Technical Note 01

Project:	Whitmore High School		
Subject:	Energy Statement incorporating BREEAM		
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INTRODUCTION

This energy statement technical note has been produced by Atkins MEP team on behalf of Morgan Sindall in support of the planning application by DDP – Urban Planning Consultancy for the Whitmore High School project in Barry, Wales.

The technical note outlines the approach being taken to incorporate an energy strategy which is being developed alongside consideration of the function and form of the building through the Architectural proposals, whilst considering any supplementary planning documents or core strategies. The purpose of the technical note is to outline the proposed energy strategy to demonstrate the predicted performance of the building in terms of the building fabric, services and renewables, with respect to the UK Building Regulations Part L. Consideration within the design will also address the issue of overheating in order to comply with the relevant thermal comfort criteria.

This technical note analyses the energy and CO_2 savings that can be achieved by installing low or zero carbon (LZC) technologies at the proposed development. The technical note also highlights the BREEAM credits targeted for the school to achieve a minimum rating of BREEAM 'Excellent', as part of a Welsh Government requirement.

BREEAM

The project brief requires a minimum rating of BREEAM 'Excellent' to be achieved, as part of a Welsh Government requirement. The school shall be designed to meet the requirements of BREEAM New Construction 2014.

An initial BREEAM pre-assessment was undertaken at Stage 2 by MM Sustainable Design, which identified credits that must be achieved during the early and development stage, and these are being considered by the Atkins MEP team prior to the final sign off of the RIBA Stage 4a design.

The table below highlights the credits identified at Stage 2 as being feasible and targeted to ensure that the required 'Excellent' rating can be achieved. Some of these credits have already been obtained as highlighted.

Credit ID	Issue Title	No. Credits Targeted	No. Credits Obtained	MEP Input Required
MAN 01	Project Brief and Design	4	1	No

Credit ID	Issue Title	No. Credits Targeted	No. Credits Obtained	MEP Input Required
MAN 02	Life Cycle Cost and Service Life Planning	4	0	No
MAN 03	Responsible Construction Practices	6	0	No
MAN 04	Commissioning and Handover	4	0	Yes
MAN 05	Aftercare	3	0	Yes
HEA 01	Visual Comfort	2	0	Yes
HEA 02	Indoor Air Quality	4	0	Yes
HEA 03	Safe Containment in Laboratories	1	1	Yes
HEA 04	Thermal Comfort	3	0	Yes
HEA 05	Acoustic Performance	3	0	No
HEA 06	Safety and Security	1	0	Yes
ENE 01	Reduction of Energy Use and Carbon Emissions	5	0	Yes
ENE 02	Energy Monitoring	2	0	Yes
ENE 03	External Lighting	1	0	Yes
ENE 04	Low Carbon Design	2	2	Yes
ENE 06	Energy Efficient Transportation Systems	3	0	Yes
ENE 08	Energy Efficient Equipment	2	0	Yes
TRA 01	Public Transport Accessibility	1	1	No
TRA 02	Proximity to Amenities	1	1	No
TRA 03	Cyclist Facilities	2	0	No
TRA 04	Maximum Car Parking Capacity	0	0	No
TRA 05	Travel Plan	1	0	No
WAT 01	Water Consumption	3	0	Yes
WAT 02	Water Monitoring	1	0	Yes
WAT 03	Water Leak Detection	2	0	Yes
MAT 01	Life Cycle Impacts	3	0	No
MAT 02	Hard Landscaping and Boundary Protection	1	0	No
MAT 03	Responsible Sourcing of Materials	2	0	No
MAT 04	Insulation	1	0	Yes
MAT 05	Designing for Durability and Resilience	1	0	No
MAT 06	Material Efficiency	0	0	No
WST 01	Construction Waste Management	2	0	No
WST 02	Recycled Aggregates	1	0	No
WST 03	Operational Waste	1	0	No
WST 05	Adaption to Climate Change	1	1	No
WST 06	Functional Adaptability	1	0	No
LE 01	Site Selection	0	0	No
LE 02	Ecological Value of Site and Protection of Ecological Features	0	0	No
LE 03	Minimising Impact on Existing Site Ecology	1	0	No
LE 04	Enhancing Site Ecology	1	0	No
LE 05	Long Term Impact on Biodiversity	2	0	No
POL 01	Impact of Refrigerants	1	0	Yes
POL 02	NOX Emissions	3	0	Yes
POL 03	Surface Water Run-Off	4	0	No
POL 04	Induction of Night Time Light Pollution	1	0	Yes
POL 05	Reduction of Noise Pollution	1	0	Yes

Credit ID	Issue Title	No. Credits Targeted	No. Credits Obtained	MEP Input Required
Exemplary Credits				
MAN 03	Responsible Construction Practice	0	0	No
MAN 05	Aftercare	1	0	Yes
HEA 01	Visual Comfort	0	0	Yes
HEA 02	Indoor Air Quality	0	0	Yes
ENE 01	Reduction of Energy & CO2 Emissions	0	0	Yes
WAT 01	Water Consumption	0	0	Yes
MAT 01	Life Cycle Impacts	2	0	Yes
MAT 03	Responsible Sourcing of Materials	0	0	No
WST 01	Construction Waste Management	0	0	No

PASSIVE DESIGN ANALYSIS

A passive design analysis study has also been undertaken at RIBA Stage 2 by AECOM in compliance with the methodology set out in BREEAM 2014, for the potential for passive design measures to reduce building energy consumption, associated carbon emissions and to minimises the reliance on active building services as part of the passive design analysis credit. The study contributed towards BREEAM 2014 application for Non-Domestic for Ene04 Credit 1 - Passive Design Analysis. The study demonstrated a “significant” (i.e greater than 5%) CO_2 reduction is achievable through the use of passive measures.

LOW AND ZERO CARBON TECHNOLOGIES

A BREEAM Compliant Low and Zero Carbon (LZC) feasibility study has been undertaken at RIBA Stage 2 by AECOM. The study contributed towards the BREEAM (2014) application for Non-Domestic for Ene04 Credit 1 – Low and Zero Carbon Technologies. Of all the LZC technologies investigated for the application, the report recommended that photovoltaic (PV) is the most favourable option. PV calculations summary below.

BASELINE	**Baseline energy Demand**	1,157,420	kWh p.a
	Greenhouse Gas (GHS) emissions	373	tCO2e p.a
PROPOSED	**Total available roof area**	3,643	m2
	Area of active PV	1000	m2
	Annual electrical generation	124,061	kWh p.a
	GHG Emission saving	64.4	tCO2e p.a
	GHG Emission saving (%)	17.2	%

The design-stage expected energy demand (baseline energy demand) of the building was calculated through the use of energy benchmarks from CIBSE TM46. Using the proposed floor plans of the building, it was possible to drive an energy demand for the proposed development. On the basis of these calculations, solar PV could achieve a 17.2% reduction on regulated baseline GHG emissions.

Please note - the amount (m^2) of feasible renewable technology sized, as indicated in the calculations, will likely to change as the design evolves from the early concept design at RIBA Stage 2. However, this is deemed as acceptable assuming the reduction in regulated carbon dioxide

equivalent ($CO2_e$) emission or energy use, compared with the baseline energy demand, is 5% or greater.