Steel beams to bear onto padstones in masonry party walls

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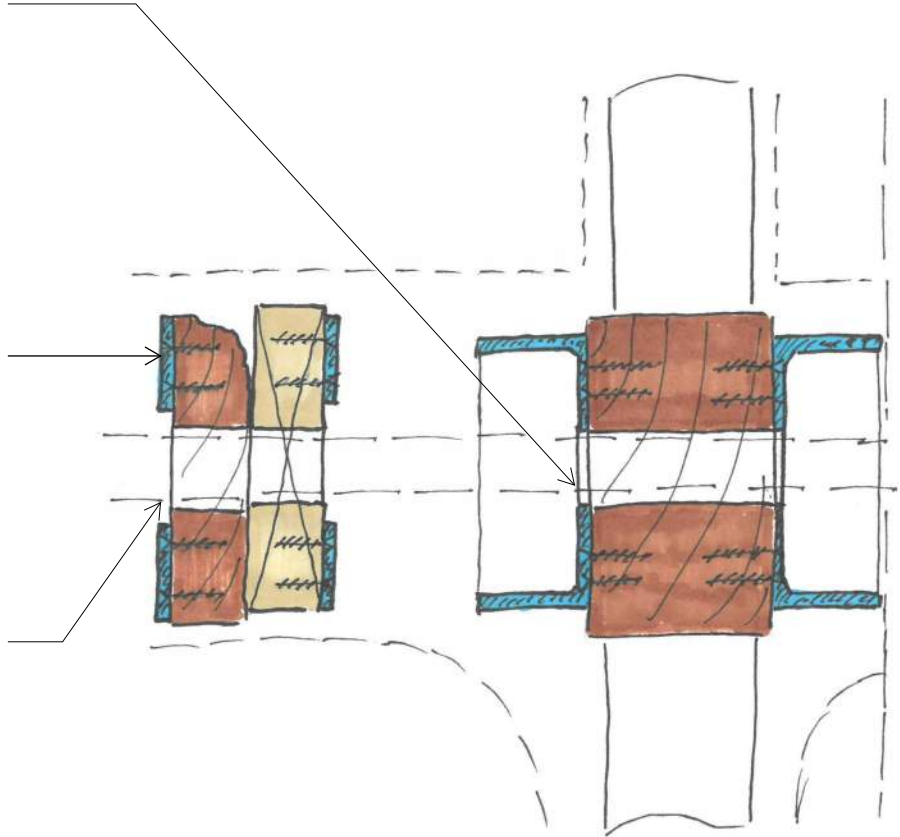
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Strengthening steel beams to existing timber spine wall beams allow for kitchen waste pipe to run through to riser beyond - steel beams to be strengthened locally around penetration

Existing and proposed joists to be strengthened locally with steel plates to allow for kitchen waste pipe to run within floor zone - plates to be screw fixed to joists

Service penetration to mid depth of joists



Proposed service riser location



Detail 2: Spine Beam & Joist Service Penetration, 1:10

Structural Strengthening Requirements:

- The strengthening is required to allow the waste pipe from the proposed kitchen island unit to run through the floor zone. The island unit is required to avoid any damage to historic wall finishes
- The service run for the kitchen waste pipe will effect a maximum of 3 joists and the spine beam at each level



Figure 2, Spine Wall Strengthening Location (Indicative)

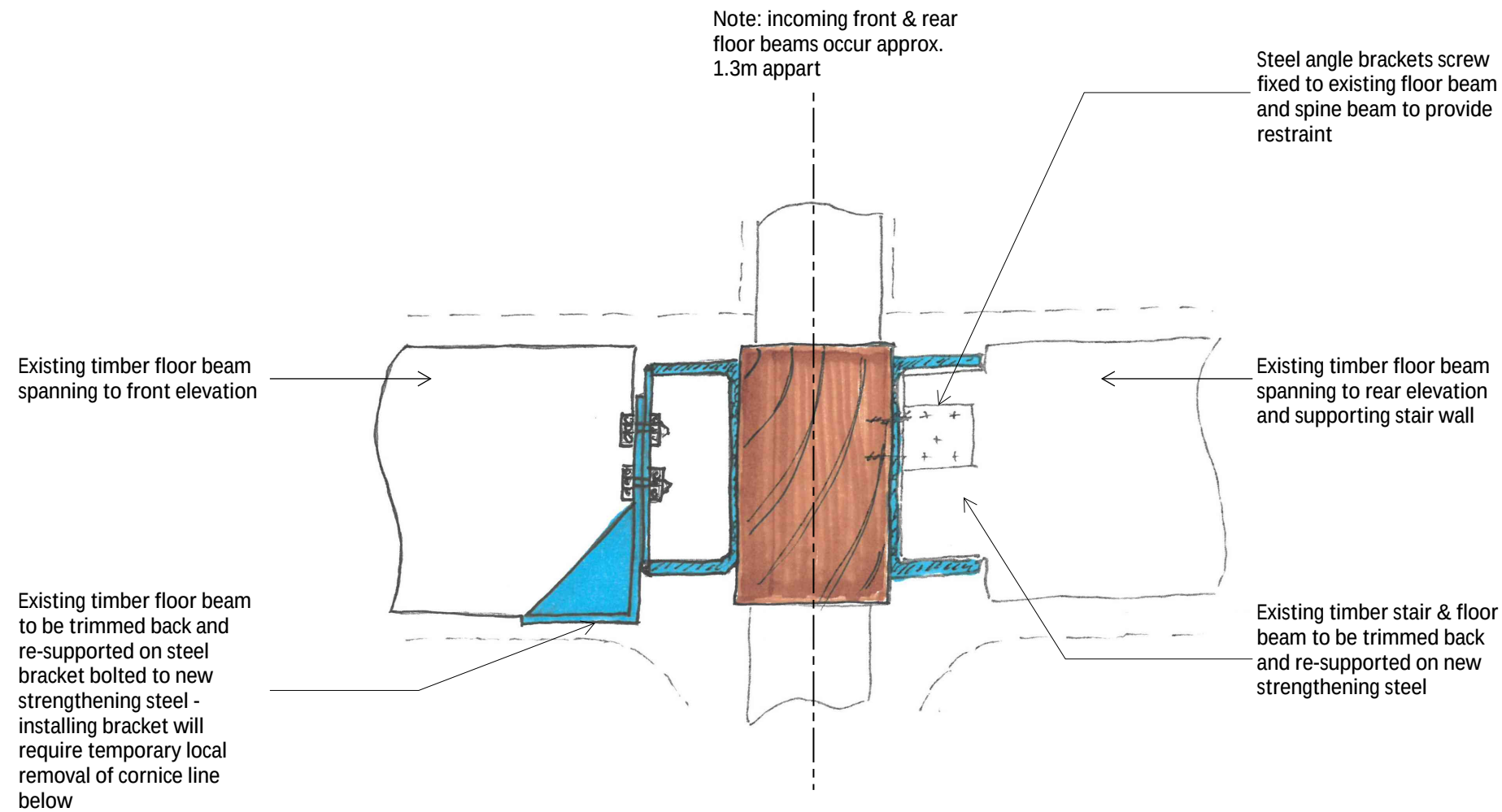
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Detail 3: Floor Beam To Be Re-supported, 1:10

Structural Strengthening Requirements:

- The strengthening is required to the bearing of the floor beams to justify the connection for required residential loadings to current standards



Figure 3, Floor Beam To Be Re-supported (Indicative)

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