

# D4FC Factsheet 18:

## Welland Primary School

### Contact details

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### General project information

Name of project: Welland Primary School  
 Location of project: Peterborough  
 Type of project: New build  
 Cost of project: £6.3m

### Project team

Client: Peterborough City Council Children's Services  
 Project manager: Rider Levett Bucknall  
 Client advisors: Enterprise Peterborough and AECOM (during early design)  
 Contractor: Kier Eastern  
 Mechanical and electrical engineers: Mott McDonald (through Kier Eastern)  
 Structural engineers: PEP Civil and Structures (through Kier Eastern)  
 Architects: Woods Hardwick (through Kier Eastern)  
 Landscape architects: ACD Landscape Architects (through Kier Eastern)  
 Cost consultants: Davis Langdon AECOM (through Kier Eastern)

### Project description

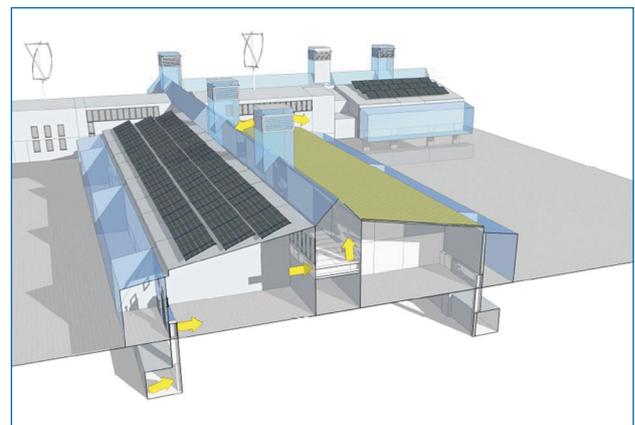
The redevelopment plan for Welland Primary School was to replace an existing school with a completely new building within the current school boundary, but with doubled teaching accommodation. Further to the 'conventional' design work, this project examined the possible impacts of projected climate change on the new building. Following on from the findings, adaptation strategies and related design options for the building were suggested. Whole life costs for the various design options proposed to address the relevant climate change risks were then estimated. To justify the 'business case' for adapting the design to take account of climate change, comparisons were made between the performance and whole life costs of a number of case studies based on adapting the design at various RIBA workstages.

### Project timescales and dates

**Design and assessment period (pre-planning):** January 2010 to March 2011

**Construction period (post-consent):** June 2011 to August 2012

**Operation and monitoring period:** September 2012 onwards



## Further project details

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

- during the conceptual stage, principal risks for the building location were identified from the report *Design for future climate: opportunities for adaptation in the built environment*
- the following climate change related risks were assessed to be significant: overheating of internal spaces during summer, the outdoor environment, heating system design, structural stability of foundations, structural stability above ground, durability of construction materials, and above and below ground drainage. In addition, water conservation measures were considered.

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

- the ‘business case’ for adaptation to address climate-related risks was presented using detailed design case studies that included whole life costs. The detailed findings were also summarised in a short report using less technical language to assist with communicating the results.

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

- for overheating, ClassCool and ClassVent ([www.teachernet.gov.uk/iaq](http://www.teachernet.gov.uk/iaq)) were used to set the initial strategy and then *Virtual Environment 6.2.0.1* from Integrated Environmental Solutions was used for detailed modelling, along with weather data from the Prometheus project based on UKCP09 projections
- flood risk was not considered as part of this project.

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

- from the start, it was agreed with the client to incorporate certain adaptation measures in the design, but it was not originally intended to explicitly evaluate them in terms of a business case

- as permitted by the overriding requirement to open the new building on schedule, the project has adopted a number of design features that provide a reasonable degree of climate change adaptation.

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

- lack of industry standard guidance on how to assess the various climate change related risks for the design
- the UKCP09 projections were not entirely consistent with the data needed to set design assumptions. For example, average rainfall values are presented in UKCP09, while extreme values are needed for design
- the ‘integrated’ approach taken has been more challenging in practice than anticipated at the project outset. Each climate change risk may require adaption measures to be introduced for more than one design issue. This has included the necessity to create or standardize terminology and draw out interactions, common aspects or differences between the various design considerations.

### 6 What advice would you give others undertaking adaptation strategies?

- it is recommended that that the climate change related risks to be addressed in a design should be agreed as early as possible and assessments then carried out immediately: RIBA Stage C would be ideal, although some implications may not become apparent until more detailed design information becomes available
- certain design adaptations may have no or low impact on overall construction costs. But, to achieve this generally requires proper consideration at an early stage
- early client agreement is necessary about the extent to which each climate change related risk should be mitigated, as constrained by the available budget
- it is sometimes possible to defer adaptation to later in the building life cycle, for example during routine replacement of building components
- the whole life cost implications of adaptation and any residual risks should be assessed alongside design options to provide additional information with which to evaluate those options.

