

# envioblinds<sup>®</sup>

LOW CARBON TECHNOLOGY

## **Environmental Modelling Report**

for

**Little Common School**  
(11<sup>th</sup> April 2019)

**Contents**

1.0	The Project.....	3
2.0	Environmental Modelling .....	3
3.0	Results.....	4

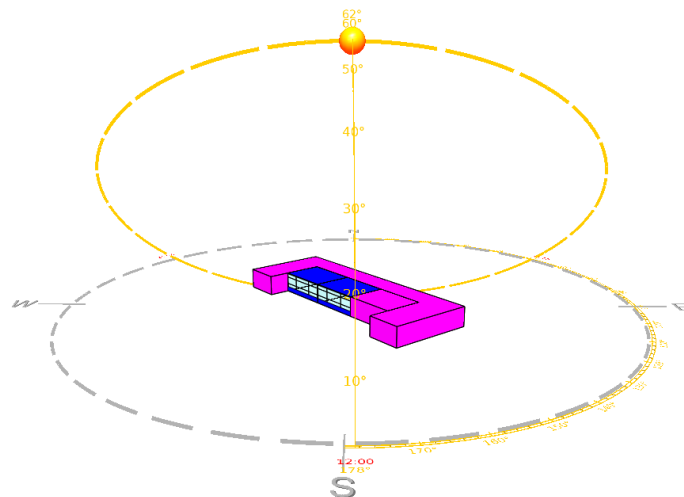
## 1.0 The Project

The purpose of this assessment is to establish the thermal impact of installing external solar shading to classrooms at Little Commons School, Bexhill-by-Sea. The space assessed is a single storey teaching space, with a heavily glazed elevation to South West. We assume this space to include three classrooms, each 7500mm x 5500mm (41.25m<sup>2</sup>). Two of these classrooms are modelled; one with external shading and the other without to allow comparison of predicted internal air temperature. The results are indicative only.

## 2.0 Environmental Modelling

Integrated Environmental Solutions Virtual Environment (IES VE) thermal dynamic software is used to model the building. The environmental modelling is carried out by the means of creating a 3D model with building specific parameters. The model is based on visual external site survey, Google Earth and assumed information.

Image 1. IES model with sunpath



### The following U-values are used:

- Roof 0.22 W/m<sup>2</sup>.K
- External wall 0.39 W/m<sup>2</sup>.K
- Glazing 1.97 W/m<sup>2</sup>.K g-value 0.54
- Ground floor 0.40 W/m<sup>2</sup>.K

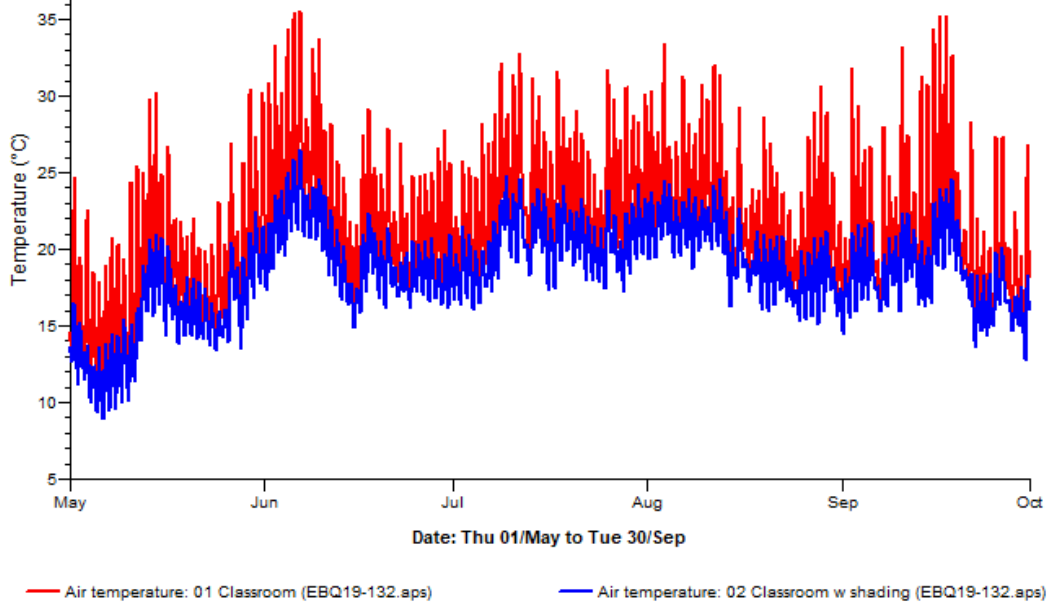
### The following parameters are used:

- Hours of occupation, 9am – 4pm weekdays (Schools BB101)
- Assessment period, from 1<sup>st</sup> May to 30<sup>th</sup> September (Schools BB101)
- Internal gains during occupied hours
  - Lighting & equipment heat gains 10W/m<sup>2</sup> at 50% diversity
  - People gain 20 children and 2 adults per classroom at 75% diversity
- Passive space, i.e. no heating or cooling
- Infiltration 1.0ach, windows assumed shut
- IES simulation weather file SouthamptonDSY05.fwt (design summer year)

### 3.0 Results

The results show that classroom with external shading has 2°C to 9°C lower temperature than the room without external shading.

**Graph 1. Predicted classroom temperature (1<sup>st</sup> May – 30<sup>th</sup> September)**



The results show that the maximum temperature can be reduced by 9°C with the use of external shading.

- Maximum temperature without external shading 35°C
- Maximum temperature with external shading 26°C

**Graph 2. Predicted classroom peak temperature (6<sup>th</sup> June)**

