NOTES FOR BREEAM

PRE ASSESSMENT

As part of the BREEAM Schools' assessment there are a number of issues that have to have client involvement independent from the design/construction elements.

To ensure that the best score possible is achieved it is necessary that points are obtained from all sections of the assessment. This will not only involve undertaking the tasks but having the evidence to back them up.

The assessment level proposed will have a cost implication. BRE has published data on cost implication, which are as follows:

BREEAM RATING	PASS	GOOD	V GOOD	EXCELLENT	ZERO/LOW C	
COST INCREASE %	0.01	0.2-0.7	1.0-2.6	4.1-5.6	2.7-15.3	
AVERAGE	-	0.5%	2%	5%	10%	*

* From information supplied by BRE.

New build schemes will be easier to achieve better ratings than refurbishment. Schemes to be refreshed are unlikely to increase rating levels beyond current standards.

To date none of Stockton's schools have been formally assessed as part of BREEAM criteria. It will be necessary for all premises to be assessed and rated, as part of BSF and it will be hoped that challenging but achievable ratings can be set.

There are some items within the BREEAM assessment that will influence briefing/accommodation schedule/building management and will have to have agreement before the appointment of a LEP as project proceeds to full design stage a.

At the present time under BSF it has been decided to specify that the designer's aim to achieve excellent but the minimum standard required will be very good.

Excellent is where the authority should be aiming for, but indications are that to achieve this a not insignificant 5% increase in budget will be required.
As in the BSF project as a whole there is an affordability issue, increasing the budget is unlikely to find approval.
Striving for excellent but having very good, should be achievable with only a modest increase.
This has now been agreed as the way forward for primary capital school projects as well.

PRACTICAL ISSUES

The following areas are given as examples and are not exhaustive of the issues to be address in design of a balances and well performing building. These are examined on all projects to assess energy usage and potential carbon reduction.

Insulation
This is the major item that can significantly reduce energy and maintenance costs. The difficulty is providing sufficient insulation when the building is constructed that will give an effective lifespan. Buildings considered to be well insulated 15 years ago are now deemed to be inadequate and can be difficult to improve easily.
The use of facing brickwork is likely to decline in favour of timber frame or rendered walls with applied insulation. However these types of construction are not suitable for all public buildings that are often subject to physical rigours.
The more effective insulation products themselves can be formed from petroleum based materials but as long as they perform as insulants this is acceptable.
All SBC buildings are built with insulation standards exceeding current guidance as a matter of course.

Ventilation
This is a critical factor in education buildings, which have mandatory requirements.
Practice over the last few years has moved from electronically openable windows and roof lights to windcatchers on the roof. These enable natural ventilation and internal CO2 levels to be controlled without the need of mechanical ventilation. The use of windows and rooflights has been discontinued as it restricts the design and also has a number of mechanical controls involved. The windcatchers are now moving on to include solar fans, which will provide extract even when there is insufficient thermal movement or wind.
Should natural ventilation not be used, the mechanical option becomes more involved because of the requirement for heat exchangers and air recirculation ductwork.

Thermal Mass
The importance of thermal mass is now becoming relevant to public buildings as well as residential. In the past thermal mass was a way of using the mass of the structure to stabilise temperature control – a slow warm up and cool down. With increasing summer temperatures the thermal mass of the building can delay the time when the building reaches its maximum temperature. In schools this means that if the maximum temperature within the building can be moved from 1.00pm until 3.00 pm or later, a good internal condition can be maintained without the use of Air Conditioning. Thermal mass is best achieved with dense blockwork or brickwork so while external walls may be timber frame internal walls will be blockwork. This is where lightweight partitioning systems are not successful.

Heating Systems
Wet underfloor heating systems became economical when good levels of underfloor insulation became manditory. Low temperature systems that no not make the floors hot became acceptable because of good heat distribution; low running costs and low maintenance especially in schools. Subsequentially the systems have been found to be the best systems to be used with heat exchanger systems [ground or air sourced]. Because the effective heat exchange leaves the water at 40 deg. C that is the temperature required for underfloor systems rather than the 70 – 80 deg C. for radiators.
At the present time – subject to enough space being available- ground source heat pumps are the most effective of the on site renewable energy resources. Current

information indicates that between 3 and 4 units of heat can be generated by 1 unit of electricity. Currently a ground source heat pump will be in the region of £35 per sq.m. or exampled by Rosebrook School were the installation cost £70,000.

Solar Shading

With increased temperatures is it important that even in temperate latitudes buildings effectively tackle shading to avoid high internal temperatures and avoid the requirement for Air Conditioning. Current regulations are directing the designers to external shading rather than changing glass types or internal blinds. This has significant issues in the design as there are greater costs in removing heat from solar gain that for heating the building in the first place.