Form: QAE_03-00.00

Environmental Design Guidance

Rev	Date	Status	Checked	Amendments / Comments
0	24.07.2022	S2	AJG	

Scope

The scope of this document is to provide supporting Environmental Design guidance as outlined within BS EN ISO 1401:2015 (EMS). The intent is to support the design process but is not intended to be a substitute for project specific briefing or sustainable criteria. The following has been developed inline with the criteria established within the **RIBA Sustainable Outcomes guide** as well as the **RIBA 2030 Climate Challenge**. It has been developed specifically around the direct Architectural responsibilities under BREEAM 2018. A Metric referenced in both previously referred documents.

Where additional guidance or metrics are required, these have been referenced via Hypertext links. **Whole life Carbon** and **Embodied Carbon assessments** are separate to this document.

RIBA SUSTAINABLE OUTCOMES

Distils the 12No UN Sustainable Design goals into 9No Measurable and Manageable outcomes that Architects can use on a daily basis.

RIBA Sustainable Outcomes Guide

RIBA 2030 CLIMATE CHALLENGE

Establishes targeted reductions in Operational Energy, Embodied Carbon & Potable Water Use by 2030

RIBA 2030 Climate Challenge

RIBA PLAN OF WORK 2020

RIBA design and process management tool - Updated to include Sustainable Project strategies

RIBA Plan of Work 2020

https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work

RIBA PLAN FOR USE

Plan for Use is the RIBA's interpretation of the Soft Landings Framework produced by the Usable Buildings Trust and BSRIA.2 Its aim is to encourage a more outcome-based approach to design.

RIBA Plan for Use Guide

BREEAM 2018 CONSTRUCTION – (Non Domestic)

The assessment timeline summarise each category and outlines at which stage credits should be addressed and ideally when these should be considered by the design team

BREEAM Assessment timeline

RIBA STAGE 0 - Strategic Definition

Core Sustainable Outcomes Tasks

00

Net Zero Embodied Carbon Emissions

Insulation – (BREEAM 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.
Consider: • 100% of timber and timber-based products used are 'legal' and 'Sustainable' as per UK Gov Timber Procurement Policy. • A Responsible Procurement Plan must be in place before RIBA Stage 2
• **Metrics – Reference:** P+HS QAE_03-06 Responsible Sourcing of Materials Template QAE_03-07 Sustainable Procurement Plan Statement / BREEAM 2018 for Metrics and Guidance (BREEAM Mat 03 Responsible Sourcing of Construction Products)

Sustainable Land-Use and ecology

Site Selection – (BREEAM 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.
Consider: • An Ecological risks and opportunities survey needs to have been carried out. • 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.
• **Metrics – Reference:** BREEAM 2018 for Metrics and Guidance (BREEAM LE 03 Managing impacts on ecology)

NOTE :
The Environment Act 2021 ("Act") contains provisions for the protection and improvement of the environment, including introducing biodiversity net gain ("BNG"). Whilst the provisions are not yet in force, they may already have implications for the viability of development proposals.

The BNG plan must set out how the "Biodiversity Gain objective" is met. The Biodiversity Gain objective requires the biodiversity value attributable to a development to exceed pre-development biodiversity value by at least 10% (this percentage may be changed by regulations, although nothing is currently proposed)

BNG is set to become a requirement for planning applications from November 2023 and for Development Consent Order (DCOs)from November 2025. It is essential to start planning now for how the new requirements will affect your future development

Ref QAE Docs	**[QAE 03-06]** – Responsible Sourcing of Materials Template **[QAE 03-07]** – Sustainable Procurement Plan Statement	

RIBA STAGE 1 - Preparation and Briefing

Core Sustainable Outcomes Tasks

01

Good Health and Well Being

Visual Comfort – (BREEAM Hea 01)
Support building occupier health, mental wellbeing and productivity.
- Help to provide a connection to nature by maximising natural daylight and encouraging an external view out.
- Help to reduce energy costs and environmental impact by reducing the need for artificial light.

Consider:
- **Control of glare from sunlight** – identify areas at risk of glare. Identify a glare control strategy to design out potential for glare.
- **Daylighting** (building type dependent) – Maximise exposure to natural daylight A percentage of the total floor area of all 'relevant rooms must have adequate daylight.
- **View out** - Of all the spaces within relevant building areas, 95% of these spaces must comply with the criteria. 95% of their floor area was within 8m of an external wall that has a window or opening that provides an adequate view out.

- **Metrics – Reference:** BREEAM 2018 for Metrics and Guidance (BREEAM Hea 01 Guidance)

- **Private Space - (BREEAM Hea 07) Safe and healthy surroundings**
  Ensure safe access to and safe movement around the site.
- Facilitate the activities that can have physical, mental and social benefits for occupants aiding staff retention.
- Add to the desirability of the building helping to increase its value and appeal to occupants and neighbours.

Consider:
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 for the following: (The site entrance to the building entrance / Car parks (where present) to the building entrance /The building to outdoor space / Connecting to off-site paths where applicable.)
- 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:
- Delivery areas are not accessed through general parking areas and do not cross or share the following: (pedestrian and cyclist paths / outside amenity areas accessible to building users and general public.)
- 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.

Outdoor Space
- There is an outside space providing building users with an external amenity area

- **Metrics – Reference:** BREEAM 2018 for Metrics and Guidance (BREEAM Hea 07 Safe and healthy surroundings)

Ref QAE Docs	**[QAE 03-01] -** Material Efficiency Template **[QAE 03-02] -** Climate Change Adaption Template **[QAE 03-03] –** Design for disassembly & Adaption Template	

RIBA STAGE 1 - Preparation and Briefing

Core Sustainable Outcomes Tasks

01

Net Zero Embodied Carbon Emissions

- **Material efficiency - (BREEAM Mat 06) Safe and healthy surroundings**
- Reduce cost as a result of a reduction of material use in building design.
- Encourage the reuse of existing materials.
- Encourage the use of materials with higher levels of recycled content.
- Improve understanding of, and the performance of, alternative design and construction methods that result in lower material usage and waste levels.

Consider:
- set requirements that inform decisions throughout the design and construction of the project.
- Assess the site, the likely project scale, and the client's functional and aesthetic requirements to set material efficiency objectives for the project..

Metrics – Reference:
P+HS QAE_03-01 Material Efficiency Template /
BREEAM 2018 for Metrics and Guidance **(BREEAM Mat 06 Material Efficiency)**

Waste - (BREEAM WsT 05) Adaption to Climate Change
•Encouraging consideration and implementation of measures to mitigate the impact of more extreme weather conditions arising from climate change over the lifespan of the building.

Consider: Conduct a climate change adaptation strategy appraisal using:
•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.
•Develop recommendations or solutions based on the climate change adaptation strategy appraisal that aim to mitigate the identified impact.

- **Metrics – Reference:**
  P+HS **QAE_03-02** Climate Change Adaption Template /
  BREEAM 2018 for Metrics and Guidance (BREEAM Wst 05 Adaption to Climate Change)

Waste - (BREEAM WsT 06) Functional adaptability
•Encouraging consideration and implementation of measures design options related to adaptability and disassembly, which can accommodate future changes to the use of the building and its systems over its lifespan.

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

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- **Metrics – Reference:**
  P+HS **QAE_03-03** Design for disassembly & Adaption Template
  BREEAM 2018 for Metrics and Guidance (BREEAM Wst 06 Design for disassembly and adaption)

Ref QAE Docs	**[QAE 03-01] -** Material Efficiency Template **[QAE 03-02] -** Climate Change Adaption Template **[QAE 03-03] –** Design for disassembly & Adaption Template	

RIBA STAGE 1 - Preparation and Briefing

Core Sustainable Outcomes Tasks

01

Sustainable Connectivity and transport

Transport - (BREEAM Tra 02) Sustainable Transport measures
•Recognising developments in close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants.

Consider:

- Sustainable transport measures require a Transport assessment & Travel plan to have been carried out. Compliance will require multi-disciplinary input including client.

Extracts from BREEAM criteria.

- (5) Provide a public transport information system in a publicly accessible area, to allow building users access to up-to-date information on the available public transport and transport infrastructure
- (13) Install compliant cycle storage spaces to meet the minimum levels set out in Table 7.5. BREEAM 2018 Guidance
- (15) Provide at least two compliant cyclists' facilities for the building users, (Showers, changing facilities, Lockers, Drying spaces.)

- **Metrics – Reference:**
  BREEAM 2018 for Metrics and Guidance **(BREEAM Tra 02 Sustainable transport measures)**

Sustainable Life Cycle Cost

- **Management - (BREEAM Man 01) Project brief and design**
  Early stakeholder engagement ensures that key project stakeholders are identified and engaged to determine end user requirements and operational adaptability, allowing them to be taken into account throughout the project.

RIBA Sustainable Outcomes (Sustainable life Cycle Cost)

- *The ensure a holistic outcome with regards to economic sustainability, the intention is to use Government Soft Landings requirement for measuring operational costs of buildings.*

Consider:

There are 12 core principles of Soft Landings:

- Adopt the entire process
- Provide Leadership
- Set Roles and Responsibilities
- Ensure Continuity
- Commit to Aftercare
- Share Risk and Responsibility
- Use Feedback to Inform Design
- Focus on Operational Outcomes
- Involve the Building Operators
- Involve the End Users
- Set Performance Targets
- Communicate and inform

- **Metrics – Reference:** Meeting minute records /
  BREEAM 2018 for Metrics and Guidance (BREEAM Man 01 Project brief and design)
  RIBA Sustainable Outcomes Guide / RIBA Plan for Use Guide

Ref QAE Docs	**[QAE 03-01] -** Material Efficiency Template **[QAE 03-02] -** Climate Change Adaption Template **[QAE 03-03] –** Design for disassembly & Adaption Template	

RIBA STAGE 2 - Concept Design

Core Sustainable Outcomes Tasks

02

Good Health and Well Being

Health and Wellbeing – (BREEAM Hea 02) Indoor air quality •To encourage and support healthy internal environments with good indoor air quality – reduce the potential for indoor air pollution.
Consider: • **Emissions from construction products** requires an Indoor air quality plan (IAQ) to have been carried out. Compliance will require multi-disciplinary input including client. • **Emissions from construction products** • Three out of the five product types meet the emission limits, testing requirements and any additional requirements listed in Table 5.11 (BREEAM 2018 Guidance) • 1. Interior paints and coatings • 2. Wood-based products (including wood flooring) • 3. Flooring materials (inc floor levelling compounds and resin flooring) • 4. Ceiling, wall and acoustic and thermal insultation materials • 5. Interior adhesives and sealants (inc floor 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.
• **Metrics – Reference:** P+HS **QAE_03-04** VOC Emissions Template / BREEAM 2018 for Metrics and Guidance **(BREEAM Hea 02 Indoor air quality)**

Net Zero Embodied Carbon Emissions

Materials – (BREEAM Mat 02) Environmental impacts from construction products – Environmental Product Declarations (EPD) • To encourage availability of robust and comparable data on the impacts of construction products through the provision of EPD
Consider: • Specify construction products with EPD that achieve a total EPD points score of at least 20
Metrics – Reference: P+HS QAE_03-05 EPD Template / BREEAM 2018 for Metrics and Guidance (BREEAM Mat 02 Environmental impacts from construction)

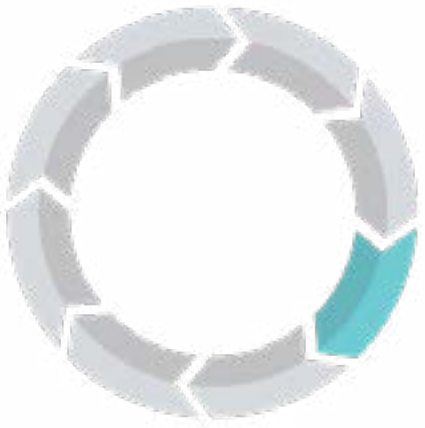
Materials – (BREEAM Mat 05) Designing for durability and resilience •Increasing the lifespan of the building through designing for durability and protection from degradation and specifying appropriate construction products.
Consider: •Protection measures are incorporated into the building's design and construction to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring. •Includes internal and external vehicle or trolley movements, deliveries, parking. & Access for maintenance.
Metrics – Reference: Metrics – Reference: BREEAM 2018 for Metrics and Guidance (BREEAM Mat 05 Designing for durability)

Ref QAE Docs	**[QAE 03-04] – VOC Emissions Template** **[QAE 03-05] – EPD Template**	

RIBA STAGE 2 - Concept Design

Core Sustainable Outcomes Tasks

02



Net Zero Embodied Carbon Emissions

Material efficiency - (BREEAM Mat 06) Safe and healthy surroundings
•Reduce cost as a result of a reduction of material use in building design.
•Encourage the reuse of existing materials.
•Encourage the use of materials with higher levels of recycled content.
•Improve understanding of, and the performance of, alternative design and construction methods that result in lower material usage and waste levels.

Consider:
•Develop strategies to implement or action the materials efficiency requirements set under the Preparation and Brief stage.
•Hold workshops with the project team to identify design opportunities to reduce or optimise materials use through design, specification, construction techniques etc.

Metrics – Reference:
P+HS **QAE_03-01** Material Efficiency Template /
BREEAM 2018 for Metrics and Guidance (BREEAM Mat 06 Material Efficiency)

Sustainable Water Cycle

Water – (BREEAM 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

Consider:
RIBA Climate Challenge target is to Reduce potable water use by at least 40% from CIRIA benchmark/ Building Regulation figures. Towards 10litres / person/day for non-Dom & 75 litres/ person/ day for Dom buildings.

Water Consuming Components –
Component's efficiencies to be included as a minimum:
1. WCs
- Wash-hand basin taps (except clinical whbs)
- Showers
- Urinals
- Kitchen taps: kitchenette

For base line and improvements refer to Water Efficient Component types (table 8.3) BREEAM 2018 Guidance
Grey Water Systems / Rainwater Systems
- can offset potable water demand – Calcs by others.

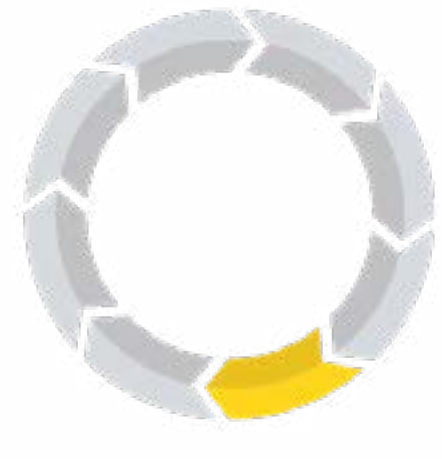
- **Metrics – Reference:**
  BREEAM 2018 for Metrics and Guidance (BREEAM Wat 01 Water consumption)

Ref QAE Docs	**[QAE 03-04] – VOC Emissions Template** **[QAE 03-05] – EPD Template**	

RIBA STAGE 3 - Developed Design

Core Sustainable Outcomes Tasks

03



Net Zero Embodied Carbon Emissions

Material efficiency - (BREEAM Mat 06) Safe and healthy surroundings
•Reduce cost as a result of a reduction of material use in building design.
•Encourage the reuse of existing materials.
•Encourage the use of materials with higher levels of recycled content.
•Improve understanding of, and the performance of, alternative design and construction methods that result in lower material usage and waste levels.

Consider:
•Develop design proposals based on learning from the concept design.
•Incorporate material efficiency measures and strategies identified in concept design into architectural, structural and building services design as appropriate. Review performance against previous stages and identify deviations.

Metrics – Reference:
P+HS **QAE_03-01** Material Efficiency Template
BREEAM 2018 for Metrics and Guidance (**BREEAM Mat 06 Material Efficiency**)

Waste - (BREEAM WsT 06) Functional adaptability
•Encouraging consideration and implementation of measures design options related to adaptability and disassembly, which can accommodate future changes to the use of the building and its systems over its lifespan.

Consider: •
•Conduct a study to explore the ease of disassembly and the functional adaptation potential of different de-sign scenarios - by the end of Concept Design.
•Develop recommendations or solutions based on the study - during or prior to Concept Design, that aim to enable and facilitate disassembly and functional adaptation.

- **Metrics – Reference:**
  P+HS **QAE_03-03** Design for disassembly & Adaption Template
  BREEAM 2018 for Metrics and Guidance (BREEAM Wst 06 Design for disassembly and adaption)

Sustainable Connectivity and transport

Transport - (BREEAM Tra 02) Sustainable Transport measures
•Recognising developments in close proximity of, and accessible to, local amenities which are likely to be frequently required and used by building occupants.

Consider:
- Sustainable transport measures require a Transport assessment & Travel plan to have been carried out. Compliance will require multi-disciplinary input including client.

Extracts from BREEAM 2018 criteria.
- (5) Provide a public transport information system in a publicly accessible area, to allow building users access to up-to-date information on the available public transport and transport infrastructure
- (13) Install compliant cycle storage spaces to meet the minimum levels set out in Table 7.5.
- (15) Provide at least two compliant cyclists' facilities for the building users, (Showers, changing facilities, Lockers, Drying spaces.)

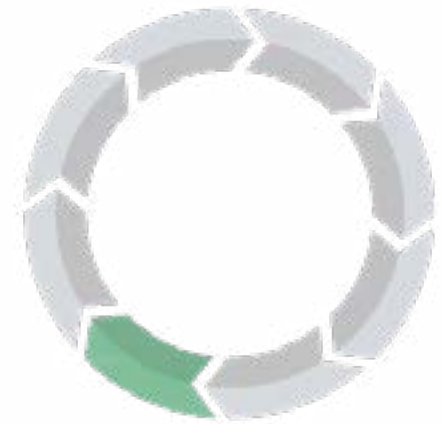
- **Metrics – Reference:** w
  BREEAM 2018 for Metrics and Guidance (**BREEAM Tra 02 Sustainable transport measures**)

Ref QAE Docs	**[QAE 03-01] - Material Efficiency Template** **[QAE 03-02] - Climate Change Adaption Template** **[QAE 03-03] – Design for disassembly & Adaption Template**	

RIBA STAGE 4 - Technical Design

Core Sustainable Outcomes Tasks

04



Net Zero Embodied Carbon Emissions

Material efficiency - (BREEAM Mat 06) Safe and healthy surroundings
•Reduce cost as a result of a reduction of material use in building design.
•Encourage the reuse of existing materials.
•Encourage the use of materials with higher levels of recycled content.
•Improve understanding of, and the performance of, alternative design and construction methods that result in lower material usage and waste levels.

Consider:
•Develop design proposals based on learning from the concept design.
•Incorporate material efficiency measures and strategies identified in concept design into architectural, structural and building services design as appropriate. Review performance against previous stages and identify deviations.

Metrics – Reference:
P+HS **QAE_03-01** Material Efficiency Template /
BREEAM 2018 for Metrics and Guidance (BREEAM Mat 06 Material Efficiency)

Waste - (BREEAM WsT 05) Adaption to Climate Change
•Encouraging consideration and implementation of measures to mitigate the impact of more extreme weather conditions arising from climate change over the lifespan of the building.

Consider:
•Provide an update during Technical Design demonstrating how the recommendations or solutions proposed at Concept Design have been implemented where practical and cost effective

- **Metrics – Reference:**
  P+HS **QAE_03-02** Climate Change Adaption Template /
  BREEAM 2018 for Metrics and Guidance (BREEAM Wst 05 Adaption to Climate Change)

Waste - (BREEAM WsT 06) Functional adaptability
•Encouraging consideration and implementation of measures design options related to adaptability and disassembly, which can accommodate future changes to the use of the building and its systems over its lifespan.

Consider: •
Provide an update, during 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.
•Produce a building adaptability and disassembly guide to communicate the characteristics allowing functional adaptability and disassembly to prospective tenants.

- **Metrics – Reference:**
  P+HS **QAE_03-03** Design for disassembly & Adaption Template
  BREEAM 2018 for Metrics and Guidance (BREEAM Wst 06 Design for disassembly and adaption)

Ref QAE Docs	**[QAE 03-01] - Material Efficiency Template** **[QAE 03-02] – Climate Change Adaption Template** **[QAE 03-03] – Design for disassembly & Adaption Template**	

RIBA STAGE 5 - Construction

Core Sustainable Outcomes Tasks

05

Net Zero Embodied Carbon Emissions

Material efficiency - (BREEAM Mat 06) Safe and healthy surroundings
•Reduce cost as a result of a reduction of material use in building design.
•Encourage the reuse of existing materials.
•Encourage the use of materials with higher levels of recycled content.
•Improve understanding of, and the performance of, alternative design and construction methods that result in lower material usage and waste levels.

Consider:
•Implement material efficiency measures in construction
•Implement material efficiency measures and strategies identified in previous stages in building construction and identify deviations. Identify further efficiencies as appropriate for this stage.

Metrics – Reference:
P+HS **QAE_03-01** Material Efficiency Template
BREEAM 2018 for Metrics and Guidance (**BREEAM Mat 06 Material Efficiency**)

Ref QAE Docs	**[QAE 03-01] - Material Efficiency Template**	

RIBA STAGE 6 - Handover and Close Out

Core Sustainable Outcomes Tasks

06

(RIBA Plan for Use Guide)

The requirements at R**IBA Stage 6** are more accurately outlined in the R**IBA Sustainable Outcomes guidance** and where adopted the **RIBA Plan for Use Guide .**
Where identified these could include:

•Following a Soft Landings Principles or Methodology to create a collaborative and outcomes focused project ethos to deliver better outcomes.
•A commitment to completing 'Light Touch POE at the end of Stage 6

RIBA STAGE 7 - In Use

07

(RIBA Plan for Use Guide)

The requirements at **RIBA Stage 7** are more accurately outlined in the R**IBA Sustainable Outcomes guidance** and where adopted the **RIBA Plan for Use Guide .**
Where identified these could include:

•If required, carry out level 2 or 3 POE on projects post completion during **Stage 7**
•Encourage the client and the design team to commit to disclose outcomes performance data