

A BSRIA report

# The Value of BREEAM

By James Parker

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## FOREWORD



‘As we look to improve the performance of our buildings, both new and existing, it is important to understand the effect of rating tools like BREEAM and how they are perceived and applied by a range of stakeholders. I therefore welcome this independent research by BSRIA, which not only gives a very positive reflection on the progress that BREEAM has made in the market, but also sets an important agenda for BRE as it starts its next update and plans for a “next generation” BREEAM. This will take account of wider social and economic dimensions of more sustainable buildings, as well as a need to complement the rapidly growing use of techniques such as Building Information Modelling (BIM). In a rapidly changing world, sustainability factors are increasingly becoming essential elements of ‘good quality’ buildings that maximise benefits for people while minimising negative impacts on the environment. Nothing stands still for long!

This report shows the value – in many forms – that can be derived from a consistent approach to measuring and benchmarking the design and performance of buildings, and unless we do that much more widely, we will fail to make the gains that could benefit so many people. The report also provides important feedback for BRE as the owners and operators of BREEAM, and as the industry’s needs and demands change ever more rapidly, it is essential to take on board customers’ feedback to inform the further evolution of the tool. I look forward to working with BRE to engage the industry to ensure we all respond to these challenges.

A handwritten signature in black ink, appearing to read 'Paul King'. The signature is stylized and fluid, written in a cursive-like style.

Paul King, Chief Executive, UK Green Building Council

## ACKNOWLEDGEMENTS

This publication has been written by James Parker.

The development of the questionnaires and detailed analysis of the data was provided by BSRIA staff, principally the author, with input from Anne King, Jo Harris, Allan Wilson and Martin Chiesa. The same staff also carried out the face-to-face interviews with client organisations.

BSRIA also wishes to thank BRE Global for their support in providing staff to carry out telephone interviews as well as data for analysis and help finding appropriate interviewees.

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We also would like to acknowledge the time given by the interviewees and for their valuable inputs and opinions. While we would like to name everyone individually, some have requested to remain anonymous.

While Schneider Electric and BRE have had input into the production of this report, final editorial control has remained with BSRIA.

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## EXECUTIVE SUMMARY

A strong focus on sustainability in the design, construction and use of buildings has become the norm in the UK. Since its launch in 1990, BREEAM (the Building Research Establishment Environmental Assessment Method) has stimulated a greener built environment in this country – and now increasingly around the world. The sustainability of hundreds of thousands of buildings has been assessed and certified under the scheme, with many more now registered for assessment. But what do those most closely involved in implementing BREEAM and meeting its requirements actually think of the scheme? BSRIA has gathered and analysed the views of the construction industry and its clients.

### Gathering the industry view

Face-to-face and telephone surveys of client opinions have been conducted, along with a web survey of construction professionals and the supply chain, including designers, contractors and BREEAM assessors. While some of those surveyed have used the latest version of the scheme – BREEAM New Construction 2011 – most had greater experience of the BREEAM 2006 and 2008 versions. BREEAM is regularly updated to keep pace with, or be ahead of, regulatory requirements, and to incorporate feedback from users.

### FINDINGS

Of those surveyed, an overwhelming 88% think that BREEAM is a good thing. This is not to say that they all think it is perfect – 76% believe that improvements could be made, with changes that simplify and increase the flexibility of the assessment process being particularly encouraged.

### Main drivers

Planning requirement was found to be the main driver for having a BREEAM assessment across all of sectors surveyed. That is not surprising as more than half of local authorities in England have a BREEAM requirement as part of their local development framework, with the number rising to more than 70% of authorities in major cities such as London. The next most common driver is organisational policy with, for example, many large commercial, as well as public sector organisations having a requirement for BREEAM in their procurement strategies.

### Costs

Less than half of those surveyed said they had incurred significant extra costs on their latest BREEAM rated project, with many of those saying that the additional costs were not necessarily a bad thing. Some clients, for example, saw them as investments in the future – the pay-back being a reduction in a building's running costs. Similarly, most of the supply chain thought that clients could recover the additional costs of BREEAM.

There did not appear to be a significant link between the amount of the cost increase and the level of BREEAM rating sought – other factors were more important. These included the point at which BREEAM was included in the design process: the earlier this occurs the better the chance of keeping costs down. Another factor was the amount of

## EXECUTIVE SUMMARY

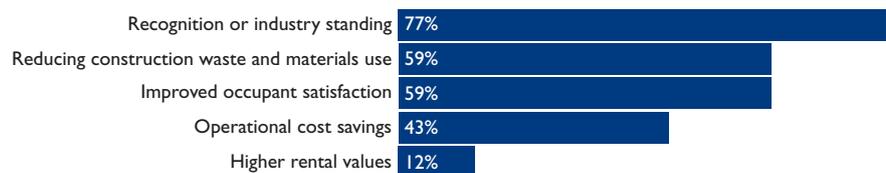
experience of using BREEAM. Some clients have applied the scheme for several years, so have tried and tested designs in which sustainability is a key element.

### Benefits

A significant majority (71%) of those surveyed said that the use of BREEAM was beneficial to their projects. Of the three elements of sustainability – environmental, economic and social – it was found that the most commonly stated benefits fell in the social category. Social benefits included the improved image provided by BREEAM certification to the building and organisation involved. This seems to be particularly important for universities, with students now very aware of green issues.

Another common social benefit raised was the improved comfort and satisfaction of the occupants of BREEAM certified buildings. While economic benefits were less frequently raised, a significant number of respondents did highlight operational costs savings and returns on investment. Not many included increased rental value as a benefit, possibly because this issue has been obscured by other drivers of change in the market value of property.

**Figure 1 : Common benefits of BREEAM**



Source : BSRIA field research<sup>[3]</sup> (client respondents only)

Environmental benefits included reduced construction waste, and reduced embodied and operational carbon – which, of course, also has economic benefits. Supply chain respondents took the view that the clients and professional teams gained more commercial benefits from BREEAM, with a smaller number identifying commercial benefits for contractors.

### Key areas of impact

The survey examined the extent to which BREEAM influences different areas of the project. For example, it appears to have relatively little effect on the location and orientation of the building, but an important impact on technological issues. These include the use of intelligent controls, the selection of building services, and the facilities provided for staff – for example the inclusion of cycle facilities.

Opinions on the impact of BREEAM on innovation were mixed. While 39% of the clients stated that BREEAM drove them to invest in innovation, 86% of the professionals and supply chain said that BREEAM drove investment in innovation on at least some occasions. This division of opinion could be due to varying perceptions of what innovation entails.

### **BREEAM is well recommended**

Looking to the future, BREEAM appears to be here to stay with 96% of those surveyed saying they would use it again and 88% saying that they would recommend it to others.

### **CONCLUSIONS**

#### **Valued**

The overall view of BREEAM is positive, with high proportions of those surveyed saying that it is a good thing, that they would use it again and that they would recommend it to others. It was felt that increased flexibility in some aspects of the assessment process was needed to improve the scheme.

#### **Sustainability driver**

BREEAM has been a useful construction industry driver – and has become the industry norm in the quest for more sustainable buildings. Some of those surveyed took the view that they would focus on green issues anyway, and that corporate policies and regulations are now increasingly important sustainability drivers. It could be argued, however, that BREEAM has helped to create the environment in which the industry wants to be sustainable, and in which the progress of green regulation is encouraged.

#### **In-use benefits**

Among the benefits often discussed by respondents were the improved comfort and satisfaction of occupants in BREEAM certified buildings. This reflects the importance of not losing sight of a building's performance after construction, and of making it pleasant for users and efficient to run – for example by installing intelligent building controls.

#### **Start early**

One of the clearest messages from those involved in the survey was the importance of starting the BREEAM process as early as possible. This makes achieving sustainability targets easier and cheaper than leaving it to later stages and having to make design changes.

Early involvement of BREEAM also helps to bring the whole project team on board. The survey revealed some disconnect between parts of the team – for example, clients were shown to be happier with the BREEAM process and to feel it was more valuable than some members of the supply chain.

Bringing in BREEAM very early on will help to establish and maintain the dialogue and cohesion within the team that will contribute to the cost effective delivery of high quality, sustainable buildings.

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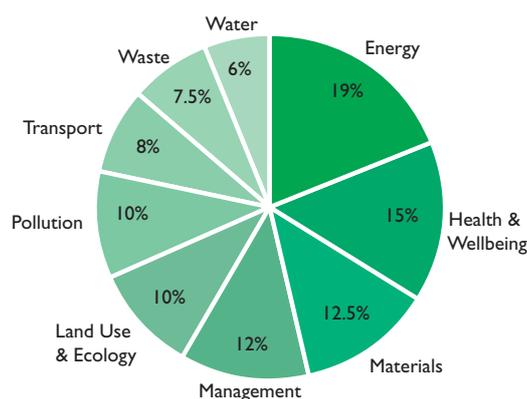
## I OVERVIEW



BREEAM (the Building Research Establishment Environmental Assessment Method) started life in 1990 as an assessment scheme for new offices. The first document was very small compared with BREEAM today, just 20 pages, looking at a handful of issues.

BREEAM was developed through the 1990s and 2000s adding schemes for different building types, such as retail and residential. Today we have BREEAM New Construction 2011, which now has over 400 pages and which can be used to assess almost any building. The categories have changed too, with the number increased to nine (Figure 2) and credits are now also available for innovation.

**Figure 2 : BREEAM categories**



Source : BRE<sup>[1]</sup>

There are now 49 credit issues assessed from sustainable procurement through to innovation. The most significant category is energy (19% of the final score).

**The aims of BREEAM are:**

- To mitigate the life cycle impacts of buildings on the environment
- To enable buildings to be recognised according to their environmental benefits
- To provide a credible, environmental label for buildings
- To stimulate demand for sustainable buildings.

The 2008 version of BREEAM was a key milestone in the development of the system, and many of the buildings analysed in this report were assessed using this version. This version introduced mandatory post construction stage assessments for the award of the final certificate, together with minimum standards, innovation credits and the Outstanding rating. It is the 2008 version that is the main focus of this study.

BREEAM is now a significant activity in construction with over 1,000 certificates issued in the last three years (GreenBookLive<sup>[2]</sup>) and 1813 licensed assessors from 799 organisations, both in the UK and internationally. There are also national BREEAM schemes in operation in the Netherlands and Spain, and shortly in Sweden and Norway.

BREEAM is generally a well appreciated process. In our field survey 88% said that it is a good thing, 96% said they would use it again, and 88% said that they would recommend it to others.

**Figure 3 : People saying BREEAM is a good thing**



Source : BSRIA field research<sup>[1]</sup> (client respondents only)

It is seen both as a benchmark standard and as a way of promoting environmental awareness and sustainable building. Several survey respondents also suggested that BREEAM is useful for driving policy within the client team, because *“it provides a good foundation, and then developers can pick and choose which areas to focus on”*, *“it encourages organisations without a strong policy to reduce carbon....and encourages users to consider a large range of carbon reduction measures”* and, *“it supplies you with a set of disciplines, potential environmental credentials especially if introduced at the start of a project.”*

It is a useful way of, *“distilling a complicated subject”*, and *“a good design tool.”* Several also commented on the message BREEAM sends out and its ease of recognition saying, *“everyone understands what BREEAM and BREEAM ratings are”*, and, *“raises the profile and impacts of construction - provides an open statement to visitors about opportunities to reduce carbon impacts.”*

Our respondents said that it encourages people to consider things such as the use of controls in the building and energy efficiency of the building that may otherwise be overlooked. Also it was seen as making it easier for a local authority to measure sustainability.

## 2 DRIVERS FOR BREEAM



**Dogs Trust Rehoming Centre**  
 BREEAM Rating: Outstanding  
 Score: 94.44%  
 Version: BREEAM 2008 Bespoke

The building was the main rehoming building for the Dogs Trust Centre in Shrewsbury. Outstanding was the target from the outset and achieved with the highest score achieved at post construction to date.

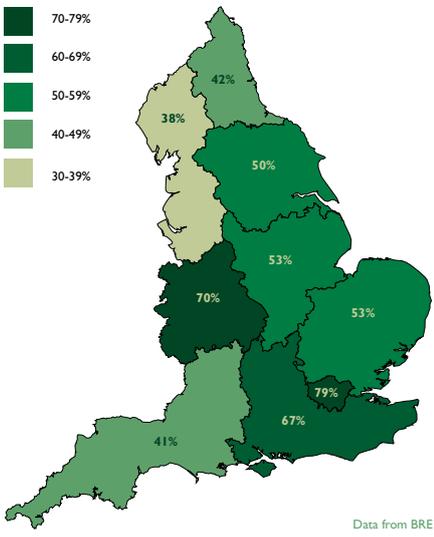
The key element in the success of their green strategy was the collaborative approach taken by the design team from the start, utilising the Soft Landings Framework. This helped to highlight potential risks to achieving the client's operational targets and mitigate the risks. It was a BREEAM Awards winner in 2012

When BREEAM was launched in 1990 there was essentially only one driver for having the assessment, which was to meet client requirements. In the last few years the number of drivers has increased, in line with the increasing focus on environmental impacts and climate change. Also there are other requirements, the most obvious being Part L of the Building Regulations, which effectively incorporate issues that were previously covered in BREEAM. It could be argued that BREEAM itself has been a real driver for change in the construction landscape and is embedded in our construction practice.

### 2.1 DRIVERS FROM THE PUBLIC SECTOR

Many of the current drivers come from government, both local and central. Many local authorities (see Figure 4) now require BREEAM for new buildings through their local development frameworks. This essentially makes BREEAM a planning condition for many buildings. The rating required varies between authorities, with the most frequent requirement being Very Good.

**Figure 4 :** Percentage of Local Authorities in the English regions that specify BREEAM in draft and adopted Development Plan documents



Central government procurement is driven through the Government Buying Standards, which require all buildings on the Government Estate to achieve a minimum rating of Excellent for new buildings and Very Good for refurbishment\*. The exception is the Ministry of Defence, which has developed its own scheme – DREAM (Defence Related Environmental Assessment Method). This was developed as BREEAM was difficult to implement on many defence sites due to their location and unique way of operating.

The Welsh Assembly requires BREEAM Very Good for all non-residential buildings with a floorspace of 1,000 m<sup>2</sup> or more. In addition, they must achieve the minimum standards for Excellent under the Ene1 – Reduction of CO<sub>2</sub> Emissions credit issue.

The Northern Ireland Executive requires all new or refurbished buildings occupied by their departments to meet at least BREEAM Very Good.

All health authorities in the UK require BREEAM Excellent for new buildings and Very Good for refurbishment, subject to certain capital cost thresholds.

BREEAM in educational buildings has been a hot topic for many years, with several publications about the costs of BREEAM for Schools. (BRE, *Putting a price on sustainable Schools*<sup>[4]</sup> and *Schools for the Future*, DfES<sup>[5]</sup>). The achievement of at least a Very Good rating has been required for capital funding of both new build and refurbishment of schools with a build project value of over £2 million for secondary schools or £500,000 for primary schools. This requirement is currently being debated and may change in the future.

The use of BREEAM in higher and further education buildings is also linked to funding. The Skills Funding Agency requires an Excellent rating for new building and Very Good for refurbishment, as does the Department of Education in Northern Ireland. The Scottish Funding Council requires an Excellent rating for both new building and major refurbishment.

Many large commercial organisations have included a requirement for BREEAM in their procurement strategies. The retail sector has seen some competition as to “who can be the greenest” in recent years, especially between the major supermarkets.

In the 2010 version of their “Plan A” policy Marks and Spencer have included an aim to target Excellent on all new stores and warehouses. The John Lewis Partnership is working to a similar target, which is Excellent for all new stores from 2010. They have a minimum acceptable standard of Very Good, for where Excellent is not achievable. Their Waitrose stores have been leading the way with two recent new stores achieving Outstanding ratings.

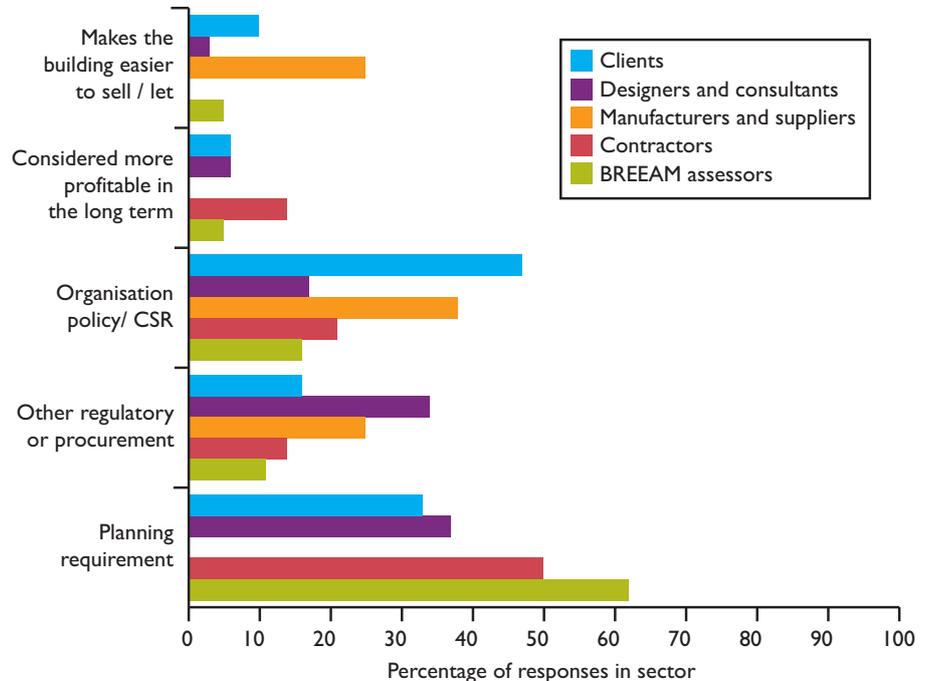
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\* <http://sd.defra.gov.uk/progress/soge/performance-data-2010/target-areas/breeam/>

## 2.2 REASONS FOR GOING FOR BREEAM

The interviewees in this study were asked what was the main reason for going for BREEAM certification on the project. The main reason differed from sector to sector, with the top reason overall being organisational policy, according to clients and planning requirement according to the professional and supply chain.

**Figure 5 : Reasons for going for BREEAM certification**



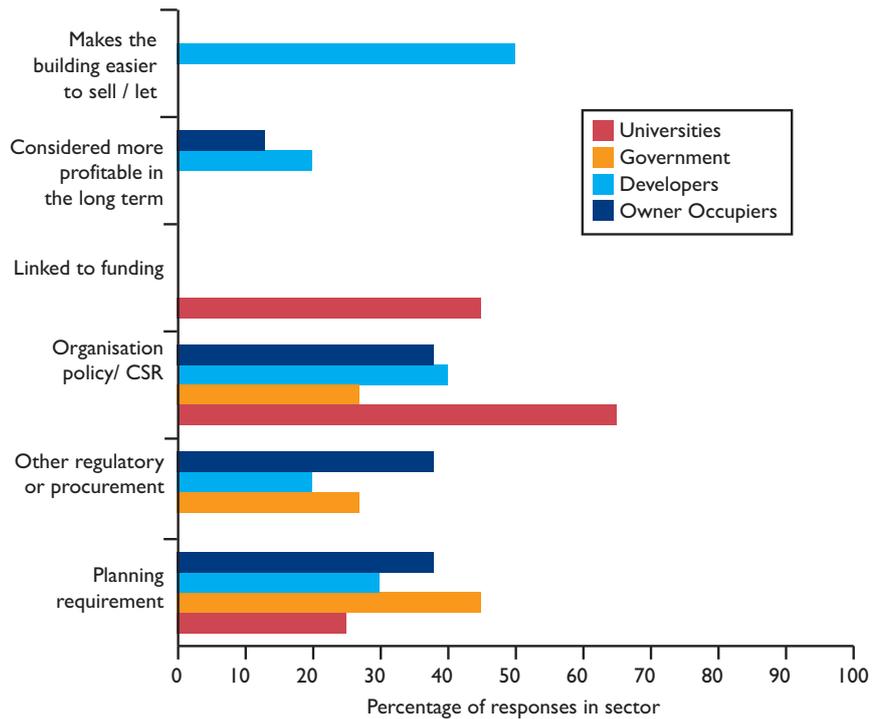
Source : BSRIA field research<sup>[3]</sup>

In the university sector, a key driver is the link to funding as all higher education funding councils and the European Regional Development Fund (ERDF) require BREEAM. However there is also a strong PR dimension. As one university respondent said: *“The PR it provides is important in an academic institution, to show that the university has sustainability on the agenda.”*

For the government procurers, the drivers were a mix of planning policies and internal or central government procurement policies, often linked to funding.

In the developer sector, much of the low level of building at present is pre-let and the decision is made by the tenant, so the main driver is to meet client requirements. One developer added: *“Two reasons and they are linked. First is that it is a key part of our green strategy drive at group level. The second is that we believe that the design will appeal to the target market.”*

**Figure 6 : Reasons for going for BREEAM certification from client interviews**

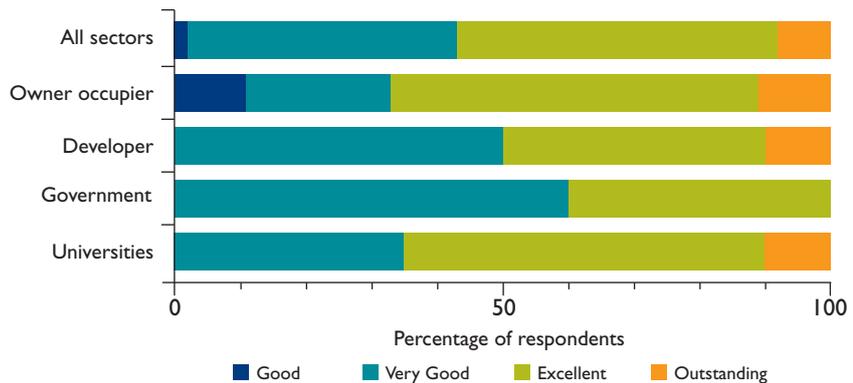


Source : BSRIA field research<sup>[3]</sup> (client respondents only)

**2.3 DRIVERS FOR HIGHER RATINGS**

As BREEAM has become part of the construction culture, clients, industry and BRE have looked at new ways to differentiate. The Outstanding rating was introduced to enable this. The survey looked at what is happening in practice. The last project the interviewees had been involved with, the Excellent rating was the most common (49%), across all sectors except for government, where Very Good was top (60%). Only 8% of buildings targeted an Outstanding rating (see Figure 7).

**Figure 7 : Targeted BREEAM ratings**



Source : BSRIA field research<sup>[3]</sup> (client respondents only)

Those who targeted Outstanding or Excellent ratings were then asked the reason for this choice. The responses were split between the three pillars of sustainability, with the social benefit slightly ahead of the others (see Figure 8). Social reasons often relate to PR, as in the comment from a university, very much in the public eye. Another said

their reason for going for Outstanding was to *“Raise the bar and lead by example. To prove it hasn't got to involve a lot of spending”*.

Developers said they aimed for higher ratings because it's *“a landlord strategy and it is good for marketing the building”* and *“letting assistance”*.

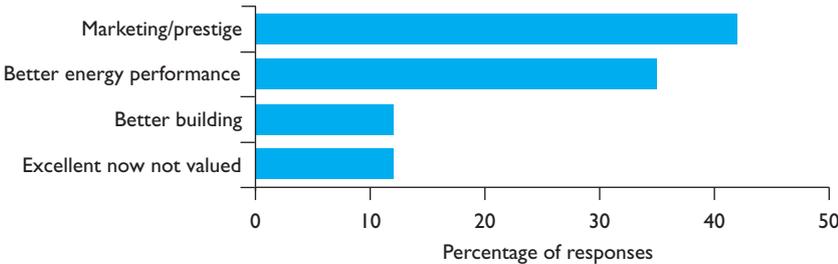
**Figure 8 : Reasons for choice of higher target rating by category**



Source : BSRIA field research<sup>[3]</sup> (client respondents only)

Those who thought that an Outstanding rating was more beneficial than an Excellent rating attributed it to the marketing prestige. Producing a better building, especially on the energy front was next on the list.

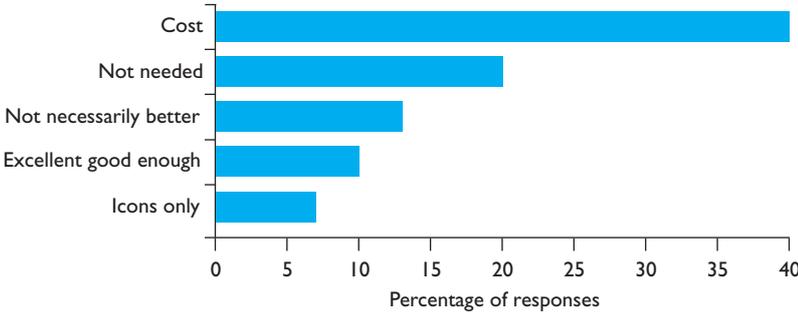
**Figure 9 : Reasons why Outstanding is more beneficial than Excellent**



Source : BSRIA field research<sup>[3]</sup>

Most of those who did not think Outstanding was the way forward said it was because of the additional costs.

**Figure 10 : Reasons why Outstanding is not significantly better than Excellent**



Source : BSRIA field research<sup>[3]</sup>

Those only targeting Very Good were asked if they are considering changing their targets in the future to Excellent. Most (70%) said that they would not.

The reasons given for not seeking higher ratings were:

- Unachievable because of circumstances and site; refurbishment, and historic buildings were given as examples
- Not worth extra money/budget limitations
- Not needed.

Those that were seeking higher ratings said:

- *“To improve and build on what we have”*
- *“Rental values will increase”*
- *“Environmental issues are becoming increasingly valuable as a marketing tool to students who rent the rooms.”*

One commercial developer who had gone for Very Good in their last project noted, *“Excellent would have been much more worthwhile, so we looked at the options. The end client would not have paid the extra rent to justify the additional spend - which would have been a lot as we needed an extra 7-10 points in this location. This is fairly typical. We often do a pre assessment and then decide whether we are really going for BREEAM. The way the tenant operates its business will often preclude the higher ratings; for example the need for a deep floor plate means we have to have mechanical cooling.”*

The same interviewee commented on their future ambitions related to BREEAM ratings: *“We would aim for Outstanding or Excellent as there has been “grade inflation” so now it’s only worth getting the higher ratings.”*

### 3 COST OF BREEAM



**Waitrose, Stratford City**  
 BREEAM Rating: Outstanding  
 Score: 86.29%  
 Version: BREEAM 2008 Retail

The supermarket is part of the new Westfield Shopping Centre. The store was an empty shell which was fitted out to Waitrose own specification.

Heating was supplied by the Westfield's energy centre, producing a 20% reduction in CO<sub>2</sub>. Free cooling was employed in the form of cold air retrieval from the refrigerated cabinets used, which added to the use of hydrocarbons for refrigerants produces a much lower detrimental effect on the environment.

It was a BREEAM Awards winner in 2012

Capital cost is a key factor in any project, and people are often worried about the additional cost of getting a BREEAM assessment done, or of targeting the higher BREEAM ratings.

Just under half of the interviewees who took part in our surveys said they had incurred significant extra costs to get the BREEAM certification on their last BREEAM project.

**Figure 11 :** Clients incurring significant extra costs to get the target BREEAM rating



Source : BSRIA field research<sup>[1]</sup> (client respondents only)

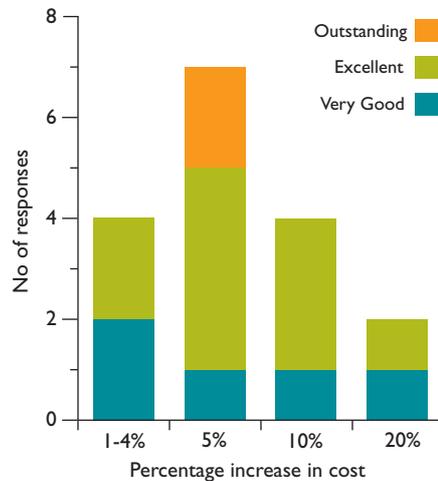
Of those that did incur significant costs one said, “*BREEAM encourages us to invest more as we want to invest in low running costs*”, and another, “*taking into consideration the running costs it balances it out.*”

Two of those that said that they didn't incur increased costs said that there would have been extra costs if they had aimed for a higher rating. Another respondent said, “*We would have done it all anyway as we are driven by what the market wants, and sustainability features highly on this,*” and a third commented, “*Life cycle costs are more important.*”

When asked how much this cost increase was, the amounts varied from 1-2% up to 20%. The mode value was 5%, and median 7.5%. The variation is probably due to the clients' experience of BREEAM. Some clients already have mature standard green designs, while others have come into the field more recently. The point at which BREEAM is thought about in the design/construction process is also likely to be a factor, although this was not seen from the responses in the surveys.

There is no relationship between increasing costs and higher ratings (see Figure 12), although the perception may be different.

**Figure 12 : Increase in costs for BREEAM projects**



Source : BSRIA field research<sup>[3]</sup> (client respondents only)

#### Equipment mentioned more than once:

- Controls (PIR sensors, metering, general lighting)
- Lighting
- Choice of materials
- Energy efficient equipment
- Grey water, rain water, harvesting
- Additional (and in some cases seen as unnecessary) metering
- Green roofs.

Those that did incur costs were asked if they could identify where the money was spent (see Figure 13). The majority of responses said equipment, although professional services are still significant, but can be seen as beneficial with one respondent saying: "Premium is added by consultants and contractors and sometimes individual credits require additional attention with associated costs." Another confirmed this and quantified, "it required us to hire a professional BREEAM Assessor which required a fee, to gain an excellent rating = 10% of the cost." The type of equipment listed as being installed is also likely to provide operational savings.

**Figure 13 : Where the additional money was spent**

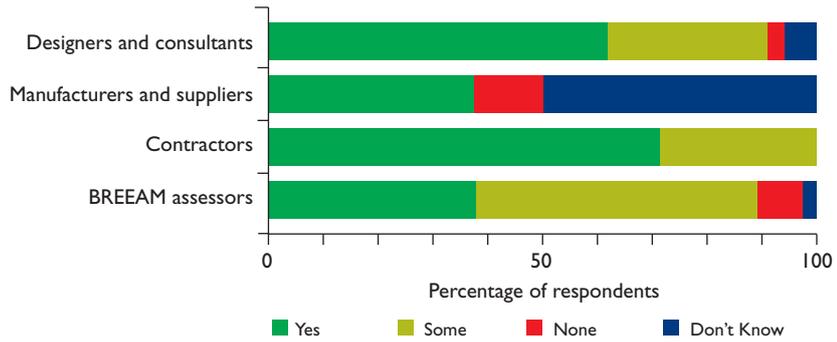


Source: BSRIA field research<sup>[3]</sup> (client respondents only)

In the professional and supplier survey only 5% of respondents said they incurred no extra costs to get the BREEAM rating they wanted on their last project, compared to a non BREEAM project. This is significantly different from the client answers, where 40% said no extra costs were incurred. There are a number of possible reasons:

- Clients do not know so clearly which costs could be attributed specifically to BREEAM.
- Clients who have asked for BREEAM in the first place do not want to feel there were extra costs.
- Contractors and consultants incur extra costs and do not or cannot pass them on.

**Figure 14 : Extra costs incurred in getting the BREEAM target rating**



Source : BSRIA field research<sup>[1]</sup> (supply chain respondents only)

**3.1 WHOLE LIFE COSTS**

The surveys also looked at whether operational costs were likely to be part of the thought process during the design and construction of the building if a BREEAM rating was being sought. There was an even split of views (see figure 14).

One of those who said they were not considered specifically made the comparison with LEED: *“BREEAM doesn't consider operational costs as LEED does.”*

One who said operational costs were more likely to be considered told us that this was the case, *“Particularly on more efficient energy saving plant with higher capital cost and long term savings on operational costs.”*

**Figure 15 : Operational costs versus capital build cost considered because of BREEAM**



Source : BSRIA field research<sup>[1]</sup> (client respondents only)

**3.2 COST RECOVERY**

Several pieces of research have been carried out looking at the cost implications of BREEAM. The first report published back in 2005 by the BRE Trust, *Putting a price on sustainability*<sup>[6]</sup>, was carried out by property consultants Cyril Sweett. This report looked at four buildings; a house, a naturally ventilated office, an air-conditioned office and a PFI-procured health centre. BREEAM has moved on since this report, as have Building Regulations that have significantly pushed the energy issues. However, the basic principles remain similar; although the base case building would now not meet Building Regulations.

**Table 1 :** Capital cost uplift for buildings with a BREEAM rating

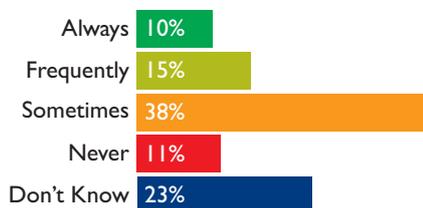
		Location	Naturally ventilated office	Air-conditioned office	PFI health centre
BREEAM rating	Very Good	Poor	2%	5.7%	0
		Typical	-0.3%	0.2%	0
		Good	-0.4%	-0.1%	
	Excellent	Typical	3.4%	7.0%	1.9%
		Good	2.5%	3.3%	0.6%
Predicted costs savings	Energy	Any	17%	26%	3%
	Water	Any	71%	55%	10%

**NOTE:** The reduction in capital costs for the naturally ventilated office was attributed to the removal of an air-conditioning unit. Source : BRE Trust<sup>[6]</sup>

In our survey, we asked the supply chain, “In a recent piece of research by a leading independent quantity surveyor it was found that a naturally ventilated BREEAM Excellent office building typically costs 3% more than the same non-BREEAM building. Do you consider that clients recover this cost?”

There was a high proportion of “don’t know” responses (23%) but the majority (38%) said that the client sometimes recovers the extra costs, and a significant number (15%) said that frequently the client would. Those that thought the client would always recover the extra costs were 10%. This may not be an accurate view as the supply chain may not always be privy to the operational cost information.

**Figure 16 :** Frequency of a client recovering the extra costs of BREEAM



Source : BSRIA field research<sup>[3]</sup> (supply chain respondents only)

The BRE Trust published another cost-based report in 2008, this time written with Faithful and Gould. *Putting a Price on Sustainable Schools*<sup>[4]</sup> looked at a primary and secondary school with the same approach as the earlier BRE/Cyril Sweett work<sup>[6]</sup>. However, in this study whole life costs were not calculated. The results are in Table 2.

**Table 2 :** Capital cost uplift for schools

BREEAM rating	Location	Primary school	Secondary school
Very Good	Poor	3.0%	2.7%
	Good	1.8%	0.8%
Excellent	Poor	9.85%	4.4%
	Good	5.9%	3.9%

Source : BRE Trust<sup>[4]</sup>

Both of these reports look only at construction costs and do not include the professional fees needed for the BREEAM assessor/advisor and other professionals such as ecologists.

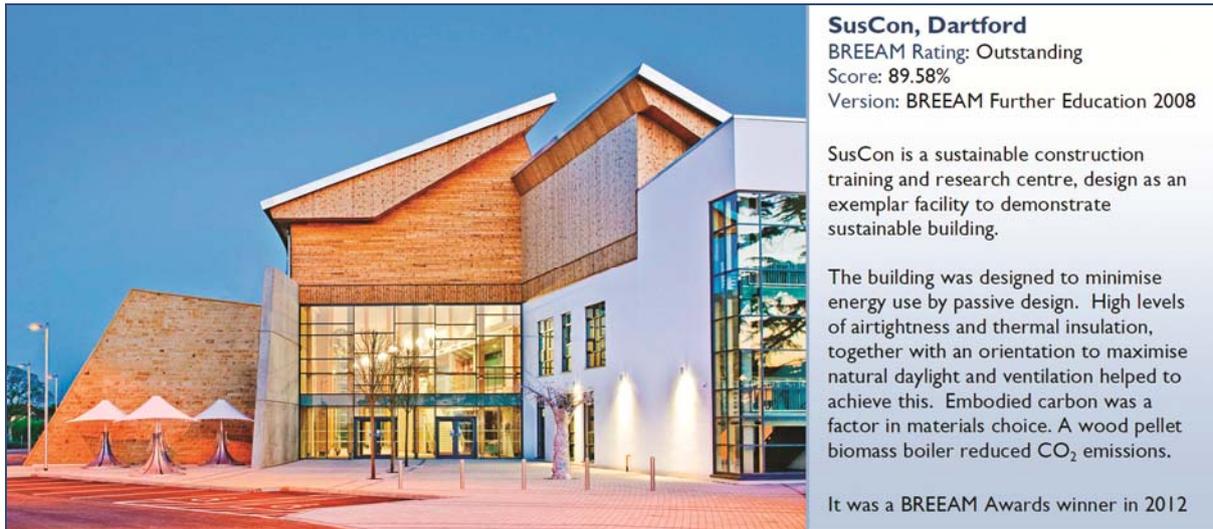
More recently the targetzero online resource ([www.targetzero.info](http://www.targetzero.info)) published reports on several different sectors that included cost uplifts link to BREEAM ratings. The values quoted in Table 3 are lower than in the older BRE Trust report. This could be due to sustainability becoming more mainstream, as well as more stringent building regulations.

**Table 3** : Capital cost uplift for a range of building

Rating	School <sup>[7]</sup>	Warehouse <sup>[8]</sup>	Supermarket <sup>[9]</sup>	Office <sup>[10]</sup>	Mixed-use <sup>[11]</sup>
Very Good	0.2%	0.04%	0.24%	0.17%	0.14%
Excellent	0.7%	0.4%	1.76%	0.77%	1.58%
Outstanding	5.8%	4.8%	10.1%	9.83%	4.96%

Source : Target Zero

## 4 BENEFITS OF BREEAM



Our survey explored the perceptions of the industry as to the benefits of BREEAM for specific recent projects. Most clients (71%) thought achieving a BREEAM rating on their latest project was beneficial, with a quarter of the responses either negative or having mixed views. A few projects were not advanced enough for respondents to give an answer.

**Figure 17 : Benefit of BREEAM to the project**



Source : BSRIA field research<sup>[1]</sup> (client respondents only)

Many of those who felt that getting a BREEAM rating was beneficial said that it was because of marketing and public relations, for example by:

- “Helping 'Green Champions' see a model of what can be done.”
- “Providing a badge (for tenants) as part of their total package of green credentials and they got it.”
- “The success of this project was driven by our strategy - and thus would have happened without BREEAM being involved. But BREEAM improves the green credentials of the building in terms of good publicity contribution and CSR.”

Many of those holding mixed views said that although BREEAM was a good PR tool, it was not so good on the construction side of the project.

One university which did not see benefits provided a more detailed comment: “We have seen quite significant deficiencies in the last 10 years. From our experience I am unsure whether BREEAM is the most appropriate method of assessment for sustainability... We have found it difficult to meet their specialist requirements. We have looked at LEED, BREEAM and Australian GreenSTAR and seriously considered following LEED as we believe this is a more open standard. However we have reluctantly recognised BREEAM as more

*appropriate.*” The interviewee believes BREEAM faces difficult challenges as it is designed by people who have to have a mechanistic approach to things. In his opinion BREEAM doesn't bring about a holistic approach, although it is a way to bring together different members of the design team.

Turning to the three pillars of sustainability, environmental, economic, and social, the research showed that the social and environmental benefits are more frequently identified by clients than economic benefits. However, the environmental benefits most frequently cited as being derived from the project, namely reduced waste and increased energy efficiency will also have an economic benefit.

**Figure 18 : Importance of different types of benefit**



NOTE: Percentage of respondents that gave a positive response to at least one item under each of the three pillars of sustainability. Source: BSRIA field research<sup>[1]</sup> (client respondents only)

#### 4.1 ENVIRONMENTAL BENEFITS

The environmental benefits of BREEAM are largely generated by the Land Use and Ecology credits. These include the location of the site, as well as the landscaping and rely heavily on the appointment of an ecologist to be able to maximise the credits scored. The level to which BREEAM drove the ecology issue was mixed amongst our respondents, with some saying things such as, *“It prompted us to carry out studies and consider recommendations that we could implement,”* while a local government interviewee said, *“not through BREEAM though, as this is achieved through our own policies. We have an on-going biodiversity policy.”*

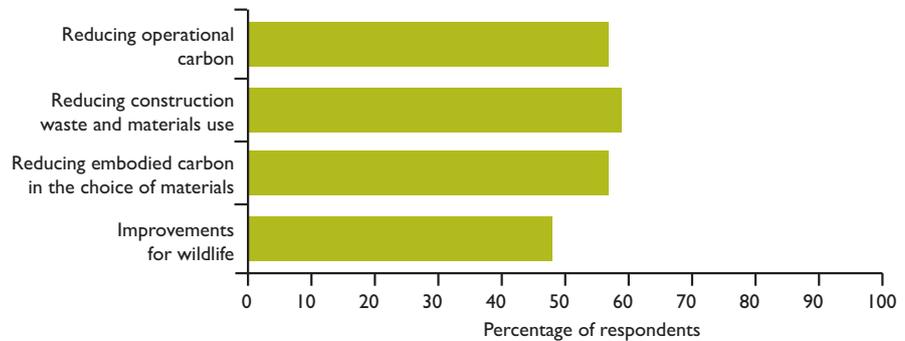
One university also commented on the need to meet specifics to get the BREEAM credits. *“We had someone at the University helping us with ecology; however we did not employ a suitably qualified ecologist until we had to meet the BREEAM Land Use & Ecology credits.”*

Pollution credits are also linked to environmental benefits, as are those concerning the reduction of CO<sub>2</sub> emissions largely driven by energy. Typical items that were said to provide these benefits were: rain water harvesting, solar thermal panels, ponds, sustainable timber, recycling facilities, pollution and noise reduction management.

The minimisation of construction waste, or at least putting the processes in place, was also seen as a benefit. One university commented, *“I think it [BREEAM] helped with waste management - helped to provide a framework.”* Another university was unsure of the exact driver, *“...it makes contractors think about recycling and the reuse of materials, for example reusing spoil on site. Definite improvement, although I'm unsure whether this is more to do with waste disposal costs or BREEAM... maybe because of both”*

The embodied carbon of the materials used was also raised, with one university very positive, *“I believe this to be one of the benefits of BREEAM.”* Another commented on the BRE GreenGuide being useful in the process.

**Figure 19 : Environmental benefits**



Source : BSRIA field research<sup>[3]</sup> (client respondents only – prompted question)

## 4.2 SOCIAL BENEFITS

The survey shows that the social benefits are the strongest aspects of BREEAM. The benefit that had been seen most frequently in our research is the recognition in terms of industry standing that BREEAM brings. This is followed closely by benefits for public relations and Corporate Social Responsibility. Improved occupant satisfaction and comfort also scored highly.

Several of the universities surveyed commented on student awareness of green issues, one simply saying, *“Students are very 'AWARE'”*, and another, *“some of these are subjective and difficult to quantify in real terms. Student awareness is a significant factor, and there are definite benefits maintaining Green credibility with them, and with the City Council.”*

This driving factor may be the reason that universities are particularly advanced in this area with one saying, *“It has become standard practice - compare 'Eco-Campus<sup>†</sup>' rating etc.”*

Some commented specifically on the employment issues. One owner operator listed job creation with other benefits, *“Local employment (through the biofuels local plant developed to source our CHP), lower CO<sub>2</sub> emissions, wildlife benefits and no parking facilities, so encouragement to use public transport.”* Others said:

- *“The turnover of service staff is lower as it is a nice environment to work in”* (office owner occupier)
- *“Recruitment and retention were two of the main drivers for the BREEAM rating - it was appropriate for the tenant’s staff”* (developer)

<sup>†</sup> EcoCampus is a national Environmental Management System (EMS) and award scheme for the higher and further education sectors see <http://www.ecocampus.co.uk/>

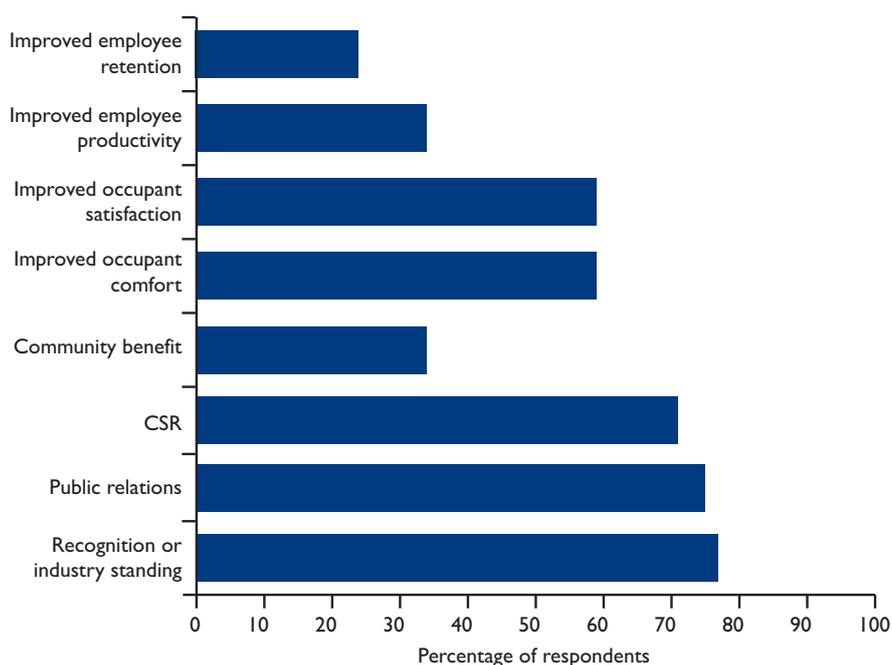
And for a military site:

- “Yes. Making lives and work of soldiers better.”

On the public relations front respondents were positive except in the context of relations with the general public where the reactions were:

- “BREEAM does not reach the community. Considerate Contractors Scheme was more social” and
- “Public does not know about BREEAM”.

**Figure 20 : Social benefits.**



Source : BSRIA field research<sup>[1]</sup> (client respondents only – prompted question)

### 4.3 ECONOMIC BENEFITS

Economic benefits are not linked to any specific BREEAM category, but to the rating as a whole. They can be split into two areas: the reduction in operating costs and the money the building can make through sale or rental.

Only 12% of respondents thought that the BREEAM rating would help attract higher rental values, but more than twice as many thought that it would be easier to let the building. Interestingly one respondent had seen an increase in rental values from students. There is also anecdotal evidence that in certain areas of the country a BREEAM Excellent rating is a necessity to be able to let a new office block. In areas like this a general increase in rents has probably occurred over time until the increased rates and BREEAM certification is the norm.

However this is a complex area. For developers this is currently a very thin market with very little speculative development: most projects are pre let. BREEAM is just one of a very large package of measures which will have been agreed by the developer and tenant.

A rather different type of study was undertaken by Maastricht University for RICS (*Supply, Demand and the Value of Green Buildings*). In this report

similar buildings with and without BREEAM certification were compared across England and Wales. Here there does appear to be evidence for increased rental prices for green buildings, but this is dependent on several factors, summed up by the line, “BREEAM certification has value in the London office market, but that value is conditional upon the economic conditions at the time of rent (sale).”

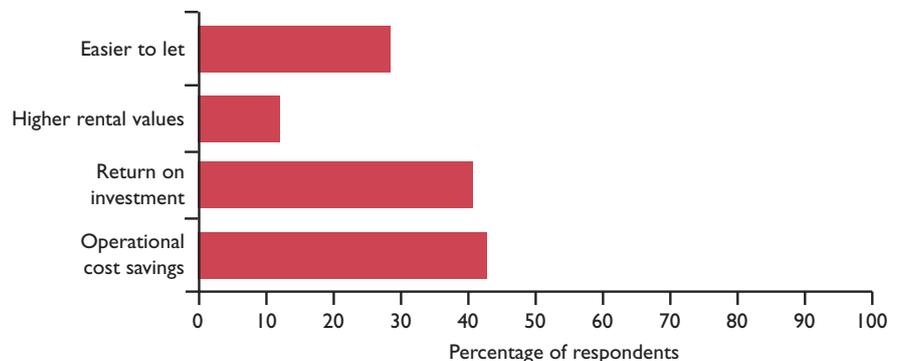
The projects analysed in our study only included 28 with a rating above Very Good, and this comment from a developer is therefore pertinent: *“There is absolutely no increase in rental values for a Very Good building and in any case this was pre let, and we could not pass any higher rental on. We might be able to gain something if the pre assessment had shown a rating very close to Excellent and we could then upgrade for relatively little cost, but have valuable badge to pass on.”*

From the interviews the saving in operational costs was the most commonly identified economic benefit, with return on investment a close second.

Even if savings are expected they may not be delivered and one interviewee who has not benefitted from savings said, *“Post occupancy monitoring identified higher than designed/planned electricity use due to IT base/project established, and the need to review energy management as a result.”*

There are variations too by sector. They continued with some competing market drivers, *“But we would only get a BREEAM rating for an office building. In the industrial market they will not spend the extra money.”*

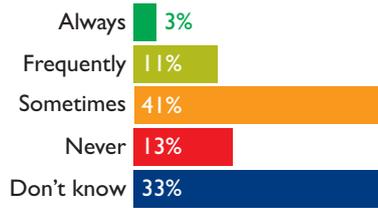
**Figure 21 : Economic benefits**



Source : BSRIA field research<sup>[3]</sup> (client respondents only – prompted questions)

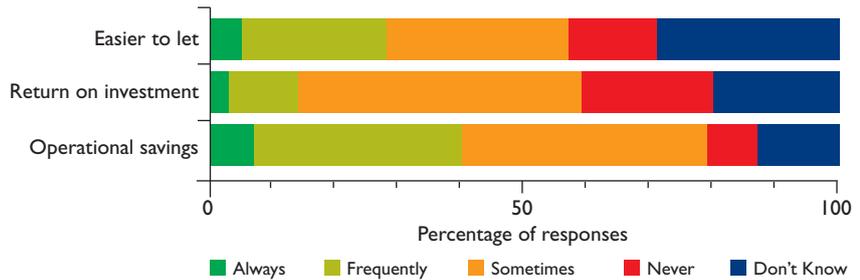
Notably in the professional and supply chain survey one third did not know whether BREEAM had brought the client organisation economic benefits (see Figure 22). This is not perhaps all that surprising. Clients themselves were less likely to identify economic benefits. However, it still demonstrates a lack of understanding of the client’s needs by the professionals and supply chain. Economic benefits for the client, where identified, were as operational savings (Figure 23).

**Figure 22 : Frequency of BREEAM bringing economic benefits for the client**



Source : BSRIA field research<sup>[1]</sup> (supply chain respondents only)

**Figure 23 : Area where the economic benefits could be gained.**

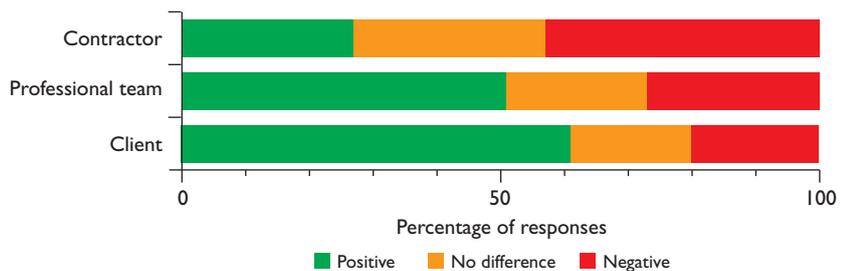


Source : BSRIA field research<sup>[1]</sup> (supply chain respondents only)

**4.4 COMMERCIAL EFFECT ON THE SUPPLY CHAIN**

In the web survey we asked how much of an affect achieving a BREEAM rating has in commercial terms for the client, professional team, and contractor. Here there is an interesting result, giving a positive response for the client, i.e. it is beneficial for the client, roughly neutral for the professional team (architect, consultants etc.), and more negative for the contractor (Figure 24).

**Figure 24 : Effect of BREEAM on the project in commercial terms**



Source : BSRIA field research<sup>[1]</sup> (supply chain respondents only)

This result is probably due to the lack of flexibility that BREEAM allows the contractor in terms of value engineering. For example, materials may need certain certification that can add to the cost. This may explain why just over half (52%) of the responses in the web survey had said that they had experienced projects where the BREEAM rating had dropped during the assessment process. Other reasons include the collation of evidence, or lack of it. Again this can be down to the contractor for the final certificate.

#### 4.5 GETTING HIGHER RATINGS

The field research explored the willingness of the industry to push for the top Outstanding rating, and how valuable it was seen to be. The majority did not consider the Outstanding rating to be worthwhile. Only 38% thought that it was significantly more beneficial than an Excellent rating.

**Figure 25** : Respondents who considered an Outstanding rating to be significantly more beneficial than an Excellent rating

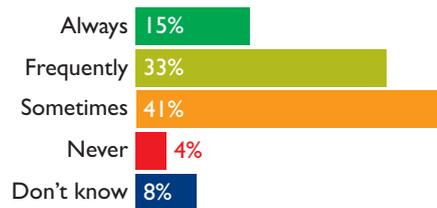


Source : BSRIA field research<sup>[3]</sup> (client respondents only)

#### 4.6 CREDIT CHASING

The web survey tested the view that in a BREEAM project some credits add no value to the project but are just there to 'tick the boxes'. Nearly all respondents had some experience when projects sought credits for their own sake and did not add value to the project (Figure 26).

**Figure 26** : How often projects target credits that do not add value to the project as a whole



Source : BSRIA field research<sup>[3]</sup> (supply chain respondents only)

## 5 TECHNOLOGIES AND PROCESSES



**7 More London**  
 BREEAM Rating: Outstanding  
 Score: 86.04% (Interim)  
 Version: BREEAM Offices 2008

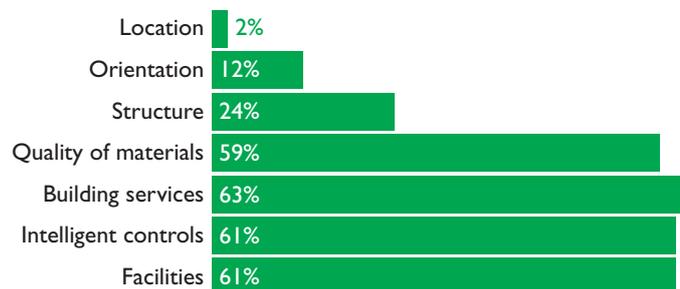
7 More London was the first office development in London to achieve the Outstanding rating. As the new sustainable headquarters for PricewaterhouseCoopers, the building incorporates a high performance façade, solar hot water panels, green roofs and fully automated building management and metering systems. The big CO<sub>2</sub> savings (55% less than 2006 Part L requirements) have come from a combined cooling, heat and power trigeneration plant running on biofuel including used cooking oil.

Any modern “green” building will need new technologies and processes to help reach the targets set by building regulations and of course BREEAM. This could range from the obvious such as the addition of renewable technologies, to the more subtle such as construction processes.

### 5.1 HOW BREEAM INFLUENCES THE PROJECT

BREEAM has the potential to influence a very wide range of aspects of the project from location to the user controls, as well as innovation and procurement. Credits are now available for following the soft landings process<sup>[12]</sup>. The level of influence in a number of key areas was investigated in the surveys. The results are shown in Figure 27 below. Location and orientation of the building are generally not affected, unlike the more technological elements, such as the building services and controls. Generally, BREEAM also influences the facilities provided in the building for the staff.

**Figure 27 : Where BREEAM influences the project**



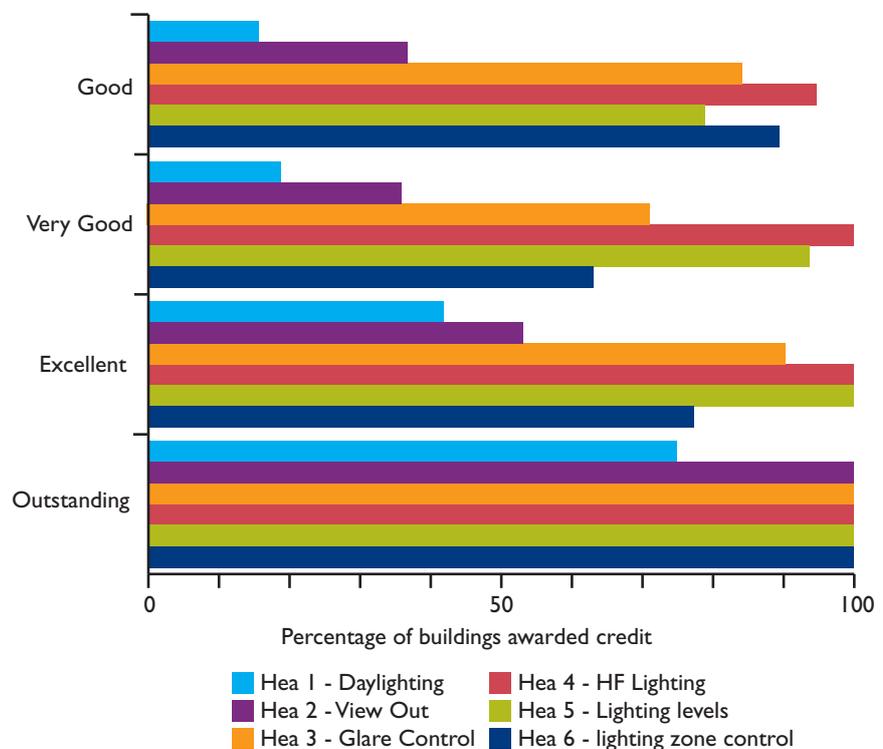
Source : BSRIA field research<sup>[3]</sup> (client respondents only)

Lack of influence on location is generally due to the site being pre-determined. The one “Yes” response stated that the choice of location was affected by public transport links. Nor is orientation often influenced by BREEAM. When it is influenced by BREEAM, daylighting is generally the driver. Where the structure was influenced, the comments stated that this was to use the GreenGuide (for selecting

lower impact materials) or to use more recycled materials. The influence on materials was also to select more sustainable materials (through the use of the GreenGuide) and low VOC materials. Some said more robust materials. Those not influenced said that they would make the same choices anyway or that the GreenGuide was more of an influence than BREEAM, as it is best practice in their opinion.

Data was provided by BRE on the buildings that were awarded ratings during 2010. This data showed the link between certain credits and the ratings achieved. In the health and wellbeing category the credit issues Hea 1 to 6 look at various lighting issues. The credit issues covered by Hea 1 and Hea 2 appear to have a strong link to increased BREEAM ratings. These look at daylighting related issues, indicating a general rule of increasing BREEAM rating leads to increased daylighting. The credits linked to artificial lighting appear to be pretty evenly awarded across all ratings.

**Figure 28** : lighting related credits



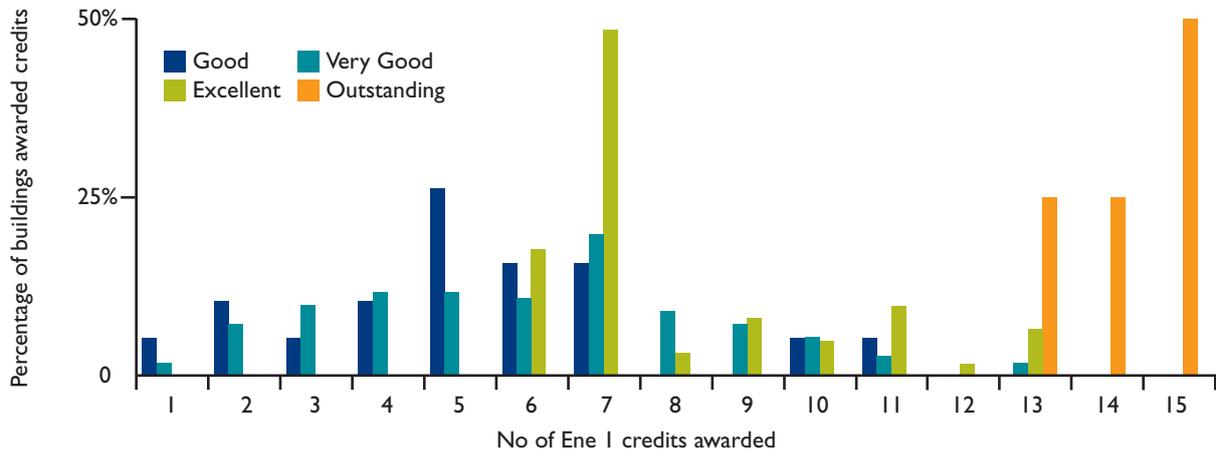
Source : BRE data

Of the other health and wellbeing credits, most are linked to ventilation and thermal comfort. All show an increased number of buildings gaining credits as the BREEAM rating increased.

The same data was used to look at what most view as the key area of sustainable building – energy. Looking at the credits awarded that could provide long term benefits to the building terms of running costs or carbon reduction, the most obvious of these is the Ene 1 credit issue – reduction of CO<sub>2</sub> emissions. In the 2008 version of BREEAM the award of credits was based directly on the Energy Performance Certificate CO<sub>2</sub> index rating.

Looking at the credits awarded for this issue compared to the rating achieved, we can see a pattern emerge, as shown in Figure 29. The middle ratings of Good and Very Good have a large spread of energy credits, with the majority of Good rated buildings achieving five credits and majority of Very Good rated buildings getting seven credits.

**Figure 29 :** Distribution of Ene 1 credits by rating

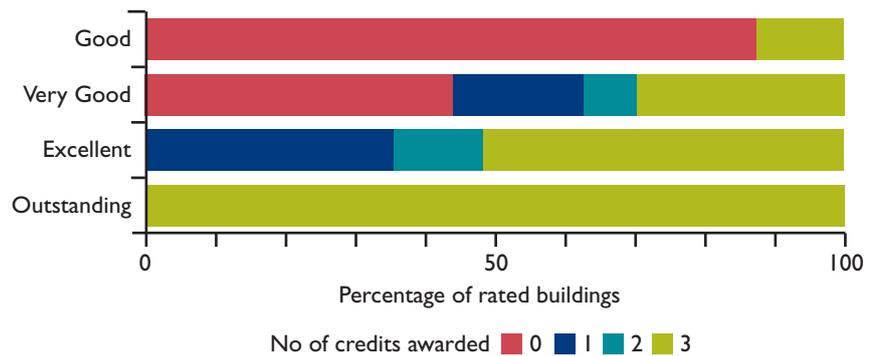


Source : BRE data

Moving on to the higher ratings, Excellent does push the number of credits, and therefore improves the EPC rating. The main driver is the BREEAM minimum standard required for award of an excellent rating. This means that at least six Ene 1 credits must be awarded to achieve an excellent rating. Most buildings in the data set achieved just one higher than that, with the remainder spread between eight credits and 13. Outstanding again pushes this further with no projects achieving less than 13 credits. The minimum standard that applies for Outstanding is 10 credits. From this we can say that there is a general rule that the higher the rating the better the EPC.

Sticking with energy, the Ene 5 credit – Low or zero carbon technologies is an indicator of investment in technologies. Here 100% of the Outstanding rated buildings achieved all three credits, and all Excellent buildings achieved at least one credit. With this credit issue there is a minimum standard of one credit for Excellent and Outstanding. This requires a feasibility study to be carried out, or have a three year contract for the supply of 100% renewable electricity. To get two CO<sub>2</sub> credits technologies must be installed that can reduce the CO<sub>2</sub> emissions of the building by 10%, or 15% for three credits. Very few buildings are awarded just two credits, with most buildings in the data set achieving three credits, demonstrating a reduction of at least 15% in CO<sub>2</sub> emissions.

We suspect however that the achievement of the Ene 5 credit is probably driven more by planning conditions rather than BREEAM itself, but there is still a relationship between the rating and the number of credits awarded.

**Figure 30** : Distribution of Ene 5 credits by rating

Source : BRE data

## 5.2 INNOVATION

Nearly two thirds of the specifiers and professionals said that BREEAM influences the use of intelligent control (Figure 31) and 85% said that BREEAM at most occasionally encouraged investment in innovation (Figure 32).

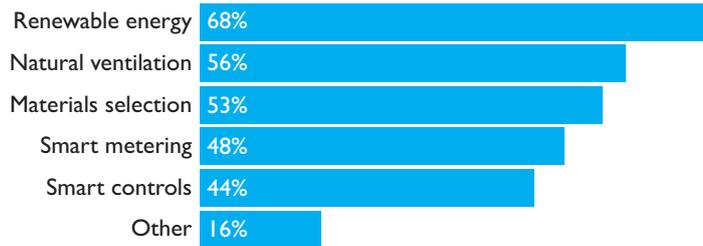
**Figure 31** : BREEAM's influence on the intelligent control

Source : BSRIA field research<sup>[3]</sup> (supply chain respondents only)

**Figure 32** : How often BREEAM drives people to invest in innovation

Source : BSRIA field research<sup>[3]</sup> (client respondents only)

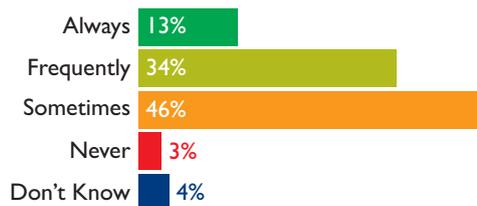
Renewable technologies were cited as the innovation that respondents were most likely to come across in a BREEAM project (Figure 33).

**Figure 33** : The type of innovation in a BREEAM project

Other responses included: procurement, including off-site construction, improvements in lift energy saving, Soft Landings approach implementation, Sustainable Urban Drainage (SUDs), waste reduction and recycling, monitoring and reporting.

Source : BSRIA field research<sup>[3]</sup> (supply chain respondents only)

Two respondents saw BREEAM as restricting innovation. One saying, *“In some instances BREEAM or people’s reading of it can restrict beneficial technologies”*, and another, *“Would argue BREEAM penalises innovation, especially in relation to materials.”*

**Figure 34** : How often BREEAM encourages the installation of building technologies and active energy management

Source : BSRIA field research<sup>[3]</sup> (supply chain respondents only)

The client responses were different from the supply chain and professionals with just over half saying that BREEAM did not drive them to invest in innovation. However, many said that innovation occurred anyway and it was just that BREEAM was not the main driver.

**Figure 35** : BREEAM as a driver for investment in innovation

Source : BSRIA field research<sup>[3]</sup> (client respondents only)

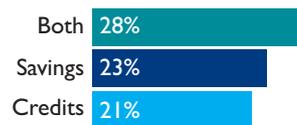
Innovations that were undertaken by the clients interviewed included:

- “Upgrading of standard, contaminated land remediation”
- “Double façade, smart controls”
- “SUDs and swales to help with flooding problem”
- “flood protection, water systems”
- “a lift to benefit from energy recovery on the down sequence” – but these did not qualify for innovation credits.

Several respondents, when asked if the level of innovation in their most recent project was typical, said that the project in question had set a new standard for all future projects.

All clients interviewed said that they had installed building technologies and active energy management in their latest project, but less than 30% did this solely for gaining credits. For the majority it was for both operational savings and gaining credits.

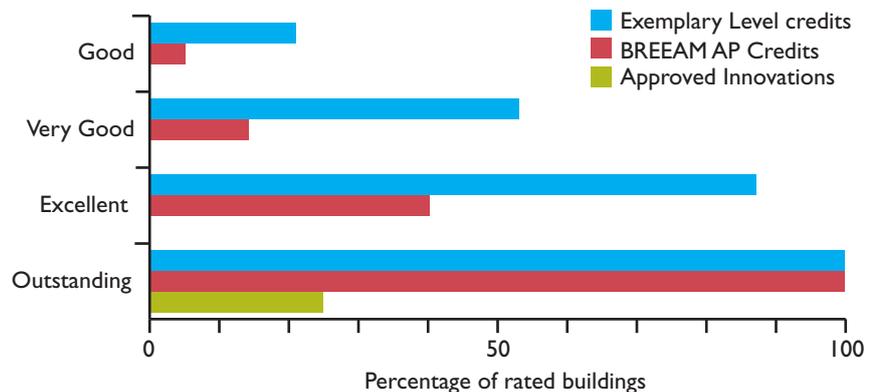
**Figure 36 :** Why BREEAM is a driver for installing building technologies and active energy management or intelligent controls



Source : BSRIA field research<sup>[3]</sup> (client respondents only)

Looking at the innovation related credits awarded to the building in the BRE certification data provided, it can be seen that more are awarded with higher BREEAM ratings. This would be expected. The data also shows that the approved innovation credits, where an application is sent to BRE for approval regarding a specific innovative technology or process, have only been awarded for Outstanding rated buildings. The application costs £1000 each time, and so are not normally included unless credits are needed to reach the targeted rating. The use of a BREEAM Accredited Professional also increases as the BREEAM rating increases.

**Figure 37 :** Distribution of innovation credits by rating



Source : BRE data

### 5.3 DESIGN FLEXIBILITY

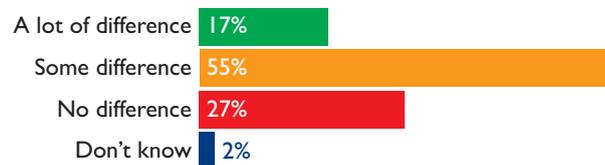
Achieving a good BREEAM rating may require the design to be adapted and most projects (73%) were sufficiently flexible, but in 20% of projects changes could not be made.

Many commented that the design included BREEAM from early on, and the changes had been made during this early stage.

### 5.4 CONSTRUCTION QUALITY

BREEAM assessors and specifiers, as well as contractors themselves, see BREEAM as having a positive effect on the quality of construction. This is significantly different from the client views where only 40% said it made a difference to quality.

**Figure 38 : BREEAM's effect on quality of construction**



Source : BSRIA field research<sup>[3]</sup> (supply chain respondents only)

One client thought that BREEAM provided a good target as *“it gives the construction team an aim for improved quality.”* Another highlighted that, *“It's in the stuff you don't see,”* and followed with an example, *“more resilient structure in terms of sealing the building envelope.”*

Those who did not feel BREEAM made a difference were not necessarily critical of construction quality, but could not specifically attribute the higher quality to BREEAM. For one respondent, *“In some cases it makes it worse as it can push towards using new technologies which are not as widely understood or user-friendly”.*

Most of the client group (74%) said that BREEAM did not cause delays to the project, although this was generally because it was planned for from the beginning. This shows that BREEAM has become established and there is an understanding of the processes by the clients.



### Lion House, Alnwick

BREEAM Rating: Outstanding

Score: 87.28%

Version: BREEAM Offices 2008

Lion House is a flagship ultra low emissions office designed to achieve exemplary standards of sustainability for the government department, Defra. The building was the first to be certified Outstanding at post construction.

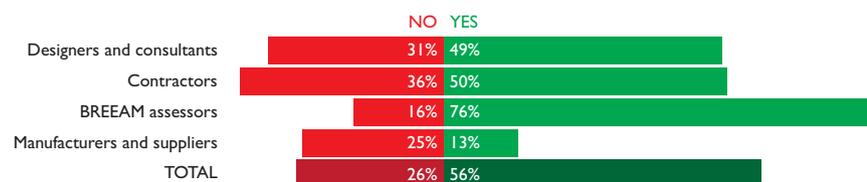
It contains a host of renewable technologies including photovoltaic panels and wind turbines. It also included a real time feedback to users via a traffic light system indicating when the mechanical ventilation is operating and the windows should therefore be closed.

The future for BREEAM looks good. The concept is generally liked by clients and an assessment is required for planning permission in 54% of local authorities in England (see Figure 3). Although the majority surveyed (88%) thought BREEAM was a good thing, it can still spark a debate, with many wanting changes.

BREEAM has good repeat business. In the client survey of BREEAM users, 96% said they would use it again, with just a few of the responses (4%) indicating that they were unsure. Some said that was because they had to due to either company/procurement policy or planning requirements. One developer summed up, *“Have to. It's an industry standard. Planners, government, industry all want it. It's not quite regulations but its close enough.”* Another just said, *“It has become an industry standard.”* While a university was more positive, *“Overall it supports our carbon reduction strategy, demonstrated CSR and it is included in our policy for new builds and major refurbishments.”*

The crunch question for any product is whether people would not just use it again but recommend it to others. BREEAM does well on this measure: 88% of clients would recommend it to others.

**Figure 39** : Recommendation of BREEAM to others



Source : BSRIA field research<sup>[1]</sup> (supply chain respondents only)

From the supply side only 56% would recommend BREEAM to others. Not surprisingly the BREEAM assessors were the majority group in the Yes camp, and 76% of them would recommend BREEAM. The supply side (architects, consultants and contractors) are split more evenly with

50% recommending it, while the manufacturers are the least likely to recommend it.

Those that would recommend BREEAM particularly noted its use as a framework and admired the *“principles but not the process.”*

Others said, *“I would recommend it if they have the money but people don't realise the costs involved with BREEAM.”*

Those who would not recommend BREEAM gave two main reasons: the lack of added value and its prescriptive nature. With one stating, *“Other things like the regulatory requirements have now overtaken it. It would be better to spend the money on insulating the existing building stock, than on finding ways of winning extra BREEAM points.”*

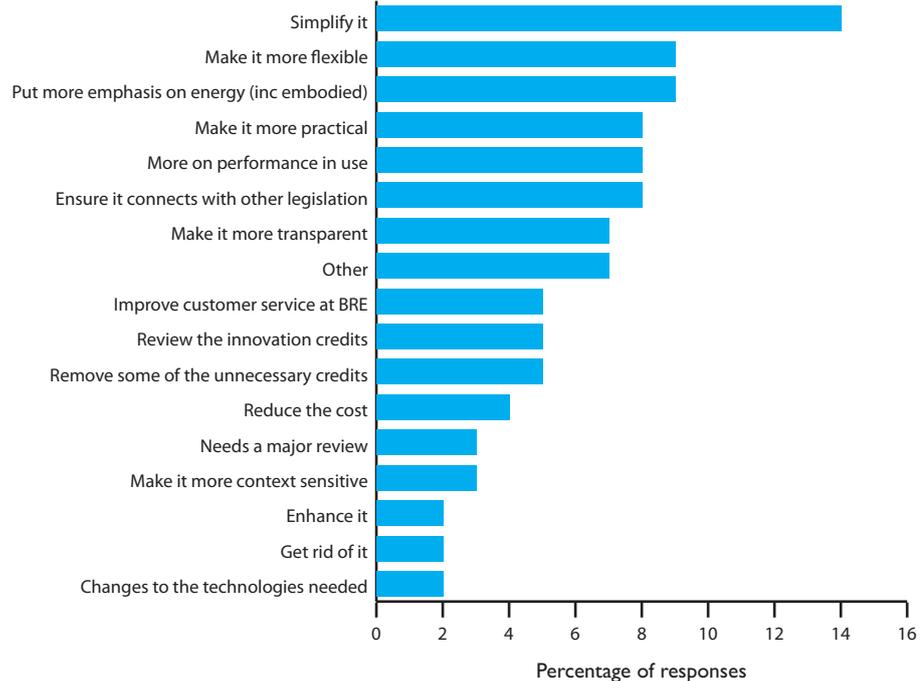
The other comments suggested that BREEAM does not help innovation. For example, *“Other methods are more geared to innovation. It doesn't challenge industry or funding streams. The facilities management industry is not aware of BREEAM and not geared to work together. There are no KPIs to recognise if BREEAM is working.”*

Although everyone agrees BREEAM is a good thing more than three quarters of respondents believe change is needed.

The most common change requested was to simplify the process (Figure 40), with several saying that it needs to be aligned to how the industry does things. Next came the need to put more emphasis on energy and then to deal with BREEAM's inflexibility, with many saying that it should be more flexible to better suit different situations. The Ministry of Defence developed their own assessment scheme, DREAM (the Defence Related Environmental Assessment Method), as BREEAM was not flexible enough to account for the remote campus type environment in which the military operates. Some universities also reported similar problems. Transport issues were often cited here, as there is often little need for public transport or cycle storage as living accommodation is within easy walking distance of many of the buildings on a university campus or military base. So credits are lost and the benefit of the work-live arrangement is not taken into account.

Comments highlighted problems in relation to some technologies, particularly CHP (Combined Heat and Power). The comments highlighted that CHP only gains points above a certain size, and this has led to some specifications calling for oversized CHP units to get the credits, rather than the most efficient option. More recent evidence has also pointed to a conflict between BREEAM 2011 and CHP, with several reports of it now being impossible to get an Excellent rating with CHP installed. This is a particular problem in London where the London Plan requires the consideration of CHP.

However BRE has recently updated the energy calculator tool to give more benefit to CHP, which appears to be working.

**Figure 40 : Changes needed to BREEAM**

Source : BSRIA field research<sup>[3]</sup>

General feedback on BREEAM was mixed. One respondent commented that BREEAM now has too much power: *“The principle is brilliant and sound, however I think it has gained too much power and the cost of achieving it could be damaging to further development, especially when it is now a requirement of our Government (Welsh Assembly).”*

The “tick box survey” tag is often attributed to BREEAM, albeit sometimes unfairly, so naturally this came up in some of the comments received such as, *“BREEAM is a series of tick boxes which sometimes feel irrelevant to the project...”* However the same respondent also raised some positive points, –such as the *“good PR value as it is easy to understand with simplistic language, ... everyone can relate to ratings of Excellent/ Very Good.”* The same university commented on the poor reception of the scheme, *“BREEAM is convoluted - a lot of people (particularly academics at the University) don't think it gives a proper reflection of a building performance and it is a very bureaucratic process.”* Although they appeared to be positive about the future, *“It could be improved and would then be even more appreciated.”*

A common complaint with BREEAM is its lack of flexibility, particularly in relation to innovation and one respondent (a developer) said, *“This causes innovation to become neglected, and doesn't allow space to push the boundaries, whereas LEED is much better at this. BREEAM doesn't allow for general debate over innovation. No differentiation to allow flexible thinking.”*

On a similar note, a university commented on the disconnect between BREEAM and the construction industry, *“It is driven by a different agenda - political. Lack of thought has gone into it; many of the credits are achievable outside of BREEAM due to best practice present in modern construction. Outside of BREEAM progress is made at a quicker pace and at a lower cost ... “For example and as a comparison, I have been involved in two projects: one in Wales - Government funded and must achieve an Excellent and one which achieved a*

*Very Good. In the end I was much happier with Very Good- there is a significant cost margin at the top end which does not reflect the benefits gained."*

The changes over the last few years have not always been welcomed, in one respondent's view, "good but, not as good as it was 10 years ago, I don't think it is keeping up. It's handling of buildings where the structure is being retained is poor. It is a tick box exercise, which doesn't have enough focus on the operation of the building. LEED is a much more sophisticated piece of software; it is more expensive but the operational considerations counteract this."

Those who took part in our surveys were asked if they had any lessons they would like to share with the industry or feedback to BRE.

The comments were varied, many similar to statements already made, but again they were categorised to ease analysis. The most common lesson for the industry is to start early. One comment linked starting early to reduced costs, "Look at it early and the cost will be negligible; the later it's left the harder and costlier it becomes." While the third most common point raised was that BREEAM costs a lot, one respondent countered this with, "It hasn't got to be expensive."

One comment highlighted the need to follow through after occupation saying, "Prepare during construction to follow it up with BREEAM In Use - stopping after BREEAM (during construction) is almost a waste of money." Not looking at the same issues in the same detail during operation is one of the main reasons that some buildings do not fulfil their low carbon promises. A green building will not be green on its own, it needs to be operated correctly to reach its full potential.

One respondent reminded project teams to shout about the good that they have done, and so not miss out on the award of credits, "Remember to get acknowledgement for good practice that the companies involved do as a matter of course. Too many fail to record or tell the BREEAM assessor about materials certification, good site management etc. Or fail to undertake daylighting calculations until they are chasing around for more credits."

Another comment was aimed more at the planners, who in some authorities apply conditions for specific BREEAM ratings universally, "Planners need to be realistic about what they are stipulating as a required rating - they need to be aware of the constraints of a site."

In summary the industry likes BREEAM but would like it even more if it were made simpler and more flexible. No client or design team should be discouraged from using BREEAM. It brings significant benefits, but to make the most of these you need to start planning for BREEAM from the very beginning of the project.

## APPENDIX A: METHODOLOGY

This report from BSRIA presents the views of the construction industry concerning BREEAM. It is chiefly based on a field survey carried out in the January 2012. The research included 50 face-to-face and telephone interviews with client organisations from both public (universities and government) and commercial (owner occupiers and developers) sectors. A web survey supported this to collect a more general view (105 responses), chiefly looking at the views of BREEAM assessors, other professionals and the supply chain.

### Interviews

Interviews were carried out in order to gain an understanding of the perceived value of BREEAM from a client's point of view. Clients from the following sectors were interviewed:

- Universities – university estates staff from across the UK
- Government – including local authorities, central government and other related bodies
- Commercial developer – commercial developers constructing buildings to sell or let
- Commercial owner occupier – commercial owners of estates.

The client sectors selected for the personal interviews were not chosen at random, but concentrated on sectors with larger buildings (e.g. universities rather than schools), where there was a potential for higher rental income (property developers), and where office activity was significant. Retail and leisure were excluded. The web survey provided a check that these were not biased sectors in relation to their views on BREEAM.

Most of those interviewed had experience of multiple BREEAM assessments.

The analysis of sectors covered and experience of BREEAM is shown in the tables and figures that follow.

**Table 4 :** Sectors owned by client interviews

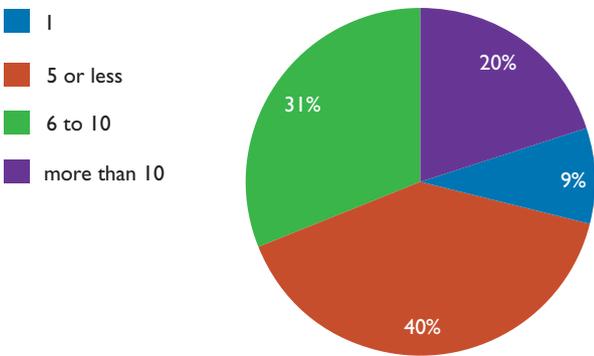
Client Sector	Face-to-face interviews	Telephone interviews	Total interviews
Universities	4	16	20
Government	5	6	11
Commercial developers	3	7	10
Commercial owner occupiers	2	6	8

The selection of interviewees was undertaken as follows:

1. BSRIA produced a list of the clients from the selected sectors:
  - All universities
  - Central government and agencies
  - 20% (at random) of all local authorities
2. The list was submitted to BRE who annotated it as to which had used BREEAM
3. BSRIA recruited interviewees from this list.

The questionnaire was developed by BSRIA. The personal interviews were undertaken by BSRIA and telephone interviews by BRE staff. All analysis and reporting was carried out by BSRIA.

**Figure 41 : BREEAM experience of telephone interviews**

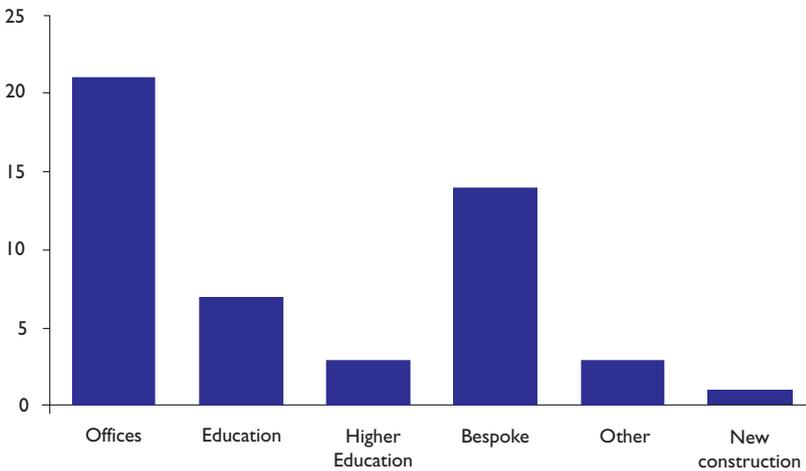


NOTE: Number of projects completed with a BREEAM rating

The interviewees had been involved with more than 1300 projects where BREEAM had been used. However, to gain specific information rather than general impressions, most questions concerned their most recent BREEAM project.

The scheme used to assess the project in question was also asked, shows a typical mix dominated by offices and bespoke, with one using the 2011 New Construction Scheme.

**Figure 42 : BREEAM schemes used.**



Looking at the versions (years) most were 2008, a few 2006, with one on-going project using the new 2011 scheme.

In the face-to-face interviews some had experience of Ska, for office fit outs, and LEED where they had American clients. One building in one interviewee’s portfolio had both BREEAM and LEED certification. Other experience had been with the Code for Sustainable Homes and CEEQUAL, a civil engineering assessment method.

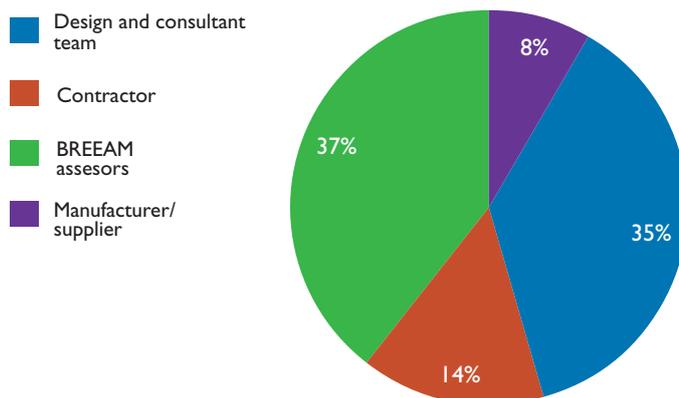
**Web survey**

A short survey was carried out using a web based questionnaire, developed by BSRIA and distributed to the members of BSRIA’s Building Environmental Assessment Network, and advertised on both the BSRIA and BRE websites.

In total 94 responses were received. The majority of responses (35%) were from BREEAM Assessors.

The majority of the respondents have had significant involvement in BREEAM (60%), and 30% had some experience.

**Figure 43 : Function of those taking the web survey**



## APPENDIX B: BACKGROUND



### ABOUT BREEAM

BREEAM (the Building Research Establishment Environmental Assessment Method) started life in 1990 as an assessment scheme for new offices. The first document was very small compared with BREEAM today, just 20 pages, looking at a handful of issues split into these categories:

- Global Effects
  - Greenhouse gases (carbon dioxide emissions)
  - Ozone depletion (refrigerants and CFCs)
  - Wood products
  - Recycling of materials
- Neighbourhood Effects
  - Legionnaires' disease (air conditioning)
  - Local wind effects
  - Reuse of existing site
  - Indoor effects
  - Legionnaires' disease (water supplies)
  - Lighting
  - Hazardous materials
  - Indoor air quality

This was developed through the 1990s and 2000s adding schemes for different building types, such as retail and residential. Today we have BREEAM New Construction 2011, which now has 407 pages and which can be used to assess almost any building. The categories have

changed too, with the number increased to nine plus credits are now available for innovation:

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution.

There are now 49 credit issues assessed from Man 01 – Sustainable Procurement through to Inn 01 – innovation. Each category is weighted (see Figure 2) and then added together to reach the final percentage score.

The 2008 version of BREEAM was a key milestone in the development of the system, and many of the buildings analysed in this report were assessed using this version. This version introduced mandatory post-construction stage assessments for the award of the final certificate, together with minimum standards, innovation credits and the Outstanding rating.

BREEAM offers a number of ratings based on the overall score ranging from Pass to Outstanding. The score thresholds are:

	Pass	≥ 30%
	Good	≥ 45%
	Very Good	≥ 55%
	Excellent	≥ 70%
	Outstanding	≥ 85%

### Aims of BREEAM

The aims of BREEAM, as given in the 2011 version of the manual are:

1. To mitigate the life cycle impacts of buildings on the environment
2. To enable buildings to be recognised according to their environmental benefits
3. To provide a credible environmental label for buildings
4. To stimulate demand for sustainable buildings.

### Objectives of BREEAM

The objectives of BREEAM, as given in the 2011 version of the manual are:

1. To provide market recognition of buildings with a low environmental impact
2. To ensure best environmental practice is incorporated in building planning, design, construction and operation
3. To define a robust, cost-effective performance standard surpassing that required by regulations
4. To challenge the market to provide innovative, cost effective solutions that minimise the environmental impact of buildings
5. To raise the awareness amongst owners, occupants, designers and operators of the benefits of buildings with a reduced life cycle impact on the environment
6. To allow organisations to demonstrate progress towards corporate environmental objectives.

BREEAM has been developed to meet the following underlying principles:

1. Ensure environmental quality through an accessible, holistic and balanced measure of environmental impacts
2. Use quantified measures for determining environmental quality
3. Adopt a flexible approach, avoiding prescriptive specification and design solutions
4. Use best available science and best practice as the basis for quantifying and calibrating a cost effective performance standard for defining environmental quality
5. Reflect the social and economic benefits of meeting the environmental objectives covered
6. Provide a common framework of assessment that is tailored to meet the 'local' context including regulation, climate and sector
7. Integrate construction professionals in the development and operational processes to ensure wide understanding and accessibility
8. Adopt third party certification to ensure independence, credibility and consistency of the label
9. Adopt existing industry tools, practices and other standards wherever possible to support developments in policy and technology, build on existing skills and understanding and minimise costs
10. Stakeholder consultation to inform on-going development in accordance with the underlying principles and the pace of change in performance standards (accounting for policy, regulation and market capability).

There are two qualified professionals specific to the BREEAM system. The first is the BREEAM Assessor. They hold licenses to carry out the assessment of different building types. Licenses can be held for the following building types:

- Offices
- Retail
- Industrial
- Education
- Higher Education
- Multi-residential
- Healthcare
- Other Buildings – Courts
- Other Buildings – Prisons
- Other Buildings – Bespoke (for non-standard buildings)
- Data Centres
- International.

BREEAM Accredited Professionals or BREEAM APs are construction industry professionals who have knowledge of both BREEAM and wider sustainability issues. They are tested and qualified through BRE, and meant to act in a sustainability/BREEAM advisor role on BREEAM projects. Additional credits are available if a BREEAM AP is appointed early in the process and have input into the design and construction.

There are also national BREEAM schemes in operation in the Netherlands and Spain, and there will shortly be schemes in Sweden and Norway.

### **The current situation**

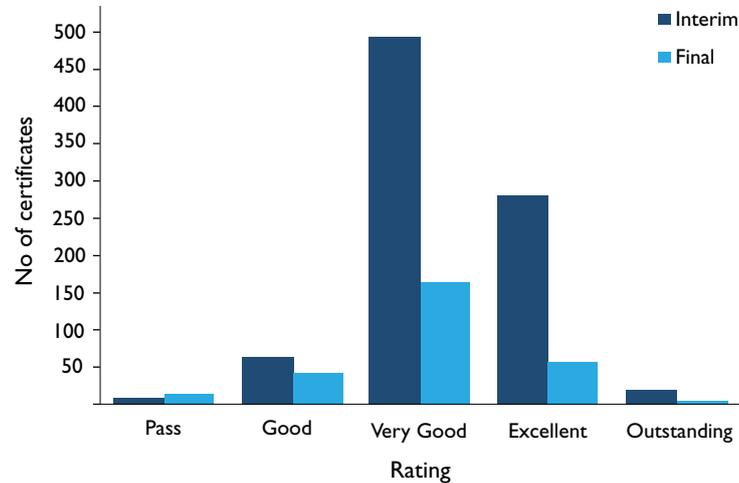
BRE now publish a list of all BREEAM Assessors, Accredited Professionals and certified buildings (using the 2008 scheme or newer) on their Greenbooklive website.

BREEAM is a significant activity:

- There are 400 BREEAM Accredited Professionals, a UK only qualification, and 1813 licensed assessors from 799 organisations, both in the UK and internationally. This excludes organisations that are only licensed for the domestic schemes and BREEAM in use auditors.
- 802 interim (Design Stage) certificates and 261 final certificates have been issued under the 2008 version of BREEAM across all building types. (See Figure 44)
- In terms of assessment licenses, BREEAM International is the most popular, followed by BREEAM Offices when looking at the UK. Offices also top the number of certificates issued, with Bespoke and Education following.

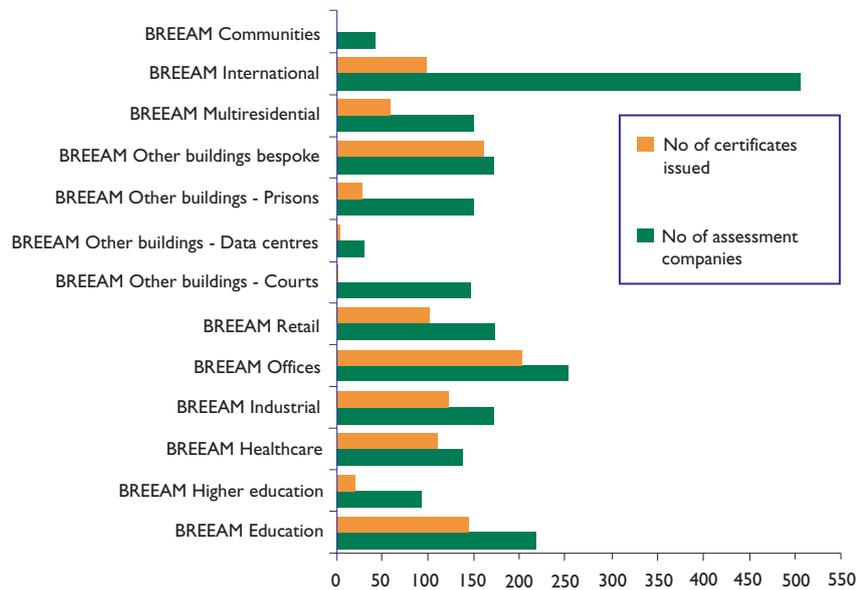
Looking at the assessment organisations, only six have the complete suite of 15 licenses, including the domestic schemes and BREEAM Communities – a master planning assessment tool. If organisations have only one licence, this is usually BREEAM International.

**Figure 44 :** Number of certificates issued under BREEAM 2008



Source : Data from [www.greenbooklive.com](http://www.greenbooklive.com)

**Figure 45 :** Number of BREEAM certificates issued and assessment companies by scheme



Source : Data from [www.greenbooklive.com](http://www.greenbooklive.com)

These values are changing on a day to day basis with more assessors being trained, and more buildings being certified all the time. The most recent list is available on the GreenBookLive website.

## APPENDIX C: ANALYSIS OF BREEAM CERTIFICATIONS

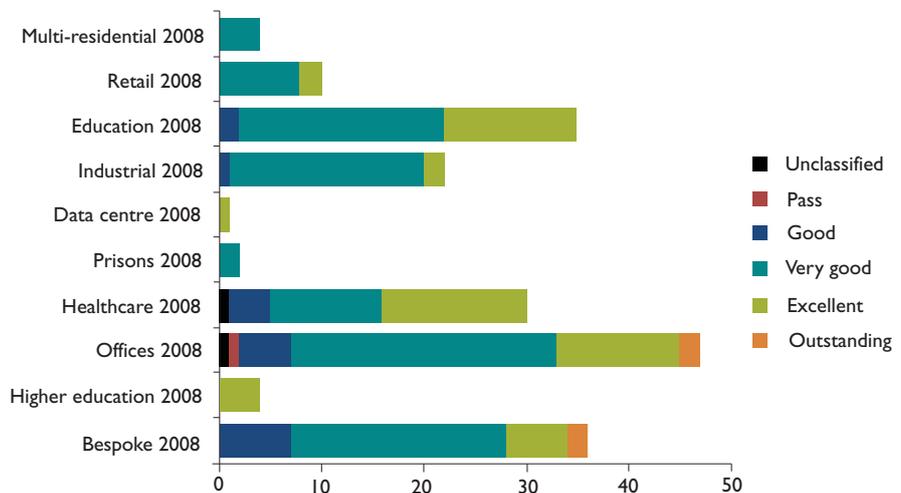
### Introduction

As part of the analysis of the value of BREEAM, BRE Global supplied a full breakdown of all BREEAM certificates issued during 2010. This allowed a detailed analysis of which credits were awarded for different BREEAM ratings. This data is used in the main body of the report to illustrate technology and process issues.

### BREEAM versions and ratings

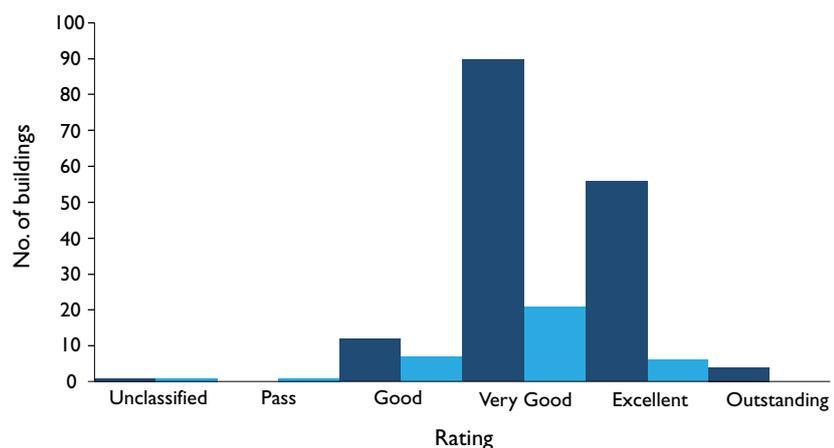
Under the 2008 version of BREEAM certificates were issued across 10 schemes during 2010, as shown in Figure 46. More than one quarter were for offices, although office building only comprised 19% of new construction that year. Of all the certificates issued 71% were for new buildings, 18% for refurbishments and the remainder mainly fit outs.

**Figure 46 :** BREEAM certificates issued in 2010 by type and rating.



Source : BRE data

**Figure 47 :** BREEAM ratings at final and interim stage.



Source : BRE data

The majority of BREEAM ratings are Very Good. If there is a planning or procurement requirement it is generally set at this level. The only Outstanding awards made in 2010 were under the bespoke and offices schemes (Figure 46).

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