



BREEAM Pre-Assessment

CAVERSHAM PARK CARE HOME

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02	17/01/2023	Revised issue with updated proposals

1.0 Introduction

This pre-assessment has been prepared by GreenBuild Consult to establish the available credits for the proposed construction of the Caversham Park Care Home development situated in Reading, based on the provisional/outline design and to determine the likely BREEAM rating.

The pre-assessment is based upon the BREEAM New Construction 2018 non-domestic scheme (SD5078:3.0-2018), methodology.

Performance Objectives

The BREEAM Pre-Assessment was conducted based upon proposal drawings provided and further discussions held with the Design Team. These project proposals have been reviewed in accordance with achieving the following minimum BREEAM Performance Objectives:

- A minimum BREEAM Score of at least 70.00%
- A minimum BREEAM Rating of Excellent

The Assessor has worked with the Design Team to establish which credits could be achieved on the current outline building design, the results of which are detailed below. As detailed in Table 1 below, the existing design of the building would provisionally achieve an Excellent rating of 77.34% based on the current proposed design. However, through consideration of the further potential credits highlighted below, a higher Outstanding rating of 88.30% can be achieved. Table 3 on the following pages details the BREEAM requirements for the development and comments received.

Table 1 – Outline of BREEAM Credits.

Section	Available		Targeted		Potential	
	Credits	Category weighting	Credits	Percent	Credits	Percent
Management	21	11.00%	21	11.00%	21	11.00%
Health and Wellbeing	19	14.00%	13	9.57%	17	12.52%
Energy	22	16.00%	11	8.00%	17	12.36%
Transport	12	10.00%	10	8.33%	12	10.00%
Water	9	7.00%	7	5.44%	7	5.44%
Materials	14	15.00%	12	12.85%	12	12.85%
Waste	10	6.00%	8	4.80%	8	4.80%
Land Use and Ecology	13	13.00%	9	9.00%	11	11.00%
Pollution	12	8.00%	11	7.33%	11	7.33%
Innovation	10	10.00%	1	1.00%	1	1.00%
Total	142	110.00%	103	77.34%	117	88.30%

2.0 Minimum Standards

Table 2 below displays the minimum acceptable levels of performance for each rating. To achieve a particular BREEAM rating, the minimum overall percentage score must be achieved as well as the minimum standards detailed in the table below.

Table 2 – BREEAM Minimum Standard

BREEAM issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Man03 Responsible Construction Practices	None	None	None	One credit (responsible construction management)	Two credits (responsible construction management)
Man04 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)
Man04 Commissioning and Handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
Man05 Aftercare	None	None	None	One credit (commissioning and implementation)	One credit (commissioning and implementation)
Ene01 Reduction of energy use and carbon emissions	None	None	None	Four credits (Energy performance or Prediction of operational energy consumption)	Four credits (Energy performance or Prediction of operational energy consumption)
Ene02 Energy Monitoring	None	None	One credit (First sub- metering credit)	One credit (First sub- metering credit)	One credit (First sub- metering credit)
Wat01 Water Consumption	None	One credit	One credit	One credit	Two credits
Wat02 Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat03 Responsible sourcing of construction products	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Wst01 Construction waste management	None	None	None	None	One credit
Wst03 Operational Waste	None	None	None	One credit	One credit

3.0 Project Description

The proposed scheme will deliver a 64 bedroom residential care home facility covering 2.5 storeys. The proposed development will include bedrooms with en-suites, catering facilities, laundry provisions and amenity space for the occupants (library, activity room, salon, cinema, gym & games room).

Site Location

The development will be located within Caversham Park, Reading.

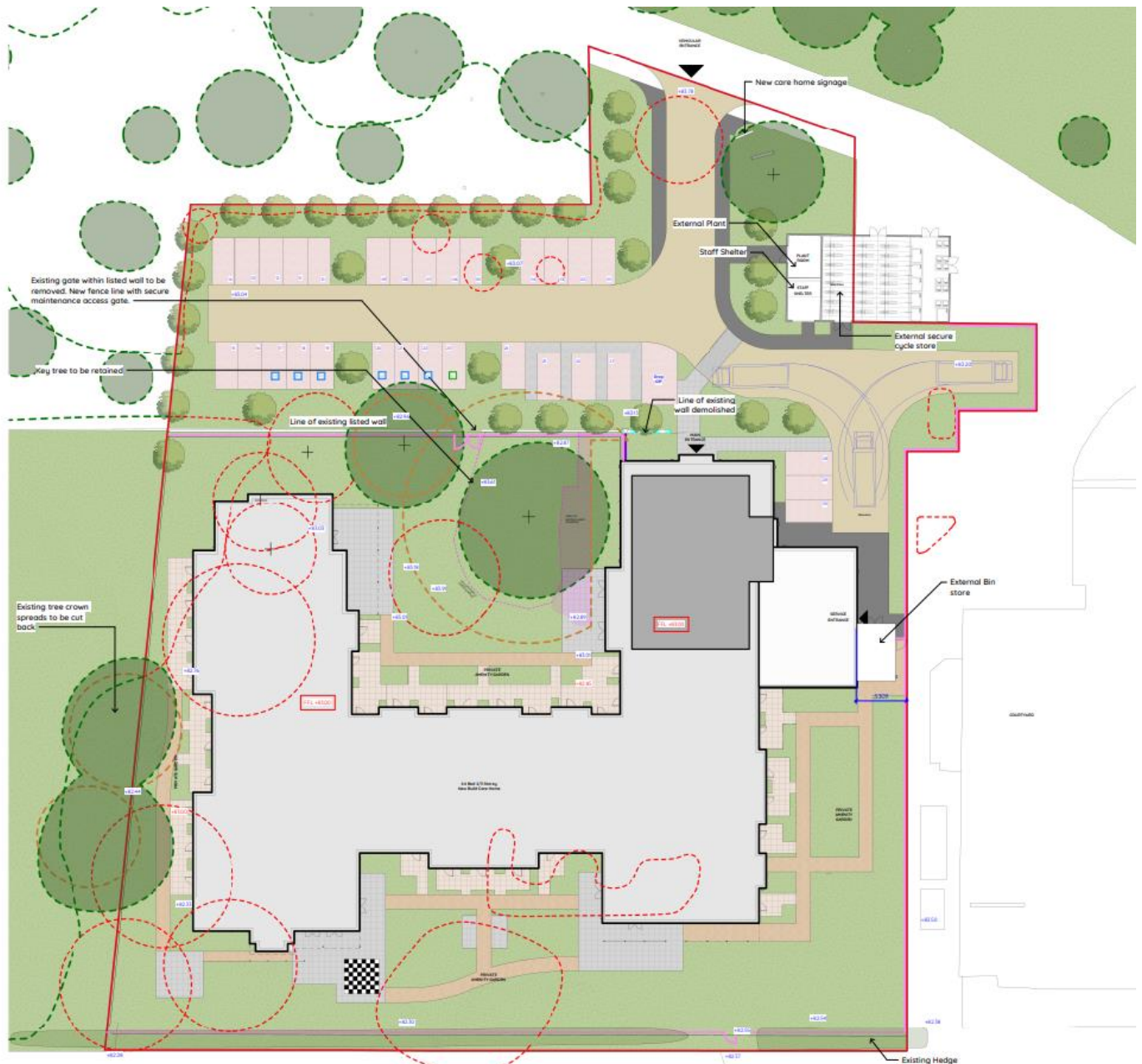


Figure 1 – Site plan (Condylofthouse Architects)



Figure 2 – 3D Views (Condylofthouse Architects)

4.0 BREEAM Pre-Assessment

The table below details the available, targeted and potential credits for each BREEAM category for the proposed development, including an outline of responsibility.

BREEAM New Construction 2018

Design target: 77.34% (Excellent)

Potential credit uplift: 88.30 % (Outstanding)

Credit code	Management	Responsibility	Available (21)	Targeted (21 & 1E)	Potential (0)
Man 01	Project delivery planning	Develop./Arch.	1	1	0
	Stakeholder consultation	Developer	1	1	0
	BREEAM Advisory Professional: BREEAM AP (Concept Design)	Developer	1	1	0
	BREEAM Advisory Professional: BREEAM AP (Developed Design)	Developer	1	1	0
Man 02	Elemental life cycle cost (LCC)	Cost consultant	2	2	0
	Component level life options appraisal	Cost consultant	1	1	0
	Capital cost reporting	Cost consultant	1	1	0
Man 03	Legal and Sustainable Timber (Pre-requisite)	Contractor	0	0	0
	Environmental management	Contractor	1	1	0
	BREEAM Advisory Professional (Site)	Contractor	1	1	0
	Responsible construction management	Contractor	2	2	0
	Monitoring of construction site impacts: Utility consumption	Contractor	1	1	0
	Monitoring of construction site impacts: Transportation of construction materials and waste	Contractor	1	1	0
Man 03 Exemplary	Responsible Construction Management	Contractor	1	1	0
Man 04	Commissioning - testing schedule and responsibilities	Contractor	1	1	0
	Commissioning - design and preparation	Contractor	1	1	0
	Testing and inspecting building fabric	Contractor	1	1	0

	Handover	Contractor	1	1	0
Man 05	Aftercare support	Contractor	1	1	0
	Commissioning - implementation	Contractor	1	1	0
	Post Occupancy Evaluation (POE)	Client	1	1	0
Creditcode	Health and Wellbeing	Responsibility	Available (19)	Targeted (13)	Potential (4)
Hea 01	Control of glare from sunlight control	Daylight Cons. Architect	1	1	0
	Daylighting	Architect/ Daylight Cons	2	0	2
	View out	Architect/ Daylight Cons	1	0	0
	Internal and external lighting levels, zoning and control	M&E Consultant	1	1	0
Hea 02	Indoor Air Quality Plan (Pre-requisite)	Air Quality Consultant	0	0	0
	Ventilation	M&E Consultant	1	0	1
	Emissions from construction products	Architect	2	2	0
	Post-construction indoor air quality measurement	Contractor/ Air Quality Consultant	1	1	0
Hea 04	Thermal modelling	Energy Consultant	1	1	0
	Design for future thermal comfort	Energy Consultant	1	1	0
	Thermal zoning and controls	Energy Consultant	1	1	0
Hea 05	Sound insulation	Acoustician	2	1	0
	Indoor ambient noise level	Acoustician	1	1	0
	Room acoustics	Acoustician	1	1	0
Hea 06	Security	Security Specialist	1	1	0
Hea 07	Safe access	Architect	1	0	1
	Outside space	Architect	1	1	0

Creditcode	Energy	Responsibility	Available (22)	Targeted (11)	Potential (6)
Ene 01	Energy performance	Energy Consultant	9	4	2
	Prediction of operational energy consumption	Energy Consultant	4	0	4
Ene 02	Sub-metering of end use categories	M&E Consultant	1	1	0
Ene 03	External lighting	M&E Consultant	1	1	0
Ene 04	Passive design: Passive design analysis	Energy Consultant	1	0	0
	Passive design: Free cooling	Energy Consultant	1	0	0
	Low and zero carbon technologies	Energy Consultant	1	1	0
Ene 05	Refrigeration energy consumption	n/a	n/a	n/a	n/a
	Indirect greenhouse gas emissions	n/a	n/a	n/a	n/a
Ene 06	Energy consumption	M&E / Lift supplier	1	1	0
	Energy efficient features: Lifts	M&E / Lift supplier	1	1	0
	Energy efficient features: Escalators or moving walkways	n/a	n/a	n/a	n/a
Ene 07	Energy efficient laboratory	n/a	n/a	n/a	n/a
Ene 08	Energy efficient equipment	M&E / Client	2	2	0

Creditcode	Transport	Responsibility	Available (12)	Targeted (10)	Potential (2)
Tra 01	Transport assessment and travel plan	Transport Consultant	2	2	0
Tra 02	Sustainable transport measures	Transport Consultant	10	8	2

Creditcode	Water	Responsibility	Available (9)	Targeted (7)	Potential (0)
Wat 01	Water consumption	M&E / Architect	5	3	0
Wat 02	Water monitoring	M&E Consultant	1	1	0
Wat 03	Leak detection system	M&E Consultant	1	1	0
	Flow control devices	M&E Consultant	1	1	0
Wat 04	Water efficient equipment	Landscaping Architect / M&E Consultant	1	1	0

Creditcode	Materials	Responsibility	Available (14)	Targeted (12)	Potential (0)
Mat 01	Superstructure (LCA analysis)	LCA Consultant	6	6	0
	Substructure (LCA analysis)	LCA Consultant	1	1	0
Mat 02	Environmental impacts from construction products - Environmental Product Declarations (EPD)	Architect	1	0	0
Mat 03	Legal and Sustainable Timber (Pre-requisite)	Contractor	0	0	0
	Enabling sustainable procurement	Architect / Contractor	1	1	0
	Measuring responsible sourcing	Architect / Contractor	3	2	0
Mat 05	Designing for durability and resilience	Architect	1	1	0
Mat 06	Material efficiency	Architect	1	1	0

Creditcode	Waste	Responsibility	Available (10)	Targeted (8)	Potential (0)
Wst 01	Pre-demolition audit	Pre-demolition contractor	1	1	0
	Construction resource efficiency	Contractor	3	2	0
	Diversion of resources from landfill	Contractor	1	1	0
Wst 02	Use of recycled and sustainably sourced aggregates	Contractor	1	0	0
Wst 03	Operational waste	Architect	1	1	0
Wst 04	Speculative finishes	Client / Architect	n/a	n/a	n/a
Wst 05	Adaptation to climate change	Architect	1	1	0
Wst 06	Design for disassembly and adaptability - Recommendations	Architect	2	2	0

Creditcode	Land Use and Ecology	Responsibility	Available (13)	Targeted (9)	Potential (2)
LE 01	Previously occupied land	Architect	1	1	0
	Contaminated land	Contaminated land specialist	1	0	0
LE 02	Survey and evaluation	Ecologist / Developer / Contractor	1	1	0
	Determining the ecological outcomes for the site	Ecologist	1	1	0
LE 03	Planning, liaison, implementation and data	Ecologist / Architect	1	1	0
	Managing negative impacts of the project	Ecologist	2	1	1
LE 04	Ecological enhancement	Ecologist / Developer Contractor	1	1	0
	Change and enhancement of ecology	Ecologist / Architect	3	1	1
LE 05	Planning, liaison, data, monitoring and review management and maintenance	Developer/ Contractor/ Architect	1	1	0
	Landscape and ecology management plan (or similar) development	Ecologist	1	1	0

Creditcode	Pollution	Responsibility	Available (12)	Targeted (11)	Potential (0)
Pol 01	No refrigerant use	n/a	n/a	n/a	n/a
	Refrigerant use: Impact of refrigerant	M&E Consultant	2	2	0
	Refrigerant use: Leak detection	M&E Consultant	1	1	0
Pol 02	Local air quality	M&E Consultant	2	2	0
Pol 03	Flood resilience	Drainage Engineer	2	2	0
	Surface water run-off: Rate	Drainage Engineer	1	1	0
	Surface water run-off: Volume	Drainage Engineer	1	1	0
	Minimising watercourse pollution	Drainage Engineer	1	0	0
Pol 04	Reduction of night-time light pollution	M&E Consultant	1	1	0
Pol 05	Reduction of noise pollution	Acoustician	1	1	0

Appendix A: BREEAM Pre-Assessment Full Details of Credits

The table below briefly details the required criteria for each individual BREEAM measure applicable to the proposed development, including the respective compliance comments/ notes discussed at the pre-assessment meeting.

Management

MAN01: Project Brief and Design	
Project Delivery Planning	Prior to completion of RIBA Stage 2 all relevant parties and relevant bodies are identified and consulted with by the design team. The project delivery stakeholders must meet to identify and define for each key phase of project delivery e.g – Roles, Responsibilities, Contributions. The findings of the consultation influence the design and therefore must have been held before key and final design decisions were made.
Stakeholder Consultation (Interested Parties)	Prior to completion of RIBA Stage 2 all relevant third-party stakeholders have been consulted by the design team. The project demonstrates how stakeholder contributions have influenced the project brief or design. Prior to completion of the detailed design, all interested parties give and receive consultation feedback.
BREEAM Advisory Professional (Concept & Developed Design)	A BREEAM AP is appointed to 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 & Developed Design. A BREEAM AP will monitor progress, identify risks, coordinate the generation of appropriate evidence and provide feedback to support the achievement of performance targets.
MAN02: Lifecycle Cost & Service Life Planning	
Elemental Life Cycle Cost	A Life Cycle Cost (LCC) analysis has been carried out at Process Stage 2 together with any design options appraisal in line with 'Standardised method of life cycle costing for construction procurement PD 156865 2008. The elemental LCC plan provides an indication of future replacement costs over a period of analysis as required by the client, including service life, maintenance and operation cost estimates.
Component Level LCC Options Appraisal	A component Level LCC has been carried out by the end of Process Stage 4. A component Level LLC demonstrates that elements in the following building components have been analysed with appropriate examples at a strategic and system level, comparing alternative options: • Envelope: e.g. cladding, windows, and/or roofing • Services: e.g. heat source cooling source, and/or controls • Finishes: e.g. walls, floors and/or ceilings • External spaces

	The option(s) meet the performance criteria for the building (i.e. realistic options are used for the comparison) and the lowest discounted LCC over the period is preferred.
Capital Cost Reporting	Report the capital cost for the building in pounds per square metre of gross internal floor area (£k/m ²), via the BREEAM Assessment Scoring and Reporting tool.
MAN03: Responsible Construction Practices	
Timber Procurement	All timber and timber-based projects used during the project are legal, sustainable and sourced in accordance with the UK Government's Timber Procurement Policy.
Environmental Management	All parties who at any stage manage the construction site operates an Environmental Management System covering their main operations. The EMS must be third party certified OR in compliance with BS 8555: 2016. All parties who at any point manage the construction site (e.g. the principal contractor, the demolition contractor) implement best practice pollution prevention policies and procedures on site in accordance with Working at construction and demolition sites: PPG6, Pollution Prevention Guidelines.
BREEAM Advisory Professional (site)	A BREEAM AP is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target(s), during the Construction, Handover and Close Out stages. A BREEAM AP will monitor construction progress, proactively identify risks, coordinate the generation of appropriate evidence and provide feedback to the constructors and project team.
Responsible Construction Management	Achieve responsible construction management criteria as listed within the BREEAM guidance, including items such as Vehicle movement, Pollution management, Tidiness, Health and Wellbeing, Security.
Monitoring of Construction Impacts	Assign responsibility to an individual for monitoring, recording, and reporting energy use, water consumption and transportation data resulting from all onsite processes (and dedicated off-site manufacturing) throughout construction. Monitor and record data on water consumption (m³) from the use of construction plant, equipment (mobile and fixed) and site accommodation necessary for completion of all construction processes. Using the collated data report the total net water consumption (m³), i.e. consumption minus any recycled water use, from the construction process. Set targets for transportation movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site.

MAN04: Commissioning and Handover

Commissioning Schedule & Responsibilities	All commissioning activities are carried out in accordance with current Building Regulations, BSRIA and CIBSE guidelines and/or other appropriate standards, where applicable. Where a building management system (BMS) is specified, refer to compliance note CN5 on BMS commissioning procedures. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning, testing and, where necessary, re-commissioning activities on behalf of the client. The client will account for the commissioning and testing programme, responsibilities and criteria within their budget and main programme of works, allowing for the required time to complete all commissioning and testing activities prior to handover.
Commissioning Design and Preparation	A specialist commissioning manager is appointed during the design stage (by either the client or the principal contractor) with responsibility for overseeing the general commissioning of all building services. For buildings with complex building services, this role needs to be carried out by a specialist commissioning manager.
Testing & Inspecting Building Fabric	The integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths is quality assured through completion of post construction testing and inspection. Dependent on building type or construction, this can be demonstrated through the completion of a thermographic survey or an airtightness test and inspection. Any defects identified are rectified prior to building handover and close out and must meet the required performance characteristics defined at the design stage.
Handover	Prior to handover, develop two building user guides for the following users: • A non-technical user guide for distribution to the building occupiers. • A technical user guide for the premise's 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. Two training schedules timed appropriately around handover and proposed occupation plans for each of the above-mentioned users.

MAN05: Aftercare

Aftercare Support	There is (or will be) operational infrastructure and resources in place to provide aftercare support to the building occupier(s), which includes the following as a minimum: • A meeting programmed to occur between the aftercare team/individual and the building occupier/management. • On-site facilities management training, to include a walkabout of the building and introduction to and familiarisation with the building systems, their controls and how to operate them in accordance with the design intent and operational demands.
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	•Initial aftercare support provision for at least the first month of building occupation, e.g. on-site attendance on a weekly basis to support building users and management. Longer term aftercare support provision for occupants for at least the first 12 months from occupation.
Commissioning - Implementation	Seasonal commissioning responsibilities will be completed over a minimum 12-month period, once the building becomes occupied.
Post Occupancy Evaluation	The client makes a commitment to carry out a Post Occupancy Evaluation (POE), carried out by an independent third party, one year after building occupation, to gain building performance feedback and identifies gaps between design intent and in-use performance. The client makes a commitment to carry out the appropriate dissemination of information on the building's post occupancy performance in order to share any good practice and lessons learned.

Health and Wellbeing

HEA:01 Visual Comfort	
Glare Control	The potential for disabling glare has been designed out of all relevant building areas either through building layout (e.g. low eaves) and/or building design (e.g. blinds, brise soleil, bioclimatic design that provides shading from high level summer and low-level winter sun). The glare control strategy does not increase energy consumption used for lighting. This is achieved by maximising daylight levels in all weather and ensuring the use or location of shading does not conflict with the operation of lighting control systems.
Daylight Factor	Relevant building areas meet BREEAM guidance: • Good practice day lighting criteria of 2% at 80% occupied floor area. • A uniformity ratio of at least 0.4 or a minimum point daylight factor of at least 0.8% (spaces with glazed roofs, such as atria, must achieve a uniformity ratio of at least 0.7 or a minimum point daylight factor of at least 1.4%)
View Out	95% of the floor area in relevant building areas is within 8m of a wall which has a window or permanent opening that provides an adequate view out. The window/opening must be $\geq 20\%$ of the surrounding wall area.
Internal & External Lighting	Internal lighting Internal lighting in all relevant areas of the building is designed to provide illuminance (lux) levels and colouring rendering index in accordance with the SLL Code for Lighting 2012 and any other relevant industry standard. For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 sections 3.3, 4.6, 4.7, 4.8 and 4.9. External lighting Illuminance levels for lighting in all external areas within the construction zone are specified in accordance with BS5489-1:2003 Lighting of roads and public amenity areas. Zoning and Occupant Control Internal lighting is zoned to allow for occupant control in accordance with the criteria below for relevant areas present within the building: - In office areas, zones of no more than four workplaces - Workstations adjacent to windows/atria and other building areas separately zoned and controlled - Seminar and lecture rooms: zoned for presentation and audience areas - Library spaces: separate zoning of stacks, reading and counter areas - Teaching space or demonstration area - Whiteboard or display screen - Auditoria: zoning of seating areas, circulation space and lectern area - Dining, restaurant, café areas: separate zoning of servery and seating/dining areas - Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas

	and circulation space with controls accessible to staff.
Exemplary Day lighting	Average daylight factor of 4% and a minimum point daylight factor of 1.6% OR 2.8% for spaces with glazed roofs, such as atria.
HEA02: Indoor Air Quality	
Indoor Air Quality Plan	An indoor air quality plan will be produced, with the objective of facilitating a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building. The indoor air quality plan must consider the following, removal and control of contaminant sources, third party testing and analysis maintaining good indoor air quality in-use.
Minimising Sources of Pollution - Ventilation	The building has been designed to provide fresh air and minimise internal pollutants (and ingress of external polluted air into the building) in accordance with the criteria of the relevant standard for ventilation.
Emissions from construction products	One Credit Three out of the five product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 within the BREEAM NC 2018 manual. Two Credits All of the product types listed meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 BREEAM NC 2018 manual.
Post Construction Indoor Air Quality	Formaldehyde and total VOC levels are measured post construction (but pre-occupancy) and are found to be below guideline levels. 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.
HEA04: Thermal Comfort	
Thermal Modelling	Thermal modelling has been carried out using software in accordance with CIBSE AM11 to demonstrate the building design and services strategy can deliver thermal comfort levels in occupied spaces in accordance with the criteria set out in CIBSE Guide A Environmental Design. The modelling demonstrates that: For air-conditioned buildings, summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE

	Guide A Environmental design. - For naturally ventilated buildings winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design. - 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.
Design for Future Thermal Comfort	The thermal modelling demonstrates that the relevant requirements as set out under the thermal modelling credit are achieved for a projected climate change environment. Where criterion 6 above is not met, the project team demonstrates how the building has been adapted, or designed to be easily adapted in future using passive design solutions in order to subsequently meet the requirements.
Thermal Zoning & Controls	Where zoning allows separate occupant control (within the occupied space) of each perimeter area (i.e. within 7m of each external wall) and the central zone (i.e. over 7m from the external walls) e.g. adequate TRVs (thermostatic radiator valves) placed in zones around the building perimeter, and the provision of local occupant controls to internal areas. 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
HEA05: Acoustic Performance	
Acoustic Performance	Sound Insulation – One Credit The sound insulation between rooms and other occupied areas complies with the performance criteria given in Section 7 of BS 8233:2014. Alternatively, propose performance standard based on demonstrably best practice. Indoor Ambient Noise Levels – One Credit Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014 and a programme of pre-completion testing is carried out. Room Acoustics – One Credit Achieve the requirements relating to sound absorption and reverberation times, where applicable, set out in Section 7 of BS 8233:2014 and a programme of pre-completion testing is carried out.
HEA06: Security	
Security of Site & Building	A Suitably Qualified Security Specialist (SQSS) conducts an evidence-based Security Needs Assessment (SNA) during or prior to Concept Design (RIBA Stage 2 or equivalent). The purpose of the SNA will be to identify attributes of the proposal, site and surroundings which may influence the approach to security for the development.
Exemplary Level	A compliant risk-based security rating scheme has been used. The performance against the scheme has been confirmed by independent assessment and verification.

HEA07: Safe and Healthy Surroundings

Safe Access	Dedicated and safe cycle paths are provided from the site entrance to any cycle storage and connect to off-site cycle paths where applicable. Dedicated and safe footpaths are provided on and around the site providing suitable links. 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, further criteria also apply. There is a dedicated parking or waiting area for goods vehicles with appropriate separation from the manoeuvring area and staff and visitor car parking. 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.
Outside Space	There is an outside space providing building users with an external amenity area.

Energy

ENE01: Reduction of CO₂ Emissions

Energy Performance	Up to 9 credits are available depending on the calculated Energy Performance Ratio and Prediction of operational energy consumption for the proposed building.
Prediction of operational energy consumption	Four credits are available: • Involve relevant members of the design team in an energy design workshop 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 assumption 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.

ENE02: Energy Monitoring

Major Energy Systems	Install energy metering systems so that at least 90% of the estimated annual energy consumption of each fuel is assigned to the end-use categories. Meter the energy consumption in buildings according to the total useful floor area: • If the area is greater than 1,000 m², by end-use category with an appropriate energy monitoring and management system. • If the area is less than 1,000 m², use either: - an energy monitoring and management system or - separate accessible energy sub-meters with pulsed or other open protocol communication outputs, for future connection to an energy monitoring and management system Sub-metering of high energy load and tenancy areas; Monitor a significant majority of the energy supply with: An accessible energy monitoring and management system for: a.i tenanted areas or a.ii relevant function areas or departments in single occupancy buildings. OR 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: b.i tenanted areas or b.ii relevant function areas or departments in single occupancy buildings.
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ENE03: External Lighting

External Lighting Specification	The average initial luminous efficacy of the external light fittings within the construction zone is not less than 70 luminaire lumens per circuit Watt. External light fittings are controlled through a time switch, or daylight sensor, to prevent operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.
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ENE04: Low Carbon Design

Passive Design Analysis	The project team carries out an analysis of the proposed building design/development to influence decisions made during Concept Design stage (RIBA Stage 2 or equivalent) and identify opportunities for the implementation of passive design solutions that reduce demands for energy consuming building services. The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis and the analysis demonstrates a meaningful reduction in the total energy demand as a result.
Free Cooling	The passive design analysis credit is achieved. The passive design analysis carried out under criterion 2 includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions. AND The building uses a free cooling strategy listed by the BREEAM compliance criteria.
Low & Zero Carbon Technologies	A feasibility study has been carried out by an energy specialist, out at RIBA stage C (concept design) or equivalent, to establish the most appropriate local (on-site or near-site) low or zero carbon (LZC) energy source for the building/development. A local LZC energy technology has been specified for the building/development in line with the recommendations of the above feasibility study.

ENE06: Energy Efficient Transportation Systems

Energy Consumption	For specified lifts: Analyse the transportation demand and usage patterns for the building to determine the optimum number and size of lifts, escalators or moving walks Calculate the energy consumption in accordance with BS EN ISO 25745 Part 2 or Part 3 for one of the following: - At least two options for each transportation type (e.g. for lifts, hydraulic, traction or machine room less (MRL) OR At least two options considering different system arrangements and control strategies. - Consider the use of regenerative drives, subject to the requirements in Regenerative drives - Specify the transportation system with the lowest energy consumption.
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Energy Efficient Features	One credit – Lifts Specify the following three energy efficient features for each lift: - A standby condition for off-peak periods - 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 - Use of a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor. Specify regenerative drives where their use is demonstrated to save energy. One credit – Escalators or moving walks Specify at least one of the following for each escalator or moving walk: A load-sensing device that synchronises motor output to passenger demand through a variable speed drive OR A passenger- sensing device for automated operation (auto walk) ,so the escalator operates in auto start mode when there is no passenger.
ENE08: Energy Efficient Equipment	
Unregulated Energy Consumption	Identify the building's unregulated energy consuming loads. Estimate their contribution to the total annual unregulated energy consumption of the building, assuming a typical or standard specification. Identify the systems or processes that use a significant proportion of the total annual unregulated energy consumption of the building. Demonstrate a meaningful reduction in the total annual unregulated energy consumption of the building.

Transport

TRA01: Transport Assessment & Travel Plan

Travel Plan

During the feasibility and design stages, develop a travel plan based on a site-specific travel assessment or statement which can be used to influence the site layout and built form. The travel plan includes proposals to increase or improve sustainable modes of transport and movement of people and goods during the building's operation and use.

If the occupier is known, involve them in the development of the travel plan. Demonstrate that the travel plan will be implemented post construction and be supported by the building's management in operation.

Demonstrate that the travel plan will be implemented and supported by the building's management in operation.

TRA02: Sustainable Transport Measures

Transport Options Implementation

Pre-requisite: Achieve the Tra01 transport assessment and travel plan credits.

Identify sustainable transport measures - Up to 10 credits are available where the Accessibility Index is calculated determining the number of appropriate sustainable transport measures.

Water

WAT01: Water Consumption

Water Consumption of Fittings	The water consumption (litres/person/day) for the assessed building is compared against a notional baseline performance and BREEAM credits awarded as follows: <table border="1" data-bbox="796 427 1217 759"> <thead> <tr> <th>% improvement</th><th>BREEAM credits</th></tr> </thead> <tbody> <tr> <td>12.5%</td><td>1</td></tr> <tr> <td>25%</td><td>2</td></tr> <tr> <td>40%</td><td>3</td></tr> <tr> <td>50%</td><td>4</td></tr> <tr> <td>55%</td><td>5</td></tr> <tr> <td>65%</td><td>Exemplary performance</td></tr> </tbody> </table>	% improvement	BREEAM credits	12.5%	1	25%	2	40%	3	50%	4	55%	5	65%	Exemplary performance
% improvement	BREEAM credits														
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25%	2														
40%	3														
50%	4														
55%	5														
65%	Exemplary performance														

WAT02: Water Monitoring

Water Monitoring	The specification of a water meter on the mains water supply to the building, and each meter (main and sub) has a pulsed output to enable connection to a Building Management System (BMS) for the monitoring of water consumption.
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WAT03: Water Leak Detection

Leak Detection System	Where automatic excess flow valves are installed at relevant locations to protect property from damage caused by leaking pipes or tanks.
Sanitary Flow Control Devices	One of the following types of flow control device is fitted to each WC area/facility to ensure water is supplied only when needed (and therefore prevent minor water leaks): • A time controller i.e. an automatic time switch device to switch off the water supply after a predetermined interval. • A programmed time controller i.e. an automatic time switch device to switch water on and/or off at predetermined times. • A volume controller i.e. an automatic control device to turn off the water supply once the maximum pre-set volume is reached. • A presence detector and controller i.e. an automatic device detecting occupancy or movement in an area to switch water on and turn it off when the presence is removed.

WAT04: Water Efficient Equipment

Water Efficient Equipment	Identify all water demands from users other than those listed under – Calculation of water efficiency performance that could be realistically mitigated or reduced. Where there is no water demand from uses other than domestic-scale, sanitary use components in the building, this issue is not applicable. Identify systems or processes to reduce the relevant water demand, and establish, through either good practice design or specification, a demonstrable reduction in the total water demand of the building.
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Materials

MAT01: Environmental Impacts from Construction Products

Superstructure	Six credits are available for undertaking a Lifecycle assessment of the superstructure at concept and technical design stages. The purpose of this process is to make comparisons in design options.
Substructure & Hard Landscaping	One credit is available for carrying out an LCA options appraisal of at least 6 different substructure and hard-landscaping options during the concept design stage.

MAT02: Environmental Impacts from Construction Products

Specification of Products with EPDs	Specify construction products with Environmental Product Declarations (EPD) and achieve total EPD points score of at least 20 according to the BREEAM methodology.
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MAT03: Responsible Sourcing

Responsible Sourcing of Materials	Up to three credits are available where materials used in structural and non-structural elements are responsibly sourced.
Enabling sustainable procurement	A sustainable procurement plan must be used by the design team to guide specification towards sustainable construction products. The plan must: 1. Be in place before Concept Design. 2. Include sustainability 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. 3. Include a requirement for assessing the potential to procure construction products locally. There must be a policy to procure construction products locally where possible. Include details of procedures in place to check and verify the effective implementation of the sustainable procurement plan.

MAT05: Designing for Robustness

Durability/ Protection Measures	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: • Negative impacts of high user numbers in relevant areas of the building (e.g. corridors, lifts, stairs, doors etc.). • Damage from any vehicle or trolley movements within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas. • Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m
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	of the external building façade for all car parking areas and within 2m for all delivery areas. Additionally, the relevant building elements incorporate appropriate design and specification measures to limit material degradation due to environmental factors e.g. A detailed assessment of the element's resilience or design the roof and façade to prevent water damage, ingress and detrimental ponding.
MAT06: Material Efficiency	
Material Efficiency	Opportunities have been identified, and appropriate measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance and end of life.

Waste

WST01: Construction Waste Management

Construction Site Waste Management Plan

Where the amount of non-hazardous construction waste ($\text{m}^3/100\text{m}^2$ or tonnes/100 m^2) generated on site by the development is the same as or better than good or best practice levels, as follows:

	Amount of waste generated per 100 m^2 (gross internal floor area)	
BREEAM Credits	m^3	Tonnes
One	13.3	11.1
Two	7.5	6.5
Three	3.4	3.2
Exemplary level	1.6	1.9

An additional credit can be awarded a significant majority of non-hazardous construction waste generated by the development will be diverted from landfill and reused or recycled.

WST02: Use of Recycled & Sustainably Sourced Aggregates

Project Sustainable Aggregate Points

Sustainable aggregate points are awarded based on the quantity, source and distance travelled. One credit can be achieved where at least 3.5 points are achieved.

WST03: Operational Waste

Segregation & Storage of Recyclable Waste

There is dedicated space(s) to cater for the segregation and storage of operational recyclable waste volumes generated by the assessed building/unit, its occupant(s) and activities.

The dedicated space(s) must be:

- Clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams
- Accessible to building occupants / facilities operators for the deposit of materials and collections by waste management contractors
- Of a capacity equivalent to at least $2\text{m}^2/1000\text{m}^2$ of gross floor area.

Additionally, for multi residential buildings with communal facilities, provide home composting facilities in communal/ kitchen spaces. 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. 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.

WST05: Adaptation to climate change

Adaption to climate change

Carry out a systematic (structural and fabric resilience specific) risk assessment to identify and evaluate the impact on the building over its projected life cycle from expected extreme weather conditions arising from climate change and, where feasible, mitigate against these impacts.

Develop recommendations or solutions based on the climate change adaptation strategy appraisal, before or during Concept Design, that aim to mitigate the identified impact.

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.

WST06: Design for Disassembly & Adaptability

Design for Disassembly & Adaptability

First credit - Conduct a study to explore the ease of disassembly and the functional adaptation potential of different design scenarios. Develop recommendations or solutions based on the study during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation.

Second Credit- Provide an update during the technical design on;

- How the recommendations or solutions proposed by Concept Design have been implemented where practical and cost effective.
- Changes to the recommendations and solutions during the development of the Technical Design.

AND

Produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.

Land use and Ecology

LE01: Site Selection	
Previously Developed Land	At least 75% of the proposed development's footprint is on an area of land which has previously been developed for use by industrial, commercial or domestic purposes in the last 50 years.
Contaminated Land	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: • The degree of contamination • The contaminant sources or types • The options for remediating sources of contamination which present an unacceptable risk.
LE02: Identifying and Understanding the risks and opportunities for the Site	
Survey & Evaluation	Prior to the completion of the preparation and brief, an appropriate level of survey and evaluation has been carried out to determine the ecological baseline of the site using the BREEAM Ecological Risk Evaluation Checklist (Guidance Note 34).
Determining Ecological Outcome	During Concept Design, the project team liaise and collaborate with representative stakeholders to identify and consider ecological outcome for the sites (appropriate to the scale and type of development) for the project.
LE03: Managing Negative Impacts on Ecology	
Planning Liaison, Implementation & Data	Roles and responsibilities have been clearly defined, allocated and implemented to support successful delivery of project outcomes at an early enough stage to influence the concept design or design brief. Site preparation and construction works have been planned for and are implemented at an early project stage to optimise benefits and outputs (e.g. mitigation measures to protect existing ecological features) The project team liaising and collaborating with representative stakeholders, taking into consideration data collated and shared, have implemented solutions, and measures have been selected, during site preparation and construction works.
Managing Negative Impacts	Negative impacts from site preparation and construction works have been managed according to the hierarchy and no overall loss of ecological value has occurred. Two Credits - No overall loss of ecological value has occurred One Credit - The loss of ecological value has been limited as far as possible

LE04: Change & Enhancement of Ecological Value

Liaison, Implementation & Data Collection	The project team, liaising and collaborating with representative stakeholders and taking into consideration data collated and shared, have implemented locally relevant ecological solutions and measures which enhance the site. The solutions and measures adopted are based on recommendations from recognised 'local' ecological expertise and specialist input and guidance.
Enhancement of Ecology	Credits are awarded on a scale of 1 to 3, based on the calculation of the change in ecological value occurring as a result of the project.

LE05: Long Term Ecology Management & Maintenance

Long Term Ecology Management & Maintenance	One credit is awarded where the project team liaise and collaborate with representative stakeholders, taking into consideration data collated and shared, on solutions and measures implemented to: monitor and review implementation and the effectiveness AND develop and review management and maintenance solutions, actions or measures. 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. An additional credit may be awarded where a Landscape and ecology management plan, or similar, is developed in accordance with BS 42020:2013(210) covering as a minimum the first five years after project completion.
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Pollution

POL01: Impact of Refrigerants	
Refrigerant GWP	Two credits – The direct effect life cycle CO₂ equivalent emissions (DELCO) of ≤ 100 CO₂-eq/kW. OR All refrigerants used have a global warming potential (GWP) ≤ 10. One Credit - The direct effect life cycle CO₂ equivalent emissions (DELCO) of ≤ 1000 CO₂-eq/kW
Refrigerant Leak Detection	One credit may be awarded where evidence provided demonstrates that refrigerant leaks can be detected or where there are no refrigerants specified for use in the building or development and automatic refrigerant pump down is made to a heat exchanger (or dedicated storage tanks) with isolation valves or where there are no refrigerants specified for the development.
POL02: Local Air Quality	
Local Air Quality	All heating and hot water is supplied by non-combustion systems. For example, only powered by electricity. OR Emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed the described levels.
POL03: Flood & Surface Water Management	
Flood Resilience	Two credits may be awarded where evidence provided demonstrates that the assessed development is located in a zone defined as having a low annual probability of flooding.
Surface Water Run-Off - Rate	Where drainage measures are specified to ensure 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.
Surface Water Run-Off - Volume	Where flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance) any additional predicted volume of run-off for the 100 year 6 hour event must be prevented from leaving the site by using infiltration or other SuDS techniques.
Minimising Watercourse Pollution	Where evidence provided demonstrates that effective on-site treatment such as Sustainable Drainage Systems (SUDs) or oil separators have been specified in areas that are or could be a source of watercourse pollution.

POL04: Reduction of Night Time Light Pollution

External Lighting Specification	Where the external lighting design is in compliance with the guidance in the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 2011, or where no external lighting is to be specified. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00. 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.
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POL05: Noise Attenuation

Reduction of Noise Pollution	Where there are or will be noise-sensitive areas or buildings within 800m radius of the assessed development a noise impact assessment in compliance with BS 7445 has been carried out. OR 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(231) is commissioned.
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