Supplementary Energy and Sustainability Information in Response to Council Queries

Produced by Norman Bromley Partnership, Peter Joel and Associates, Ellis Williams Architects and Gerald Eve LLP

Dated 16 August 2017

Hannah Bryant

From: Hannah Bryant
Sent: 17 July 2017 16:48
To: 'Tulloch, Rob'
Cc: Graham Oliver; Emily Barnard
Subject: RE: 52-53 Russell Square

Rob

Please see our comments below in green:

ENERGY HIEARCHY RESULTS:
No information provided. The applicant should provide details of the CO2 reduction per stage of the energy hierarchy, in line with the GLAs guidance on Preparing Energy Assessments. Applicant should provide the BRUKL report to support the stated savings.

No CO2 reduction details have been provided as the proposed energy measures have been introduced in order to limit any impact upon the Grade II Listed nature of the property and the negative impact and potential harm they would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Thermal modelling and the provision of a BRUKL is to be undertaken at a later design stage.

The proposals will look at the feasibility, where possible, of upgrading the insulation to the existing building fabric to meet the requirements for energy and CO2 emissions of the Building Regulations Part L and the London Plan Energy Hierarchy.

In any event, the energy demand of the development will be further reduced through the provision of the following, as set out within the submitted Energy Strategy:-

- *Retaining the existing external heat pump units and internal heating and cooling units to serve the classrooms. Some existing units will need to be relocated with additional room units. Any additional units will be sympathetically selected and sized as far as technically possible to match the existing units.*
- *Provision of new internal luminaires to all classrooms and offices may be considered to incorporate daylight and presence sensors to reduce the energy usage. The selection of new luminaires will aesthetically match where possible to the existing luminaires.*
- *All luminaires shall incorporate LED or low energy lamps and high frequency electronic control gear;*
- *Energy efficient external lighting with daylight detection and time switch controls to prevent their unnecessary use*

This information will be incorporated into the thermal model and associated BRUKL document undertaken at a later design stage. Accordingly, we would appreciate if the details could be secured by condition.

Building fabric u-values (W/m²K), Air permeability (m2/hr/m2), Approach to limiting thermal bridging
No information provided – the applicant should provide details

This is not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact and potential harm this would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. We have therefore sought to limit the need to disturb original building fabric in accordance with this policy.

Proximity to existing decentralised energy networks and proposals to connect/ Opportunities to connect to a future network *No information provided – the applicant should provide details.*

Due to the buildings location we don't believe there is the scope to connect to existing or future decentralised networks. Some of these systems have been discussed within section 7 of the Energy Strategy that supports the planning application.

We are not aware of any district heating in Russell Square. In any event, it is very unlikely that the owners of the district heating system would allow the school to connect to their system. Such systems are employed when multiple buildings are proposed across a site/local area.

Notwithstanding this, connection to a decentralised energy network is not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact it would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets.

Suitability for on-site CHP *No information provided – the applicant should provide details.*

For CHP to provide economical or environmental savings the system requires a good base load and to be able to operate a minimum number of hours. For a school, with typical heating and water demands, we do not consider that CHP is an option. Camden's Planning Guidance also states typically CHP is deemed feasible where there is a simultaneous demand for heat and power in excess of 5,000 hours per annum. The school usage is likely to be less than 2,000 hours per annum. Accordingly, it is not considered appropriate in this instance.

The proposals are to retain the existing air source heat pump units and internal heating and cooling units to serve the classrooms. *Information on this should be provided, including efficiency*

The proposals are to retain the existing air source heat pump units which are operating as a Variable Refrigerant Volume System (VRV) with internal heating and cooling units to serve the classrooms.

The heat pump utilises energy from the external air and converts this energy to either heating or cooling energy for the building. The system is admittedly less efficient than a ground source heat pump, with relatively greater variation in that COP as external condition fluctuate. The year round average COP of the air source heat pump system is typically 3 to 3.5. However, the technology will make a significant contribution to reducing carbon emissions associated with this building, particularly when compared to the alternative heat source such as a gas fired boiler.

Furthermore, the technology has already been discretely incorporated into this building, and therefore has been shown to be viable for use here which does not harm the historic interest of this listed building.

There is still some roof space available – the applicant should incorporate solar PV where possible, even if this only goes some way to achieving the renewables targets.

Solar panels are not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact and potential harm they would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Solar panels are not proposed in accordance with this policy.

A BREEAM rating of 'Very Good' is targeted for the project with the following % of credits achieved:

- 59% energy credits
- 66% water credits
- 50% materials credits

This falls short of minimum policy requirements. The applicant should target 'Excellent' rating in line with policy targets.

Due to the Listed nature of the property, it is not considered possible to meet the policy requirements in regard to minimum energy credits. In order to meet this requirement, further alterations would be required to the building, which could be considered harmful to the historic fabric and significance of the listed building. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Many technologies considered within the Energy Statement would be harmful to the historical fabric of the building and are therefore considered unsuitable in accordance with the above policy. Accordingly, the only proposals that form part of this application are set out above and within the Energy Strategy itself.

It is considered that the BREEAM 'Very Good' which is targeted for the project is acceptable in this case, where the energy score is limited due to constraints of the listed building.

Natural ventilation proposed with some mechanical ventilation to laboratories, PE room etc. No further details provided.
All development should demonstrate that measures to adapt to climate change have been implemented and that overheating risk has been managed.

Basic overheating compliance tests must be undertaken to demonstrate compliance with Building Regulation, however this test does not cover all factors which influence overheating. Therefore, the GLA guidance states that developers should carry out additional design assessments e.g. dynamic thermal modelling. Where dynamic modelling is carried out, it should be undertaken in accordance with the guidance and data sets in TM49: Design Summer Years for London. It is also recommended that developers consider CIBSE TM52 The Limits of Thermal Comfort: Avoiding Overheating in European Buildings when carrying out modelling.

Where cooling is proposed, developers should provide details, including: efficiency, ability to take advantage of free cooling and renewable cooling sources. Non-domestic developments should provide details on the area weighted average building cooling demand (MJ/m2) (from the BRUKL) both actual and notional – the actual should be below notional.

A dynamic thermal model analysis will be carried out during the detailed design stage to inform the strategy for ventilation and avoid overheating during the summer months. We would appreciate if this could be conditioned.

Green infrastructure and biodiversity (including green/brown roofs) No information provided.

Green/brown roofs are not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact and potential harm they would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Green/brown roofs are not proposed in accordance with this policy.

Please give me or Emily a call if you wish to discuss the above.

Kind regards

Hannah

Hannah Bryant
Senior Planning Consultant

Tel. +44 (0)20 7333 6427
Fax. +44 (0)20 7491 1825
Mob. +44(0)7788 367 923
HBryant@geraldeve.com

Gerald Eve LLP
72 Welbeck Street London W1G 0AY
www.geraldeve.com

From: Tulloch, Rob [mailto:Rob.Tulloch@camden.gov.uk]
Sent: 11 July 2017 08:25
To: Hannah Bryant
Subject: RE: 52-53 Russell Square

Hi Hannah,

Just indicate where the listed status of the building would prevent any intervention.

Kind regards

Rob Tulloch
Senior Planning Officer
Planning Solutions Team
Regeneration and Planning
Supporting Communities
London Borough of Camden

Telephone: 020 7974 2516
Fax: 020 7974 1680
Web: camden.gov.uk

2nd Floor
5 Pancras Square
London N1C 4AG

From: Hannah Bryant [mailto:HBryant@geraldeve.com]
Sent: 10 July 2017 14:26
To: Tulloch, Rob <Rob.Tulloch@camden.gov.uk>
Cc: Graham Oliver <GOliver@geraldeve.com>; Emily Barnard <EBarnard@geraldeve.com>
Subject: RE: 52-53 Russell Square

Rob

Thanks. We will review and come back to you as soon as possible.

However, many of the items raised are likely to be unfeasible as the property is Grade II listed and progressing with such works would cause harm to the significance of the listed building. How would you like us to deal with this?

Many thanks

Hannah

Hannah Bryant
Senior Planning Consultant

Tel. +44 (0)20 7333 6427
Fax. +44 (0)20 7491 1825
Mob. +44(0)7788 367 923
HBryant@geraldeve.com

Gerald Eve LLP
72 Welbeck Street London W1G 0AY
www.geraldeve.com

From: Tulloch, Rob [mailto:Rob.Tulloch@camden.gov.uk]
Sent: 10 July 2017 08:51
To: Hannah Bryant
Subject: 52-53 Russell Square

Hi Hannah,

Sorry for the delay, but our sustainability officer has come back with the following comments:

ENERGY HIEARCHY RESULTS:
No information provided. The applicant should provide details of the CO2 reduction per stage of the energy hierarchy, in line with the GLAs guidance on Preparing Energy Assessments. Applicant should provide the BRUKL report to support the stated savings.

Building fabric u-values (W/m²K), Air permeability (m2/hr/m2), Approach to limiting thermal bridging *No information provided – the applicant should provide details*
Proximity to existing decentralised energy networks and proposals to connect/ Opportunities to connect to a future network *No information provided – the applicant should provide details.*
Suitability for on-site CHP *No information provided – the applicant should provide details.*
The proposals are to retain the existing air source heat pump units and internal heating and cooling units to serve the classrooms. *Information on this should be provided, including efficiency There is still some roof space available – the applicant should incorporate solar PV where possible, even if this only goes some way to achieving the renewables targets.*
A BREEAM rating of 'Very Good' is targeted for the project with the following % of credits achieved:

- 59% energy credits
- 66% water credits
- 50% materials credits

This falls short of minimum policy requirements. The applicant should target 'Excellent' rating in line with policy targets.
Natural ventilation proposed with some mechanical ventilation to laboratories, PE room etc. No further details provided.
All development should demonstrate that measures to adapt to climate change have been implemented and that overheating risk has been managed.

Basic overheating compliance tests must be undertaken to demonstrate compliance with Building Regulation, however this test does not cover all factors which influence overheating. Therefore, the GLA guidance states that developers should carry out additional design assessments e.g. dynamic thermal modelling. Where dynamic modelling is carried out, it should be undertaken in accordance with the guidance and data sets in TM49: Design Summer Years for London. It is also

recommended that developers consider CIBSE TM52 The Limits of Thermal Comfort: Avoiding Overheating in European Buildings when carrying out modelling.

Where cooling is proposed, developers should provide details, including: efficiency, ability to take advantage of free cooling and renewable cooling sources. Non-domestic developments should provide details on the area weighted average building cooling demand (MJ/m2) (from the BRUKL) both actual and notional – the actual should be below notional.

Green infrastructure and biodiversity (including green/brown roofs) No information provided.

Can you forward this to your energy consultant?

kind regards

Rob Tulloch
Senior Planning Officer
Planning Solutions Team
Regeneration and Planning
Supporting Communities
London Borough of Camden

Telephone: 020 7974 2516
Fax: 020 7974 1680
Web: camden.gov.uk

2nd Floor
5 Pancras Square
London N1C 4AG

Please consider the environment before printing this email.

Hannah Bryant

From: Hannah Bryant
Sent: 04 August 2017 11:24
To: 'Tulloch, Rob'
Cc: Graham Oliver; Emily Barnard
Subject: RE: Montague St Apps
Attachments: Ecole Jeannine Manuel - Energy Analysis - MD.PDF; 17-07-28 EWA EJMSS Add Sustainability Statement.pdf

Good Morning Rob

Further to your email below, I summarise the key issues raised and our response:

1. Indication of improvement in energy performance – please see attached energy analysis detailing the notional CO2 reduction for the change of use school application in comparison with the office.

2. Building fabric u-values (W/m²K), Air permeability (m2/hr/m2) and Approach to limiting thermal bridging – please see attached note from the architects confirming the approaches.

3. Full justification for BREEAM 'Very Good' rating – we have demonstrated that the project will meet the mandatory credits for 'Excellent' though not achieving an 'Excellent' rating. As has been demonstrated below the project has been set to achieve all of and, in some cases, more than the required mandatory credits for 'Excellent'.

	Minimum Excellent Credits reqd	**Ecole Jeannine Pre-Assessment target**
Man 03	1 credit	4 credits
Man 04	Criteria 9 only - BUG	BUG targeted
Man 05	1 credit	1 credit (Seasonal Commissioning)
Ene 01	6 credits	8 credits
Ene 02	1 credit	1 credit (sub-metering)
Wat 01	1 credit	2 credits
Wat 02	Criterion 1 only	Criterion 1 targeted
Mat 03	Criterion 1 only	Criterion 1 + 1 credit (Sustainable procurement Plan)
Wst 01	none	2 credits
Wst 03	1 credit	n/a as no change to building fabric

We trust that this closes out the issues raised but if you have any further queries, please do let me know at your earliest convenience.

We would appreciate if the application could be put forward for September committee.

Many thanks

Hannah

Hannah Bryant
Senior Planning Consultant

Tel. +44 (0)20 7333 6427
Fax. +44 (0)20 7491 1825
Mob. +44(0)7788 367 923
HBryant@geraldeve.com

Gerald Eve LLP
72 Welbeck Street London W1G 0AY
www.geraldeve.com

From: Tulloch, Rob [mailto:Rob.Tulloch@camden.gov.uk]
Sent: 28 July 2017 12:04
To: Hannah Bryant
Subject: RE: Montague St Apps

Hi Hannah,

The agenda is being drawn up now and the Montague applications are on it.

In terms of Russell Square:

The energy officer has the following comments (in blue)

ENERGY HIEARCHY RESULTS:
No information provided. The applicant should provide details of the CO2 reduction per stage of the energy hierarchy, in line with the GLAs guidance on Preparing Energy Assessments. Applicant should provide the BRUKL report to support the stated savings.

No CO2 reduction details have been provided as the proposed energy measures have been introduced in order to limit any impact upon the Grade II Listed nature of the property and the negative impact and potential harm they would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Thermal modelling and the provision of a BRUKL is to be undertaken at a later design stage.

The proposals will look at the feasibility, where possible, of upgrading the insulation to the existing building fabric to meet the requirements for energy and CO2 emissions of the Building Regulations Part L and the London Plan Energy Hierarchy.

In any event, the energy demand of the development will be further reduced through the provision of the following, as set out within the submitted Energy Strategy:-

- *Retaining the existing external heat pump units and internal heating and cooling units to serve the classrooms. Some existing units will need to be relocated with additional room units. Any additional units will be sympathetically selected and sized as far as technically possible to match the existing units.*
- *Provision of new internal luminaires to all classrooms and offices may be considered to incorporate daylight and presence sensors to reduce the energy usage. The selection of new luminaires will aesthetically match where possible to the existing luminaires.*
- *All luminaires shall incorporate LED or low energy lamps and high frequency electronic control gear;*
- *Energy efficient external lighting with daylight detection and time switch controls to prevent their unnecessary use*

This information will be incorporated into the thermal model and associated BRUKL document undertaken at a later design stage. Accordingly, we would appreciate if the details could be secured by condition.

Normally we do ask for this all upfront. We just need an idea of the overall achievable energy reduction target which we then add to the S106. We will off course recognise the constraints given it's a listed building.

Building fabric u-values (W/m²K), Air permeability (m2/hr/m2), Approach to limiting thermal bridging *No information provided – the applicant should provide details*

This is not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact and potential harm this would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. We have therefore sought to limit the need to disturb original building fabric in accordance with this policy.

They still need to provide the detail and state whether it's being upgraded or not.

Proximity to existing decentralised energy networks and proposals to connect/ Opportunities to connect to a future network *No information provided – the applicant should provide details.*

Due to the buildings location we don't believe there is the scope to connect to existing or future decentralised networks. Some of these systems have been discussed within section 7 of the Energy Strategy that supports the planning application.

We are not aware of any district heating in Russell Square. In any event, it is very unlikely that the owners of the district heating system would allow the school to connect to their system. Such systems are employed when multiple buildings are proposed across a site/local area.

Notwithstanding this, connection to a decentralised energy network is not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact it would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets.

We can accept that connection to a network is not going to be a viable solution in this case.

Suitability for on-site CHP *No information provided – the applicant should provide details.*

For CHP to provide economical or environmental savings the system requires a good base load and to be able to operate a minimum number of hours. For a school, with typical heating and water demands, we do not consider that CHP is an option. Camden's Planning Guidance also states typically CHP is deemed feasible where there is a simultaneous demand for heat and power in excess of 5,000 hours per annum. The school usage is likely to be less than 2,000 hours per annum. Accordingly, it is not considered appropriate in this instance.

We can accept that CHP is not going to be a viable solution in this case.

The proposals are to retain the existing air source heat pump units and internal heating and cooling units to serve the classrooms. *Information on this should be provided, including efficiency*

The proposals are to retain the existing air source heat pump units which are operating as a Variable Refrigerant Volume System (VRV) with internal heating and cooling units to serve the classrooms.

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contribution to reducing carbon emissions associated with this building, particularly when compared to the alternative heat source such as a gas fired boiler.

Furthermore, the technology has already been discretely incorporated into this building, and therefore has been shown to be viable for use here which does not harm the historic interest of this listed building.

OK thank you.

There is still some roof space available – the applicant should incorporate solar PV where possible, even if this only goes some way to achieving the renewables targets.

Solar panels are not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact and potential harm they would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Solar panels are not proposed in accordance with this policy.

Solar PV can go on listed buildings. There are many examples where this has been done within no/minimal impact on the structure/ characteristic/ views etc. They'll need to provide evidence this has been fully investigated. If it's not acceptable for conservation reasons we need evidence that this is the case from the heritage officer.

A BREEAM rating of 'Very Good' is targeted for the project with the following % of credits achieved:

- 59% energy credits
- 66% water credits
- 50% materials credits

This falls short of minimum policy requirements. The applicant should target 'Excellent' rating in line with policy targets.

Due to the Listed nature of the property, it is not considered possible to meet the policy requirements in regard to minimum energy credits. In order to meet this requirement, further alterations would be required to the building, which could be considered harmful to the historic fabric and significance of the listed building. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Many technologies considered within the Energy Statement would be harmful to the historical fabric of the building and are therefore considered unsuitable in accordance with the above policy. Accordingly, the only proposals that form part of this application are set out above and within the Energy Strategy itself.

It is considered that the BREEAM 'Very Good' which is targeted for the project is acceptable in this case, where the energy score is limited due to constraints of the listed building.

We can accept Very Good, only if full justification is provided as to why the credits required for 'Excellent' have not been achieved. Generally we ask for a list of the missed credits with an explanation as to why they've not been achieved. I know this sounds onerous but because this is missing the policy target we need to be sure that we can justify it to committee.

Natural ventilation proposed with some mechanical ventilation to laboratories, PE room etc. No further details provided.
All development should demonstrate that measures to adapt to climate change have been implemented and that overheating risk has been managed.

Basic overheating compliance tests must be undertaken to demonstrate compliance with Building Regulation, however this test does not cover all factors which influence overheating. Therefore, the GLA guidance states that developers should carry out additional design assessments e.g. dynamic thermal

modelling. Where dynamic modelling is carried out, it should be undertaken in accordance with the guidance and data sets in TM49: Design Summer Years for London. It is also recommended that developers consider CIBSE TM52 The Limits of Thermal Comfort: Avoiding Overheating in European Buildings when carrying out modelling.

Where cooling is proposed, developers should provide details, including: efficiency, ability to take advantage of free cooling and renewable cooling sources. Non-domestic developments should provide details on the area weighted average building cooling demand (MJ/m2) (from the BRUKL) both actual and notional – the actual should be below notional.

A dynamic thermal model analysis will be carried out during the detailed design stage to inform the strategy for ventilation and avoid overheating during the summer months. We would appreciate if this could be conditioned.

Normally we ask for this upfront but we can condition.

Green infrastructure and biodiversity (including green/brown roofs) No information provided.

Green/brown roofs are not considered appropriate on the site due to the Grade II Listed nature of the property and the negative impact and potential harm they would have both on the Listed Building itself and the surrounding Conservation Area. Policy D2 of the Local Plan seeks to protect and enhance Camden's heritage assets. Green/brown roofs are not proposed in accordance with this policy.

Again, If it's not acceptable for conservation reasons we need evidence that this is the case from the heritage officer.

In terms of PVs and Green roofs we can accept that these would be harmful to the listed building.

Kind regards

Rob Tulloch
Senior Planning Officer
Planning Solutions Team
Regeneration and Planning
Supporting Communities
London Borough of Camden

Telephone: 020 7974 2516
Fax: 020 7974 1680
Web: camden.gov.uk

2nd Floor
5 Pancras Square
London N1C 4AG

From: Hannah Bryant [mailto:HBryant@geraldeve.com]
Sent: 28 July 2017 11:42
To: Tulloch, Rob <Rob.Tulloch@camden.gov.uk>
Cc: Graham Oliver <GOliver@geraldeve.com>; Emily Barnard <EBarnard@geraldeve.com>
Subject: Montague St Apps

Good Morning Rob

I hope you are well.

Please can you provide an update on the status of the Montague Street applications. I believe you previously advised that you would know this week whether the applications could be heard at committee on 10 August.

Any update you can provide, so that I can advise my client, would be much appreciated.

Many thanks

Hannah

Hannah Bryant
Senior Planning Consultant

Tel. +44 (0)20 7333 6427
Fax. +44 (0)20 7491 1825
Mob. +44(0)7788 367 923
HBryant@geraldeve.com

Gerald Eve LLP
72 Welbeck Street London W1G 0AY
www.geraldeve.com

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Table 1 - Assumed main input figures used in the model IES VE simulation:

		Offices	**School**
Space Conditions	Heating Setpoint [˚C]	21	21
	Cooling Setpoint [˚C]	23	23
U values [W/m²K]	Exposed Ground Floor	0.223	0.223
	Roof	**2.65**	**0.112**
	External Wall	1.715	1.715
	Internal Partition	1.875	1.875
	Door	2.166	2.166
	External Glazing	1.158	1.158
Internal Gains	Lighting [W/m²]	12	8
	Small Power [W]	25	12.5
	People [m²/person]	10	2
ACH	Infiltration [ach]	0.25	0.25

Table 2 - Approximate kW and Carbon Emission Results for Office

	Heating (Oct.-Apr.)			Cooling (May-Sep.)		
	Building Loads [kW]	Building Energy [kW]	Carbon Emissions [kg.CO2/h]	Building Loads [kW]	Building Energy [kW]	Carbon Emissions [kg.CO2/h]
Max. (Peak)	55.68	74.76	17.71	50.48	65.08	33.78
Min. (Peak)	0.76	6.12	0.0208	0	0	0
Carbon Emissions [kgCO2/annum]	71222.31			13986.33		

Total Carbon Emissions [kgCO2/annum] = 85208.64

Table 3 - Approximate kW and Carbon Emission Results for School

	Heating (Oct.-Apr.)			Cooling (May-Sep.)		
	Building Loads [kW]	Building Energy [kW]	Carbon Emissions [kg.CO2/h]	Building Loads [kW]	Building Energy [kW]	Carbon Emissions [kg.CO2/h]
Max. (Peak)	27.32	39.32	10.06	37.3	48	24.7
Min. (Peak)	0.0208	0.0208	0.0208	0	0	0
Carbon Emissions [kg.CO2/annum]	43542.22			12632.59		

Total Carbon Emissions [kgCO2/annum] = 56174.81

[%] improvement = 34.07

CONCLUSION:

1. The above tabulated data compares the existing building used as an office against the proposed change of use to a school incorporating improvements proposed to the roof U values as advised by the Architect and by replacing the fixed lighting with new LED lighting.
2. The results in tables 2 and 3 are based on the assumed figures contained within table 1 and have not been verified. Existing U values would need verifying based on an intrusive survey and proposed u values have not been confirmed by the architect at this stage. The internal gains have been assumed based on bench mark guides.
3. The results indicate a positive reduction of 34% in terms of annual energy savings and CO2 Emissions with the change of use however the extent of these reductions should not be relied upon.

Project Reference:	EJMUK
Address:	52-53 Russell Square, WC1B 4HP
File Reference :	2262/09
Date :	28.07.17
Planning Reference :	2017/2285 /P

EllisWilliams
Architects

Supplementary Statement:
Sustainable Design

1. Improving Building Fabric Efficiency:

The existing building is constructed from solid brick masonry, with a pitched roof above on a timber supporting structure to the main townhouse at the front, and two extensions also in masonry one with a low-pitched metal roof and one with a flat roof. The existing windows are mostly original timber framed sliding sash windows, and doors are solid timber. The solid construction it is assumed from the age of construction (c.1800) does not include any insulation.

The building is Grade II* Listed, and the client will take a leasehold interest in the property. In order to increase the thermal efficiency within the constraints of the Listed status and lease terms, it is proposed to provide the following:

- Building fabric U-values: Insulation in roof and loft spaces with 250mm depth mineral wool quilt to limit thermal losses to the major exposed surface of the top floor rooms, and equally limit the heat gains in the summer particularly underneath the metal roof to the Mews building; A further investigation will be undertaken on possession of the building to investigate whether the existing timber dormer roof construction contains insulation between the rafters and whether access is possible in order to add insulation between these timbers; Replacement of the existing window blinds with thermally lined blinds to the large sliding sash windows to limit thermal losses during winter evenings, and also to control solar gains in summer.
- Air permeability: All of the existing windows have some form of weather stripping/seal, which will be replaced to reduce air permeability around the existing frames. All windows will be checked and the sashes adjusted to ensure they sit tightly within their frames and close fully. All windows will also be checked and any loose/ degraded putty replaced. Jambs where plasterwork meets the window reveals will also be checked any cracks/ holes filled with mineral wool and the plaster sealed up to the windows to improve air tightness. The floors are generally a low-rise accessible floor system – these will be lifted and all perimeters inspected and ensured that the floors seal well to the perimeters and any holes/ openings filled particularly around the skirting board junction to ensure air movement is limited around these perimeters.
- Approach to limiting thermal bridging: All windows and doors are timber with timber frames, set back approximately half way back within the depth of the existing solid masonry walls, therefore there are limited thermal bridges at openings generally as existing. Any holes/ gaps will be filled with mineral wool and internal plasterwork made good as stated above. At roof level the roof construction is timber on a timber wall plate, again limiting thermal bridging at the eaves when loft insulation is introduced at this level.

London
135 Curtain Road
Shoreditch
London EC2A 3BX
+44(0)20 7841 7200

Cardiff
Tramshed Tech
Pendyris Street
Cardiff CF11 6BH
+44(0)1928 752 200

Liverpool
Vanilla Factory
39 Fleet Street
Liverpool L1 4AR
+44(0)151 708 1802

Warrington
Wellfield
Chester Road
Preston Brook WA7 3BA
+44 (0)1928 752 200

Berlin
Clausewitzstraße 1
10629 Berlin
+49 (0)30 887 14 331

www.ewa.co.uk
info@ewa.co.uk

Company Registered in
England, no. 3818904