

19 October 2023

Ms Katherine Vintiner  
Principal  
Hampton Court House  
Hampton Court Road  
Richmond-upon Thames  
LONDON  
KT8 9BS

Our Ref: DLD/2377

Dear Ms Vintiner

## REPORT NO 2

### DRAMA ROOM - DRY ROT IN ROOF HAMPTON COURT HOUSE

Following our initial report dated 04 September 2023 further site inspections were carried out on the Drama Room roof on 05<sup>th</sup> September, 29<sup>th</sup> September and 03 October 2023.

#### ***Findings – Refer to attached photographs.***

In addition to the reported findings of our previous report, the present structural condition of the roof is substantially worse than originally feared. There is evidence of:-

- significant movement (sagging) of the lantern structure,
- splitting of the roof timber trimmers ,
- roof spread of the rafter feet on the external walls, and
- extensive lengths of decayed wall plates

#### ***Conclusions***

In summary, the roof is in poor structural condition and substantial structural remedial repairs are required to avoid its further deterioration. In the meantime, the room is unsafe for normal classroom occupancy or use.

#### ***Recommendations***

The School Management should consider the long-term option of replacing the roof in its entirety or carrying out more short-term repairs which might offer earlier use of the classroom facility. The other main consideration to note is that short-term ad-hoc repairs are already evident throughout the roof structure, and the added cost of further repairs must be considered as a very short term and relatively expensive solution. It is reasonable to assume that the roof structure has come to the end of its useful life.

Short-term repairs can be recommended in the form of:-

- a. Replacing all defective timbers including wall plates and rafters and boards
- b. Undertaking localised repairs to the split timbers and dowel connections.
- c. Applying a ply-sheet diaphragm membrane layer to the roof underside to the sloping

structures together

We have taken the opportunity of carrying out a measured survey of the roof to assist with our structural analysis of its condition. Please refer to the attached drawing numbers HSHS.S101 and S201 which shows the roof layout in detail for ease of reference. Photographs of the exposed roof structure are also appended to the end of this report.

I look forward to hearing from you.

Yours sincerely



Declan Duffy BSc(Hons) CEng MStructE MICE MIEI  
Chartered Civil & Structural Engineer  
Director

Encs: Structural Roof Plan  
Photos

**Photographs**



Photo 2/1  
Main roof rafters





*Photo 2*  
*Sagging roof trimmers around rooflight*



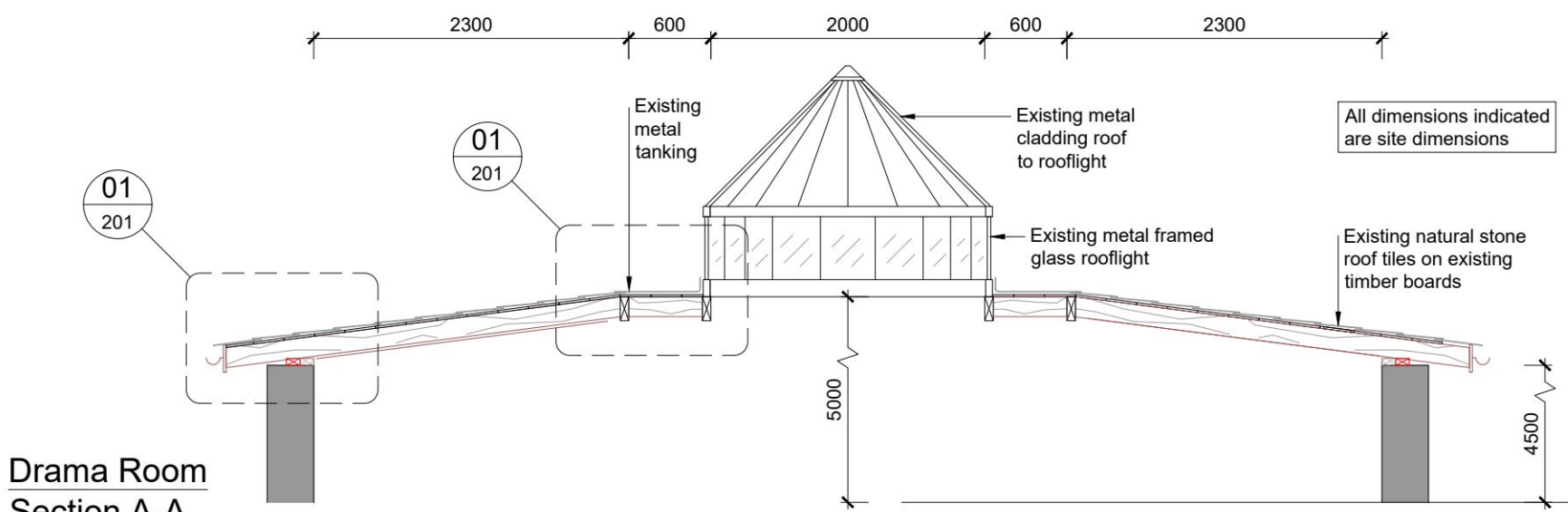
Decayed wall plate and rafter feet.

*Photo 3*  
*Close-up of decayed timbers*

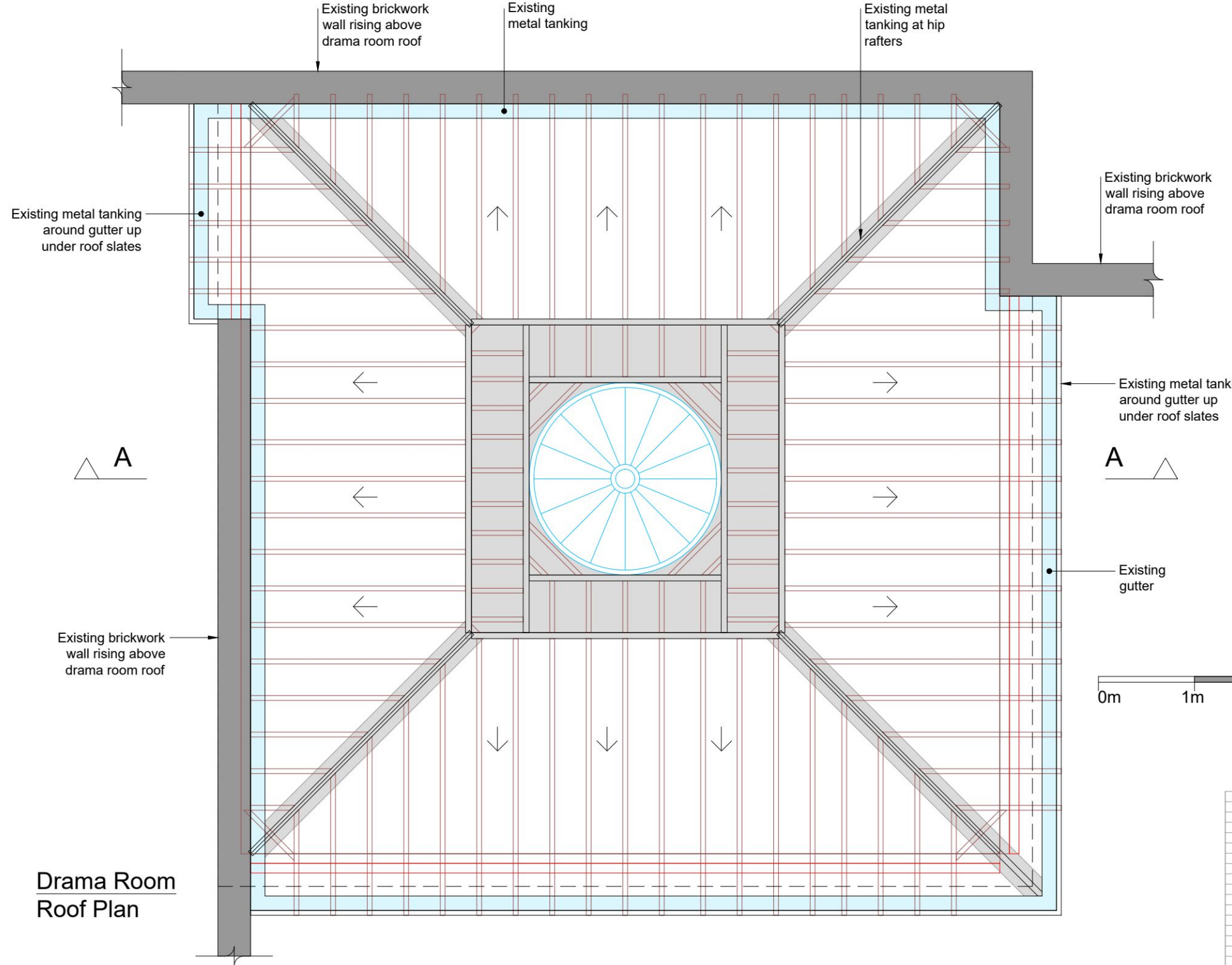




*Photo 4*  
*Poor condition of roof timbers*



Drama Room  
Section A-A



Drama Room  
Roof Plan

**Legend**

- Existing timber rafter 150 x 50mm
- Existing hip rafter 175 x 62mm
- Existing gutter
- Existing metal tanking (waterproofing)
- Existing wall plate and timber packing

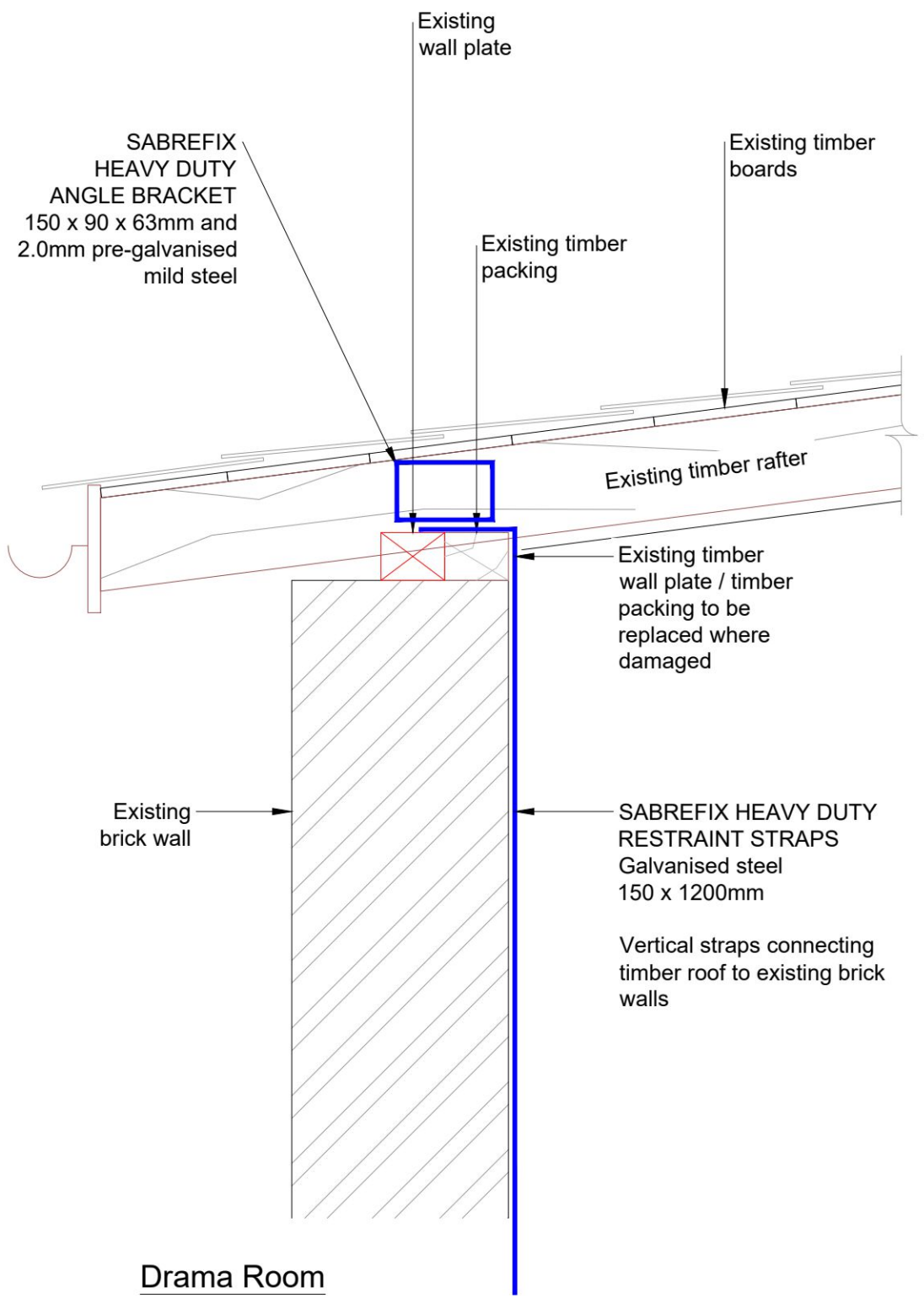
**General Notes**

- 1) All temporary works shall be the responsibility of the main contractor but should advice be given by the engineer, no responsibility will be accepted unless the advice is confirmed by the contractor in writing before being carried out.
- 2) All Dimensions are in millimeters unless otherwise noted.
- 3) Any deviation from the details shown must be notified to the engineer by the contractor in writing before being carried out.
- 4) Foundations have been designed to impose a bearing pressure of 100kN/m<sup>2</sup> on London clay and 150kN/m<sup>2</sup> on sand and gravel at the depths shown. Any additional shall be replaced with a nominal 1:8 mix concrete but in the event of extensive additional excavation being required the engineer must be informed immediately and fresh instruction obtained.
- 5) Reinforcement to be grade 460, deformed type 1 high yield bars or grade 250 mild steel in accordance with BS 4449:1997.
- 6) All steel to be Grade 43A.
- 7) All steelwork painted with 1 coat of Red Oxide at the fabrication works and 1 coat on site after erection. Each coat with a dry film thickness of not more than 50 microns. Steelwork to be encased in concrete shall be unpainted.
- 8) Provide minimum 1 hour fire protection to steelwork.
- 9) The concrete mix for Padstones shall be a 1:4 mix.
- 10) Brickworks shall be constructed using bricks with a minimum crushing strength of 27.5N/mm<sup>2</sup> and blockwork shall be constructed using blocks with a minimum crushing strength of 2.8N/mm<sup>2</sup> unless otherwise noted. All masonry shall be laid in class(iii) Mortar
- 11) All new structural timbers shall be grade C16 To BS5268 unless otherwise noted and shall be treated with an approved timber preservative, including cut ends and notches.
- 12) Do not scale off this drawing.
- 13) No beams/bearings are directly supported on chimney breast brick wall.
- 14) All bolts Grade 8.8 M16 bolts unless otherwise stated.
- 15) Concrete mix shall be grade 35k, giving a minimum crushing strength of 35N/mm<sup>2</sup> at 28 days. Use 20mm aggregate and sulphate resisting cement.
- 16) The dry-packing shall consist of 1 parts by volume of rapid hardening Portland Cement and 3 parts sharp sand, or non-shrink cementitious grouting.
- 17) Newton 303 Pollyproof Waterbar to all vertical and horizontal cold joints.

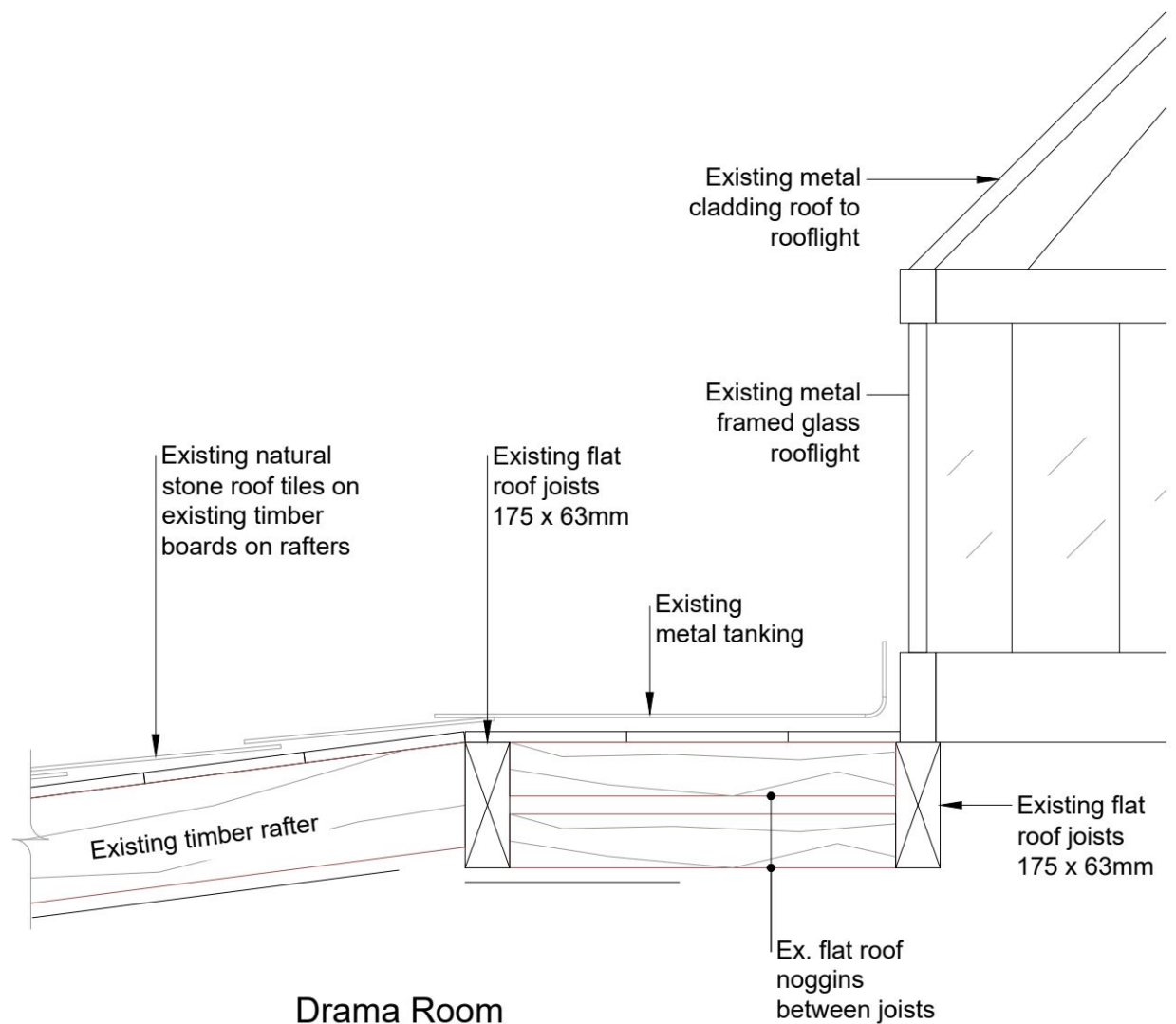
**PRELIMINARY**

P1 Preliminary issue	XX.10.23	PE	client	<b>DUFFY ASSOCIATES</b> BUILDING · ENGINEERING · DESIGN 76 New King's Road · London · SW6 4LT T 0207 042 8290 · declanduffy@duffyassociates.co.uk
			Hampton Court House School	
			Drawing title	Scale 1:50 (A3)
			Drama Room - Roof structure plan and section A-A	Date OCT 2023
				Drawing Number S101
				Drawn By PE
			Property	Figured dimensions only to be taken from this drawing. Any errors or omissions to be reported to the Architect/Engineer.
			Hampton Court House School	
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**Drama Room  
Detail 01 (1:10)**



**Drama Room  
Detail 02 (1:10)**

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- 7) All steelwork painted with 1 coat of Red Oxide at the fabrication works and 1 coat on site after erection. Each coat with a dry film thickness of not more than 50 microns. Steelwork to be encased in concrete shall be unpainted.
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			Hampton Court House School	
			Drawing title	Scale 1:50 (A3)
			Drama Room - Roof structure details	Date OCT 2023
				Drawing Number S201
				Drawn By PE
			Property	Figured dimensions only to be taken from this drawing. Any errors or omissions to be reported to the Architect/Engineer.
			Hampton Court House School	
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