Green Guide Update: BRE Response to Comments on Whole Life Performance Briefing Note (6)

This document contains a summary of feedback to the BRE industry consultation on Whole Life Performance Briefing Note (6).

The Briefing Note outlines the approach that BRE intends to take for estimating the service lives of the specifications to be adopted for the Green Guide. It also introduced the concept of the “period of analysis”, or “study period” during which components will be replaced at the end of their service lives.

BRE intends to use these values in the updated Environmental Profiles Methodology and the Green Guide.

Comments have been provided by industry stakeholders (● bullet pointed). A list of those who have provided comment is given at the end of the document. BRE have responded to these comments (italic font). Comments were discussed at a meeting of the Construction Products Association MAG on 21 February 2006.

The document is split into the following parts, which reflect the Points on which BRE is seeking agreement. There is also a body of text which covers general comments and the audit role of Faithful and Gould:

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Part 1 –
General comments

- I confirm [our] agreement with the proposed methodology
- Confirm that I agree with all four points within the briefing note
- I agree with points 1-3
- Okay

- The European framework for specification of wood preservation implemented in BS 8417 with desired service life categories is relevant here coupled with the Wood Protection Association Manual and Commodity Specification based on BS 8417. Our specifications default to 60 year service life in line with our understanding of durability requirements in the Construction Products Directive

The GG does not consider specifications at this level of detail

- The industry associations are proposing an annex to the European plywood standards recognising that plywood is a very diverse construction material. We are therefore seeking to relate expected or required service life to these variables …. 3 years (which could mean months) ≤10 years, and ≥10 years or permanent. Advice will also be given as to when preservative treatment should supplement natural durability. How would this kind of categorisation relate to a generic RSL for plywood?

The GG Specifications will select the material that is fit for purpose and the appropriate RSL

- We have evidence of aluminium being used in the Bodleian Library in 1927 and church roofs in Derbyshire in the late 1800’s, however the bungalow evidence is considered the most substantial in terms of current photography and evidence of installation dates (evidence provided)

This briefing paper describes the process that BRE will adopt for arriving at service lives. The evidence will be considered when service lives are being drafted. Industry will have the opportunity to comment on the service lives at this stage.

- Is there a place where I can view some of the other documents that are referenced in the Note?

The HAPM, BPG and BLP publications have now been updated and amalgamated into the BLP Construction Durability Database which is available free of charge to Registered Social Landlords and for a nominal subscription to others. BMI can be purchased from RICS.

- Is there a document that tries to establish lifetime vs environmental impact and is there a scheme whereby designers, clients, financiers can claim any environmental cashback for the use of more expensive yet longer lasting and environmentally improved products?

Envest2 includes data on environmental impacts and whole life costing. BRE is not aware of cashback schemes but both issues are outside the scope of the GG.

- I would be more than interested in understanding the method of driving the theoretical considerations of a 60 year BRE life expectancy trial down to the day to day tribulations of the contractor on site.

This is generally beyond the scope of the GG for it is at its core a life cycle tool. However, guidance on how to use the GG and at whom it is targeted, including contractors, will be provided.

- In response to this document I would advise that possible recycling of items at the end of their life is considered in the disposal section of this document.
This subject is covered in Briefing Note 7: End-of-life and wastage models.

- The methodology does not appear to take account of the draft ISO 15686-9. The GG will make reference as appropriate to this ISO, however it is a draft and definitions are noted ‘to be developed further’. The briefing note has generally referenced those parts that are published (ISO 15686 Parts 1, 2, 3 and 6 are published) as appropriate although it is acknowledged that even Part 1 is being revised and a new Part 5 and 8 are also in draft.

- I hope ...in the guide you will advocate manufacturers should provide properly authenticated evidence for service life data for their own product

Agreed

- How will the service life data be placed in the public domain so that the system is seen to be fully transparent

RSL data will not be released prior to the publication of the GG. Trade associations will be given the opportunity to provide BRE with appropriate evidence and information to influence the decision process of deriving the service life data.

- This wording suggests that all components will be replaced during or at the end of the study period. This wording must reflect that not all components of a structure will be replaced during the study period suggested of 60 years. A house roof may need changing say every 50 years, windows every 20, kitchen & bathroom every 15. For brick/block/concrete the service life will be 200 years + at the time of demolition, lightweight framing/SIPs panel maybe 75-125 years.

The wording will state that it will only be those components with a shorter life than 60 years which will be replaced as part of the LCA exercise.

- Kate Barker (report published by ODPM) states from every speaking platform that houses built today must last for many centuries. More ‘conservative’ treasury spokespersons state “at least 200 years”! This issue must be clearly identified in the text of the guidance note and we would suggest that there is a need to separately address the structural frame of buildings from the other components such as roof/windows/doors/ceilings/insulated plasterboard, which will be changed when regulation forces change or owners simply want to upgrade or change.

- Again, we would stress that the potential service life of the structural frame of a building will be 200 years + for brick/block/concrete and perhaps only 75-100 years for lightweight framing/SIPs panel. Some building types will be decommissioned (demolished) before the end of their potential service life. Housing has probably the longest required service life for any buildings type in the UK according to current demographics and the numbers of new houses being built.

The GG does not consider how long a building will last. We assume all buildings will last beyond 60 years and specifications where component parts have service lives greater than 60 years will be denoted as 60+ years. The GG will consider the LCA over a 60 year period. However short life buildings such as an industrial building would be expected to have a building service life of less than 60 years and will be notionally rebuilt at the end of its design or service life and will attract a fresh set of environmental burdens each time it is rebuilt. (An industrial building with a life of 25 years will be rebuilt once during the 60 year LCA study period)
Part 2 –

BRE will derive reference service life data of the specifications in the Green Guide

ISO 15686-1 states that

*The reference service life is the service life that a building or parts of a building would expect (or is predicted to have) in a certain set (reference set) of in-use conditions.*

- Agree that the GG cannot be project or site specific and that a generic service life should be used and that BRE should derive this
- We agree in principle that BRE will derive RSL data
- Agree that LCAs can only use reference service lives. To do otherwise would make the whole process to complicated and confusing for practitioners.
- I agree with points 1-3

Noted

- We agree that BRE should derive service life data. It will be necessary to agree detailed specification in the GG as this will to some extent determine the RSL. We await detailed information on the specs. including steel products

*Specifications have been issued for comment and design details will be published to specific industry representatives.*

- We are also unclear as to what environmental conditions will be considered. EN ISO 12944-2 lists six different conditions from C1 (very low) to C5-M (very high marine).

*ISO 15686 service life planning defines seven factors which influence component durability which need to be considered when determining service life. These seven factors are considered below with a comment on how they are incorporated in the GG approach to identifying the reference set (ie the conditions under which the specified material will be used):*

1. Material and component quality. *Will be specified as complying with relevant BS/ISO standards*
2. Design. *To good practice standards*
3. Workmanship. *To good practice standards and BS 8000*
4. Indoor environment. *Dry and warm*
5. Outdoor environment. *Inland with normal urban pollution*
6. Maintenance. *Maintenance in accordance with manufacturers recommendations*
7. Use. *Specifications adjusted to building sector eg carpets in a school will be to different specification to domestic carpets*

- We request that manufacturers and trade associations have the chance to comment on, or challenge, the BRE RSL when they become available.

*Trade associations will be given the opportunity to provide evidence and information to inform the decision process which develops the service life data. Industry will not be provided the opportunity to challenge every number that BRE derives.*

- Like to know at what stage in the overall BRE BREEAM methodology, service life factors that take account of issues such as maintenance and environment will be accounted for with regard to specific material and elements. Is this something that will be incorporated in a future update a result of the output from TC 350 and B/558

*Maintenance will be considered if this indicates an impact. Generally, the more important impacts are replacements. The GG is the place where these aspects shall be taken into account.*
• Agreed …but the key question is how the RSL will be determined. Use of ‘factor’ in second sentence in first para page 3 - is this some sort of reference to ISO 15686, what does it mean in practice

Agreed; the reference to ‘factor’ is confusing and will be omitted in the GG.

• This doesn’t seem to be the actual definition in the current version of the ISO (Ref 3.1.2).

It is in fact a definition from ISO15686-8 which is in draft. The definition has been changed to ISO 15686-1.

The reference service life is the service life that a building or parts of a building would expect (or is predicted to have) in a certain set (reference set) of in-use conditions.

• Agree if it is expressed clearly as a median or average, however it would be helpful to offer a lower and upper range that represents very benign and very harsh or best case and worst case RSL

BRE does not intend that the GG becomes a service life planning tool which would be building and site specific and if we were to adopt the suggestion it would make the tool too complex and large as a paper based tool.

• It must be recognized that the ISO 15686 definition is “the service life of a building or constructed asset or any part thereof…” Building frames have a much greater service life that any other components and this must be recognised.

• Reference service life for building frames must be up until the point of demolition of the framed structure, not a whole building average service life.

• We would agree that this is appropriate for the determination of LCA’s, but only for certain materials and components with well-defined, but relatively short, reference service lives (typically < 20 years) e.g. sealed double glazing units, central heating boilers, floor coverings etc. In the case of materials/components such as brickwork external walling (for domestic buildings, in particular) which can last for centuries, we consider that any attempt to derive a single value for the reference service life is too simplistic and inappropriate generally. In this respect, we note that you already recognize that ‘expressing service life precisely in years is difficult particularly for long-life structures’.

Structural components that have extended service lives will be designated 60+ years. This would include components such as lintels that are difficult to inspect and/or replace and non structural items such as plaster and screed.

• Service life requirements for housing must be greater than other buildings and should not be brought to an unrealistic low figure by averaging with service requirements of other building types which are often much shorter. Eg B&Q state that their “sheds” are designed to a service life of under 10 years and will probably be demolished around that service life ending.

The GG does not consider how long a building will last. The GG will consider the LCA over a 60 year study period. However short life buildings such as an industrial building would be expected to have a building service life of less than 60 years and will be notionally rebuilt at the end of its design or service life and will attract a fresh set of environmental burdens each time it is rebuilt. (An industrial building with a life of 25 years will be rebuilt once during the 60 year LCA study period)
“BRE will derive reference service life data of the specifications in the Green Guide”

Conclusion from MAG meeting 21 February 2006:

It was agreed that it will be the reference service life that BRE will derive for the GG specifications. The GG will make it clear that it is not a service life planning tool and that the reference service life data used in the GG should be used with caution when related to actual sites and buildings.
**Part 3 –**

**BRE will assume that the end of service occurs at the period of time after installation when a building or its parts no longer meets the performance requirements**

- In the example of coated steel cladding the service life is often extended by repainting. Repainting should be part of the regular servicing within the RSL. In theory it is possible for a steel cladding product to last the full 60 years provided it is regularly maintained.

**The GG considers and measures the impact of maintenance.**

- The end of service life should be when the specification has deteriorated to such an extent that it is no longer serviceable. We seek confirmation on this point otherwise we agree.
- A clearer definition of performance requirements should be given, perhaps with illustrative examples.
- Agree with the assumption that end of service life occurs at the point in time after installation when the building or its parts no longer meet the performance requirements. …..Performance should be limited to physical performance ie durability and not social performance in terms of continuing functionality of the architecture.
- Other regulatory issues such as energy conservation should not be taken into consideration as there is no requirement to introduce these retrospectively.
- Acceptable to whom? User, owner, regulatory bodies? Might be better to say it is the time at which it no longer meets its performance requirements.
- Things like air leakage through windows and curtain walling may increase with time. Specified performance is the as ‘new performance’. Long term performance requirements are not specified but assumed to lower. Other examples would be the gloss level on paints and operating forces on doors.
- Yes but it needs to be clear that it doesn’t necessarily mean failure but an assumed level that would be allowable by or stated in the individual brief.

**From the consultation process BRE now provide the following adjusted definition for end of service life:**

The end of service occurs at the period of time after installation when a building or its parts no longer meet the performance requirements and when physical failure is possible and/or when it is no longer practical or economical to continue with corrective maintenance.

- RSL should look at physical performance of the component. It should not take into account consideration aesthetic and other fashion reasons.
- We hope that in compiling service lives form each building type or sector, BRE does not take account of historic data ie which reflects fashion and social tastes over and above elemental performance.

**The GG is designed to show the reality of how building specifications and components perform in the reality of the built environment. It considers physical performance and aesthetics or fashion performance requirements where appropriate. Aesthetics or fashion reasons have an influence in only a very small number of building elemental categories.**

- End of service life for building frames must be the point of demolition of the framed structure. The end of service life must be established separately for industrial and domestic structures due to significant variances between the two. A concrete frame structure can be re-clad and refitted with little maintenance to the frame until their in no requirement for the building or buildings change of use. There are many example right now of old factories and warehouses built in brick and concrete being converted...
into luxury flats extending the frames’ service life, which have already reached over 100 years, toward their second century. (eg. In Nottingham city centre)

• Again, we would agree that this is appropriate for certain materials and components having well-defined, but short, service lives. In relation to the building itself, however, we consider this statement to be too general in nature and open to interpretation. In practice, it could provide a perfect ‘get out’ clause for the wholesale demolition of buildings – ‘it no longer met performance requirements’ being the only justification. Surely this is not consistent with the overall aims of sustainable development and the prudent use of natural resources?

• Agree in principle but it is hard to agree fully without understanding how the performance requirements will be determined for individual parts, let alone from the building as a whole. Can you be more explicit in terms of how these individual points will work in practice?

The GG is not concerned when the end of life of a building should be unless it is shorter than 60 year eg industrial. Demolition is inevitable but it is not possible to predict when for long life buildings ie over 60 years. Demolition is included within the LCA process and is included in the overall score for each specification. The GG is more concerned with shorter life materials that need to be replaced a number of times during the 60 year study period.

“BRE will assume that the end of service occurs at the period of time after installation when a building or its parts no longer meets the performance requirements”

Conclusion from MAG meeting 21 February 2006:

A clearer definition of end of service life should be developed.

BRE now provide this definition as:

"The end of service occurs at the period of time after installation when a building or its parts no longer meet the performance requirements and when physical failure is possible and/or when it is no longer practical or economical to continue with corrective maintenance"
Part 4 –

The data sources BRE is intending to use and let us know of any additional sources we should include

- Do these publications use the same definition of service life as the BRE are proposing or do they take account of other factors as mentioned above (environmental)
  Yes these publications generally use the same definition

- For more recent construction systems the knowledge and experience of the trade associations is likely to be superior than that of the organisations listed
  Where appropriate BRE is seeking input from trade associations

- There is potentially a problem with the use of a large range of supposedly different guides….this arises from the fact that many of these guides are self referential and one firmly stated opinion can cascade across the whole range of guides reinforcing the value on each repetition. It is vital that as many trade associations as possible provide actual lifetimes for their products
  The guides referred to have data derived from different sources and should not impact on each other. We intend to involve trade associations as far as possible.

- In the case of insulated panels for the roofs and walls of buildings, EPIC has data back to the installation of the first panels in various geographical locations and applications. This can be made available but adequate notice would be required.
- BS 8500 included concrete mix designs which can provide a service life of 100 years plus and reflects BD EN1990
- …would be happy to submit such data to BRE. Some examples include:
  Evidence of service lives from installations supported by photographs as evidence of installation dates.
  o E.g. Georgian brick/concrete terraced houses in cities, even if recycled into modern flats, have nowhere near fulfilled their service life.
  o E.g. Victorian brick/concrete factories and warehouses being refitted to form flats with modern retail facilities and car parking on ground and lower floors.
  o E.g. Victorian insitu concrete town houses being converted into luxury flats
  Third party certification covering reference service lives.
  o E.g. concrete tiles and other concrete products that have service life expectations of 100 years + in BBA and other certification schemes.
  o Confirmation that the product or material complies with relevant codes of practice and standards. E.g. Companies operating quality management systems to the relevant UK and ISO standards.

There will be an opportunity for trade associations to submit data supporting service life claims.

- …requirement of detailed evidence…inadequate time (11 working days) has been allowed by BRE.
  A revised timetable will be issued

- Can BRE confirm …. That long term site exposure and/or accredited testing on cementitious materials carried out by BRE will be considered
We will consider service life data held by BRE (as well as data provided by trade associations)

- Question the open-ended statement to the effect that BRE will simply derive averages based on its experience were there any differences. …differences are more likely to be more often the case and that you should have a well detailed and robust method for deriving the required information. We commissioned and published a study by an engineering firm to look a empirical evidence with regard to service lives of key building components in different climatic conditions in North America.

The reference sources are well established in the UK and were individually commissioned pieces of work funded from different sources. We cannot afford the time required for a new commission.

- The HAPM, BPG and BLP publications have now been updated and amalgamated into the BLP Construction Durability Database which is available free of charge to RSLs and for a nominal subscription to others. Think there should at least be a note referencing to the website www.componentlife.com.

Agreed

- We agree that service lives should be generic and not product manufacture specific. We would suggest that the service lives required for each building type or sector could be
  - office - 20 years
  - domestic - 200 years
  - education - 60 years
  - healthcare - 50 years
  - retail and warehouse - 10 years

Again, we would stress that the Barker report and Treasury requirements for new housing require the life of new house structures to be 200-1300 years. Additionally the requirements on Housing Corporation service life of houses required for Housing Authorities make reference to the expected time the house will stand and be able to be altered/modernized/upgraded. We would suggest that a 100 year expectation minimum ‘service’ life may be required following regular upgrading of the house fabric during that period.

The GG is not considering the service lives of whole long life buildings, we are seeking agreement for a 60 year study period. The GG is not concerned when the end of life of a building should be unless it is shorter than 60 year eg industrial. Demolition is inevitable but it is not possible to predict when for long life buildings ie over 60 years. Demolition is included within the LCA process and is included in the overall score for each specification. The GG is more concerned with shorter life components that need to be replaced a number of times during the 60 year study period.

- We would suggest that the Barker Report and Housing Corporation requirements on the life expectation of houses built today must be taken in to account. In relation to concrete products evidence on additional durability could be extended to 1000+ year service life in relation to roman concrete.

Outside the scope of this project. Again we are mostly interested in shorter life components that will be replaced a number of times during the assessment period.

- We note that most of the estimates of service life contained in the data sources listed are essentially anecdotal in nature, often being based solely upon the personal opinions of a small number of professionals who have ‘experience in a particular field’. Large variations in these data are also often apparent.
In addition, the data do not necessarily agree with other statistics. For example, whilst the life of clay brickwork walling is 85 to 125 years according to the BMI, a simple analysis of the UK Government’s Housing Statistics shows that 22% of the existing (mainly brick-built) housing stock is already over 140 years old.

In view of this, we consider that the limitations of any findings from these data should be recognized and highlighted in any publications. The GG is mainly interested in shorter life components that will be replaced a number of times during the assessment period. The GG will make it clear that it is not a service life planning tool and that the reference service life data should be used with caution when referring to actual sites and buildings.

- I wonder if might be better to separate the in-use and maintenance impact from post-use (or end of service) demolition, recycling and reuse impact. This may be useful for designers who are dealing with changes of use or ownership.

This information would be valuable to the design process and construction professionals working at different stages through the building life cycle. Unfortunately, it sits outside the scope of the GG project and more practically what is feasible to publish at this stage. In time, and as the electronic method of publication develops, it may be feasible to publish this more detailed level of information.

“The data sources BRE is intending to use and let us know of any additional sources we should include”

Conclusion from MAG meeting 21 February 2006:

Data sources for developing the reference service lives of the specifications are agreed.
Part 5 –

The audit role of Faithful and Gould

- Agree with the source data … along with input from F+G are a reasonable choice for providing reference service life data
- Agree with the use of an auditor cannot comment on UK data
- Acceptable if it is clear when averaging has been carried out by BRE on conflicting information. …and the source has been audited by F+G rather than from the list of publications

Noted

“The audit role of Faithful and Gould”

Conclusion from MAG meeting 21 February 2006:

The role of Faithful and Gould acting as third party reviewer of the BRE derived reference service lives was agreed.
Part 6 –

Life cycle assessment will undertaken over a 60 year study period and will include the impacts of the demolition expected to occur any time after the study period

- We agree that a 60 year period is suitable and that end of life should be included
- Agree with the use of a 60 year study period
- The change in terminology to ‘study period’ does seem to be at odds with the current GG to Spec and to Housing Spec

The specifications within the GG are all assessed over a 60 year building life

...the specifications were analysed over the 60 year building design life...

...since this has been changed to a ‘study period’ there seems no benefit in changing to a 120 year study period. There needs to be clear explanation of the term ‘study period’.

- If BRE intends to study IMPACTS before and after life in service then it surely must include impacts during life otherwise the data is based solely on raw material, manufacture and demolition/disposal impacts.

The study period is the period over which the environmental impacts of a completed building element and its parts will be measured. This includes the impacts of maintenance and component replacements activities. The environmental assessment also includes the impacts during manufacture, delivery to site and construction plus a calculation of its demolition impacts

- We would welcome the opportunity to review the end of life data for steel products or know the source of data

Trade Associations will have the opportunity to input data on the service lives of their products

- Please clarify ‘components and materials...will be noted as 60+ years’. Does this in fact mean specifications?

Components and material specifications that have a longer life than 60 years (denoted as 60+) will not be replaced at year 60. The GG will not identify the actual service lives of such long life specifications.

- BRE proposes to acknowledge components and materials that will have a longer life than 60 years with the notation 60+ years. We would question whether this is sufficient and propose a pro-rata approach.... Eg a product that has a service life of 80 years should only receive 75% of its environmental impacts over the 60 year study period

- I think that this 60 year period needs further consideration. It may be that a period of 100-120 years is more appropriate. It is also referred to in the new part 5 of the ISO.

For example Al windows with a 35-40 year reference service life will only get replaced once during 60 years but 2/3 times during 100/120 years. PVC-u with a 25 year life 2No. replacements with 60; 4no. with 100/120 years. The longer period may give a more representative comparison (ratio2/3:4) between these and other components. Perhaps an example calculation from the revised Green Guide would help us decide the most appropriate appraisal period?

- Developers and investors are still using 40 years in some cases for financial analysis on speculative projects but I don’t think this would affect using 60 years as an appropriate figure.

“However, this does not imply that the buildings under consideration or their long life components have reached the end of their service lives.” We agree with this statement as with concrete you have a structural frame which will outlast all the replaceable non structural components and materials.
We believe that a 60 year study period should not be used for housing though it might be appropriate for other building types that are not required to last to the same timescales.

- “Components and materials that BRE considers will have a longer life than 60 years will be noted as 60+ years.”

We strongly disagree with this proposal. An accurate indication of the service life of the component must be made clear and be reflected in the relevant calculations using the service life. A number of categories such as 60+ years, 120+ years and 180+ years would be far more effective at communicating the service life of ‘long-life’ components. This is particularly true for housing where the argument for 120 year service life seems far more appropriate to market needs.

The GG avoids trying to identify the accurate expected lives of long life components and materials (ie those with a 60+ year life). The Environmental Profiles Methodology does not undertake a proportionate approach as this would require determining a definitive time period for component life cycle.

- As the current GG methodology appears to use RSL many materials appear to have a life span that is probably unrealistically long. A more meaningful approach would be to calculate ESL based on the application of in-use factors that take account of the specific application and environmental conditions (see point 1) ie use methodology of ISO 15686. This might create too much information for hard copy guidance but could be incorporated into the proposed web-based system.

The GG is unable to take account of the ISO factor approach which is a project and site specific estimation of service lives. The GG is not intended to be used as tool for undertaking service life planning. The GG will direct the user to the ISO 15686 source.

- The revised ISO 15686-5 is going to use the term ‘period of analysis’. Suggest the term should be changed to this.

The GG will only refer to current standards not those in draft, although there is always the possibility that a draft standard may overtake the GG timetable. Such cases will be reviewed.

- Not sure that this statement is strictly correct. Suggest it would be far better to say that 60 years equates to the normal design life of most new buildings (Ref: now obsolete BS 7543)

The GG does not consider the design life of long life buildings (ie 60+ years). The 60 year study period is the issue requiring agreement.

- Do not understand the force of the preceding note. You say you will include ‘cradle to grave’ and ‘cradle to construction site’. It seems to me that goes without saying so what is the meaning of this note

- Factory gate to construction completion
  - Impacts of building the specification

Not too sure why this is relevant here. Think the wording needs more explanation if it is to be kept.

Wording has been included elsewhere in GG documents and is provided here for information and is intended to be a summary of the GG assessment process.

- We strongly believe that the BRE has a moral and practical obligation to promote long life construction and using the 60 year model is both irresponsible to the needs of the environment society and industry. I hope that my words resonate with the Sustainability Board and they recommend extending the model to include 120 year and longer design lives to benefit all stakeholders.
This is not the purpose of the GG. BRE promotes buildings that are fit for purpose and this does not always equate with a 120 year life. The GG use 60 years only for the assessment period.

- Point 4 suggests that the LCA should be measured over a 60 year period. Currently this is 30 years I believe...as a supplier of two BRE 30 years WLC assessed products...I would suggest that remaining at 30 years would be preferable.

The current GG uses 60 years.

- If the service life remains at 60, then we would suggest that positive impacts for those components not requiring replacement at 60+ years, 120+ years and 180+ years would be effective at demonstrating the benefits of ‘long-life’ durable components and building elements.

- We strongly disagree with these two requests for the following reasons

1. **60 year study period**

- Whilst this accords with the approach of the previous Green Guide, it does not necessarily mean it is valid.
- Whilst 60 years may be the normal maximum study period adopted for whole life costing, there do not appear to be any convincing reasons (apart from convenience) for adopting this same maximum period for LCA studies. Indeed it could be argued that whole life costings may well be driven by accounting techniques which place particular emphasis on the short-term value of money (and property). This may well often be in direct conflict with environmental issues.
- Restricting the Green Guide LCA’s to a single study period of 60 years will clearly be disadvantageous for construction materials/specifications such as clay brickwork walling in buildings, which as recognised by the BRE, has a service life in excess of 60 years. Over a maximum 60 year study period the relatively high pre-factory gate environmental impacts from this form of construction will not be fully mitigated by its low post factory gate impact. For this reason, we consider that it is insufficient to simply note that components and materials may have a life of 60+ years. We would recommend that a range of study periods should be provided to reflect the relative environmental impacts of the various components within a building, over these different study periods. In this way the relative environmental impacts of the different components/specifications with time would be better understood, and designers would be more able to evaluate the true whole life environmental impacts of their designs.

This is too complex for a high level guidance document such as the GG. Envest2 provides a means for the user to adopt different study periods.

2. **Demolition**

- It is inconsistent to acknowledge that certain materials have service lives in excess of 60 years whilst, at the same time, including the impacts from their demolition in the 60 year LCA data.

Demolition is included in the assessment and some materials will have a higher impact than others at demolition. Components and materials specifications that have a longer life than 60 years (denoted as 60+) will not be replaced at year 60. The GG will not identify the actual service lives of such long life specifications. The GG will make it clear that the demolition is outside the 60 year period – BRE will not state when.
The sentence above must read “Life cycle assessment will be undertaken over a 60 year study period and will include the impacts of the demolition expected to occur any time during and after the study period.”

(demolition of some building types designed for shorter service life than 60 might be expected to take place at around 10 years. E.g. Retail Sheds)

This must be seen with a general caveat that all impacts are based on current disposal and recycling methods and cannot determine future impacts from changed practices.

Agreed, appropriate and clearer reworded will be provided in the new Green Guide.

“Life cycle assessment will undertaken over a 60 year study period and will include the impacts of the demolition expected to occur any time after the study period”

Conclusion from MAG meeting 21 February 2006:

A 60 year study period is acceptable. The GG will make it clear that this is in no way a statement of building life.
Consultees who provided comment (* = Methodology peer reviewer)

Hywel Davies, private consultant
Dr C R Coggins, The British Wood Preserving & Damp-proofing Association
Michael Sansom, SCI
Peter Trew, EPIC
Pete Thomas, Tarkett-Marley Floors Ltd and UKRFA
Andrew Frost & Tom de Saulles, The Concrete Centre / British Cement Association
Wayne B. Trusty, Athena Sustainable Materials Institute *
Neil Smith, NHBC
John Hannah, British Ready-mixed Concrete Association
David Duke-Evans, Wood Panel Industries Federation
James Tinkler, King Sturge LLP
Adrian Wilkins, Faithful and Gould *
Pav Bingel and Adrian Bown, Leeds Metropolitan University
Justin Ratcliffe, Council for Aluminium in Building
Richard Besant, Powdertech Limited
John F Langmaid, BSRIA
Miles Watkins, Aggregate Industries
Chris Dixon, Lindman Doorsets / Pultec Windows
Stephen Ledbetter, The Centre for Window and Cladding Technology / Bath University
Rosi Fieldson, Simon Group
Marie-Louise ter Beek, London Remade

Opportunities for further comment

BRE will be covering this topic at a further Construction Products Association MAG meeting to be held on 8 March 2006 at BRE. The aim of the meeting will be to confirm that the points raised at the meeting on 21 February have been incorporated; and to discuss any outstanding dissenting views.

Please direct all further responses to:

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