D4FC Factsheet 7:

Oxford University Press Offices D Wing Extension

Contact details

Name:	Eimear Moloney
Company:	Hoare Lea
Email:	eimearmoloney@hoarelea.com
Tel:	01865 339756

General project information

Name of project:	Oxford University Press Offices D Wing Extension
Location of project:	Oxford
Type of project:	Part refurbishment, part new build
Cost of project:	£11m

Project team

Client:	Oxford University Press
Designer:	Berman Guedes Stretton
Contractor:	Unknown

Other organisations involved (and their role): Hoare Lea (M&E consultant), Price & Myers (structural engineer), Baqus Sworn King (cost consultant)

Project description

Refurbishment and extension of existing OUP cellular office space into 4000 m² of high spec open plan offices in order to create an additional 100+ workstations.

The proposal retains the existing office building, D wing and the “old pub” on Walton Street and demolishes the remaining buildings forming C wing.

A new three storey with basement building will be constructed on the south of C wing with a new atrium using the same structural grid and floor levels as the existing D wing, creating a large combined open plan office space. The configuration of the new building has been developed to reduce any overlooking and amenity issues with the adjoining residential properties.

The building will have to comply with the Oxford Councils NRIA and 20 per cent renewables requirement. This will be achieved through a combination of a vertical borehole ground source heat pump system and roof mounted PV cells.

Project timescales and dates

Design and assessment period (pre-planning): project will be submitted for planning in August 2011

Construction period (post-consent): construction is due to begin in summer 2012 and will take about one year

Operation and monitoring period: this will occur for 12 months post-completion

Further project details

1 What approach did you take in assessing risks and identifying adaptation measures to mitigate the risks?

- we held several workshops at which each member of the design team and the client attended. Climate related design and operational risks were identified and adaptations options and strategies developed. Each adaptation measure and its application to the OUP project was discussed
- where data was available additional numerical modelling was undertaken otherwise a "what-if" approach was taken.

2 How have you communicated the risks and recommendations with your client? What methods worked well?

- the client has been in attendance at each workshop and as such, is fully aware of all adaptation measures that will be recommended. The client has been involved in all areas of the design for the adaptation measures.

3 What tools have you used to assess overheating and flood risks?

- the University of Manchester were appointed to analyse the UKCIP09 data and to provide the team with the following:
  - design limit data for heating and cooling systems
  - design summer year (DSY) for overheating analysis for Oxford for present, 2020s, 2040s 2080s. This data was used IES thermal modelling analysis software
  - test reference year (TRY) data energy use analysis for Oxford for present, 2020s, 2040s 2080s.
  - peak rainfall data from the University of Manchester was given, in terms of mm/hr for storm water flooding risk calculations
- the TSB design checklist was developed further to aid discussion and structure the design analysis at the workshops.

4 What has the client agreed to implement as a result of your adaptation work?

- the client has agreed in principle to the following adaptation measures:
  - alteration to the roof design on the west end of the building to allow for a future plant mezzanine
  - the addition of thermal mass to the top floor ceiling of the existing building to increase the thermal mass
  - exposed concrete ceilings could be coffered with blanked pipes contained within. To allow a future chilled ceiling system to be installed with minimal impact to the structure.
  - the inclusion of a "knock-out panel" next to the south east riser to allow for future services
  - the boilers to be more modularised to allow for easier adaptation to future changes in climate
  - three further drinking points to be provided in the quad and on the roof
  - increase the level of the render start point so more of the building has a flood tolerant finish
  - alteration to the roof design to allow for future storage of storm water
  - increasing the diameter of the rainwater downpipes
  - inclusion of weirs in the roof upstand to account for future increase in rainfall
  - the door frames in the basement to be deepened to allow for future retrofitting of flood barriers
  - addition of a step from the auditorium into the plantroom to reduce the impact of any flooding
  - the increase in the amount of stormwater attenuation
  - an increase in the number of PV panels to the south facade
  - the inclusion of empty PVC ducts between the pub and the basement plantroom to allow for future plant connection to the pub basement

However the project is currently under review and a final decision is yet to be made.

The current cost plan, without any climate change adaptation or risk reduction measures, has a construction cost of £10 900 000. The cost of the 15 adaptation measures is £965 000 (at current prices).

5 What were the major challenges so far in doing this adaptation work?

- there does remain a large degree of uncertainty surrounding the design basis and the context in which the impacts of climate change can be assessed. The availability of credible future weather data is fundamental to an analytical assessment of the impacts. The nonexistence or unreliability of specific data relating to key risk factors such as rainfall and wind reduces confidence in the analysis. As a result, clients and design teams are less likely to commit to added expenditure in response to potential risks
- the UKCIP09 weather data has the potential to provide high resolution weather data for projects but as yet is generally unusable by the property sector
- ultimately the implementation of adaptation measures will impact upon costs and this need to be balanced against budget.

6 What advice would you give others undertaking adaptation strategies?

- many of the adaptations and those of most significance are strategic in nature and affect the space planning and structure of the building. As such the climate related risks need to be identified and analysed at an early stage in the project
- based on the experience of the team the following design strategy could be adopted for other buildings:

  - design with good solar control and openable windows
  - include the capability to facilitate night cooling and with sufficient planned riser and plant space to accommodate a future mechanical cooling system
  - ensure all windows are openable even with mechanically ventilated building to enhance resilience
  - avoid the use of internal rainwater drainage and consider design detailing for protection against intense rainfall and provide attenuation to lessen the risk of local flooding.
  - consider the impact of changes to ground water conditions on foundations
  - consider the resilience of the building to interruptions to energy supply
- ultimately the implementation of adaptation measures will impact upon costs. A building that is inherently flexible and “loose fit”, and has good passive design features, is likely to be easier and less costly to adapt over its lifetime.