

Climate Change Statement.

New Woodley School and College



July 2024
22315-FSA-XX-XX-RP-A-8800

Rev: P01

Client	Kirklees Council
Address	Fernside Avenue in Almondbury, Huddersfield.HD58LQ
Description of Development	<i>“Development of a Special Educational Needs and Disability School (Use Class F1) comprising educational buildings, outdoor educational spaces, retention of existing MUGA courts, landscaping, hardstanding, car parking, access and ancillary infrastructure”.</i>

Part 2: Climate Change Mitigation measures

Q1: What measures have been/will be taken to reduce the energy demand associated with your proposed development beyond the minimum required in Building Regulations? (See section 2)

The Energy Strategy adopted for the New Woodley School and College has been proposed and agreed following extensive discussions with the School & the Local Authority to ensure that the solutions adopted go beyond current best practice to develop and deliver a building with high levels of sustainability, energy conservation and Carbon Emission Reductions.

The Environmental briefing report Issued during the initial concept design activities prior to the planning application sets out the considerations that were made in defining the brief for the New Woodley School and College. A review of the Authority requirements was carried out during briefing meeting, and these were considered in conjunction with existing defined standards, including Part L and DfE Generic Design Specification 2021. Our conclusions were to develop a high performing building envelope that incorporated both passive and active design solutions; drove a fossil fuel free Energy strategy with significant levels of Renewable generation with aspirations to be a Net Zero Carbon (in Operation) building.

Our building design has considered the building orientation, glazing areas, and overall building form factor to develop the building design and where possible these ideas have been adopted.

Thermal Envelope

Our design proposals promote a fabric first approach to the thermal envelope. U-Values for the Thermal Elements and fixed fittings provide significant enhancement over the current requirements over the current building Regulations Part L2. And a highly performing air permeability value of 2m³/hr/m² will help to further promote energy conservation. The U-Values proposed are as detailed on the table adjacent.

Construction Element	U-Value W/m²k
Roof	0.11
External Wall	0.14
Ground Floor/Exposed Floor	0.12
Partitions	-
Windows	1.1
Curtain Walling	1.1
Roof Light	1.1
Glazed Doors	1.1
Pedestrian Doors	1.1
Vehicle Doors	N/A
Lookalike/louvre	1.1
Air Permeability m³/(h.m²)@50Pa	2.0

Daylighting

Daylight provision has been built into all teaching spaces and as many perimeter spaces as possible to ensure that the pupils have direct access to natural daylight for their Health & Wellbeing and to reduce the reliance on artificial lighting as far as practical. We have adopted the guidelines for the recommendations for daylighting as outlined in the DfE Technical Annex 2E as our daylighting targets.

Active Engineering Installations.

The Mechanical & Electrical Building Services Installations will be designed to be as energy efficient as possible to support the Low Energy & Net Zero Carbon Aspirations.

Heat generated will be via Hi-efficiency Air Source Heat Pumps, with different systems provided for the heating system and the bulk hot water generation. All heating distribution will be provided by variable volume, demand-controlled systems to ensure that heat is only circulated when required.

Bulk domestic hot water to the main kitchen will be served from an Air Source Heat pump generated central store for all hot water outlets apart from the ART classroom, STEM classroom and laundry spaces which will be via local electric point of use heaters.

Ventilation provision will promote natural provision through openable windows. Mechanical/Natural Hybrid Ventilation units shall also be provided in the teaching spaces for winter and mid season conditions when additional controlled & tempered ventilation is required. All fans in the building will be provided with high efficiency variable EC motors.

Energy Performance

The results of the energy demand reduction measures set out within this section exceeds the minimum requirements of Part L (2021) of building Regulations by 4.6%, giving the building a A-Rated EPC with a score of 7 this is without PV. PV is proposed to be installed with aspirations to achieve Net Zero Carbon in Operation to achieve a A+ EPC rating.

Kirklees Local Plan

Kirklees Local Plan

In responding to the Policies set out in the Kirklees Local Plan (2019) and referencing the Planning Applications Climate Change Guidance (June 2021), Table A- Measures to reduce Energy Demand:

CHP (LP5 / LP26): We have not proposed the introduction of a CHP installation, development of a master site infrastructure or connection to an existing network. There are no adjacent or planned (known) CHP/District Energy Schemes in the immediate vicinity and our design strategy is to develop a Net Zero Carbon Building using a Fossil Fuel free energy mix. The introduction of CHP would not have been in keeping with this philosophy. The thermal profile of the building is also not appropriate for the use of CHP.

Smart Energy Metering (LP24/LP47): Smart Energy metering is not applicable to a non-domestic building. But Energy Metering will be provided through the provision of ½ hour utility metering and internal sub metering, with an automatic metering and targeting system to comply with CIBSE TM22 & Part L2 of the building Regulations.

Building Services Controls (LP24/LP47): A full Building Energy and Management System (BEMS) will be provided to provide efficient control and energy monitoring of the building. The Energy Metering will also be encompassed into this system. Lighting Installations will be provided with automatic control and dimming installation (where Appropriate) to automatically turn off lighting or dim it to compensate for increased daylighting levels.

White Goods (LP24/LP47): The provision of white goods is outside of the scope of the building design. However, as the design progresses to the next stage, a CIBSE TM54 Operational Energy Assessment will be carried out to determine the non-regulated energy consumption within the building to help the NZCtO targets to be met. This process will involve client/user meetings and will help to guide the users in selecting appropriate A-Rated White goods, etc.

Drying Spaces (LP24/47): This section is not applicable to a school.

Welcome Packs (LP24/LP47): The handover information, client training and soft landings procedures will ensure a thorough transfer of information and understanding to permit the school to occupy, run and maintain the building.

Heating Controls ((LP24/LP47): The heating system will be designed using electrically Driven Air Source Heat pumps and will serve a series of heat emitters (radiators, hybrid ventilation units and underfloor heating). Each of the emitters will be controlled by BMS Addressable 2-Port control valves which will enable an infinite level of zoning and control custom control to ensure an appropriate, flexible, and adaptable building control.

CHP (LP26): As detailed earlier in this response

Q2: What measures have been/will be taken to limit the carbon consumed through the implementation and construction processes, e.g., by reusing existing on-site materials or sourcing materials locally? (See section 3)

Various measures have been implemented and will continue to be employed to minimize carbon consumption during the implementation and construction processes. These include:

- **Material Reuse:** Prioritising the reuse of existing on-site materials whenever feasible, reducing the need for new resource extraction and manufacturing.
- **Local Sourcing:** Procuring construction materials from local suppliers wherever possible to minimize transportation-related carbon emissions and support the regional economy.
- **Sustainable Building Materials:** Using sustainable and low-carbon building materials that have a reduced environmental impact, such as recycled or eco-friendly alternatives.

The construction delivery team is not known at this time but should look to address the following:

- **Waste Reduction:** Implementing effective waste management practices to minimise construction waste and promote recycling and repurposing of materials.
- **Renewable Energy:** Incorporating renewable energy sources, such as solar panels to power construction sites when feasible.
- **Efficient Transportation:** Encouraging workers to use public transportation or carpooling to reduce individual carbon footprints when commuting to the construction site.
- **Green Construction Practices:** Utilising environmentally responsible construction methods, such as efficient insulation, advanced framing techniques, and water-saving measures.
- **Energy-Efficient Equipment:** Employing energy-efficient construction machinery and equipment to reduce energy consumption during construction activities.

These measures collectively aim to mitigate the environmental impact of the construction process, aligning with sustainability goals and reducing the overall carbon footprint associated with the project.

Q3: What measures have been/will be taken to utilise renewable or low carbon energy sources?

Renewable Technologies

Local Carbon Technologies

The adoption of Low Carbon Technologies is primarily focused on the proposed Energy fuel mix and the use of heat generating systems.

As Natural Gas, LPG & Oil are all now considered high Carbon fuels, the building will be fossil fuel free relying on the use of electricity only to drive heat pumps.

Air Source Heat pumps will be provided to generate 100% of the heating energy required for the building and 100% of the kitchen domestic Hot Water provision. Separate systems are proposed to enable the building to benefit from high SCoP (Seasonal Coefficient of Performance) values for the low temperature heating and a smaller high temperature ASHP for the kitchen hot water.

Renewable Technologies

There is a significant consideration of the use of Renewable Technologies. A renewable solution is necessary to achieve the NZCtO targets for the building and the selected technology must be a solution that will support these targets.

Solar Photovoltaic Panels (PV) are proposed on this building as a significant contribution to providing on-site renewable energy and to form the final layer of “Be Green” provision to support the aspirations to achieve Net Zero Carbon in Operation (NZCtO). A 259kWp roof mounted PV array will be provided, generating over 197MWh of electrical energy per annum. Solar Thermal panels have not been proposed as these would need to be isolated for a significant proportion of the year when the school is closed (weekends & holidays).

Solar PV has been proposed as this forms a fully “on-site” and “on Building” solution; it is a maintainable and simple solution that is now widely used; it does not impact on other parts of the site; it does not create noise or air pollution issues; and is able to still generate during periods of school closure, exporting the generated electricity into the local grid and generating a revenue income stream for the school.

The design proposals have been modelled at RIBA Stage 2 with a building regulations Part L2 assessment to determine the Carbon Emissions for both the “be Lean” and “be Green”. The Renewable Energy design measure adopted deliver an A+ -Rated Building with an EPC score of -6 achieving the Net Zero Carbon in Operation targets.

Kirklees Local Plan

In responding to the Policies set out in the Kirklees Local Plan (2019) and referencing the Planning Applications Climate Change Guidance (June2021), Table C – Technologies to consider for renewable and low carbon energy.

Local Area Energy Networks (LP26): We have not proposed the connection to an existing network as There are no adjacent or planned (known) District Energy Schemes in the immediate vicinity and our design strategy is to develop a Net Zero Carbon in Operation Building using a Fossil Fuel free energy mix.

Solar Panels (LP24/LP26): Solar Photovoltaic Panels (PV) are proposed on this building as a significant contribution to providing on-site renewable energy and to form the final layer of “Be Green” provision to support the Net Zero Carbon in Operation (NZCtO). A 259kWp roof mounted PV array will be provided, generating over 197MWh of electrical energy per annum. Solar Thermal panels have not been proposed as these would need to be isolated for a significant proportion of the year when the school is closed (weekends & holidays).

Ground / Air / Water Source heating & Cooling (LP26): Air Source Heat pumps are provided to generate 100% of the heating and cooling energy required for the building and 100% of the kitchen domestic Hot Water provision. Separate systems are proposed to enable the building to benefit from high SCOP values for the low temperature heating and a smaller high temperature ASHP for the hot water services.

Wind Turbines (LP26): Wind Turbines are not proposed for this development. Whilst the site location and extensive green playing field offer the opportunity for wind energy, the impacts to the local area, high capital cost and high maintenance costs would leave the school with an asset with a very long payback period. The Solar PV alternatives provided can achieve the NZCtO targets with an on-building solution.

Biomass Heating Power (LP26): Biomass is not proposed for this building due to the high levels of space required to store the fuel, the limitations, and risks of having a grid-disconnected heating system (requiring manual delivery) and the Potential NOx and air quality issues that could impact the Naturally ventilated building.

Q4: What measures have been/will be taken to ensure the building design and layout has been optimised to energy efficiency beyond the minimum requirements in Part L of the Building Regulations?

Design Optimisation

Design optimisation of the building has been catered for through changes to the building orientation, the thermal performance of the envelope and the fenestration / glazing development. These elements have not been developed at the cost of developing a school that meets the clients brief for the educational delivery but have helped to mould the final design solution. The performance of the thermal envelope has been enhanced over the minimal requirements of the Building Regulations with the building air permeability also enhanced. A flat roof design has been proposed to maximise the space available for PV.

Energy Efficiency measures have been incorporated throughout the building, from the Air Source Heat Pumps for the heating and hot water to the hybrid Mechanical/Natural ventilation solution to provide efficient environmental control and maintain occupancy comfort.

Further details on the energy efficiency measures that we have adopted at covered in Q1 of this form.

The design proposals have been modelled at RIBA Stage 2 with a building regulations Part L2 assessment to determine the Carbon Emissions for both the “be Lean” and “be Green”. The Energy Efficiency design measure adopted deliver an A-Rated Building with an EPC score of 7 without PV provided.

Kirklees Local Plan

In responding to the Policies set out in the Kirklees Local Plan (2019) and referencing the Planning Applications Climate Change Guidance (June2021), Table D – Measures to maximise energy efficiency in building design.

South Facing Roof Structures (LP24): The building orientation has been aligned to suit the entrance location and teaching spaces for early years. There is no pitched roof to the design, but a series of flat roofs, which will all be used to mount PV panels to maximise the electrical on-site generation.

Passive Solar Design (LP24): Our Passive solar design measures have been considered with the final building solution. The East/West facing aspect of the early years teaching spaces will benefit from not being subjected to direct south facing solar gains. Glazing design has been optimised to promote natural daylight across the depth of the teaching spaces and to be able to benefit from solar gain where possible, but not to create overheating in the summer months of high solar gain when it is not required. Building internal arrangements have been laid out to meet the operation requirements and adjacencies of the school, but where possible non permanently occupied spaces (such as the main hall) are north facing. The use of exposed thermal mass to promote passive cooling have not been adopted at the as this would leave a large amount of M&E distribution exposed to the pupils. It is not proposed to provide any form of mechanical cooling to the school (other than Server Room process requirements)

Landscaping (LP24): The proposals look to consider the local context ensuring that the development is adequately screened from neighbouring occupiers via tree planting as well as suitable development free buffer zones. In addition, a total of 176no. Proposed trees will be planted across the site, carefully considering opportunities around the building to assist with heating and cooling.

Following in depth consultation with the school themselves, the Kirklees client team and the Planners, the design has been developed to the highest standard expected in such an environment, ensuring a well-considered learning environment for the pupils, as well as allowing for a design that is flexible for future changing uses. The landscape scheme aims to protect and enhance the green infrastructure giving student and staff access to a variety of high-quality open spaces as well as sport and play facilities on site.

Energy Efficiency (LP24/LP27): Energy Efficiency measures proposed are extensive and have been identified in Q1 of this document. The “Be Lean” Energy Efficiency measures adopted alone contribute to a A-Rated building, this is before the provision of Renewable technology through PV solar panels.

In responding to the Policies set out in the Kirklees Local Plan (2019) and referencing the Planning Applications Climate Change Guidance (June2021), Table F – Measures for Non-residential development:

Natural Light (LP24): Daylight provision has been built into all teaching spaces and as many perimeter spaces as possible to ensure that the pupils have direct access to natural daylight for their Health & Wellbeing and to reduce the reliance on artificial lighting as far as practical. We have adopted the guidelines for the recommendations for daylighting as outlined in the DfE Technical Annex 2E as our daylighting targets.

Natural Ventilation (LP24): The building will be ventilated by a combination of natural & mechanical system to promote health & wellbeing, and energy efficiency. Due to the cohort of pupils, close temperature control is required and all pupil learning spaces will be provided with cooling to maintain temperatures of 22°C so the environment for the pupils to learn in. Cooling will be provided via a Air Source Heat Pump located in the plant enclosure on the roof.

Solar Shading (LP24): The majority of the teaching spaces are on the south & west wings of the building, having an East / West aspect that will benefit from maximising natural daylight without having excessive solar gain. Where necessary to control summer overheating then Solar controlled glazing is provided. This solution has been identified as a preference to external solar shading/bris soleil due to the climbing risks present with fixed external shading.

Hard Surfacing (LP24): Hard surfaces are present within the site boundary, but these are limited to the car parking & roadways and associated play areas of the school. To prevent the problems associated with reflected heat and thermal mass within these surfaces, a buffer zone of grass and class gardens is provided between the building and the hard surfaces. Green roofs were also considered to help with heat absorption, but the limitation on PV density available on a green roof would have affected the NZCio targets. Instead, a 40% improvement on the roof U-Value was adopted.

Q5: What measures have been/will be taken to reduce potential impacts of flooding associated with your proposed development? (See section 6)

The proposed development will implement a surface water drainage system that will collect, attenuate and discharge surface water from the site at a controlled rate to reduce the potential impacts of flooding associated with the proposed development.

The proposed drainage system will restrict the maximum rate of surface water leaving the site to a 30% reduction on the calculated existing maximum discharge rate from the site during the 1 in 1-year return period, for all events up to the 1 in 100-year return period, with an appropriate allowance for the future impacts of climate change on rainfall intensity for the lifetime of the proposed development.

The use of Sustainable Drainage Systems (SuDS) and attenuation will balance the additional volume of surface water within the site in a controlled manner whilst surface water leaves the site at the reduced rate compared to the existing scenario at the site.

Q6: What measures have been/will be taken to reduce water stress associated with your proposed development? (e.g., Water retention and minimisation measures) (See sections 7 and 8)

Water Conservation

Water consumption within the school will be both controlled and monitored. Storage shall be minimised, and the potable / non-potable requirements shall be separated. Incoming Utility Meters and internal distribution and sub-system water meters shall be provided to monitor the consumption of the hot and cold water. All meters will be connected to the BEMS to enable water consumption to be monitored.

Low flow appliances will be provided to all sanitary appliances, with dual flush WC's and spray taps to Wash Hand Basins. Showering provision is minimised through a low number of showers and there will be no baths or urinals.

Internal on-site cold-water storage will be limited to 5 litres per person per day to ensure that excessive water is not being held on site. Dedicated Category 5 (Cat5) systems will be provided with low water storage cisterns for the non-potable supplies to the laundry spaces, Art room, STEM classroom and the roof to clean the PV panels.

External irrigation supplies will be primarily fed from above ground rainwater collection tanks. Permanent systems for rainwater harvesting and greywater recovery is not proposed due to the proposed low water consumption of the building and the high capital expenditure associated with the internal distribution as the sanitary appliances and not centralised in the building but distributed throughout the school to suit the operation of the school key stages.

Kirklees Local Plan

In responding to the Policies set out in the Kirklees Local Plan (2019) and referencing the Planning Applications Climate Change Guidance (June 2021), Table H – Measures for Water Saving:

Water-efficient Toilets (LP34): All WC's provided with dual flush cisterns to conserve water consumption.

Waterless Urinals (LP34): There are no urinals proposed for this building.

Taps (LP34): All taps to wash hand basins will be fitted with spray outlets to reduce the level of water consumed. Control of wash hand basin taps, via either mechanical self-closing or PIR control, is still to be reviewed with the school to ensure that the sanitary appliances are suitable for the pupils.

Showers (LP34): There are a low number of showers provided within the building and no baths. Showering utilisation is expected to be low and all showers provided will be flow limited to 10l/s or less to comply with Part G of the Building Regulations.

Appliances (LP34): The provision of white goods is outside of the scope of the building design. However, as the design progresses to the next stage, a CIBSE TM54 Operational Energy Assessment will be carried out with the school to ensure that the low water consumption targets are achieved. This process will involve client/user meetings and will help to guide the users in selecting appropriate A-Rated White goods with low water consumption.

Water Meters (LP34): Water meters will be provided into the potable and non-potable distribution networks. Water meters will be provided to the main incoming utility supply and the primary pumped supplies. All water meters will be provided with Pulsed Outputs to allow the BEMS system to monitor water consumption across the school.

In responding to the Policies set out in the Kirklees Local Plan (2019) and referencing the Planning Applications Climate Change Guidance (June 2021), Table 1 – Measures for Water retention:

- **Rainwater Harvesting (LP34):** Localised Rainwater harvesting is proposed for the capture of canopy mounted surface water and above ground storage for the forest school only. The water stored will be used only for irrigation and water purposes for the play spaces.
- **Water recycling (LP34):** The use of grey water has not been proposed for this development. The proposed usage and quantities of water expected are not high enough to justify the additional capital associated with a dedicated drainage system from basins; storage; treatment; and pumping via a separate distribution network to serve the WC's. The payback period for this use, considering the high maintenance costs makes this application un-viable for this development.
- **Groundwater (LP34):** The use of groundwater abstraction from a borehole has not been proposed for this development. The proposed usage and quantities of water is not high enough to justify the use of a borehole provision and all associated filtration &/or treatment.

Q7: What measures have been/will be taken to provide biodiversity net gains? (See section 8)

The Biodiversity Net Gain metric identifies that a net gain of 22.56% has been achieved through the landscape scheme.

Hardstanding:

The extent of proposed hardstanding shall be limited primarily to the requirements of compliance with BB104 and DDA.

Green Infrastructure

Whilst priority has been given to retaining existing trees and woodland along the site perimeter, internally within the site five no. trees and three no. groups of existing trees will be removed as part of the new proposals. To offset this removal, 167 new trees will be planted across the scheme with a particular focus on the site boundaries to minimise overlooking from adjacent properties.

A rich mosaic of green infrastructure will be present across the site with a priority given to recreating a new woodland habitat to act as forest school akin to the school's existing provision. In addition, ornamental planting will be implemented across the class gardens, car park and courtyard, as well as a variety of semi-natural areas with wildflower meadow across the site.

Proposed planting:

- Use of hardy, draught tolerant plant species have been proposed to minimise maintenance requirements.
- Primarily in the main school core there has been selection of native species, including pollinator species, food and habitat providing species to promote local wildlife.
- Within the forest school there has been selection of native species complementing and enhancing existing woodland habitat.
- Fruit trees and shrubs will be provided to allow for harvesting and food production.

Open Spaces (LP51 / LP63):

Landscape materials

- Materials specified for the open spaces wherever possible shall be locally sourced to reduce transport emissions as well as.
- The priority is for the use of building materials which are natural, recyclable, recycled or with recycled content, sustainably sourced, in general with a low carbon footprint.

Transport

- Provision of sheltered bicycle parking to encourage active travel for employees to reduce reliance on private car.

Green Infrastructure

- The proposed green spaces have been developed to suit the special needs of the school and to offer a welcoming and calming environment for both pupils and employees. The proposed planting of 167 no. of trees throughout the site will improve the microclimate on site and reduce water evaporation from the ground as well as mitigating effects of air pollution within the site

Q8: What measures have been/will be taken to reduce air pollution associated with your proposed development? (See section 9)

Air Pollution

The fossil fuel free building design will not burn any gases for heating, hot water or cooking and so will release no NOx into the atmosphere and will not contribute to increases in local air pollution.

Electric Vehicle charging points will be provided to the front of the school for staff & visitor use, thereby promoting the use of electric vehicles.

Kirklees Local Plan

In responding to the Policies set out in the Kirklees Local Plan (2019) and referencing the Planning Applications Climate Change Guidance (June 2021), Table K – Measures for reducing air pollution:

Locally Sourced Materials (LP51): The use of construction materials sourced from local suppliers within close proximity to the development site will be emphasised during the contractor selection process. This practice would significantly reduce transportation-related emissions.

Installation of Mechanical Ventilation (LP51): The building will be ventilated by a combination of natural & mechanical system to promote health & wellbeing, and energy efficiency. The proposal for a fossil fuel free building will not contribute to increased air pollution in the local area and so a natural ventilation system is preferred.

EV Charging (LP24/LP51): The provision of Charging points for Electric Vehicles is catered for through the provision of 12 dedicated parking bays with charging provision. This represents 10% of the total onsite parking provision and complies with the requirements of Part S of the Building Regulations.



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