A Study of the Effectiveness of BREEAM as an Assessment Tool for Sustainability by Interview of Practitioners

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A STUDY OF THE EFFECTIVENESS OF BREEAM AS AN ASSESSMENT TOOL FOR SUSTAINABILITY BY INTERVIEW OF PRACTITIONERS

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Jack Sewell, the primary researcher, undertook the basis of this review in preparation for his dissertation, whilst reading BSc (Hon) Environmental Science.

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The increasing environmental obligations on the built environment have resulted in a range of assessment methods. A currently predominant choice, applied by developers and consultants is the Building Research Establishment Environmental Assessment Method (BREEAM).

Our interviews with BREEAM-certified professionals evaluated the proficiency of BREEAM as a measure of sustainability and noted the nature of flaws in its current application. Primary research methods were in-depth, semi-structured interviews, developed from a thematic analysis of the previously published literature review.

Results acknowledged that BREEAM is essentially an efficient tool for assessing the environmental performance of a development and that the evolving nature of BREEAM gives it the greatest potential to develop into a proficient measure of sustainability. However, this study concluded that BREEAM is not currently a proficient test for sustainability, as it does not address enough of the fundamental principles of sustainable development. If sustainability is the aim, then attention should focus on:

1. Product lifetime economics need to be built into the assessment.
2. Attention should be paid to the geographical location and environmental properties of the site.
3. Post construction, continual monitoring of effectiveness and evaluation of impacts should be carried out.

KEY WORDS: BREEAM, Sustainable Development, Environmental Assessment, Methodology Appraisal

INTRODUCTION

As BREEAM is a leading sustainability assessment system (BREEAM, 2017a,b), the efficacy of its application is dependent on the assessors' interpretations of the term 'sustainable development'.

Our review of literature on BREEAM produced the following conclusions:

"*BREEAM is widely regarded as a very useful tool for assessing the environmental performance of a development, but does not address the wider issues of sustainable development, such as geographical site suitability of solutions and long term environmental footprint. It is therefore not a proficient measure of sustainability within the widely accepted definition of sustainable development. The main concerns from the literature are:*

"Positives

- *BREEAM effectively addresses the environmental performance of a building.*
- *Early involvement of an assessor in the project design is beneficial to the assessment.*

"Negatives

- *BREEAM is seen to involve much less client participation than other assessment methods.*
- *There is a lack of incorporation of social and economic dimensions of sustainable development.*
- *BREEAM does not allow for adequate consideration of the variation in needs or opportunities indifferent geographical locations.*
- *BREEAM can be regarded as a box-ticking exercise more to satisfy financial considerations than to find the most suitable solution for sustainability.*
- *The ability of the BRE to provide effective quality assurance.*

"The flexible nature of the assessment tool and the intention of BRE to update and progress the methodology presents a good chance of BREEAM maturing and achieving its goal. To this end, the building users, designers and developers must have a common understanding of the real definition of sustainable development." (Sewell & Fraser, 2018b).

These conclusions were used to inform an interview method for canvassing expert opinion on the effectiveness of BREEAM as an assessment method for sustainability.

The aim of this study was to evaluate the proficiency of BREEAM as a measure of sustainability and to note the nature of any flaws in its current application. A phenomenological approach was used, considering both primary and secondary data. Primary research methods were in-depth, semi-structured interviews with six, experienced, BREEAM-certified professionals, who together represented a total of 35 years of assessment experience. The results were considered in the context of already published, secondary information.

METHOD

This study evaluated the level of proficiency with which BREEAM measures sustainable development. A comprehensive literature review provided *a priori* evaluative research conclusions (presented above). Richness and current professional depth of opinion was added to this overview by appraising the opinions of experts, specifically chosen because of their relevant experience.

Interviewees were self-selected by response to an invitation via LinkedIn (the professional networking website) and by word-of-mouth amongst the primary researcher's personal professional contacts.

The method used was semi-structured interviews, which are the result of pre-planning (Literature Review: Sewell and Fraser, 2019) and design of questions before the interview,

as with structured interviews, but with the added opportunity for interviewees to elaborate on and explain further through open-ended questions (as Alsaawi, 2014). Importantly, the interviewer, too, had experience of BREEAM and was able to interpret and seek further clarity all the better for his subject-knowledge. Interviews were carried out by telephone to allow the researcher to take advantage of conversational cues and immediate clarification. The interviews were recorded (with permission) to aid analysis.

The interviews were piloted twice, amended and finally carried out with six, active, BREEAM- accredited professional assessors. The interviewees held a combined total of 35 years as accredited assessors. The interviewees had experience of working with other UK-based methodologies, such as Code for Sustainable Homes, Home Quality Mark and SKA Rating (RICS). Two interviewees had worked with the international methods: LEED (Leadership in Energy and Environmental Design), *Passivhaus* and Greenstar.

The range and style of interview questions was guided by the issues brought forward in an extensive literature review and further developed in the two pilot interviews. In order to evaluate the BREEAM methodology against the BRE stated purpose and against current definitions and intensions of sustainable development, transcribed interviews were phenomenologically analysed in a four-stage process (Marton, Carlsson & Halasz, 1992):

1. Identifying data in 'pool of meaning', grouping similar sets of data;
2. Contrasting these groups of data.
3. Engaging an independent judge to establish reliability.
4. Post-coding into themes before independent review.

Piloting the interview with an assessor developed and honed the final set of questions used in the interviews, see Figure 5.

1. How long have you worked on BREEAM projects?
2. How long have you been a licensed assessor?
3. On how many projects have you acted as a consultant from the beginning of the design?
4. How would you define BREEAM?
5. What would you class as the main aspects of sustainability in the built environment?
6. What do you consider successful about BREEAM as an assessment method?
7. What do you consider to be weak points about BREEAM as an assessment method?
8. Have you ever worked with any other assessment methodologies? *e.g.* LEED, CASBEE, Green Building Tool.
9. How do you feel these differ from or compare to BREEAM?
10. How would you define a sustainable development?
11. Do you feel the greatest emphasis on sustainable development is, or should be implemented in the design phase?
12. Why do you feel this?
13. Of all the sections within BREEAM, do you feel there is a larger emphasis on environmental aspects than any other?
14. For a development to be truly sustainable, do you feel that all aspects of sustainability should be addressed equally?

15. What do you feel are the key factors that lead to a sustainable development or building? *e.g.* a communicative design team
16. Within the 2014 BREEAM manual, there were a lot of changes, for example the evidence detail for each credit became very vague. What are your opinions on this?
17. How much of an impact do you feel they have on the suitability of the assessment method to measure sustainability?
18. It is currently being proposed that the new version of BREEAM will include another stage for certain credits to cover post-occupation. Do you feel this will bring value to the assessment? If so how?
19. Do you feel that BREEAM is an 'afterthought' or an 'add-on' to gain planning approval, as opposed to a voluntarily engaged assessment?
20. If yes, how do you feel this could be improved?

Figure 5: Semi-structured interview questions used in this study.

RESULTS

Interview Post-coding

The information coalesced into the following themes, which allowed for richer interpretation for the discussion section:

- Factors affecting sustainability / sustainable development
- Environmental aspects of sustainability
- Social aspects of sustainability
- Economic aspects of sustainability
- Design tool for setting standards
- Sustainability assessment tool
- Defining sustainable development
- Experience with assessment methodologies
- Positives of BREEAM
- Negatives of BREEAM
- Improvements required for BREEAM.

Questions 1 and 2: Interviewee Profiles

Six interviewees were randomly chosen. Two interviewees were known to the researcher, having responded to the word-of-mouth invitation. Four were previously unknown, but responded to the LinkedIn request for participants. Their levels of experience as BREEAM assessors were varied (see Figure 6).

Interviewee Identifier	Time working with BREEAM (years)	Time as a licensed BREEAM assessor (years)
A	4	1
B	3.5	1.5
C	7	5
D	12	8
E	8	8
F	10	10

Figure 6: The number of years for which interviewees' had experience of BREEAM and, specifically, as licensed assessors.

Question 3: How often BREEAM is applied from the start of a project.

Our interviewees reported a varied range of rates for where BREEAM was considered from the beginning of a project - between 6 and 100%.

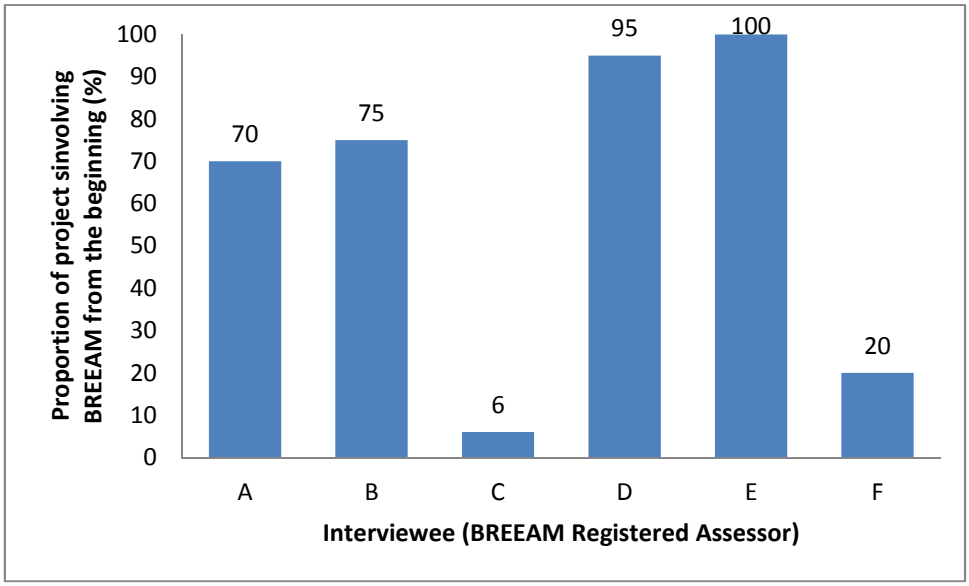

Figure 7: In the interviewees' experience, the percentage of projects where BREEAM was applied from the start of the project design.

In case there has been an increase, or decrease in BREEAM involvement over the range of years spanned by our interviewees' experience, a comparison was made between years of experience and number of projects involving BREEAM from inception. Figure 8 shows no correlation.

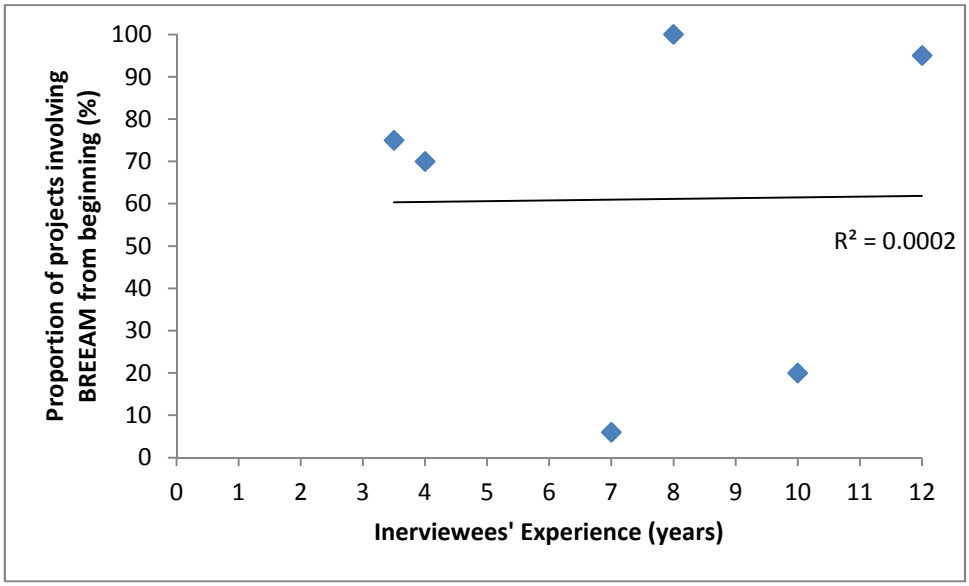

Figure 8: Correlation of interviewees' years of BREEAM experience with how many projects they knew to have involved BREEAM consideration from early design.

Question 4: How the participants defined BREEAM

The majority of interviewees defined BREEAM in accordance with the Building Research Establishment definition. Two interviewees made reference to the method as a design tool for best practice in sustainable building. Only one interviewee acknowledged all three aspects of the 'triple bottom line' (social, environmental, economical) as key to sustainability in the built environment. No other interviewees mentioned economic considerations, but their responses concerned energy efficiency, reducing carbon emissions and the health and wellbeing of future occupants. One interviewee added that continued innovation in building design is key to sustainability.

Questions 5 to 20: answers are summarised in the following discussion.

DISCUSSION

The principle behind the assessment method, as well as its mandatory nature, was commended by all the assessors, half of whom praised its level of detail, using the descriptions "*in-depth*" and "*holistic*". One interviewee commented on the method's ease of use; another pointing out that the tick-box nature had the positive effect of setting clear targets for building and stakeholders. There were several comments about the method acting as a tool for design training, which could lead to the setting of good practice industry standards, raising awareness, encouraging creative thinking and going above and beyond the building regulations, as well as allowing for definitive, measurable comparability between buildings.

Half of the interviewees believed that the tick-box format leads to a major failure in the method. One believed that the simplistic mechanism results in the favouring of credits that are most beneficial to the developers' costs. This can mean that buildings that are *BREEAM Excellent* or *BREEAM Outstanding*, do not necessarily run as sustainable buildings once occupied and have less value than the rating claims. Lack of evaluation of the relative appropriateness and site-specific effectiveness of sustainability features is apt to give as much credit for inappropriate design and missed opportunities as for geographically optimal design considerations. Without long-term accountability or site specific justification, the range of options on the list allows for commercial expediency to dominate long-term sustainability benefits. There was a consensus that a BREEAM certificate does not really show that a building is performing as designed. One interviewee stated that a fundamental final flaw in BREEAM certification is that a large proportion of the QA team are not experienced building professionals. It is almost as if sometimes the assessors are using a different definition of the words 'sustainable' and 'development' than are the developers.

Assessors recognised the importance of being involved right from the start of a project to enable better understanding of the construction and for giving better advice. However, only one of the interviewees reported having been involved in this way in all projects. Interviewees reported that many clients were simply uninterested in the use of BREEAM. The reported rate of BREEAM consideration from the beginning of a project was very varied, so an average value is meaningless (Fig. 7). Comparing number of years of assessor experience with number of projects involving BREEAM from the outset also

showed no correlation, R^2=0.0002 (Fig. 8). This suggests a varied interest in applying BREEAM from clients. Our interviewees reported that clients had variable understanding and interest in BREEAM.

Those with experience of *Passivhaus* and Greenstar believed that these international accreditations offer methodological opportunities for removing some of the frustrations of BREEAM. On the other hand, although LEED is more adaptable than BREEAM, it is largely short-term-cost-driven; and LEED is more client-driven, whilst BREEAM (to its credit) involves more client participation.

Summary

- Although professionals disagreed with a statement that all aspects of sustainability should be addressed in equal measure, the lack of societal focus meant that a fundamental dimension of sustainability was not being addressed.
- The lack of consideration of the unique set of features for the specific geographical location of every site means that the assessment fails to understand the sustainability requirements of individual developments.
- BREEAM fails to incorporate sufficient client participation. There was a consensus that this was amongst the fundamental factors in the success of a sustainable development.
- The complexity of the assessment means that it is often perceived and used as a 'tick-box exercise'. In the hands of less experienced assessors, this allows for the favouring of monetarily expedient design choices. Such decisions are likely to result in more profitable buildings, potentially at the expense of more sustainable buildings.
- The lack of effective post-construction evaluation means that BREEAM can fail to meet a component of sustainability: continual improvement. However, this is expected to be incorporated in the next issue of BREEAM.
- Minimal recognition of the importance of early assessor involvement and project lifetime design team engagement were both highlighted as inadequacies in more clearly facilitating a sustainable development.

CONCLUSIONS

1. ***Positive:***
   BREEAM was unanimously regarded as a successful model for an *environmental assessment* method.
   It has potential to be a valid measure of 'sustainable development' only if that term is understood in its broadest sense, and if its application is involved (as BRE intended) at the initial design stages of a development.

2. ***Negative:***
   As it is currently used, BREEAM fails to address key aspects of sustainable development and so is not deemed a proficient test of *sustainability* (*sustainable development*).

3. ***Recommendations***:

The flexibility of design and review by its creators, results in an ongoing evolution of the BREEAM assessment. This provides potential for it to become proficient in the future. To achieve this goal, the following is recommended:

- Although the three pillars of sustainable development should not necessarily be addressed in equal measure in every development, the current general lack of societal focus has a major negative impact on effective sustainability.
- Geographical location is not adequately considered in the application of possible sustainability measures.
- BREEAM fails to sufficiently incorporate client participation or user needs, especially in the long term.
- The complexity of the assessment, being reduced to an apparent tick-box exercise masks the true potential, especially to those not familiar with either the construction industry options or with sustainability.
- Choice of sustainability measures is often decided on immediate monetary costs, instead of longer-term appropriateness for site and to users.
- Lack of long-term, post-construction evaluation renders BREEAM ineffective at measuring a development's continual improvement (although this is expected to be incorporated in the next issue of BREEAM).
- Where developers' have minimal recognition of the importance of early assessor involvement in the design, it renders BREEAM a retrospective fix, at best.
- Assessors may not all have built environment industry experience, leading to misunderstandings in advice given and options requested.

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