Document

BREEAM Pre-assessment Stage 3 Update

Project

Elleray Hall Community Centre

Client

Richmond Upon Thames

Date

May 2021

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REVISION HISTORY

Suitability	Revision	Version Date	Summary of Changes	Changes marked
S2	P1	28/04/21	Issue for information	
S2	P2	20.05.21	Issue for information	Updated Ene 01 credits Changed 1 Pol 03 credit to Potential

DISTRIBUTION

This document has been distributed to:

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Andrew Gilbert	CCAR
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APPROVALS

This document requires the following approvals.

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Claudia Cioli	Sustainability engineer

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1.0 INTRODUCTION

The pre-assessment for the Elleray Hall Community Centre has been carried out based on the BREEAM 2018 New Construction Design Stage Criteria for Other – Assembly & Leisure buildings- applicable to new build projects. Please note that this pre-assessment includes a summary of the requirements for each credit but the BREEAM Technical Manual should be referred to for full details.

2.0 SCORING AND MANDATORY REQUIREMENTS

BREEAM requires the achievement of a minimum percentage score in order to achieve a particular rating. The new Community Centre for Elleray Hall is targeting *Excellent* for which a score of at least 70% is required. Based on input provided by the design team to date, the expected score is currently 72%, which would provide a small buffer to minimise the risks of credits not being achievable as the project progresses.

This diagram shows the different categories where credits need to be achieved, categories are all weighted differently.

The number of credits available for each environmental issue and the number targeted for this project are summarised in the graphs below.

In addition to the achievement of a minimum score, BREEAM also contains mandatory credits/requirements which MUST be achieved in order to obtain a particular rating. If these are not achieved, the required rating cannot be obtained regardless of the percentage score achieved. In BREEAM 2018, there are also 'pre-requisites' which do not carry a score, but must be achieved in order to award a credit and/or rating. A list of the mandatory credits is included in Section 5 of this document.

3.0 SUMMARY OF CREDITS

The expected score at the moment is **72%** which provides a buffer of 2% over the minimum 70% required for *Excellent.* The graphs below show the number of credits available for each category and the number of credits targeted at the moment.

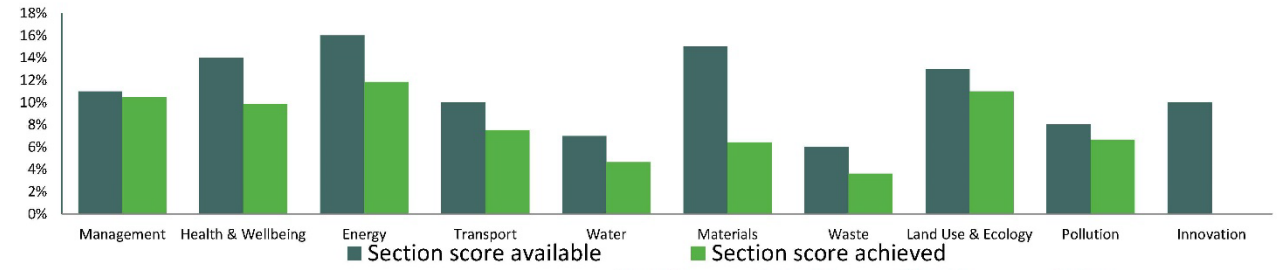
BREEAM UK New Construction 2018 Assessment Report: Rating & Key Performance Indicators

BREEAM® BREEAM® UK delivered by bre

Overall Building Performance

Building name	Elleray Hall
BREEAM rating	Excellent
Total Score	72.00%
Min. standards level achieved	Excellent level

Building Performance by Environment Section



Environmental Section	No. credits available	No. credits Achieved	% credits achieved	Section Weighting	Section Score
Management	21	20	95.24%	11.00%	10.47%
Health & Wellbeing	17	12	70.59%	14.00%	9.88%
Energy	23	17	73.91%	16.00%	11.82%
Transport	12	9	75.00%	10.00%	7.50%
Water	9	6	66.67%	7.00%	4.66%
Materials	14	6	42.86%	15.00%	6.42%
Waste	10	6	60.00%	6.00%	3.60%
Land Use & Ecology	13	11	84.62%	13.00%	11.00%
Pollution	12	10	83.33%	8.00%	6.66%
Innovation	10	0	0.00%	10.00%	0.00%

A total of 97 out of 141 credits are being targeted as detailed below.

Credit Name		Available	Targeted	Potential	Awarded	Responsibility
Management						
Man 01	Project brief and design	4	4	4		BREEAM AP, Project Manager, Assessor
Man 02	Life cycle cost and service life planning	4	4	4		Cost Consultant
	Elemental Cycle Cost (Stage 2)		Y			Cost Consultant
	Component Cycle Cost (Stage 4)		Y			Cost Consultant
	Capital Cost Reporting (Design Stage and Pos construction stage)		Y			Cost Consultant
Man 03	Responsible construction practices	6	4	6		Contractor
Man 04	Commissioning and handover	4	4	4		Contractor
Man 05	Aftercare	3	2	3		Contractor
Total		21	20	20	0	
Health & Wellbeing						
Hea 01	Visual Comfort	4	3	4		Lighting Designer, Architect, Daylight Consultant
	Glare Control		Y			Architect
	Daylight		Y			Architect / Daylight Consultant
	View Out		N			Architect
	Internal Zoning and controls		Y			Electrical Engineer, Lighting Designer
Hea 02	Indoor Air Quality	4	1	4		Architect / Mechanical Engineer
Hea 04	Thermal comfort	3	2	3		Mechanical Engineer
Hea 05	Acoustic Performance	3	3	3		Acoustician
Hea 06	Security	1	1	1		Suitable Qualified Specialist
Hea 07	Health and Safety Surroundings	2	2	2		Architect / Transport Consultant
Total		17	12	17	0	
Energy						
Ene 01	Reduction of energy use and carbon emissions	13	4	9		Mechanical Engineer
Ene 02	Energy Monitoring	2	2	2		Mechanical Engineer, Electrical Engineer
Ene 03	External Lighting	1	1	1		Electrical Engineer, Lighting Designer
Ene 04	Low carbon design	3	2	2		Mechanical Engineer
Ene 06	Energy Efficient Transportation Systems	2	2	2		Lift Engineer
Ene 08	Energy Efficient Equipment	2	2	2		Client / Building Occupier
Total		23	17	19	0	
Transport						
Tra 01	Transport Assessment and Travel Plan	2	2	2		Transport Consultant
Tra 02	Sustainable Transport Measures	10	7	9		Architect / Transport Consultant

Total		**12**	**9**	**11**		
Water						
Wat 01	Water Consumption	5	2	3		Mechanical Engineer, Architect
Wat 02	Water Monitoring	1	1	1		Mechanical Engineer
Wat 03	Water Leak Detection & Prevention	2	2	2		Mechanical Engineer
Wat 04	Water Efficient Equipment	1	1	1		Mechanical Engineer, Landscape Architect
Total		**9**	**6**	**7**	**0**	
Materials						
Mat 01	Life Cycle Impacts	7	0	3		Life Cycle Impact Specialist
	Life Cycle Impacts - Concept Design					Life Cycle Impact Specialist
	Life Cycle Impacts - Stage 4					Life Cycle Impact Specialist
Mat 02	Environmental Impacts from construction products - EPD	1	1	1		Architect / Contractor
Mat 03	Responsible Sourcing of Construction products	4	3	2		Contractor
Mat 05	Designing for durability and resilience	1	1	1		Architect / Structural Engineers/ MEP
Mat 06	Material efficiency	1	1	1		Architect / Structural Engineer / MEP / Contractor
Total		**14**	**6**	**8**	**0**	
Waste						
Wst 01	Construction Waste Management	5	2	3		Contractor
Wst 02	Use of recycled and sustainably sourced aggregates	1	0	1		Contractor
Wst 03	Operational Waste	1	1	1		Architect, Operation Waste Consultant
Wst 04	Speculative finishes (office buildings only)	N/A	N/A	N/A		N/A
Wst 05	Adaptation to climate change	1	1	1		Architect, Structural Engineer
Wst 06	Design for disassembly and adaptability	2	2	1		Architect
Total		**10**	**6**	**8**	**0**	
Land Use & Ecology						
LE 01	Site Selection	2	1	2		Architect
LE 02	Ecological Risks and Opportunities	2	2	2		Ecologist, Contractor
LE 03	Managing impacts on ecology	3	3	3		Ecologist
LE 04	Ecological change and enhancement	4	3	2		Ecologist
LE 05	Long term ecology management and maintenance	2	2	2		Ecologist, Contractor
Total		**13**	**11**	**13**	**0**	

Pollution						
Pol 01	Impact of Refrigerants	3	3	3		Mechanical Engineer, Contractor
Pol 02	Local Air Quality (NOx emissions)	2	2	2		Mechanical Engineer, Contractor
Pol 03	Flood and surface water management	5	3	5		Drainage / Flood Risk Consultant
Pol 04	Reduction of Night Time Light Pollution	1	1	1		Electrical Engineer, Lighting Designer
Pol 05	Reduction of noise Pollution	1	1	1		Acoustician, Contractor
Total		12	10	11	0	
Innovation						
Various Categories		10	0	0		
Total		10	0	0	0	
Total					0	

4.0 EARLY ACTIONS

Given the high rating aspiration for this project, it is important to secure as many credits as possible and to ensure that early actions and design considerations that should take place during feasibility and concept design stages are clearly identified and actioned at the right RIBA Stage.

The table below provides a summary of the early consultant appointment requirements and the actions to date.

Credit	Requirement	Confirmed Y/N Responsible party	Actions
Man 01	Appoint a BREEAM AP for the design stages, as outlined above	McBains	Report / evidence to be provided in due time
Man 01	Schedule consultation opportunities with 'interested parties'	CCA	Consultation process held from March 20th to April 7th- Feedback to be provided
Man 02	Commission an elemental Life Cycle Costing (LCC) study	Susesco	Elemental LCC report available
Hea 01	Daylight analysis and calculations	Paul Hearmon, Right of Light Consulting	Calculations to be provided in due time
Hea 02	Indoor air quality plan	CAA/ MEP McBains	IAQP to be provided
Hea 05	Appoint Acoustician – Carry out background noise survey	Applied Acoustic Design has been appointed	Existing background noise survey to be conducted – Report to be provided
Hea 06	Engage a Suitably Qualified Security Specialist'	CAA engaged Secure by Design scheme	Recommendations to be provided and CAA to demonstrate inclusion in designb
Ene 04	Produce a low and zero carbon feasibility study	McBains	Passive design analysis and LZC systems feasibility study included in the energy report prepared by McBains
Ene 04	Undertake a passive design analysis	McBains	Passive design analysis and LZC systems feasibility

Credit	Requirement	Confirmed Y/N Responsible party	Actions
			study will be included in the energy report prepared by McBains
Tra 01	Undertake a site specific transport assessment (or develop a travel statement) and draft travel plan	PMA Traffic Appointed	Pending 130
Mat 06	If not already produced in Stage 1, set targets and report on opportunities and methods to optimise RIBA Stage	CAA to provide	Pending
Wst 01	Produce a pre-demolition audit	TBC	
Wst 05	Conduct a climate change adaptation strategy appraisal	CAA to provide	Pending
Wst 06	Conduct a study to explore the ease of disassembly and functional adaptation potential of different design scenarios	CAA to provide	Pending
Tra 02	Conduct a review of the credits available under the BREEAM Tra 02 credit to maximise opportunities.	Covered under PMA Traffic appointment	DT input required
Le 02	Appoint of Suitable Qualified Ecologist	BSG Ecology appointed	Confirm ecological value of the site, identify and manage risks and capacity and feasibility for enhancement of the value of the site. Select measures to meet optimal ecological outcomes. Liaise with stakeholders to influence key planning decisions.

Next steps:

Gather evidence required for the next stage and close actions relevant to Stages 1-2 i.e appointments, relevant reports, meeting minutes, etc.

5.0 MANDATORY CREDITS:

Table 2.5 Minimum BREEAM standards by rating level

	Minimum standards by BREEAM rating level				
BREEAM issue	Pass	Good	Very Good	Excellent	Outstanding
Man 03 Responsible construction practices	None	None	None	One credit (responsible construction management)	Two credits (responsible construction management)
Man 04 Commissioning and handover	None	None	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)
Man 04 Commissioning and handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
Man 05 Aftercare	None	None	None	One credit (commissioning-implementation)	One credit (commissioning-implementation)
Ene 01 Reduction of energy use and carbon emissions	None	None	None	Four credits (Energy performance or Prediction of operational energy consumption*)	Six credits (Energy performance) and Four credits (Prediction of operational energy consumption*)
Ene 02 Energy monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Wat 01 Water consumption	None	One credit	One credit	One credit	Two credits
Wat 02 Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat 03 Responsible sourcing of construction products	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Wst 01 Construction waste management	None	None	None	None	One credit
Wst 03 Operational waste	None	None	None	One credit	One credit

6.0 APPENDIX

6.1 BREEAM Tracker

BREEAM Tracker 2018 (Other - Non Residential Institution - Community Centre)

Project	Elleray Hall			
Client	London Borough of Richmond	**Target**	**Excellent**	**70% Minimum Target**
Project No.	61301	**Current Score**	**72.00%**	
Date	20.05.21			
Revision	Rev 4			

2.0 - Credit Summary

Total Credits available	**141**
Total Credits targeted	**97**

Credit Name		Available	Targeted	Potential	Awarded	Responsibility	Comments / Risk
Management							
Man 01	Project brief and design	4	4	4		BREEAM AP, Project Manager, Assessor	
Man 02	Life cycle cost and service life planning	4	4	4		Cost Consultant	
	Elemental Cycle Cost (Stage 2)		Y			Cost Consultant	
	Component Cycle Cost (Stage 4)		Y			Cost Consultant	
	Cpaital Cost Reporting (Design Stage and Pos construction stage)		Y			Cost Consultant	
Man 03	Responsible construction practices	6	4	6		Contractor	Includes contractor's AP on site credit - Medium Risk
Man 04	Commissioning and handover	4	4	4		Contractor	Testing and Inspecting of Building Fabric - Thermographic Survey - High Risk
Man 05	Aftercare	3	2	3		Contractor	Letter required for Design Stage- **PO required** for post construction Stage
Total		**21**	**20**	**20**	**0**		
Health & Wellbeing							
Hea 01	Visual Comfort	4	3	4		Lighting Designer, Architect, Daylight Consultant	
	Glare Control		Y			Architect	
	Daylight		Y			Architect / Daylight Consultant	
	View Out		N			Architect	
	Internal Zoning and controls		Y			Electrical Engineer, Lighting Designer	
Hea 02	Indoor Air Quality	4	1	4		Architect / Mechanical Engineer	
Hea 04	Thermal comfort	3	2	3		Mechanical Engineer	
Hea 05	Acoustic Performance	3	3	3		Acoustician	
Hea 06	Security	1	1	1		Suitable Qualified Specialist	Security Needs assessment included in score
Hea 07	Health and Safety Surroundings	2	2	2		Architect / Transport Consultant	
Total		**17**	**12**	**17**	**0**		
Energy							
Ene 01	Reduction of energy use and carbon emissions	13	4	9		Mechanical Engineer	
Ene 02	Energy Monitoring	2	2	2		Mechanical Engineer, Electrical Engineer	
Ene 03	External Lighting	1	1	1		Electrical Engineer, Lighting Designer	
Ene 04	Low carbon design	3	2	2		Mechanical Engineer	
Ene 06	Energy Efficient Transportation Systems	2	2	2		Lift Engineer	
Ene 08	Energy Efficient Equipment	2	2	2		Client / Building Occupier	
Total		**23**	**17**	**19**	**0**		
Transport							

Tra 01	Transport Assessment and Travel Plan	2	2	2		Transport Consultant	
Tra 02	Sustainable Transport Measures	10	7	9		Architect / Transport Consultant	
Total		**12**	**9**	**11**			
Water							
Wat 01	Water Consumption	5	2	3		Mechanical Engineer, Architect	
Wat 02	Water Monitoring	1	1	1		Mechanical Engineer	
Wat 03	Water Leak Detection & Prevention	2	2	2		Mechanical Engineer	
Wat 04	Water Efficient Equipment	1	1	1		Mechanical Engineer, Landscape Architect	
Total		**9**	**6**	**7**	**0**		
Materials							
Mat 01	Life Cycle Impacts	7	0	3		Life Cycle Impact Specialist	
	Life Cycle Impacts - Concept Design					Life Cycle Impact Specialist	
	Life Cycle Impacts - Stage 4					Life Cycle Impact Specialist	
Mat 02	Environmental Impacts from construction products - EPD	1	1	1		Architect / Contractor	
Mat 03	Responsible Sourcing of Construction products	4	3	2		Contractor	
Mat 05	Designing for durability and resilience	1	1	1		Architect / Structural Engineers/ MEP	
Mat 06	Material efficiency	1	1	1		Architect / Structural Engineer / MEP / Contractor	
Total		**14**	**6**	**8**	**0**		
Waste							
Wst 01	Construction Waste Management	5	2	3		Contractor	Pre - demolition audit NOT included in score
Wst 02	Use of recycled and sustainably sourced aggregates	1	0	1		Contractor	
Wst 03	Operational Waste	1	1	1		Architect, Operation Waste Consultant	
Wst 04	Speculative finishes (office buildings only)	N/A	N/A	N/A		N/A	
Wst 05	Adaptation to climate change	1	1	1		Architect, Structural Engineer	
Wst 06	Design for disassembly and adaptability	2	2	1		Architect	
Total		**10**	**6**	**8**	**0**		
Land Use & Ecology							
LE 01	Site Selection	2	1	2		Architect	
LE 02	Ecological Risks and Opportunities	2	2	2		Ecologist, Contractor	
LE 03	Managing impacts on ecology	3	3	3		Ecologist	
LE 04	Ecological change and enhancement	4	3	2		Ecologist	
LE 05	Long term ecology management and maintenance	2	2	2		Ecologist, Contractor	
Total		**13**	**11**	**13**	**0**		
Pollution							
Pol 01	Impact of Refrigerants	3	3	3		Mechanical Engineer, Contractor	
Pol 02	Local Air Quality (NOx emissions)	2	2	2		Mechanical Engineer, Contractor	
Pol 03	Flood and surface water management	5	3	5		Drainage / Flood Risk Consultant	
Pol 04	Reduction of Night Time Light Pollution	1	1	1		Electrical Engineer, Lighting Designer	
Pol 05	Reduction of noise Pollution	1	1	1		Acoustician, Contractor	
Total		**12**	**10**	**11**	**0**		
Innovation							
Various Categories		**10**	**0**	**0**			
Total		**10**	**0**	**0**	**0**		

Total **0**

BREEAM Tracker 2018 (Non- Residential institution)

Project Elleray Hall - Community Centre
Client London Borough of Richmond
Project No. 61301
Date 20.05.21
Revision Rev 4

Credits Status
- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages
- Pre Planning
- Concept Design
- Tender

McBains

Current rating	Excellent
72.00%	70.00%

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
MANAGEMENT (8.33%)		Credits available	Base target	Optimum Target				
Man 01 - Project Brief and Design		**To optimise final building design through recognising and encouraging an integrated design process and robust stakeholder engagement.**						
Project Delivery Planning (1-3)	Credit awarded where, **prior to completion of the RIBA Stage 2 Concept Design**, the client, building occupier, design team and contractor contribute to the decision making process for the project. As a minimum this includes meeting to identify and define their roles, responsibilities and contributions during each phase of the project. Show that consideration was given to all topics as listed in the guidance (requirements 2a-h). The project team should demonstrate how the project delivery stakeholder contributions and outcomes of the consultation process have influenced or changed the Initial Project Brief, including if appropriate, the Project Execution Plan, Communication Strategy, and the Concept Design.	1	1	1	**Design and Post Construction Stage: Client:** to provide project directory and Project Executivon Plan, Project Brief.	PM	PP	
Stakeholder Consultation (Interested Party) (4-6)	**Prior to end of Stage 2 (Concept Design)** - relevant bodies consulted to influence the design on minimum content - consultation plan shows consultation at key milestones, feedback provision to relevant bodies - project team demonstrates how consultation has influenced or changed design at initial Concept Brief and Concept Design feedback to be given and received **by end of Stage 4 (Technical Design)**	1	1	1	**Design and Post Construction Stage: Client:** Consultation plan setting out the process and scope of the consultation. **Architect:** Details of how feedback has been addressed by end of Stage 3 (Stage D)	Client + Architect	PP	
Additionally for Education, Healthcare, Law Courts and Major Transportation Hubs building types (7)	An independent party carries out the consultation exercise. The Design Quality Indicator (DQI) and the Achieving Excellence Design Evaluation Toolkit (AEDET) could be used as methods to assess the design quality of buildings	N/A			Third party or a person or body internal to a party involved who shall not be involved in the issue in question, and shall not have conflicts of interests resulting from their position.	Client / Independent 3rd party	PP	
BREEAM AP - Concept Design (8-9)	**Prerequisite: The project team, including client, formally (contract, letter of appointment) agree strategic performance targets** Credit awarded where the BREEAM AP work with the project team, including the client, to consider the links between BREEAM issues and assist them in maximising the project's overall performance against BREEAM, from their appointment and throughout **Concept Design**, including: Monitor progress against the performance targets throughout all stages after their appointment where decisions critically impact BREEAM performance. Proactively identify risks and opportunities related to the achievement of the targets agreed Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team	1	1	1	**Design and Post Construction Stage: Client:** BREEAM AP appointment **BREEAM AP:** Meetings minutes, communication records, formal notes of conversations and other statements reporting on discussions related to performance targets and maximising performance Risks and opportunities documentation.	Client	PP	
BREEAM AP - Developed Design (11-12)	Credit awarded where the first BREEAM AP credit is achieved where the BREEAM AP work with the project team, including the client, to consider the links between BREEAM issues and to assist them in maximising the project's overall performance against BREEAM throughout **Developed Design.** Monitor progress against the performance targets agreed throughout all stages where decisions critically impact the specification and tendering process and the BREEAM performance. Proactively identify risks and opportunities related to the achievement of the targets agreed Provide feedback to the project team as appropriate, to support them in taking corrective actions and achieving their agreed performance targets. Monitor and, where relevant, coordinate the generation of appropriate evidence by the project team.	1	1	1	**Design and Post Construction Stage: Client:** BREEAM AP appointment **BREEAM AP:** Meetings minutes, communication records, formal notes of conversations and other statements reporting on discussions related to performance targets and maximising performance risks and opportunities documentation.	Client	PP	
Man 02 - Life cycle cost and service life planning		**To promote the business case for sustainable buildings and to deliver whole life value by encouraging the use of life cycle costing to improve design, specification, through-life maintenance and operation.**						
Elemental Cycle Cost (LCC) (1-3)	Two credits awarded where a competent person carries out an **outline, entire asset LCC plan** at **Concept Design - RIBA Stage 2** together with any design options appraisals in line with 'Standardised method of life cycle costing for construction procurement' PD 156865: 2008(6). 2 The elemental LCC plan provides an indication of future replacement costs over a period of analysis as required by the client (e.g.20, 30, 50 or 60 years); 2.b Includes service life, maintenance and operation cost estimates. Where the life expectancy of the building is not yet formally agreed (due to being at very early design stages), the default design life of 60 years should be used for modelling purposes 3 Demonstrate, using appropriate examples provided by the design team, how the elemental LCC plan has been used to influence building and systems design and specification to minimise life cycle costs and maximise critical value.	2	2	1	**Design and Post Construction Stage: Cost Constultant:** Elemental LCC Plan	Cost Consultant	PP	
Component Level LCC option appraisal (4-5)	Credit awarded where a **component LCC plan** is developed (in line with PD 156865: 2008) to include envelope, services, finishes and external spaces, where present, **before the end of RIBA Stage 4.** Demonstrate how the component level LCC plan has influenced building and systems design/specifications to minimise life cycle costs and maximise critical value.	1	1	1	**Design and Post Construction Stage: Cost Consultant:** Component level LCC options appraisal plan.	Cost Consultant	PP	
Capital Cost Reporting (6)	Credit awarded where the project team **reports the predicted capital cost for the building in £k/m2.** At the design stage of assessment, where the final information is not available, the credit can be awarded where the client provides the predicted capital cost, including contingencies, and commits to providing this information for the final stage of assessment. At the final stage, if the final capital cost is not known, the client's/cost consultant's best estimate should be provided	1	1	1	**Design Stage: Cost Consultant:** Predicted capital costs via BREEAM Projects. **Post Construction Stage: Cost Consultant:** Capital costs via BREEAM Projects.	Cost Consultant	PP	

BREEAM Tracker 2018 (Non- Residential institution)

Project Elleray Hall - Community Centre
Client London Borough of Richmond
Project No. 61301
Date 20.05.21
Revision Rev 4

Current rating **Excellent**

72.00% **70.00%**

Credits Status

- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages

- Pre Planning
- Concept Design
- Tender

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Man 03 - Responsible Construction Practices		**To recognise and encourage construction sites which are managed in an environmentally and socially considerate, responsible and accountable manner Construction Practices**						
Pre-requisite (1-2)	**PREREQUISITE FOR ALL RATINGS - Legal and sustainable timber** All timber and timber-based products used on the project is 'Legally harvested and traded timber' **PREREQUISITE FOR HEALTHCARE NHS BUILDINGS -**Any party who at any stage manages the construction site (e.g. the principal contractor, the demolition contractor) operates an Environmental Management System (EMS)	0	Y	Y			**T**	
Environmental Management (3-4)	All parties who at any stage manage the construction site (e.g. the principal contractor, the demolition contractor) **operate an EMS covering** their main operations. The EMS must: 3.a Be third party certified, to ISO 14001: 2015(10), EMAS (EU Eco-Management and Audit Scheme) or equivalent standard; OR 3.b In compliance with BS 8555: 2016(11) have: 3.b.i Appropriate structure 3.b.ii Reached implementation stage phase four 'implementation and operation of the environmental management system' 3.b.iii Completed defined phase audits one to four. 4 All parties who at any point manage the construction site (e.g. the principal contractor, the demolition contractor) i**mplement best practice pollution prevention policie**s and procedures on site in accordance with Working at construction and demolition sites: PPG6, Pollution Prevention Guidelines(12).	1	1	1	**Design Stage Client:** Contract / Appointment to include ISO 14001 or equivalent standard for EMS in the specification for contractor and other relevant party Working at construction and demolition sites: PPG6, Pollution Prevention Guidelines requirements for best practice pollution prevention policies and procedures on site **Post Construction Stage Contractor:** Copies of certificates or chain of custody evidence at PC stage. A copy of the principal contractors EMS/EMAS certificate or for BS 8555, evidence of their status, e.g. a copy of their phase 4 audit. Scheme certificate and compliance report.	Client / Contractor	**T**	
BREEAM AP - Site (6)	**Prerequisite:** Client and contractor formally agree performance target Credit awarded where a BREEAM AP is appointed to monitor the project to ensure compliance with relevant sustainability criteria and BREEAM targets during Construction, Handover and Close Out stages **(RIBA stages 5 and 6).** Monitor progress, identify risks, feedback to contractors and coordinate generation of evidence and provision to the assessor. Note that to achieve this, the BREEAM AP must be site based or visit the site regularly to carry out spot checks, with sufficient frequency. They will attend regular progress meetings and report progress against the BREEAM targets.	1	1	1	**Design Stage and Post Construction Stages BREEAM AP:** Meeting minutes, communications, contract with specific wording regarding the scope and responsibilities and targets	BREEAM AP	**T**	
Responsible Construction Management (7-9) (MANDATORY - 1 credit under CCS Scheme for Excellent)	One credit awarded when contractor achieves 7 responsible construction management items **(Table 4.1)** Two credits awarded when contractor achieves 7 +6 responsible construction management items **(Table 4.1)**	2	1	2	**Design and Post Construction Stages Client** to include in contractor's specifications **Contractor:** Company's policy and procedure documents (including environmental management, pollution prevention, security)	Client /'Contractor	**T**	
Monitoring of construction site impacts - Utility & Transport (10-22)	Assign responsibility to an individual for monitoring, recording and reporting energy use, water consumption and transportation data (where measured) resulting from all on-site construction processes (and dedicated off-site manufacturing) throughout the build programme. To ensure the robust collection of information, this individual must have the appropriate authority and responsibility to request and access the data required. Where appointed, the BREEAM AP could perform this role. FIRST CREDIT- **Utility consumption**. Achieve above and set targets for the site energy in kWh (and where relevant, litres of fuel used) & water consumption as a result of the use of construction plant, equipment (mobile and fixed) and site accommodation. Monitor and record data for the energy consumption Report the total carbon dioxide emissions (total kgCO_2/project value) and water consumption (minus recycled water)from the construction process via BREEAM Projects (for the purposes of potential future BREEAM performance benchmarking). SECOND CREDIT -Monitoring of **transport and waste**. Set targets for transportation movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site. As a minimum cover: 20.a transportation of materials from the point of supply to the building site, including any transport, intermediate storage and point of supply Monitor as a minimum: 20.a.i Materials used in major building elements (superstructure, substructure, external works and core building services) 20.a.ii Ground works and landscaping materials. 20.b transportation of construction waste from the construction gate to waste disposal processing or recovery centre gate. This monitoring must cover the construction waste groups outlined in the project's resource management plan. 21 Monitor and record data for the transportation movements 22 Using the collated data, report separately for materials and waste, the total transport-related carbon dioxide emissions (kgCO_2-eq), plus total distance travelled (km) via BREEAM Projects (for the purposes of potential future BREEAM performance benchmarking).	2	2	2	**Design and Post Construction Stages: Client** to include in contractor's specifications **Contractor:** As above or BRE's online environmental reporting tool, SMARTWaste, enables users to capture, monitor and target a project's on-site energy consumption and produce a CO_2 footprint, water consumption and responsible sourcing of timber. transportation and CCS data can also be collected	Client / Contractor	**T**	
Exemplary	Achieves all items of **Table 4.1**				Evidence as per criteria 7-9 above	Client	**T**	

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Client London Borough of Richmond
Project No. 61301
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Revision Rev 4

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72.00% **70.00%**

Credits Status
- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages
- Pre Planning
- Concept Design
- Tender

McBains

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Man 04 - Commissioning and Handover		**To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants**						
Commissioning and Testing Schedule and Responsibilities (1-5) (MANDATORY FOR VERY GOOD AND EXCELLENT)	Credit awarded where a **schedule of commissioning** is prepared which identifies a suitable timescale for commissioning and re-commissioning of all complex and non-complex building services, control systems and building fabric and the appropriate standards that all commissioning activities will be carried out in accordance with BSRIA/CIBSE abd or other appropriate standard. Exclude from the assessment any process or manufacture-related equipment specified as part of the project. However, include such equipment in cases where they form an integral part of the building HVAC services, such as some heat recovery systems Where a building management system (BMS) is specified: 3.a Carry out commissioning of air and water systems when all control devices are installed, wired and functional 3.b Include physical measurements of room temperatures, off-coil temperatures and other key parameters, as appropriate, in commissioning results 3.c The BMS or controls installation should be running in auto with satisfactory internal conditions prior to handover 3.d All BMS schematics and graphics (if BMS is present) are fully installed and functional to user interface prior to handover 3.e Fully train the occupier or facilities team in the operation of the system. 4. Appoint an appropriate project team member to monitor and programme pre-commissioning, commissioning and testing. Where necessary include re-commissioning activities on behalf of the client. 5 The principal contractor accounts for the commissioning and testing programme, responsibilities and criteria within their budget and the main programme of works. Allow the required time to complete all commissioning and testing activities prior to handover**.**	1	1	1	**Design and Post Construction Stages: Client** to confirm this requirement will be included within Contractor's specifications. **Contrator:** The main project programme/ commissioning programme should include air testing, thermographic survey, acoustic testing, commissioning and VOC testing	Client / Contractor	**T**	
Commissioning Design & Preparation (6-7)	6. Achieve criteria 1 to 5. 7 During the design stage, the client or the principal contractor appoints an appropriate project team member, provided they are not involved in the general installation works for the building services systems, with responsibility for: 7.a Undertaking design reviews and giving advice on suitability for ease of commissioning. 7.b Providing commissioning management input to construction programming and during installation stages. 7.c Management of commissioning, performance testing and handover or post-handover stages. **For buildings with complex building services and systems, this role needs to be carried out by a specialist commissioning manager (specialist contractor rather than a general sub- contractor). Must be appointed prior the start of construction**	1	1	1	**Design and Post Construction Stages: Client** to confirm this instruction will be completed **prior to the start of Construction.** Contract or appointment letter to contain responsibilities and programme		**T**	
Testing and inspecting building fabric (8-10)	8. Achieve criteria 1 to 5. 9 **Complete post-construction testing and inspection** to quality-assure the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths (this is through airtightness testing and a thermographic survey). A suitably qualified professional (professionals of ATTMA (Air Tightness Testing and Measurement Association) and UKAS accredited - thermographic surveys (Level 2 qualified)) undertakes the survey and testing in accordance with the appropriate standard. 10 Rectify any defects identified during post-construction testing and inspection prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building or element as defined at the design stage	1	1	1	**Design Stage Client** to confirm suitable QA air tightness and thermographic surveys will be instructed **Post Construction Stage:** Thermographic survey and testing report	Client	**T**	
Handover - Building User Guide (11-12) (MANDATORY FOR VERY GOOD AND EXCELLENT)	Prior to handover, develop **two building user guides** for the following users: 11.a A non-technical user guide for distribution to the building occupiers. 11.b A technical user guide for the premises facilities managers. A draft copy is developed and discussed with users first (where the building occupants are known) to ensure the guide is most appropriate and useful to potential users. 12 Prepare two training schedules timed appropriately around handover and proposed occupation plans for the following users: 12.a A non-technical training schedule for the building occupiers. 12.b A technical training schedule for the premises facilities managers.	1	1	1	**Design Stage: Client** to confirm contractor will be required to produce a compliant Building User Guide (BUG) **Post Construction Stage: Contractor:** BUGs	Client / Contractor	**T**	

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Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Man 05 - Aftercare		**To ensure the building operates in accordance with the design intent and operational demands, through providing aftercare to the building owner and occupants during the first year of occupation**						
Aftercare support (1-2)	Credit awarded aftercare support to the building occupiers is available by having in place operational infrastructure and resources. This includes as a minimum: 1.a A **meeting** between the aftercare support team or individual, and the building occupier or management team (prior to initial occupation, or as soon as possible thereafter) to: 1.a.i Introduce the **aftercare support available,** including the content of the building user guide (where it exists) and training schedule. 1.a.ii Present **key information about features of the building** including the design intent and how to use the building to ensure it operates as efficiently and effectively as possible. 1.b **On-site facilities management training** including: 1.b.i a walkabout of the building AND 1.b.ii introduction to and **familiarisation with the building system**s, their controls and how to operate them in accordance with the design intent and operational demands. 1.c Provide initial **aftercare support for at least the first month** of building occupation, e.g. weekly attendance on-site, to support building users and management (the level of frequency will depend on the complexity of the building and building operations). 1.d Provide **longer term aftercare support for occupiers for at least the first 12 months** from occupation, e.g. a helpline, nominated individual or other appropriate system to support building users and management. 2 Establish **operational infrastructure and resources to coordinate the collection and monitoring of energy and water consumption data for a minimum of 12 month**s, once the building is substantially occupied. This facilitates analysis of discrepancies between actual and predicted performance, with a view to adjusting systems and user behaviours accordingly. predicted performance.	1	1	1	**Design Stage** **Client** to confirm contractor will be required to provide compliant after care support (contract or appointment to include targets and requirements as listed so that it can be used as evidence) **Post Construction Stage** **Contractor**: to provide compliant aftercare support and training (report, plan, programme, etc) Commissioning records, reports and letter of appointment.	Client / Contractor	**T**	
Commissioning - Implementation (3)	**3. Complex systems - Specialist commissioning manager (over a minimum 12 month period after occupation)** 3.a.i Identify changes made by the owner or operator that might have caused impaired or improved performance. 3.a.ii Test all building services under full load conditions, i.e. heating equipment in mid-winter, cooling and ventilation equipment in mid-summer and under part load conditions (spring and autumn). 3.a.iii Where applicable, carry out testing during periods of extreme (high or low) occupancy. 3.a.iv Interview building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems. 3.a.v Produce monthly reports comparing sub-metered energy performance to the predicted one 3.a.vi Identify inefficiencies and areas in need of improvement. 3.a.vii Re-commission systems (following any work needed to serve revised loads), and incorporate any revisions in operating procedures into the operations and maintenance (O&M) manuals **Simple systems (naturally ventilated)** - external consultant/ facilities manager 3.b.i Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback. 3.b.ii Identify deficiencies and areas in need of improvement. 3.b.iii Re-commission systems and incorporate any relevant revisions in operating procedures into the O&M manuals.	1	1	1	**Design Stage** **Client** to confirm contractor will be required to provide compliant Seasonal Commissoning (contract or appointment to include targets and requirements as listed so that it can be used as evidence) **Post Construction Stage:** **Contractor / Client** Commissioning records, reports and letter of appointment (as above) For commissioning activities to be completed over a minimum 12-month period following (substantial) building occupation, evidence of the appointment of a commissioning manager and schedule of commissioning responsibilities which fulfils the BREEAM criteria are acceptable to demonstrate compliance.	Client / Contractor	**T**	
Post- Occupancy Evaluation (4-7)	4 Credit awared when the client or building occupier commits to carry out a **POE one year after** the building is substantially occupied. This gains comprehensive in-use performance feedback and identifies gaps between design intent and in-use performance. The aim is to highlight any improvements or interventions that need to be made and to inform operational processes. 5 An independent party carries out the POE covering: 5.a A review of the design intent and construction process (review of design, procurement, construction and handover processes). 5.b Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering: 5.b.i Internal environmental conditions (light, noise, temperature, air quality) 5.b.ii Control, operation and maintenance 5.b.iii Facilities and amenities 5.b.iv Access and layout 5.b.v Energy and water consumption 5.b.vi Other relevant issues, where appropriate 6 The independent party provides a report with lessons learned to the client and building occupiers. 7 The client or building occupier commits funds to pay for the POE in advance. This requires an independent party to be appointed to carry out the POE as described in criterion 5. Evidence of the appointment of the independent party and schedule of responsibilities which fulfils the BREEAM criteria are acceptable to demonstrate compliance.	1	1	1	**Design and Post Construction Stages** **The client or building occupier** commits funds to pay for the POE in advance. This requires an independent party to be appointed to carry out the POE as described in criterion 5. Evidence of the appointment of the independent party and schedule of responsibilities which fulfils the BREEAM criteria are acceptable to demonstrate compliance.	Client	**T**	
Total Management		21	20	20				

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HEALTH & WELLBEING (0.00%)								
Hea 01 - Visual Comfort		**To encourage best practice in visual performance and comfort by ensuring daylighting, artificial lighting and occupant controls are considered.**						
Control of glare from sunlight (1-3)	Credit awarded when areas at risk of glare using a **glare control assessment** have been identified. The glare control assessment also justifies any areas deemed not at risk of glare. 2 Where risk has been identified within a relevant building area (occupied continuously for 30 mins or more), a **glare control strategy** is used to design out the potential for glare. 3 The glare control strategy does not increase energy consumption used for lighting. This is achieved by: 3.a Maximising daylight levels in all weather, cloudy or sunny AND 3.b Ensuring the use or location of shading does not conflict with the operation of lighting control systems.	1	1	1	**Design and Post Construction Stages Architect & M+E:** Annotated drawings / Glare control strategy narrative As built	Architect +MEP	**CD**	
Daylighting -BUILDING SPECIFIC (4) **Exemplary Credits available**	Two credits awarded where calculations have been carried out which demonstrate that at least 80% of floor area in occupied spaces is adequately daylit. Average daylight factor = 2% AND a) or b) a) uniformity ratio, (at least 0.3) b) view of sky/room depth criterion met Greater daylight factor required in atria (i.e. 3% and uniformity ratio of 0.7) See Tables 5.1 to 5.5 for building specific requirements	1	1	1	**Design and Post Construction Stages Architect & M+E:** Annotated drawings Daylight calculations As built	Architect	**CD**	
View out (5-6)	Credit awarded when 95% of floor space in each relevant building area (inc. workstations, close work areas or areas where a view out is deemed beneficial to occupants of the space) are within 8m of a wall which has a window or permanent opening that provides an adequate view out. The window/opening must be equal to, or greater than, 20% of the surrounding wall area. Where the room depth is greater than the 8m requirement, compliance is only possible where the % of window/opening is ≥ the values in table 1.0 of BS 8206: Part 2	1		1	**Design and Post Construction Stages Architect:** Annotated drawings As built	Architect	**CD**	
Internal and external lighting levels, zoning and control (7-13) **Exemplary credits available**	Internal Lighting: 7 & 8 All internal is designed to provide illuminance levels and colouring rendering index as recommended by SLL Code for Lighting 2012, CIBSE LG 7 or other relevant industry standard for internal lighting 8 8.a Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this.) 8.b Any area where a surface is used to reflect light in to a space, such as uplighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this. 8.c Recommendations for direct lighting, ceiling illuminance, and average wall illuminance AND Lighting must be **appropriately zoned** and allow for occupant control. (no more than **4 workstation**s, central/ window desks, display & counter areas. External Lighting: complies with BS 5489-1:2013 and BS EN 12464-2:2014, where no **external lighting** is fittings are specified, credit is awarded on the basis of compliance with criteria 7-8 above Zoning & Occupant Control: Building and use specific requirements	1	1	1	**Design and Post Construction Stages M+E** to confirm inclusion within M & E specifications. Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this.) When surface used for reflecting light, design team calculation for are required. Where no external lighting is fittings are specified, credit is awarded on the basis of compliance with criteria 7-8. As built	M+E	**CD**	
Hea 02 - Indoor Air Quality		**To encourage and support healthy internal environments with good indoor air quality.**						
Prerequisite- Indoor Air Quality Plan (1)	A site specific Indoor Air Quality (IAQ) plan has been produced and implemented, to identify methods that can minimise indoor air pollution during occupation of the building by considering: a. Removal of contaminant sources b. Dilution and control of contaminant sources (Where present, consideration is given to the air quality requirements of specialist areas such as laboratories) c. Procedures for pre-occupancy flush out d. Third party testing and analysis e. Maintaining indoor air quality in-use				**Design and Post Construction Stages Client** to confirm contractor will be required to produce Air Quality Plan, include requirements as listed in contract and /or appointment letter	ARCH	**CD**	
Ventilation (2)	2. 'Credit awarded where the building has been designed to **minimise the concentration and recirculation of pollutants** in the building by providing fresh air in to the building in accordance with relevant standards for ventilation. 2.a **Ventilation pathways** are designed according to the releant standards (see methodology) the building's air intakes and exhausts at least 10m of horizontal distance apart and at least 10m horizontal distance from sources of external pollution (including the location of air exhausts from other buildings Where present, HVAC systems must incorporate **suitable filtration** to minimise external air pollution, as defined in BS EN 16798-3:2017(45). The specified filters should achieve supply air classification of at least SUP 2. 2.d Areas of the building subject to large and unpredictable or variable occupancy patterns have **carbon dioxide (CO_2) or air quality sensors specified** and: 2.d.i In mechanically ventilated buildings or spaces: **sensors are linked to the mechanical ventilation syste**m and provide demand-controlled ventilation to the space 2.d.ii In **naturally ventilated buildings** or spaces: sensors either have the ability to alert the building owner or manager when CO_2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows or roof vents 2.e For **naturally ventilated or mixed mode buildings,** the design demonstrates that the ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates in accordance with CIBSE AM10	1		1	**Design and Post Construction Stages M+E** to provide annotated drawings, ventilation strategy, specification As built	M+E	**CD**	
Emmission from construction products (3-4)	3. One credit awarded when three out of the five product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 or two credits if all roduct types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 Scope includes: Interior paints and coatings Wood- based products including wood flooring Flooring materials (inc. floor levelling compounds & resin flooring) Ceilling, wall and acoustic and thermal insulation materials Interior adhesives and sealants (inc. flooring adhesives) Where wood-based products are not one of three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as formaldehyde E1 class as a minimum.	2	1	2	**Design Stages Architect** to confirm which products will meet the standards and include within specifications. Evidence include manufaturer's literature, see Approved Alternative VOC Scheme (GN 22) **Post Construction Stage** Contractor to provide confirmation of materials specification	Architect	**T**	

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Post construction indoor air quality measurement (5-10)	VOC & Formaldehyde (post construction testing) 'Formaldehyde and Total VOC concentrations are measured post construction, **pre occupancy** - remedial works committed to in order to achieve formaldehyde (100µg/m3) in 30 minutes and Total VOC (500µg/m3) over 8 hours Testing to be inline with: a. BS ISO 16000-4: 2011 Diffusive sampling of formaldehyde in air b. BS ISO 16000-6: 2011 VOCs in air by active sampling c. BS EN ISO 16017-2: 2003 VOCs - Indoor, ambient and workplace air by diffusive sampling d. BS ISO 16000-3: 20116 Formaldehyde and other carbonyls in air by active sampling. Where levels are found to exceed these limits, the project team confirms the measures that have, or will be, undertaken in accordance with the IAQ plan, to reduce the TVOC and formaldehyde levels to within the above limits. The measured concentration levels of formaldehyde (µg/m³) and TVOC (µg/m³) are reported, via the BREEAM Scoring and Reporting Tool.	1		1	**Design Stage Client** to include testing requirements, targets and applicable testing standards in contract / appointment letter. **Post Construction Stage: Contractor** to arrange testing and report	Client / Contractor	**T**	
Examplary - VOC emmision from construction products	Three of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.12	+1			**Design and Post Construction Stages Client** to confirm which products will meet the standards and include within specifications. Evidence include manufaturer's literature, see Approved Alternative VOC Scheme (GN 22)	Client / Contractor	**T**	
Hea 04 - Thermal Comfort		**To ensure the building is capable of providing an appropriate level of thermal comfort.**						
Thermal Modelling (1-4)	**at Stage 3/ 4 (Stage D/E)** Credit can be awarded when a CIBSE AM11 **thermal modelling** has been carried out to prove thermal comfort in winter & summer in line with CIBSE Guide A (mechanically ventilated buildings) and CIBSE TM52 (natural ventilated buildings) 3 The modelling demonstrates that: 3.a 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 or level for the building type); or the thermal environment in occupied spaces meet the Category B requirements for PPD, PMV and local discomfort set out in Table A.1 of Annex A of ISO 7730:2005. 3.b For **naturally ventilated buildings:** 3.b.i 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 or level for the building type). 3.b.ii The building is designed to **limit the risk of overheating**, in accordance with the adaptive comfort methodology outlined in either of the following standards as appropriate; CIBSE TM52: The limits of thermal comfort: avoiding overheating in European buildings or CIBSE TM59: Design methodology for the assessment of overheating risk in homes. 4 For air-conditioned buildings, the PMV (predicted mean vote) and PPD (predicted percentage of dissatisfied) indices based on the above modelling are reported via the BREEAM assessment scoring and reporting tool.	1	1	1	**Design Stage Client** to instruct thermal modelling unless all areas will be air conditioned **M+E** TM 52 /TM 59 as relevant **Post Construction Stage M+E** Energy Performance Certificate	Client + M+E	**CD**	
Design for future thermal comfort (5-8)	**Achives 1-4 above** The thermal modelling demonstrates that the building design and services strategy can deliver the same thermal comfort levels in occupied spaces under a projected climate change environment: - pass overheating modelling using DSY (Design Summer Year) weather files, as follows: *Natural ventilation:* Time period: **2050**s Emissions scenario: Medium (A1B) 50th percentile DSY 2 and DSY 3 *Mechanically Ventilated / Mixed Mode Buildings* Time period: 2020s Emissions scenario: High (A1F1) 50th percentile DSY 2 and DSY 3 Where thermal comfort criteria are not met for the projected climate change environment, the project team should demonstrate how the building has been adapted, or is adaptable in future using passive design solutions to achieve above criteria. For air-conditioned buildings, the PMV and PPD indices are reported, based on the modelling	1	0	1	**Design Stage Client** to instruct thermal modelling unless all areas will be air conditioned **M+E** TM 52 /TM 59 as relevant **Post Construction Stage M+E** Energy Performance Certificate	Client + M+E	**CD**	
Thermal Zoning and Controls (9-11)	Controls + zoning **- 1st credit achieved,** thermal modelling has informed temp controls strategy Strategy for heating or cooling systems to address the following: 11.a Zones within the building, and how the building services could efficiently and appropriately heat or cool these areas. For example consider the different requirements for the central core of a building compared with the external perimeter adjacent to the windows. 11.b The degree of occupant control required for these zones, based on discussions with the end user (or alternatively building type or use specific design guidance, case studies, feedback) and considers: 11.b.i User knowledge of building services. 11.b.ii Occupancy type, patterns and room functions (and therefore appropriate level of control required). 11.b.iii How the user is likely to operate or interact with the systems, e.g. are they likely to open windows, access thermostatic radiator valves (TRV) on radiators, change air-conditioning settings etc. 11.b.iv 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 draughts). 11.c 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. 11.d The need or otherwise for an accessible building user actuated manual override for any automatic	1	1	1	**Design and Post Cosntruction Stages M+E** to thermal zoning and controls strategy bsed on thermal modelling **M+E** to confirm that Hea 4 (1st credit) regarding CIBSE Guide A and TM52 analyses has been achieved. As built	M+E	**CD**	

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Hea 05 - Acoustic Performance		**To ensure the building is capable of providing an appropriate acoustic environment to provide comfort for buildingusers.**						
Acoustic Performance (1-2)	Up to two credits Where For all building types, except Residential institutions (short term and long term stay), which have four credits available. 1 The building meets the appropriate acoustic performance standards and testing requirements defined in the relevant Tables 5.14 -5.18 . These tables define criteria for the acoustic principles of: 1.a Sound insulation 1.b Indoor ambient noise level 1.c Room acoustics. **OR** 3 credits for: 2 A suitably qualified acoustician (SQA) is appointed to define a bespoke set of performance requirements for all function areas in the building. The bespoke performance requirements use the three acoustic principles **Up to 4 credits for Residential Institutions (short term and long term stay)** The building meets the appropriate acoustic performance standards and testing requirements defined in Table 5.19. These tables define criteria for the acoustic principles of: 3.a Sound insulation 3.b Indoor ambient noise level 3.c Room acoustics.	3	3	3	**Design Stage** **Client** to include criteria and targets ina coustician appointment or contract. **Acoustician** to confirm compliance with BREEAM criteria as per the relevant tables by email or report **Post Construction Stage** **Acoustician** report & Annotated Drawings	Acoustician	**PP**	
Hea 06 - Security		**To encourage the planning and implementation of effective measures that provide an appropriate level of securityto the building and site.**						
Security of site & building (1-3)	1 A Suitably Qualified Security Specialist (SQSS) conducts an **evidence-based Security needs assessment** (SNA) during or prior to **Concept Design**. Consider: Design and layout (e.g. crime prevention through environmental design) Physical security (e.g. tested and certified security products) Technological security (e.g. Tested and certified alarms, automatic access control systems, CCTV). It may be necessary to also consider building and security systems' ability to resist cyber-related attack. This will be dependent on the types of systems to be incorporated into the project To identify attributes of the proposal, site and surroundings which may influence the approach to security for the development. Develop a set of security controls and recommendations for incorporation into the proposals. Those controls and recommendations shall directly relate to the threats and assets identified in the preceding SNA. Controls and recommendations shall be incorporated into proposals and implemented in the as-built development. Any deviation from those controls and recommendations shall be justified and agreed with the SQSS. **Exemplary level criteria** A compliant risk based security rating scheme has been used. The performance against the scheme has been confirmed by independent assessment and verification.	1	1	1	**Design Stage** **Client**: Appoint SQSS and include BREEAM requirements in contract letter of appointment **SQSS** SNA report and recommendations.Drawings and narrative inlcuding recommendations have been implemented SNA to include the following: 1. A visual audit of the site and surroundings, identifying environmental cues and features pertinent to the security of the proposed development. 2. Formal consultation with relevant stakeholders, including the local ALO, CPDA and CTSA (as applicable), in order to obtain a summary of crime and disorder issues in the immediate vicinity of the proposed development. 3. Identify risks specific to the proposed, likely or potential use of the building(s). 4. Identify risks specific to the proposed, likely or potential user groups of the building(s). 5. Identify any detrimental effects the development may have on the existing community. **Post Construction Stage:** **Architect** As build drawings and narrative inlcuding recommendations have been implemented	Client / SQSS / Architect	**PP**	
Hea 07 - Safe and Healthy surroundings		**To encourage the provision of safe access around the site and outdoor space that enhances the wellbeing of building users.**						
Safe access (1 -6)	Where external site areas form part of the assessed development the following apply: 1 Dedicated and safe cycle paths are provided from the site entrance to any cycle storage, and connect to offsite cycle paths where applicable. 2 Dedicated and safe footpaths are provided on and around the site providing suitable links for the following: 2.a The site entrance to the building entrance 2.b Car parks (where present) to the building entrance 2.c The building to outdoor space 2.d Connecting to off-site paths where applicable. 3 Pedestrian drop-off areas are designed off, or adjoining to, the access road and should provide direct access to other footpaths. Where vehicle delivery access and drop-off areas form part of the assessed development, the following apply: 4 Delivery areas are not accessed through general parking areas and do not cross or share the following: 4.a pedestrian and cyclist paths 4.b outside amenity areas accessible to building users and general public. 5 There is a dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking. 6 Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.	1	1	1	**Design Stage** **Architect** to provide annotated drawings **Post Construction Stage** **Architect** to provide as built drawings	Architect	**PP**	
Outside Space (7)	One credit awarded when there is an outside space providing building users with an external amenity area, of an appropriate size to provide enough amenity for the predicted number of building users during coffee or lunch breaks to gather, socialise, relax and connect with the natural environment. The space is predominantly intended for building staff, but can be used by other building users where relevant and beneficial to the building users. The outside space must: – be an outdoor landscaped area, for example a garden, balcony or terrace; the majority of the space should be open to the sky – have appropriate seating areas and be non-smoking, – be located to ensure it is accessible to all building users and avoids areas that will have disturbances from sources of noise (e.g. building services, car parks, busy roads, delivery areas etc.).	1	1	1	**Design Stage** **Architect** to provide annotated drawings **Post Construction Stage** **Architect** to provide as built drawings	Architect	**PP**	
Total Health and Wellbeing		17	12	17				

BREEAM Tracker 2018 (Non- Residential institution)

Project Elleray Hall - Community Centre
Client London Borough of Richmond
Project No. 61301
Date 20.05.21
Revision Rev 4

Current rating **Excellent**
72.00% **70.00%**

Credits Status
- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages
- Pre Planning
- Concept Design
- Tender

McBains

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
ENERGY (72.00%)								
Emissions **(Mandatory - 4 credits for Excellent)**		**To minimise operational energy demand, primary energy consumption and CO_2 emissions.**						
Energy performance (1)	Calculate an Energy Performance Ratio for New Construction (EPR NC). SBEM calculations to be undertaken. Where the tenant is unknown, Part L min. values to be used unless a Green Lease will be given to tenants committing them to better values. Ene 01 Calculator based on BRUKL figures	9	4	5	**Design Stage** **M+E** to undertake revised SBEM modelling according to new design - BRUKL document **Post Construction Stage** **M+E** Output documents from the approved software reflecting performance at the as-built stage of analysis. This must account for any changes to the specification during construction and the measured air leakage rate, ductwork leakage and fan performances (as required by building regulations).	M+E	**PP**	
Prediction of operational energy consumption (2-5)	Energy design workshop involving the relevant members of the design team focusing on operational energy performance Undertake additional energy modelling during the design and post-construction stage to generate predicted operational energy consumption figures Report predicted energy consumption targets by end use, design assumptions and input data (with justifications). Carry out a risk assessment to highlight any significant design, technical, and process risks that should be monitored and managed throughout the construction and commissioning process.	4	4	4	**Design Stage** **Client + Energy design team;** Workshop minutes, agreed outcomes. Predicted energy consumption values, design assumptions, input data and risk assessments reported Confirmation of suitably qualified energy modeller's qualifications and experience. **Post Construction Stages** As interim stage. Where changes to design assumptions and input data have occurred at post-construction stage, the energy modelling should be re-run to take into account those changes	M+E	**PP**	
Exemplary criteria (6-9)	Up to two credits - Beyond zero net regulated carbon The building achieves an EPR NC≥ 0.9 and zero net regulated CO2 emissions Energy generation from on-site and near-site LZC sources is sufficient to offset carbon emissions from regulated energy use plus a percentage of emissions from unregulated energy use. Three credits - Carbon negative The building is 'carbon negative'where > 10% (1 credit) > 50% (2 credits) > 100% (3 credits) of carbon emissions from unregulated (and regulated) energy use are offset by energy generated from on-site and near-site LZC	+5			**Design and Post Construction Stages** As above, plus evidence confirming: 1. The total carbon neutral energy generation (kWh/yr) 2. The source of the carbon neutral energy 3. Calculated estimate of energy consumption from unregulated systems or process (kWh/yr) (only required if confirming zero regulated carbon or carbon negative exemplary credits) 4.Calculated estimate of exported energy surplus (only required ifconfirming carbon negative status).	M+E	**PP**	
Post -Occupancy Stage (10-12)	Achieve maximum available credits in Ene 02 Energy monitoring. In addition, preschools, primary schools, law courts, prisons and multi-residential buildings must meet the requirements of the second credit for sub-metering of high energy load and tenancy areas. The client or building occupier commits funds to pay for the post occupancy stage. This requires an assessor to be appointed and to report on the actual energy consumption compared with the targets set in criterion 4 The energy model is submitted to BRE and retained by the building owner.	+2		+2	**Design and Post Construction Stages** The client's commitment to proceed to the post occupancy stage and report the energy consumption.	Consultant	**PP**	
Ene 02 - Energy Monitoring		**To encourage the installation of energy sub-metering to facilitate the monitoring of operational energy consumption. To enable managers and consultants post-handover to compare actual performance with targets in order to inform ongoing management and help in reducing the perfor**						
Sub-metering of end use categories (1-3) **(MANDATORY FOR VERY GOOD AND EXCELLENT)**	1 Install energy metering systems so that at l**east 90%** of the estimated annual energy consumption of each fuel is assigned to the end-use categories 2 Meter the energy consumption in buildings according to the total useful floor area: 2.a If the area is **greater than 1,000m²**, by end-use category with an appropriate energy monitoring and management system. 2.b If the area is **less than 1,000m²,** use either: 2.b.i an energy monitoring and management system or 2.b.ii separate accessible energy sub-meters with pulsed or other open protocol communication outputs, for future connection to an energy monitoring and management system 3 Building users can identify the energy consuming end uses, for example through labelling or data outputs.	1	1	1	**Design Stage** **M+E** to include compliant clause in the specification. Include requirements in the design and provide metering schematics/marked up drawings as supporting evidence. Identify all systems present and metering arrangements. Where systems are not metered, provide a suitable justification for the evidence. **Post Construction Stage** As built drawings. Justification of any changes	M+E	**T**	
Sub-metering of high energy load and tenancy areas (4-5)	4 Monitor a significant majority of the energy supply with: 4.a An accessible energy monitoring and management system for: 4.a.i tenanted areas or 4.a.ii relevant function areas or departments in single occupancy buildings. OR 4.b Separate accessible energy sub-meters with pulsed or other open protocol communication outputs for future connection to an energy monitoring and management system for: 4.b.i tenanted areas or 4.b.ii relevant function areas or departments in single occupancy buildings. 5. Sub-meter per floor plate in large single occupancy or single-tenancy buildings with one homogeneous function, for example hotel bedrooms, offices	1	1	1	**Design Stage** **M+E** to include compliant clause in the specification. Include requirements in the design and provide metering schematics/marked up drawings as supporting evidence. Identify all systems present and metering arrangements. Where systems are not metered, provide a suitable justification for the evidence. **Post Construction Stage** As built drawings. Justification of any changes	M+E	**T**	
Ene 03 - External Lighting		**To reduce energy consumption through the specification of energy efficient light fittings for external areas of the development.**						
External Lighting (1-3)	1 No external lighting (which includes lighting on the building, at entrances and signs). OR 2 External light fittings within the construction zone with: 2.a Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt 2.b Automatic control to prevent operation during daylight hours 2.c Presence detection in areas of intermittent pedestrian traffic. The above requirements **include** decorative & floodlighting. Emergency light fittings, including security lighting, that are also used for normal operation are assessed for this issue.	1	1	1	**Design Stage:** **M+E** to confirm inclusion within M & E specifications Annotated drawings **Post Construction Stage:** **M+E** to provide as built drawings	M+E	**T**	

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Credits Status

- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages

- Pre Planning
- Concept Design
- Tender

McBains

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Ene 04 - Low carbon design		**To encourage the adoption of design measures, which reduce building energy consumption and associated carbon emissions and minimise reliance on active building services systems.**						
Passive Design Analysis (1-8)	One credit - Passive Design analysis :Credit awarded where the first Hea 04 credit has been achieved and the design team conduct an analysis of building design by the end of **RIBA Stage 2,** to identify opportunities for passive design solutions to reduce energy consuming services. Implement passive design measures to reduce the total heating, cooling, mechanical ventilation, lighting loads and energy consumption in line with the passive design analysis findings. Quantify the reduced total energy demand and carbon dioxide (CO_2-eq) emissions resulting from the passive The review of passive measures should cover the following: 1. Site location 2. Site weather 3. Microclimate 4.Building layout 5. Building orientation 6.Building form 7. Building fabric 8. Thermal mass or other fabric thermal storage 9. Building occupancy type 10. Daylighting strategy 11. Ventilation strategy 12. Adaptation to climate change. One credit - Free cooling: 5 Achieve the passive design analysis credit. 6 Include a free cooling analysis in the passive design analysis carried out under criterion 2. 7 Identify opportunities for the implementation of free cooling solutions. 8 The building is naturally ventilated or uses any combination of the free cooling strategies. Examples include: night-time cooling, ground coupled air cooling, displacement ventilation (not linked to any active cooling), ground water cooling, surface water cooling, evaporative cooling, desiccant dehumidification and evaporative cooling using waste heat, and absorption cooling using waste heat.	2	1	2	**Design and Post Construction Stages M+E** analysis of building desig and possible options Thermal modelling calculations and startegy for **Hea 4** Results from a dynamic simulation model demonstrating the reduced energy demand and CO_2-eq emissions from the specified passive design measures	M+E	**PP**	
Low & Zero Carbon Technologies (9-12)	Credit awarded when an energy specialist conducts a feasibility study by the end of **RIBA Stage 2**, to establish the most appropriate recognised local (on-site or near-site) LZC energy sources for the development. A local LZC energy technology/technologies must be specified for the building/development in line with the recommendations of this feasibility study, and this results in a meaningful reduction in regulated CO2 emissions (as a guide, this should be **at least 5%).** A dynamic simulation model should quantify the reduced regulated carbon dioxide (CO_2-eq) emissions resulting from the feasibility study.	1	1	1	**Design and Post Construction Stages M+E** Results from a dynamic simulation model demonstrating reductions in CO_2-eq emissions from the specified low and zero carbon technology.	M+E	**PP**	
Ene 05 - Energy Efficient cold storage		**To encourage the installation of energy efficient refrigeration systems, in order to reduce operational greenhouse gas emissions resulting from the system's energy use NOT APPLICABLE**						
Refrigeration energy consumption (1-2)					**Design Stage M+E** Design and specification **Post Construction:** Refrigeration plant commissioning record.	M+E	**PP**	
Indirect greenhouses gas emmissions (3-4)					**Design and Post Construction Stages M+E**- Calculations by an appropriately qualified professional (e.g. a building services engineer), including calculations to justify the assumptions made and methodologies for savings in indirect greenhouse emissions. As built	M+E	**PP**	
Ene 06 - Energy Efficient Transportation Systems		**To encourage the specification of energy efficient transportation systems within buildings**						
Energy consumption (1)	1 For specified lifts, escalators or moving walks (transportation types): 1.a Analyse the transportation demand and usage patterns for the building to determine the optimum number and size of lifts, escalators or moving walks 1.b Calculate the energy consumption in accordance with BS EN ISO 25745 Part 2(124) or Part 3(125)for one of the following: 1.b.i At least two options for each transportation type (e.g. for lifts, hydraulic, traction or machine roomless (MRL)) OR 1.b.ii At least two options considering different system arrangements and control strategies. 1.c Consider the use of regenerative drives, subject to the requirements in Regenerative drives 1.d Specify the transportation system with the lowest energy consumption.	1	1	1	**Design Stage: 'Vertical Transportation Consultant** to provide Transportation demand and usage patterns Energy consumption calculation and comparisons **Post Construction Stage:** As built confirmation	ARCH	**PP**	
Energy efficient features (2-5)	2. Achieve above **Lift** 3 Specify the following three energy efficient features for each lift: 3.a A s**tandby conditio**n for off-peak periods 3.b The lift car lighting and display lighting provides an average luminous efficacy across all fittings in the car of **> 70 luminaire lumens** per circuit Watt 3.c Use of a **drive controller capable of variable speed,** variable-voltage, and variable-frequency (VVVF) control of the drive motor. 4 Specify **regenerative drives** where their use is demonstrated to save energy. **Escalators or moving walks** 5 Specify at least one of the following for each escalator or moving walk: 5.a A load-sensing device that synchronises motor output to passenger demand through a variable speed drive OR 5.b A passenger-sensing device for automated operation (auto walk), so the escalator operates in auto start mode when there is no passenger demand	1	1	1	**Design Stage: Vertical Transportation Consultant** system pecifications **Post Construction Stage:** As built confirmation	M+E	**PP**	

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Client London Borough of Richmond
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Revision Rev 4

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72.00% **70.00%**

Credits Status

- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages

- Pre Planning
- Concept Design
- Tender

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Ene 07 - Energy Efficient Laboratory systems		**To encourage laboratory areas that are designed to minimise operational energy and associated CO2 emissions TBC**						
Ene 08 - Energy Efficient Equipment		**To encourage installation of energy efficient equipment to ensure optimum performance and energy savings in operation.**						
Energy efficient equipment (1-3)	Credit awarded where the building's unregulated energy consuming loads and estimate of their contribution to the total annual has been identified (swimming pools, data centres, IT intensive operating areas, commercial size laundry facilities, domestic scale appliances) 2 Identify the systems or processes that use a significant proportion of the total annual unregulated energy consumption of the building. 3 Demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building. Table 6.5 lists some examples of significant contributors to unregulated energy consumption, and the associated criteria. If other significant contributors, not listed in the table, will be specified, the design team should justify how a meaningful reduction will be achieved for these contributors.	2	2	2	**Design Stage Client** to provide a letter committing to procure office equipment, other small powered equipment and supplementary electric heating with Energy Star ratings.	Client	**T**	
Total Energy		23	17	19				

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Stages
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McBains

Current rating	Excellent
72.00%	70.00%

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
TRANSPORT (5.83%)								
Tra 01 - Transport Assessment & Travel Plan		**To reward awareness of existing local transport and identify improvements to make it more sustainable.**						
Transport assessment & travel plan (1-5)	1 No later than **Concept Design** stage, undertake a site-specific transport assessment (or develop a travel statement) and draft travel plan, which can demonstrably be used to influence the site layout and built form; 2 The site-specific travel assessment (or statement) shall cover as a minimum: 2.a If relevant, travel patterns and attitudes of existing building or site users towards cycling, walking and public transport, to identify relevant constraints and opportunities. 2.b Predicted travel patterns and transport impact of future building or site users. 2.c Current local environment for pedestrians and cyclists, accounting for any age-related requirements of occupants and visitors. 2.d Reporting of the number and type of existing accessible amenities, see **Table 7.1** , within 500m of the site. 2.e Disabled access accounting for varying levels and types of disability, including visual impairment. 2.f Calculation of the existing public transport Accessibility Index (AI), see Methodology 2.g Current facilities for cyclists. 3 Following a transport assessment, develop a sitespecific travel plan that provides a long term management strategy which encourages more sustainable travel. The travel plan includes measures to increase or improve more sustainable modes of transport and movement of people and goods during the building's operation . 4 If the occupier is known, involve them in the development of the travel plan. 5 Demonstrate that the travel plan will be implemented and supported by the building's management in	2	2	2	**Design Stage: Transport Consultant** BREEAM Tra 01 tool to calculate AI, annotated drawings and narrative for access to amenities Travel Plan **Post Construction Stage:** As above **Client:** Demonstrate that the tarvel plan will be implemented and supported by building's management	Transport Consultant	**PP**	
Tra 02 - Sustainable Transport Measures		**To maximise the potential for local public, private and active transport through provision of sustainable transport measures appropriate to the site.**						
Pre- requisite (1)	Achieve criteria 3-5 in the Tra 01 Transport assessment and travel plan				**Design Stage: Transport Consultant** BREEAM Tra 01 tool to calculate AI, annotated drawings and narrative for access to amenities Travel Plan **Post Construction Stage:** As above **Client**: Demonstrate that the tarvel plan will be implemented and supported by building's management	Transport Consultant	**PP**	
Transport options implementation (2-3)	2 Identify the sustainable transport measures, including compliant car park spaces, **cycle storage (1 per 10 users - building dependent), showers (1 per 10 cycle storage) , lockers (as per cycle storage)** changing facilities and / or drying spaces. Amenities such as cash machine, food outlet, gym, etc within 500 mts - building specific Requirements may be halved in city centre locations. 3 Award credits according to the existing Accessible Index (AI) of the project, and the total number of points achieved for the options implemented **(Table 7.3).**	10	7	9	**Design Stage: Transport Consultant / Architect** Travel plan Annotate drawings **Post Construction Stage:** As above **Architect:** Annotated drawings - as built	Transport Consultant / Architect	**PP**	
Total Transport		12	9	11				

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- Potential Credit
- Not Applicable

Stages
- Pre Planning
- Concept Design
- Tender

McBains

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72.00%	70.00%

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
WATER (5.00%)								
Wat 01 - Water Consumption		**To reduce the consumption of potable water for sanitary use in new buildings through the use of water efficient components and water recycling systems.**						
Water Consumption (1-6) **(1 CREDIT MANDATORY FOR VERY GOOD)**	1 Use the BREEAM Wat 01 calculator to assess the efficiency of the domestic water-consuming components. 2 Use the standard Wat 01 method to compare the water consumption (litres/person/day) for the assessed building against a baseline performance. Award BREEAM credits based upon Table 8. Where it is not possible to use the standard method, complete the assessment using the alternative Wat 01 method . WCs Wash-hand basin taps Showers Urinals Kitchen taps: kitchenette 3 If a greywater or rainwater system is specified, use its yield in L/person/day to offset potable water demand from components. 4 If a greywater or rainwater system is specified and installed: 4.a Greywater systems in compliance with BS 8525-1:2010 Greywater systems - Part 1 Code of Practice 4.b Rainwater systems in compliance with BS EN 16941-1:2018 The water monitoring strategy used enables the identification of all water consumption for sanitary uses as assessed under Wat 01 (litres/person/day), if a post occupancy stage certification is sought **Prison and healthcare buildings specific requirements.**	5	2	3	**Design Stage:** **Architect + M+E** to confirm which sanitary fittings will be specified Wat 01 Calculator (or alternative method if applicable) Provide technical data sheets confirming flow rates and flush volumes as supporting evidence. **Post construction Stage:** As built drawings, narrative	Architect + M+E	**T**	
Wat 02 - Water Monitoring		**To reduce the consumption of potable water in new buildings through the effective management and monitoringof water consumption.**						
Water monitoring (1-6)	1 Specify a water meter on the mains water supply to each building. This includes instances where water is supplied via a borehole or other private source. 2 For water-consuming plant or building areas consuming **10% or more** of the building's total water demand: 2.a Fit easily accessible sub-meters OR 2.b Install water monitoring equipment integral to the plant or area. 3 For each meter (main and sub): 3.a Install a pulsed or other open protocol communication output AND 3.b Connect it to an appropriate utility monitoring and management system, e.g. a building management system (BMS), for the monitoring of water consumption. If there is no BMS system in operation at Post-Construction stage, award credits provided that the system used enables connection when the BMS becomes operational. 4 In buildings with swimming pools, or large water tanks and aquariums, fit separate sub-meters on the water supply of the above and any associated changing facilities (toilets, showers etc.) irrespective of their water consumption levels. 5 In buildings containing laboratories, fit a separate water meter on the water supply to any process or cooling loop for 'plumbed-in' laboratory process equipment, irrespective of their water consumption levels. 6. The water monitoring strategy used enables the identification of all water consumption for sanitary uses as assessed under Wat 01 (litres/person/day), if a post occupancy stage certification is sought.	1	1	1	**Design Stage:** **M+E** to include compliant clause in the specification. Review the areas present in the building and determine if any sub-metering is required. Provide drawings for the design stage assessment showing all meters. If for any reason it's not beneficial to sub-meter certain areas, M+E to provide written justification	M+E	**T**	
Wat 03 - Water Leak Detection and Prevention		**To reduce the consumption of potable water in new buildings through minimising wastage due to water leaks.**						
Leak detection system (1-2)	Credit awarded where a **leak detection system** capable of detecting a major water leak has been installed 1.a **On the utilities** water supply within the buildings, to detect any major leaks within the buildings AND 1.b **Between the buildings and the utilities water supply**, to detect any major leaks between the utilities supply and the buildings under assessment. 2 The leak detection system is: 2.a A **permanent automated** water leak detection system that alerts the building occupants to the leak OR an **inbuilt automated diagnostic procedure** for detecting leaks 2.b Activated when the flow of water passing through the water meter or data logger is at a flow rate above a pre-set maximum for a pre-set period of time. It does not necessarily require a system that directly detects water leakage along part or the whole length of the water supply system 2.c **Able to identify different flow** and therefore leakage rates, e.g. continuous, high or low level, over set time periods. Although high and low level leakage rates are not specified, the leak detection equipment installed **must have the flexibility** to distinguish between different flow rates to enable it to be programmed to suit the building type and owner's or occupier's **usage patterns.** 2.d **Programmable** to suit the owner's or occupier's water consumption criteria 2.e Where applicable, designed to avoid false alarms caused by normal operation of large water consuming plant such as chillers. Where there is physically no space for a leak detection system between the utilities water meter and the building, alternative solutions can be used, provided that a major leak can still be detected.	1	1	1	**Design and Post construction stages:** **M+E** to confirm inclusion within M & E specifications. **M+E** to provide drawings as supporting evidence.	M+E	**T**	
Flow control devices (3)	Credit awarded where flow control devices that regulate the water supply to each WC area or sanitary facility according to demand have been installed, in order to minimise undetected wastage and leaks from sanitary fittings and supply pipework..	1	1	1	**Design and Post construction stages:** **M+E** to confirm inclusion within M & E specifications, confirming where the compliant clauses are located. Provide drawings as supporting evidence.	M+E	**T**	
Wat 04 - Water Efficient Equipment (N/A)		**To reduce water consumption for uses not assessed under Wat 01 by encouraging specification of water efficient equipment.**						
Water efficient equipment (1-2)	Identify all water demands from uses other than those listed that could be realistically mitigated or reduced. (including Swimming pools, Recreational hot tubs and hydrotherapy pools, Equipment used for irrigation, Vehicle wash equipment, Project-specific industrial processes, Water filtration and treatment processes, Building services (e.g. cooling towers and humidification systems) **Where there is no water demand from uses other than domestic-scale, sanitary use components in the building, this issue is not applicable.** 2 Identify systems or processes to reduce the relevant water demand (criterion 1 above), and establish, through either good practice design or specification, a demonstrable reduction in the total water demand of the building.	1	1	1	**M+E** to confirm inclusion within M & E specifications i.e. drip fed irrigation, RWH for irrigation, or rely solely on precipitation	M+E	**T**	
Total Water		9	6	7				

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Stages
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McBains

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
MATERIALS (1.07%)								
Mat 01 - Environmental impacts from construction products - Building life cycle assessment (LCA)		**To reduce the burden on the environment from construction products by recognising and encouraging measures to optimise construction product consumption efficiency and the selection of products with a low environmental impact (including embodied carbon), over the life cycle of th**						
Superstructure - all building types (1-5)	**Comparison with the BREEAM LCA benchmark during Concept Design (office, industrial and retail buildings only)** **Superstructure (office, industrial and retail buildings (check specific notes)** 1 During the **Concept Design,** demonstrate the environmental performance of the building as follows: 1.a Carry out a building LCA on of the superstructure design using either the BREEAM Simplified Building LCA tool or an IMPACT Compliant LCA tool . 1.b **Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for** (that includes external material or product specifications). **Comparison with the BREEAM LCA benchmark during Technical Design (office, industrial and retail buildings only)** 2 During Technical Design, demonstrate the environmental performance of the building as follows: 2.a As criterion 1.a 2.b Submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design. Where a project has not achieved criterion 1 , criterion 2 may still be achieved. **Option appraisal during Concept Design (all building types)** 3 For office, industrial and retail building types, achieve criterion 1 (check specific notes) 4 During Concept Design, identify opportunities for reducing environmental impacts as follows: 4.a Carry out building LCA options appraisal of 2 to 4 significantly different superstructure design options (applicable to the Concept Design stage) 4.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Concept Design 4.c For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency). 4.d Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document. 4.e Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options. 4.f Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specifications). If the building LCA tool recognised by BREEAM and used for criteria 3 to 5 (and 6 to 9 , if pursued) is not an IMPACT Compliant LCA tool and criteria 1 to 2 are applicable, then the BREEAM Simplified Building LCA tool (or an IMPACT Compliant LCA tool) shall be used for criteria 1 to 2	6		2	**Design and Post Construction Stages: Architect -** The Mat 01/02 Results Submission Tool (updated for PC) The options appraisal summary document – Evidence that the LCA options appraisal summary document has been received by the design team and client (meeting minutes, letter of acknowledgement) – Evidence of how the LCA design options have informed the design decision-making process (e.g. meeting minutes, documented design development showing how the LCA options have affected the design).	Architect	**PP**	
	Options appraisal during Technical Design (all building types) 5 During Technical Design identify opportunities for reducing environmental impacts as follows: 5.a Carry out building LCA options appraisal of 2 to 3 significantly different superstructure design options (based on the selected Concept Design option and as applicable to the Technical Design stage, 5.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing superstructure during Technical Design) according to the methodology 5.c As criteria 4.c to 4.e above Where an options appraisal summary document was produced during Concept Design, update it to include the Technical Design options. 5.d Submit the Mat 01/02 Results Submission Tool to BRE at the end of Technical Design. Where a project has not achieved criteria 3 and 4, criterion 5 may still be achieved.							
Substructure and hard landscaping options appraisal during Concept Design - all building types (6-7)	6 Criteria 3 and 4 are achieved. 7 During Concept Design identify opportunities for reducing environmental impacts as follows: 7.a Carry out building LCA options appraisal of a combined total of at least six significantly different substructure or hard landscaping design options (at least two shall be substructure and at least two shall be hard landscaping). 7.b Using a building LCA tool that is recognised by BREEAM (as suitable for assessing substructure and hard landscaping during Concept Design) according to the methodology 7.c As criteria 4.c to 4.f above	1		1	**Design and Post Construction Stages: Architect -** As criteria 3 to 4.– The LCA options appraisal summary document includes substructure and hard landscaping according to the criteria.	Architect	**CD**	
Exemplary criteria - Core Building services options appraisals during Concept Design - all building types (8-9)	8 Criteria 3 to 4 are achieved. 9 During Concept Design identify opportunities for reducing environmental impacts as follows: 9.a Carry out building LCA options appraisal of at least 3 significantly different core building services design options. 9.b Use a building LCA tool that is recognised by BREEAM (as suitable for assessing core building services during Concept Design) according to the methodology (see Methodology below). 9.c As criteria 4.c to 4.f on the previous page	+1			**Design and Post Construction Stages: Architect–** As criteria 3 to 4 – The LCA options appraisal summary document includes core building services according to the criteria.	Architect	**CD**	
Exemplary criteria - LCA and LCC alignment - all building types (10-14)	10 Achieve criteria 3 to 5. 11 Achieve Elemental LCC plan and Component Level LCC options appraisal credits (Man 02 Life cycle cost and service life planning 12 Include design options appraised for criteria 3 to 4 (and 6 to 7 and 8 to 9, if pursued) during Concept Design in The elemental LCC plan 13 Include the design options appraised for criterion 5 during Technical Design in the 'Component level LCC option appraisal' (in Man 02 Life cycle cost and service life planning).	+1			**Design and Post Construction Stages: Architect:** As criteria 5 – The 'elemental LCC plan' and 'Component level LCC option appraisal; in issue Man 02 Life cycle cost and service life planning on page 45'.	Architect	**CD**	
Exemplary criteria - Third party verification - all building types (8-18)	15 Criteria 1 to 7 (as applicable to the building type) are achieved. 16 A suitably qualified third party (see Definitions on page 228) either carries out the building LCA work or verifies the building LCA work (if by others), and produces a report describing how they have checked the building LCA work accurately represent the designs under consideration during Concept Design and Technical Design with reference to the requirements of criteria 1 to 7 (and 8 to 14 if pursued). 17 For each LCA option, itemise in the report the checks made by the suitably qualified third party including, as a minimum, the quality requirements shown in Table 9.4 18 Include details of the suitably qualified third party's relevant skills and experience and a declaration of their third party independence from the project client and design team in the report.	+1			**Design and Post Construction Stages:** The **third party's** report: – Verifying that building LCAs accurately represent the designs under consideration. – Itemising the findings of their verification checks. – Evidence that the requirements of a Suitably qualified third party are fulfilled. **'Tables 9.4 to 9.7**	Qualified in the building LCA tool Completed at least three different building LCAs for paying customers in the last two years.	**CD**	

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Credits Status
- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages
- Pre Planning
- Concept Design
- Tender

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Mat 02 - Environmental impacts fromconstruction products - Environmental Product Declarations (EPD)		**To encourage availability of robust and comparable data on the impacts of construction products through the provision of EPD.**						
Specification of products with a recognised environmental product declaration - EPD (1-2)	1 Specify construction products with EPD that achieve a total EPD points score of at least 20 2 Enter the details of each EPD into the Mat 01/02 Results Submission Tool, including the material category classification. The Mat 01/02 Results Submission Tool will verify the EPD points score and credit award.	1	1	1	**Design Stage:** **Architect** to provide Mat 01/02 Tool **Post Construction Stage** **Contractor:** Copies of EPD certificates	Architect / Contractor	**CD**	
Mat 03 - Responsible Sourcing of construction products		**To facilitate the selection of products that involve lower levels of negative environmental, economic and social impact across their supply chain including extraction, processing and manufacture.**						
Pre- requisite (1)	All timber and timber based products to be 'legally harvested timber'							
Enabling Sustainable procurement (2)	construction products. The plan must: 2.a Be in place **before Concept Design.** 2.b Include s**ustainability aims, objectives and strategic targets** to guide procurement activities. Note: targets do not need to be achieved for the credit to be awarded but justification must be provided for targets that are not achieved. 2.c Include a requirement for assessing the potential to **procure construction products locally.** There must be a policy to procure construction products locally where possible. 2.d Include details of procedures in place to check and **verify the effective implementation** of the sustainable procurement plan. In addition, if the plan is applied to several sites or adopted at an organisational level it must: 2.e Identify the risks and opportunities of procurement against a broad range of social, environmental and economic issues following the process set out in BS ISO 20400	1	1	1	**Design Stage:** **Design Team:** Sustainable Procurement Plan as per requirements **Client** to confirm obligations will be placed on the contractor. **Post Construction Stage:** **Contractor** sources materials for the project in accordance with a the sustainable procurement plan, inline with BS 8902, local sourcing review, & monitoring procedures of purchasing process.	Design team / Client / Contractor	**CD**	
Measuring responsible sourcing (4)	3 Use the Mat 03 calculator tool and methodology to determine the number of credits achieved for the construction products specified or procured. Credits are awarded in proportion to the scope of the assessment and the number of points achieved, as set out in Table 9.10. Use Mat 03 Calculator Route 1. Where the quantity of a product is not known Route 2. Where the quantity of a product has been worked out It may be the case that across an assessment there will be a combination of routes for products.(only one route per product)	3	2	1	**Design Stage:** **Architect:** to complete MAT 3 calculator. This should ideally be undertaken before materials are procured. **Post Construction Stage:** **Contractor:** Completed copy of the Mat 03 Calculator tool. Evidence of level of responsible sourcing achieved for each construction product. For example, certificates.**Table 9.11** (list of applicable building elements (walls, floors etc.) and materials (bricks, metal, concrete etc.)		**T**	**Table 9.10 -9.11** for scope levels
Mat 05 - Designing for Durability & Resistance		**To reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape.**						
Material Durability & Resistance (1-4)	Credit awarded where the following is demonstrated that: **Protecting vulnerable parts of the building from damage** 1 Protection measures are incorporated into the building's design and construction to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring. These measures must provide protection against: 1.a Negative impacts of high user numbers in relevant areas of the building (e.g. corridors, lifts, stairs, doors etc.). 1.b Damage from any vehicle or trolley movements within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. 1.c External building fabric damage by a vehicle. Protection where parking or manoeuvring areas are within 1 metre of the building façade and where delivery areas or routes are within 2 metres of the façade, i.e. specifying bollards or protection rails. 1.d Potential malicious damage to building materials and finishes, in public and common areas where appropriate. **Protecting exposed parts of the building from material degradation** 2 Key exposed building elements have been designed and specified to limit long and short term degradation due to environmental factors. This can be demonstrated through one of the following: 2.a The element or product achieving an appropriate quality or durability standard or design guide, see Table 9.14 . If none are available, use BS 7543:2015(164) as the default appropriate standard OR 2.b A detailed assessment of the element's resilience when exposed to the applicable material degradation and environmental factors. 3 Include convenient access to the roof and façade for cost-effective cleaning, replacement and repair in the building's design. 4 Design the roof and façade to prevent water damage, ingress and detrimental ponding. Table 9.14 provides a list of relevant industry durability and quality standards that can be used to achieve compliance	1	1	1	**Design Stage:** **Architect** to review potentially vulnerable parts of the building and provide a marked up drawings showing implemented measures. Use Table 9.14 as checklist / guidance to identify the durability and resilience measures specified and provide supporting drawings/specifications. **Post Construction Stage:** **Architect** Provide as built drawings	Architect	**PP**	
Mat 06 - Material Efficiency		**To avoid unnecessary materials use arising from over specification without compromising structural stability, durability or the service life of the building.**						
Material efficiency (1-3)	1. 'At the **Preparation and Brief and Concept Design stages**, set targets and report on opportunities and methods to optimise the use of materials throughout all stages of the desing process 2 Develop and record the implementation of material efficiency, thorughout 2.a Developed Design 2.b Technical Design 2.c Construction. 3 Report the targets and actual material efficiencies achieved	1	1	1	**Design Stage: Design Team** - **Preparation & Brief** - dedicated report that sets out a clear framework to guide material efficiency activities throughout the design and construction of the project, sets out aims, objectives, targets, performance indicators, opportunities, constraints and responsibilities to guide material efficiency activities. **Concept Design -** Minutes of the workshops held.Identify efficiencies. Documentation demonstrating how the feedback from the workshop has been incorporated in the concept design of the project **Developed & Technical Design** - Report on deviations from previous stages and additional actions to be taken. Identify efficiencies. Documentation demonstrating the incorporation of the outcomes from the concept stage and additional actions **Construction -** Implement material efficiency measures eport on deviations from previous stages. Documented evidence of activity to further identify efficiencies at this stage, for example: meeting minutes, training events, waste reduction documentation etc	Architect + M+E +Structural Engineer	**PP**	
Total Materials		14	6	8				

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Stages
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Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Waste (1.67%)								
Wst 01 - Construction Waste Management		**To reduce construction waste by encouraging reuse, recovery and best practice waste management practices to minimise waste going to landfill.**						
Pre-demolition audit (1-3) B135	1 Complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications. The audit must cover the identification and quantification of the key materials where present on the project, potential applications and any related issues for the reuse and recycling of the key materials, opportunities for reuse and recycling within the same development, identification of local reprocessors or recyclers for recycling of materials, identification of overall recycling targets where appropriate, identification of reuse targets where appropriate, identification of overall landfill diversion rate for all key materials 1.a Be carried out at **Concept Design** stage by a competent person prior to strip-out or demolition works 1.b Guide the design, consider materials for reuse and set targets for waste management 1.c Engage all contractors in the process of maximising high grade reuse and recycling opportunities 2 Make reference to the audit in the resource management plan (RMP) 3 Compare actual waste arisings and waste management routes used with those forecast and investigate significant deviations from planned targets.	1		1	**Design Stage:** **Client** to produce a copy of the Resource Management Plan and, where relevant, pre-demolition audit.(or place obligation on relevant party) **Competent person** - to produce a pre-demolition audit as required **Post Construction Stage:** **Contractor** -RMP and Site Waste Management Plan to maximise high grade reuse and recycling	Client +competent person + contractor	**CD**	
Construction Resource Efficiency (4-5)	4 Prepare a compliant Resource Management Plan (RMP) covering: 4.a Non-hazardous waste materials (from on-site construction and dedicated off-site manufacture or fabrication, including demolition and excavation waste 4.b Accurate data records on waste arisings and waste management routes. 5 Meet or improve upon the benchmarks in **Table 10.1** for non-hazardous construction waste, excluding demolition and excavation waste **at least ≤ 13.3** (m3, actual not bulk) ≤ 11.1 tonnes for 1 credit	3	1	1	**Design Stage:** **Client** to produce a copy of the Resource Management Plan **Post Construction Stage:** **Contractor** -RMP and Site Waste Management Plan to maximise high grade reuse and recycling	Client / Contractor	**CD**	
Diversion of resources from landfill (6-7)	One credit awarded where 70% by volume/80% by tonnage of non-hazardous construction waste and 80% by volume/90% by tonnage of non-hazardous demolition waste generated by the development will be diverted from landfill and reused or recycled. Materials should be sorted into separate key waste groups, according to the waste streams generated by the scope of the works, either on or off-site.	1	1	1	**Design Stage:** **Client** to produce a copy of the Resource Management Plan **Post Construction Stage:** **Contractor** - RMP and Site Waste Management Plan to maximise high grade reuse and recycling	Client /Contractor	**T**	
Wst 02 - Use of recycled and sustainably sourced aggregates		**To encourage the use of more sustainably sourced aggregates, encourage reuse where appropriate and avoid waste and pollution arising from disposal of demolition and other forms of waste.**						
Pre-requisite (1)	1 If demolition occurs on site, to encourage the reuse of site-won material on site, complete a pre-demolition audit of any existing buildings, structures or hard surfaces in accordance with Wst 1							
Project sustainable aggregate points (2-6)	2 Identify all aggregate uses and types on the project (**Table 10.5 and Table 10.6**) 3 Determine the quantity in tonnes for each identified use and aggregate type. 4 Identify the region in which the aggregate source is located. 5 Calculate the distance in kilometres travelled by all aggregates by transport type. 6 Enter the information into the BREEAM Wst 02 calculator to calculate the Project Sustainable Aggregate points. The corresponding number of BREEAM credits will be awarded as shown in **Table 10.4.**	1		1	**Design Stage:** **Structural Engineer** to confirm whether this would be feasible Complete the Wst 2 calculator tool Provide Evidence suppoting info included in Wst 02.Uses can include road/paved surfaces, foundations, pipe bedding **Post Construction Stage:** As above	Struct. Eng	**PP**	**Table 10.5 and 10.6**
Wst 03 - Operational Waste		**To encourage the recycling of operational waste through the provision of dedicated storage facilities and space.**						
Operational waste - NHS and multiresidential apply (1-2)	Credit awarded where there is dedicated space(s) to cater for the segregation and storage of operational recyclable waste generated by the assessed building. The space must be clearly labelled, accessible and of a capacity appropriate to the building type, size, number of units and predicted volumes of waste. Where the building occupier is not known, a default size of At least 2m² per 1000m² of net floor area for buildings < 5000m² 2. A minimum of 10m² for buildings ≥ 5000m² 3. An additional 2m² per 1000m² of net floor area where catering is provided (with an additional minimum of 10m² for buildings ≥ 5000m²). The net floor area should be rounded up to the nearest 1000m² 2 For consistent and large amounts of operational waste generated, provide: 2.a Static waste compactors or balers; situated in a service area or dedicated waste management space 2.b Vessels for composting suitable organic waste OR adequate spaces for storing segregated food waste and compostable organic material for collection and delivery to an alternative composting facility 2.c A water outlet provided adjacent to or within the facility for cleaning and hygiene purposes where organic waste is to be stored or composted on site.	1	1	1	**Design Stage:** **Architect** to include requirements in the design and provide evidence to demonstrate compliant waste storage provision, including the area for recyclables, labelling and accessibility. Annotated drawings **Client** to confirm food waste storage procedures, predicted waste types and volumes to inform the waste storage design. **Post Construction Stage:** As built drawings	Architect / Client	**PP**	
Wst 04 - Speculative floor and ceiling finishes (OFFICES ONLY)		**To minimise the wastage associated with the installation of floor and ceiling finishes in lettable areas in speculative buildings where tenants have not been involved in their selection.**						
Speculative floor and ceiling finishes (1-2)	1 For tenanted areas, where the future occupant is not known and carpets or other floor or ceiling finishes are installed, these must be limited to a show area only. 2 Only install floor and ceiling finishes selected by the known occupant of a development. Alternatively, where only ceiling finishes and no carpets are installed, the building owner confirms that the first tenants will not be permitted to make substantial alterations to the ceiling finishes.	N/A	n/a		**Design and Post Construction Stages:** **Client** to confirm that floor finishes will not be changed when building users occupy	Client	**CD**	
Wst 05 - Adaptation to climate change		**To minimise the future need of carrying out works to adapt the building to take account of more extreme weather changes resulting from climate change and changing weather patterns.**						
Resilience of Structure, fabric, building services and renewables intallation (1-3)	1 Conduct a climate change adaptation strategy appraisal using: 1.a A systematic risk assessment to identify the impact of expected extreme weather conditions arising from climate change on the building over its projected life cycle. The assessment covers the installation of building services and renewable systems, as well as structural and fabric resilience aspects and includes: 1.a.i Hazard identification 1.a.ii Hazard assessment 1.a.iii Risk estimation 1.a.iv Risk evaluation 1.a.v Risk management. 2 Develop **recommendations** or solutions based on the climate change adaptation strategy appraisal, before or during **Concept Design**, that aim to mitigate the identified impact. 3 Provide an **update during Technical Design** demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing by the assessor.	1	1	1	**Design Stage:** **Architect** to develop a climate change adaptation strategy appraisal as required (examples provided in **Table 10.12**) **Post Construction Stage** **Architect** - Climate change adaptation strategy appraisal and implementation of solutions and measures reports Annotated drwawings	Architect	**PP**	**Table 10.12**

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Stages
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Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Wst 06 - Design for Disassembly & Adaptability		**To avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works as a result of changing functional demands and to maximise the ability to reclaim and reuse materials**						
Design for disassembly and functional adaptability - recommendations (1-2)	1 Conduct a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios by the end of **Concept Design.** Must consider feasibility, accesibility, versatility, adaptability, convertibility, expandability and refurbishment potential 2 Develop recommendations or solutions based on the study above during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation	1	1	1	**Design and Post Construction Stages: Architect:** Disassembly and functional adaptability study Implementation plan report **Contractor:** Building adaptability and disassembly guide.	Architect	**PP**	
Design for disassembly and functional adaptability - implementation (3-5)	**3 Achieve criteria 1 and 2** 4 Provide an **update, during Technical Design**, on: 4.a How the recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective. Omissions have been justified in writing to the assessor. Update to cover multiple building uses options, routes and methods for plant replacement, accesibility to plants, expansion options, ease of disassembly, durability, standardisation, etc 4.b Changes to the recommendations and solutions during the development of the Technical Design. 5 Produce a building adaptability and disassembly guide	1	1	1	**Design and Post Construction Stages: Architect:** Disassembly and functional adaptability study Implementation plan report **Contractor:** Building adaptability and disassembly guide.	Architect / Contractor	**PP**	Table 10.14 for examples
Total Waste		10	6	8				
Land Use and Ecology [illegible]								
LE 01 - Site Selection		**To encourage the use of previously developed and/or contaminated land and avoid land which has not been previously disturbed**						
Previously occupied land (1)	Credit awarded where at least **75%** of the footprint of the proposed development (including temporary site works) has been previously occupied by industrial, commercial or domestic buildings or fixed surface infrastructure.	1	1	1	**Design and Post Construction Stage: Architect** to provide drawings to confirm at least 75% of proposed development is on previously developed land		**PP**	
Contaminated land (2-3)	2 A contaminated land professional undertakes a site investigation, risk assessment and appraisal, which deems that land within the development footprint to be affected by contamination. This report identifies: 2.a The degree of contamination 2.b The contaminant sources or types 2.c The options for remediating sources of contamination which present an unacceptable risk. 3 The client or principal contractor confirms that a remediation strategy will be implemented, in line with the report .	1		1	**Design and Post Construction Stage: Ecologist / Contractor** to confirm from site investigations Copy of the remediation strategy and implementation Plan	Ecologist / Contractor	**PP**	
LE 02 - Ecological risks and oportunities		**To determine the existing ecological value associated with the site, including surrounding areas, and the risks and opportunities for ecological protection and enhancement as part of the project**						
Pre- requisite (1)	1 The client or contractor confirms compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.						**PP**	
Survey and Evaluation (2-5)	Foundation route (Route 1) SIMPLE SITES- CAN BE DONE BY A PROJECT TEAM MEMBER 2 The site is evaluated using the BREEAM Ecological Risk Evaluation Checklist (Guidance Note 34) confirming that the Foundation route can be used . Comprehensive route (Route 2) 3 A Suitably Qualified Ecologist (SQE) carries out a survey and evaluation for the site early enough to influence site preparation works, layout and, where necessary, strategic planning decisions (typically **Preparation and brief stage**) 4 The SQE's survey and evaluation determines the site's ecological baseline including: 4.a Current and potential ecological value and condition of the site and related areas within the Zone of Influence. 4.b Direct and indirect risks to current ecological value from the project. 4.c Capacity and feasibility for enhancement of the site's ecological value and, where relevant, areas within the Zone of Influence. 5 Recommendations and data collected from the survey and evaluation are shared with appropriate project team members to influence decisions made for activities during site preparation, design and construction works, which can support ecological features.	1	1	1	**Design and Post Construction Stage: Design Team / Ecologist** Route 1- Completed Guidance Note 34: BREEAM, CEEQUAL and HQM Ecology Risk Evaluation Checklist. Route 2 - A copy of the Ecological Survey and Evaluation document. Note: A phase 1 habitat assessment or other equivalent type of assessment can act as acceptable evidence as long as it can be shown that they cover the content of the assessment criteria.	Ecologist	**PP**	
Determining ecological outcomes (6-7b)	Determining ecological outcomes Foundation and Comprehensive routes (Routes 1 and 2) 6 Survey and evaluation criteria relevant to the chosen route (criterion 2 if following the Foundation route or Criteria 3–5 above for the Comprehensive route). 7 The project team liaise and collaborate with representative stakeholders early enough to influence key planning decisions (typically Concept Design stage), to: 7.a Identify the optimal ecological outcomes for the site. 7.b Identify, appraise and select measures to meet the optimal ecological outcomes for the site (criterion 7.a), in line with the mitigation hierarchy of action, according to the route being used (see Definitions):	1	1	1	**Design Stage & Post Construction Stage: Ecologist to provide completed Guidance note 34 and 40 and ecology report that** identify measures as follows and share recommendations to influence design. 1. Avoidance 2. Protection 3. Reduction or limitation of negative impacts 4. On site compensation and 5. Enhancement, considering the capacity and feasibility within the site, or where viable, offsite.	Ecologist	**PP**	
Exemplary credits available								

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Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
LE 03 - Managing Impacts on Ecology		**To avoid, or limit as far as possible, negative ecological impacts associated with the site and surrounding areas resulting from the project.**						
Pre-requisite (1)	LE 02's 'Survey and evaluation and Determining ecological outcomes' criteria have been achieved using the Foundation route (Route 1) or the Comprehensive route (Route 2).						**PP**	
Planning and Measures onsite (2-4)	Foundation and comprehensive route (Routes 1 and 2) 2 Further planning to avoid and manage negative ecological impacts on-site is carried out early enough to influence the concept design and design brief as well as site preparation planning (typically **Concept Design** stage). 3 On-site measures for managing negative ecological impacts during site preparation and construction are implemented in-practice (e.g. mitigation measures to protect existing ecological features) 4 Criteria 2-3 are based on input from the project team in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02 Ecological risks and opportunities	1	1	1	**Design Stage:** **Ecologist** to issue recommendations to avoid / manage negative impacts on site **Contractor** On site measures and management plan to mitigate ecological impact **Post Construction Stage Contractor:** Report / site visit confirming measures have been implemented	Ecologist / Contractor/ Client to place obligation on contractor	**PP**	
Managing negative impacts (5-6)	Foundation route (Route 1) (one credit) 5 Criteria 2 and 3 have been achieved. 6 Negative impacts from site preparation and construction works are managed according to the mitigation hierarchy and no overall loss of ecological value has occurred. Comprehensive route (Route 2) (up to two credits) 7 Criteria 2-4 have been achieved. 8 Negative impacts from site preparation and construction works have been managed according to the mitigation hierarchy, in line with the SQE's recommendations and, either: 8.a No overall loss of ecological value has occurred (two credits). OR where criterion 8.a is not possible: 8.b The loss of ecological value has been minimised (Minimising Loss) (one credit)	2	2	2	**Design Stage:** **Ecologist** to issue recommendations to manage negative impact from site preparation and construction. No overall loss of ecological value **Post Construction Stage:** **Ecologist** Reports /records of site visits confirming commendations to manage negative impact from site preparation and construction. No overall loss of ecological value	Ecologist / Contractor to implement	**CD**	no overall loss of ecological value
LE 04 - Ecological change and enhancement		**To enhance ecological value of the area associated with the site in support of local, regional and national priorities.**						
Pre- requisite (1-2)	1 Criterion 6 (for Foundation route) or 8 (for Comprehensive route) in LE 03 has been achieved. 2 The client or contractor confirms compliance is monitored against all relevant UK, EU or international legislation relating to the ecology of the site.				**Design Stage:** **Ecologist** to confirm in writing no negative impact from site preparation and construction **Post Construction Stage:** **Client / Contractor**: Confirms compliance monitored against relevant legislation	Client / Ecologist / Contractor	**T**	
Change and enhancement of ecology (3)	Foundation route (Route 1) only 3 Locally relevant ecological measures have been implemented that enhance the site's ecological value. The measures adopted are based on: 3.a Recommendations from recognised 'local' ecological expertise and specialist input and guidance. 3.b Input from the project team in collaboration with representative stakeholders and data collated as part of 'Determining ecological outcomes' in LE 02.	1	1	1	**Design Stage:** Recommendations within a report, to increase ecological value of site **Post Construction Stage:** Site visit confirming measures have been carried out in-practice, in line with SQE's recommendations.		**T**	
Ecological enhancement (4-5)	Comprehensive route (Route 2) only 4 Measures have been implemented that enhance ecological value, which are based on input from the project team and SQE in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02 . Measures are implemented in the following order: 4.a On site, and where this is not feasible, 4.b Off site within the Zone of Influence. 5 Data collated are analysed and where potentially valuable, provided to the local environmental records centres nearest to, or relevant for, the site.				**Design Stage:** **Ecologist** to provide recommendations within a report, to increase ecological value of site **Post Construction Stage:** **Ecologist:** Site visit confirming measures have been carried out in-practice, in line with SQE's recommendations.		**T**	
Change and enhancement of ecology (6)	Comprehensive route (Route 2) only 6 Up to three credits are awarded based on the change in ecological value occurring as a result of the project. This must be calculated in accordance with the process set out in GN36 - BREEAM, CEEQUAL and HQM Ecologt Calculation Methodology – Route 2. Credits are awarded in line with the Reward Scale table in GN36 where there are no residual impacts on protected sites or irreplaceable habitats.	3	2	3	**Design Stage:** **Ecologist:** Completed version of BREEAM Change in Ecological Value Calculator. **Post Construction Stage:** As-built evidence to show the changes in the BREEAM Change in Ecological Value Calculator have been carried out as planned, in line with SQE's recommendations	Ecologist / 'Architect	**T**	
Exemplary credits available								
LE 05 - Long Term ecological management and maintenance		**To secure ongoing monitoring, management and maintenance of the site and its habitats and ecological features, to ensure intended outcomes are realised for the long term.**						
Pre-requisite - Statutory obligations, planning and site implementation (1-2)	1 The client or contractor has confirmed that compliance is being monitored against all relevant UK, EU and international standards relating to the ecology of the site. 2 The following must be achieved, according to the route being assessed: 2.a Foundation route (Route 1) - Criterion 6 in LE 03 has been achieved. 2.b Comprehensive route (Route 2) - Criterion 8 in LE 03 has been achieved, and at least one credit under LE 04 for 'Change and Enhancement of Ecology' has been awarded.					Client + Ecologist	T	
Management and maintenance throughout the project - Routes 1-2 (3-4)	3 Measures have been implemented to **manage and maintain ecolog**y throughout the project. These measures are based on input from the project team in collaboration with representative stakeholders and data collated as part of the 'Determining ecological outcomes' in LE 02 . To ensure the optimal ecological outcomes agreed in LE 02 are met in-practice, these measures must monitor and review the effectiveness of the mitigation and enhancement measures in place for LE 03 & LE 04 to ensure they are implemented. 4 A section on Ecology and Biodiversity has been included as part of the tenant or building owner information supplied, to inform the owner or occupant of local ecological features, value and biodiversity on or near the site. This should include detailed management and maintenance plans as required by landscape and asset managers as well as relevant parts of the handover information for occupiers written in a format that encourages understanding and supportive behaviours.	1	1	1	**Design and Post Contruction Stages:** Evidence for LE 02, 03 & 03. **Client** to ensure a section on Ecology and Biodiversity has been included as part of the tenant or building owner information supplied as per requirements	Client + Ecologist+ Contractor	**T**	
Landscape and Ecology management plan (3-4)	5 A Landscape and Ecology Management Plan, or equivalent, has been developed in accordance with BS 42020:2013 Section 11.1 covering at least the first five years after project completion as a minimum and including: 5.a Actions and responsibilities of relevant individuals prior to handover 5.b The ecological value and condition of the site at handover and how this is expected to develop and change over time 5.c Identification of opportunities for ongoing alignment with activities beyond the development project, which support the aims of BREEAM's Strategic Ecology Framework 5.d Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts 5.e Clearly defined and allocated roles and responsibilities for delivering the plan 6 The landscape and management plan or similar will be updated to support maintenance of the ecological value of the site	1	1	1	**Design Stage:** **Client / Ecologist:** Landscape and Ecology Management Plan as per requriements **Post Construction Stage:** **Contractor** to implement L&E Management Plan	Client + Ecologist + Contractor	**T**	
Total Land Use and Ecology		13	11	13				

BREEAM Tracker 2018 (Non- Residential institution)

Project Elleray Hall - Community Centre
Client London Borough of Richmond
Project No. 61301
Date 20.05.21
Revision Rev 4

Current rating **Excellent**
72.00% **70.00%**

Credits Status
- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages
- Pre Planning
- Concept Design
- Tender

McBains

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
POLLUTION (0.44%)								
Pol 01 - Impact of Refrigerants		**To reduce the level of greenhouse gas emissions arising from the leakage of refrigerants from the building.**						
No refrigerant use (1)	Where the building does not require the use of refrigerants whithin its installed plants / systems	+3			**Design and Post Construction Stages: M+E** to include within M & E specifications confirming that no systems with refrigerants are specified. As built confirmation	M+E	**CD**	
Pre- requisite (2)	2 All systems with electric compressors comply with the requirements of BS EN 378:2016(207) (parts 2 and 3). Refrigeration systems containing ammonia comply with the Institute of Refrigeration Ammonia Refrigeration Systems code of practice	0	Y	Y	**Design and Post Construction Stages: M+E** to include within M & E specifications confirming compliance with BS EN 378:2016(207) (parts 2 and 3).. As built confirmation	M+E	**CD**	
Impact of refrigerant (3-5)	Two credits 3 The direct effect life cycle CO_2 equivalent emissions (DELC) of ≤100 CO_2-eq/kW. For systems which provide cooling and heating, the worst performing output based on the lower of kW cooling output and kW heating output is used to complete the calculation. OR 4 All refrigerants used have a global warming potential (GWP) ≤10. OR One credit 5 Systems using refrigerants have a DELC of ≤1000kgCO_2-eq/kW cooling and heating capacity.	2	2	2	**Design and Post Construction Stages: M+E** Completed copy of the Pol 01 Calculator tool. Documentary evidence supporting the data used to complete the calculator tool	M+E	**CD**	
Leak Detection (6-7)	6 All systems are hermetically sealed or only use environmentally benign refrigerants OR 7 Where the systems are not hermetically sealed: 7.a Systems have: 7.a.i A permanent automated refrigerant leak detection system, that is robust and tested, and capable of continuously monitoring for leaks. OR 7.a.ii An inbuilt automated diagnostic procedure for detecting leakage is enabled 7.b In the event of a leak, the system must be capable of automatically responding and managing the remaining refrigerant charge to limit loss of refrigerant	1	1	1	**Design and Post Construction Stages: M+E** to include within M & E specifications - As built confirmation	M+E	**CD**	
Pol 02 - Local Air Quality		**To contribute to a reduction in local air pollution through the use of low emission combustion appliances in the building.**						
Nox Emissions	1 All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity. OR alternatively; 2 **Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the levels set in** Table 12.4 and Table 12.5	2	2	2	**Design Stage M+E** to include within M & E specifications the requirement for heating and hot water to have combined NOx < 40mg/kWh Provide manufacturers' data sheets to confirm NOx emissions. **Post Construction Stage:** Confirm as built	M+E	**CD**	Table 12.4 -12.5
Pol 03 - Flood and Surface Water management		**To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, thereby minimising the risk and impact of localised flooding on-site and off-site, watercourse pollution and other environmental damage.**						
Pre-requisite (1)	1 An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria.				**Client -** Appointment of drainage specialist		**PP**	
Flood resilience (2)	2 A site-specific flood risk assessment (FRA) confirms the development is in a flood zone that is defined as having a low annual probability of flooding. The FRA takes all current and future sources of flooding into consideration.	2	2	2	**Design and Post Construction Stages: Flood risk consultant** report confirming risk of flooding from all sources (current and future)	Flood risk consultant	**PP**	
Medium or high flood risk (3-4)	3 A site-specific FRA confirms the development is in a flood zone that is defined as having a medium or high annual probability of flooding and is not in a functional floodplain. The FRA must take all current and future sources of flooding into consideration. Sites less than 1 ha simple detail required in the FRA , which overrides criterion 2 above. 4 To increase the resilience and resistance of the development to flooding, one of the following must be achieved: 4.a The ground level of the building and access to both the building and the site, are designed (or zoned) so they are at least 600 mm above the design flood level of the site's flood zone (see 600mm threshold). 4.b 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 8533:2017				**Design Stage: Flood risk consultant -** to provide FRA **Architect** Confirm flood resistance measures included in design i.e 600mm above flood level / design according hierarchy approach - Annotated drawings **Post Contruction Stage** As built	Flood risk consultant / Architect	**PP**	
Surface Water Run-off (5-9)	Prerequisite for surface water run-off credits 5 Surface water run-off design solutions must be bespoke, i.e. they must take account of the specific site requirements and natural or man-made environment of and surrounding the site. The priority levels detailed in the Methodology must be followed, with justification given by the appropriate consultant where water is allowed to leave the site. One credit - Surface Water Run-Off - Rate 6 For brownfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) shows a 30% improvement for the developed site compared with the predeveloped site. This should comply at the 1-year and 100-year return period events. 7 For Greenfield sites, drainage measures are specified so that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 1-year and 100-year return period events. 8 Policy/ maintenance agreements for the ownership, long term operation and maintenance of all specified Sustainable	1	1	1	**Design Stage: Drainage Eng.** Site specific run-off solutions. Provide calculations pre/ post development peak rate run -off (30%improvement for brownfield sites) must allow for climate change **Client:** Specify relevant maintenance agreements for the ownership, long term operation and maintenance of all Sustainable Drainage Systems (SuDS). **Post Construction Stage** As built drawings / confirmation letter	Drainage Eng. + Client	**PP**	
Surface Water Run-off - Volume (10-16)	10 Flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance); AND EITHER 11 Drainage design measures are specified so that the post-development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development. This must be for the 100-year 6-hour event, including an allowance for climate change (see criterion 15). 12 Any additional predicted volume of run-off for this event is prevented from leaving the site by using infiltration or other SuDS techniques. OR (only where criteria 11 and 12 cannot be achieved): 13 Justification from the appropriate consultant indicating why the above criteria cannot be achieved, i.e. where infiltration or other SuDS techniques are not technically viable options. 14 Drainage design measures are specified so that the post-development peak rate of run-off is reduced to the limiting discharge. The limiting discharge is defined as the highest flow rate from the following options: 14.a The pre-development one-year peak flow rate 14.b The mean annual flow rate (Qbar) 14.c 2L/s/ha. For the one-year peak flow rate, the one-year return period event criterion applies. 15 Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS are in place. 16 For either option, above calculations must include an allowance for climate change; this should be made in accordance with current best practice planning guidance.	1	0	1	**Design and Post Construction Stages: Drainage Eng.** to provide annotated drawings and documents showing the proposed drainage solution, system failure flood flow routes, potential flood ponding levels and ground floor levels. Calculations for the pre / post development water run off (Volume) and limiting discharge **Client:** Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS. PC - As built	Drainage Eng.	**PP**	

BREEAM Tracker 2018 (Non- Residential institution)

Project Elleray Hall - Community Centre
Client London Borough of Richmond
Project No. 61301
Date 20.05.21
Revision Rev 4

Current rating **Excellent**

72.00% **70.00%**

Credits Status

- Credit Targeted
- Credit Not Targeted
- Potential Credit
- Not Applicable

Stages

- Pre Planning
- Concept Design
- Tender

McBains

Credit Title and Name		Credits available			Examples of Acceptable evidence	Actions & Responsible Party	Stage	Comments
Minimising Water Course Pollution (17-24)	17 There is no discharge from the developed site for rainfall up to 5 mm (confirmed by the appropriate consultant). 18 Areas with a low risk source of watercourse pollution, an appropriate level of pollution prevention treatment is provided, using appropriate SuDS techniques. 19 Areas with a high risk of contamination or spillage of substances, such as petrol and oil, have separators (or an equivalent system) are installed in surface water drainage systems. 20 Chemical or liquid gas storage areas have a means of containment fitted to the site drainage system (i.e. shut-off valves). This is to prevent the escape of chemicals to natural watercourses in the event of a spillage or bunding failure. 21 All water pollution prevention systems have been designed and installed in accordance with the recommendations of documents such as the SuDS manual and other relevant industry best practice. They must be bespoke solutions taking account of the specific site requirements and natural or man-made environment of and surrounding the site. 22 A comprehensive and up to date drainage plan of the site will be made available for the building or site occupiers. 23 Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS must be in place. 24 All external storage and delivery areas are designed and detailed in accordance with the current best practice planning guidance.	1		0	**Design and Post Construction Stages:** **Drainage Eng.** to confirm that the first 5mm of <u>all</u> rain fall within the site boundary will be prevented from leaving the site e.g. permeable paving, rainwater harvesting etc. **AND** pollution control measures that will be installed. **Client:** Relevant maintenance agreements for the ownership, long term operation and maintenance of all specified SuDS. As built	Drainage Eng.	**PP**	
Minimising Water Course Pollution - Simple buildings (25-26)		N/A	N/A	0	**Design and Post Construction Stages:** **Drainage Eng.** Confirm permeable areas Calclation of the 5mm rainfall event from the relevant areas As built	Drainage Eng.	**PP**	
Pol 04 - Reduction of Night-time Light Pollution		**To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, thereby reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.**						
Reduction of Night-time Light Pollution (1-5)	1 External lighting pollution has been eliminated through effective design that removes the need for external lighting. This does not adversely affect the safety and security of the site and its users. OR alternatively, where the building does have external lighting, one credit can be awarded as follows: 2 The external lighting strategy has been designed in compliance with Table 2 of the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 2011. 3 All external lighting (except for safety and security lighting) can be **automatically switched off** between 23:00 and 07:00. 4 If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the **lower levels of lighting** recommended during these hours in Table 2 of the ILP guidance notes. 5 **Illuminated advertisements** are designed in compliance with ILP PLG05 The Brightness of Illuminated Advertisements	1	1	1	**Design and Post Construction Stages:** **M+E** to include with M & E specifications and annotated drawings	M+E / Ecologist may have some input	**CD**	
Pol 05 - Reduction of noise pollution		**To reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings.**						
Noise attenuation (1-5)	There are no noise-sensitive areas within the assessed building or within 800 m radius of the assessed site. OR 2 Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800 m radius of the assessed site, a noise impact assessment compliant with BS 4142:2014(223) is commissioned. Noise levels must be measured or determined for: 2.a Existing background noise levels: 2.a.i at the nearest or most exposed noise-sensitive development to the proposed assessed site 2.a.ii including existing plant on a building, where the assessed development is an extension to the building 2.b Noise rating level from the assessed building. 3 The noise impact assessment must be carried out by a suitably qualified acoustic consultant. 4 The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise sensitive development, must be **at least 5dB lower** than the background noise throughout the day and night. 5 If the noise sources from the assessed building are greater than the levels described in criterion 4, measures have been installed to attenuate the noise at its source to a level where it will comply with the criterion.	1	1	1	**Acoustician** to confirm compliance. At the design stage of assessment, where noise-sensitive areas or buildings are present, actual measurement is unlikely to be possible due to the planned but non-existent installation. In such situations, compliance can be demonstrated through the use of acousticians' calculations or by scale model investigations	Acoustician	**PP**	
Total Pollution		12	10	11				