



## Summary

Transition Bath formally objects to the planning application [14/01667/REG03](#) to build a new classroom block for 180 pupils on the grounds that the proposed building has not been designed sustainably and is likely to have a high energy demand, high CO2 emissions and therefore high running costs.

Our two main objections are:

1. The design of the building, orientation and location of the windows will provide very little solar gain despite comments to the contrary in the planning submission. In addition we feel the standard of insulation could be improved at very little additional cost.
2. The '[Building Transport Assessment](#)' despite being 74 pages long appears to inadequately assess the impact on traffic in the local area, and appears to come to the conclusion that there will be no impact of adding an additional 120 pupils to the school. The report is difficult to interpret, poorly structured and lacks focus. We feel that it fails to adequately assess the offsetting impacts from increased role widening the catchment area for the school and the housing development(s) proposed in B&NES's Core Strategy. Although we welcome the additional provision of places at the school, we feel the quality of the transport analysis is poor and not sufficient for a realistic assessment of the impact by third parties.

We would also like to make the following two further comments:

3. We would hope the council makes good use of the knowledge gained from the 2013 energy survey of 70 schools in B&NES to stop repeating recent design problems in new schools?
4. The submitted floor plans for the school show differing and inconsistent orientations making it difficult to accurately assess solar gain.

Transition Bath's objective is to make Bath as sustainable as possible and this applies to both energy consumption in buildings and transport. Overall we welcome the provision of additional places at Weston All Saints but are objecting to the detail of the proposed solution.

## Detail

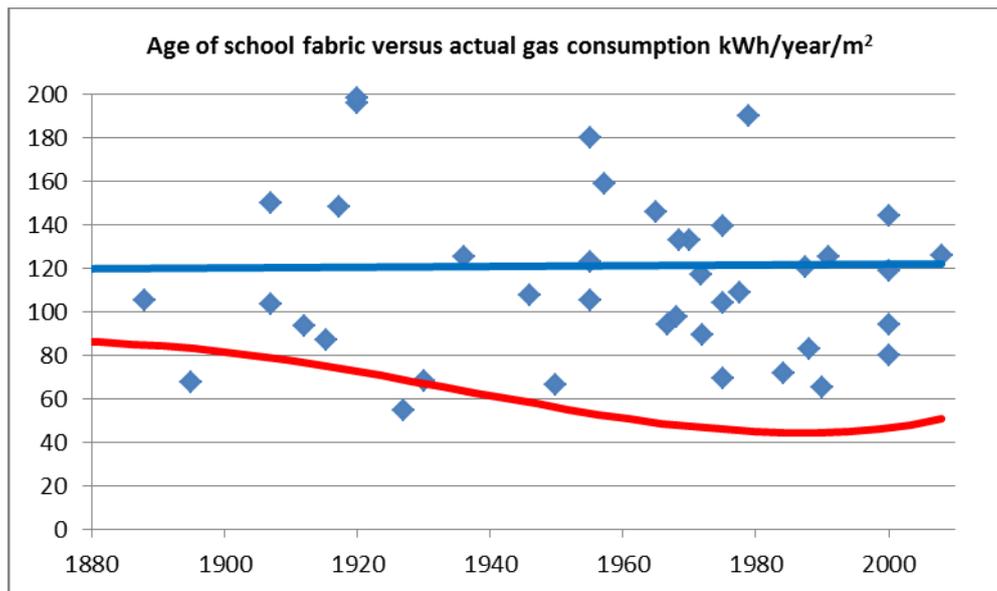
### Background to why Transition Bath objects of the design of the building

Transition Bath has been working with schools in the B&NES area for 4 years helping them reduce their energy demand. During this time we have noticed that the energy consumption of new schools on a per floor area or per pupil basis seems to differ very little from their less well insulated Victorian counterparts.

Last year we were involved in an energy survey of over 70 schools in conjunction with B&NES council and Verco Ltd. One of the conclusions of the survey was that modern schools are not delivering the



expected energy savings from their better insulation that you might expect. The graph below shows the average age of each school's fabric versus the schools energy consumption on a per m<sup>2</sup> basis:



Each blue dot represents an individual school, the blue line is a trend line fitted through the blue spots. The line is sloping slightly upwards suggesting new schools use more energy than older schools. Modern insulation materials and building standards should imply lower energy costs but this seems not to be the case. The red line is the theoretical modelled energy consumption given the building standards at the time the schools were built<sup>1</sup>, which shows that more modern schools on the right hand end of the chart should have lower energy demand; in fact the majority of schools in Bath under perform their theoretical consumption figures. These findings are not specific to Bath and mirror previous national studies.

As a result of the surveys a significant number of schools in Bath, with the help of B&NES council are being retrofitted to improve their energy efficiency, a move Transition Bath applauds.

However, we feel the rather than remediating problems after schools are built, schools should be designed in the first place with the objective of minimising their heating consumption, and that the information learnt from the 70 schools surveys last year should be applied to the design of new schools in the area. We are concerned that this new building at Weston All Saints will add to the long list of school buildings which need retrofitting.

<sup>1</sup> It assumes all schools have been retrofitted with double glazing, cavity walls have been insulated, but no additional insulation has been added to solid walled buildings



**Lack of solar gain in current design**

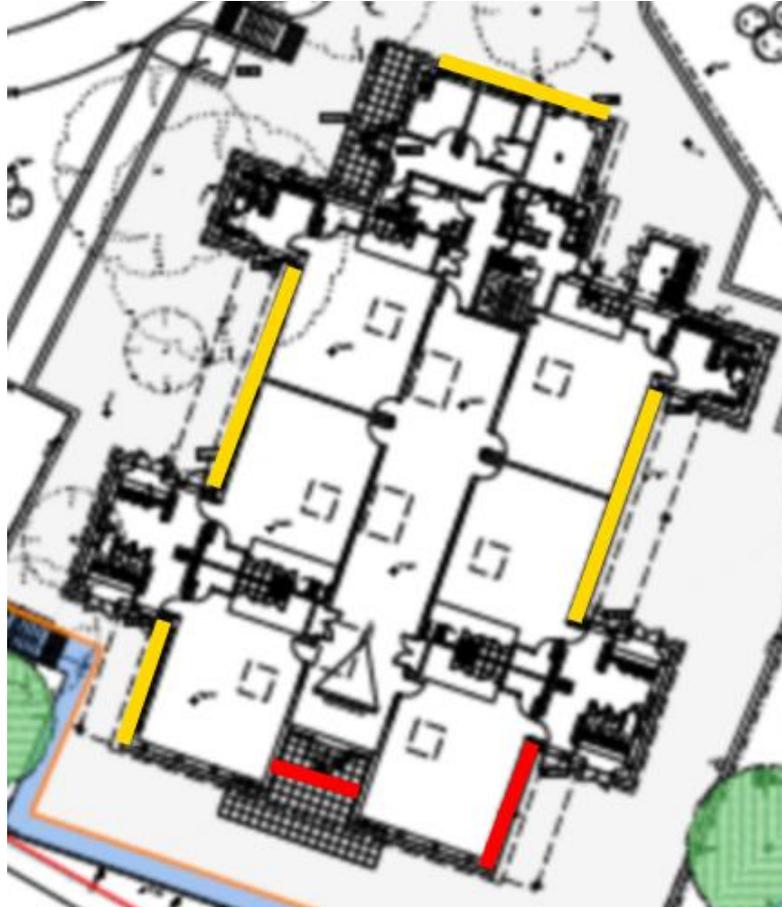
It is unclear, as it is not stated in the planning application whether this proposed design has been subject to energy modelling, but we guess that this is not the case and that thought has not been put into maximising winter solar gain to minimise the consumption of energy for heating? Managing the energy balance of gains and losses in schools is difficult because of the high density of pupils and electrical equipment providing large 'free' gains which you wouldn't normally find in most buildings. This needs to be carefully balanced to avoid summer overheating.

In the 'Sustainable Construction Checklist' the developers, in answer to the following question:

*"Do building layouts and orientation encourage passive solar gain? For example are glazed elevations located to the south and service areas to the north? "*

tick 'yes' but the prime facie evidence suggests that the developers have paid only limited attention to maximising solar gains.

Looking at the plan (orientated north-south +/-30<sup>0</sup>):



Only the windows in the areas highlighted in red appear to be orientated for solar gain in the winter. The remaining windows, highlighted in yellow, will see very little if any solar gain either because they are orientated in the wrong direction or covered by deep canopies.

The lack of solar gain is mainly caused by the protruding toilet blocks on the east and west sides of the building – surely a more efficient design would be for these to be internal? We feel that if more careful thought was put into solar gains the school’s heating demand would be reduced.

**Recommendations based on 2013 energy survey of 70 B&NES Schools**

No mention of the heating and hot water systems are provided in the planning submission, but we would hope the council has learnt from the experience of the energy surveys and follows these recommendations:

1. Avoid underfloor heating: as it is incompatible with the low occupation hours of schools
2. Use point of use electric hot water heaters and not a centrally managed and distributed system



3. Pay careful attention of thermostatic control and zoning
4. Pay careful attention to ventilation, better insulation often means higher energy consumption as windows are left open more often to reduce overheating in rooms with poor thermostatic control

#### **Insulation, ventilation and form**

The protruding toilet blocks also mean that the building has less of a compact form than it could potentially have been and although we understand the potential logic of the canopied areas on the west and east sides of the school we feel the architects could have presented a design which better meets the functional and energy efficiency needs of the school by internalising the toilets and presenting a more compact form with smaller surface area?

We also feel that the U values, particularly of the walls (0.24) and roof (0.18) could be improved at very little additional extra cost. It is also unclear whether any thought has been put into mechanical ventilation and potential heat recovery something which we feel is important because of the high occupation density of schools?

#### **Orientation of the building – plans don't match?**

The image below shows 2 floor plans presented in the planning application overlaid on each other, and as you can see they don't match:



There appears to be a 30° difference in orientation between the “PROPOSED CONSTRUCTION SITE ACCESS AND SITE COMPOUND PLAN” and the “PROPOSED GROUND FLOOR PLAN”, making it difficult to assess the potential benefits of solar gain.

We feel it would be useful if the developers could clarify the exact orientation of the building as it is ambiguous in their current application?

### **Travel/Transport Planning**

Overall we welcome the proposal to increase the role at Weston All Saints Primary school as it should reduce the need for pupils to be transported to other schools outside the area and allow the area to more adequately cope with the additional demand of the housing development proposed in Weston under B&NES’s Core Strategy. However we feel the quality of the Transport Analysis is inadequate.



We found the 'BUILDING TRANSPORT ASSESSMENT NOVEMBER 2013' document very difficult to read as it seems the authors' prioritised quantity of verbiage over its quality. We feel that in its 74 pages it misses the 2 key points it should be addressing:

1. The impact of the housing developments in Weston on pupil numbers proposed in B&NES's Core Strategy which might add 300 homes to the area
2. The impact of car travel if the potential catchment area of the schools is enlarged as a result of 120 more pupils being added to the school role

The document appears to state that there will be no impact from increasing the school role by 120:

*"This TA overall demonstrates that there is **no significant impact of the proposal**, and that the adjacent highway network can safely accommodate vehicular and non vehicular modes of transport to the proposed building."*

Something we don't believe.

The proposed housing developments in the Core Strategy have the potential to both increase and decrease the traffic problems around the school. The decrease could be caused by an increase in the school role walking to school from the new housing estate reducing the catchment area and therefore the number of parents driving their children to school as a result of distance. The increase is potentially as a result of general additional traffic during rush hours from the new occupants of the proposed estate commuting to work. These contradictory impacts don't appear to have been assessed in the council's document.

If you ignore the Core Strategy housing development, we feel increasing the school role will likely result in more pupils travelling from a greater distance to the school in the short term and for the majority of these pupils and their parents there is a greater temptation to drive because of the distance. Again, we feel the document falls short in analysing this problem?