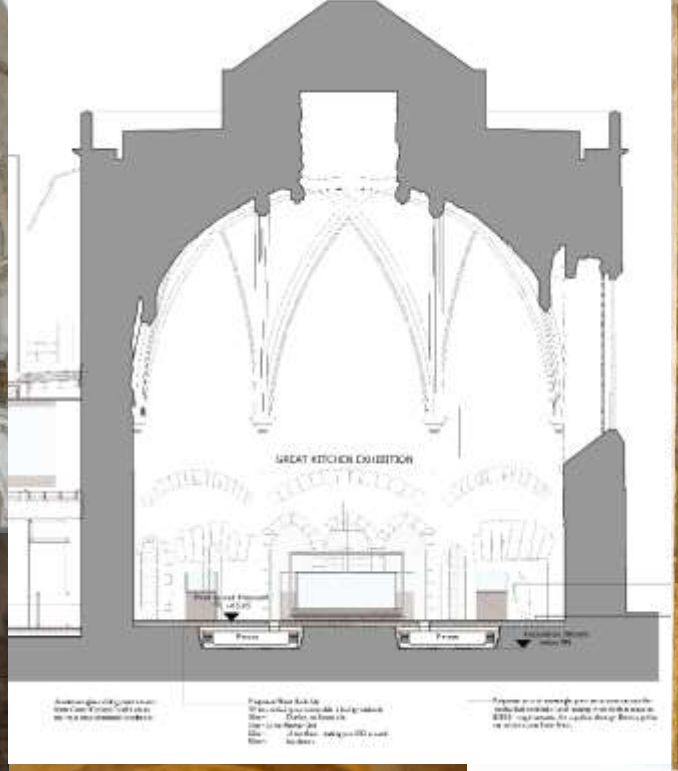
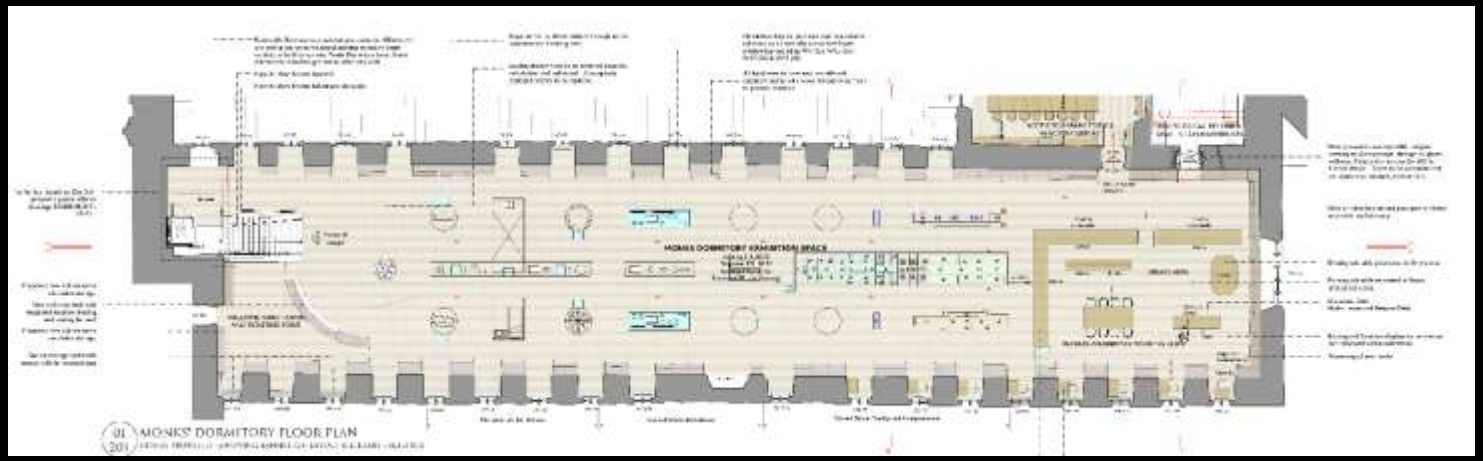
Conservation of Fabric and Collections in Cathedrals: Environmental Factors

Tobit Curteis Associates LLP


GREAT KITCHEN EXHIBITION

❖ CATHEDRAL EXHIBITIONS/ DISPLAYS DIFFER FROM OTHER BUILDINGS

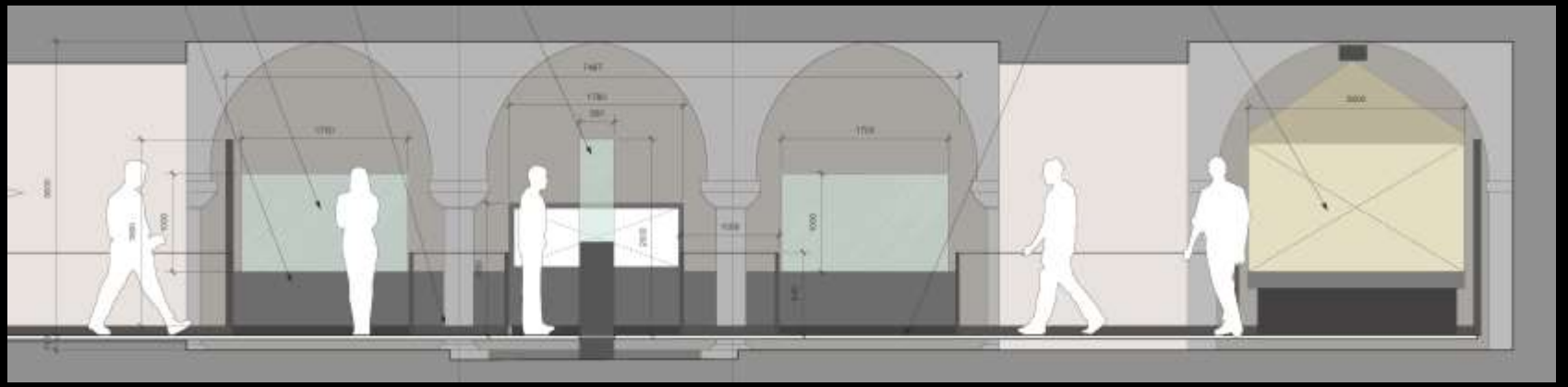
- The building is part of the exhibit
  - Building must not be compromised for the sake of the display
  - Limitations on how displays can be laid out and narrative developed and where sensitive materials can be placed (may not be popular with exhibition designer)

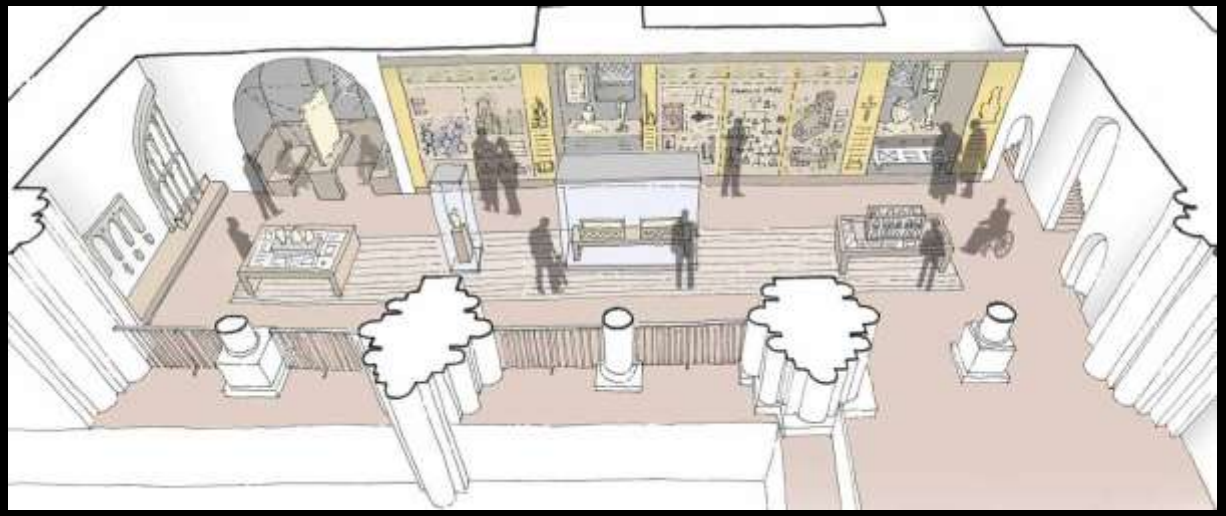


Drawing: Purcell UK

Rochester Cathedral: Crypt

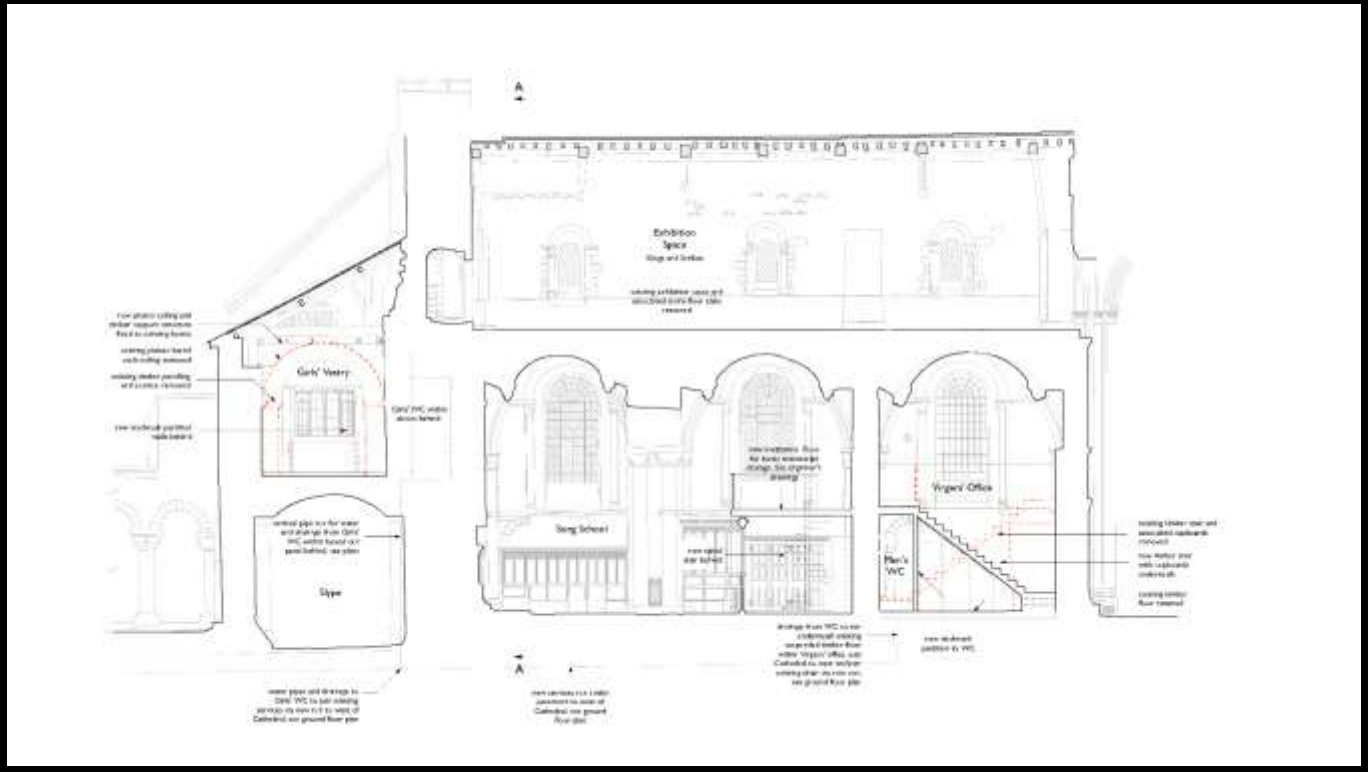
Drawings: Land Design Studio Ltd





Winchester Cathedral: Kings & Scribes

Drawing: Studio MB



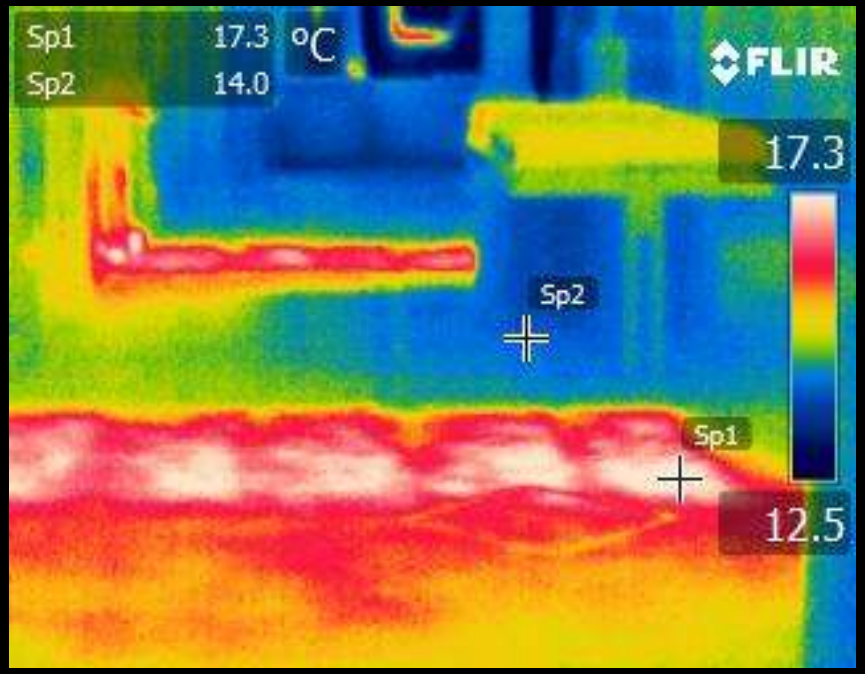
Drawing: Nick Cox Architects

➢ THE BUILDING ENVELOPE MUST FUNCTION CORRECTLY

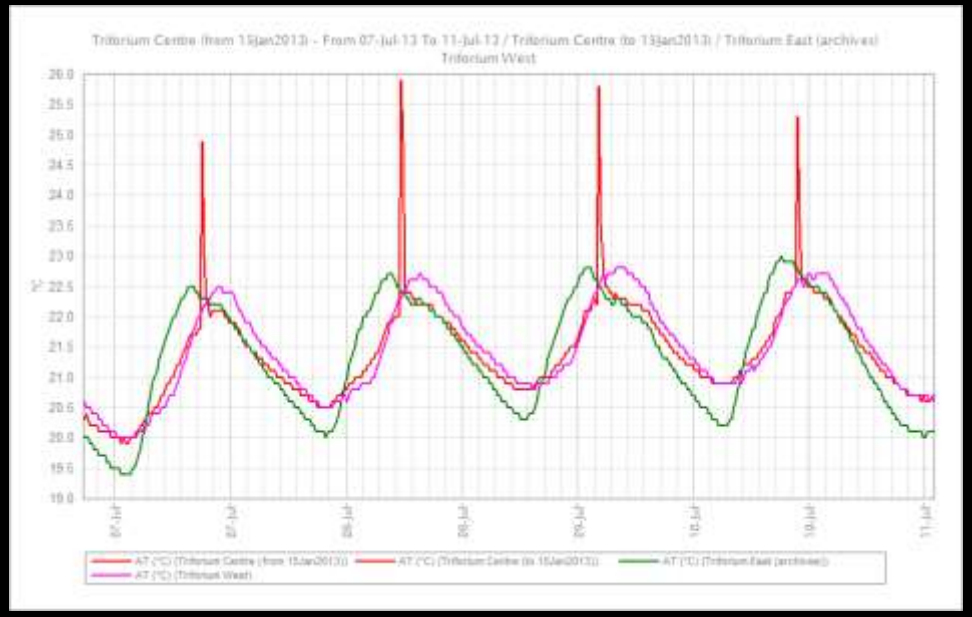
- Damage to the building envelope and rainwater disposal system must be addressed if suitable environmental/ conservation conditions are to be achieved inside

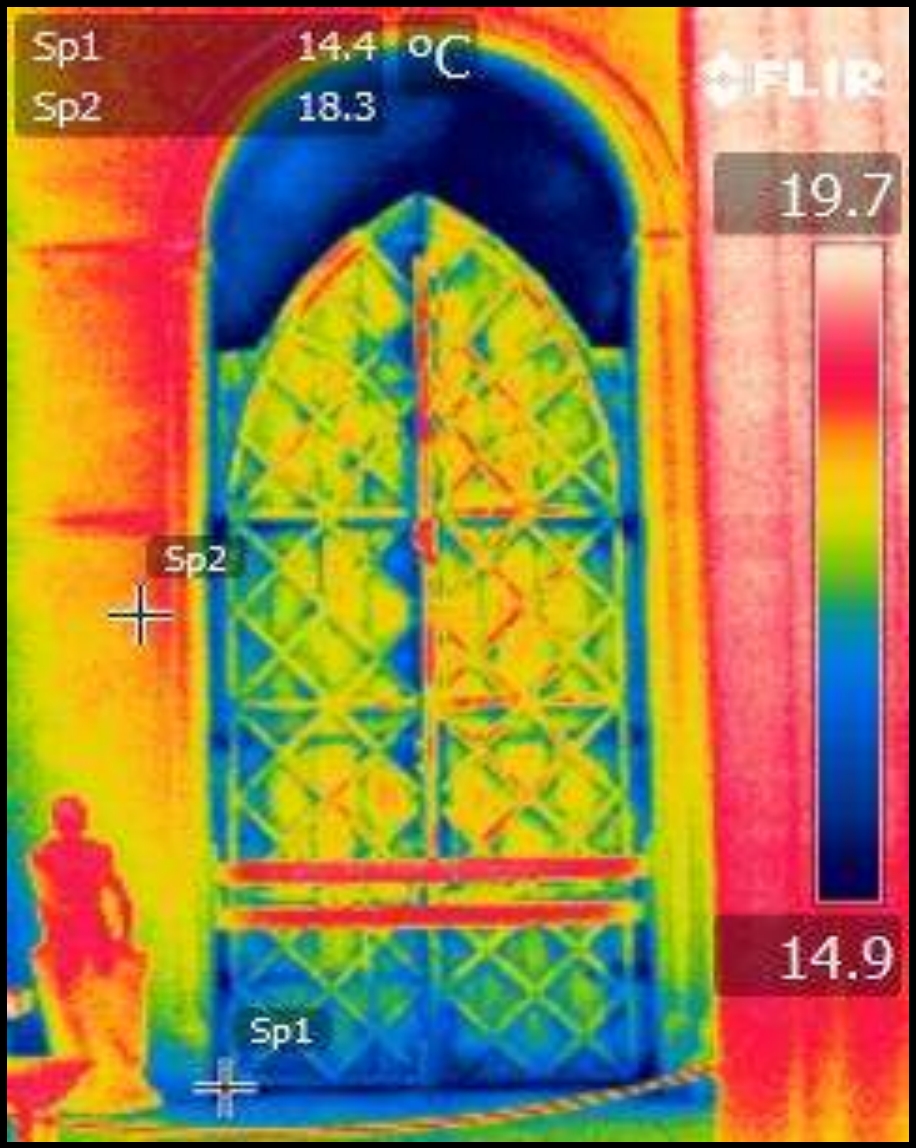
➢ THE BUILDING IS AN ACTIVE ENVIRONMENTAL CONTROL – NOT A BOX

- Huge advantage for passive control over modern buildings
- Advantages
  - Thermal buffering (massive structure)
  - Hygral (porous) buffering
- Disadvantages
  - Roofs – heat
  - Windows – light/ heat
  - Doors – air exchange (undermine any environmental control)
  - Pre existing heating systems
  - Exhibition is not primary aim in most cathedrals



Winchester Cathedral: Triforium





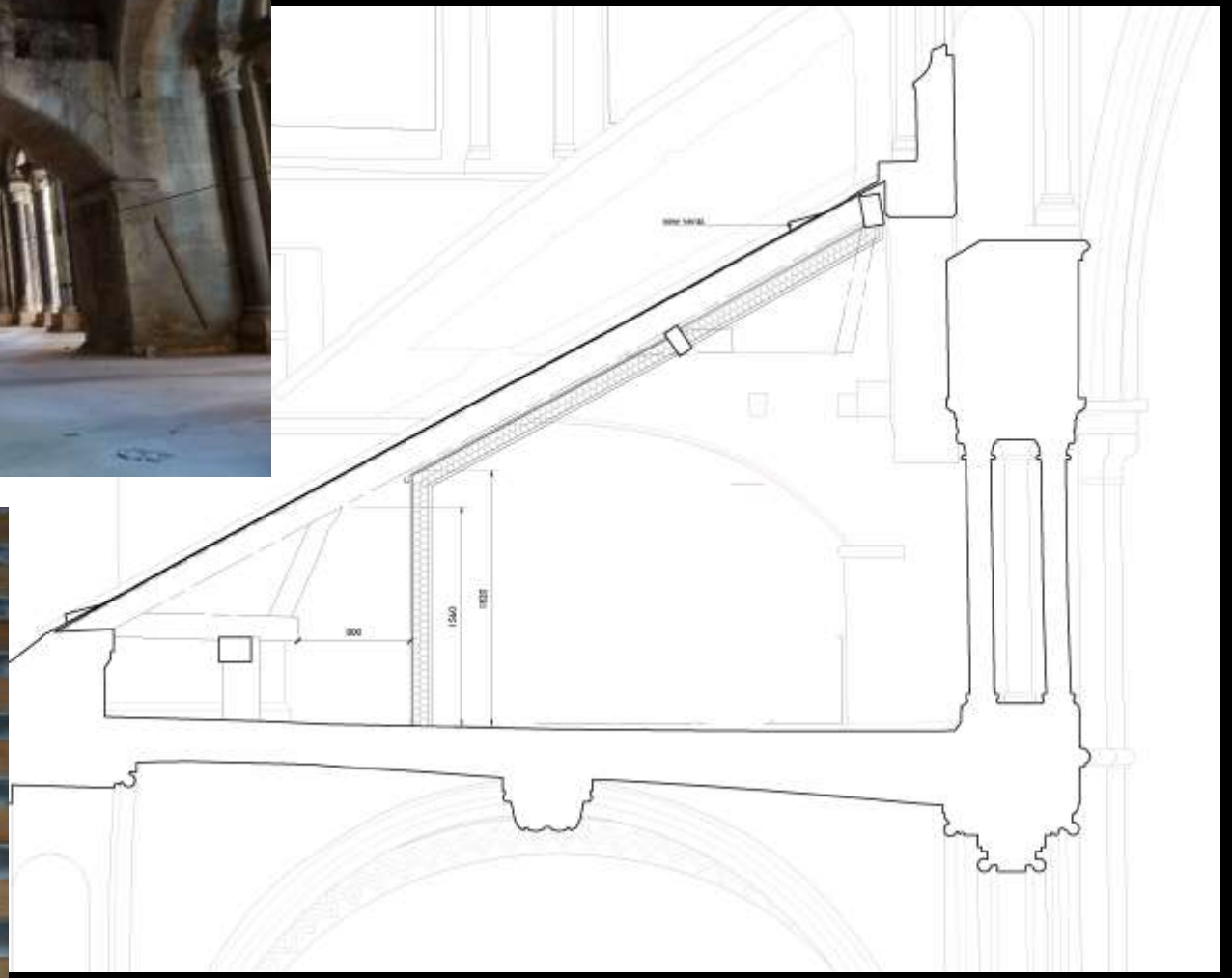
Peterborough Cathedral: South west door

Winchester Cathedral

➢ LIMITS TO THE WAY YOU CAN CHANGE THE BUILDING ENVELOPE

- Insulation of building itself – can be effective but condensation risks such as ULC/ stone deterioration.
- Window shades – visual impact
- Room within a room – possible but visually intrusive
- Substitute non porous coatings for porous (lime plaster/ limewash/ distemper)

Drawing: Purcell UK

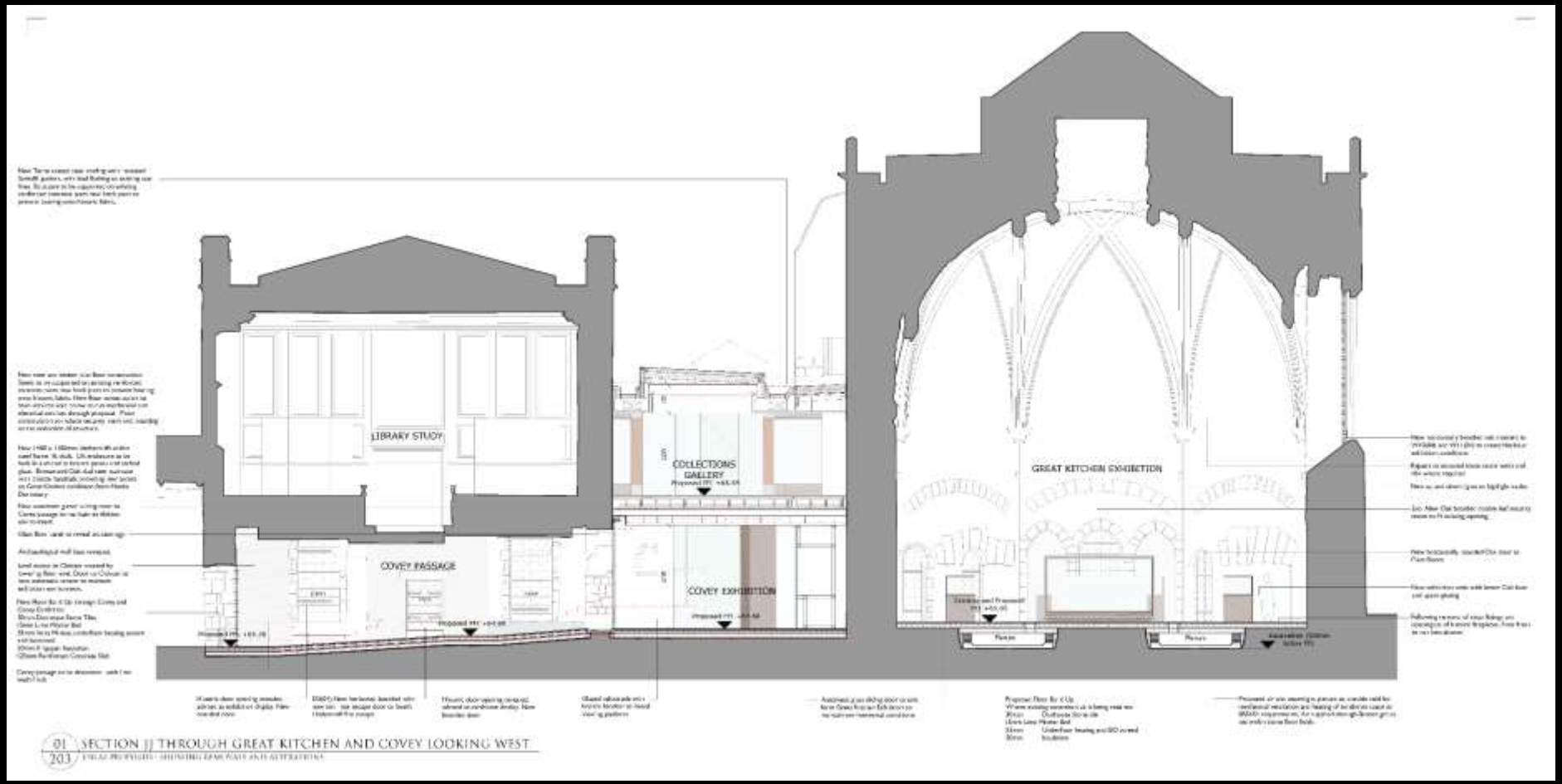


Canterbury Cathedral

Underside lead corrosion

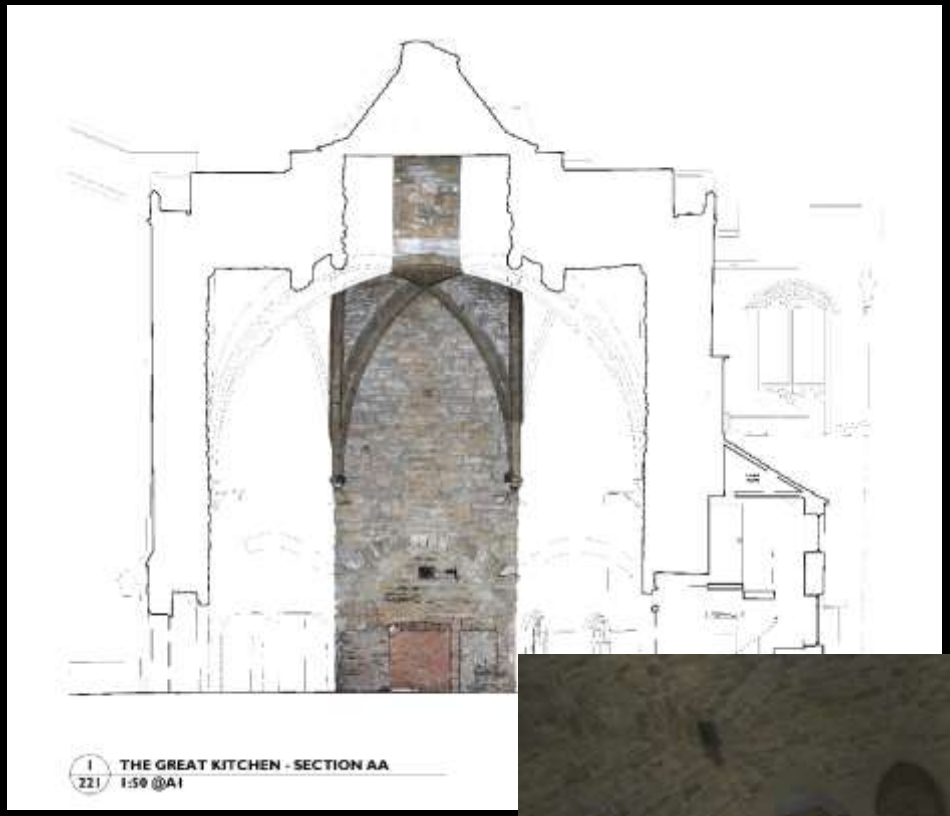
➢ Limit to Level of environmental control that can be safely achieved

- Background environmental control limited because of sensitivity of building fabric
- Museum standards (BS5454) cannot usually be achieved without risk
- HVAC systems are generally inappropriate (why heat/ water input)
- Conservation heating is best active control
  - Control heat to control RH
  - Sacrifice comfort for conservation
  - Reduce heat input/ cost
  - Limited level of control possible – possibly supplement with dehumidification
- Limitation on loans (what do you actually want to borrow)



Drawing: Purcell UK

Durham Cathedral: Great Kitchen, Open Treasure

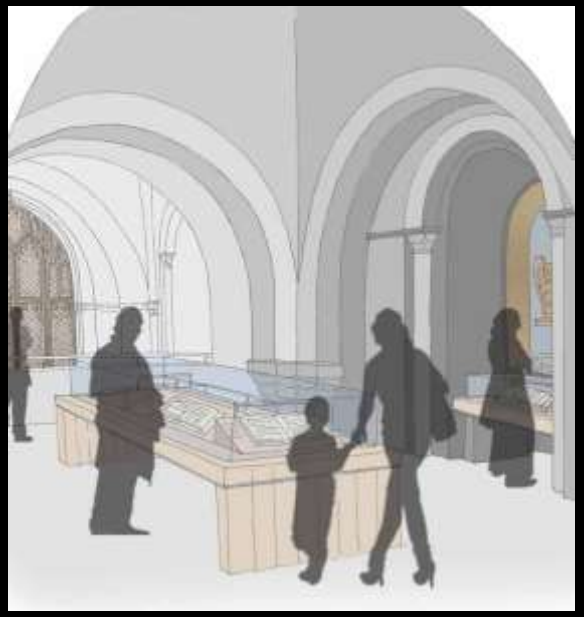


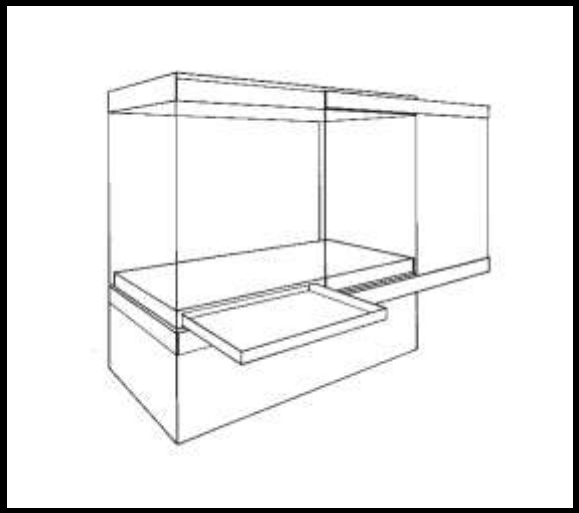
Drawing: Purcell UK

➢ CASE DESIGN AND LIMITATIONS

- Cases generally not designed for highly uncontrolled environments
- Active or passive cases ?
  - Passive may be safer but not designed for long term conditions outside ambient
  - Both require considerable management/ staff time
- In complex areas design to allow retrofitting
- Case testing ACR rate
- Work closely with designer/ manufacturer to ensure that they understand the demands of the site

Drawing: Studio MB

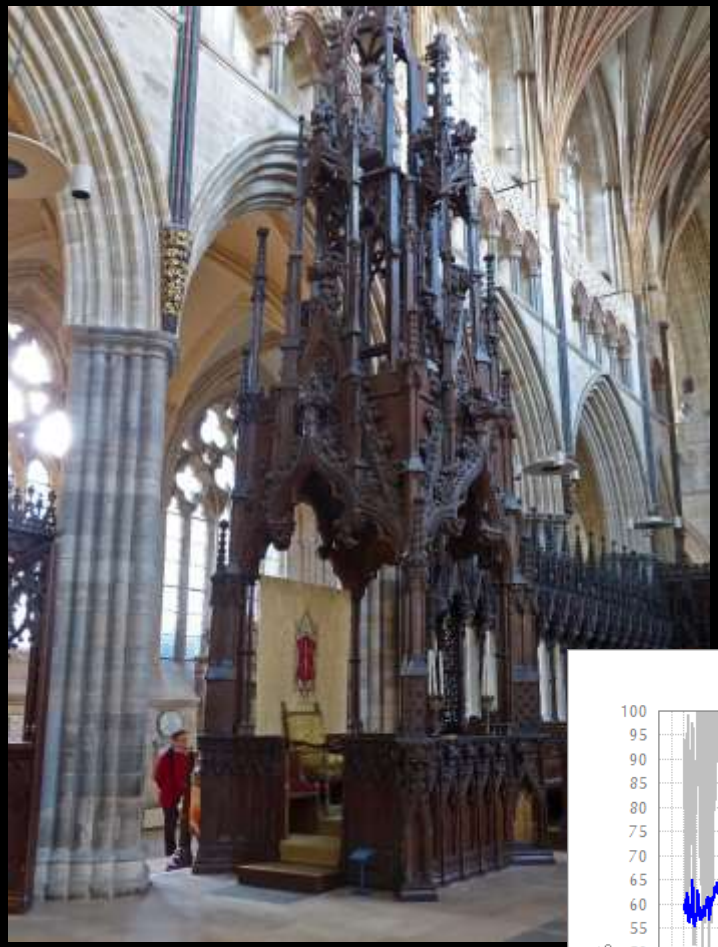


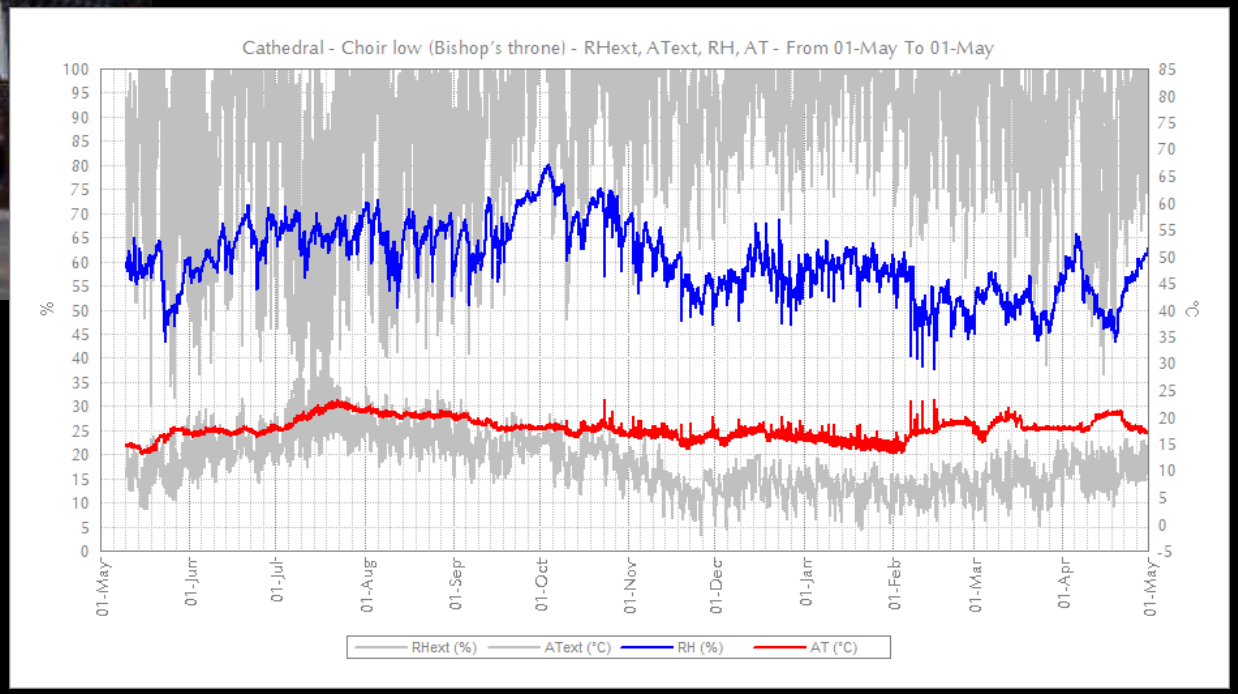


➢ SURVEY (MONITOR/ MEASURE) EXISTING CONDITIONS

- Identify safe aspects/ current defects/ future problems
- Design controls – look secondary (unanticipated) problems
  - Many variables so models imprecise – testing is the only safe way
  - Most background control achieved through building repairs
  - Test cases/ mechanical control systems
- Evaluate exhibition design as it develops (work with designers and project team)
- Monitor results (diagnostic – consultant)
- Long term monitoring (consultant or in house)


Sp1 52.4 °C
Sp2 26.6
Sp3 23.7
Sp4 22.3
45.2
18.5
Sp3
Sp2
Sp1
Sp4
FLIR





Exeter Cathedral: Bishop's Throne

➢ KEY POINTS

- Understand environmental (and conservation) issues/ limitations at beginning of project before exhibition narrative is established.
- Cohesive design team. Environmental/ conservation advisors should be in close discussion with project manager/ lead consultant at the concept stage.
- Building envelope/ rainwater disposal must be in good condition.
- Building is an active influence on display conditions.
- Most of the limitations associated with display of sensitive artefacts in a cathedral can be designed around, with careful planning.
- Management of display is a considerable long term staff time/cost.
- Good design minimises conservation & management costs.