Summary of changes BREEAM 2014 – 2018

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atelier ten

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Introduction

BREEAM is regularly updated in order to best reflect the concerns and of the construction industry. The most recent update released on 7th March 2018: BREEAM 2018 New Construction includes new changes in comparison to the 2014. The deadline for submitting schemes under BREEAM NC 2014 was the 23rd of March. The key changes are summarised in this document.

The impact of changes is represented in three tiers:

Low impact ★

Medium impact ★ ★

High impact ★ ★ ★

Summary of changes with high impact to the design

The following issues have changes with a high impact to the design.

Hea 01 – Visual comfort

This credit now requires a glare control assessment to demonstrate areas where glare will (and will not) likely occur. The credit can be achieved directly if compliant shading is provided. Alternatively, a survey or modelling must prove that sunlight cannot reach the eyes of occupants from high level summer and low-level winter sun. The methodology still does not prescribe standards, performance thresholds or occupancy patterns, but is more stringent than 2014 version.

Hea 02 – Indoor air quality

Indoor air quality plan is now a prerequisite, not a separate credit.

Ene 01 - Reduction of energy use and carbon emissions

All building types have 9 credits available (previously 12) with new and more stringent EPRnc benchmarks (a EPRnc of 0.9 would achieve 12 credits under BREEAM 2014 and only 9 with 2018). 4 additional credits are available for the Prediction of Operational Energy Consumption (POEC) using the methodology described in CIBSE TM54. These calculations require additional energy modelling by an energy specialist. (Atelier Ten is qualified to carry out this type of analysis).

Wat 01 – Water consumption

Benchmarks have been updated with more stringent criteria for the Alternative Wat 01 calculation. (i.e. WC performance level 1 in BREEAM 2014 was 5l and in BREEAM 2018 it is 4.5l (10% improvement)).

Mat 01 - Environmental impacts from construction products – LCA. & credits

A Life Cycle Assessment (LCA) must be carried out at the key design stages to demonstrate that the specification of material build-ups and their impact have been considered. A full LCA requires the appointment of a specialist (Atelier Ten is qualified to carry out this type of analysis). The green guide for specification is no longer used in this credit.

Pol 02 – Local air quality

NOx, VOCs and particulate matter emissions from heating and DHW systems are now assessed. Pollution thresholds are more stringent when buildings are located in AQMAs. Credits are available by default for heating and hot water supplied by non-combustion systems. CHP systems may no longer be able to contribute towards this issue due to the NOx emissions. Projects connected to the grid (fully electric) are not penalised. This credit benefits systems such as electric ground source and air source heat pumps.

What does the changes mean to the clients and design team?

High impact

- Architects now need to consider glare control measures from early design stages. Clients may need to include internal blinds as part of a base building scope.
- Preparing an indoor air quality plan should be included in tender documents and architects and MEP engineers should provide sufficient information to appointed contractors to prepare the plan.
- Projects targeting BREEAM 'Excellent' or above will likely need to
  - carry out operational energy calculations in accordance to CIBSE TM54.
  - consider greywater or stormwater re-use in addition to specifying low-flow fixtures.
  - carry out LCA at concept and detailed design stages.
- All-electric systems such as ground source heat pumps or air source heat pumps will become preferable with the focus on local air quality (this is also depicted in the new draft London Plan).

Medium impact

- Clients may need to set aside separate budget for soft landing and post occupancy evaluations.
- Contractors will need to implement tighter monitoring of water, transportation related carbon and energy consumption during construction.
- Architects and interior designers will need to be more careful in selecting paints and finishes with low VOCs. Specification languages will need to reference new standards introduced in BREEAM 2018.
- Architects will need to consider providing an outside space as an amenity at early design stage.
- Clients and MEP engineers will need to consider incorporating electric charging points for more than 10% of the total car parking capacity.
- When specifying products, architects and interior designers should consider products with a third party certified Environmental Product Declarations (EPDs).
- Architects and structural engineers should study possibilities for disassembly and functional operation at concept stage.
- Architects should provide additional space for compostable waste for all multi-residential buildings.
- Blue roofs, green roofs and/or attenuation tanks will be required in most of urban sites to meet the surface water management credit.

Summary of changes

Management

Table 1 Key changes in management

Issue	Title	Key change	Impact scale
Man 01	Project brief and design	AP credit is now based on the results of the Sustainability Champion Consultation carried out by the BREEAM AP. The BREEAM AP and the BREEAM assessor are different roles	★
Man 02	Life cycle cost and service life planning	No significant changes	
Man 03	Responsible construction practices	BREEAM AP requires additional visits and a deeper involvement	★★
		Considerate Construction Scheme is no longer the only way to achieve this credit. A checklist is the default route to achieve this credit. More information will be provided in Guidance Note 33	★★
		Targets are now required for the consumption of water, transportation, energy during construction and monitoring	★★
Man 04	Commissioning and handover	Handover requirements: separate building user guide and training for occupiers and premises managers	★
Man 05	Aftercare	Removal of the post occupancy evaluation (POE) dissemination requirement, and new requirement for **funds** to be committed to achieving the POE	★★
		Exemplary credit removed	★

What does this mean to the client and design team?

- Set aside separate budget for soft landing and post occupancy evaluations.
- Tighter monitoring of water, transportation related carbon and energy consumption required during construction.

Health and wellbeing

Table 2 Key changes in health and wellbeing

Issue	Title	Key change	Impact scale
Hea 01	Visual comfort	Glare control now requires a **glare control assessment** to demonstrate areas where glare will, and will not be an issue	★★★
		Daylighting number of credits for multi-residential assessments and healthcare have changed	★
		View out: now assessed for 95% of relevant building areas, instead of 100% and extended to **8m**	★
Hea 02	Indoor air quality	Indoor air quality plan is now a **prerequisite**, not a separate credit. It must be prepared during RIBA Stage 2	★★★
		Changes to ventilation credit, including additional routes for compliance. Intakes must be 10m from any extract or source of pollution, measured horizontally	★
		Updated standards for VOC is now more stringent formaldehyde emission targets, new TVOC benchmarks for paints and coatings and classification in carcinogens categories 1A and 1B. Now **2 credits** available are tiered based on the number of products that comply	★★★
Hea 03	Safe containment in laboratories	This credit is no longer available. Assessed as part of Hea 02	★
Hea 04	Thermal comfort	Design for future thermal comfort criteria now requires use of new **CIBSE 2016 weather files**	★★
Hea 05	Acoustic performance	All building types now need to follow acoustic principles. All building types have three credits available apart from residential institutions which has four New requirements for the third credit (room acoustics): • reverberation time performance and associated tests in open plan teaching spaces; and • a site inspection by the developer or SQA confirming compliance in corridors and stairwells	★
Hea 06	Security	Safe access credit moved to Hea 07 Exemplary credit available Suitably Qualified Security Specialist definition updated	★
Hea 07	Safe and healthy surroundings	New issue with new criteria (partly from Hea 06) New credit for the assessment of Outside Space that benefit the occupants physically, mentally and socially	★★

What does this mean to the client and design team?

- The design team now needs to consider glare control measures from early design stages. The client may need to include internal blinds as part of the base building.
- Preparing an indoor air quality plan should be included in tender documents and architects and MEP engineers should provide sufficient information to appointed contractors to prepare the plan.
- Architects and interior designers will need to be more careful in selecting paints and finishes with low VOCs. Specification languages will need to reference new standards introduced in BREEAM 2018.
- Architects to consider designing in an outside space as an amenity at early design stage.

Energy

Table 3 Key changes in energy

Issue	Title	Key change	Impact scale
Ene 01	Reduction of energy use and carbon emissions	All assessment types have **9** credits available (previously 12). New EPRNC benchmarks	★★★
		4 additional credits available for **Prediction of Operational Energy Consumption** (POEC). A workshop must be held to discuss this (pre-requisite). Shell Only assessments only have these nine credits available; POEC credits are available for undertaking additional design and post construction stage energy modelling and reporting consumption targets	★★★
		Up to **5 exemplary** credits are available for all assessment types other than Shell Only • 2 credits – beyond zero net regulated carbon • 3 credits – carbon negative • 2 credits – **post-occupancy evaluation** commitment (includes achieving Ene 02 and commitment to pay and appoint an energy assessor)	★★
		Simple buildings have 9 standard credits available for EPR. 7 Exemplary credits are available; 2 for meeting the POEC requirements and the five Exemplary credits for Carbon Negative and Post-Occupancy Stage	★
Ene 02	Energy monitoring	New criterion for sub-metering of high energy load and sub-metering per floor plate tenancy areas for single occupancy buildings	★
Ene 03	External lighting	Minimum luminous efficacy should be no less than 70 luminaire lumens per circuit watt (previously 60)	★★
Ene 04	Low carbon design	Passive design analysis and Low zero carbon feasibility study criteria amended. **'Meaningful reduction' in energy is not needed**; the reduction needs to be quantified (previously 5%)	★
		Free cooling credit now only available to naturally ventilated buildings only	
Ene 05	Energy efficient cold storage	No significant changes	
Ene 06	Energy efficient transportation systems	No significant changes	
Ene 07	Energy efficient laboratory systems	Pre-requisite to comply with Hea 03 requirements removed	★
Ene 08	Energy efficient equipment	Small power has been removed as an entry in the Examples of solutions table. Small power can still be considered the significant contributing unregulated energy consumption of the building and assessed as such	★
Ene 09		Drying space requirements from Ene 09 have been incorporated into Ene 08	★

What does this mean to the client and design team?

- Projects targeting BREEAM 'Excellent' or above will likely need to carry out operational energy calculations in accordance to CIBSE TM54.

Transport

Table 4 Key changes in transport

Issue	Title	Key change	Impact scale
Tra 01	Transport assessment and travel plan	Number of credits **reduced to 2** New Issue incorporates Travel plan requirements (previously Tra 05)	★★
		Travel plan to include the site's Accessibility Index and Accessible amenities (from previous Tra 02) to reflect the transport situation prior to the development	★
Tra 02	Sustainable transport measures	New Issue requires implementation of sustainable transport measures including electric car charging points, new bus services, cycle storage, etc • electric charging points (3kw) for > 10% of the total car parking capacity • same requirements for cycling facilities	★★
		Number of credits **increased to 10** depending on the Accessibility index	★★
Tra 03	Cyclist facilities	Credit merged within Tra 01 and Tra 02	★
Tra 04	Maximum car parking capacity	Credit merged within Tra 01 and Tra 02	★
Tra 05	Travel plan	Credit merged within Tra 01 and Tra 02	★

What does this mean to the client and design team?

- Consider incorporating electric charging points for more than 10% of the total car parking capacity.

Water

Table 5 Key changes in water

Issue	Title	Key change	Impact scale
Wat 01	Water Consumption	Benchmarks updated (**more stringent**) for the Alternative Wat 01 calculation Methodology now allows actual specification performance to be used	
		Increased flexibility of assessment and scope provided for Healthcare buildings	
Wat 02	Water monitoring	No significant changes	
Wat 03	Water leak detection	No significant changes	
Wat 04	Water efficient equipment	No significant changes	

What does this mean to the client and design team?

- Projects targeting BREEAM 'Excellent' or above will likely need to consider greywater and/or rainwater re-use in addition to specifying low-flow fixtures.

Materials

Table 6 Key changes in materials

Issue	Title	Key change	Impact scale
Mat 01	Environmental impacts from construction products - LCA	Mat 01 substantially changed. It now requires the assessment of hard landscaping (Previously Mat 02) and insulation (Previously Mat 04) into Mat 01	★
		7 credits and now available (plus 3 exemplary). This credit requires a **Life Cycle Assessment** (LCA) to demonstrate that the impact of material and systems specification has an impact over the building lifetime A simplified BREEAM LCA tool is available but the number of credits available is reduced in comparison to a full BREEAM compliant LCA	★★★
Mat 02	Environmental impacts from construction products - EPD	Mat 02 focuses on encouraging **Environmental Product Declarations** (BS EN 15804 or ISO 21930) on construction products	★★
Mat 03	Responsible sourcing of construction products	No significant changes	
Mat 04	Insulation	Credit issue merged within Mat 01	
Mat 05	Designing for durability and resilience	Requirements now **more detailed** regarding material degradation. This uses BS 7543:2015 as the default standard, but the design team need to conduct a detailed assessment of materials' degradation due to environmental factors	★★
Mat 06	Material efficiency Assessment scope	Examples of material efficiencies required at each work stage	★

What does this mean to the client and design team?

- Projects targeting BREEAM 'Excellent' or above will likely need to carry out LCA at concept and detailed design stages.
- When specifying products, consider products with a third party certified Environmental Product Declarations (EPDs).

Waste

Table 7 Key changes in waste

Issue	Title	Key change	Impact scale
Wst 01	Construction site waste management	**Extra credit** available for pre-demolition audit. Requirements are more stringent	★★
Wst 02	Use of recycled and sustainably sourced aggregates	All aggregates used now assessed Aggregate selection now assessed in **more detail** (use, type, location, and distance)	★★
Wst 03	Operational waste	Dwellings with communal facilities must provide storage for compostable waste	★
Wst 04	Speculative finishes (Offices only)	No significant changes	
Wst 05	Adaptation to climate change	No significant changes. Scope of assessment now includes building services	
Wst 06	Design for disassembly and adaptability	Title changed. The scope of issue now includes disassembly and adaptability	★
		2 credits now available: 1 credit to **study** possibilities for disassembly and functional adaptation and 1 credit for the implementation of the recommended strategies of the first credit	★★

What does this mean to the client and design team?

- Study possibilities for disassembly and functional operation at concept stage.
- Provide additional space for compostable waste for all multi-residential buildings.

Land use and ecology

Table 8 Key changes in land use and ecology

Issue	Title	Key change	Impact scale
Le 01	Site selection	No major changes	
Le 02	Identifying and understanding the risks and opportunities for the project	New pre-requisite: choose an assessment Route 1 (Ecological risk evaluation checklist for 1 credit) or route 2 (appoint ecologist for 2 credits). Monitor compliance against EU or UK legislation	★
		More detailed methodology than 2014 with the involvement of stakeholders. Criteria requires a **site survey and evaluation**, which defines the ecological value of the site, risks and capacity to enhance value. Based on the survey, the stakeholders determine the **'ecological outcomes'** for the site and select specific measures following a **hierarchy of action** (avoidance, protection, reduction, site compensation and enhancement)	★ ★
		Exemplary credit for considering the wider site sustainability-related activities and the potential for ecosystem service related benefits (landscape, health and wellbeing, resilience, infrastructure)	★ ★
Le 03	Managing negative impacts on ecology	Pre-requisite: LE 02 achieved. Monitor compliance against EU or UK legislation	★
		Routes 1 and 2 also apply The fist credit requires the **involvement of stakeholders** and definition of roles and responsibilities to deliver the ecological outcomes from LE 02	★
		The second credit requires the assessment and management of **negative impacts** during construction following the hierarchy of action in LE 02. This issue does not evaluate 'change in ecological value', like in 2014 version. This is now included in LE 04	★ ★
Le 04	Change and enhancement of ecological value Assessment scope	Pre-requisite: LE 03 achieved. Monitor compliance against EU or UK legislation	★
		Routes 1 and 2 also apply The first credit is awarded based on the collaboration of representative stakeholders (only route 2) Additional credits are awarded based on the **'change in ecological value'** based on the ecologist input	★ ★
Le 05	Long term ecology management and maintenance Assessment scope	Pre-requisite: LE 04 achieved. Monitor compliance against EU or UK legislation and involvement of stakeholders	★
		Criteria focuses on the management and maintenance of new and existing ecological features. It requires the client to commit to **monitor** the site's ecological features The landscape and ecology management plan scope is more detailed than 2014 version There are no credits for the implementation of additional measures, like in 2014 version	★ ★

Pollution

Table 9 Key changes in pollution

Issue	Title	Key change	Impact scale
Pol 01	Impact of refrigerants	No major changes.	
Pol 02	Local air quality	**NOx, VOCs and particulate matter** emissions are now assessed. Benchmarks for NOx revised. All emission benchmarks are percentage improvements on EU legislative maximums	★★★
		Credits are available by default for heating and hot water supplied by non-combustion systems. Developments with heating supplied via grid **electricity** no longer penalised for this credit	★★
Pol 03	Flood and surface water management	New **pre-requisite** for the appointment of an appropriate consultant	★★
		30% surface water runoff improvement required	★★
		Water pollution prevention systems must be **bespoke**, taking account of the specific site requirements and natural or man-made environment of and surrounding the site	★★
Pol 04	Reduction of night time light pollution	No significant changes	
Pol 05	Reduction of noise pollution	BREEAM 2018 requires that a noise survey is carried out at the nearest or most exposed noise sensitive development (BREEAM 2014 accepts a location which can be argued to be representative); In BREEAM 2018, noise from fixed installations on the new development must be limited to at least 5dB below the background noise throughout the day and night. BREEAM 2014 is significantly less onerous and sets these limits to 5dB and 3dB above background, for day and night respectively	★★

What does this mean to the client and design team?

- All-electric systems such as ground source heat pumps or air source heat pumps will become more preferable with the focus on local air quality (this is also depicted in the new draft London Plan).
- Blue roofs, green roofs and/or attenuation tanks will be required in most of urban sites to meet the surface water management credit.

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