

A wider and deeper spectrum for BREEAM NC 2016

On March 28th, the new BREEAM environmental certification scheme for new constructions – BREEAM INTERNATIONAL NEW CONSTRUCTION 2016 (NC 2016) – replaced the previous scheme which had been used by the market for three years. As a continuation of BREEAM International NC 2013, it now completes the range of certifications with BREEAM INTERNATIONAL REFURBISHMENT AND FIT-OUT (RFO 2015) for the renovation and fit-out of buildings, launched last year. Our team of assessors has taken a close look at this reference, in order to provide an overview of what has changed, compared to previous versions.

Launched in the United Kingdom in 1990, BREEAM has become one of the most widely used environmental certification systems in the world. It is the most widely used in Europe, and in Belgium, where 33 new buildings have received final BREEAM certification and 36 projects an intermediary certificate.

BREEAM promotes the use of high energy and environmental performance, by going beyond the regulations and rules in force in this domain. As these are constantly evolving, the certification system evolves at the same time, in order to always stand apart. This evolution helps the construction sector move forwards, and challenges property developers, encouraging them to construct buildings which respond to the challenges of the moment (environmental, climactic, sanitary, ecological etc.).

New options for evaluating a building

By contrast with previous BREEAM scheme, BREEAM NC 2016 numbers three evaluation options: 'Fully fitted', 'Shell and Core' and 'Shell only'. While the first of these enables buildings which are ready to be used immediately to be evaluated, the other two

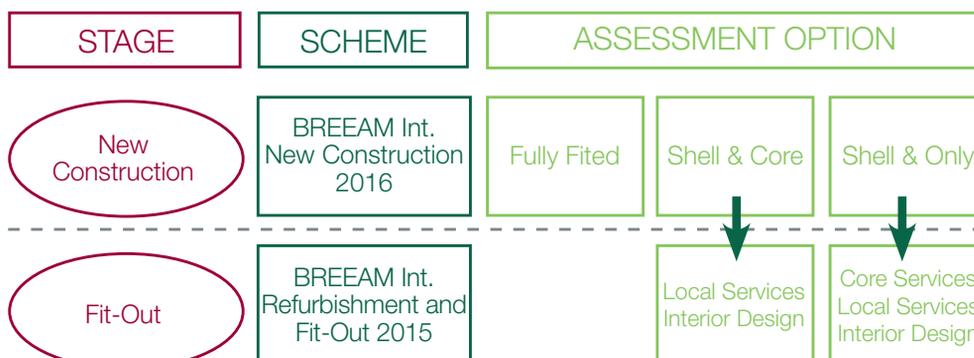
enable buildings to be certified without taking account of how they made be finished for tenants. In these cases, a second certification based on BREEAM RFO 2015 can complete the NC 2016 evaluation, by evaluating the fit-outs of the future tenants. As a result of this, it is no longer necessary for developers to have recourse to a 'Green Lease Agreement' if they only wish to certify their buildings in the 'Shell and Core' or 'Shell only' state. Depending on the option selected, the certification can include all or part of the following elements: the structure, the building envelope, the building servicing installations, the lifts, the fit-out of the common areas, etc.

New types of building assessable with BREEAM

Along with residential buildings, offices, retail and industrial buildings, other types of buildings can be certified by BREEAM NC 2016. Certification has been extended to hotels, residential institutions (rest homes, student residences etc.) and to educational establishments (schools, universities...). BREEAM Bespoke is still able to be envisaged for 'non-standard' buildings such as prisons, cinemas, conference centres etc.



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BREEAM New Construction 2016 numbers three assessment options

Integrated conception process

In order to be able to follow the guidelines of a construction project, the 'Management section' of the certification process has been completely reorganised. Each criterion now refers to a key phase of the project (from conception to use, and not forgetting construction) and includes demands specific to each phase. One of the

promoting an 'Indoor Air Quality Plan', drawn up by an expert. Through his study, he advises the conception team in its design and its choice of materials, in order to eliminate pollutants (such as volatile organic components, NOx, SO2 and others) at source to maintain the quality of the air during the building's use. Recommendations are made to the contractors

“To minimise both needs in terms of primary energy, and greenhouse gas emissions, BREEAM concentrates more on the passive conception and design of a building”

objectives of this reorganisation is to integrate into the project, as early as possible, right from the programming or sketch stage, an environmental process bringing together a panel of experts (acoustics, ecology, contractor...). In order to guide and advise the project developers on sustainability and environmental aspects, BREEAM recommends including in the team an expert in the domain of sustainability. This expert now wears the 'Sustainability Champion' hat, the equivalent of BREEAM AP in the previous version.

The life-cycle cost approach to the project was already dealt with in previous versions. BREEAM now grants a supplementary credit if this phase is handled at the programming stage, the stage at which the decision-making power is strongest, and enables maximum benefit to be gained over the long term.

Ensuring the quality of the interior climate

A focus is put on minimising pollution of the air inside the buildings, particularly through

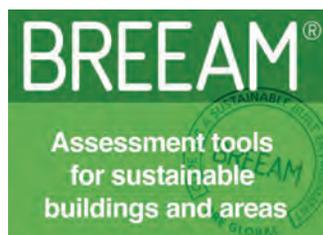
to avoid soiling ventilation equipment during the work-site phase.

And finally, the procedures for carrying out a flush-out⁽¹⁾ and for measuring the air quality (to be undertaken before the building is occupied), are to be put in place via the 'Indoor Air Quality Plan'. The new reference is also more demanding where emissions of volatile pollutants is concerned, pollutants inherent to finishing products (paint, varnish, floor coverings etc.). New components such as formaldehydes and certain cancerous substances are now to be limited, in addition to the emissions limitations to be adhered to for volatile organic components. In order to be in line with international norms in force, testing and evaluation procedures for measuring interior air quality after the construction phase, have also been revised.

Climate change

The scheme has equipped itself with criteria aiming at reducing the impact of climate change on the building. For example, the structure and the envelope of the building

Evolutions within BREEAM International NC 2016



- Certification according to level of finishing
- Broadening of building types
- More significant impact of the integrated conception process
- Reinforcement of criteria involving interior environment quality
- Climactic issues taken into account
- Optimisation of the environmental impact of materials and waste
- Adaptation of the scoring system

(1) Flush-out: purging the air of the building has to be carried out after construction and before occupation of the building, in order to eliminate pollutants (organic volatile components or other pollutants inherent to finishing materials), and any foreign matter which may have accumulated in the ventilation system during construction, etc.

“New concepts appear to minimise the environmental impact of materials used and of waste”

have to be subject to a risk analysis, enabling situations which could harm the construction to be avoided, and sustainable solutions to be integrated. Supplementary credits are also attributed when a holistic approach to the effects of global warming is adopted. In this case, particular attention is paid to issues such as flooding, thermal comfort, energy consumption etc. in order to minimise needs in terms of primary energy and emissions of greenhouse gases, BREEAM insists more than before on **passive design** (location, climate, orientation, construction method, natural lighting...) and on passive cooling. This all results in the whole of the conception of the building being the priority, and not just the use of low carbon emissions systems.

Sustainability of the equipment and the construction elements

Thorough conception of those zones subject to high levels of use was already an evaluation criterion in previous versions. From now on, the field of application of this is enlarged. The foundations, the load-bearing structure and the exterior envelope are examples of new elements to be taken into account. For each of these, environmental effects and the effect of the degradation of the materials on their durability will be evaluated, such as for example the effect of sunlight, temperature variations, corrosion...

Environmental impact of the materials

New concepts have been introduced to minimise the environmental impact of materials used, and of waste:

- **Material efficiency** > Objective: to design a robust and sustainable building while minimising its needs in primary energy along with minimising the production of waste during the dismantling/demolition of the building. During the whole of the conception and construction of the building, opportunities for a rational use of materials have to be identified.
- **Functional adaptability** > Objective: right from the conception stage, study possibilities for renovating the building or converting it to another use.

- **Waste use** > extra importance is accorded to demolition waste, for which results are expected in terms of not sending it to landfill sites. This new element puts the emphasis on demolition audits to be carried out as far upstream of the project as possible. This enables the project designers to be involved more on what happens to waste, and to encourage them to move towards re-use, recycling or other forms of value-creation favoured by a circular economy.
- **Recognition of EPD's** > the recognition of Environmental Product Declarations (EPD) which enables an objective approach to product origin of the materials and of their carbon footprint.

Following this brief analysis, it can be observed that in general terms, the overall approach remains similar to the previous version. Nevertheless, given the evolution of regulations (such as, for example, the Building Energy Performance in Belgium – PEB), the demands of BREEAM have been reinforced in line. On top of this, BREEAM NC 2016 has adopted a new weighting system which enables better adaptation of the scores by country and by evaluation option.

This evolution demands new studies to be carried out and new notions to be integrated ever earlier into projects, particularly at the conception and programming phase. It is therefore advantageous to designate a sustainability expert at a very early stage, and to establish a clear time-line⁽²⁾ for the certification procedure, and to involve in good time those specialists who can introduce the best sustainable and economic solutions to the project.

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(2) Read the article 'Time-line for environmental certification' on this subject, available at www.b4f.eu