Da Vinci House, Saffron Hill

BREEAM Refurbishment [Part 3] 2014

Design Stage Planning Report

For

E&A (Saffron Hill) Limited

Sustainable Construction Services

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Revision record

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EXECUTIVE SUMMARY

Sustainable Construction Services has been appointed to conduct a BREEAM Assessment on the refurbishment of the Office unit at Da Vinci House, Saffron Hill. This is in order to meet the planning requirements set out by Camden London Borough Council. The Assessment is to be placed under the BREEAM Refurbishment and Fit-out scheme due to the extent of the works. The project is expected to reach BREEAM Very Good.

This report describes in detail the actions that have been completed by the design team members and explains the actions will be completed. When all actions are completed and the appropriate evidence is attained the project will be submitted to the BRE and, following the Quality Assurance process, a Design Stage Certificate will be attained.

This report may be used in the interim as evidence of the client's commitment to reach BREEAM Very Good on the refurbishment of the Office Units until the Design Stage Certificate is attained. In our professional opinion we are satisfied that the project is on track to reach BREEAM Very Good as per the planning requirement.

TABLE OF CONTENTS

Executive Summary 3

Table of Contents 4

Introduction 5

Management 11

Health and Wellbeing 19

Energy 23

Water 26

Materials 28

Waste 31

Pollution 33

INTRODUCTION

PURPOSE OF THIS DOCUMENT

Sustainable Construction Services has been commissioned to carry out a BREEAM [BRE Environmental Assessment Method] Fit Out Assessment [2014] Non-Domestic "Office" Building assessment of Da Vinci House, Saffron Hill on behalf of the E&A (Saffron Hill) Limited.

The scope of the guidance document is as follows:

- Introduction
- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Pollution

WHAT IS BREEAM

BREEAM [Building Research Establishment's Environmental Assessment Method] is the world's first sustainability rating scheme for the built environment and has contributed much to the strong focus in the UK on sustainability in building design, construction and use. BREEAM is now an international standard that is locally adapted, operated and applied through a network of international operators, assessors and industry professionals. Through its application and use BREEAM helps clients measure and reduce the environmental impacts of their buildings and in doing so create higher value, lower risk assets.

To date, BREEAM has been used to certify over 260,000 building assessments across the building life cycle and it is being applied in over 50 countries.

AIMS OF BREEAM

The aims of BREEAM are to:

- To mitigate the life cycle impacts of buildings on the environment
- To enable buildings to be recognised according to their environmental benefits
- To provide a credible, environmental label for buildings
- To stimulate demand and create value for sustainable buildings, building products and supply chains.

OBJECTIVES OF BREEAM

The objectives of BREEAM are to:

- To provide market recognition of buildings with a low environmental impact
- To ensure best environmental practice is incorporated in the planning, design, construction and operation of buildings and the wider built environment.
- To define a robust, cost effective performance standard surpassing that required by regulations.
- To challenge the market to provide innovative, cost effective solutions that minimise the environmental impact of buildings.
- To raise awareness amongst owners, occupants, designers and operators of the benefits and value of buildings with a reduced life cycle impact on the environment.
- To allow organisations to demonstrate progress towards corporate environmental objectives.

BREEAM has been developed to meet the following underlying principles:

- Ensure environmental quality through an accessible, holistic and balanced measure of environmental impacts.
- Use quantified measures for determining environmental quality.
- Adopt a flexible approach that encourages and rewards positive outcomes, avoiding prescribed solutions.
- Use robust science and best practice as the basis for quantifying and calibrating a cost effective and rigorous performance standard for defining environmental quality.
- Reflect the social and economic benefits of meeting the environmental objectives covered.
- Provide a common international framework of assessment that is tailored to meet the 'local' context including regulation, climate and sector.
- Integrate building professionals in the development and operational processes to ensure wide understanding and accessibility.
- Adopt third party certification to ensure independence, credibility and consistency of the label.
- Adopt existing industry tools, practices and other standards wherever possible to support developments in policy and technology, build on existing skills and understanding and minimise costs.
- Align technically and operationally with relevant international standards, including the suite of standards on the 'Sustainability of Construction Works' prepared by the European Committee for Standardisation Technical Committee CEN/TC 350.
- Engage with a representative range of stakeholders to inform ongoing development in accordance with the underlying principles and the pace of change in performance standards [accounting for policy, regulation and market capability].

BREEAM UK REFURBISHMENT AND FIT-OUT

The BREEAM UK Refurbishment and Fit-out scheme is a performance based assessment method and certification scheme for existing building refurbishment and fit-out projects.

The primary aim of BREEAM UK Refurbishment and Fit-out is to promote the delivery of sustainable refurbishment and fit-out, in order to mitigate the life cycle impacts of existing buildings on the environment in a robust and cost effective manner. This is achieved through integration and use of the scheme by clients and their project teams at key stages in the design and refurbishment / fit-out works process.

This enables the client, through the BREEAM Assessor and the BRE Global certification process, to measure, evaluate and reflect the performance of their refurbishment or fit-out project against best practice in an independent and robust manner.

As illustrated in Figure 2, the scheme provides a modular framework split up into four separate parts that are assessed according to the projects scope of work, with each part defining a set of individual measures and associated criteria that each project is assessed against. This allows projects to be assessed against the parts that are within the projects scope of influence, while also ensuring that similar project types are assessed against a comparable set of criteria.

This approach provides the scheme's users with a flexible means of measuring the environmental performance of their building and comparing it with other buildings across the property market. Backed with the assurance that independent third party certification of the assessment process provides.

The performance of a BREEAM assessed project is quantified by a number of individual measures and associated criteria stretching across a range of environmental issues, which highlights the full set of assessment issues that may be applied to a project. The performance of the project is then ultimately expressed as a single certified BREEAM rating.

BREEAM RATING BENCHMARKS

The BREEAM rating benchmarks for construction projects assessed using the 2014 RFO version of BREEAM are as follows:

Table – 1: BREEAM rating benchmarks

BREEAM Rating	Percentage Score
Outstanding	>85%
Excellent	>70%
Very Good	>55%
Good	>45%
Pass	>30%
Unclassified	<30%

The BREEAM rating benchmarks enable a client and all other stakeholders to compare the performance of a newly constructed building with other BREEAM rated buildings, and the typical sustainability performance of a stock of new non-domestic buildings in the UK.

In this respect each BREEAM rating broadly represents performance equivalent to:

- Outstanding: Less than top 1% of UK refurbishment or fit out projects [innovator]
- Excellent: Top 10% of UK refurbishment or fit out projects [best practice]
- Very Good: Top 25% of UK refurbishment or fit out projects [advanced good practice]
- Good: Top 50% of UK refurbishment or fit out projects [intermediate good practice]
- Pass: Top 75% of UK refurbishment or fit out projects [standard good practice]

An unclassified BREEAM rating represents performance that is non-compliant with BREEAM, in terms of failing to meet either the BREEAM minimum standards of performance for key environmental issues or the overall threshold score required to achieve at least a Pass rating.

MINIMUM STANDARDS

To maintain a flexible system BREEAM adopts a 'balanced score-card' approach to the assessment and rating of building performance. This means that, to achieve a particular level of performance the majority of BREEAM credits can be traded, i.e. non-compliance in one area can be off-set through compliance in another to achieve the target BREEAM rating.

However, to ensure that performance against fundamental environmental issues is not overlooked in pursuit of a particular rating, BREEAM sets minimum standards of performance in key areas e.g. energy, water, materials etc. It is important to bear in mind that these are minimum acceptable levels of performance and, in that respect they should not necessarily be viewed as levels that are representative of best practice for a BREEAM rating level.

To achieve a particular BREEAM rating, the minimum overall percentage score must be achieved and the minimum standards, detailed in Table - 2 below, applicable to that rating level complied with.

Table - 2: Minimum BREEAM standards for a Very Good / Excellent rated building

BREEAM Issue	Minimum Standard [Very Good]	Minimum Standard [Excellent]
Man 03 – Considerate Constructors	**N/A**	One Credit
Man 04 – Commissioning	**N/A**	One Credit [BUG]
Man 05 – Aftercare	**N/A**	One Credit Seasonal Commissioning
Ene 01 – Reduction of Energy Use and Carbon Emissions	**N/A**	Six Credits
Ene 02 – Energy Metering	**One Credit**	First Credit
Wat 01 – Water Consumption	**One Credit**	One Credit
Wat 02 – Water Monitoring	**Criterion 1 Only**	Criterion 1 Only
Mat 03 – Responsible Sourcing of Materials	**Criterion 1 Only**	Criterion 1 Only
Wst 03 – Operational Waste	**N/A**	One Credit

ENVIRONMENTAL SECTION WEIGHTINGS

Environmental weightings are fundamental to any building environmental assessment method as they provide a means of defining, and therefore ranking, the relative impact of environmental issues. BREEAM uses an explicit weighting system derived from a combination of consensus based weightings and ranking by a panel of experts. The outputs from this exercise are then used to determine the relative value of the environmental sections used in BREEAM and their contribution to the overall BREEAM score.

Table - 3 outlines the weightings for each of the seven environmental sections included in the BREEAM UK Refurbishment Parts 1,2 3 & 4 scheme.

Table – 3: BREEAM Environmental section weightings

Environmental section	Weighting [RFO]
Management	15.65%
Health & Wellbeing	17.73%
Energy	15.76%
Transport	8.21%
Water	7.3%
Materials	17.11%
Waste	7.7%
Pollution	10.53%
Total	100%
Innovation	10.00%

Each of the above environmental sections consists of a differing number of assessment issues and BREEAM credits. As a result, each individual assessment issue and credit varies in terms of its contribution to a building's overall score.

MANAGEMENT

MAN 01 PROJECT BRIEF AND DESIGN

Aim

To recognise and encourage an integrated design process that optimises building performance.

Action Required

Stakeholder consultation [project delivery]

E&A (Saffron Hill) Limited to provide **meeting minutes** that sets out a clear sustainability brief prior to Concept Design which sets out:

- Client requirements e.g. internal environmental conditions required
- Sustainability objectives and targets including target BREEAM rating, business objectives etc
- Timescales and budget
- List of consultees and professional appointments that may be required e.g. Suitably Qualified Acoustician etc
- Constraints for the project e.g. technical, legal, physical environmental

In defining the roles and responsibilities for each key phase of the project, the following must be considered:

- Particular installation and construction requirements/limitations
- Design and construction risk assessments e.g. CDM, Legionella risk assessment
- Legislative requirements e.g. building control notification, heritage requirements
- Procurement and supply chain
- Identifying and measuring project success in line with project brief objectives
- Occupiers budget and technical expertise in maintaining any proposed systems
- Maintainability and adaptability of the proposals
- Requirements for the production of project and end user documentation
- Requirements for commissioning, training and aftercare support.

MAN 02 LIFE CYCLE COST AND SERVICE LIFE PLANNING

Aim

To deliver whole life value from investment and promote economic sustainability by recognising and encouraging the use and sharing of life cycle costing and service life planning to improve design, specification and through-life maintenance and operation.

Action Required

Capital cost reporting

BASE Interiors to provide letter to confirm the **capital cost** for the project in pounds per square metre [£k/m^2].

MAN 03 RESPONSIBLE CONSTRUCTION PRACTICES

Aim

To recognise and encourage construction-sites which are managed in an environmentally and socially considerate, responsible and accountable manner.

Action Required

Pre-requisite

BASE Interiors to issue a **letter** that confirms they will ensure that all timber and timber based products used on the project will be 'Legally harvested and traded timber'.

Environmental management

BASE Interiors to provide an in-date ISO 14001 certificate confirming that they operate an environmental management system [EMS] covering their main operations.

BASE Interiors to issue a **letter** that confirms they will implement best practice pollution prevention policies and procedures on-site in accordance with Pollution Prevention Guidelines, Working at construction and demolition-sites: PPG6.

Sustainability Champion [construction]

BASE Interiors to issue a **letter** that confirms they will appoint a Sustainability Champion to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target[s], during the Construction, Handover and Close Out stages [as defined by the RIBA Plan of Works 2013, stages 5 and 6].

To do this the Sustainability Champion will ideally be site based or will visit the site regularly to carry out spot checks, with the relevant authority to do so and require action to be taken to address shortcomings in compliance.

The Sustainability Champion will monitor site activities with sufficient frequency to ensure that risks of non-compliance are minimised. They will report on progress at relevant project team meetings including identifying potential areas of non-compliance and any action needed to mitigate.

E&A (Saffron Hill) Limited to provide **an extract from the main contract** confirming BREEAM Very Good forms part of the contractual obligations

Considerate construction

BASE Interiors to issue a **letter** that confirms they will use the considerate construction scheme, and achieve a minimum of 35 points with a minimum score of seven in each of the five sections.

Monitoring of construction-site impacts

BASE Interiors to issue a **letter** that confirms they will assign responsibility to an individual[s] for monitoring, recording and reporting energy use, water consumption and transport data [where measured] resulting from all on-site construction processes [and dedicated off-site monitoring] throughout the build programme.

To ensure the robust collection of information, this individual[s] must have the appropriate authority and responsibility to request and access the data required. Where appointed, the Sustainability Champion could perform this role.

Energy consumption

BASE Interiors to issue a **letter** that confirms they will monitor and record data on principal constructor's and subcontractors' energy consumption in kWh [and where relevant, litres of fuel used] as a result of the use of construction plant, equipment [mobile and fixed] and site accommodation.

Report the total carbon dioxide emissions [total $kgCO_2$/project value] from the construction process via the BREEAM Assessment Scoring and Reporting tool.

Water consumption

BASE Interiors to issue a **letter** that confirms they will monitor and record data on principal constructor's and subcontractors' potable water consumption [m3] arising from the use of construction plant, equipment [mobile and fixed] and site accommodation.

Using the collated data report, the total net water consumption [m^3], i.e. consumption minus any recycled water use from the construction process via the BREEAM Assessment Scoring and Reporting tool.

Transport of construction materials and waste

BASE Interiors to issue a **letter** that confirms they will monitor and record data on transport movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum this must cover:

- Transport of materials from the factory gate to the building site, including any transport, intermediate storage and distribution.
- Scope of this monitoring must cover the following as a minimum: Materials used in major elements, including insulation materials; and Ground works and landscaping materials.
- Transport of construction waste from the construction gate to waste disposal processing/recovery centre gate. Scope of this monitoring must cover the construction waste groups outlined in the project's waste management plan.

Using the collated data, report separately for materials and waste, the total fuel consumption [litres] and total carbon dioxide emissions [$kgCO_2$ eq], plus total distance travelled [km].

MAN 04 COMMISSIONING AND HANDOVER

Aim

To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.

Action Required

Commissioning and testing schedule and responsibilities

BASE Interiors to issue a **letter** that confirms they will provide a **schedule** of commissioning and testing that identifies and includes a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services and control systems and testing and inspecting building fabric.

BASE Interiors to issue a **letter** that confirms all commissioning activities shall be conducted in accordance with, such as current Building Regulations, BSRIA and CIBSE guidelines and/or other appropriate standards, where applicable. Where a building management system [BMS] is specified, the following commissioning procedures must be carried out:

- Commissioning of air and water systems is carried out when all control devices are installed, wired and functional
- In addition to air and water flow results, commissioning results include physical measurements of room temperatures, off-coil temperatures and other key parameters as appropriate
- The BMS/controls installation should be running in auto with satisfactory internal conditions prior to handover
- All BMS schematics and graphics [if BMS is present] are fully installed and functional to user interface before handover
- The occupier or facilities team is fully trained in the operation of the system.

The **BASE Interiors** to provide a **formal letter** that confirms that an appropriate project team member[s] is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of E&A (Saffron Hill) Limited.

BASE Interiors to provide a copy of the **main programme of works** that confirms they will account for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works, allowing for the required time to complete all commissioning and testing activities prior to handover.

Commissioning building services

BASE Interiors to issue a **letter** that confirms they will appoint a specialist commissioning manager during the design stage with responsibility for:

- Undertaking design reviews and giving advice on suitability for ease of commissioning.
- Providing commissioning management input to construction programming and during installation stages.

- Management of commissioning, performance testing and handover/post-handover stages. Where there are simple building services, this role can be carried out by an appropriate project team member, provided they are not involved in the general installation works for the building services system[s].

Handover

BASE Interiors to issue a **letter** that confirms they will produce a **Building User Guide** [BUG] prior to handover for distribution to the building occupiers and premises managers.

The Building User Guide will provide easily accessible and understandable information relevant to the following stakeholders:

- The building's staff (or where relevant residents)
- The non-technical facilities management team/building manager
- Other building users, e.g. visitors/community users

The content of the guide will be specific to the building type and end users, but broadly should include information on the following:

- Overview of the building and its environmental strategy, e.g. energy/water/waste efficiency policy/strategy and how users should engage with/deliver the policy/strategy.
- Building services overview and access to controls, e.g. where to find them, what they control, how to operate effectively and efficiently etc.
- Pre-arrival information for visitors, e.g. access and security procedures/provisions
- Provision of, and access to, shared facilities
- Safety and emergency information/instructions
- Building related operational procedures specific to building type/operation, e.g. laboratories.
- Building related incident reporting/feedback arrangements
- Building related training information/links
- Provision of, and access to, transport facilities, e.g. public transport, cyclist facilities, pedestrian routes etc.
- Provision of, and access to, local amenities
- Re-fit, refurbishment and maintenance arrangements/considerations
- Links, references and relevant contact details

BASE Interiors to issue a **letter** that confirms they will prepare a **training schedule** for building occupiers/premises manager's, timed appropriately around handover and proposed occupation plans, which includes the following content as a minimum:

- The project's design intent
- The available aftercare provision and aftercare team main contact[s], including any scheduled seasonal commissioning and post occupancy evaluation
- Introduction to, and demonstration of, installed systems and key features, particularly building management systems, controls and their interfaces

- Introduction to the Building User Guide and other relevant building documentation, e.g. design data, technical guides, maintenance strategy, operations and maintenance [O&M] manual, commissioning records, log book etc.
- Maintenance requirements, including any maintenance contracts and regimes in place.

MAN 05 AFTERCARE

Aim

To provide post-handover aftercare to the building owner/occupants during the first year of occupation to ensure the building operates and adapts, where relevant, in accordance with the design intent and operational demands.

Action Required

Aftercare support

BASE Interiors to issue a **letter** that confirms they will ensure that there will be operational infrastructure and resources in place to provide aftercare support to the building occupier[s], which includes the following as a minimum:

- A meeting programmed to occur between the aftercare team/individual and the building occupier/management [prior to initial occupation, or as soon as possible thereafter] to: Introduce the aftercare team or individual to the aftercare support available, including the Building User Guide [where existing] and training schedule/content; Present key information about the building including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible.
- On-site facilities management training, to include a walkabout of the building and introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands.
- Initial aftercare support provision for at least the first month of building occupation, e.g. on-site attendance on a weekly basis to support building users and management [this could be more or less frequent depending on the complexity of the building and building operations].
- Longer term aftercare support provision for occupants for at least the first 12 months from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users/management.

The **E&A (Saffron Hill) Limited** to provide a **formal letter** confirming that there will be operational infrastructure and resources in place to co-ordinate the collection and monitoring of energy and water consumption data for a minimum of 12 months, once the building is occupied. This is done to facilitate analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and/or user behaviours accordingly.

Seasonal commissioning

BASE Interiors to issue a **letter and M&E specifications** that confirms they will undertake the following seasonal commissioning activities over a minimum 12-month period, once the building becomes substantially occupied:

Complex systems - Specialist Commissioning Manager:

- Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions [spring/autumn].
- Where applicable, testing should also be carried out during periods of extreme [high or low] occupancy.
- Interviews with building occupants [where they are affected by the complex services] to identify problems or concerns regarding the effectiveness of the systems.
- Re-commissioning of systems [following any work needed to serve revised loads], and incorporating any revisions in operating procedures into the operations and maintenance [O&M] manuals.

Post occupancy evaluation – additional if required

The **E&A (Saffron Hill) Limited** to provide a **formal letter** that confirms a commitment to carry out a post-occupancy evaluation [POE] exercise one year after initial building occupation. This is done to gain in-use performance feedback from building users to inform operational processes, including re-commissioning activities, and maintain or improve productivity, health, safety and comfort. The POE is carried out by an independent party and needs to cover:

- A review of the design intent and construction process [review of design, procurement, construction and handover processes].
- Internal environmental conditions [light, noise, temperature, air quality]
- Control, operation and maintenance
- Facilities and amenities
- Access and layout
- Other relevant issues
- Sustainability performance [energy/water consumption, performance of any sustainable features or technologies e.g. materials, renewable energy, rainwater harvesting etc.].

A review of the design intent and construction process [review of design, procurement, construction and handover processes].

Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering:

- Internal environmental conditions [light, noise, temperature, air quality]
- Control, operation and maintenance
- Facilities and amenities
- Access and layout
- Other relevant issues.

Sustainability performance [energy/water consumption, performance of any sustainable features or technologies e.g. materials, renewable energy, rain- water harvesting etc.].

The **E&A (Saffron Hill) Limited** to provide a **formal letter** that confirms a commitment to carry out the appropriate dissemination of information on the building's post-occupancy performance. This is done to share good practice and lessons learned and inform changes in-user behaviour, building operational processes and procedures, and system controls.

Appropriate dissemination includes communication to immediate stakeholders such as building occupants, managers and owners, plus externally through the production and publication of a building case study through one of the following means:

- Client's/building owner's own website, publicly available literature or press release
- Industry/sector or government/local authority sponsored website or information portals.

Relevant information for dissemination includes:

- A basic description of the project and building
- BREEAM rating and score
- The key innovative and low-impact design features of the building
- Project cost
- Project size: floor area, site area
- Facilities available for community use [where relevant]
- Any steps taken during the construction process to reduce environmental impacts, i.e. innovative construction management techniques
- Predicted and actual carbon dioxide emissions and/or Energy Performance Certificate rating.
- Outcomes of the post-occupancy evaluation study, to share lessons learned from the project including: Occupant feedback; and, energy and water consumption including renewable energy generation, level of rainwater/grey water provision.

HEALTH AND WELLBEING

HEA 01 VISUAL COMFORT

Aim

To ensure daylighting, artificial lighting and occupant controls are considered at the design stage to ensure best practice in visual performance and comfort for building occupants.

Action Required

Internal lighting

BASE Interiors to issue a **letter and M&E specifications** that:

- All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.
- Internal lighting in all relevant areas of the building is designed to provide an illuminance [lux] level appropriate to the tasks undertaken, accounting for building user concentration and comfort levels. This can be demonstrated through a lighting design strategy that provides illuminance levels in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard.
- For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 72 sections 3.3, 4.6, 4.7, 4.8 and 4.9.

External lighting

BASE Interiors to issue a **letter and M&E specifications** that:

- All external lighting is specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.

Zoning and occupant control

BASE Interiors (M&E) to provide **lighting drawings** which confirm internal lighting is zoned to allow for occupant control in accordance with the criteria below for relevant areas present within the building:

- In office areas, zones of no more than four workplaces
- Workstations adjacent to windows/atria and other building areas separately zoned and controlled
- Seminar and lecture rooms: zoned for presentation and audience areas
- Library spaces: separate zoning of stacks, reading and counter areas
- Teaching space or demonstration area
- Whiteboard or display screen
- Auditoria: zoning of seating areas, circulation space and lectern area
- Dining, restaurant, café areas: separate zoning of servery and seating/dining areas
- Retail: separate zoning of display and counter areas

- Bar areas: separate zoning of bar and seating areas
- Wards or bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces
- Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff.

HEA 02 INDOOR AIR QUALITY

Aim

To recognise and encourage a healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes.

Action Required

Indoor air quality [IAQ] plan

BASE Interiors (M&E) to provide an **indoor air quality plan** (SCS to provide a template for this), with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building. The indoor air quality plan must consider the following:

- Removal of contaminant sources
- Dilution and control of contaminant sources
- Procedures for pre-occupancy flush out
- Third party testing and analysis
- Maintaining indoor air quality in-use

HEA 04 THERMAL COMFORT

Aim

To ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building.

Action Required

Thermal modelling

BASE Interiors (M&E) to provide **a thermal comfort report** which confirms the following:

Thermal modelling has been carried out using software in accordance with CIBSE AM11 Building Energy and Environmental Modelling.

The software used to carry out the simulation at the detailed design stage provides full dynamic thermal analysis. For smaller and more basic building designs with less complex heating or cooling systems, an alternative less complex means of analysis may be appropriate [such methodologies must still be in accordance with CIBSE AM11].

The modelling demonstrates that for air conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard [where this sets a higher or more appropriate requirement/level for the building type].

The modelling demonstrates that for naturally ventilated/free running buildings:

- Winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design, Table 1.5; or other appropriate industry standard [where this sets a higher or more appropriate requirement/level for the building type].
- The building is designed to limit the risk of overheating, in accordance with the adaptive comfort methodology outlined in CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings.

For air conditioned buildings, the PMV [predicted mean vote] and PPD [predicted percentage of dissatisfied] indices based on the above modelling are confirmed.

Thermal zoning and controls

BASE Interiors (M&E) to provide an **email** that confirms that the thermal modelling analysis has informed the temperature control strategy for the building and its users.

BASE Interiors (M&E) to provide a **thermal comfort report** that confirms that the heating/cooling system has been zoned to efficiently and appropriately heat or cool different areas of the building. For example consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows.

BASE Interiors (M&E) to provide a **thermal comfort report** that confirms the degree of occupant control required for these zones, based on discussions with the end user considers: User knowledge of building services; Occupancy type, patterns and room functions [and therefore appropriate level of control required]; How the user is likely to operate or interact with the system[s], e.g. are they likely to open windows, access thermostatic radiator valves [TRV] on radiators, change air-conditioning settings etc; The user expectations [this may differ in the summer and winter] and degree of individual control [i.e. obtaining the balance between occupant preferences, for example some occupants like fresh air and others dislike drafts].

BASE Interiors (M&E) to confirm within the **thermal comfort report** how the proposed systems will interact with each other [where there is more than one system] and how this may affect the thermal comfort of the building occupants.

BASE Interiors (M&E) to confirm within the **thermal comfort report** the need or otherwise for an accessible building user actuated manual override for any automatic systems.

HEA 05 ACOUSTIC PERFORMANCE

Aim

To ensure the building's acoustic performance including sound insulation meet the appropriate standards for its purpose.

Action Required

A **suitably qualified acoustician** [i.e. a member of the Institute of Acoustics] should be appointed to provide an **acoustic report** that confirms compliance with following acoustic performance variables:

- Sound insulation
- Internal indoor ambient noise levels

Sound insulation

Acoustician to provide an **acoustic report** which confirms that the performance standards set out in Section 7 of BS 8233:2014.

BASE Interiors to issue a **letter** that confirms they will undertake a programme of pre-completion acoustic testing by a **compliant test body**.

Internal indoor ambient noise levels

Acoustician to provide an **acoustic report** which confirms that the indoor ambient noise level standards set out within Section 7 of BS 8233:2014.

BASE Interiors to issue a **letter** that confirms they will undertake a programme of acoustic measurements by a **compliant test body**.

Notes: For heavy weight roofs, or parts of the roof that are heavyweight, with a mass per unit area greater than 150kg/m2 [including those with sedum planting] that do not have any glazing or rooflights, calculations are not required, as such the credit can be awarded on a default basis of compliance.

ENERGY

ENE 01 REDUCTION OF ENERGY USE AND CARBON EMISSIONS

Aim

To recognise and encourage buildings designed to minimise operational energy demand, primary energy consumption and CO2 emissions.

Action Required

The **BASE Interiors** (M&E) to provide a completed **ENE01 Data collection form**.

ENE 02 ENERGY MONITORING

Aim

To recognise and encourage the installation of energy sub-metering that facilitates the monitoring of operational energy consumption.

Action Required

Sub-metering of major energy consuming systems

The **BASE Interiors** (M&E) to provide a **technical note** that confirms the estimated annual energy consumption of energy consuming system[s] proposed for the building.

Note: Typical systems that consume energy within a building include:

- *Space heating*
- *Domestic hot water heating*
- *Humidification*
- *Cooling*
- *Ventilation, i.e. fans [major]*
- *Pumps*
- *Lighting*
- *Small power*
- *Renewable or low carbon systems*
- *Controls*

The **BASE Interiors** (M&E) to provide **mechanical schematics** that confirm that energy meters have been installed on at least 90% of all mechanical systems [by annual energy consumption].

The **BASE Interiors** (M&E) to provide **electrical schematics** that confirm that energy meters have been installed on at least 90% of all electrical systems [by annual energy consumption].

The **BASE Interiors** (M&E) to provide an **M&E specification** that confirm that a Building Management System or Automatic Meter Reading System has been specified to monitor energy consumption throughout the building.

Note the end energy consuming uses must be identifiable to the building users, for example through labelling or data outputs.

Sub-metering of high energy load and office area or by floor-plate

The **BASE Interiors** (M&E) to provide a **mechanical schematic** and **electrical schematic** that confirms that an accessible energy monitoring and management system or separate accessible energy sub-meters with pulsed or other open protocol communication outputs to enable future connection to an energy monitoring and management system are provided, covering office area or by floor-plate.

ENE 06 ENERGY EFFICIENT TRANSPORTATION SYSTEMS

Aim

To recognise and encourage the specification of energy efficient transportation systems.

Action Required

Energy consumption

BASE Interiors to provide technical report/specification to confirm that lifts that are to be installed only rise at a speed of 0.15m/sec which will allow credits to be excluded.

OR

BASE Interiors (M&E) to provide a **technical report** which confirms that an analysis of the transportation demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators and/or moving walks.

BASE Interiors (M&E) to provide a **technical report** which confirms that the energy consumption has been calculated in accordance with BS EN ISO 25745 Energy performance of lifts, escalators and moving walks, Part 2: Energy calculation and classification for lifts [elevators], for at least two types of lift.

BASE Interiors (M&E) to provide a **technical report/specification** which confirms the lift with the lowest energy consumption is specified.

Note: A regenerative drive should only be considered where it produces an energy saving greater than the additional standby energy used to support the drives. Regenerative drives will typically be appropriate for lifts with high travel and high intensity use.

Energy efficient features

BASE Interiors (M&E) to provide a **technical report/specification** which confirms that for each lift, the following three energy efficient features have been specified:

- The lifts operate in a standby condition during off-peak periods. For example the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time.
- The lift car lighting and display lighting provides an average lamp efficacy, [across all fittings in the car] of > 55 lamp lumens/circuit Watt.
- The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency [VVVF] control of the drive motor.

WATER

WAT 01 WATER CONSUMPTION

Aim

To reduce the consumption of potable water for sanitary use in buildings from all sources through the use of water efficient components and water recycling systems.

Water consumption

BASE Interiors (the main contractor) to provide a **technical report/specification** that confirms the water consumption of the following sanitary fittings:

- WCs [litres] – recommended 3/6 dual
- Taps [litres/min] – recommended 5 l/m
- Showers [litres/min] – recommended 9 l/m

WAT 02 WATER MONITORING

Aim

To ensure water consumption can be monitored and managed, and therefore encourage reductions.

Action Required

Water monitoring

BASE Interiors (M&E) to provide a **technical report/specification/mechanical schematic** that confirms the specification of a water meter on the mains water supply to the building; this includes instances where water is supplied via a borehole or other private source.

BASE Interiors (M&E) to provide a **technical note** that confirms whether the kitchen area(s) are likely to consume 10% of building water. If so, then a sub-meter will be installed to monitor this.

M&E Specification to confirm*: Each meter [main and sub] has a pulsed or other open protocol communication output to enable connection to an appropriate utility monitoring and management system, e.g. a building management system [BMS], for the monitoring of water consumption.*

WAT 03 WATER LEAK DETECTION

Aim

To reduce the impact of water leaks that may otherwise go undetected.

Action Required

Leak detection system

BASE Interiors (M&E) to provide a **technical report/specification** that confirms that a leak detection system which is capable of detecting a major water leak on the mains water supply within the building and between the building and the utilities water meter shall be installed. The leak detection system must be:

- A permanent automated water leak detection system that alerts the building occupants to the leak OR an in-built automated diagnostic procedure for detecting leaks is installed.
- Activated when the flow of water passing through the water meter/data logger is at a flow rate above a pre-set maximum for a pre-set period of time.
- Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods.
- Programmable to suit the owner/occupiers' water consumption criteria.
- Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.

Flow control devices

BASE Interiors (M&E) to provide a **technical report/specification** that confirms that flow control devices that regulate the supply of water to each WC area/facility according to demand shall be installed [and therefore minimise water leaks and wastage from sanitary fittings].

Note: The following could be considered as types of flow control devices:

- A time controller, i.e. an automatic time switch device to switch off the water supply after a predetermined interval
- A programmed time controller, i.e. an automatic time switch device to switch water on and/or off at predetermined times.
- A volume controller, i.e. an automatic control device to turn off the water supply once the maximum pre-set volume is reached
- A presence detector and controller, i.e. an automatic device detecting occupancy or movement in an area to switch water on and turn it off when the presence is removed
- A central control unit, i.e. a dedicated computer-based control unit for an overall managed water control system, utilising some or all of the types of control elements listed above.

MATERIALS

MAT 01 LIFE CYCLE IMPACTS

Aim

To recognise and encourage the use of construction materials with a low environmental impact [including embodied carbon] over the full life cycle of the building.

Action Required

Life cycle impacts

BASE Interiors to complete Mat 01 table to confirm the presence of the following elements:

- Heat source, space heating, air-conditioning and ventilation
- Communication, security and control systems
- Electrical installations
- Fire and lighting protection
- Lift and Conveyor installations/systems
- Water and waste installations
- Sanitary installations

This table is also help to confirm the percentage of each element will be re-used within the building.

MAT 03 RESPONSIBLE SOURCING OF MATERIALS

Aim

To recognise and encourage the specification and procurement of responsibly sourced materials for key building elements.

Action Required

Pre-requisite

BASE Interiors to issue a **letter** that confirms they will ensure that all timber and timber based products used on the project shall be 'legally harvested and traded timber'

Sustainable procurement plan

BASE Interiors to issue a **Sustainable Procurement Plan.** The plans will set out a clear framework for the responsible sourcing of materials to guide procurement throughout a project and by all involved in the specification and procurement of construction materials. The plan may be prepared and adopted at an organisational level or be site/project specific and for the purposes of BREEAM compliance, will cover the following as a minimum:

- Risks and opportunities are identified against a broad range of social, environmental and economic issues. BS 8902:2009 Responsible sourcing sector certification schemes for construction products- Specification can be used as a guide to identify these issues.
- Aims, objectives and targets to guide sustainable procurement activities.
- The strategic assessment of sustainably sourced materials available locally and nationally. There should be a policy to procure materials locally where possible.
- Procedures are in place to check and verify that the sustainable procurement plan is being implemented/adhered to on individual projects. These could include setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate success.

Responsible sourcing of materials [RSM]

BASE Interiors (the main contractor) to provide a **completed copy of the Mat 03 table** that confirms the anticipated material [see list below] that makes up the following building elements:

- Ceiling [including ceiling finishes]
- Door/window
- Floor [including floor finishes]
- Insulation [Building Fabric]
- Internal partition/internal walls [including finishes]
- Structure, primary and secondary

BASE Interiors (M&E) to provide a **technical note/report** that confirms the anticipated material [see list below] that makes up the following building elements:

- Insulation [Building Services]
- Building service

2No. credits are to be achieved in this section to meet planning requirements.

*Note: Typical **materials** include:*

- *Timber/ timber-based products (TBP)*
- *Concrete/ cementitious (plaster, mortar, screed etc.)*
- *Metal*
- *Stone/ aggregate*
- *Clay-based (pavers, blocks, bricks, roof tiles, etc.)*
- *Gypsum*
- *Glass*
- *Plastic, polymer, resin, paint, chemicals and bituminous*
- *Animal fibre/skin, cellulose fibre*

Note: Any material type within a location/use category, other than Ceiling and Internal partitions/internal walls, which clearly accounts for less than 1m3 per 1,000m2 of gross internal

floor area, can be excluded from assessment. Fixings, adhesives, many finishing materials [but not all] and ironmongery would normally fall below this threshold.

Note: Material types within Ceiling and Internal partitions/internal walls location/use categories, which clearly account for less than 0.33 m3 per 1000 m2 of gross internal floor area, can be excluded from assessment.

MAT 04 INSULATION

Aim

To recognise and encourage the use of thermal insulation which has a low embodied environmental impact relative to its thermal properties

Action Required

Embodied impact

BASE Interiors to provide **a technical matrix,** which contains the following information:

- Building insulation element [note under BREEAM the external walls; roof and ground floor insulation needs to be assessed].
- Description of materials
- Green Guide Numbers & Ratings
- Area [SQM]
- Thickness of material in meters
- Thermal Conductivity

Note: an example of this matrix is included below;

Insulation	Description	Green Guide Number	Green Guide Ratings	Area [SQM]	Thickness [m]	Thermal Conductivity
Ground Floor						
External Walls						
Roof						

Insulation	Description	Green Guide Number	Green Guide Ratings	Volume [m^3]	Thickness [m]	Thermal Conductivity
Building services						

WASTE

WST 01 CONSTRUCTION WASTE MANAGEMENT

Aim

To promote resource efficiency via the effective management and reduction of construction waste.

Action Required

Pre-refurbishment Audit

BASE Interiors to provide a copy of **pre-refurbishment audit** (SCS have previously sent a template to be filled in) of all existing buildings, structures or hard surfaces within the scope of the refurbishment or fit-out zone is completed.

- Audit should be carried out at Concept design stage, prior to strip-out or demolition works in order to use the audit results to guide the design, consideration of materials that can be reused, and set targets for waste management and ensure all contractors are engaged in the process of maximising high grade reuse and recycling opportunities
- Audit to be carried out by a competent person who is independent of the project, has appropriate knowledge of building, waste and options
- Actual waste arisings to be compared with those forecast from the audit and barriers to achieving targets should be investigated

Audit must be referenced in resource management plan and cover

- Identification and quantification of the key materials where present
- Potential applications and any related issues for the reuse and recycling of key materials in accordance with the waste hierarchy
- Identification of local repressors or recyclers for recycling of materials
- Identification of overall recycling rate for all key materials
- Identification of reuse targets where appropriate
- Identification of overall landfill diversion rate for all key materials

Construction resource efficiency (waste levels)

BASE Interiors to issue a **copy of the Resource Management Plan** that confirms they will operate a Resource Management Plan [RMP] covering the non-hazardous waste related to on-site construction and dedicated off-site manufacture or fabrication [including demolition and excavation waste] generated by the building's design and construction.

BASE Interiors to issue a **copy of the Resource Management Plan** that confirms they will operate a Resource Management Plan [RMP] which confirms that the total construction waste including on-site construction and dedicated off-site manufacturer/fabrication [excluding demolition and excavation waste] meets or is lower than 4.5 m3 [1.2 tonnes] per 100 m2 gross internal floor area.

Note - Volume [m3] is actual volume of waste [not bulk volume].

Diversion of resources from landfill

BASE Interiors to issue a **copy of the Resource Management Plan** that confirms they will operate a Resource Management Plan [RMP] which confirms that at least 85% by volume [90% by tonnage] of non-hazardous construction [on-site and off-site manufacture/fabrication in a dedicated facility], demolition and excavation waste [where applicable] generated by the project shall be diverted from landfill.

BASE Interiors to issue a **copy of the Resource Management Plan** that confirms they will operate a Resource Management Plan [RMP] which confirms that waste materials will be sorted into separate key waste groups either on-site or through a licensed contractor for recovery.

WST 06 FUNCTIONAL ADAPTABILITY

BASE Interiors to provide a building-specific **functional adaptation strategy study** by the client and design team which includes recommendations for measures to be incorporated to facilitate future adaptation.

Note: SCS initial took minutes on this item and they will be written up formally and issued to the team for review.

POLLUTION

POL 01 IMPACT OF REFRIGERANTS

Aim

To reduce the level of greenhouse gas emissions arising from the leakage of refrigerants from building systems.

Action Required

Impact of refrigerant

BASE Interiors (M&E) to provide a **technical report/specification** that confirms that all systems [with electric compressors] comply with the requirements of BS EN 378:2008 [part 3] and where refrigeration systems containing ammonia are installed, the Institute of Refrigeration Ammonia Refrigeration Systems Code of Practice

BASE Interiors (M&E) to provide a **technical note** that confirms the following variables for each proposed refrigerant system:

- Refrigerant charge (kg)
- System operational lifetime (years)
- Refrigerant Recovery Efficiency factor (%)
- Annual Leakage Rate (units: % Refrigerant charge)
- Annual Purge Release factor (% Refrigerant charge)
- Annual Service Release (% Refrigerant charge)
- Probability factor for catastrophic failure (%Refrigerant charge loss/year)
- Global Warming Potential of refrigerant
- Cooling/heating capacity (kW).

POL 03 SURFACE WATER RUN-OFF

Aim

To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, thereby minimising the risk and impact of localised flooding on and off-site, watercourse pollution and other environmental damage.

Action Required

Flood resilience

BASE Interiors (the main contractor) to appoint a **Civil Engineer** to provide a **Flood Risk Assessment,** or provide a Flood Risk Assessment already provided for planning, which confirms the probability of flooding to the site based on all current and future sources of flooding from the following sources:

- Fluvial (rivers)

- Tidal
- Surface water: sheet run-off from adjacent land (urban or rural)
- Groundwater: most common in low-lying areas underlain by permeable rock (aquifers)
- Sewers: combined, foul or surface water sewers
- Reservoirs, canals and other artificial sources.

Medium/high flood risk

Where a site-specific FRA confirms the development is situated in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain [in accordance with current best practice national planning guidance].

The **Civil Engineer** to provide a **site plan** that confirms that the ground level of the building and access to both the building and the site, are designed [or zoned] so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located;

OR

The **Civil Engineer** to provide a **technical note/report** which confirms that the final design of the building and the wider site reflects the recommendations made by an appropriate consultant in accordance with the hierarchy approach outlined in section 5 of BS 8533:2011

POL 05 REDUCTION OF NOISE POLLUTION

Aim

To reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings.

Action Required

Reduction of noise pollution

Acoustician to provide an **acoustic report** which confirms that a noise impact assessment in compliance with BS 7445 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 or at a location where background conditions can be argued to be similar.

- The rating noise level resulting from the new noise source.

Note: The noise impact assessment must be carried out by a suitably qualified acoustic consultant, i.e. an individual who holds a recognised acoustic qualification and membership of the Institute of Acoustics.

Where the noise level from the proposed site/building, as measured in the locality of the nearest or most exposed noise-sensitive development, is a difference greater than +5dB during the day [07:00

to 23:00] and +3dB at night [23:00 to 07:00] compared to the background noise level the following remediation measures must be adopted.

Base Interiors (M&E) to provide a **technical report/specification** which confirms that the noise source[s] from the proposed site/building shall be no greater than +5dB during the day [07:00 to 23:00] and +3dB at night [23:00 to 07:00] compared to the background noise level.