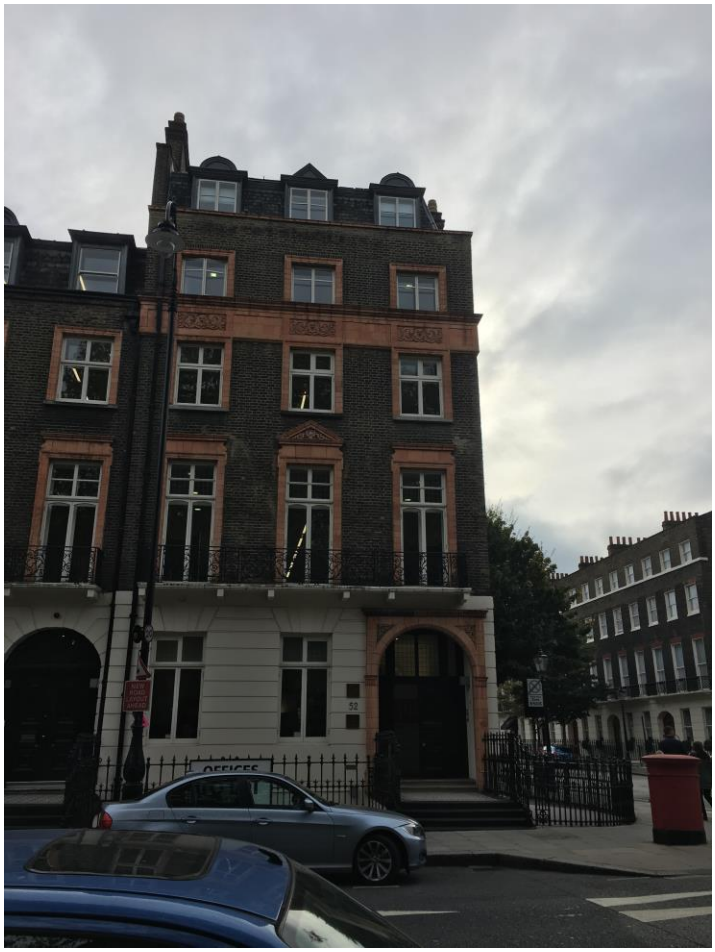
Norman Bromley Partnership LLP

consulting engineers in building services

PROJECT REF : BS 1516
DATE :- April 2017

52-53 RUSSELL SQUARE, LONDON. WC1B 4HP

ENERGY AND SUSTAINABILITY STATEMENTS FOR THE CHANGE OF USE APPLICATION



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PROJECT REVISION SHEET

Revision No.	Date	Details	Changes	Author	Approved
0	April 2017	First Issue		MD	MR
1	April 2017		Amendments / Alterations	MD	MR
2	April 2017		Amendments / Alterations	MD	MR

Contents

1.0 Introduction

In order to support the Change of Use Application at 52-53 Russell Square, London, WC1B 4HP for Ecole Jeannine Manuel French School we have produced this high level report to discuss the energy and sustainability strategies associated with the application.

Norman Bromley Partnership LLP have previously undertaken a survey and provided an overview report of the existing engineering services and their condition and suitability for re-use in a school at an existing office building at 52-53 Russell Square. The building consists of 6 levels; lower ground, ground, first, second, third, fourth floors.

The existing building will be refurbished and remodelled to suit the French School's requirements with the proposed services design approach focussing on addressing sustainability through the inclusion of design requirements that comprehensively tackle impacts associated with building developments. The following areas are covered by this report:

- Camden Planning Guidance Sustainability CPG3
- Planning Requirements – London Plan Energy Hierarchy
- Passive and Active Design
- Energy
- Pollution
- BREEAM

2.0 Camden Planning Guidance Sustainability CPG3

The design approach will have an emphasis in meeting London Borough of Camden's Sustainability Planning Guidance Document CPG3. The key messages for the Planning Guidance Document CPG3 for existing buildings states the following:

- At least 10% of the project cost should be spent on environmental improvements.
- Potential measures are bespoke to each property.
- Sensitive improvements can be made to historic buildings to reduce carbon dioxide emissions.

The above will be incorporated through a combination of Architectural and Services improvements to the building, examples of how this may be achieved are improving the building fabric or the specification of high efficiency LED lighting.

Within the renewable energy section of CPG3 the council sets out their expectations:

- All developments are to target at least a 20% reduction in carbon dioxide emissions through the installation of on-site renewable energy technologies. Special consideration will be given to heritage buildings and features to ensure that their historic and architectural features are preserved.
- When assessing the feasibility and viability of renewable energy technology, the Council will consider the overall cost of all the measures proposed and resulting carbon savings to ensure that the most cost-effective carbon reduction technologies are implemented in line with the Energy hierarchy.

Details of how these are proposed to be achieved are discussed further in the report.

3.0 Planning Requirements

The development is required to adhere to a number of national, regional and local policies. These form the key principles in the development of the energy strategy and as such ensure compliance is achieved with all relevant targets.

In addition to ensuring compliance with the Building Regulations Part L 2016 the building shall also meet the London Plan Energy Hierarchy strategy which provides an inclusive approach to energy use considering on site energy use, efficiency of energy supply and the use of sources of renewable energy.

The purpose of the energy hierarchy approach is to demonstrate that climate change mitigation measures form a fundamental part of the proposed scheme's design and evolution. Any measures taken forward must be demonstrated as appropriate and feasible in the context of the overall development.

There are 4 steps to the energy hierarchy process:

1. Design Criteria Building Regulations compliant building	2. 'Be Lean' Reduction by energy efficiency measures	3. 'Be Clean' Selection of low carbon energy supply strategy	4. 'Be Green' Renewable technologies

Step 1 – Design Criteria

Establish the regulated CO_2 emissions for a Part L 2016 compliant building (baseline design) using BRE accredited SBEM calculation software.

Step 2 – 'Be Lean' – Reduction by Energy Efficiency Measures

Apply energy demand reduction measures specific to the scheme such as enhanced building fabric to deliver reduced heat loss, heat gain and improved air permeability.

Other measures include improved efficiency of fixed building services beyond that of the statutory requirements.

Step 3 – 'Be Clean' – Selection of low carbon energy supply strategy

Once demand for energy has been minimised it should be demonstrated that the use of a low carbon energy supply has been explored through the order of preference of the following options:

1 - Connection to an existing heat distribution network
Investigate the potential for connecting onto an existing heat network, contacting local heat network operators.

2 - Connection to a planned heat distribution network
Investigate the potential for connecting onto a planned heat network referencing local energy master plans.

3 - Site wide heating networks - Where multiple buildings are proposed or where the building density is sufficient, a communal heating system should be adopted with all buildings/uses within a development normally connected into a single site wide heating network, thus facilitating future connection to decentralised energy networks.

4 - Combined heat and power (CHP) – Consider the appropriateness of CHP for the development. Typically CHP is deemed feasible where there is a simultaneous demand for heat and power in excess of 5,000 hours per annum.

Step 4 – 'Be Green' – Renewable Energy Technologies

Subject to the 'Be Lean and Be Clean' principles being appropriately satisfied and demonstrated accordingly, consideration should be made to feasible renewable energy technologies.

4.0 **BREEAM**

Peter Joel & Associates have been appointed as BREEAM facilitator for the project and they produced a pre-assessment report, the main points of which are summarised below:-

- BREEAM establishes a set of categories under which specific credit requirements are grouped: Management, Health and Wellbeing, Energy, Transport, Water, Materials, Waste, Land Use * Ecology, Pollution.

- A BREEAM rating of 'Very Good' is targeted for the project,

- In order to ensure that the VERY GOOD rating is achieved for the School, the design team members need to ensure that the credit criteria are incorporated in the developing design and that suitable evidence can be provided to validate achievement.

The BREEAM Pre-Assessment is attached as an appendix to this submission.

5.0 **Passive and Active Design**

The existing building and structure will be remodelled with a view of utilising existing window opening to provide a passive design approach to the development of the school which is crucial to the success of reducing its carbon footprint. Our strategy incorporates a fine balance between natural daylight and natural ventilation, avoiding both discomfort glare and excessive solar gain during the summer months.

Daylighting

We believe that natural daylight is not just a key element to achieve energy savings, but it is a crucial element to deliver quality and comfort in learning environments. We will strive, where possible, to ensure that all classrooms benefit from good daylighting from the existing large windows.

Ventilation

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.

Where offices are converted for classroom use ventilation shall generally be via opening windows as the introduction of louvres through the building façade will not be possible. Extract and make up air ventilation will be required to laboratories, PE room etc. This will need to be designed to be sympathetic with the existing structure.

Systems and Controls

Lighting will be on movement sensors and will include daylight dimming.

Site Ecology and Biodiversity

Our design aims to enhance the ecology and biodiversity of the site.

6.0 **Energy**

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.

The energy demand of the development will be further reduced through the provision of the following :-

- 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;

- Roof mounted photovoltaic modules were considered however due to the property's heritage, location and available roof space it has been assumed the photovoltaics will not be an option.

7.0 Renewable Technology Feasibility Study

This section of the report outlines the range of technologies considered for the proposed development, identifying the site specific viability of each technology. Calculations have not been produced to demonstrate the viability of each of the renewable technologies with generated energy, carbon emissions and system paybacks.

The following Low or Zero Carbon technologies have been investigated:-

- Wind Turbines
- Photovoltaics
- Solar Water Heating
- Ground Source Heat Pump
- Air Source Heat Pump

7.1 Wind Turbines

Wind turbines exploit a natural resource to generate electricity, which can be used to serve the building with any excess exported and sold to the electricity provider.

However, wind turbines must be cited to operate in an undisturbed air flow. Considering the proximity of adjacent buildings, the wind turbine would have to be mounted at some height, and require a suitable support structure, both highly visible. Due to the property's heritage and location with the potential special and planning problems associated with wind turbines, this technology is not considered a feasible option.

7.2 Photovoltaics

Photovoltaic (PV) panels produce electrical energy which can also be used to serve the building, with any excess exported to the electricity provider. Again though the location of PV panels on the roof of this property would be problematic.

Due to the Mansard roof style there is very limited useable roof space available, and suitable access has to be achieved for inspection and maintenance. For these reasons PV panels are not considered a viable option for this property.

7.3 Solar Water Heating

A solar water heating system could be used in conjunction with a conventional gas boiler system and a dual element hot water cylinder.

Similar to the use of PV panels though, there is very limited roof space available for the citing of panels. To compound this, the hot water demand within this building will be very modest, so solar hot water technology would make only a limited contribution to the reduction in C02 emissions. As a result it is not considered an appropriate option for this property.

7.4 Ground Source Heat Pumps

A ground source heat pump would require some form of ground pipework loop, either at a shallow depth or throughout the height of a borehole, to extract usable energy from the ground. This building has virtually no available land for the installation of either. For that reason this technology is not considered remotely viable for this building.

7.5 Biomass Boilers

A biomass boiler could be introduced at this building to provide a heat source for the central heating system. However, there is very limited space for fuel storage, thereby necessitating frequent deliveries to what is a very busy part of London.

Furthermore, and considering the city centre location, there would be considerable concern over the height of the chimney required to ensure compliance with the Clean Air Act Memorandum.

For these reasons the introduction of a biomass boiler is not considered viable for this building.

7.6 Air Source Heat Pumps

The proposals are to retain the existing air source heat pump units and 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.

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.

Finally the technology has already been discretely incorporated into this building, and therefore has been shown to be viable for use here.

APPENDIX 'A' - BREEAM PRE-ASSESSMENT

BREEAM UK REFURBISHMENT & FIT-OUT 2014
PRE-ASSESSMENT REPORT

52 – 53 Russell Square London WC1

Client: Ecole Jeannine Manue

21st April 2017

PETER JOEL & ASSOCIATES

Document History

Issue	Date	Comment	Author	Chk'd
1.0	31/03/2017	Pre-Assessment Report	PJ	
2.0	21/04/2017	Revised Report	PJ	

CONTENTS

1.0 BREEAM 2014

1.1 BREEAM Overview

BREEAM is the Building Research Establishment's Environmental Assessment Method.

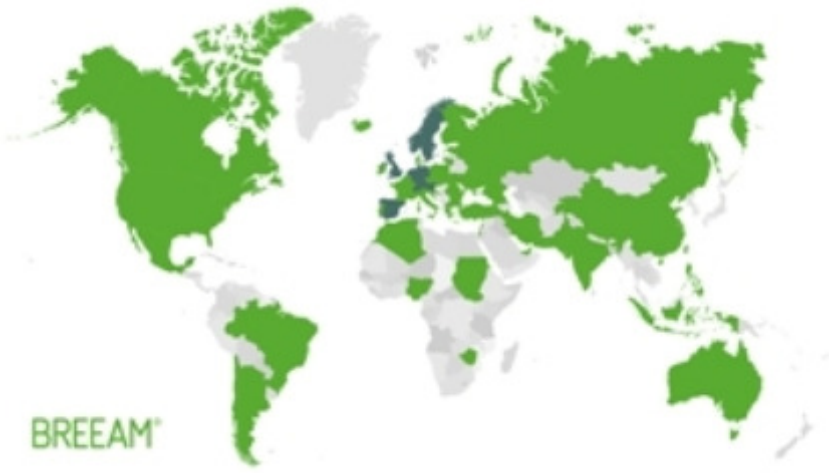
Initially created in the 1980's, the Schemes are periodically updated to ensure the methodology goes above and beyond current building regulations. The aim of this is to encourage environmental design and push forward sustainable construction practices both in the UK and Internationally. BREEAM is now widely used across the world and with 250,000 buildings fully certified and over a million registered for assessment, BREEAM is the world's leading environmental assessment method for sustainable buildings.

BREEAM projects are awarded 'Credits' for compliance with assessment criteria. The criteria are split over ten categories, Management, Health and Wellbeing, Energy, Water, Materials, Transport, Waste, Land Use and Ecology, Pollution and Innovation. The total number of credits achieved is totalled to produce a single overall percentage score. The score translates to a rating ranging over the following scale, Pass (≥30%), Good (≥ 45%), Very Good (≥55%), Excellent (≥70%) and Outstanding (≥ 85%).

The assessments are then reviewed and checked by BRE Global before a certificate is issues.

1.2 BREEAM Around the world

The Map below provides an overview of the uptake of BREEAM assessments across the world. Countries shaded light green have certified BREEAM projects, those indicated in a dark green have a country specific BREEAM Scheme operated by a National Scheme Operator.



1.3 BREEAM UK Refurbishments & Fit-out 2014

BREEAM UK Refurbishment & Fit-out 2014 Scheme can be used to assess a wide variety of refurbishment and fit-out buildings (including Change of Use) in the UK. These include public and commercial sector buildings such as Education, Healthcare and Office projects, as well as Prisons, Courts and Multi-residential buildings.

2.0 THE PROCESS

Early awareness and implementation of the BREEAM requirements will help the Project Team to arrive at a consolidated approach to the environmental and sustainable aspects of a development. Our experience shows that the most successful BREEAM projects are those that the BREEAM Assessor is engaged in the early stages in order to agree a brief that will:

- suit the users of the building
- satisfy all regulatory and BREEAM criteria
- engage all projects stakeholders and design team members
- work on an agreed and realistic budget and keep costs under control

The BREEAM assessor will give advice at key points throughout the project from initial meetings through to project completion and handover. The BREEAM Assessors role is to collate the evidence and submit the report to BRE Global for review and certification.

The three key stages are:

- **Pre-Assessment** – following the initial design team meetings, the Pre-Assessment report will be created. This report outlines the credits targeted, an overview of the project, the credit requirements and the expected score.

- **Design Stage** – this is a 'live' report that the Assessor will update periodically throughout the project and issue to the design team on request. The report provides a 'snapshot' of the projects progress. As the evidence is received from the project team the credits are awarded and this is reflected in the report. This report provides a comprehensive guide to the progress of the project.

- **Post Construction Stage** – following practical completion of the project the Assessor will collate the final evidence and conduct a site visit. From this the final report is submitted to BRE Global and a certificate issued for the project.

3.0 STATUS OF REPORT

3.1 Pre-assessment

The BREEAM Refurbishment and Fit-out assessment for 52 – 53 Russell Square is based on the following Parts as identified in the BREEAM manual:

a) **Part 2: Core Services** – this is applicable where core services such as heating boiler, heat distribution, water services, Building Management System or low/zero carbon technologies are being installed or upgraded to a level that requires compliance with the Building Regulations Compliance Guide

b) **Part 3: Local Services** – this relates to fixed upgraded or replaced light fittings (at least 50%), systems and controls, upgrade of zone controls, local ventilation, local heating units, local cooling units and any point of use water heaters (where applicable)

The pre-assessment indicates that a score of **58.79%** suggesting a BREEAM rating of **'Very Good'** could be achieved. The Grade II Listed feature of the existing building limits the extent of alteration works especially to the fabric and so certain BREEAM elements are either not achievable or would not be cost effective. Where improvements can be accommodated without compromising the historical nature of the building, these have been considered and reflected in this pre-assessment report.

BREEAM Rating					
	Credits available	Credits achieved	% Credits achieved	Weighting	Category score
Man	20.0	10.0	50.00%	18.90%	9.45%
Hea	9.0	6.0	66.67%	10.15%	6.76%
Ene	22.0	13.0	59.09%	20.95%	12.37%
Tra	0.0	0.0	0.00%	0.00%	0.00%
Wat	9.0	6.0	66.67%	9.92%	6.61%
Mat	12.0	6.0	50.00%	19.08%	9.54%
Wst	8.0	4.0	50.00%	8.27%	4.13%
Le	0.0	0.0	0.00%	0.00%	0.00%
Pol	10.0	7.0	70.00%	12.72%	8.90%
Inn	10.0	1.0	10.00%	10.00%	1.00%
Total	100.0	53.0	53.00%	-	58.79%
Rating	-	-	-	-	Very Good

4.0 SECTIONS

4.1 Management

Credit	Title	Max	Target	Achieved
Man 01 (1-3)	Project Design & Brief – Stakeholder Consultation (Project Delivery)	1	0	0
Man 01 (4-6/7)	Project Design & Brief – Stakeholder Consultation (Third Party)	1	0	0
Man 01 (8-10)	Project Design & Brief – Stakeholder Consultation (Design)	1	0	0
Man 01 (11-12)	Project Design & Brief – Stakeholder Consultation (Monitoring)	1	0	0
Man 02 (1-2)	Life Cycle Cost & Service Life Planning – Elemental Life cycle cost	2	0	0
Man 02 (3-4)	Life Cycle Cost & Service Life Planning – Component Level LCC Plan	1	0	0
Man 02 (5)	Life Cycle Cost & Service Life Planning – Capital Cost Reporting	1	0	0
Man 03 (1-3)	Responsible Construction Practices – Environmental Management	1	1	0
Man 03 (4-6)	Responsible Construction Practices – Sustainability Champion	1	0	0
Man 03 (7)	Responsible Construction Practices – Considerate Construction	2	2	0
Man 03 (8,9-12)	Responsible Construction Practices – Fit-out Utility Consumption	1	1	0
Man 03 (8,13-14)	Responsible Construction Practices – Fit-out Site Transport	1	0	0
Man 04 (1-4)	Commissioning & Handover – Schedule & Responsibilities	1	1	0
Man 04 (5)	Commissioning & Handover – Building Services	1	1	0
Man 04 (6-8)	Commissioning & Handover – Handover	1	1	0
Man 05 (1-2)	Aftercare - Support	1	1	0
Man 05 (3)	Aftercare – Seasonal Commissioning	1	1	0
Man 05 (4-5)	Aftercare – Post Occupancy Evaluation	1	1	0
Sub-Total		**20**	**10**	**0**

Man 01 Project Design & Brief

No credits targeted under this issue

Man 02 Life Cycle Cost & Service Life Planning

No credits targeted under this BREEAM Issue

Man 03 Responsible Construction Practices

Project Manager / Contractor

The main contractor is required to operate an environmental management system (EMS) covering their main operations. The EMS must be either:

a) Third party certified to ISO 14001/EMAS or equivalent or
b) Have a structure that is compliant with BS 8555:2003 Phase 4 of the implementation stage and completed phase audits 1 to 4 as defined in BS 8555:2003

The contractor is to implement best practice pollution prevention policies and procedures on-site in accordance with PPG, Working at construction and demolition sites PPG6[1]
The contractor is required to have on site a 'Sustainability Champion' to monitor the project during construction and report accordingly.

All site timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy

The main contractor should keep monthly records of all on site energy consumption, water consumption and logs of all transport of construction materials during the fit-out contract works.

The principal contractor must achieve Scheme certification and a CCS score as follows:

- A CCS score between 35 and 39

A score of 7 in each of the 5 sections must be achieved

Man 04 Commissioning and Handover

Building Services Engineer

Commissioning of all building services should be carried out in line with current Building Regulations, BSIRA and CIBSE standards. Commissioning manager & specialist commissioning manager will be appointed. Additional or altered services where applicable should be carefully considered to reflect the listed status of the assessed building

There is a requirement for a compliant Building User Guide to be developed prior to handover for distribution to the building occupier and premises manager with a draft copy developed and discussed with users first to ensure the guide is most appropriate and useful to the occupier.

Man 05 Aftercare – Seasonal Commissioning & Post occupancy Evaluation

Client

There is a requirement for an on-site facilities management team to undertake 'aftercare' support. A meeting programmed to occur between the aftercare team and the building occupier should be scheduled prior to handover introducing the team as well as present key information about features of the building and how to use the building to ensure it operates as efficiently and effectively as possible.
The aftercare support provision is required for at least 3 years from occupation and discrepancies between actual and predicted performance should be identified with a commitment to identify actions required to address any discrepancies.

Seasonal commissioning over a 12 months period following occupation should be carried out

Post-Occupancy Evaluation (POE) will be carried out and shared one year after building occupation, to gain building performances feedback.

The POE will be carried out by an independent third party and will cover:-

- Review of the design and construction process
- Feedback from a wide range of building users on:-
    - Internal environmental conditions.
    - Control, operation and maintenance
    - Facilities and amenities
    - Access and layout
    - Other relevant issues
- Sustainable performance

The building occupier is to carry out the appropriate dissemination of information on the building's post occupancy performance to share good practice and lessons learned as well as inform changes in user behaviour, building operational processes and procedures and system controls.

4.2 Health and Wellbeing

Credit	Title	Max	Target	Achieved
Hea 01 (8-12/14)	Visual Comfort – Internal & External Lighting	1	1	0
Hea 02 (1)	Indoor Air Quality – Minimising Sources of Air Pollution - IAQP	1	0	0
Hea 02 (2-5)	Indoor Air Quality – Minimising Sources of Air Pollution - Ventilation	1	0	0
Hea 02 (15-16)	Indoor Air Quality – Potential for Natural Ventilation	1	0	0
Hea 04 (1-5)	Thermal Comfort - Modelling	1	1	0
Hea 04 (6-8)	Thermal Comfort - Adaptability	1	1	0
Hea 04 (10-12)	Thermal Comfort – Zoning & Controls	1	1	0
Hea 05 (1-4)	Acoustic Performance	2	2	0
Sub-Total		**9**	**6**	**0**

Hea 01 Visual Comfort - Internal & External Lighting

Building Services Engineer (Electrical)

All new internal & external lighting will need to comply with relevant CIBSE standards and should be carefully chosen to be sympathetic to the listed status of the assessed building. Ideally where practical replacements are to be limited.
Manual lighting controls should be easily accessible.
Lighting to be zoned in accordance with BREEAM requirements and adequate controls installed to suit.
All fluorescent and compact fluorescent lamps are to be fitted with high frequency ballasts.
All internal lighting to be designed and installed in accordance with SLL Code for Lighting 2012, CIBSE Lighting Guide 7 and any other relevant industry standard.

Hea 02 Indoor Air Quality

No credits targeted under this issue

Hea 04 Thermal Comfort- Modelling, Zoning and Controls

Building Services Engineer

The building will be modelled using software in accordance with CIBSE AM11 to confirm the building achieves required standards this element can be awarded.

The resultant thermal model will inform the development of the thermal zoning and control strategy.

Hea 05 **Acoustic Performance**

Acoustic Consultant

A suitably qualified acoustician is to be appointed at pre-bid/briefing stage of the project to provide early advice on the acoustic performance of the building

The building should be designed to achieve sound insulation, indoor ambient noise levels and reverberation levels as recommended in Section 7 of BS 8233:2014[5]. This again should be reviewed in line with the limits of a listed building. The scope of the acoustician's appointment should include a programme of pre-completion acoustic testing.

4.3 Energy

Credit	Title	Max	Target	Achieved
Ene 01	Reduction of Energy Use & Carbon – Energy Performance	15	8	0
Ene 02 (1-2)	Energy Monitoring – Sub metering of major energy consuming systems	1	1	0
Ene 03	External Lighting	1	1	0
Ene 04 (1-3)	Low Carbon Design – Passive Design Analysis	1	0	0
Ene 04	Low Carbon Design – Feasibility Study	1	1	0
Ene 06	Energy Efficient Transport Systems – Consumption & Energy Efficient Features	2	2	0
Sub-Total		**21**	**13**	**0**

Ene 01 **Reduction of CO_2 Emissions**

Building Services Engineer

BRUKL Output document will need to be provided for both design & post-construction stages. The thermal model should confirm a Performance Ratio (EPR_{NDR}) greater than or equal to **0.48** which is an equivalent of 8 credits under this issue. This involves a comparison of the base case (as existing) BRUKL epc against the proposed BRUKL epc

Ene 02 **Energy Monitoring & Metering**

Building Services Engineer

Where required and unavoidable as part of the services strategy, energy metering systems when installed should enable at least 90% of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories of energy consuming systems. All meters are to be linked to a BMS and are to be identifiable to the building users via labelling or data outputs.
In line with the metering strategy all floors should be separately metered with pulsed or other open protocol communication outputs to include relevant function areas or departments with a potential for these to be under separate occupants.

Ene 04 — Building Services Engineer (Mechanical)

Low Carbon Design – Low/Zero Carbon feasibility

A comprehensive low or zero carbon feasibility study should be undertaken no later than the end RIBA Stage 1 to identify potential renewable energy sources which could be incorporated in the project as part of the refurbishment and fir-out works with due consideration being given to the listed status of the building. This study should be undertaken by a suitably qualified professional and the study should identify CO_2 contributions due to the chosen technology as well as carbon reduction.

Ene 06 — Architect, Building Services Engineer

Energy Efficient Transportation Systems

Analysis of the existing lifts to be carried out with a view to determining upgrades to ensure efficient energy consumption in line with the requirements of BS EN ISO 25745.

Energy efficient features to be specified such as lift operation in standby mode during off-peak periods, energy efficient lighting to lift car (>55 lamp lumens/circuit watt) and/or the use of regenerative drives where feasible

4.4 Water

Credit	Title	Max	Target	Achieved
Wat 01 (1-6)	Water Consumption	5	2	0
Wat 02 (1-4)	Water Monitoring	1	1	0
Wat 03 (1)	Water Leak Detection	1	1	0
Wat 03 (2)	Water Flow Control Devices	1	1	0
Wat 04	Water Efficient Equipment	1	1	0
Sub-Total		**9**	**6**	**0**

Wat 01 — Architect

Water Consumption

An analysis of the existing toilet block and wc area(s) to be carried out to identify how efficient the fittings are and where inadequate remodeled to allow for low-flow water consuming sanitary fittings achieving at least a 25% improvement against the notional baseline performance.

Wat 02 — Building Services Engineer (Mechanical)

Water Monitoring

A water meter should be fitted to the mains water supply of the building which should have a pulsed output as well as the capability of being connected to the buildings Building Management System (BMS). If existing meter is being considered then this must meet the above standards.

Wat 03 **Water Leak Prevention**

Building Services Engineer (Mechanical)

Leak detection between the installed water meter at the boundary and the building will be installed as well as flow control devices such as PIR and/or solenoid valves to each WC area/ facilities to ensure water is not wasted.

Wat 04 **Water Efficient Equipment**

Architect/Landscape

All external landscaping are to rely solely on precipitation, during all seasons of the year or restricted to contextually appropriate species that thrive without irrigation and will continue to do so in those conditions likely as a result of climate change.

4.5 Materials

Credit	Title	Max	Target	Achieved
Mat 01 (1-3)	Environmental Impact of Materials	6	4	0
Mat 03 (2)	Responsible Sourcing – Procurement Plan	1	1	0
Mat 03 (3)	Responsible Sourcing – Materials	3	0	0
Mat 04 (1-2)	Insulation – Embodied Impact	1	1	0
Mat 06 (1)	Material Efficiency	1	0	0
Sub-Total		**12**	**6**	**0**

Mat 01
Architect
Contractor

Environmental Impact of Materials

Robust environmental performance information required for all specified materials including those to be retained in situ. As this is a change of use only it is anticipated that there should only be a minimal amount of new materials introduced. Points are allocated using the BREEAM Mat 01 Calculator based on the percentage of the following:

a. Reused insitu
b. Reused in situ with minor repairs
c. Specified with robust environmental performance information

Mat 03
Project Manager / Contractor

Responsible Sourcing of Materials

All timber used on the project is sourced in accordance with the UK Government's Timber Procurement Policy
The principal contractor is to source materials for the project in accordance with a documented sustainable procurement plan
Materials need to be specified to ensure appropriate responsible souring certification can be gained. For each material an EMS will need to be produced for the key process and the key supply chain process
The EMS will be required to achieve a BES 6001 Pass level as a minimum.

Mat 04
Project Manager / Contractor

Insulation

Insulation products where used will need to be specified in line with the Green Guide to Specification. This will also need to be responsibly sourced.

Insulation where specified (fabric and/or building services) are to achieve an average Green Guide rating of A, in line with the Green Guide to Specification.
For all insulation a certified Environmental Management Scheme (EMS) will need to produce for the key process and the key supply chain process.

Mat 06
Architect

Material Efficiency

No credit targeted under this issue

4.6 Waste

Credit	Title	Max	Target	Achieved
Wst 01 (1-3)	Construction Waste – Resource Efficiency	6	2	0
Wst 01 (4)	Construction Waste – Diversion from Landfill	1	1	0
Wst 06 (1-2)	Functional Adaptability	1	1	0
Sub-Total		**8**	**4**	**0**

Wst 01

Project Manager / Contractor

Construction Waste – Resource Efficiency & Diversion from Landfill sites

A pre-fit out audit of all existing materials prior to the fit-out works should be undertaken by a competent person independent of the project prior to any strip-out works.
Actual waste arisings and waste management routes used should be compared with those forecast from the audit and barriers to achieving targets should be investigated.
The audit should be referenced in the resource management plan.

The main contractor will be required to develop and implement a compliant resource management plan for covering waste arisings from the refurbishment/fit-out works with the aim of minimising waste. A Resource efficiency benchmark for non-hazardous waste per 100 m^2 of floor area should be no more than ≤ 3.5 tonnes or ≤ 11.3m^3

In addition, the main contractor will be required to divert at least 90% by weight or 85% by volume of non-demolition waste from landfill. Where demolition is part of the project then the diversion requirement should be no less than 95% by weight or 90% by volume.
Reuse and direct recycling of materials might not be appropriate for this project

Wst 06

Architect

Functional Adaptability

As this is a change of use project from an office building, a functional adaptability study should be carried out at RIBA Stage 2 detailing the potential of the building even after the change of use to still facilitate future adaptation where practical and cost effective. This study should clearly demonstrate the adaptability of the building based on the proposed design for a change in operational requirements within the same building type or for use as a different building type. An example will be reverting the building back to an office.

4.7 Pollution

Credit	Title	Max	Target	Achieved
Pol 01 (1-5)	Impact of Refrigerants	2	0	0
Pol 01 (6-7)	Impact of Refrigerants – Leak Detection	1	0	0
Pol 02 (1-2)	NO_x Emissions	3	3	0
Pol 03 (1-3)	Flood Risk Assessment	2	2	0
Pol 04 (1-5)	Reduction of Night Time Light Pollution	1	1	0
Pol 05	Reduction of Noise Pollution	1	1	0
Sub-Total		**10**	**7**	**0**

Pol 02
Building Services Engineer (Mechanical)

NO_x Emissions

All existing plant installed to meet the building's delivered heating and hot water demand should under normal operating conditions emit NO_x emission levels less than 40 mg/kWh

Pol 03
Project Manager

Surface Water Run-off – Flood Risk Assessment

A Flood Risk Assessment should be undertaken. Alternatively written confirmation is required from the Environmental Agency confirming which flood zone the development site is located.

Location/height of local services such as sockets, vents etc and location of wiring/pipework/ductwork in relation to the flood level and other measures to protect local services should be considered by the designers.

All proposed function areas/spaces below the flood level (eg sacrificial spaces) should be limited to those which are not susceptible to flood damage. Also the resilience of materials used for partitions, walls, floors, ceiling finishes, furniture and fittings as well as equipment should be considered.

Pol 04
Building Services Engineer (Electrical)

Reduction of Night Time Light Pollution

External lighting strategy to be designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011[1].
It is expected that existing lighting is to be retained but where replacements (external lighting) are considered these should be sympathetic to the listed status of the building and be capable of being (except for safety and security lighting) automatically switched off between 2300 and 0700 hours. Illuminated advertisements where specified must be designed in compliance with ILE Technical Report 5 – The Brightness of Illuminated Advertisements

Pol 05

Reduction of Noise Pollution

Acoustic Consultant

Where there are or will be noise-sensitive areas or buildings within 800m radius of the assessed development a noise impact assessment in compliance with BS 7445[1] has been carried out and the following noise levels measured/determined:

- Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development.
- The rating noise level resulting from the new noise-source.

A suitably qualified acoustic consultant (SQA) undertakes the assessment.

The noise level from the proposed site/building results in a difference no greater than +5dB during the day and +3dB at night compared to the background noise level.

Where the noise source from the proposed development is greater than the levels described attenuation measures have to be installed at its source to a level where it will comply with the criteria.

Info

The credit can be awarded by default where there are or will be no noise-sensitive areas or buildings within 800m radius of the assessed development.

Full requirement details can be found within the BREEAM Refurbishment and Fit-Out 2014 assessor manual which is freely available from: http://www.breeam.org
The manual provides detailed information on the credit criteria and compliance requirements for the assessment.

APPENDIX 1

BREEAM Pre-Assessment Tracker and Results

BREEAM UK Refurbishment & Fit-Out 2014 - PROGRESS SHEET

Name	**Ecole Jeannine Manuel 52 - 53 Russell Square WC1**
Reference	BREEAM-0086-1793
Date	31/03/2017

Score	
Target score	58.79%
Target rating	Very Good

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	Identifier	Criteria	Title	Max	Pre- Ass Target	Current Target	Minimum Standards P	G	VG	E	O	RIBA Stage	Status Complete	Not Targeted
Management	Man 01	1-3	Project Design & Brief - Stakeholder Consultation (Project Delivery)	1	0		-	-	-	-	-	1		x
	Man 01	4-6/7	Project Design & Brief - Stakeholder Consultation (Third Party)	1	0		-	-	-	-	-	1		x
	Man 01	8-10	Project Design & Brief - Sustainability Champion (Design)	1	0		-	-	-	-	-	1		x
	Man 01	11-12	Project Design & Brief - Sustainability Champion (Monitoring)	1	0		-	-	-	-	-	1		x
	Man 02	1-2	Life Cycle Cost & Service Life Planning - Elemental life cycle cost	2	0		-	-	-	-	-	2		x
	Man 02	3-4	Life Cycle Cost & Service Life Planning - Component Level LCC Plan	1	0		-	-	-	-	-	2		x
	Man 02	5	Life Cycle Cost & Service Life Planning - Capital Cost Reporting	1	0		-	-	-	-	-	2		x
	Man 03	1	Legally harvested and traded timber				x	x	x	x	x			
	Man 03	2, 3	Responsible Construction Practices - Environmental Management	1	1							3		
	Man 03	4-6	Responsible Construction Practice - Sustainability Champion	1	0		-	-	-	-	-	4		x
	Man 03	7	Responsible Construction Practices - Considerate Construction *	2	2		-	-	-	1	1	3		
	Man 03	8, 9-14	Responsible Construction Practices - Monitoring Fit-Out site impacts	1	1		-	-	-	-	-	3		
	Man 03	8, 15-17	Responsible Construction Practices - Monitoring Fit-Out Site transport	1	0		-	-	-	-	-	3		x
	Man 04	1-4	Commissioning & Handover - Schedule & responsibilities	1	1		-	-	-	-	-	4		
	Man 04	5, 6	Commissioning & Handover - Building Services	1	1		-	-	-	-	-	5		
	Man 04	10, 11	Commissioning & Handover - Handover	1	1					C9	C9	5		

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	Identifier	Criteria	Title	Max	Pre- Ass Target	Current Target	Minimum Standards P	G	VG	E	O	RIBA Stage	Status Complete	Not Targeted
	Man 05	1-2	Aftercare - Support	1	1		-	-	-	-	-	6		
	Man 05	3	Aftercare - Seasonal Commissioning	1	1					1	1	5		
	Man 05	4-5	Aftercare - Post Occupancy Evaluation	1	1		-	-	-	-	-	6		
			TOTAL	20	10									
Health & Wellbeing	Hea 01	7-13	Visual Comfort -Internal & External Lighting	1	1		-	-	-	-	-	2		
	Hea 02	1	Indoor Air Quality - Minimising Sources of Air Pollution - IAQP	1	0		-	-	-	-	-	2		x
	Hea 02	2-5	Indoor Air Quality - Minimising Sources of Air Pollution -Ventilation	1	0		-	-	-	-	-	1		x
	Hea 02	13-14	Indoor Air Quality - Potential for Natural Ventilation	1	0		-	-	-	-	-	2		x
	Hea 04	1-4	Thermal Comfort - Modelling	1	1		-	-	-	-	-	1		
	Hea 04	5-8	Thermal Comfort - Adaptability	1	1		-	-	-	-	-	2		
	Hea 04	9-11	Thermal Comfort - Zoning & Controls	1	1		-	-	-	-	-	2		
	Hea 05	1-4	Acoustic Performance	2	2		-	-	-	-	-	1		
			TOTAL	9	6									
Energy	Ene 01	1	Energy - Reduction of Energy Use & Carbon	15	8		-	-		5	8	1		
	Ene 02	1-2	Energy Monitoring - Sub-metering of Major Energy Consuming Systems	1	1		-	-	1	1	1	3		
	Ene 02	3	Energy Monitoring - Sub-metering of High Energy Load and Tenancy Areas	0	0		-	-	-	-	-	3		x
	Ene 03	1-3	External Lighting	1	1		-	-	-	-	-	2		
	Ene 04	1-3	Low Carbon Design - Passive Design Analysis	1	0		-	-	-	-	-	2		x
	Ene 04	7, 8	Low Carbon Design - Feasibility Study	1	1		-	-	-	-	-	1		

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	Identifier	Criteria	Title	Max	Pre- Ass Target	Current Target	Minimum Standards P	G	VG	E	O	RIBA Stage	Status Complete	Not Targeted
	Ene 06	1	Energy Efficient Transport Systems - Energy Consumption	1	1		-	-	-	-	-	2		
	Ene 06	2-6	Energy Efficient Transport Systems - Energy Efficient Features	1	1		-	-	-	-	-	2		
			TOTAL	21	13									
Water	Wat 01	1-6	Water Consumption	5	2		-	1	1	1	2	1		
	Wat 02	1-4	Water Monitoring	1	1		-	C1	C1	C1	C1	3		
	Wat 03	1	Water Leak Detection	1	1		-	-	-	-	-	3		
	Wat 03	2	Water Leak Detection - Flow Control Devices	1	1		-	-	-	-	-	3		
	Wat 04	1-2	Water Efficient Equipment	1	1		-	-	-	-	-	2		
			TOTAL	9	6									
Materials	Mat 01	1-3	Environmental Impact of Materials	6	4		-	-	-	-	-	1		
	Mat 03	1	Responsible Sourcing - Timber	0	0		x	x	x	x	x	2		
	Mat 03	2	Responsible Sourcing - Sustainable Procurement Plan	1	1		-	-	-	-	-	2		
	Mat 03	3	Responsible Sourcing - Materials	3	0		1	1	1	1	1	2		x
	Mat 04	1-2	Insulation - Embodied Impact	1	1		-	-	-	-	-	2		
	Mat 06	1	Material Efficiency	1	0		-	-	-	-	-	1		x
			TOTAL	12	6									
Waste	Wst 01	1-3	Construction Waste Management	6	2		-	-	-	-	1	1		
	Wst 01	4	Construction Waste - Diversion from Landfill	1	1		-	-	-	-	-	1		
	Wst 06	1-2	Functional Adaptability	1	1		-	-	-	-	-	0		
			TOTAL	8	4									
Pollution	Pol 01	2	System compliancy				x	x	x	x	x	2		
	Pol 01	1, 3-5	Impact of Refrigerants	2	0		-	-	-	-	-	2		x
	Pol 01	6-7	Impact of Refrigerants - Leak Detection	1	0		-	-	-	-	-	2		x
	Pol 02	1-2	NOx Emissions	3	3		-	-	-	-	-	2		
	Pol 03a	1-3	Surface Water Run-Off - Flood Risk	2	2		-	-	-	-	-	1		

Version 2.4

	Identifier	Criteria	Title	Max	Pre- Ass Target	Current Target	Minimum Standards P	G	VG	E	O	RIBA Stage	Status Complete	Not Targeted
	Pol 04	1-5	Reduction of Night Time Light Pollution	1	1		-	-	-	-	-	2		
	Pol 05	1-5	Reduction of Noise Pollution	1	1		-	-	-	-	-	1		
			TOTAL	10	7									
Innovation	Man 03i	18	Responsible Construction Practices - Environmental Management	1	0		-	-	-	-	-			x
	Man 05i	6	Aftercare	1	1		-	-	-	-	-			
	Hea 02		Indoor Air Quality	2	0		-	-	-	-	-			x
	Ene 01		Reduction of Energy Use & Carbon Emissions	0	0		-	-	-	-	-			x
	Wat 01		Water Consumption	1	0		-	-	-	-	-			x
	Mat 01		Environmental Impact of Materials	1	0		-	-	-	-	-			x
	Mat 03		Responsible Sourcing of Materials	1	0		-	-	-	-	-			x
	Wst 01		Construction Site Waste Management	2	0		-	-	-	-	-			x
			TOTAL	9	1									