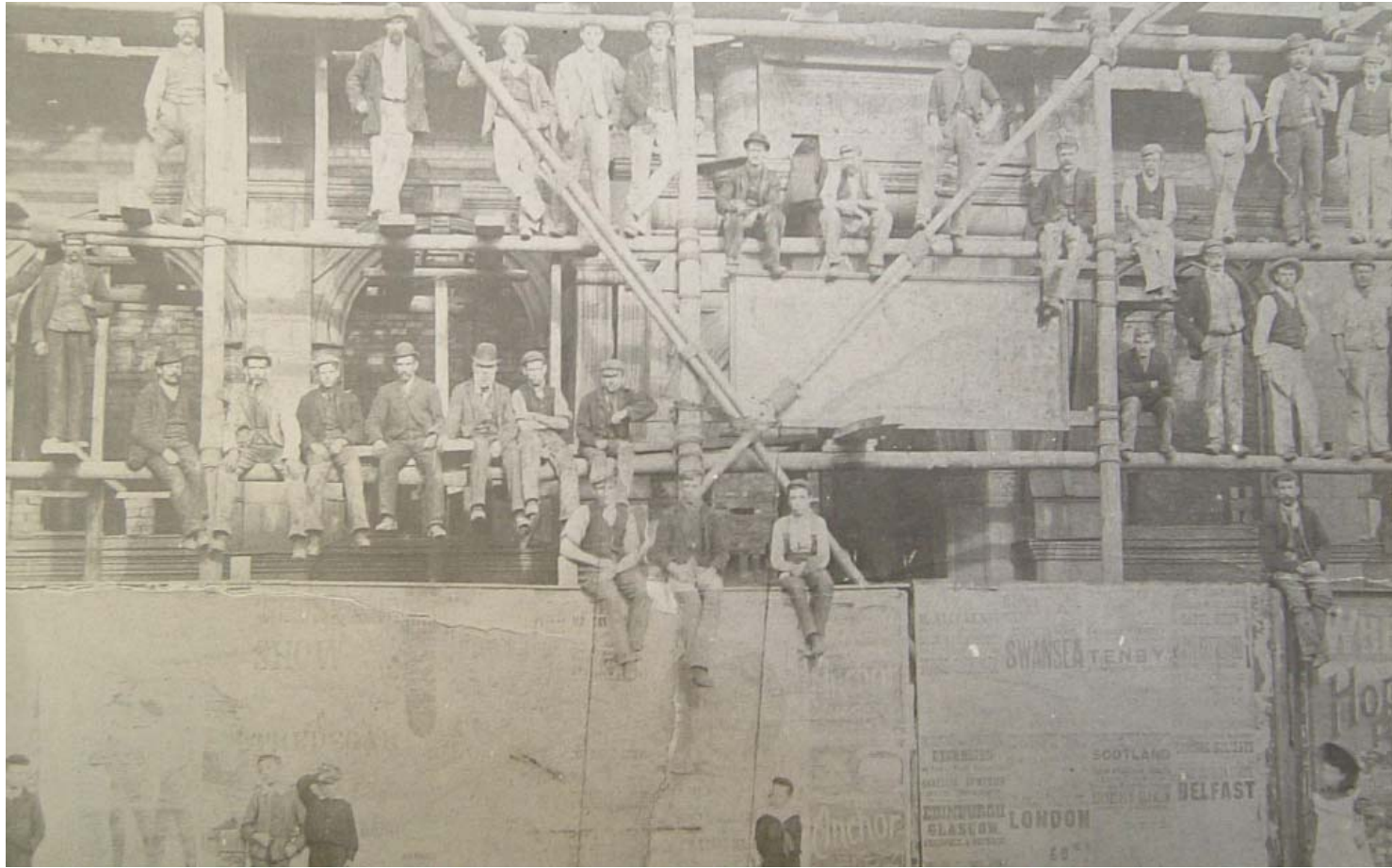
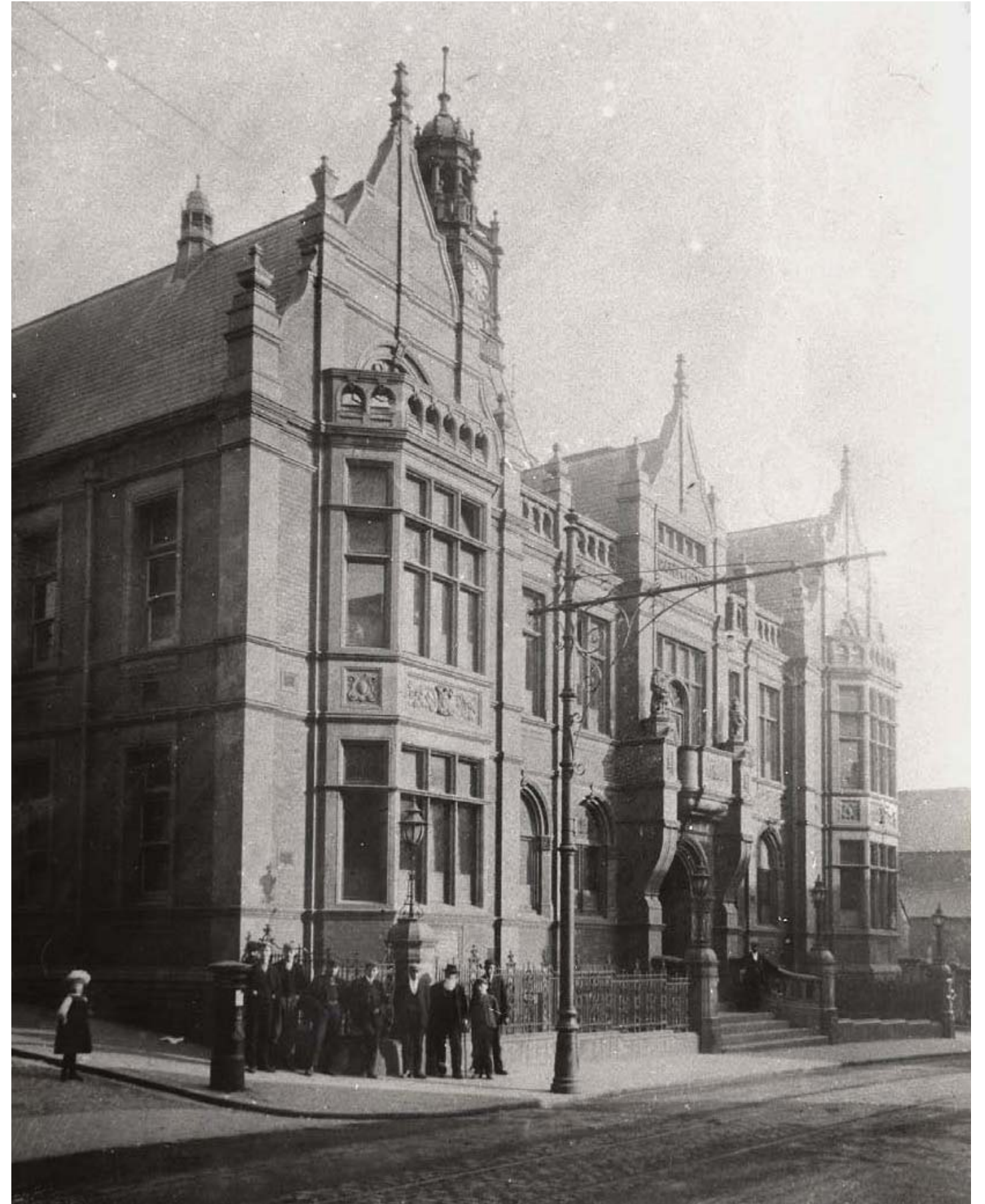


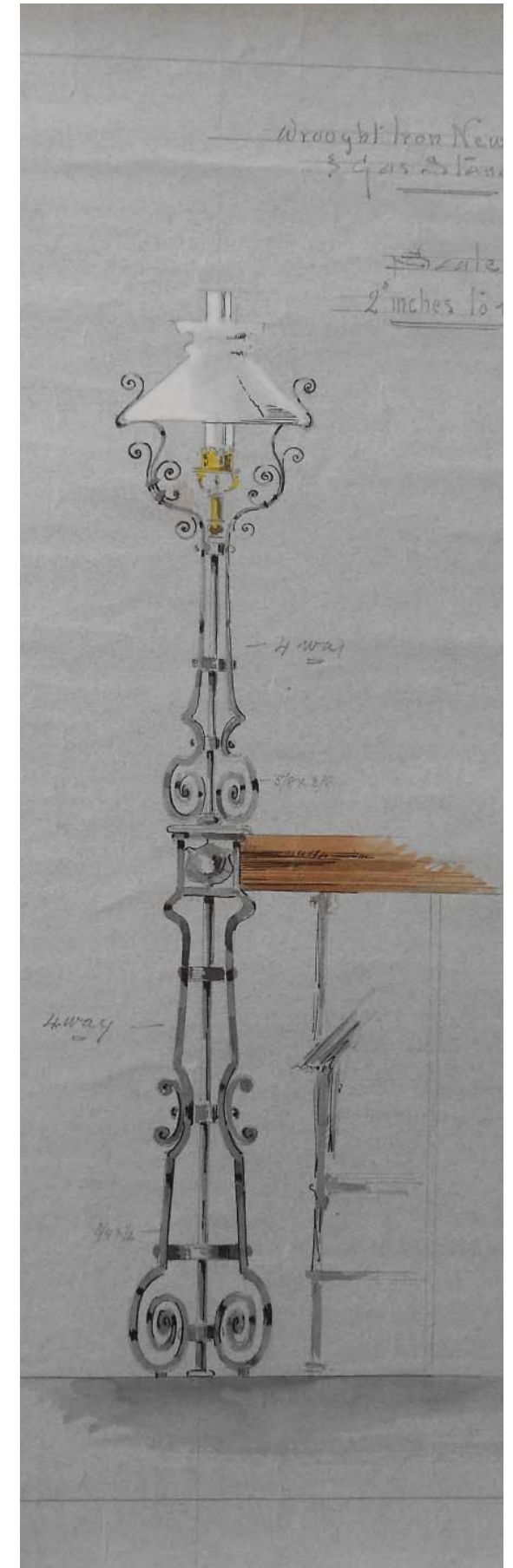
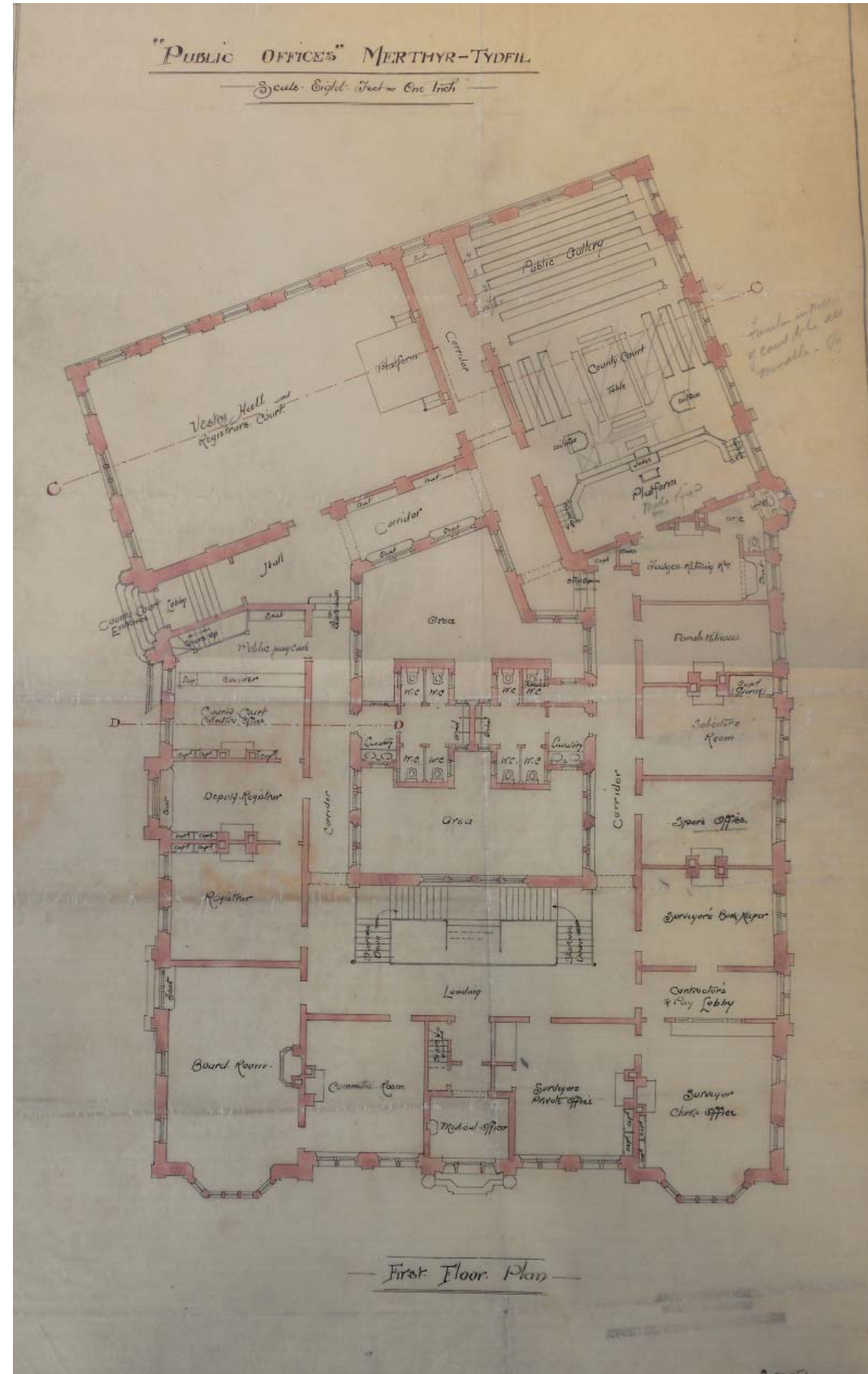
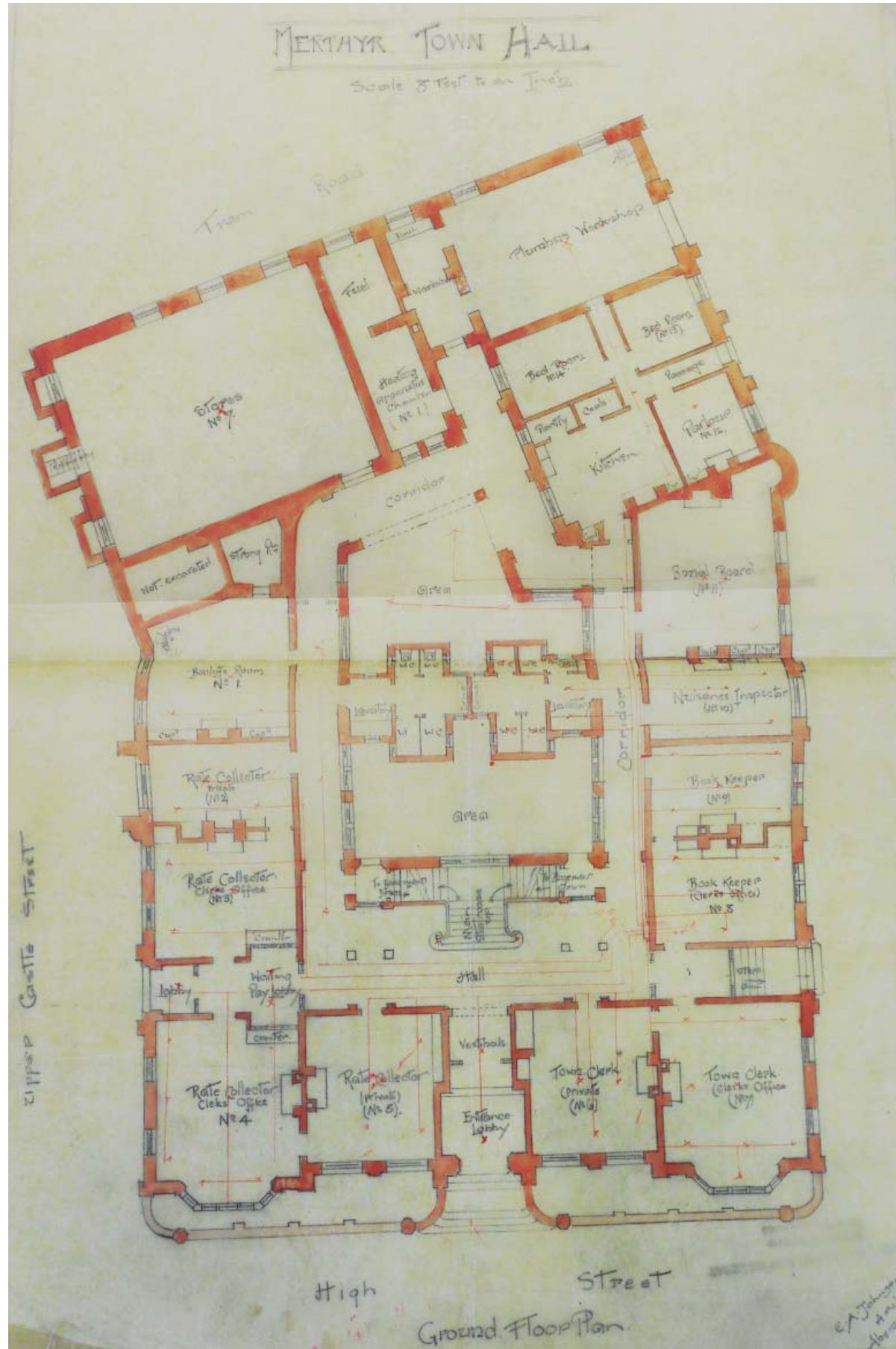
MERTHYR TYDFIL OLD TOWN HALL - A SYMBOL OF MERTHYR'S CIVIC PRIDE



- Late Victorian - built 1896-1898;
- As court house & home of local government;
- Grade II* listing - top 8% of listed buildings;
- Solid masonry construction - red brick & terracotta - with stained glass windows & terracotta parapet adornments;
- Steep slate roofs with clock tower & cupolas;
- Over 2,500 sq.m. around central courtyard;
- Architectural, historical & social significance.



MERTHYR TYDFIL OLD TOWN HALL - THE ARCHITECT'S ORIGINAL DRAWINGS



‘REDUCING THE CARBON FOOTPRINT OF A LISTED BUILDING’

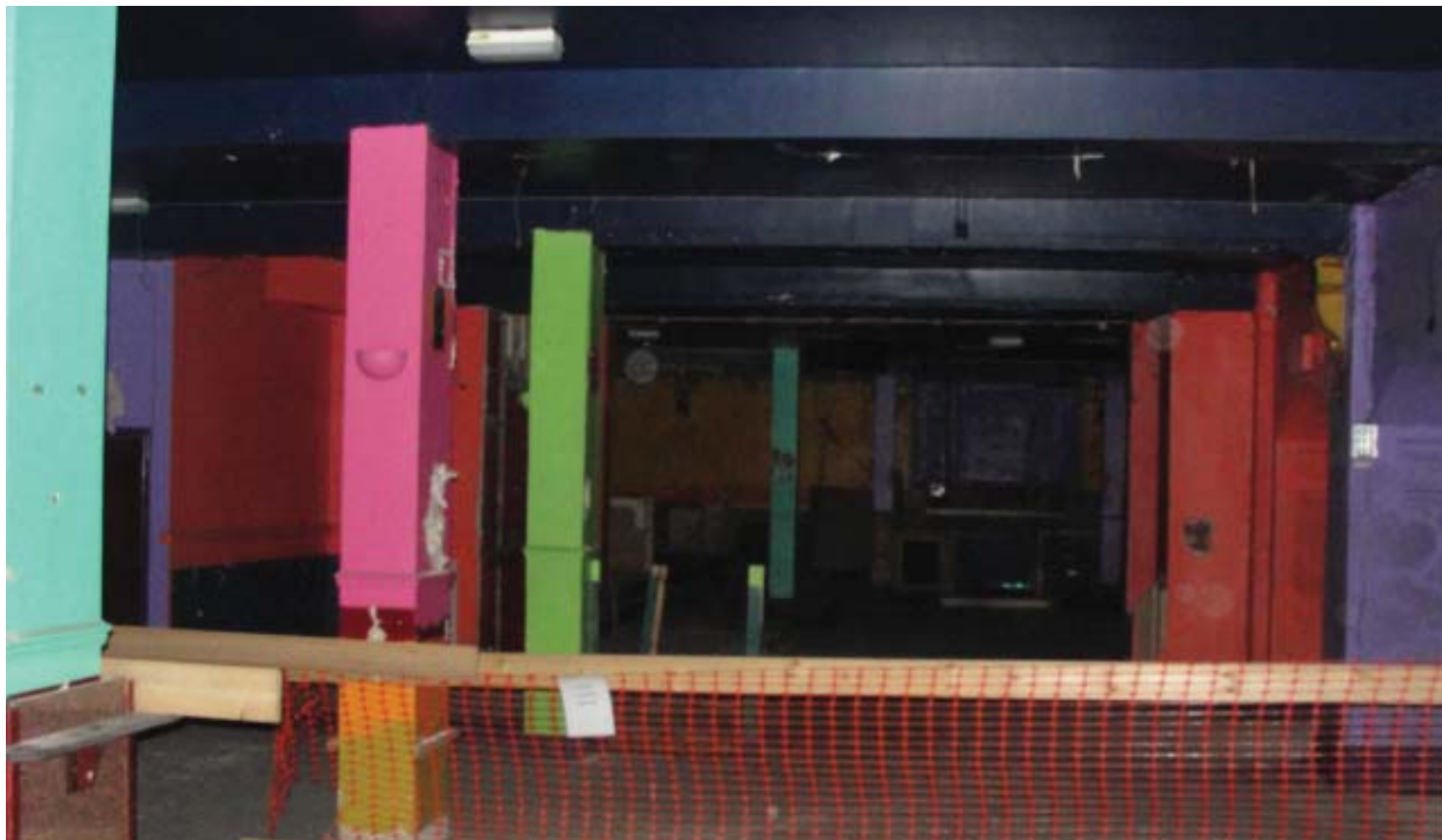
- Building re-use is ultimate in Sustainability;
- Making sure new uses are sustainable;
- Flexibility in use reduces risk of failure;
- Robust specification minimises maintenance;
- Working ‘with’ the building reduces carbon footprint & cost and maximises conservation;
- Investigation, assessment, sampling & testing to avoid unnecessary change;
- Reducing heat loss, but not breathability;
- Natural ventilation to most spaces;
- Emphasis on low energy services.



WHAT DID IT LOOK LIKE WHEN WE GOT THERE?



WHAT DID IT LOOK LIKE WHEN WE GOT THERE?



SO, HOW DID DECIDE WHERE (AND HOW) TO CONSERVE, RESTORE OR REPLACE ?

- Investigations - i.e. structural timbers;
- Assessments - i.e. structural capacities;
- Sampling -i.e. masonry mortar pointing;
- Testing - i.e. leadwork in paint.

Timing important to control risks & costs.

3. ARCHITECTURAL PAINT RESEARCH TABLE: WALL SURFACES

	Sample 1 Front Entrance Ground floor level	Sample 2 Staircase Ante- Room East corner Ground floor level	Sample 3 Main Staircase Landing level External wall	Sample 4 Main Staircase Landing level
14	Deep orange paint	Deep orange cream paint	Deep pink paint	Deep pink paint Pink paint
13	Orange paint	Cream paint	Green paint	
12	Red paint Pink paint	Cream paint	Deep red paint	Deep red paint
11	Warm brown paint	White paint White paint	Brick red paint	Pink paint
10	Cream paint Cream paint	Deep warm cream paint	Brick red paint	Cool cream paint
9	Varnish Cream paint	White paint	Red paint Red paint Red paint	White paint
8	Varnish Cream paint		Light green paint	White paint
7	White paint White paint			White paint
6	Cream paint			Cream paint
5	Whitepoint Whitepoint			Whitepoint Whitepoint
4	Cream paint Cream paint			Deep cream paint Light cream paint
3				Light cream paint
2				Salmon pink paint
1				Dull green paint
Substrate	Fine white plaster (fragment)	Orange plaster (modern)	Paper	



RETENTION OF EXISTING STRUCTURE - CONDITION



- Investigating the existing structures to permit their retention in the final scheme;
- Timber specialist investigation and report - only localised timber repairs required & recommendation for no chemical treatment.





RETENTION OF EXISTING STRUCTURE - LOADING CAPACITY

- Opening up to allow measurement of all existing beams columns and joists, including drilling of cast iron columns to determine thickness;
- Calculation of each floor capacity in its original condition and production of 'loading drawings'. Majority of floors comply with current design standards for proposed uses;
- Dynamic testing of the floor to use for dance studio to prove suitability of the floor for this use.

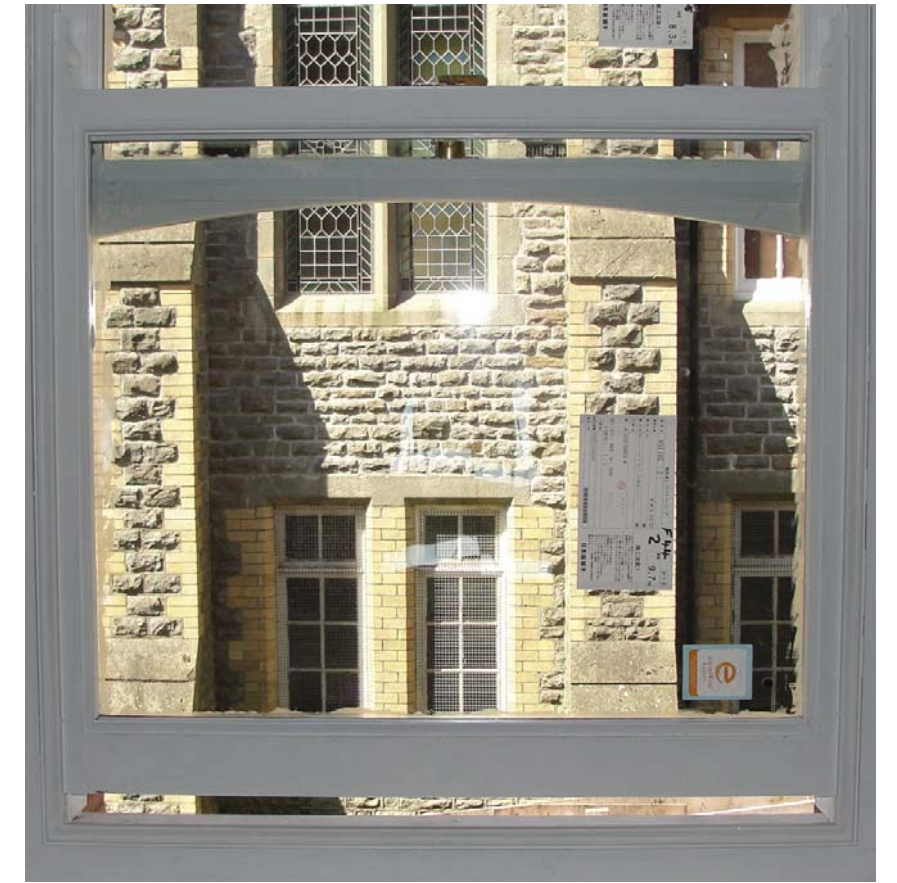


KEY - ALLOWABLE FLOOR LOADING

- 2.0 kN/m² IMPOSED LOAD
- 3.5 kN/m² IMPOSED LOAD
- 4.0 kN/m² IMPOSED LOAD
- 7.0 kN/m² COMBINED & ADDITIONAL DEAD LOAD OF RAISED FLOORING.



HOW COULD WE BEST REDUCE ENERGY USE WHILST SENSITIVELY CONSERVING?



- Reduce external wall area by 25%;
- Insulate the inside face of the external walls with 'breathable' construction;
- Natural ventilation to almost all spaces, including central courtyard;
- Insert thin double glazing units into single glazed windows;
- Emphasis on low energy services - modelled to reduce carbon footprint.



KEY CHALLENGES ON SERVICING THE BUILDING

- Servicing complex M&E requirements within grade 2* listed building;
- Minimising Energy consumption whilst retaining original character & fabric;
- Sensitive acoustic issues within recording studios;
- Dealing with significant heat gains where little or no scope for natural ventilation;
- Aesthetically challenging selection of luminaires;
- Limited space for services installation.



REDUCING ENERGY USE & CO2

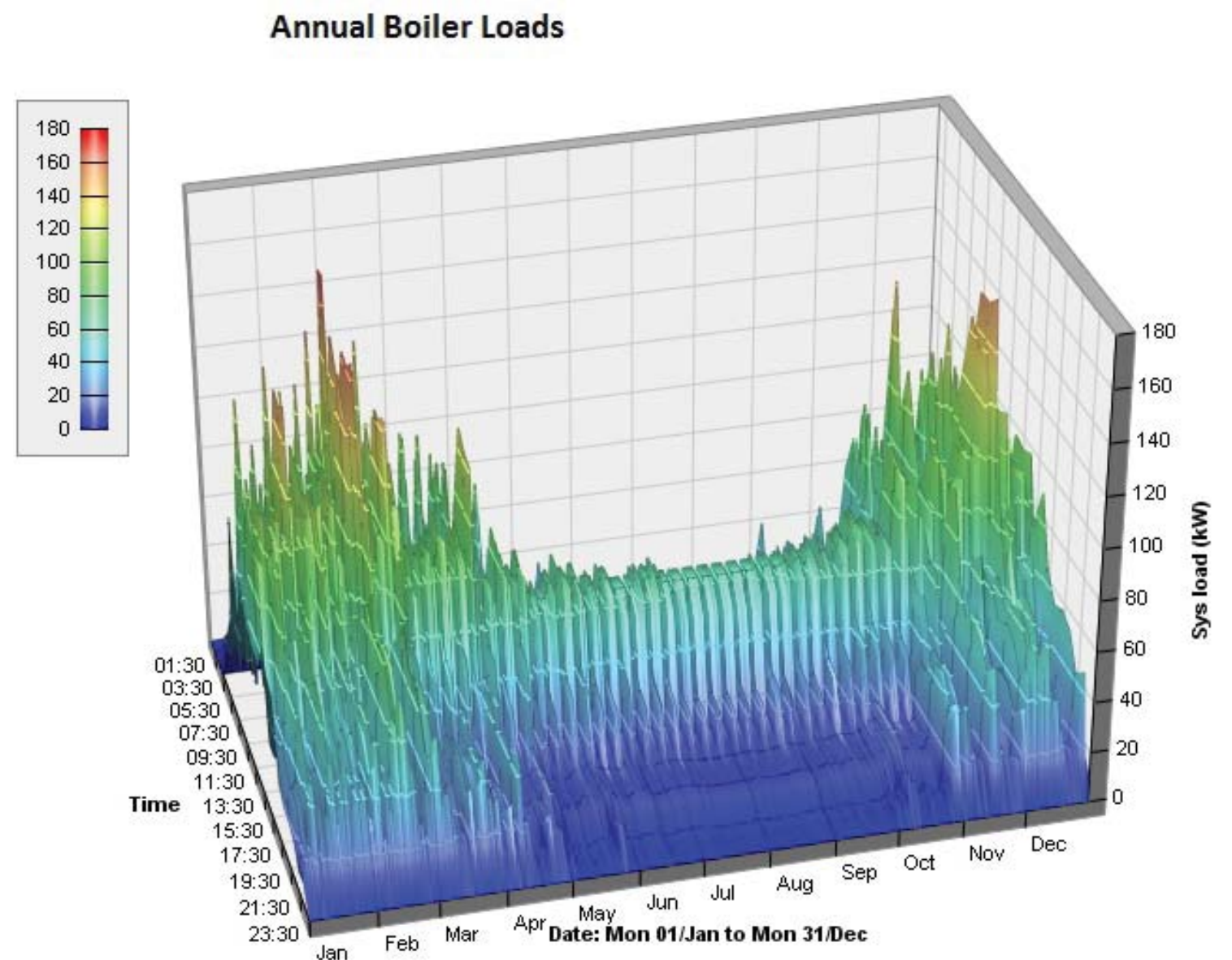
TROUP
BYWATERS
+ ANDERS

Methods / technologies used:

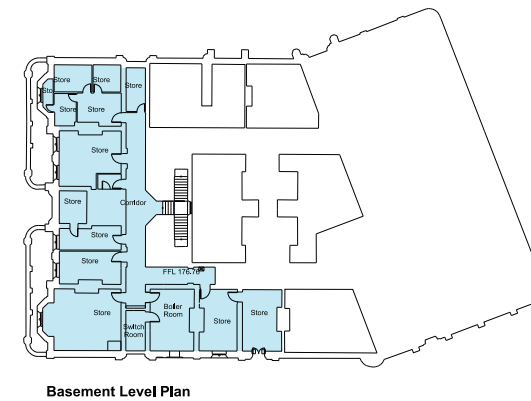
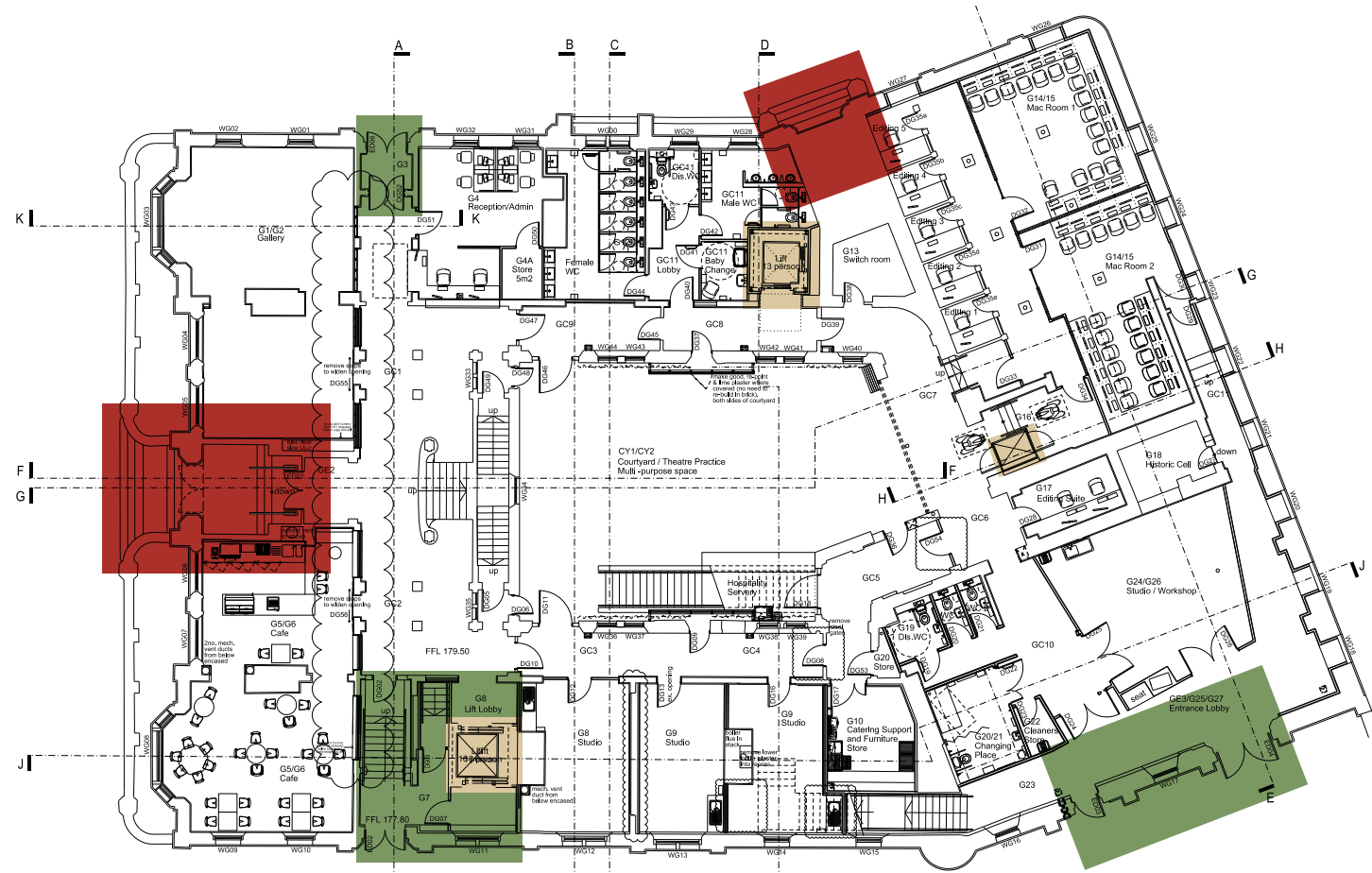
- Natural ventilation;
- Heat recovery used on mechanical; ventilation systems, where possible;
- Building management system & controls used to minimise operation of plant;
- Use of PIRs, and daylight linking, for control of lighting installation;
- Use of variable speed motors on mechanical plant.

Benefits:

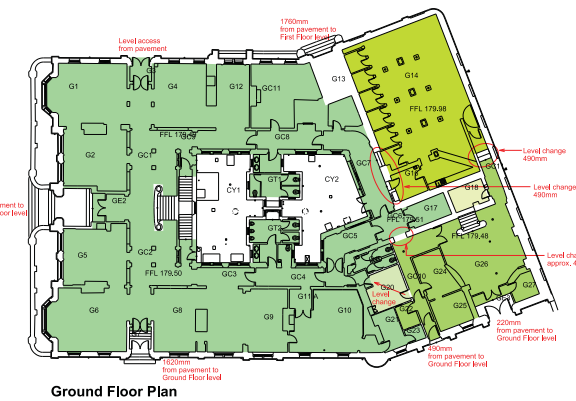
- Energy efficient heating & ventilation equipment will save approx. 56 tonnes of CO2 per annum;
- Energy efficient lighting will save approx. 36 tonnes of CO2 per annum.



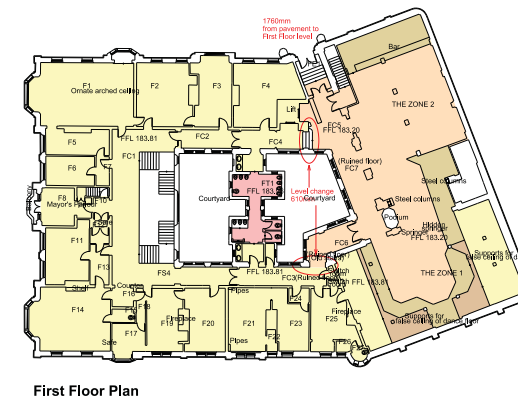
HOW DO WE ENSURE FULL ACCESSIBILITY AS WELL AS SENSITIVE CONSERVATION?



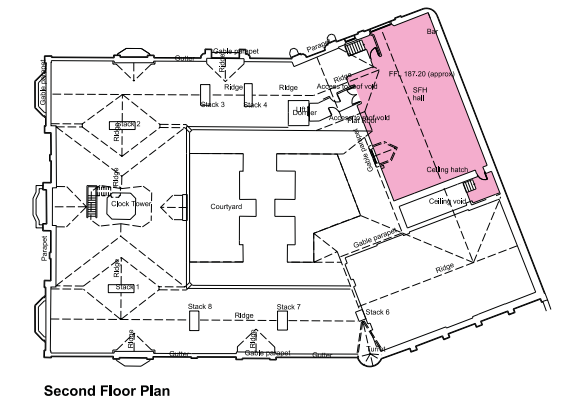
Basement Level Plan



Ground Floor Plan



First Floor Plan



Second Floor Plan

- Fully accessible entrances, where possible;
- Level flooring on each of the four floors;
- Lift access to all spaces on all levels;
- Clear and concise signage.



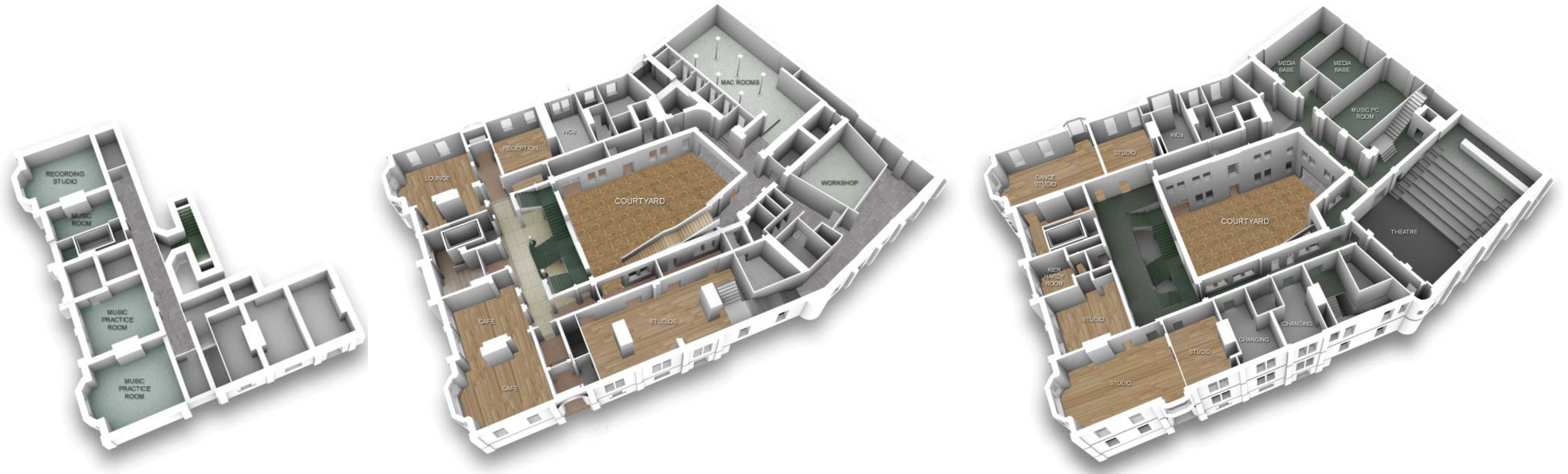
SO, HOW WILL IT SOON LOOK?



- On the outside, much like it did 115 years ago, albeit with an inherent patina of age.



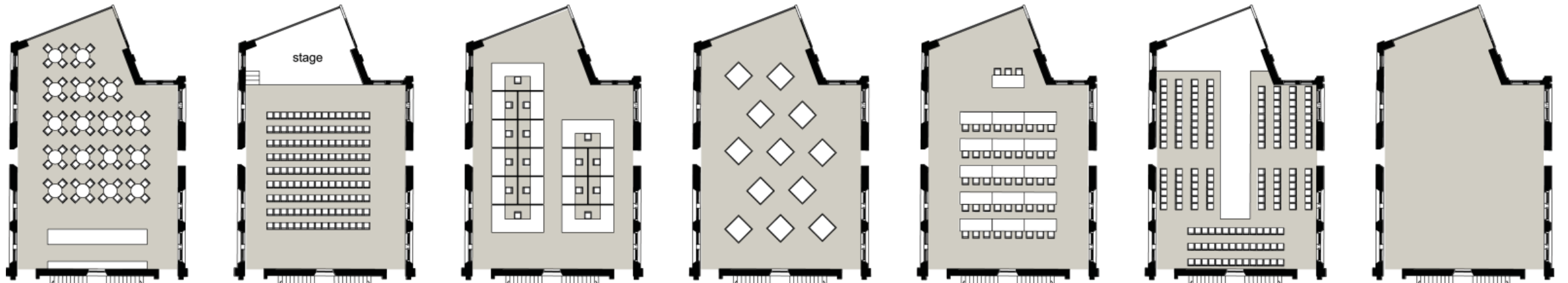
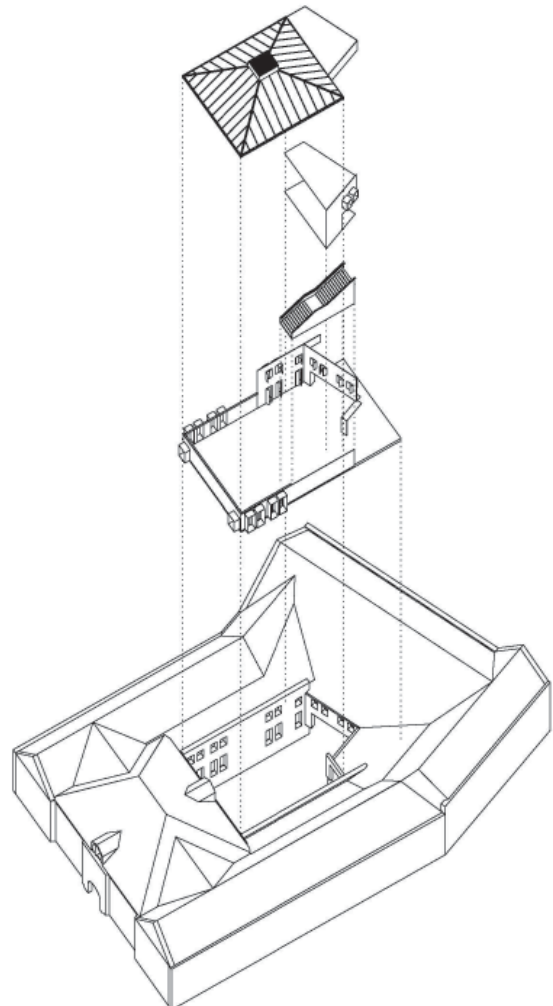
HOW WILL IT SOON LOOK?



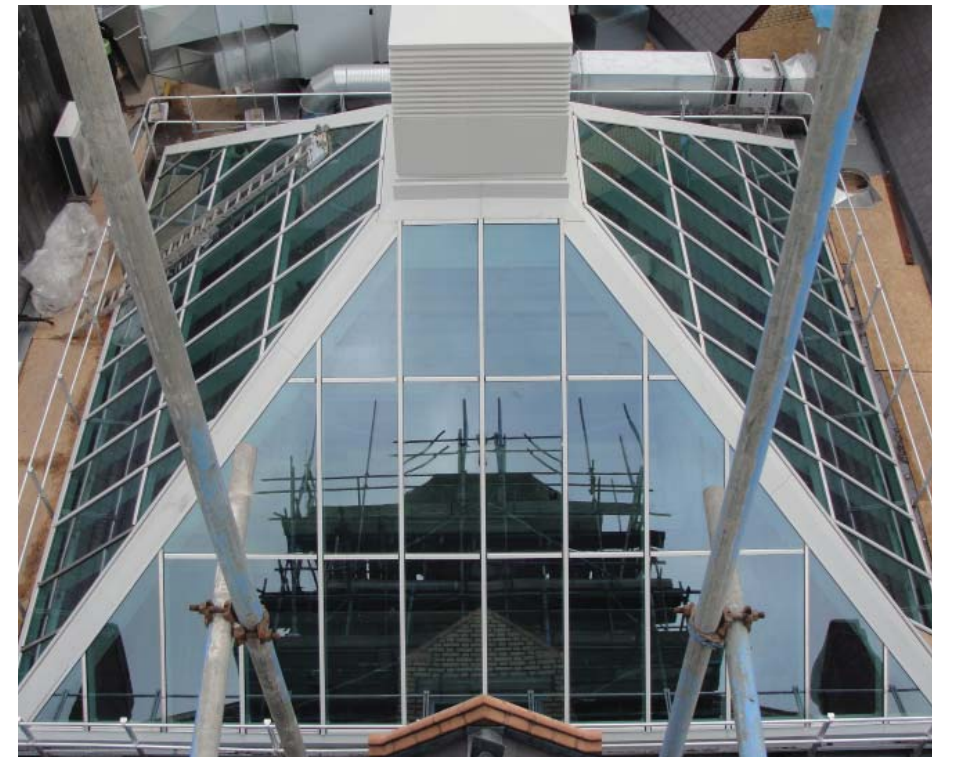
- On the inside, the extent of conservation, restoration and adaptation was dictated by what fabric and features.



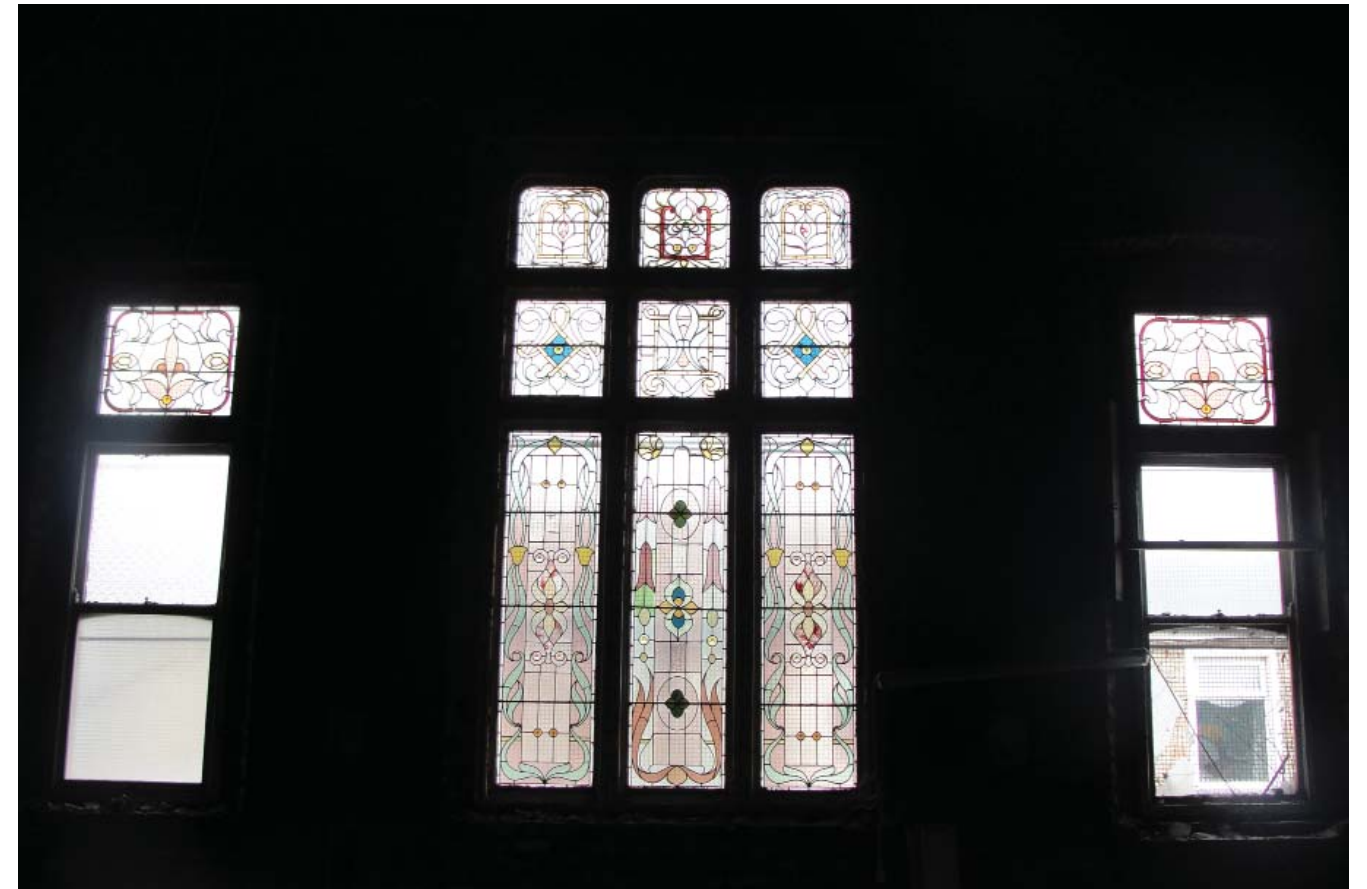
THE COURTYARD - A NEW SPACE



THE COURTYARD - A NEW SPACE



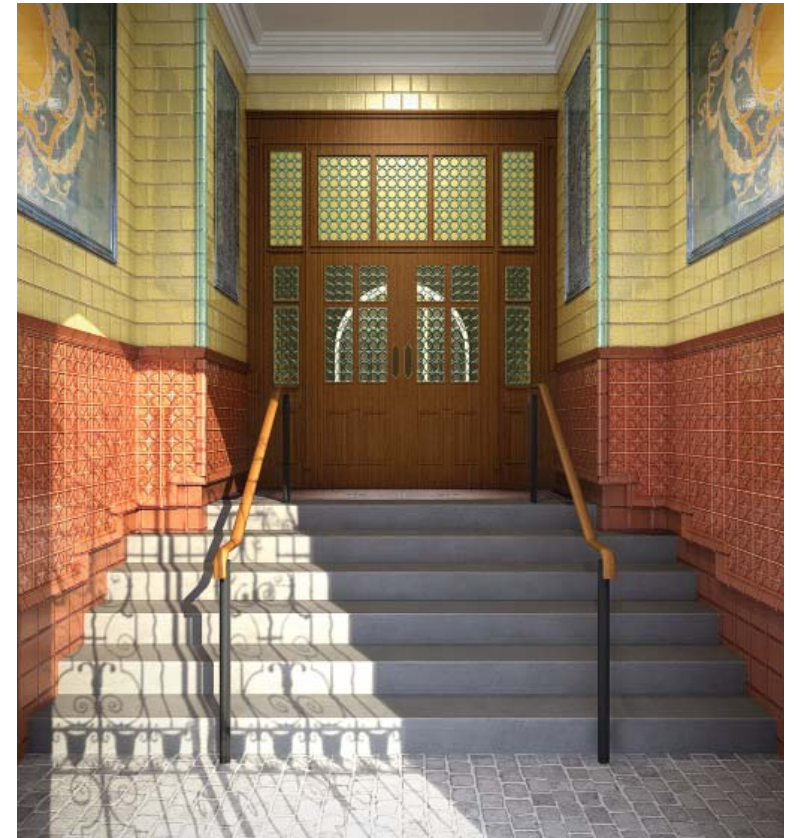
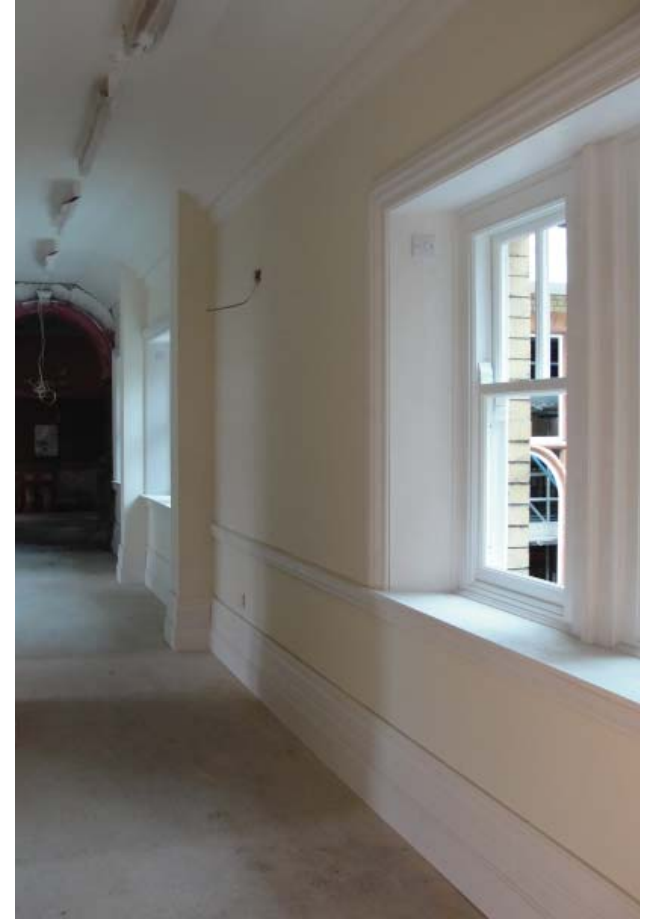
THE THEATRE (COUNTY COURT ROOM)



THE THEATRE (COUNTY COURT ROOM)



CAFE (TOWN CLERK); DANCE STUDIO (COUNCIL CHAMBERS); CIRCULATION; ENTRANCE



THANK YOU

Austin-Smith:Lord



TROUP
BYWATERS
+ ANDERS

BOWEN
& PARTNERS

