

## Abacus Primary School – Sustainability Statement

Project/Ref:04230 – Abacus Primary School

17 February 2016

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### 1 Introduction

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This sustainability statement has been prepared to outline sustainable design and construction measures incorporated into the proposals for Abacus Belsize Primary School, taking account of the requirements set out in London Borough of Camden's development plan, the London Plan, Camden Planning Guidance and specific guidance related to Listed Buildings set out by English Heritage. The proposals will, where possible, deliver a highly sustainable development.

The sustainability measures proposed for the application at Abacus Belsize Primary School will be assessed independently for the existing building and new extension. The applicable guidance shall apply with the following hierarchy:-

- New extension – building regulations, planning policy (Camden development plan and London Plan), Camden Planning Guidance.
- Existing building (Grade II Listed) – English Heritage guidance, building regulations, planning policy (Camden development plan and London Plan), Camden Planning Guidance.

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## 2 Planning Policy

The Local Authority states that the scheme must comply with Camden’s DP22. “Promoting sustainable design and construction”.

Camden Development Policies Proposed Submission – Section 3

**DP POLICY**

### DP22 – Promoting sustainable design and construction

The Council will require development to incorporate sustainable design and construction measures. Schemes must:

- a) demonstrate how sustainable development principles, including the relevant measures set out in paragraph 22.5 below, have been incorporated into the design and proposed implementation; and
- b) incorporate green or brown roofs and green walls wherever suitable.

The Council will promote and measure sustainable design and construction by:

- c) adopting the government target that all new build housing will be zero carbon by 2016 (Code for Sustainable Homes Level 6), along with the stepped targets of Code 3 by 2010 and Code 4 by 2013;
- d) expecting developments (except new build) of 500sqm of residential floorspace or above or 5 or more dwellings to achieve ‘excellent’ in EcoHomes assessments from 2013 and at least ‘very good’ prior to 2013;

- e) expecting non-domestic developments of 500sqm of floorspace or above to achieve ‘very good’ in BREEAM assessments, with the aim of increasing the target to a rating of at least ‘excellent’ in 2016, if feasible, and zero carbon from 2019, in line with the government’s ambitions.

The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:

- f) summer shading and planting;
- g) limiting run-off;
- h) reducing water consumption;
- i) reducing air pollution; and
- j) not locating vulnerable uses in basements in flood-prone areas.

Fig 1 | Extract from DP22

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The following points have been extracted from the guidance on the aforementioned policy and will be dealt with in turn to show compliance with CPG3 and DP22.

- Incorporate green or brown roofs
- Climate change adaption – summer shading and planting
- Limiting run-off
- Reducing water consumption
- Reducing air pollution
- Design – layout of uses
- Floorplates size/depth
- Floor to ceiling heights
- Location, size and depth of windows
- Limiting excessive solar gain
- Reducing the need for artificial light
- Shading methods on and around the building
- Optimising natural ventilation
- Design for and inclusion of renewable energy technology
- Impact on existing renewable and low carbon technologies in the area
- SuDs and green / brown roof
- Adequate storage for recyclable material
- Bicycle storage
- Impact on microclimate
- Fabric / services – level of insulation
- Choice of materials – responsible sourcing, re-use, recycled content
- Air tightness
- Efficient heating, cooling and lighting systems
- Effective building management system
- Source of energy used
- Counteracting the heat expelled from plant equipment
- Enhancement / provision for biodiversity
- Efficient water use / re-use of water
- On-going management and review

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### 3 Statements - Sustainability

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1. Demonstrate proposed sustainability measures in accordance with policy DP22 being:

- Incorporate green or brown roofs

Brown and sedum roof are not feasible in the scheme as the sole flat roof is proposed to provide amenity space as a roof top play area. Runoff will be reduced by increasing the amount of permeable area in the playground – currently the car park to the rear of the site is fully impervious so there will be a small net increase in permeable area in the proposed scheme. Additionally, the proposal is for a rain water attenuation tank. Please refer to the drainage design for further information.

- Climate change adaption – summer shading and planting

New extension – Generally the main windows of the new extension have a northern aspect. Those not on this façade are shaded by the massing of the new and older parts of the structure. A canopy will be attached to the extension, which will help shade windows.

Existing building - There is very little scope to introduce any sort of exterior shading on the existing building. Exterior shading elements would conflict with the requirement to maintain the character of the historic facades.

Landscaping details are set out in the Design and Access Statement, showing locations of planting.

- Limiting run-off

Whole site - The SuDS design proposed will have silt interception. Fuel and oil interception is not proposed due to the limited amount of parking on the site.

An attenuation tank is proposed – please refer to the drainage design for more details.

- Reducing water consumption

Whole site - A Water calculation has been provided in the appendix of this document. The scheme shall comply with the requirements of DP22 with respect to water consumption.

- Reducing air pollution

The Proposed School Travel Plan is car-free and is therefore not expected to result in changes to the pattern of vehicle movements on local roads, resulting in no increase to local air pollution. Please see the School Travel Plan for more information on this.

During construction, and with the adoption of appropriate mitigation measures, dust emissions are unlikely to cause any significant off- or on-site effects. A detailed Construction Management Plan will be prepared and agreed with the Council prior to the commencement of works on each phase of the development and this will give full consideration to dust impact and mitigation.

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Considering the above, the Air Quality Assessment concludes that the proposed development has been determined to be acceptable in terms of its impact on, and sensitivity to, local air quality. The Proposed Development is expected to comply with all relevant air quality policy.

- Design – layout of uses

Existing building - The extents of the retained existing building now accommodates the teaching and associated spaces of the school. The original room's sizes required the structure spine to be removed and allow the full width of the existing building to be the full width of the classroom to suit an educational layout. From lower ground to second floor the existing building accommodates the teaching spaces interspersed with services and associated spaces such as breakout, offices, group rooms, and service spaces and stores.

New extension - The new extension accommodates for 2No reception classrooms with their associated amenities at Lower ground floor alongside some service spaces and circulation, the kitchen, servery and multi-use hall accommodate the level above with further circulation at ground level. At first floor the new build element accommodates service spaces and circulation only since the vast majority of the volume at this level is void to the spaces below. The roof of the extension is utilised as play space enclosed by open weldmesh fencing and rebound boards to the sides and a netting above at high level.

- Floorplates size/depth

-

Existing building - Floorplates will remain at their existing depth, and their existing size subject to the demolition plans.

New extension - The current floor plate depth is proposed to be 385mm, with the floors constructed from precast concrete planks with a topping screed.

#### Floor to ceiling heights

Existing building - Education ceiling heights are currently proposed to be 3.1m above FFL where the existing building allows. Elsewhere for corridors and like spaces ceiling heights maybe reduced to 2.7m above FFL to allow the routing of services above.

New extension - The classroom ceiling heights are currently proposed to be a minimum of 3.1m above FFL, whilst the multiuse use hall is currently proposed to be 4.5m but is subject to confirmation following services and structural coordination.

- Location, size and depth of windows

Existing building - Windows to the existing frontages of Rosslyn Hill and Downshire Hill are retained as existing. The apertures to the inside of the site are retained where possible and only partially or fully in filled is required for construction or fire protection purposes.

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New extension - The windows are located on the rear elevation of the new extension only, facing North-east. The sizes of these apertures are still to be confirmed following the results of natural day lighting analysis.

- Limiting excessive solar gain

New extension – The building has been designed to limit solar gains in line with the guidance in DP22 where feasible. Please refer to Architectural comments below.

Existing building – It is unfeasible to limit excessive solar gain using any of the methods described in CPG3 without adversely affecting the historic character of the listed building. Internal blackout blinds will be provided to prevent glare in the class room, however this does little to prevent overheating and can contribute to the problem. Excessive solar gains will be offset by the building services.

- Reducing the need for artificial light provided by the Architect

Existing building - Due to the Grade II listing of the existing building it is not possible to increase the size or number of apertures to reduce the need for artificial lighting in many cases. The staff room in the lower ground floor has been one space where we have been able to improve upon the amount of natural daylighting to reduce the need for so much artificial lighting. Here former window openings which had been blocked up are proposed to be opened up with new windows.

New extension - The sizing of the windows and the incorporation of glazed doors are designed to reducing the need for artificial lighting during daylight hours.

- Shading methods on and around the building – please see design and access statement.

- Optimising natural ventilation.

Existing building – EFA requirements effectively prohibit the use of the existing opening windows to provide natural ventilation in the colder months. A balanced supply and extract system shall be used to ventilate class rooms in the listed part of the building. In addition to this requirement, acoustic issues caused by the heavy traffic on Rosslyn Hill make the use of opening windows undesirable for ventilation. Sash windows will be left operable so that in the event that classroom occupants deem it acceptable acoustically, they shall be able open the window for ventilation purposes. The mechanical extract system will ramp down to a minimal flow rate to save energy when the opening windows are used in this way.

En exception to this shall be the second floor second floor classrooms (top floor). The existing spaces will be assessed to determine where cross ventilation can be incorporated with roof windcatchers – these could be located on the inward roof pitch and would not be detrimental to the character of the Rosslyn Hill façade.

New extension – Natural ventilation is proposed in the new extension.

- Design for and inclusion of renewable energy technology

The scheme has been designed in line with the requirements of DP22 and CPG13. Please refer to Energy Statement.

- Impact on existing renewable and low carbon technologies in the area

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The scheme has been designed to comply with the requirements of DP22 and will not adversely affect existing renewable and LZC technologies in the local area.

- SuDs and green / brown roof

Please refer to the drainage design for details of SuDS for the existing building and new extension.

- Adequate storage for recyclable material

-

Existing building and new extension

A suitable space for refuse has been allocated and this will include a provision for recyclable refuse.

- Bicycle storage

- Existing building and new extension

- Bicycle (and scooter) parking will be provided on site for use by both staff and pupils, please see the Design and Access Statement for details of this.

- Impact on microclimate

The developments plant will not cause any excessive dumping of heat to the local environment. The provision of brown/green roofs and the landscaping in the mews development will provide a cooling effect on the micro-climate when compared with the site as it currently stands. There is unlikely to be significant impact on wind microclimate arising from the proposals, as they do not seek to significantly increase the height of the existing building, and the mews development is of a lower scale.

- Fabric / services – level of insulation

Services – Existing building and new extension - The scheme complies with the requirements of DP22.

Fabric – Existing building - The character of the listed building would be affected were any type of insulation retrofitted to the exterior walls. Where possible roofs will be insulated if this can be done in a fashion that does not compromise the listed building's appearance.

The new extension - complies with the requirements of the applicable guidance.

- Choice of materials – responsible sourcing, re-use, recycled content

Existing building and new extension - Where possible materials used on the scheme sought locally and recycled if within budget. Any materials/waste to be removed from site will be done as environmentally friendly as possible, with materials recycled where applicable. Kier to confirm.

- Air tightness



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Existing building – Whilst there is little scope to improve the fabric of the listed portion of the scheme, the historic sash windows will be refurbished and draft proofed which will have a sizable impact on the air tightness. It is still thought that the building will not comply with current building regulations air tightness level. Other major works to the façade are unfeasible save minor repairs to obvious cracks and loose mortar.

New extension - The scheme complies with the relevant regulations.

- Efficient heating, cooling and lighting systems

The scheme complies with the requirements of DP22 as detailed in the previously submitted energy strategy.

- Effective building management system
- Source of energy used

The scheme complies with the requirements of DP22.

- Counteracting the heat expelled from plant equipment

The building plant equipment has been designed not to expel heat to the surrounding area. The nature of air source heat pumps means that they will exert a slight cooling effect on the surrounding area.

- Enhancement / provision for biodiversity
- Existing build and new extension - There will be an enhancement of biodiversity within the site since the existing site is all hard surfaced. The landscape proposals include areas of soft with a planting specification of native species.
- Efficient water use / re-use of water

The scheme complies with the requirements of DP22. Please see the attached building regulations water calculation.

- On-going management and review



**Job no:** 04230 - Abacus Primary School

**Date:** 22-Mar-16

**Assessor name:** W O'Reilly

**Registration no:**

**Development name:** Abacus Primary School

Rainwater

Greywater

Results

Clear Inputs

## WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS

Dwelling Description

### 1st step - Select from options below:

Is a Rain and/or Greywater system specified?	No
Is a shower AND bath present?	No
Has a washing machine been specified?	Yes
Has a dishwasher been specified?	Yes

### 2nd step - Build spreadsheet (click button below)

**BUILD SPREADSHEET**

As soon as this button is pressed the spreadsheet will change according to the options selected previously in the 1st step. Scroll down to see the changes.

### 3rd step - Enter consumption details for the specified fittings

<b>TAPS</b> (excluding kitchen taps)			
	Fitting type	Flow rate (litres/min)	Number of fittings
	1	4.70	36
	2		
	3		
	4		
	Proportionate flow rate (litres/min)		
Consumption / person / day (Litres)			9.01
<b>BATHS</b>			
	Fitting type	Capacity to overflow (litres)	Number of fittings
<b>Please make sure that either bath or shower is filled in</b>	1		0
	2		
	3		
	4		
	Proportionate capacity to overflow (litres)		
Consumption / person / day (Litres)			0.00
<b>SHOWERS</b>			
	Fitting type	Flow rate (litres/min)	Number of fittings
<b>Please make sure that either bath or shower is filled in</b>	1	9.00	1
	2		
	3		

0

	4		
		<b>Proportionate flow rate (litres/min)</b>	6.30

	<b>Consumption / person / day (Litres)</b>	<b>50.40</b>
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<b>DISHWASHER</b>		<b>Fitting Type</b>	<b>Litres per place setting</b>	<b>Number of fittings</b>
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	1		1.10	1
	2			
	3			
	4			
	<b>Proportionate litres per place setting</b>			0.77

	<b>Consumption / person / day (Litres)</b>	<b>3.96</b>
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<b>WASHING MACHINES</b>		<b>Fitting Type</b>	<b>Litres per kilogram of dry load</b>	<b>Number of fittings</b>	<b>Is this fitting using rainwater?</b>	<b>Number of Fittings using rainwater</b>
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	1		6.70	1	No	0
	2				Click to select	
	3				Click to select	
	4				Click to select	
	<b>Proportionate of litres/kg of dry load</b>			4.69		

	<b>Consumption / person / day (Litres)</b>	<b>14.07</b>
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<b>WC's</b>	<b>Fitting Type</b>	<b>Flush Type</b>	<b>Volume**</b>	<b>Number of fittings</b>	<b>Is this fitting using rainwater?</b>	<b>Number of Fittings using rainwater</b>
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1	Full Flush	4.00	36	Yes	0
	Part Flush	2.00			
2	Full Flush			Click to select	
	Part Flush				
3	Full Flush			Click to select	
	Part Flush				
4	Full Flush			Click to Select	
	Part Flush				
<b>Average effective flushing volume (litres)</b>			2.66		

<b>Consumption / person / day (Litres)</b>	<b>11.75</b>
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<b>KITCHEN SINK TAPS</b>		<b>Fitting Type</b>	<b>Flow rate (litres/minute)</b>	<b>Number of fittings</b>
1			6.00	1
	2			
	3			
	4			
<b>Proportionate flow rate (litres/min)</b>			4.20	
<b>Consumption / person / day (Litres)</b>			<b>13.00</b>	

<b>WASTE DISPOSAL UNIT</b>	
<b>Is a waste disposal unit specified for the dwelling?</b>	No
<b>Consumption / person / day (Litres)</b>	<b>0.00</b>
<b>WATER SOFTENER</b>	

<b>Water Softener in use?</b>	No
<b>Total capacity used per regeneration (%)</b>	
<b>Water consumed per regeneration (litres)</b>	
<b>Average number of regeneration cycles per day (No.)</b>	
<b>Number of occupants served by the system (No.)</b>	
<b>Water consumed beyond 4% person / day (Litres)</b>	
	<b>0.00</b>

<b>RAINWATER CALCULATIONS</b>	<a href="#">Go to Start</a>
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**Part 1: Amount of rainwater collected**

<b>Rainwater collection system in use?</b>		No
<b>Which approach is being followed from BS8515:2009?</b>		Click to select
Rainwater collection area	m <sup>2</sup>	
Yield co-efficient	(%)	
Hydraulic filter efficiency		
Average rainfall	mm/yr	
Rainwater collection from detailed approach	litres/year	
Number of occupants served by the system	(Quantity)	420.00
Daily rainwater collection	(litres/dwelling)	0.00
<b>Daily rainwater per person</b>	(litres)	<b>0.00</b>

**Part 2: Where is the rainwater to be used?**

WC Consumption	(litres/person/day)	0.00
Washing Machine Consumption	(litres/person/day)	0.00

<b>Daily non potable water demand:</b>	(litres/person/day)	<b>0.00</b>
<b>Part 3: Savings provided by rainwater</b>		
Remaining demand requiring mains top-up/additional collection	(litres/person/day)	0.00
Excess rainwater not currently used:	(litres/person/day)	0.00
<b>Water savings from rainwater use:</b>	(litres/person/day)	<b>0.00</b>

**GREYWATER CALCULATIONS** [Go to Start](#)

**4th step - Analyse Results** [Go to Start](#)

**INTERNAL WATER CONSUMPTION**

<b>NET INTERNAL WATER CONSUMPTION</b>	(litres/person/day)	<b>102.18</b>
<b>RAINWATER COLLECTION SAVING</b>	(litres/person/day)	<b>0.00</b>
<b>NORMALISATION FACTOR</b>	(litres/person/day)	<b>0.91</b>
<b>TOTAL WATER CONSUMPTION</b>	(litres/person/day)	<b>93.0</b>
<b>CSH CREDITS ACHIEVED</b>		<b>3.00</b>
<b>CSH MANDATORY LEVEL:</b>		<b>Level 3/4</b>

**17. K COMPLIANCE**

<b>EXTERNAL WATER USE</b>	(litres / person / day)	<b>5.00</b>
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<b>TOTAL WATER CONSUMPTION</b>	(litres / person / day)	<b>98.0</b>
<b>17. K COMPLIANCE?</b>		<b>Yes</b>

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