1.0 Sustainability

1.1 Sustainability

Sustainable development means improving quality of life and living within environmental limits, not one at the expense of the other.

The whole purpose of the Barnsley schools project is to improve the quality of life in Barnsley through better education and community benefits. This must be achieved within the environment's capacity, both locally and globally.

Barnsley Partnership for Learning (BP4L) will achieve this with a coherent, integrated approach to:

- Design, build and operate the SEN to cause the least environmental damage and provide the most benefit.
- Make the SEN an 'ambassador of sustainability' to all its users and the wider community.

Our strategic approach has already identified the key sustainability drivers (see sub-sections below). These have guided our design, and will be continued by BP4L through the construction and operation of the SEN to ensure the best solutions are implemented. These solutions will be monitored and improved over time to ensure that they are adapted to meet future needs of the school.

To build sustainability in to our approach, our dedicated sustainability champion has been involved from the outset, providing input into the design at all stages.

1.2 Policies and Regulations

Our approach has been guided by all relevant strategies and policies:

- Barnsley Bid deliverables
- Barnsley environment strategy
- Barnsley Local Development Framework
- Barnsley Community Plan and Neighbourhood renewal strategy 2005/2008
- Barnsley Unitary Development Plan Dec 2000 (Part 1 & Part 2)
- Remaking Barnsley- Strategic Development framework 2003-2033

We interpret and apply these in the context of wider regional policies including:

- Regional Spatial Strategy for Yorkshire and the Humber to 2016 (replacing Regional Planning Guidance for Yorkshire and the Humber RPG12)
- The Regional Energy & Energy Infrastructure Strategies
- The Regional Economic Strategy for Yorkshire and the Humber 2006–2015
- Sustainable Communities in Yorkshire and the Humber: Building for the Future, 2003
- Yorkshire and the Humber Climate Change Action Plan 2005
- Government Office for Yorkshire and the Humber Sustainable Development Policy 2005
- Regional Planning Guidance for Yorkshire and the Humber RPG12
- Yorkshire and the Humber Regional Waste Strategy–July 2003

The proposed design will assist the council in meeting its obligations as follows;

- Heating by Biomass - we propose a biomass boiler to provide approximately 100% of the buildings heating and hot water load.
- 10% Renewables on top of Biomass - we propose the use of wind turbines to provide 10% of the Phase 2 new build element net electricity consumption.
- Rainwater Harvesting - we propose collection of rainwater for toilet flushing and irrigation demands.
- Enhances Insulation - we propose to exceed Part L requirements.
- Enhanced Passive Cooling - we propose thermal mass for passive cooling.
- Overt Sustainability - we propose all sustainable features to be prominent and if appropriate accessible to students, staff and visitors.
- BREEAM - we propose to deliver a BREEAM 'very good' rating whilst aspiring to achieve an 'excellent' rating.

1.3 Our Approach

Sustainability has been a key consideration in the development of the design proposals for Greenacre SEN in line with the Client's aspirations.

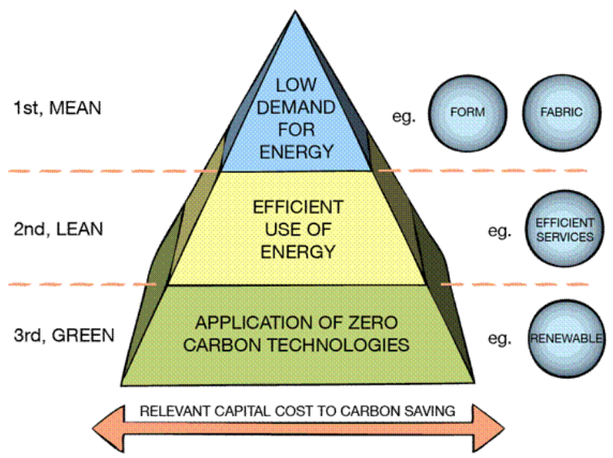
To ensure that a sustainable solution is delivered it is essential that environmental, social and economic considerations are addressed strategically.

The strategic approach has already started with the identification of key issues that are driving sustainability on the project. This is an ongoing process that has influenced the design to this point, and will be continued through the construction and operation of the school to ensure the best solutions are implemented. These solutions will be monitored and improved to ensure that they are adapted to meet future needs of the school.

Perhaps the most pressing issue of our age is the need to counteract climate change through the design of buildings that require minimal fossil fuel use.

A hierarchical approach to carbon reduction has been applied through the mean, lean, green design approach.

The mean strategy has been to provide a building that incorporates environmental solutions that are low-tech and simple to operate and will provide good thermal comfort and conditions for learning. The use of simple low energy systems, optimisation of the building form and higher standards of the building fabric minimises energy demand. Secondly, the lean strategy embraces the installation of energy efficient systems to minimise energy use where active systems are required. Thirdly, the carbon footprint is further mitigated by the use of renewable energy sources as part of the green strategy. The diagram below explains this approach.



Minimising the need for energy use is the most foolproof and cost-effective way to reduce the environmental impacts of energy, and its related impact on climate change. It is therefore our top environmental priority. One of the main techniques to reduce the energy consumption will be using natural ventilation in the majority of the spaces, acoustically attenuated where necessary. Combined with the high thermal mass provided by the concrete structural frame, optimised orientation, shallow floor plates and passive solar control, this makes for a more comfortable building and lower energy requirements than a mechanically ventilated design.

Further measures incorporated in the design to reduce energy demands in line with the mean strategy include:

- Passive design to optimise natural daylight in conjunction with daylight linked lighting controls and high efficiency background / task lighting.
- Balancing glazing and thermal insulation elements to reduce heat loss and maximise positive solar gain.
- Space planning to reduce the need for space cooling.
- Construction to a high level of air tightness to minimise heat loss from leaks.

Highly efficient control systems have also been incorporated as part of the lean strategy. These include the following:

- Optimised heating systems and controls to reduce inefficient heating.
- Electrical energy efficiency measures such as off power factor correction, high efficiency cooling plant (where natural ventilation cannot be used), and variable speed drives on fans and pumps.
- Intelligent controls connected to the Building Management System (BMS) and targeted metering throughout the building to ensure that operational energy use can be monitored and improved.

1.4 Renewable Energy Strategy

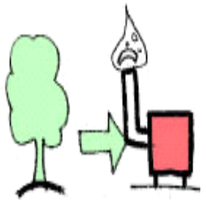
We propose to minimise the carbon emissions from the remaining energy use by using the following renewable sources;

- Biomass boilers - to be used to provide approximately 100% of annual thermal load.
- Wind turbines - energy to provide 10% of the new building elements of the Phase 2 school's year-round electricity needs.

For the Energy Centre we propose a 220kW biomass boiler to meet approximately 100% of the SEN's year round heating requirements, with gas backup. To complement this renewable heat source, we propose the use of a small wind turbine system to supply renewable electricity. This combines powerful and dramatic symbolism with a genuine opportunity to reduce greenhouse gas emissions significantly.

Currently the use of biomass fuel has an attractive payback period. This is not due to a drop in biomass fuel costs but is directly due to a significant increase in the cost of alternative fuels. There are various biomass fuels on the market, woodpellet and woodchip. Both of which are readily available in the Barnsley area.

The biomass fuel store will comprise an enclosure in the energy centre. The 56m^3 store will be underground allowing delivery Lorries to pull up on site and dump the load into an underground bunker.



It is intended to generate the equivalent of approximately 10% of the annual electrical energy consumed by the Phase 2 schools via wind turbines. However; not all the schools occupy a location which is exposed to wind patterns that will give efficient generation, nor do they have an area that will readily accommodate large turbines. An approach has therefore been taken to locate turbines on all sites, but to focus the majority on the site which has the greatest generation potential and appropriate area of land. This means that the majority of the turbines will be located on the Shafton site.

To satisfy the annual electrical consumption of the new build elements of Phase 2 will require 3, 15kW turbines located on the Shafton site and a 1.5kW turbine on each of the SEN sites. When the retained estates element is included the projected consumption will just exceed that available from the 3,15kW and 2, 1.5kW turbines. Rather than add a fourth turbine on the Shafton site it is intended to address the shortfall via the generation provision which will be provided as part of Phase 3.

All the sustainability features will be legible to building users, with direct physical access wherever safe and practicable. Additionally, linking all sustainable energy and other resource features to the Building Management System will provide both displays of environmental performance in public areas (to provide eco-feedback to staff, students and visitors) and data for formal study.

1.5 Part L Compliance

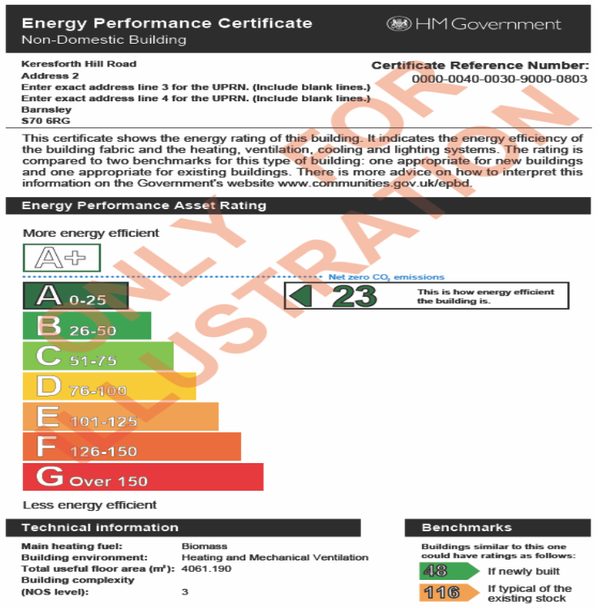
The part L carbon dioxide emissions calculation has been performed using the Integrated Environmental Systems (IES) Virtual Environment. The software is certified for compliance with the building regulations and the EPBD in the UK and the simulation engineer is a certified CIBSE low carbon consultant design and simulation assessor.

Criterion 1: Predicted CO2 emission from proposed building does not exceed the target

1.1	Calculated CO2 emission rate from notional building	40.7 KgCO2/m2.annum
1.2	Improvement factor	0.19
1.3	LZC benchmark	0.1
1.4	Target CO2 Emission Rate (TER)	29.8 KgCO2/m2.annum
1.5	Building CO2 Emission Rate (BER)	14.2 KgCO2/m2.annum
1.6	Are emissions from building less than or equal to the target?	BER =< TER
1.7	Are as built details the same as used in BER calculations?	Separate submission

As shown, the benchmarked building emissions rate, based upon current design information is; 14..2kg/CO2/m2 which shows a 52.3% improvement upon the Target Emissions Rating.

Additionally shown below is the provisional energy performance certificate for the scheme, also produced using the IES virtual environment.



As shown the scheme as designed is on course to achieve an EPC 'A' rating.

An outline overheating study has been undertaken to design in compliance with the BB101 and output specification overheating requirements, these being:

The performance standards for summertime overheating in compliance with Approved document L2 for teaching and learning areas are:

a) There should be no more than 120 hours when the air temperature in the classroom rises above 28°C

b) The average internal to external temperature difference should not exceed 5°C (i.e. the internal air temperature should be no more than 5°C above the external air temperature on average)

c) The internal air temperature when the space is occupied should not exceed 32°C.

In order to show that the proposed school will not suffer overheating two of these three criteria must be met.

In summary, the thermal performance of the school complies with sections a) and c).

1.6 Target Consumption figures

The predicated Utility Consumption figures for the Greenacre SEN are;

	Biomass Cons. (MWh)	Gas Cons. (MWh)	Electricity Cons. (MWh)	Total Energy Cons. (MWh)
Greenacre	409.3	9.3	141.3	560

1.7 BREEAM

Summary of the current predicted score

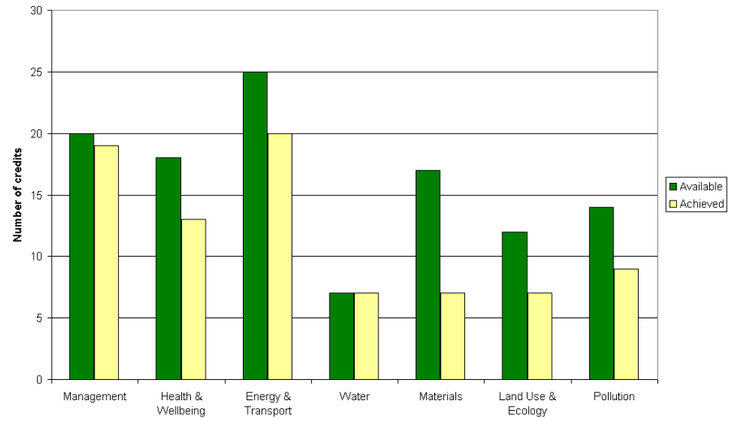
BDP sustainability has produced this BREEAM Pre-Assessment to assess the current design for Greenacre SEN against the BREEAM for Schools 2006 criteria. The team have produced a BREEAM Pre-Assessment to benchmark and inform the design as an iterative process.

The pre-assessment is based on initial discussions held between a licensed BREEAM assessor and the project team, and review of general arrangement drawings and information.

It is important to note at this early stage, that the outcome of the BREEAM assessment is ultimately dependent on the level and quality of the responses to the BREEAM actions by everyone involved in the project.

The design team have demonstrated their intention of attaining a BREEAM Very Good rating and aspiring to achieve an excellent rating through the ongoing BREEAM pre-assessment process. The chart below provides an overview of the predicted BREEAM score for the Greenacre SEN. The current predication is for a score of *71.43%*, equating to a rating of *EXCELLENT*.

Full breakdown of this route to Excellent can be found in the Appendix A. The spreadsheet also has an added column which indicates a more conservative route to Very Good.



APPENDIX A

BREEAM Assessment - Greenacre

Barnsley BSF Phase 2 Pre-assessment - Updated 18th December 2009

Greenacre SEN

BDP.

Predicted Scores	
71.4%	58.8%
Excellent	Very Good

Pass = 25%
Good = 40%
Very Good = 55%
Excellent = 70%

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Credit Code	**Credit Title**	**Credit Criteria**	**Credit Responsibility**	**Maximum Credits**	**Predicted Credits**	**Removed Sustainability Option**	**Credit Validation/BDP Sustainability Recommendations after meeting held 14th January 2009**
Management Section							
M1	**Commissioning**	**Where evidence provided demonstrates that an appropriate project team member has been appointed to monitor commissioning on behalf of the client to ensure commissioning will be carried out in line with current Building Regulations and (where applicable), best practice.**	**Design Team**	**2**	2	2	Design Team comment: achievable BDP comment: the design team will need to ensure that the appointment of person's) within the design team to oversee commissioning are documented + person(s) appointed by the principal contractor to conduct the seasonal commissioning within the first year of the building being occupied are documented.
M4	**Consider Constructors**	**First credit:** **One credit is awarded where evidence provided demonstrates that there is a commitment to comply with best practice site management principles.** **Second credit:** **Two credits are awarded where evidence provided demonstrates that there is a commitment to go significantly beyond best practice site management principles.**	**Principal Contractor**	**2**	2	2	Design Team comment: achievable BDP comment: the principal contractor must ensure that a copy of the CCS report is submitted to the BREEAM assessor (to gain the full credits a score over 32 is required)-this should be achievable if the principal contractor has a documented Safety, Health and Environmental Management system.
M5	**Construct Site Impacts**	**Up to four credits are awarded where established good practice is adopted on site in line with the BREAM Construction Site Impacts Checklist A3.** **Use the BREAM calculators to determine the number of credits achieved**	**Principal Contractor**	**4**	4	4	Design Team comment: achievable BDP comment: the principal contractor must ensure that a structured framework for managing all environmental aspects associated with site activities is implemented on site. This must include the following: procedures for land, air and water pollution control, objectives and targets programme, monitoring of energy (CO2), waste, materials, transport (CO2) and water, assigning role and responsibilities (also need to included control measures for protection of wildlife/endangered species due to the nature of some of the sites). All timber should be FSC certified.
M6	**Site Investigation**	**One credit is awarded where evidence provided demonstrates that the design team has carried out a detailed site investigation of the selected site.**	**Architect**	**1**	1	1	Confirmation is required that a site investigation has been carried out in compliance with all the relevant building regulations and codes of practise. Credit assumed achievable at the present time.

					GREENACRE		
Credit Code	**Credit Title**	**Credit Criteria**	**Credit Responsibility**	**Maximum Credits**	**Predicted Credits**	**Removed Sustainability Option**	**Credit Validation/BDP Sustainability Recommendations**

M8	**Consultation**	**First Credit:** **One credit is awarded where evidence provided demonstrates that consultation has been undertaken and feedback given to the local community and building users.** **Second Credit:** **One credit is awarded where the first credit has been achieved and where evidence provided demonstrates that the consultation process is undertaken using an independent method such as DQI, DQM or School Works, facilitated by a third party.**	**Architect** **Architect**	1 1	1 1	1 1	Consultation with the local neighbourhood will need to take place. This is to increase the feeling of "ownership" within the surrounding community, involving them within the process of designing/modelling the prospect neighbourhood of which they are to be an important part. Additionally an ALO is being contacted to provide a specific advice.
M9	**Shared Facilities**	**First Credit:** **One credit is awarded where at least one credit is achieved under M8 and where evidence provided demonstrates that shared facilities have been provided as a consequence of consultation feedback.** **Second Credit:** **One credit is awarded, where the first credit is achieved and where evidence provided demonstrates that these facilities can be accessed without compromising the safety of the building and its occupants.**	**Architect** **M&E / Architect**	1 1	1 1	1 1	A document describing the facilities to be shared and how to access them to be produced and communicated to all consultees. An additional credit can be achieved if it is proven that these facilities can be accessed without compromising the safety of the building and its occupants.
M10	**Security**	**One credit is awarded where evidence provided demonstrates that the project team has consulted with the Architectural Liaison Officer (ALO) or the Crime Reduction Design Adviser (CRDA) and has carried out a Crime Pattern Analysis for the site to assess the level of risk.**	**Architect**	1	1	1	Credit assumed achievable on the basis that a security strategy including external and internal security measures and procedures is produced.
M12	**Building Users Guide**	**One credit is awarded where evidence provided demonstrates the provision of a simple guide that covers information relevant to the tenant/occupants and non-technical building manager on the operation and environmental performance of the building.**	**Design Team**	1	1	1	Commitment to produce a simple building users guide covering standard O&M information and additional information covering topics such as transport, waste management, ecological upkeep etc. Credit assumed achievable.
M14	**Publication of Building Information**	**One credit is awarded where evidence provided demonstrates that the design team are committed to publicising information about the new development via the internet, newsletters, site visits, presentations etc.**	**Design Team**	1	1	1	The publicised info should include: BREEAM rating and score, building cost, external works, gross floor area, total are of site, area of teaching spaces, area of circulation, area of storage, % are of site used by the community, predicted energy/water consumption, predicted energy generation and predicted water use per pupil per year. Credit assumed achievable.
M16	**The Development as a Learning Resource**	**One credit is awarded where evidence provided demonstrates that the proposed building and landscape design provides a learning resource that can be used to facilitate development of environmental issues within existing school curriculum.**	**Design Team**	1	1	1	Design Team comment: achievable Facilities both within the building (renewable energy systems with teaching space) and external landscape education facilities will be provided.
M20	**Ease of Maintenance**	**One credit is awarded where evidence provided demonstrates that specifications for the building and the building services / systems and landscaping have considered ease and efficiency of maintenance in line with best practice.**	**Design Team**	1	1	1	Design team to refer to relevant CIBSE guide on maintenance and checklist plus ensure adequate storage space in accordance with BB98/99.

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Credit Code	Credit Title	Credit Criteria	Credit Responsibility	Maximum Credits	Predicted Credits	Removed Sustainability Option	Credit Validation/BDP Sustainability Recommendations
		First Credit **One credit is awarded where evidence provided demonstrates that an assessment of Whole Life Costing has been undertaken on the building design at Strategic Level.**	**QS**	1	1	1	Design team: It is possible that 1 credit could be achieved on the basis that whole life costing would be undertaken at a strategic level.

M21	Whole Life Costing	Second Credit One credit is awarded where the first credit has been achieved and where evidence provided demonstrates that an assessment of Whole Life Costing has been undertaken on the building design at Component Level.	QS	1	0	0	
			Totals:	20	19	19	
			Score (%)	15.00	14.25	14.25	
Health & Wellbeing Section							
HW1	Daylighting	First Credit: One credit is awarded where evidence provided demonstrates that at least 80% of occupied spaces will be adequately daylit with an average daylight factor exceeding 2%. Second Credit: One credit is awarded where evidence provided demonstrates that all spaces will be adequately daylit with an average daylight factor exceeding 4% in single storey and 3% in multi-storey buildings. "	Architect	2	0	0	Design team comment: Calculation must be produced to show that at least 80% of all occupied areas have a daylight factor of at least 2%. Credit may be achievable but a conservative prediction has been assumed at present time.
HW2	View Out	One credit is awarded where evidence provided demonstrates that all desks are within a 7m radius of a window.	Architect	1	0	0	Design Team comment: Not achievable as the depth of certain teaching spaces is in excess of the requirements of the BREEAM credit. Educational needs have been prioritised over views.
HW3	Glare Control	One credit is awarded where evidence provided demonstrates that an occupant controlled glare control system (e.g. internal or external blinds) is fitted.	Architect	1	1	1	Design Team: achievable Manually controlled blinds to be provided in appropriate locations.
HW4	High Frequency Lighting	One credit is awarded where evidence provided demonstrates that high frequency ballasts are installed on all fluorescent and compact fluorescent lamps.	M&E	1	1	1	Design Team: achievable Adequate lighting to be provided in all locations.
HW5	Internal and External Lighting Levels	One credit is awarded where evidence provided demonstrates that all internal and external lighting, where relevant, is specified in accordance with the appropriate maintained illuminance levels (in lox) recommended by CIBSE.	M&E	1	1	1	Design Team: achievable Adequate lighting levels to be provided in all locations.
HW6	Lighting Zones	One credit is awarded where evidence provided demonstrates that lighting, in all occupied areas, is zoned to allow separate control.	M&E	1	1	1	Design Team: achievable Adequate lighting controls to be provided in all locations.
HW8	Potential for Natural Ventilation	One credit is awarded where evidence provided demonstrates that the natural ventilation strategy allows for sufficient control of the supply of fresh air.	M&E / Architect	1	0	0	Design Team comment: unachievable Natural ventilation will be viable in most areas but the BRE requirement of 5% of the gross internal floor area of the room/floor plate will have to be meet. Credit conservatively withheld at the present stage.
HW9	Internal Air Pollution	One credit is awarded where evidence provided demonstrates that air intakes serving occupied areas avoid major sources of external pollution and recirculation of exhaust air.	M&E	1	1	1	Design Team comment: assumed achievable at present. Air intake and outlets are at least 10m apart to prevent recirculation and that windows are at least 20m from a external source of pollution (car parks, roads are typical examples).
HW11	Ventilation Rates	One credit is awarded where evidence provided demonstrates that each space within the development achieves recommended minimum fresh air rates	M&E	1	1	1	Design Team comment: achievable Design will either deliver natural ventilation to spaces or will be provided with 12l/s/person in mechanically ventilated locations.

HW13	**Volatile Organic Compounds**	**One credit is awarded where evidence provided demonstrates the design team has carried out a review of all finishes and fittings containing volatile organic compounds (VOCs).**	**Architect**	1	0	0	**LOR standard finishes therefore no VOC review and credit not assumed achievable at present** Design Team comment: achievable The design team to undertake a review of materials and ensure that documented evidence is provided to identify the details of the finishes/fitting.
HW14	**Thermal Comfort**	**One credit is awarded where evidence provided demonstrates that thermal comfort levels are assessed at design stage, this is used to evaluate appropriate servicing options, and appropriate thermal comfort levels are achieved.**	**M&E**	1	1	1	It is assumed that thermal modelling results will give a Part L2A CO2 emissions report and summertime temperature analysis which will confirm that appropriate thermal comfort levels are achieved. Therefore credit is assumed achievable.
HW15	**Thermal Zoning**	**One credit is awarded where evidence provided demonstrates that local control is available for temperature adjustment in each area to reflect differing load requirements.**	**M&E**	1	0	0	**091217 underfloor heating has no separate control therefore credits unachievable** Credit assumed achievable. The building is to be designed for modular thermal control.
HW16	**Microbial Contamination**	**One credit is awarded where evidence provided demonstrates that the risk of waterborne and airborne legionella contamination has been minimised.** **AND** **One credit is awarded where evidence provided demonstrates that no humidification is present , or only steam humidification is provided.**	**M&E**	1	1	1	Credit is assumed achievable as good practice.
HW17	**Acoustic Performance**	**Up to three credits are awarded where evidence provided demonstrates that the acoustic performance of the building meets the appropriate standard for it's purpose.**	**Acoustician**	3	2	2	2 credit assumed achievable at present stage.
HW24	**Drinking Water**	**One credit is awarded where evidence provided demonstrates chilled mains fed dispensers are provided for pupils and staff use throughout the day.**	**Architect**	1	1	1	Design Team comment: achievable Water fountains to be provided as required by credit criteria. NOTE: it must be possible to fill a bottle from the fountains i.e.. swan neck fountain required.
			Totals:	18.00	11.00	11.00	
			Score (%)	15.00	9.17	9.17	

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Credit Code	Credit Title	Credit Criteria	Credit Responsibility	Maximum Credits	Predicted Credits	Removed Sustainability Option	Credit Validation/BDP Sustainability Recommendations
Energy Section							
E1	**Reduction of CO_2 emissions**	**Up to 15 credits are available where evidence provided demonstrates that the building achieves a percentage improvement above the requirement for CO_2 emissions as set out in the Building Regulations.**	**Architect / M&E**	15	11	3	Design Team comment: With the provision of biomass and renewable, there will be a reduction in part L model in excess of 30% below the building regulations target which equates to 11 credits **Reduced Sustainable Option** - Removal of biomass and reduction in design performance will result in a reduced figure of 4% below part L which equates to 3 credits.
E2	**Sub-metering of Substantial Energy Uses**	**One credit is awarded where evidence is provided to demonstrate the provision of direct sub-metering of substantive energy uses within the building.**	**M&E**	2	2	2	Design Team comment: achievable Design team to demonstrate via electrical distribution drawings the provision of sub metering for substantial energy uses which would typically include the following: chiller installations, electric humidifier, motor control centres providing power to fans and pumps, final electrical distribution boards.

E4	**External Lighting**	**One credit is awarded where evidence provided demonstrates energy efficient external luminaries are specified and all light fittings controlled for the presence of daylight.**	**Electrical**	1	1	1	Design Team comment: achievable based on the BRE amendments made to the credit requirements, i.e. - All external lighting for the building, access ways and pathways to be a minimum of 50 lamp lumens/circuit watt - All lighting to car parking areas and associated roads, where provided, to have a minimum of 70 lamp lumens/circuit watt - All flood lighting and sign lighting, where provided, to have a minimum of 70 lamp lumens/circuit watt - The daylight sensor requirement remains
E20	**Free Cooling**	**One credit is awarded where evidence provided demonstrates the design incorporates a system of providing free cooling to completely displace the need for conventional mechanical cooling systems (excluding exceptional localised circumstances with small scale systems)**	**Mechanical**	1	0	0	Design Team comment: Free cooling will be incorporated into the design where possible but the extent of which is not yet known. Credit may be achievable but a conservative prediction has been taken at the present time.
			Totals:	19.00	14.00	6.00	
			Score (%)	19.00	14.00	6.00	
					GREENACRE		

Credit Code	Credit Title	Credit Criteria	Credit Responsibility	Maximum Credits	Predicted Credits	Removed Sustainability Option	Credit Validation/BDP Sustainability Recommendations
Transport Section							
T1	**Provision of Public Transport**	**First Credit:** **One credit is awarded where evidence provided demonstrates good access is available to and from public transport networks for commuting.** **Second Credit:** **One credit is awarded where evidence provided demonstrates there is good access to and from public transport networks for business travel.**	**School**	2	2	2	Credit assumed achievable based on the assumption that there is a bus stop located within 400m of the school with a frequent service at peak times.
T5	**Cyclist Facilities**	**First credit:** **Where evidence provided demonstrates that there is adequate provision of covered, secure and well lit cycle racks and showers.** **Second credit:** **Where in addition to the above, evidence provided demonstrates adequate provision of changing facilities and lockers for clothes or a dedicated drying space for wet clothes.**	**Architect / M&E**	2	0	0	Credit assumed unachievable at present. BDP seeking advice from BDP on how applicable this credit is to a SEN school.
T6	**Pedestrian and Cyclist Safety**	**One credit is awarded where evidence provided demonstrates that the site layout has been designed to minimise risks to pedestrians and cyclists.**	**Architect**	1	1	1	Design Team comment: achievable Design to incorporate adequate design in landscaping.
T8	**Travel Plan**	**One credit is awarded where evidence provided demonstrates that a travel plan has been developed and tailored to the specific needs of the users of the assessed development.**	**School**	1	1	1	Design Team comment: achievable This is a planning requirement.
			Totals:	6.00	4.00	4.00	
Total E&T	25.00		Score (%)	6.00	4.00	4.00	
Water Section							

W1	**Water Consumption**	**Up to three credits can be awarded on the basis of the predicted potable water consumption for sanitary use within the building.**	**Architect / M&E**	3	3	2	Design Team comments: achievable There is a requirement to specifying low flush water wc's, percussion/aerated taps, rain water harvesting system and proximity sensors. **Reduced Sustainable Option** - Omission of rainwater harvesting is likely to reduce score by one credit.
W2	**Water Meter**	**One credit is awarded where evidence provided demonstrates that a water meter with a pulsed output will be installed on the mains supply to each building.**	**M&E**	1	1	1	Design Team comments: achievable Water meter to be provided at both site boundary and entry to building.
W3	**Major Leak Detection**	**One credit is awarded where evidence provided demonstrates that a leak detection system is specified or installed and is capable of identifying major leaks both within the building and between the building and the site boundary, and should cover all mains water supplies to the building.**	**M&E**	1	1	1	Design Team comments: achievable The system must be linked to BMS, provision of an audible alarm, programmable to suit occupier, designed to prevent false alarms, able to identify different leakage rates and is activated when a continuous flow of water passes through the water mater at a flow rate above a pre-set minimum for a preset period of time.
W4	**Sanitary Supply Shut Off**	**One credit where evidence provided demonstrates that proximity detection shut off is provided to the water supply to all urinals and WC's.**	**M&E**	1	1	1	Design Team comments: achievable Shut-off solenoid valves and occupancy sensors to be installed on entry to each toilet block.
W5	**Water Recycling**	**One credit is awarded where evidence is provided to demonstrate the specification of systems that collect, store, and where necessary, treat rainwater or greywater for WC and urinal flushing purposes.**	**M&E**	1	1	0	Design Team comments: achievable The rainwater harvesting system can be adequately sized. **Reduced Sustainability Option** - Omission of rainwater harvesting would result in loss of credit.
			Totals:	7.00	7.00	5.00	
			Score (%)	5.00	5.00	3.57	

GREENACRE

Credit Code	Credit Title	Credit Criteria	Credit Responsibility	Maximum Credits	Predicted Credits	Removed Sustainability Option	Credit Validation/BDP Sustainability Recommendations
Materials Section							
MW1	**Materials Specification - Major Elements**	**Up to four credits are available where evidence provided demonstrates that the major building elements specified have an 'A rating', as defined in the Green Guide to Specification.**	**Architect**	7	3	3	Design Team comment: Achievable Site specific but initial predictions suggest prediction of 3/7 of the credits will be achieved at each site. It is proposed that a material workshop will be scheduled later in the design.
MW2	**Hard Landscaping and Boundary Protection**	**One credit is awarded where evidence provided demonstrates that at least 80% of the combined area of external hard landscaping and boundary protection specifications achieve an A rating, as defined by the Green Guide to Specification.**	**Architect**	1	0	0	Design Team comment: site specific but it is not currently anticipated that the credit will be achieved.
MW5	**Reuse of Building Façade**	**One credit is awarded where evidence provided demonstrates that at least 50% of the total façade (by area) is reused and at least 80% of the reused façade (by mass) comprises in-situ reused material.**	**Structural Engineer**	1	0	0	Design Team comment: not achievable by default.
MW6	**Reuse of Building Structure**	**One credit is awarded where evidence provided demonstrates that a design reuses at least 80% of an existing primary structure and for part refurbishment and part new build, the volume of the reused structure comprises at least 50% of the final structure's volume.**	**Structural Engineer**	1	0	0	Design Team comment: not achievable by default.
MW7	**Recycled Aggregates**	**One credit is awarded where evidence provided demonstrates significant use of crushed aggregate, crushed masonry or alternative aggregates (manufactured from recycled materials) are specified for 'high grade' aggregate uses (such as the building structure, ground slabs, roads, etc.).**	**Principal Contractor**	1	0	0	Design Team comment: Following a review of local supply chains, it is unlikely that this credit will be achieved. Some credit may be achievable but credit has been conservatively withheld.

MW8	**Responsible Sourcing of Materials**	**Up to three credits are awarded where evidence provided demonstrates materials used in structural and non-structural elements are responsibly sourced.**	**Architect**	3	1	1	Design Team comment: Difficult to commit to more than one credit at this stage of the design although it is hoped to improve on this score as the project develops. A breakdown of all components making up greater than or equal 10% by volume of the key building element will be required and should be categorised into: timber, metal, glass, concrete, glass, composite and plastics + timber should be FSC certified and non timber products should be manufactured via a process certified under ISO14001/EMAS/BS8555/Green Dragon/Acorn Scheme
MW10	**Designing for Robustness**	**One credit is awarded where evidence provided demonstrates that protection is given to vulnerable parts of the building such as areas exposed to high pedestrian traffic, vehicular and trolley movements.**	**Architect**	1	1	1	Design Team comment: achievable High areas of high pedestrian and vehicle traffic would need to be identified and measures are required to prevent damage to vulnerable parts, e.g. bollards/barriers/raised kerbs, corridor walls specified to severe duty in accordance with BS5234-2, kick plates for doors and hard wearing floor finishes.
MW12	**Storage of Recyclable Waste**	**First credit:** **One credit is awarded where evidence provided demonstrates that a central, dedicated storage space is provided for materials that can be recycled. This can be either within the building itself, or on site using skips, (provided there is good access for collections and it is within easy reach of the building). Second credit:** **One credit is awarded where, in addition to the above, evidence provided demonstrates that policies/procedures have been established at the design/construction stages which:** **a. include procedures for collection and recycling of consumables;** **b. are endorsed at governor level;** **c. are or will be operational at a local level."**	**Architect**	2	2	2	Design Team comment: achievable Receptacle should be clearly labelled as a space for recyclable waste, within 20m of the main entrance, have good access for vehicles, 2 metres squared per 1000 metres squared of net floor area and a further 2 metres squared per 1000 metres squared of net floor area when catering provided + provision of a waste management plan detailing procedures for dealing with all types of waste generated on site which is endorsed by the school governor.
			Totals:	17.00	7.00	7.00	
			Score (%)	10.00	4.12	4.12	

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Credit Code	Credit Title	Credit Criteria	Credit Responsibility	Maximum Credits	Predicted Credits	Removed Sustainability Option	Credit Validation/BDP Sustainability Recommendations
Land Use & Ecology							
LE1	**Reuse of Land**	**One credit is awarded where evidence provided demonstrates that the footprint of the proposed development largely falls within the boundary of land previously developed.**	**Architect**	1	1	1	Credit assumed achievable on the basis that school playing fields can be counted as previously developed land only if the same area of playing fields are reinstated within one year from when construction of the new buildings has been completed; and where such reinstatement will not encroach on land of high ecological value as defined in Ecological Value of Land and Protection of Ecological Features credit (credit number LE3)
LE2	**Contaminated Land**	**One credit is awarded where evidence provided demonstrates that the land used for the new development has, prior to development, been defined as contaminated, and where adequate remedial steps have been taken to decontaminate the site prior to construction.**	**Principal Contractor**	1	0	0	Credit not achievable as site shows no indication of contamination.
LE3	**Ecological Value of Land and Protection of Ecological Features**	**One credit is awarded where evidence provided demonstrates that the construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works.**	**Ecologist**	1	0	0	Credit assumed not achievable as there will be trees removed from site at the beginning of construction.

LE4	Mitigating Ecological Impacts	**First Credit:** **One credit is awarded where evidence provided demonstrates the change in ecological value of the site, as a result of development, is less than zero and equal to, or greater than, minus nine species, i.e. a small negative change.** **Second Credit:** **Once credit is awarded where evidence provided demonstrates there is no negative change in the ecological value of the site as a result of development, i.e. equal to, or greater than, zero species.**	Ecologist	2	1	1	Measures will be taken to keep a low or zero ecological impact on species on the development of the new site. Current landscape proposals suggest that one credit may be achieved.
LE5	Enhancing Site Ecology	**First Credit:** **One credit is awarded where evidence provided demonstrates that the design team (or client) has I) appointed a professional to advise and report on enhancing and protecting the ecological value of the site; and ii) implemented the professional's recommendations for general enhancement and protection for site ecology.** **Additional credits:** **Up to two credits are awarded where in addition to the above, evidence provided demonstrates a positive increase in the ecological value of the site.**	Ecologist	3	3	3	Design Team comment: achievable An ecologist is part of the team which will assist in awarding the first credit, but a conservative approach is now being taken on the ecological enhancement of the site.
LE6	Long Term Impact on Biodiversity	**First Credit:** **One credit is awarded where evidence provided demonstrates that the client has committed to achieving the mandatory requirements and at least two of the additional requirements as listed in the credit Compliance Requirements.** **Second Credit:** **One credit is awarded where evidence provided demonstrates that the client has committed to achieving the mandatory requirements and at least four of the additional requirements as listed in the credit Compliance Requirements.**	Ecologist	2	2	2	Design Team comment: achievable An ecologist is part of the team and will assist the team in drawing up a ecology management plan and drawing up measure to ensure that ecological features on the site are protected.
LE7	Consultation with Students and Staff	**One Credit is awarded where evidence provided demonstrates the design team consults with staff and pupils, to determine (I) their educational and social requirements for the school grounds, (ii) their ideas for the school ground's design and (iii) where t**	Design Team	1	1	1	The staff and future building users should be consulted as part of the bid process in accordance to the BREEAM requirements as stated in the guidance documentation.
LE8	Local Wildlife Partnerships	**One Credit is awarded where evidence provided demonstrates the design team have set up a partnership with a local group that has wildlife expertise (e.g. the local wildlife trust).**	Design Team	1	1	1	Design team to set up a partnership with a local wildlife group. Credit assumed achievable.
			Totals:	12	9	9	
			Score (%)	15.00	11.25	11.25	

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Credit Code	Credit Title	Credit Criteria	Credit Responsibility	Maximum Credits	Predicted Credits	Removed Sustainability Option	Credit Validation/BDP Sustainability Recommendations
Pollution Section							
P1	Refrigerant GWP - Building Services	**Where evidence provided demonstrates the use of refrigerants with a global warming potential (GWP) of less than 5 or where there are no refrigerants specified for use in building services.**	M&E	1	1	1	Design team agreed credit should be achievable.
P2	Preventing Refrigerant Leaks	**One credit is awarded where evidence provided demonstrates that refrigerant leaks can be detected AND that the provision of automatic refrigerant pump down is made to a heat exchanger (or dedicated storage tanks) with isolation valves or where there are no refrigerants specified for the development.**	M&E	1	0	0	Credit assumed not achievable at present.

P4	**Insulant GWP**	**One credit is awarded where evidence provided demonstrates that the specification of insulating materials avoids the use of substances with a global warming potential (GWP) of 5 or more in either manufacture or composition**	**Architect / M&E**	1	1	1	Architects and Engineers are to specify insulants with a GWP of less than 5. Credit assumed achievable.
P6	**NOx Emissions of Heating Source**	**Up to three credits available, depending on the dry NOx emissions from delivered space heating energy:** **1 credit where dry NOx emissions are ≤100 mg/kWh (at 0% excess O2);** **2 credits where dry NOx emissions are ≤70 mg/kWh (at 0% excess O2);** **3 credits where dry NOx emissions are ≤40 mg/kWh (at 0% excess O2).**	**M&E**	3	0	0	Design Team comment: The provision of both gas and biomass boilers may allow one of the three credits to be achieved, but a conservative approach has been taken on the scoring.
P7	**Flood Risk / Water Run-off**	**Two credits are awarded where evidence provided demonstrates that the assessed development is situated in a flood zone that is defined as having a low annual probability of flooding.** **OR** **One credit is awarded where evidence provided demonstrates that the assessed development is located in a zone defined as having a medium annual probability of flooding and the ground level of the building, car parking and access is above the design flood level for the site's location.** **Additional credit:** **Where evidence provided demonstrates that Sustainable Urban Drainage techniques are specified to minimise the risk of localised flooding, resulting from a loss of flood storage on site through development.**	**M&E**	3	2	2	**091217 Chris Kendrick confirmed flood risk assessment carried out and site in flood zone 1, only 20% of peak flow rate will be attentuated so 2/3 will be achieved.** 2 credits assumed achievable on the basis that the development is located in at least a zone defined as having low annual probability of flooding. Environment Agency is to be consulted on this credit.
P8	**Minimising Water Course Pollution**	**One credit is awarded where evidence provided demonstrates that on site treatment such as oil separators/interceptors or filtration have been specified for areas at risk from pollution, I**	**M&E**	1	1	1	**091217 Chris Kendrick Petrol Interceptor incorporated into the design, confirmation required from yorkshire water so credit assumed.** Design Team comment: The issue of attenuation needs to be resolved with the Environment Agency. It is anticipated that the credit will be achieved at the present time.
P11	**Renewable & Low Emission Energy**	**First Credit:** **Once credits is awarded where evidence provided demonstrates that a feasibility study considering renewable and low emission energy has been carried out and the results implemented.** **Additional Credits:** **Up to two credits are awarded where the first credit is achieved and where evidence provided demonstrates that a percentage of total energy demand for the building/development is supplied from local renewable, or low emission energy, sources.**	**M&E**	3	3	0	Design Team comment: achievable A feasibility study is to be conducted investigating the most suitable renewable source for the site. The source implemented is to provide 15% of the overall energy demand. **Reduced Sustainability Option** - the omission of renewable energy would result in all loss of three credits.
P12	**Reduction of Night Time Light Pollution**	**One credit is awarded where evidence provided demonstrates that the external lighting design is in compliance with the guidance in the Institution of Lighting Engineers (ILE) Guidance notes for the reduction of obtrusive light, 2005.**	**M&E**	1	1	1	Design Team comment: achievable The design will comply with ILE guidance notes on reducing light pollution which should include automatic timers enabling the switching off of lighting between 2300 and 0700.
			Totals:	14.00	9.00	6.00	
			Score (%)	15.00	9.64	6.43	
			Final Score (%)	**100.00**	**71.43**	**58.78**	