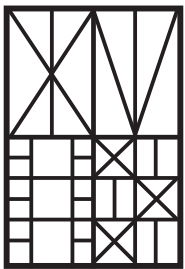


New City Court

2018 Scheme / 2021 Scheme



Listed Building Consent
BREEAM / Upgrades to Existing Fabric

July 2022

**ALLFORD
HALL
MONAGHAN
MORRIS**

GPE.

December 2018 Planning Application (*Appeal Reference: APP/A5840/W/22/3290473*)

December 2018 Listed Building Consent (*Appeal Reference: APP/A5840/Y/22/3290477*)

April 2021 Planning Application (*Appeal Reference: APP/A5840/W/22/3290483*)

April 2021 Listed Building Consent (*Appeal Reference: APP/A5840/Y/22/3290490*)

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1.0 Introduction

1.1 Purpose of Document

1.1.1 To illustrate the requirements of the BREEAM assessment for the Georgian Terrace, associated with the refurbishment and as described in the two listed building consent applications, forming part of the 2018 and 2021 schemes respectively.

1.1.2 To clarify why a BREEAM certification level of 'very good' rather than 'excellent' is proposed, given constraints on upgrades to the performance of the fabric in order to achieve mandatory credits.

1.2 Background

1.2.1 It should be clarified that given the works to the Georgian Terrace are classified as refurbishment, the relevant BRE certification schema is: BREEAM UK Refurbishment and Fit-out 2014 (this remains the latest version at the time of the Inquiry).

1.2.2 There are 4 parts which may be applicable to the BREEAM assessment, Part 1 Fabric and Structure, Part 2 Core Services, Part 3 Local Services and Part 4 internal Design.

1.2.3 For listed buildings, Part 1 is only applicable where renovations to the building meet / exceed certain thresholds. Given the changes that are required to the roof and rear / side walls to unpick the 1980's attachments to the Georgian terrace and remove deleterious materials (asbestos roof tiles) – this threshold is met. That means the project will be assessed under the Part 1 requirements for Fabric and Structure (in addition to parts 2,3 & 4).

1.2.4 To achieve an 'excellent' rating there is a requirement to achieve a minimum number of credits, but also to secure certain mandatory credits. To achieve an 'excellent' rating, there is a mandatory requirement to achieve a minimum of 6 Credits for the ENE01 Reduction of energy use and carbon emissions.

1.2.5 Based on the design proposed (which was subject to consultation with LBS conservation officers at the pre-app stage) the design described in the listed building consent application can only achieve 3 credits. This limits the maximum rating possible to 'Very Good' – regardless of the total quantum of other credits targeted (i.e. a score which might otherwise secure excellent).

1.2.6 Set out below are the key constraints to achieving 6 credits and our concerns associated with

risks to the listed building fabric were these solutions to be implemented.

2.0 Fabric considerations

2.1 The existing condition

2.1.1 The existing primary street facing elevation of the Georgian Terrace is constructed of monolithic brickwork fronting onto St. Thomas Street. This was dry lined internally in the 1980's, but is both uninsulated and has no vapour control layer. The void behind the plasterboard is used primarily for running containment to electrical systems. This wall also has concrete retaining beams cast into the rear of the original fabric, with 1980's timber joists hung on steel joist hangers from this concrete beam. See Figure 1.

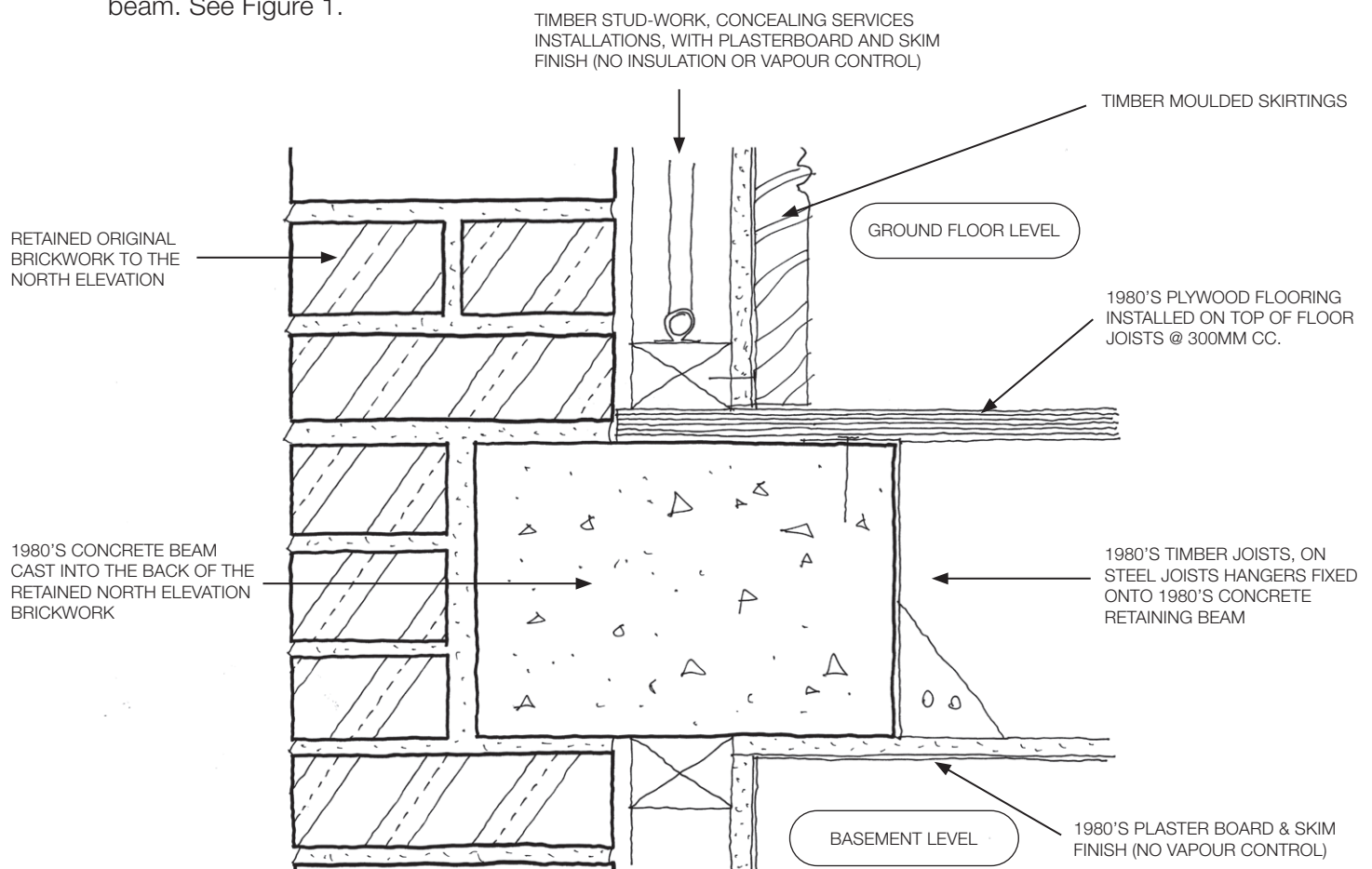


Fig. 1: Existing junction between the original fabric of the north elevation and 1980's retaining / floor structures

2.1.2 Given how this wall is currently constructed, water vapour movement is possible from inside to outside. The lack of insulation also means that heat is lost through the fabric. The combination of free vapour movement and heat loss internally, help to ensure that the brickwork can dry out, especially where subject to high levels of precipitation externally. See Figure 2

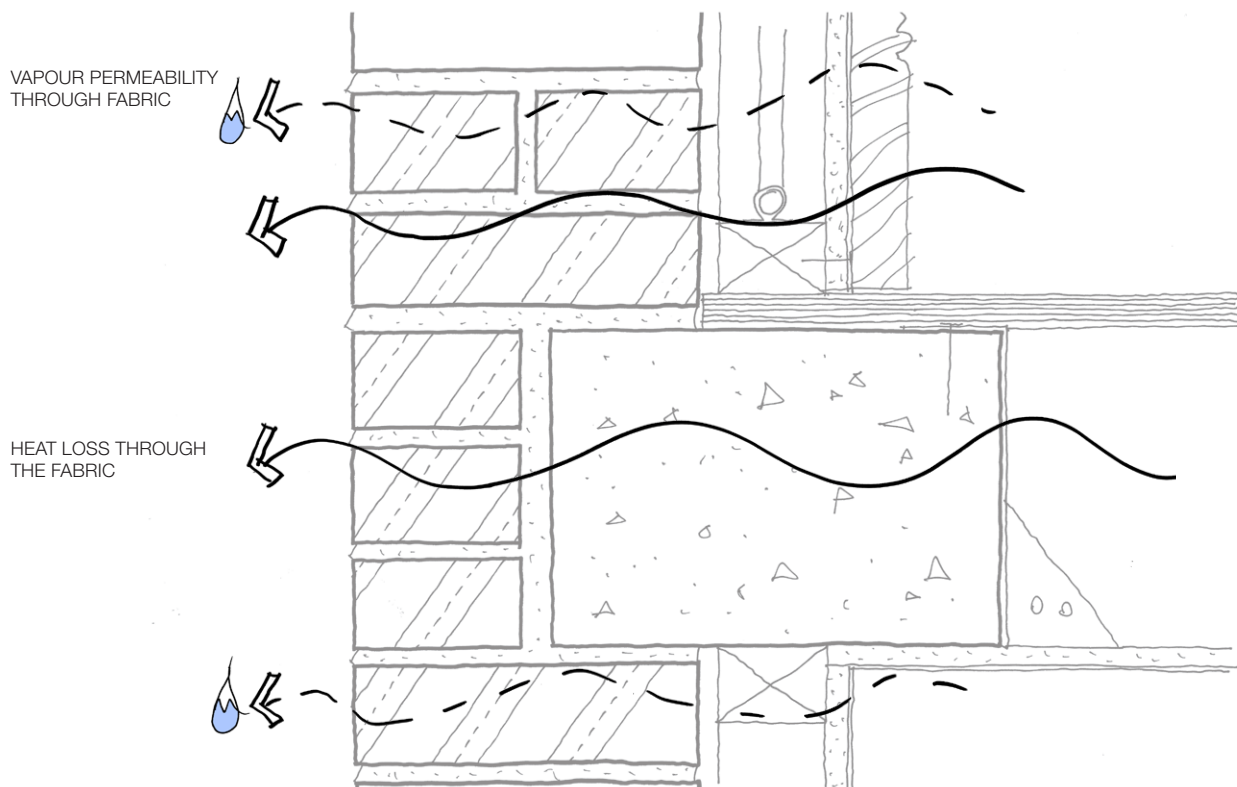


Fig. 2: Heat loss and vapour movement through existing north elevation

2.1.3 Single glazed timber sash windows are the predominant fenestration to the north elevation. From a performance perspective these are subject to both high air leakage / infiltration and poor thermal performance. However, it is the appearance of both the brickwork and fenestration - which are critical to the character and special historic interest of the property. The brickwork to this elevation constitutes a large part of the retained original fabric – the majority of the rest of the buildings brick façades are of modern 1980's construction.

2.1.4 The current rear walls (south facing) and flank wall (east facing) are 1980's cavity wall construction (where not adjoining the 1980's building). Whilst the cavity is uninsulated this baseline performance is already 2x better than the original north elevation. The windows to these elevations are slimline double-glazed units generally.

2.1.5 The roof is currently uninsulated.

2.1.6 The basement / lower ground level slab is understood to be 1980's ground bearing mass concrete (and not a suspended timber floor) and is uninsulated.

2.1.7 The existing buildings have had all of their chimney stacks removed and their lateral bracing walls dividing the front and back rooms removed. This has significantly compromised the lateral stability of the terrace. To compensate for this – the modern floor construction, include steel beams and braced timber joists – connect onto concrete beams that have been cast into the rear of the retained original fabric of the north facade.

2.2 Scope for performance improvement

2.2.1 The 1980's outer skin of the rear and flank elevations are to be rebuilt, and will include an insulated cavity construction improving the current performance. The existing double glazed units will also be replaced and achieve an increased performance.

2.2.2 Whilst the existing roof forms are to be revised to no 14 and 16 – the other roofs and their timber structures are to be retained. Insulation is proposed, but the total performance achievable whilst maintaining habitable rooms at the attic level – means that insulation depth will be limited, and performance increases modest.

2.2.3 Analysis of the alterations made in the 1980's to the stability systems of the terrace (removal of spine walls / removal of chimney breasts), have defined an approach of proposing limited alteration to these floors, to ensure that the stability of the retained original fabric of the north elevation is maintained. Given the concrete beams cast into the rear of the brickwork elevation - this limits the potential for insulation at the rear if of the façade and adjoining floor zones. This would result in considerable cold bridging where connecting into the north façade. See Figure 3.

2.2.4 Given the ground bearing concrete slabs at basement level, there is no potential to insulate beneath these given stability concerns of the terrace party walls.

2.2.5 HE guidance note (*Historic England - Energy Efficiency and Historic Buildings; How to Improve Energy Efficiency*) provides information on performance improvements to listed buildings. It includes advice on low risk (*green*) options for improving the performance of monolithic / uninsulated brickwork. However, this would require the retained St. Thomas Street brickwork elevation to be externally insulated / and refaced. This solution is not considered appropriate given the character of the listed buildings.

2.2.6 The alternative is to consider internal insulation. However, this is considered a high-risk (*red*) activity in the HE guidance (noted above). This is due to the difficulty in maintaining an insulated line, and in achieving an effective internal vapour seal. This introduces the high risk of interstitial condensation / increased moisture retention to the Georgian brickwork. An increased presence of water and over a prolonged period, has the potential to cause failure of the retained historic fabric, during freeze / thaw cycles and the potential to cause the mortar / brickwork to become friable. Once products are used to try and stabilise the outer face of the brickwork (to treat the problem), this then tends to lock greater moisture behind in the fabric of the bricks and exacerbate the problem.

2.2.7 Whilst wood wool products are suggested as a vapour permeable option, these have very poor thermal insulation properties and would limit any meaningful thermal performance improvement.

2.2.8 Replacement of the single glazing of the sash windows, with vacuum sealed slimline double glazed units, was discussed with LBS conservation officers. It was agreed that altering the external aesthetic of the windows, would lead to heritage harm and the preference was confirmed as retaining the single glazed sash – with a secondary glazing system internally. Whilst a secondary system can assist with some acoustic performance / draft sealing, the lack of continuity with an internally insulated / vapour sealed line – would reduce the overall thermal performance gains achievable.

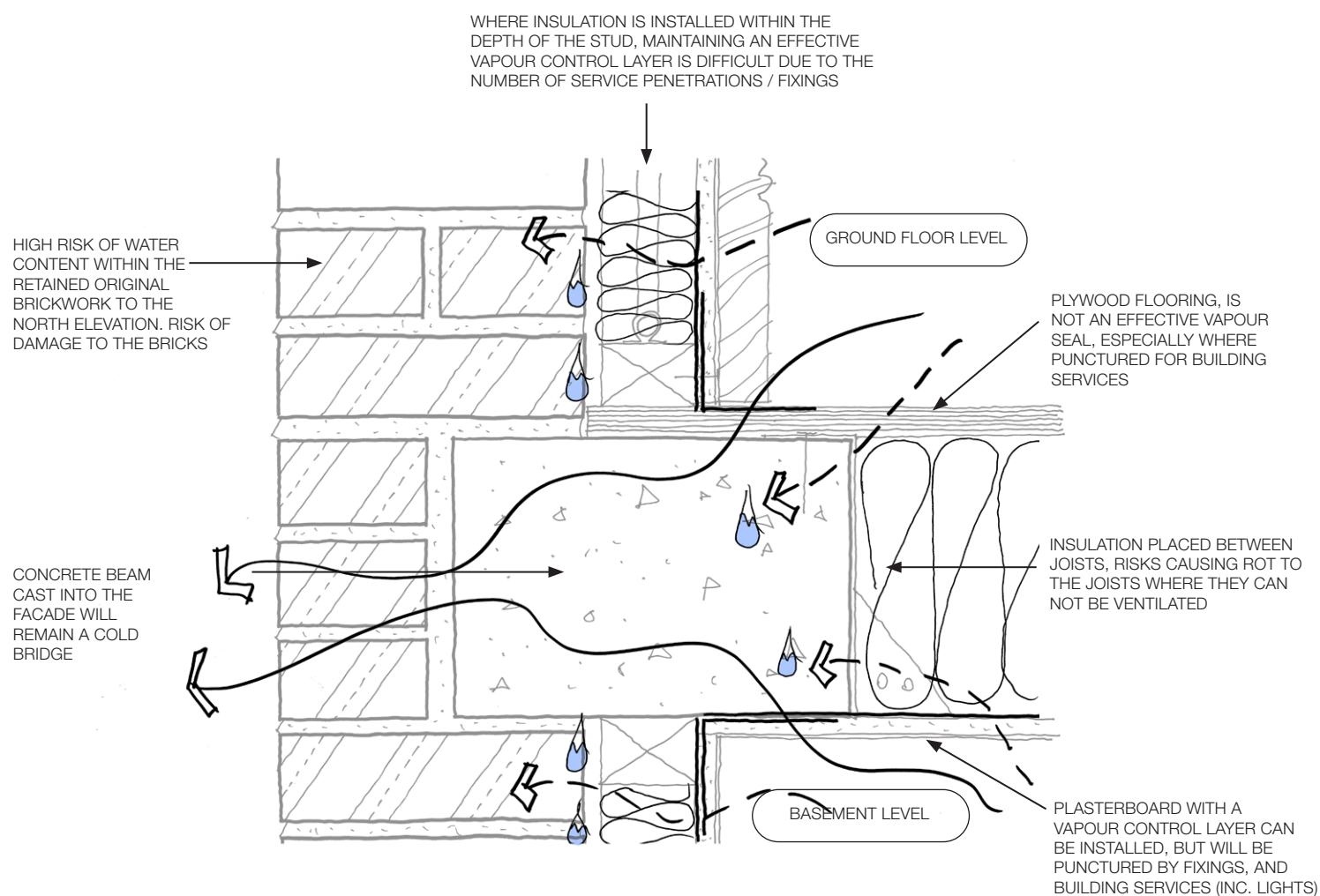


Fig. 3: Implications of attempting to insulate / install vapour control layers to the existing construction.

3.0 Conclusion

3.2.1 That to preserve the listed building fabric, and the special heritage character / interest of the Georgian Terrace, the 1980's interventions to the building now prohibit further effective upgrades to the thermal performance to the north elevation. By limiting the potential for thermal performance upgrades, the minimum mandatory credits for the ENE01 credit required to secure an excellent rating for the BREEAM UK Refurbishment and Fit-out 2014 can not be achieved.

3.2.2 That achieving a BREEAM rating of 'very good' is aligned with the proposals included in both listed building applications.

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