
TITLE: PRIVATE SECTOR HOUSING STOCK MODELLING

Committee: Regulatory and Support Services Committee

Date: 16th February 2015

Author: Liz Knox Environmental Services Manager

[P190]

1.0 ISSUE

- 1.1 To obtain approval to commission a Private Sector Housing Stock Modelling Condition Report from the Building Research Establishment (BRE Ltd).

2.0 RECOMMENDATION(S)

- 2.1 For Members to authorise the Environmental Services Manager to Commission BRE Ltd to carry out Private sector Housing stock modelling condition.

3.0 BACKGROUND/OPTIONS

- 3.1 Local Authorities are required to understand the condition of their stock (all tenures) and to develop strategies/approaches to address issues of concern. The Housing Act 2004 states that;
"A local Authority must keep the housing conditions in their area under review with a view to indentifying any action that may need to be taken by them"
- 3.2 The last House Condition Survey was completed in 2009, an update to this is now required to support and inform future housing policies and strategies. The previous survey was carried out by Fordham Research and involved a physical survey of 990 properties within the district at a cost of approximately £60,000. This survey was undertaken in accordance with the Government Guidance on such surveys.
- 3.3 The traditional House Condition survey method typically reports stock condition, evidence is limited due to the number of physical inspections that can be economically undertaken.
- 3.4 A stock modelling service is now being used as an alternative to the traditional survey method, it is not only cheaper but also provides greater scope of use and a greater level of information, which meets with the needs of the Council. The stock model also allows updating of the database with real time information, for example following improvements, which in turn ensures that the data continually evolves and is as accurate as possible.
- 3.5 The BRE are in a unique position, as up until 1997 they were a Government department, they have overseen the methodology, delivery, analysis and

reporting on the English House Condition Survey (now the English House Survey) since its inception 40 years ago. The BRE were responsible for writing most of the recent Government Guidance for Local Authorities on undertaking local House Condition Surveys. Using this knowledge, the BRE developed the Housing stock modelling service.

- 3.6 The model uses information from a number of recognised high quality national surveys and data sources, including the English Housing Survey and extrapolates them down to a local area level by establishing relationships between the national survey data and local area data such as census and credit rating data.
- 3.7 The only other organisation using similar methods is the Centre for Sustainable Energy but their sole offering is a model for fuel poverty. As such it does not provide an alternative option of generating stock condition intelligence.
- 3.8 The stock model is able to provide estimates for private sector housing at dwelling level, output area, ward and local authority level and includes information about the following;
- Dwellings with a category 1 rating system hazard
 - Dwellings with a category 1 excess cold hazard
 - Dwellings with a category 1 falls hazard
 - Dwelling disrepair
 - Vulnerable households
 - Households in fuel poverty
 - Dwellings with inefficient heating systems
- 3.9 In addition to the housing stock modelling, the estimated costs and benefits to health of possible housing intervention work within the area can be demonstrated with a prospective Health Impact Assessment (HIA) of the expected hazards to be found within the existing stock. From this the Council will have estimates for both the cost to health and the cost benefit of interventions to remove housing related hazards. The health impact assessment report will also include a section on Quality Adjusted Life Years (QALYs). QALYs provide a common currency to assess the extent of the benefits gained from a variety of interventions in terms of health related quality of life and survival which will help comparisons to be made between interventions.
- 4.0 ARGUMENTS/CONCLUSIONS
- 4.1 The Council last carried out a house condition survey in 2009. There is a requirement for Local authorities to keep housing conditions under review. Up to date information on the condition of the housing stock within our area along with vulnerable households will provide information that can inform future policies and housing strategies.

- 4.2 The information obtained may be used to access external funding if it is available and where possible improve the health and wellbeing of our residents, by targeting those most in need to improve their living conditions.

5.0 FINANCIAL IMPLICATIONS/EQUALITY IMPACT ASSESSMENT

- 5.1 The cost of commissioning the housing stock modelling and health impact assessment based on the information provided within the modelling are shown below. This has been provided for within the council's budget, due to the reduced cost of carrying out stock modelling to physical surveys this will provide savings off £30,000, a further saving of £1600 can be obtained if we carry out the modelling at the same time as Cambridge City.

Activity	Cost	Cost with discount
Housing Standards Variable	16,000	14,400
Experian tenure data	1,980	1,980
Health Impact Assessment	10,000	10,000
Total	£27,980	£26,380
HIA presentation	1,200	1,200
HIA report	1,500	1,500
Total	£30,680	£29,080

- 5.2 Equality Impact Assessment (INRA) not required

6.0 APPENDICES

- 6.1 (i) Dwelling level housing stock modelling for East Cambs
(ii) East Cambs Health Impact Assessment

<u>Background Documents</u>	<u>Location</u>	<u>Contact Officer</u>
	Room SF201	Liz Knox Environmental Services Manager (01353) 616313 E-mail: Liz.Knox@eastcambs.gov.uk

BRE Proposal

Dwelling level stock modelling for East Cambridgeshire District Council

Prepared for: Julia Atkins, Senior Environmental Health Officer (Domestic)

Date: 16 December 2014

Proposal Number: 300896 Version: 2



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Prepared by

Name Ian Watson

Position Principal Consultant, Housing and Health

Date 16th December 2014

Signature

A handwritten signature in blue ink, appearing to be 'I. Watson', is written next to the signature label.

Authorised by

Name Rob Flynn

Position Director, Housing and Health

Date 16th December 2014

Signature

A handwritten signature in blue ink, appearing to be 'R. Flynn', is written next to the signature label.



Executive Summary

East Cambridgeshire District Council wishes to gather additional information regarding the condition of private sector housing within their area. This proposal is for BRE to produce a series of estimates based on housing stock models describing housing conditions in East Cambridgeshire.

We will provide modelled data on key housing indicators including, HHSRS Category 1 Hazards, the hazard of Excess Cold and Fuel Poverty. The modelled data will be derived from a series of models which make use of Experian Segmentation Data from the Experian UK Consumer Dynamics Database using a range of statistical methods.

The modelled data will be provided in a Microsoft Access database which will include some simple summary reports.

This proposal sets out our general stock modelling approach. It finishes with a detailed costing for provision of the works associated with a 25 year data licence which includes a single issue of the modelled data and no updates. This is set out in detail in the section Fees and Invoice Plan. We do however include a summary below.

Overall fee summary (25 year licence period but with no data updates)

The fee grand total is £16,380. This does however only include a single year licence for the Experian Segmentation Data.

BRE modelled data including stock model report	£14,400
Experian Segmentation data (1 year licence only)	£1,980
Grand total	£16,380

The fee for the modelled data is discounted by 10% of the usual price on the understanding that the Council are undertaking the works in a consortium comprising themselves and Cambridge City Council and the works will be undertaken during the same period.

This proposal for works refers to modelled data which is in part derived from data provided by Experian and we therefore have to provide our modelled data and also any Experian data under a licence agreed with Experian. The proposal therefore needs to be read in conjunction with the accompanying Licence and Sub-Licence Agreement. To bring this proposal and the licence together an Agreement for Dwelling Level Housing Stock Modelling is also provided to which the licence and the proposal are annexes.



Contents

Executive Summary	2
Background	4
Our understanding of the requirement	5
Our approach	6
Preamble: Contractual arrangements	6
Housing stock modelling	6
Modelled Data	6
The dwelling level models	7
Delivering the data	11
Experian Segmentation Data	11
Data licencing	12
Housing stock model report	12
Work Programme	13
Tasks	13
Deliverables	13
Receivables	13
Timetable	14
Project Management	14
Fees and invoicing plan	15
Project team	17
Quality & Environment	18
Terms and conditions	19
Appendix A: Curricula vitae of project team	20
Appendix B: About BRE	27
Appendix C: Terms and conditions of business	31
Appendix D: Housing Stock Model Methodology	37
The 'SimpleCO ₂ ' model	37
Acceptance of BRE Proposal for Work	40



Background

This proposal is for the BRE Housing Group to produce a series of housing stock models describing housing conditions in East Cambridgeshire. It follows on from a meeting with council officers on 15th December.

BRE have used a top down methodology using statistical techniques such as logistic regression to predict likely housing conditions at small area level for over 230 local authorities in England since 2003.

Over the last few years BRE have been looking at how to further improve the quality of this very successful service. This proposal is for a new approach which will improve upon the previous methodology and is dwelling rather than area based. Indeed a key output provided by the project is a database of house condition and energy data for dwellings in East Cambridgeshire.



Our understanding of the requirement

We understand the Council are currently considering how to improve their information on the private sector housing stock. Good quality information on the condition of housing stock is essential before policy decisions on reducing fuel poverty, carbon emissions, health inequalities or promoting health and wellbeing can be made.

Keeping the condition of the housing stock under review is required by section 3 of the Housing Act 2004. This is a wide ranging requirement as it refers to other parts of the Act as well as other legislation, which between them cover:

- dwellings that fail to meet the minimum standard for housing i.e. dwellings with Category 1 hazards under the HHSRS
- HMOs
- selective licensing of other houses
- demolition and slum clearance
- the need for provision of assistance with housing renewal
- the need for assistance with adaptation of dwellings for disabled persons.

While these are the areas covered by the legislation, the latter does not proscribe precisely what information should be collected when an authority reviews its housing. It is therefore for the authority to decide whether the information we are providing is sufficient to discharge their duty to review the stock.



Our approach

Preamble: Contractual arrangements

This proposal for works refers to modelled data which is in part derived from data provided by Experian and we therefore have to provide our modelled data and also any Experian data under a licence agreed with Experian. The proposal therefore needs to be read in conjunction with the accompanying Licence and Sub-Licence Agreement. To bring this proposal and the licence together an Agreement for Dwelling Level Housing Stock Modelling is also provided and to which the Licence and Sub-Licence Agreement and this proposal are annexes.

Housing stock modelling

In the past private sector house condition surveys were seen as the most appropriate way in which to gather information required to review the condition of the housing stock.

More recently it has been recognised that authority wide house condition surveys may not be the best use of an authority's resources. In July 2009 the Audit Commission published guidance that lends support to alternative 'desktop' methods of gathering stock information. The 'desktop' methods are a reference to the BRE Housing Stock Models which at that time could provide information on key housing indicators down to Census Output Area level. The provision of the information to such small area levels was recognised as a major advantage over house condition survey methods.

The new methodology we are proposing to apply for East Cambridgeshire District Council goes a stage further and can again provide estimates to COA level but these would be based on dwelling level modelled data which will also be provided.

Modelled Data

The 'modelled data' is the dwelling level estimate provided for the following key housing indicators (text in bold is a shorthand description used in the accompanying End User Licence Agreement). The modelled data has been grouped for ease of reference and the first group are known as the Housing Standards Variables

- The presence of a **Category 1 Rating System Hazard**
- The presence of a **Category 1 Hazard for Excess Cold** (using SAP ratings as a proxy measure in the same manner as the English House Condition Survey)
- The presence of a **Category 1 Rating System Hazard for Falls**
- An estimate of the SAP rating which to emphasise its origin from a reduced set of variables we refer to as a '**SimpleSAP**' rating¹.

¹ While we can provide 'SimpleSAP' ratings from the 'SimpleCO₂' software under no circumstances must these be referred to as SAP as the input data is insufficient to produce an estimate of SAP or RdSAP for an individual dwelling that meets the standards required by these methodologies. The information should however when aggregated provide reasonable estimates for areas such as census output areas and above.



- The presence of a household in **Fuel Poverty** (this is the full fuel poverty measure based on 10% of earnings being spent on heating costs)
- The presence of a household in **Fuel Poverty** (using the **high cost low income** approach)
- **Disrepair** (using the Decent Homes standard definition of disrepair)
- The presence of a **Low Income Household** (defined as a dwelling likely to be in receipt of a means tested benefit)

The dwelling level models

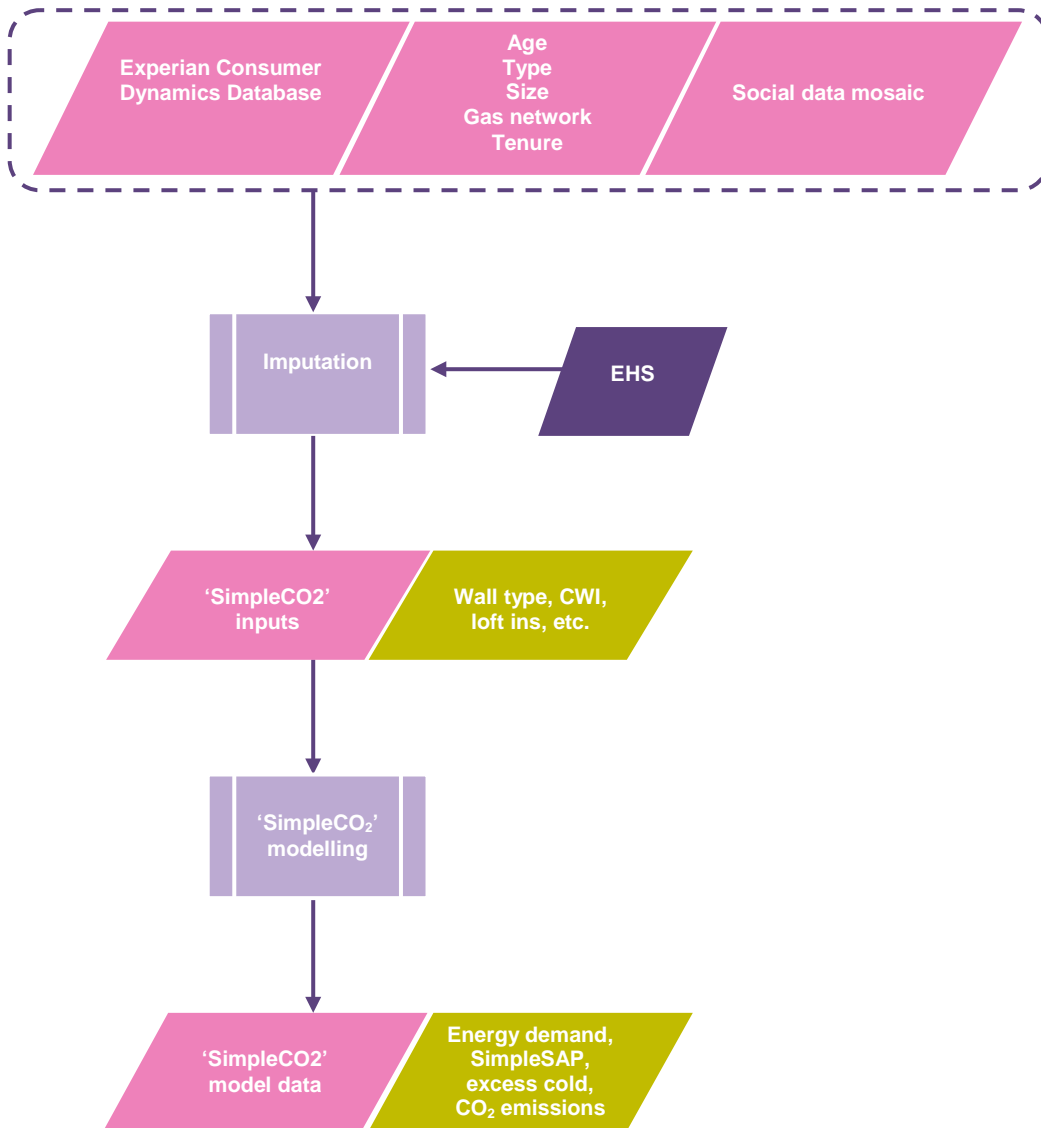
The new methodology we are proposing will make use of a model originally devised for modelling carbon emissions which we call 'SimpleCO₂'. The model uses basic dwelling descriptors from the Experian UK Consumer Dynamics Database e.g. dwelling type/age to define broad dwelling archetypes (This data which is often used for market segmentation purposes, for contractual purposes is, referred to as Experian Segmentation Data). It then uses knowledge of distributions from the English Housing Survey to predict the likely fuel type, boiler type, insulation levels and other key variables which are required to calculate levels of energy efficiency and carbon emissions.

Wall type (solid or cavity), presence of Cavity wall insulation, whether Loft insulation is present and the thickness where it is, are all variables which are derived from the EHS and Experian data with the intention of being used in the SimpleCO₂ model but each of these has a value in itself for targeting improvements.

A graphical illustration of the modelling process is shown on the following pages.



The SimpleCO₂ model

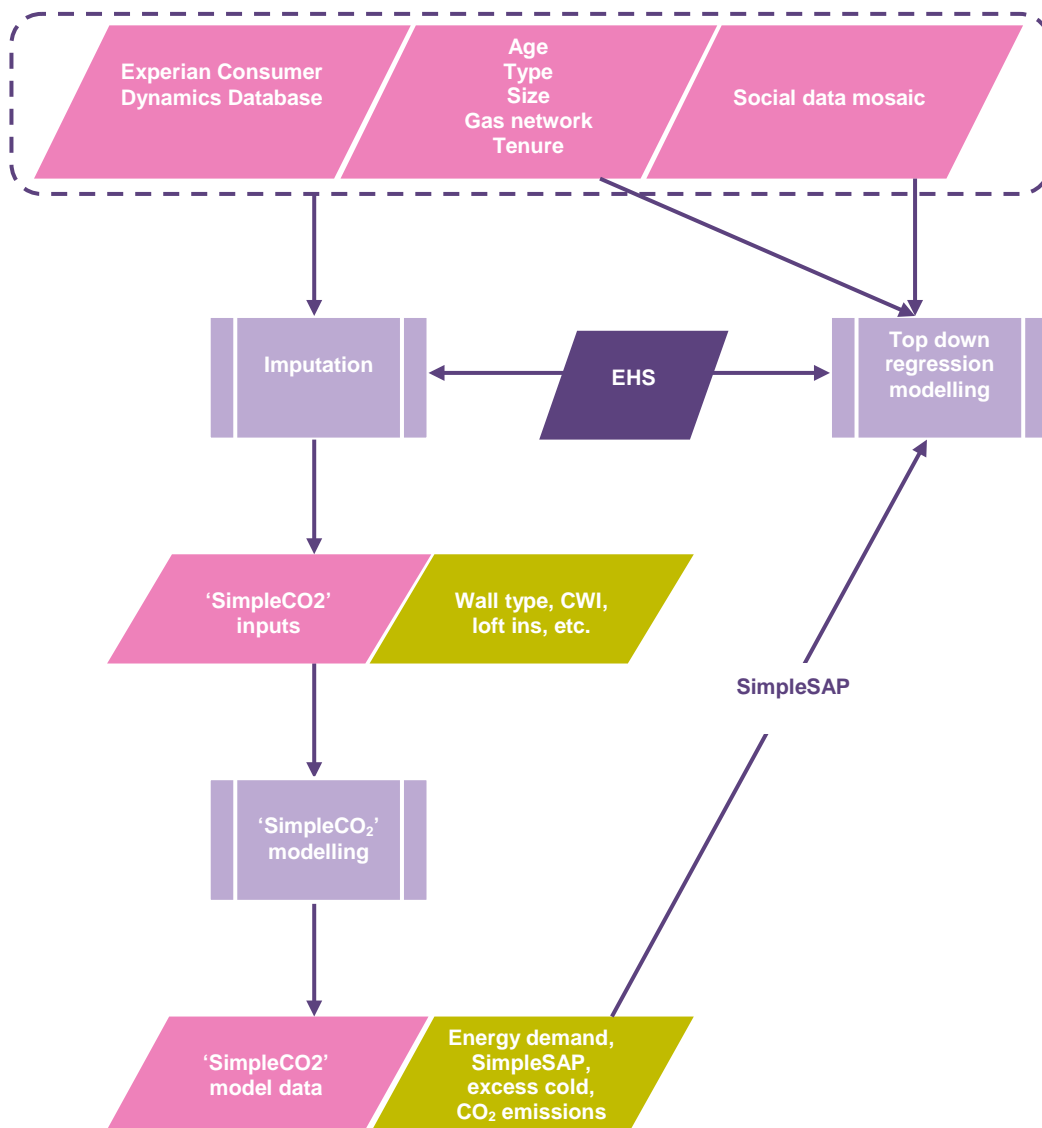


Variables such as 'SimpleSAP' and Excess Cold are direct outputs of the calculations performed by the model.



For the other variables we have adopted a top down methodology similar in many respects to the approach used by our previous set of models. We use data from the English Housing Survey and statistical techniques such as logistic regression to determine the combination of variables that are most strongly associated with failure of a particular standard.

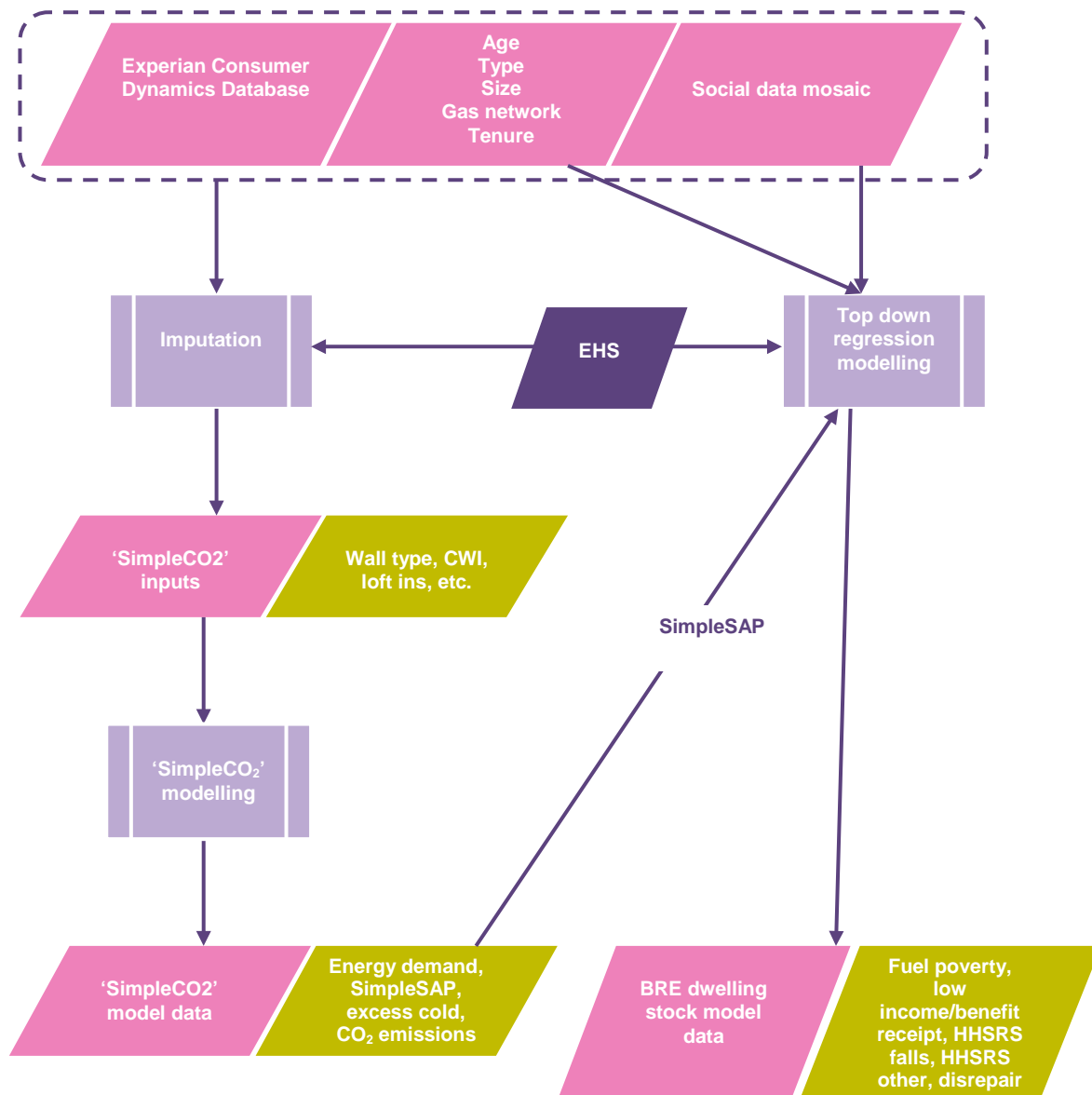
Inputs to the top down regression model





We develop a formula to predict likelihood of failure and then apply that to the Experian Segmentation Data to provide a likelihood of failure for each dwelling. This is then assigned a pass/fail value to individual dwellings on an area basis.

The top down regression model and the SimpleCO₂ model





There are therefore in effect two methodologies being used. The first deals with lack of information required to undertake an energy efficiency calculation by modelling missing input data such as insulation levels. The second models the probability of failing a standard using formulae derived from the EHS and applied to the Experian Segmentation Data. It then converts the probability to a pass/fail value based on the expected pass fail level in the area in which the dwelling is found. These approaches ensure indicative values are provided for each variable for each dwelling i.e. pass/fail for a standard or an actual value for 'SimpleSAP'. The probabilistic methods used to reach these values mean that the individual dwelling data can only be indicative but in our view this makes as full a use as is possible of the dwelling level input data. In particular it provides a useful starting point for the development of a dwelling level database of house condition and energy efficiency.

Additional information on our methodology is included in Appendix D.

Delivering the data

We would propose to deliver the modelled data and Experian Segmentation Data (where appropriate) in a database format using Microsoft Access. We have chosen to use Microsoft Access as it is a powerful yet relatively simple relational database tool which will allow the authority to easily summarise and interrogate the data as they wish. The data could however be delivered in a spreadsheet or other format if requested.

The information would be provided in a flat file format with a result for each dwelling. We would provide some basic summary reporting features allowing the data to be summarised by local authority, ward and census output area.

The license for the data would include updates which would be timed to coincide with major releases from our data suppliers e.g. English Housing Survey data.

Experian Segmentation Data

There is one further consideration on data delivery. We can, on request (and for an additional fee), provide additional Experian Segmentation Data. In addition to the dwelling age, type, size, tenure and gas supply data this includes the following information.

- Household Composition
- Households with Children
- Mosaic
- Affluence
- Financial Stress
- Property Value

The Experian fees for this data are sufficient that we would not recommend purchasing them at this stage unless the Council have a specific need. The only exception to this is the tenure data with its potential for identifying private rented sector dwellings, which are the key focus of much of the private sector housing policy of any local authority, is in our opinion well worth purchasing. We have therefore included an option for purchasing a licence for the tenure data.



Data licencing

The BRE modelled data will be supplied as a one off supply of the data on a 25 year licence but with no updates during the licence period.

Experian Segmentation Data is only available on an annual licence basis.

Housing stock model report

We would provide a housing stock model report to accompany the data which would provide a description of the methodology and summary tabulations of results at authority level and a brief narrative summarising these results.

Maps of key variables to census output area level would also be provided.

The maps used in the report will also be supplied as graphic files (jpg format).

In addition to the commentary on the modelled data, described above, the report will also include tabulations, commentary and where appropriate maps.



Work Programme

Tasks

Extract the relevant Council modelled data from the National models.

Prepare modelled data including database and maps.

Prepare database and maps.

Prepare housing stock model report outlining methodology and results including summary tables and maps.

Deliverables

Modelled data and Experian Segmentation Data provided in a Microsoft Access database.

Summary programs and tabulations in the Microsoft Access database.

Census output area maps for in .jpg format of maps provided in the report.

With the exception of the modelled data and the Experian Segmentation Data (detailed in Appendix 1 of the accompanying End User License Agreement), BRE's Terms and Conditions of Business (a copy of which are included in Appendix B) are applicable to these deliverables.

For the avoidance of doubt the deliverables to which BRE's Terms and Conditions apply are:

1. the database queries, programs and tabulations developed by BRE in the Microsoft Access database for the purpose of analysing and summarising the data listed in Appendix 1 of the End User License Agreement.
2. the housing stock model report.

Receivables

No data is required from the Council



Timetable

The indicative timetable below would need to be confirmed on appointment.

Indicative Timetable	
Extract the relevant Council modelled data from the National models.	Week 1
Prepare modelled data including database and maps.	Week 2-3
Prepare database and maps.	Week 4
Prepare housing stock model report outlining methodology and results including summary tables and maps.	Week 5-6

Project Management

Our project manager (see Project Team) is responsible for the project and will be the main point of contact but you may also be contacted by other members of the team. Project team members may vary from those listed in the project team section depending on operational circumstances at the time of appointment. The housing stock modelling team comprises 8 staff members who are able to provide effective cover at all levels. During times of exceptional demand we are also able to call on the wider resources offered by the Housing and Energy group of over 60 highly qualified staff

On appointment the project manager or a member of the project team will contact the lead officer of the authority with a detailed timetable based on that included in the proposal.

The statistical analyst will be responsible for extracting BRE modelled data for the authority from our national database and placing it into the Microsoft Access Database to be supplied to the authority.

The project manager and other members of the team are responsible for producing statistical tabulations and mapped data for insertion into a template report prepared and regularly updated by our technical editor.

The template report text is then edited by members of the team to reflect the content of the tabulations and maps. The project manager is responsible for the final content of the report and database for submission to the project reviewer. Once reviewed the report and database is returned to the project manager for despatch to the client.

Despatch to the client is undertaken using a file transfer website due to the large size of the files involved. This is a simple but secure process initiated by email.



Fees and invoicing plan

The following fees are based upon modelled data being provided to dwelling level unless otherwise indicated. The text in bold is the shorthand description used in the accompanying End User Licence Agreement.

The data is provided on a 25 year licence with a single issue of the data and no updates. A single issue of the data is provided at the commencement of the contract and no further updates are provided for the duration of the licence period.

The fee for the modelled data is discounted by 10% of the usual price on the understanding that the Council are undertaking the works in a consortium comprising themselves and Cambridge City Council and the works will be undertaken during the same period.

A table summarising the fees is included below.

Deliverables

Fees: Modelled data

		Licence fee for a 25 year license period but with no data updates
Modelled data - Housing Standards Variables	Category 1 Rating System Hazard	£14,400
	Category 1 Rating System Hazard for Excess Cold	
	Category 1 Rating System Hazard for Falls	
	'SimpleSAP' rating	
	Fuel Poverty	
	Disrepair	
	Low income household	
Total BRE modelled data		£14,400

Experian Segmentation Data

BRE will provide the Experian Segmentation Data for tenure. The Experian Segmentation Data is only available on short term licences normally of one to three year terms. Annual fee rates are detailed below.

Experian Segmentation Data	Annual Licence fee per
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	year for a 1 year license period
Tenure	£1,980

With the exception of the modelled data and the Experian Segmentation Data (detailed in Appendix 1 of the accompanying End User License Agreement), BRE's Terms and Conditions of Business (a copy of which are included in Appendix B) are applicable to these deliverables.

For the avoidance of doubt the deliverables to which BRE's Terms and Conditions apply are:

1. the database queries, programs and summary tabulations developed by BRE in the Microsoft Access database for the purpose of analysing and summarising the data listed in Appendix 1 of the End User License Agreement.
2. the housing stock model report.

All prices are quoted exclusive of VAT which will be charged at the current rate.

The modelled data and Experian Segmentation Data are licenced to the Council as End User as detailed in the separate End User License Agreement.

Invoicing plan

We will invoice for 50% on commission and the balance on delivery of the data and database and accompanying housing stock model report.

Deliverables

Overall fee summary (25 year licence period but with no data updates)

The grand total of £16,380. This does however only include a single year licence for the Experian Segmentation Data.

BRE modelled data including stock model report	£14,400
Experian Segmentation data (1 year licence only)	£1,980
Grand total	£16,380



Project team

Project Manager	Ian Watson	Principal Consultant, Housing and Health
Project Reviewer	Rob Flynn	Director, Housing and Health
Statistical Analysis	Kevin White	Senior Consultant
Editor	Fiona MacKenzie	Senior Consultant and technical editor



Quality & Environment

BRE is a multi-disciplinary and world renowned research body that brings our research, knowledge, expertise and data into a series of products, tools and standards that make the built environment better.

Our Management System complies with the requirements of BS EN ISO 9001 'Quality Management Systems', BS EN ISO 14001 'Environmental Management Systems' and with the requirements of the appropriate international accreditation standards.

Our vision is a working life with minimal negative and maximum positive environmental, social and economic impacts. We shall ensure that our operations and activities are managed in an energy and resource efficient manner, in order to minimise detrimental impacts on the environment.

Our quality policy is to:

- provide authoritative, independent and highly professional services and products that delight our clients and that fully satisfy their requirements;
- continually improve the effectiveness of both the quality management system and the provision of our all services and products;
- ensure all staff are trained and briefed about all the quality documentation so that they can implement the policies and procedures in their work;
- comply with all relevant legislation;
- be beyond reproach.

The BRE Group Board is responsible for implementing the Policy.

This will be achieved by:

- establishing, implementing and maintaining a quality management system certified against BS EN ISO 9001 and which also complies with the requirements of the appropriate international accreditation standards¹.
- setting and reviewing measurable quality objectives and ensuring those objectives are met;
- providing the necessary resources and ensuring responsibilities and authorities are determined and communicated throughout the BRE Group;
- reviewing the effectiveness of the quality management system and assessing opportunities for its continual improvement;
- seeking structured feedback from our customers;
- ensuring everything we do is always carried out in accordance with stated methods and customers' requirements.

Our environmental policy is to:

- continually improve our environmental performance;
- contribute to economic, environmental and social sustainability in both the short and long term;
- manage our activities to minimise the risk of pollution and contamination;
- comply with all relevant legislation.

The BRE Group Board is responsible for implementing the Policy.

This will be achieved by:

- maintaining an environmental management system, certified to ISO 14001;
- setting and meeting objectives and targets to minimise the negative environmental impacts and maximise the positive environmental impacts of our operations;
- training our employees to achieve and maintain high standards of environmental performance;
- using products and processes to assist in reducing the environmental life cycle impacts of our activities and those of our clients and supply partners;
- communicating openly and consulting with stakeholders on environmental issues.

¹ BS EN ISOs 17020, 17021, 17024, 17065



Terms and conditions

This project will be undertaken in accordance with our terms and conditions of business, a copy of which is enclosed in Appendix C.

Where the Terms and Conditions require insertion of the BRE Copyright Notice it shall be in the following form:-

© Copyright BRE [Insert Year]



Appendix A: Curricula vitae of project team

NAME	Ian Watson
CURRENT POSITION	Principal Consultant, BRE Housing and Health
ACADEMIC QUALIFICATIONS	BSc (Hons) Environmental Health, Post Graduate Diploma in Acoustics and Noise Control
PROFESSIONAL QUALIFICATIONS	Chartered Environmental Health Practitioner and Associate Member of the Institute of Acoustics
SPECIALISATIONS	Public health, housing, social determinants of health, housing enforcement, programme management, project delivery

CAREER SUMMARY

Ian joined BRE in 2014 having previously co-ordinated development and delivery of the award winning 'Liverpool Healthy Homes' Programme which, in partnership with Public Health tackled health inequalities and deprivation by improving housing conditions and access to health related services, and delivering a range of innovative interventions. He jointly designed the service, and managed the dedicated teams of Environmental Health Officers and outreach Advocates & Case Support Officers.

He is a Chartered Environmental Health Practitioner having graduated from Nottingham Trent University in 2001. After working at Wrexham Council specialising in housing, with particular interests in HMO sprinkler systems, residential caravan parks and immigration, in 2007 he joined Liverpool City Council's Housing Market Renewal (HMR) pathfinder, managing one of the multidisciplinary teams in the 'Health Impact Team', delivering services to tackle housing market failure, and encourage regeneration.

EXPERIENCE

- Previously responsible for developing, managing and delivering a sustainable, high quality programme of housing and public health interventions to improve the health of residents living in 25,000+ properties in Liverpool priority areas.
- Built strong working relationships between local communities, public sector agencies, local businesses and other key partners.
- Principal EHO in Council's scheme of delegation authorised to sign enforcement notices, and initiate enforcement activities. Provided expert advice, guidance and assistance to professional EHOs requiring theoretical, practical and procedural knowledge across this specialist area.
- Implemented and developed the 'Healthy Homes on Prescription project', working with energy companies, DoH, and the UKPHA / HHFPF to secure funding and working with GPs, practice managers, and CCGs to implement and operate.



- Internationally recognised as a leading expert in field attending national and international expert discussions and conferences around housing and health – CIH, CIEH, International Energy Agency, NEA, PHE, BRE, UKPHA, LSE.
- Raised profile of housing for inclusion in JSNA, health strategies, clinical pathways and Public Health Annual Report.
- Managed the Emergency Accommodation pilot using sheltered accommodation to save the NHS money and reduce bed blocking for people in housing crisis.
- Worked with partners to deliver health promotion campaigns around housing related hazards e.g. CO awareness, child accident safety, Winter Survival.
- Living in Wales 2008 property surveyor.
- Chaired the North Wales Housing & Public Health Technical Panel.

PAPERS & PUBLICATIONS

CIEH publication (2013) Effective Strategies and Interventions: environmental health and the private housing sector
<http://www.cieh.org/assets/0/72/1126/1212/1216/1218/18e5b22f-3127-48de-a254-1c941748ad62.pdf>
 Pages 71 to 75

CIEH publication (2012) 'Our health our wellbeing – Environmental Health – securing a healthier future for all':
<http://www.cieh.org/WorkArea/showcontent.aspx?id=42440>
 Pages 33 to 36.

NEA and Impetus Consulting Ltd (2011) HHSRS Your power to warm homes in the private rented sector, Using the Housing, Health & Safety Rating System to tackle fuel poverty:
<http://www.nea.org.uk/Resources/NEA/Publications/Documents/00-%20HHSRS%20toolkit%20and%20appendices.pdf>
 Pages A23 to A31.

CIEH brochure (2011) Local Authority Private Sector Housing Services:
http://www.cieh.org/uploadedFiles/Core/Policy/Publications_and_information_services/Policy_publications/Publications/Local_authority_private_sector_housing_services_-_JAN_2011.pdf
 Pages 11 to 13.

**NAME****KEVIN WHITE****CURRENT POSITION**

Senior consultant, BRE Housing

ACADEMIC QUALIFICATIONS

BSc

PROFESSIONAL QUALIFICATIONS**SPECIALISATIONS**

Development of mathematical models, Data analysis, SPSS programmer, Microsoft Excel Visual Basic programmer, Pascal programmer.

CAREER SUMMARY

Kevin White joined BRE's housing centre in 1996 as a statistician. His work was centred around the English House Condition Survey, a large scale survey that looks at all aspects of housing in England, and the development of BRE's Housing Stock Model, a mathematical tool for predicting house conditions within small areas. He has also worked on the living in Wales survey, examining housing conditions in Wales, and the WHO's LARES survey, analysing at the relationships between housing and health.

Kevin has also worked in BRE's impact assessment centre where he provided the mathematical modelling and analytical expertise in a group responsible for quantifying the effectiveness of government programmes.

EXPERIENCE

- Analysis of extensive data from the English House Condition Survey using SPSS. Manipulation and combination of assorted multi-level data sets.
- Development and maintenance of a cost modelling program used to predict the cost of repairing the English Housing Stock.
- Development and support of the Housing Stock Model
- Development of the costing program for HHSRS hazards in the EHCS.
- Development of an Excel spreadsheet used to assess and reduce surveyor variability.
- Analysis of the attitudes of construction companies for the Government Construction Client Panel
- Development and maintenance of the EHCS database.

PAPERS & PUBLICATIONS

"Older people, decent homes and fuel poverty", help the aged, 2006.

"Targeting resources using census data", ENHR, 2007.

Kevin has contributed to the English House Condition Survey 1996 (DETR, 1998), the English House Condition Survey 2001 (2002) .

**NAME****FIONA MACKENZIE****CURRENT POSITION**

Senior Consultant, Strategy Assessment and Evaluation team, Sustainable Energy Group

ACADEMIC QUALIFICATIONS

BSc Geography, MSc Environmental Science

SPECIALISATIONS

Modelling energy use and carbon emissions, data analysis, implications of climate change policy

CAREER SUMMARY

Fiona's background is in Environmental Science and she is a Senior Consultant in the Strategy Assessment and Evaluation team with over 10 years experience. The team principally work on the development of the Non-Domestic Energy and Emissions Model (N-DEEM) which is widely used to assess the potential for reducing the UK's carbon emissions. She also works on a number of other projects including work for DECC on the analysis of energy and carbon emissions on the Government Estate as well as work on the Green Deal, the Government's Market Transformation Programme and for the Carbon Trust. Fiona undertook a 3 month part-time secondment to DECC in 2012 to assist with developing the non-domestic Green Deal policy.

EXPERIENCE

- Extensive project management experience.
- Nearly 10 years experience managing the collection, analysis and review of the performance of the Government estate towards their energy and carbon targets. Much of this work involves conversion to carbon emissions, detailed checking of energy returns, identifying potential issues or anomalies and resolving through targeted questions and discussion. Recently produced the reporting template for departments to complete for the Greening Government Commitment which includes emission factors and guidance.
- Main areas of research are in energy use and the potential for reducing greenhouse gas emissions in the non-domestic building sector. Much of this work involves the implementation of database design and management skills.
- A wide range of computing skills, including several years experience of Excel spreadsheet design and modelling, as well as statistical analysis.
- Knowledge of a variety of energy efficiency measures and their economic potential for reducing carbon emissions in the UK non-domestic sector.
- The production of detailed, technologically disaggregated projections of energy consumption and carbon emissions trends to 2050.
- Undertaking data collection process audits for major UK companies.
- Part of the BRE Energy team which is responsible for managing site energy and carbon emissions.



PAPERS & PUBLICATIONS

C Pout, F MacKenzie, *Information Paper IP3/12: Potential for reducing carbon emissions from commercial and public-sector buildings*, IHS Press, London, 2012

F MacKenzie, C Pout, L Shorrock, A Matthews and J Henderson, *Energy efficiency in new and existing buildings: Comparative costs and CO₂ savings*, IHS Press, London, 2010.

C H Pout, F MacKenzie and R Bettle, *Carbon dioxide emissions from non-domestic buildings: 2000 and beyond*, CRC London, 2002.

C Ni Riain, J Fisher, F MacKenzie and J Littler, *BRE's Environmental Building: Energy Performance in Use*, Presented at CIBSE conference, Dublin, September 2000.



NAME	Robert Flynn
CURRENT POSITION	Associate Director, BRE Housing
ACADEMIC QUALIFICATIONS	BSc.(ECON)
PROFESSIONAL QUALIFICATIONS	Member of the Chartered Institute of Environmental Health
SPECIALISATIONS	National and local house condition and energy survey methodology and practice and local and housing and energy stock modelling.

CAREER SUMMARY

Rob joined BRE in January 2002 having previously worked as a BRE Associate on the English House Condition Survey (EHCS) both as a surveyor and supervisor. He is a member of the EHCS briefing team and has delivered briefings, organised practical fieldwork exercises and facilitated surveyor feedback sessions on the EHCS/EHS since 2002. He has also delivered similar services to the corresponding surveys in Wales and Northern Ireland. His other major role is developing and delivering local housing stock modelling and related consultancy to local authorities, regional and central government. Most local authorities in England have used the local energy and house condition models developed by Rob's team in developing their housing and energy strategies.

Prior to joining BRE Rob worked for over 10 years as a consultant specialising in local house condition and energy surveys and Neighbourhood Renewal Assessments. Previously he worked for over 5 years in local government as an Environmental Health Officer specialising in housing and urban renewal. .

EXPERIENCE

- Currently managing development of dwelling level modelling of SAP, CO2 and other energy models using GIS and commercially source datasets. Also managing integration of local authority data into these models.
- Manages the development, marketing and delivery of BRE's housing stock and energy modelling service to local authorities including models to COA level for SAP, CO2, Hard to Treat Homes, Fuel Poverty, Decent Homes and HHSRS Category 1 Hazards.
- Managed the development of a consultancy service advising on commissioning housing and energy efficiency surveys used by around 20 local authorities per year
- Prior to joining BRE Southern Area Manager for a housing consultancy -responsible for all aspects of housing consultancy and surveys delivered by the division in the southern half of England by a team of 12 surveyors and 4 consultants. Also responsible for technical and IT aspects of HCS and other consultancy, including development and implementation of data gathering using Palm computers.
- Director of Searchcast Consultancy Services - Responsible for all aspects of house condition and housing needs consultancy business.
- Managing Consultant NURAS National Urban Revitalisation Agency Services - Overall responsibility for developing company methods on stock surveys as well as full management responsibility of individual survey assignments.



- Special Projects Officer Hastings Borough Council - Planned implemented and completed Private Sector House Condition Survey.



Appendix B: About BRE

BRE www.bre.co.uk is an independent, research-based consultancy, testing and training organisation, offering expertise in every aspect of the built environment and associated industries. We help clients create better, safer and more sustainable products, buildings, communities and businesses, and we support the innovation needed to achieve this.

BRE Group is a world-leading centre of built environment expertise, research and training, and includes BRE Global a third-party approvals organisation offering certification of products and services to an international market. The BRE group of companies is wholly owned by the BRE Trust, the largest UK charity dedicated specifically to research and education in the built environment. Set up in 2002 to advance knowledge, innovation and communication for public benefit, the Trust uses all profits made by the BRE Group to fund new research and education programmes that will help to meet its goal of 'building a better world together'.

Please visit our BRE Group websites for more information about our products and services

www.bre.co.uk/global BRE Global is an independent, third-party approvals organisation offering certification of products, services and systems to an international market. BRE Global is responsible for the internationally renowned BREEAM and LPCB certification schemes

www.bre.co.uk/ventures BRE Ventures brings together innovators, networks and funding streams and leverages these against the BRE Group's world-class expertise and facilities to bring innovation to market quickly.

www.bre.co.uk/innovationpark The BRE Innovation Parks (are world leading and ground breaking demonstration developments designed to give a glimpse of how the future delivery of sustainable buildings and communities can be achieved.

www.breeam.org The world's leading design and assessment method for sustainable buildings

www.brebookshop.com The BRE group bookshop

www.GreenBookLive.com - GreenBookLive is the unique reference source and online listing of environmental products and services

www.RedBookLive.com Products, services and companies listed in the LPCB Red Book Database.

The BRE Group headquarters is in Watford near London and offices in the UK and around the world. For a full list of [our offices and contacts please see our website](#).



Nine things you might not know about BRE



BRE is a world leading research, consultancy, training and testing organisation delivering sustainability and innovation across the built environment and beyond.



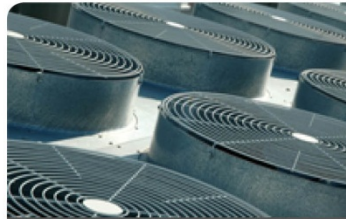
BRE has a unique range of testing facilities, including a structures lab that can contain a four-storey flat, an extreme speed wind tunnel, a burn hall that can accommodate 10MW intensity fires, and an anechoic chamber.



BRE was set up by government in 1921 and became an independent company in 1997.



BRE employs a team of leading research scientists, engineers, architects, surveyors and psychologists who have expertise in virtually every aspect of the built environment.



The BRE Innovation Park Network currently has parks at different stages of development in England, Wales, Scotland, China, Brazil, Canada and the USA. These provide opportunities for collaboration across the world.



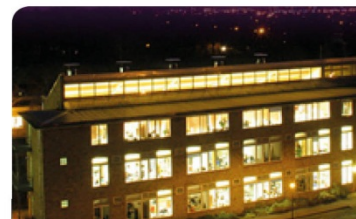
Over 20 years ago BRE developed the world's first environmental scheme for buildings, BREEAM. To date over 1 million buildings have been registered around the world.



BRE is owned by the BRE Trust, a registered charity. The profits made by BRE are used by the BRE Trust to conduct research projects that benefit society.



BRE is entirely independent of Government, commercial sector or vested interests of any kind. We are only influenced by the facts.



In 1940, BRE built the first model of the Mohne Dam used by Barnes Wallis in planning the Dambusters' Raid. It is now a Scheduled Historic Monument.



Our services include:

A

Accreditation
Acoustics
Air conditioning
Air quality
Airtightness
Alarms
Approvals
Approved certifier of design (ACD)
Assisted living
Aviation

B

BIM
BREEAM
BREMAPP
Building Regulations
Building Research Housing Group
Building services

C

Cables
CALIBRE
Carbon footprinting
Carbon management and offsetting
CE marking
Certification
Cladding
Climate change
Code for Sustainable Homes
Composites
Computational fluid dynamics
Concrete
Conservation
Consultancy
Continuing Professional Development (CPD)
Corporate social responsibility

D

Dangerous Substances
Daylighting

Decent homes
Deconstruction
Demolition Design
Disability and access
Domestic energy assessor (DEA)
DSEAR
Dust testing

E

EcoHomes
Embankment dams
EMC testing
Energy
Energy efficiency and management
Energy performance certificates (EPC)
Energy Performance of Buildings Directive
English House Condition Survey
ENVEST
Environmental assessment
Environmental consultancy
Environmental impact assessment (EIA)
Environmental profiles
Eurocodes
English House Condition Survey
ENVEST
Environmental assessment
Environmental consultancy
Environmental impact assessment (EIA)
Environmental profiles
Eurocodes
Events
Expert witness

F

Facades
Facilities management
Fire consultancy
Fire Detection

Fire risk assessments
Fire investigations
Fire safety
Fire testing
Flooding
Floors
Foundations

G

Glass and glazing
Green Book Live
Green buildings
Green Deal
Green guide to specification
Green Print
Ground engineering
H
Health and safety
Healthcare
Heritage buildings
Home Information Pack
Housing
Housing stock modelling
HVAC

I

Indoor air quality
Industrial
Infrastructure
Innovation
Innovation Parks
Intelligent buildings
International

L

Lean construction (CLIP)
Leisure
Lighting
Loss Prevention Certification Board (LPCB)
Loss Prevention Standards (LPS)
Low carbon buildings programme
Low impact buildings

**P**

Planning

M

Masterplanning

Materials

Microgeneration

Modelling

Modern Built Environment KTN

Modern methods of construction

N

Noise

O

Occupant surveys (POE)

Offices

Pollution

Prisons

Procurement

Product approval

Product development

Property protection

Publications

R

R&D

Radon

REACH

Recycling and re-use

Red Book Live

Refurbishment

Renewables

Resource efficiency

Responsible sourcing

Retail

Risk assessment

Roofs

S

SAP

SBEM

Schools

Security

Site Waste Management Plans
(SWMP)

SMARTWaste

Smoke alarms

Social research

Solar shading

Sprinklers

Standards

Stock condition surveys

Structural engineering

Sustainability

T

Testing

Thermal performance

Timber

Training

Transport

T-zero

U

UKAS

W

Waste and recycling

Water

Whole life performance and cost

Wind

Z

Zero carbon



Appendix C: Terms and conditions of business

1. INTERPRETATION

1.1 In these Terms

'BRE' means Building Research Establishment Limited (registered in England, No.33 19324), whose registered office is at Garston, Watford, Hertfordshire, WD25 9XX.

'BRE's Standard Charges' means BRE's standard charges for its services for work such as that covered by the Contract as may be determined and varied by BRE in its absolute discretion from time to time.

'Customer' means the person, company, firm or other body named on the Title Sheet for whom BRE has agreed to provide the Works in accordance with these Terms.

'Contract' means the contract for the provision of the Works, consisting of the Title Sheet, these Terms, the Special Conditions and the Programme of Works, as the same may be amended, modified or supplemented from time to time in accordance with these Terms.

'Document' includes, in addition to a document in writing, any map, plan, graph, drawing or photograph, any film, negative, tape or other device embodying visual images and any disc, tape or other device embodying any other data.

'Input Material' means any Documents or other materials, and any data or other information provided by the Customer relating to the Works.

'Output Material' means any Documents or other materials, and any data or other information provided or created by BRE relating to the Works.

'Programme of Works' means the works to be carried out in connection with the Contract as set out in the attached Documents.

'Special Conditions' means any special conditions which have been agreed between BRE and the Customer as applying to the Contract, in addition to these Terms, as set out in the attached Documents.

'these Terms' means these terms and conditions.

'Title Sheet' means the front title sheet to the Contract which, among other things, names the Customer.

'Works' means the services to be carried out by BRE for the Customer pursuant to the Contract, consisting of the parts of the Programme of Works for which BRE is responsible as set out in the attached Documents, together with any modified or additional services as BRE and the Customer may agree in writing.

1.2 The headings in these Terms are for convenience only and shall not affect their interpretation.

1.3 Reference to any statute or statutory provision includes a reference to the statute or statutory provisions as from time to time amended, extended or re enacted.

2. COMMENCEMENT & DURATION

2.1 BRE shall commence the Works on the commencement date set out in the Programme of Works, or where none is specified, shall commence the Works at such time as BRE and the Customer shall agree.

Agenda Item 6 - Appendix 1 page 31



2.2 BRE shall continue to provide the Works until they are completed in accordance with the Programme of Works, subject to earlier termination of the Contract as set out below.

2.3 Time shall not be of the essence of the Contract.

3. PROVISION OF THE WORKS

3.1 BRE shall provide the Works to the Customer subject to these Terms and the Special Conditions. In the event of any conflict or inconsistency between these Terms, the Special Conditions and/or the Programme of Works, the Special Conditions shall prevail, following which the provisions of the Programme of Works shall prevail over these Terms. Any changes or additions to the Contract must be agreed in writing by BRE and the Customer.

3.2 The Customer shall at its own expense supply BRE with all necessary Documents or other materials, and all necessary data or other information relating to the Programme of Works within sufficient time to enable BRE to provide the Works in accordance with the Contract. The Customer shall ensure the accuracy of all Input Material.

3.3 The Customer shall at its own expense retain duplicate copies of all Input Material and insure against its accidental loss or damage. BRE shall have no liability for any such loss or damage, however caused, including due to negligence. All Output Material shall be at the sole risk of the Customer from the time of delivery to or delivery or holding to the order of the Customer.

3.4 The Works shall be provided in accordance with the Programme of Works and otherwise as agreed in writing between BRE and the Customer from time to time, subject to these Terms.

3.5 BRE may correct any typographical or other errors or omissions in the Input Material without any liability to the Customer.

3.6 BRE may at any time without notifying the Customer make any changes to the Programme of Works which are necessary to comply with any applicable safety or other statutory requirements, or which do not materially affect the nature or quality of the Works.

4. DELIVERY AND COLLECTION OF MATERIALS

4.1 Where any investigations or tests are to be carried out under the Contract on any products or materials, the Customer shall be responsible at his own expense for delivering the products or materials to such premises as BRE directs for that purpose, and for collecting them when notified by BRE that they or any of them are available for collection upon completion of the investigations or tests. If the Customer fails to collect them within 90 days, BRE may, without prejudice to any other right or remedy available to BRE;

4.1.1 store the products/materials until actual collection and charge the Customer for the costs (including insurance) of storage; or

4.1.2 sell the products/materials at the best price readily obtainable and (after deducting all reasonable storage and selling expenses) account to the Customer for the excess over the price under the Contract or charge the Customer for any shortfall below the price under the Contract.

5. CHARGES

5.1 The Customer shall pay to BRE the charges set out in the Programme of Works or as set out in a quotation from BRE for the Works or in the absence of these, shall pay BRE's Standard Charges and any additional sums which are agreed between BRE and the Customer for the provision of the Works or which, in BRE's sole discretion, are required as a result of the Customer's instructions or lack of instructions, the inaccuracy of any Input Material or any other cause attributable to the Customer.

5.2 All charges quoted to the Customer for the provision of the Works are exclusive of any Value Added Tax, for which the Customer shall be additionally liable at the applicable rate from time to time.



- 5.3 BRE shall be entitled to invoice the Customer following the end of each month in which the Works are provided, or at other times agreed with the Customer.
- 5.4 All sums payable to BRE shall be paid by the Customer (together with any applicable Value Added Tax, and without any set-off or other deduction) within 30 days of the date of BRE's invoice. BRE reserves the right to withhold the Output Material until payment has been received.
- 5.5 If payment is not made by the due date, BRE will exercise its statutory right to claim interest and compensation for debt recovery costs under the Late Payment of Commercial Debts (Interest) Act 1998 and the Late Payment of Commercial Debt Regulations 2002.

6. RIGHTS IN INPUT MATERIAL AND OUTPUT MATERIAL

- 6.1 The property and any copyright or other intellectual property rights in:
 - 6.1.1 Any Input Material shall belong to the Customer.
 - 6.1.2 Any Output Material shall, unless otherwise agreed in writing between the Customer and BRE, belong to BRE, subject to the right of the Customer to use the Output Material for the purposes of utilising the results of the Works.
- 6.2 Any Input Material or other information provided by the Customer which is so designated by the Customer and any Output Material shall be kept confidential by BRE, and any Output Material or other information provided by BRE in connection with the Works which is so designated by BRE shall be kept confidential by the Customer;
 - 6.2.1 the foregoing shall not apply to any Documents or other materials, data or other information which:
 - 6.2.1.1 was already in the possession of the other party prior to its disclosure to the other party or which subsequently comes into the other party's possession free from any obligation of confidentiality; or
 - 6.2.1.2 has been independently developed by the other party; or
 - 6.2.1.3 was public knowledge at the time when it was so provided to the other party or which subsequently become public knowledge through no fault of the other party.
- 6.3 The Customer warrants that any Input Material and its use by BRE for the purpose of providing the Works will not infringe the copyright, patents or other rights of any third party, and the Customer shall indemnify BRE against any loss, damages, costs, expenses or other claims arising from any such infringement.
- 6.4 Subject to obtaining the prior written consent of BRE, compliance with clause 6.5 below and compliance with any conditions relating to the form of the publication or reproduction attached by BRE to the consent, the Customer shall be entitled to publish or reproduce the Output Material or any part thereof.
- 6.5 Where the Customer publishes or reproduces any Output Material, the Customer shall:
 - 6.5.1 reproduce on any copy (whether in machine readable or human readable form) of the Output Material BRE's copyright notices, or where there are none shall request in writing from BRE the form of copyright notice that BRE would like attached to the Output Material;
 - 6.5.2 maintain an up to date written record of the number of copies of the Output Material (or any publication or reproduction thereof) and their location and upon request forthwith produce such record to BRE; and
 - 6.5.3 notify BRE immediately if the Customer becomes aware of any unauthorised use of the whole or any part of the Output Material by any third party; and



6.5.4 without prejudice to the foregoing take all such other steps as shall from time to time be necessary or desirable to protect the confidential information and intellectual property rights of BRE in the Output Material.

7. USE OF BRE'S NAME

The Customer shall not, without BRE's prior written consent, use the names BRE, Building Research Establishment or any other name used by BRE or BRE Global Ltd or suggesting an association with BRE or BRE Global Ltd or disclose to any third party the nature or existence of the Contract, and where such consent is given, the Customer shall comply with any conditions attached to the consent.

8. SAFETY

Where BRE is required to access any property of the Customer for the purposes of carrying out the Works, then the Customer shall provide unhindered access together with all relevant working facilities required by BRE and shall provide safe access and a safe working environment which complies with all Health and Safety legislation.

9. RIGHTS, WARRANTIES AND LIABILITY

- 9.1 BRE may perform the Contract using any other subsidiary of the BRE Trust.
- 9.2 BRE warrants to the Customer that the Works will be provided using reasonable care and skill and, as far as reasonably possible, in accordance with the Programme of Works. Where BRE supplies in connection with the provision of the Works any goods (including Output Material) supplied by a third party, BRE does not give any warranty, guarantee or other term as to their quality, fitness for purpose or otherwise.
- 9.3 BRE shall have no liability to the Customer for any loss, damage, costs, expenses or other claims for compensation arising from any Input Material or instructions supplied by the Customer which are incomplete, incorrect, inaccurate, illegible, out of sequence or in the wrong form, or arising from their late arrival or non arrival, or any other fault of the Customer.
- 9.4 Except in respect of death or personal injury caused by BRE's negligence, or as expressly provided in these Terms, BRE shall not be liable to the Customer by reason of any representation, or any implied warranty, condition or other term, or any duty at common law, for any loss of profit or any indirect, special or consequential loss, damage, costs, expenses or other claims (whether caused by the negligence of BRE, any other subsidiary of the BRE Trust, their servants or agents or otherwise) which arise out of or in connection with the provision of the Works or their use by the Customer, and the entire liability of BRE under or in connection with the Contract shall not exceed the amount which has actually been paid by the Customer to BRE for the provision of the Works, except as expressly provided in these Terms.
- 9.5 Except in respect of death or personal injury, the Customer will look only to BRE (and not to any individual carrying out the Works, including any directors of BRE) for redress if the Customer considers that there has been any breach of this Contract. The Customer agrees not to pursue any claims in contract, tort (including negligence) or for breach of statutory duty against any individuals carrying out BRE's obligations under the Contract at any time, whether named expressly in the Contract or not.
- 9.6 BRE shall not be liable to the Customer or be deemed to be in breach of the Contract by reason of any delay in performing, or any failure to perform, any of its obligations in relation to the Works, if the delay or failure was due to any fire or explosion, the loss of or damage to any products or materials in the course of the carrying out of any investigations or tests on them or any cause beyond BRE's reasonable control.

10. HIRE OF EQUIPMENT

- 10.1 For the purpose of this clause 10, Customer and/or its contractors are referred to as "Contractor".



- 10.2 The use by the Contractor of any work equipment owned by BRE (and/or its affiliated companies) shall be hired by BRE at its absolute discretion to the Contractor subject to BRE's prior consent and any conditions specified, and in accordance with the following terms and conditions.
- 10.3 The Contractor shall ensure that the use of that work equipment is restricted to those persons given the task of using it with BRE's consent, and who have received adequate health and safety training (and shall provide evidence thereof to BRE upon request).
- 10.4 The Contractor shall ensure equipment is used only for operations for which, and under conditions for which, it is suitable and the Contractor shall not use and immediately return to BRE any work equipment it does not consider to be in good working order. If the work equipment is involved in any accident immediate notification must be made to BRE.
- 10.5 The Contractor will be responsible for compliance with relevant regulations issued by the Government or Local Authorities, including regulations under the Environmental Acts, Factories Acts, Health and Safety at Work, etc Act, Provision and use of Work Equipment Regulations 1998, and the Road Traffic Acts as amended and applicable, including any insurances made necessary thereby and the Contractor shall indemnify BRE (and/or its affiliated companies) against any loss, damage or injury howsoever caused and for any charges or fines that BRE (and/or its affiliated companies) may become liable for as a result of the use of the work equipment to the extent permitted by law.

11. TERMINATION

- 11.1 The Contract shall terminate automatically on completion of the Works by BRE, but such termination shall be without prejudice to any provision intended to operate thereafter.
- 11.2 BRE shall not be required to fulfil its duties and obligations under the Contract if at any time BRE is prevented from fulfilling its duties and obligations by any acts or omissions of the Customer or the Customer's personnel provided always that in order to avail itself of this provision BRE must give written notice to the Customer of any such act or omission of the Customer within 72 hours of the occurrence of such act or omission.
- 11.3 Either party may terminate the Contract forthwith by notice in writing to the other if the other:
- 11.3.1 commits a breach of the Contract which in the case of a breach capable of remedy shall not have been remedied within 14 days of the receipt by the other of a notice from the innocent party identifying the breach and requiring its remedy;
 - 11.3.2 is unable to pay its debts or enters into compulsory or voluntary liquidation (other than for the purpose of effecting a reconstruction or amalgamation in such manner that the company resulting from such reconstruction or amalgamation if a different legal entity shall agree to be bound by and assume the obligations of the relevant party under the Contract) or compounds with or convenes a meeting of its creditors or has a receiver or manager or an administrator appointed or ceases for any reason to carry on business or takes or suffers any similar action which in the opinion of the party giving notice means that the other may be unable to pay its debts.
- 11.4 Termination of the Contract for whatever reason shall not affect the accrued rights of the parties arising in any way out of the Contract as at the date of termination and, in particular but without limitation, the right to recover damages against the other and the provisions of sub-clauses 9.2, 9.3, 9.4 and 9.5 and clauses 6, 7 and 16 shall remain in force and effect.

12. ASSIGNMENT

Neither party shall assign, novate, transfer, sub-contract or in any other manner make over to any third party the benefit and/or burden of the Contract without the prior written consent of the other, such consent not to be unreasonably withheld.



13. THIRD PARTIES

Save as expressly provided in this agreement, no term shall be enforceable under the Contracts (Rights of Third Parties) Act 1999 by a third party (being any person other than the parties their permitted successors and assignees).

14. ENTIRE AGREEMENT

The Contract embodies and sets forth the entire agreement and understanding of the parties and supersedes all prior oral or written agreements understandings or arrangements relating to the subject matter of the Contract. Neither party shall be entitled to rely on any agreement, understanding or arrangement which is not expressly set forth in the Contract.

15. WAIVER

No failure or delay on the part of either party hereto to exercise any right or remedy under the Contract shall be construed or operated as a waiver thereof or shall any single nor partial exercise of any right or remedy as the case may be. The rights and remedies provided in these Terms are cumulative and are not exclusive of any rights or remedies provided by law.

16. NOTICES

A notice to be given hereunder shall be in writing and may be delivered personally or by sending it by pre-paid first class post or facsimile to the intended recipient's address given herein or to any other address supplied with reference to and in accordance with this clause to the other party hereto at their address for the purposes of service under the Contract. A notice delivered personally shall be deemed to have been served on delivery. A notice sent by post shall be deemed to have been served at an address within the United Kingdom at the expiry of 48 hours from the date of posting and at an address outside the United Kingdom at the expiry of 72 hours from the date of posting. Where any notice is given by facsimile service of the same shall be deemed to be effected upon receipt of the normal confirmation of receipt.

17. GOVERNING LAW

The Contract shall be governed by and construed in accordance with English Law and the parties hereby submit to the exclusive jurisdiction of the English courts.



Appendix D: Housing Stock Model Methodology

The new methodology makes use of a model originally devised for modelling carbon emissions which we call 'SimpleCO₂'.

The 'SimpleCO₂' model

BRE are the original developers of the Building Research Establishment Domestic Energy Model. The model calculates from measures of building characteristics the energy costs of a dwelling assuming a standard heating and living regime. The model has a number of outputs including an estimate of the SAP rating and carbon emissions.

BRE have developed a variant of the BREDEM software ('SimpleCO₂') that can calculate outputs that are indicative of the full BREDEM outputs described above from a reduced set of input variables. The minimum set of variables the software can accept is information on:

- Dwelling type
- Dwelling age
- Number of bedrooms
- Heating fuel
- Heating system
- Tenure

BRE are using the Experian UK Consumer Dynamics Database as a source of these variables. BRE take the above variables from this database and convert them into a suitable format for the 'SimpleCO₂' software.

The above variables are insufficient on their own for the software to calculate a 'SimpleSAP' rating or carbon emissions estimate. Additional variables are required and as these values cannot be precisely inferred then a technique known as hot deck imputation is undertaken. This is a process of assigning values in accordance with their known proportions in the stock. One area where this technique is used is for predicting heating fuels as the Experian data can only tell us whether a dwelling is on the gas network or not. We do not know what fuel might be used by dwellings not on the gas network, so in most cases this information will be assigned using probabilistic methods to dwellings known to be off the gas grid. The process is actually far more complex e.g. dwellings with particular characteristics such as larger dwellings are more likely to be assigned with oil as a fuel than smaller dwellings.

The reason for taking this approach is to ensure that the national proportions in the data source are the same as those found in the stock nationally (as predicted by the EHS or other national survey). While there is the possibility that some values assigned will be incorrect for a particular dwelling (as part of the assignment process has to be random) they ensure that examples of some of the more unusual types of dwelling that will be present in the stock are included.

While this approach is an entirely sensible and commonly adopted approach to dealing with missing data in databases intended for strategic use, it raises issues where one of the intended uses is planning



implementation measures. Mindful of this all variables where hot deck imputation has been applied by BRE are identified.

It is important to note that some variables have been entirely assigned using hot decking imputation techniques. These include presence of cavity wall insulation and thickness of loft insulation as there is no reliable database with national coverage for these variables.

The 'SimpleCO₂' software takes the combination of Experian and imputed data and calculates the 'SimpleSAP' rating for each dwelling in the national database including those in the East Cambridgeshire area. The calculated 'SimpleSAP' ratings are the basis of our estimates of SAP and excess cold. We discuss in a later section how we derive the other key variables.

The estimates of 'SimpleSAP' etc. cannot be guaranteed due to their being calculated from modelled data which may itself be inaccurate. They do, however, provide the best estimates that we are aware can be achieved from a data source with national coverage and ready availability. The input data could, however, be improved

- in it's accuracy for example through correcting erroneous values
- in it's depth of coverage for example by providing more detailed information on age of dwellings or
- in it's breadth by providing additional input variables such as insulation.

Improving any of these would enhance the accuracy of the output variables. For this reason it is always worth considering utilising additional information sources where they are available.

The approach described above can provide estimates for the variables we are offering to supply where they:

1. are produced by the 'SimpleCO₂' software i.e. 'SimpleSAP'
2. can be derived from the outputs i.e. excess cold (using the SAP <35 surrogate) or
3. can be derived from the imputed input variables e.g. HHSRS Category 1 Hazard from excess cold.

The other variables we are offering to supply estimates of, however, are not based solely (or in most cases not at all) on the thermal characteristics of the dwelling and these include:

- The presence of a Category 1 Rating System Hazard
- The presence of a Category 1 Fall Hazard
- The presence of a household in Fuel Poverty (this is the full fuel poverty measure based on 10% of earnings being spent on heating costs)
- Disrepair (using the Decent Homes standard definition of disrepair)
- The presence of a low income households (defined as a dwelling likely to be in receipt of a means tested benefit)

These present a different challenge and we have adopted a top down methodology similar in many respects to the approach used by our previous set of models. We use data from the English Housing Survey and statistical techniques such as logistic regression to determine the combination of variables that are most strongly associated with failure of a particular standard. We develop a formula to predict likelihood of failure and then apply that to the variables in the national Experian dataset to provide a



likelihood of failure for each dwelling. This is then assigned a failure/compliance to standard value on an area basis. Thus if the aggregate values for a census output area are that 60% of the dwellings in the area fail a particular standard then 60% of the dwellings with the highest failure probabilities will be assigned as failures and the remaining 40% as passes.

The presence of a Category 1 Hazard failure is the only exception to this as it is found by combining Excess Cold, Fall Hazards and Other Hazards such that failure of any one causes failure of the Category 1 Hazard.



Acceptance of BRE Proposal for Work

To: BRE

(Please either post form to the above address, fax to: 01923 664097 for the attention of: Ian Watson or email as attachment to: watsoni@bre.co.uk)

I acknowledge receipt of your proposal reference number 300896, version 2 dated 16/12/2014, Title of Proposal Dwelling level housing stock modelling for East Cambridgeshire District Council (as described therein)

I agree to the detailed proposal and wish to accept the offer. Please contact me to finalise the contract and End User Licence Agreement.

I agree that any terms and conditions that accompany any purchase requisitions or similar type document, or any alternative terms and conditions subsequently issued by us after the date of signature of the Agreement for Housing Stock Modelling and End User Licence Agreement shall be null and void and that the terms and conditions attached to your proposal shall continue in full force and effect.

Name of Company/Organisation: East Cambridgeshire District Council

Address: The Grange
Nutholt Lane
Ely
Cambs
CB7 4EE

Signed on behalf of Organisation:

Please also print name:

Position:

Date:

BRE Proposal

East Cambridgeshire Health Impact Assessment

Prepared for: Julia Atkins, Senior Environmental Health Officer (Domestic),
East Cambridgeshire District Council

Date: 10 December 2014

Proposal Number: 300977 Version: 1



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Cambs
CB7 4EE



Prepared by

Name Ian Watson

Position Principal Consultant, Housing and Health

Date 10th December 2014

Signature

A handwritten signature in blue ink, appearing to read 'I. Watson', is enclosed within a thin black rectangular border.

Authorised by

Name Robert Flynn

Position Director, Housing and Health

Date 10th December 2014

Signature

A handwritten signature in blue ink, appearing to read 'R. Flynn', is shown.



Executive Summary

The proposal is for the BRE Housing and Energy Group to assist East Cambridgeshire District Council with technical expertise to provide a quantitative Health Impact Assessment (HIA) of the private sector housing stock in East Cambridgeshire and a cost benefit analysis of mitigating the category 1 hazards over a 10 year period. The report will initially consider the condition of the housing stock and its health impact. This information will then be used to provide a cost benefit analysis of mitigating Housing Health and Safety hazards within the stock. These hazards will be category 1 hazards defined in accordance with Housing Health and Safety Rating System (HHSRS).

The service includes:

- Analysis and evaluation of the information available concerning private sector housing condition
- Production of tables, graphs and maps where applicable
- Producing a HIA report to highlight the impact of intervention measures to mitigate hazards, likely savings in terms of health costs, and a cost benefit analysis over a 10 year period
- Estimating the numbers of persons affected by category 1 Hazards and the reduction following intervention
- Estimate in terms of QALYs the cost of housing hazards in East Cambridgeshire
- Estimate in terms of QALYs the savings from reducing category 1 hazards to an acceptable level
- Estimate the Incremental Cost-Effectiveness Ratio (ICER) expressed as '£ per QALY' for each hazard, and determine what proportion of each of the category 1 hazards could be repaired to provide an ICER of £30,000 or less (measure of cost effectiveness defined by NICE)
- Glossy executive summary of the results



Contents

Executive Summary	2
Background	4
Our understanding of the requirement	6
Our approach	7
Work Programme	8
Receivables/Inputs	9
Deliverables/Outputs	9
Timescales	10
Project Management	10
Fees and invoicing plan	12
Project team	13
Quality & Environment	14
Terms and conditions	15
Appendix A: Curricula vitae of project team	16
Appendix B: About BRE	24
Appendix C: Terms and conditions of business	28
Acceptance of BRE Proposal for Work To:	35



Background

East Cambridgeshire District Council wishes to secure the best information possible towards helping the health and well-being of their residents. To that end the Council are keen to find additional information concerning the link between health and housing. Living in decent housing plays a large part in the health of the population and East Cambridgeshire District Council wish to quantify the estimated costs and benefits of housing to health where possible.

This information will

- inform dealings with Health and Wellbeing boards (which have been introduced as statutory bodies charged with improving health and reducing health inequalities)
- provide quantitative evidence to the Joint Strategic Needs Assessment (JSNA).

Before we can calculate the cost benefit of potential housing interventions we need to have a good understanding of the condition of the private sector housing stock. This information will be available from BRE housing stock models which East Cambridgeshire District Council has requested and is part of a separate proposal.

Once this information is made available we will be able to estimate:

- the number of housing related injuries and illnesses that are likely to occur each year
- the cost to health of treating these harmful events, and
- the cost benefit of interventions to remove housing related hazards.

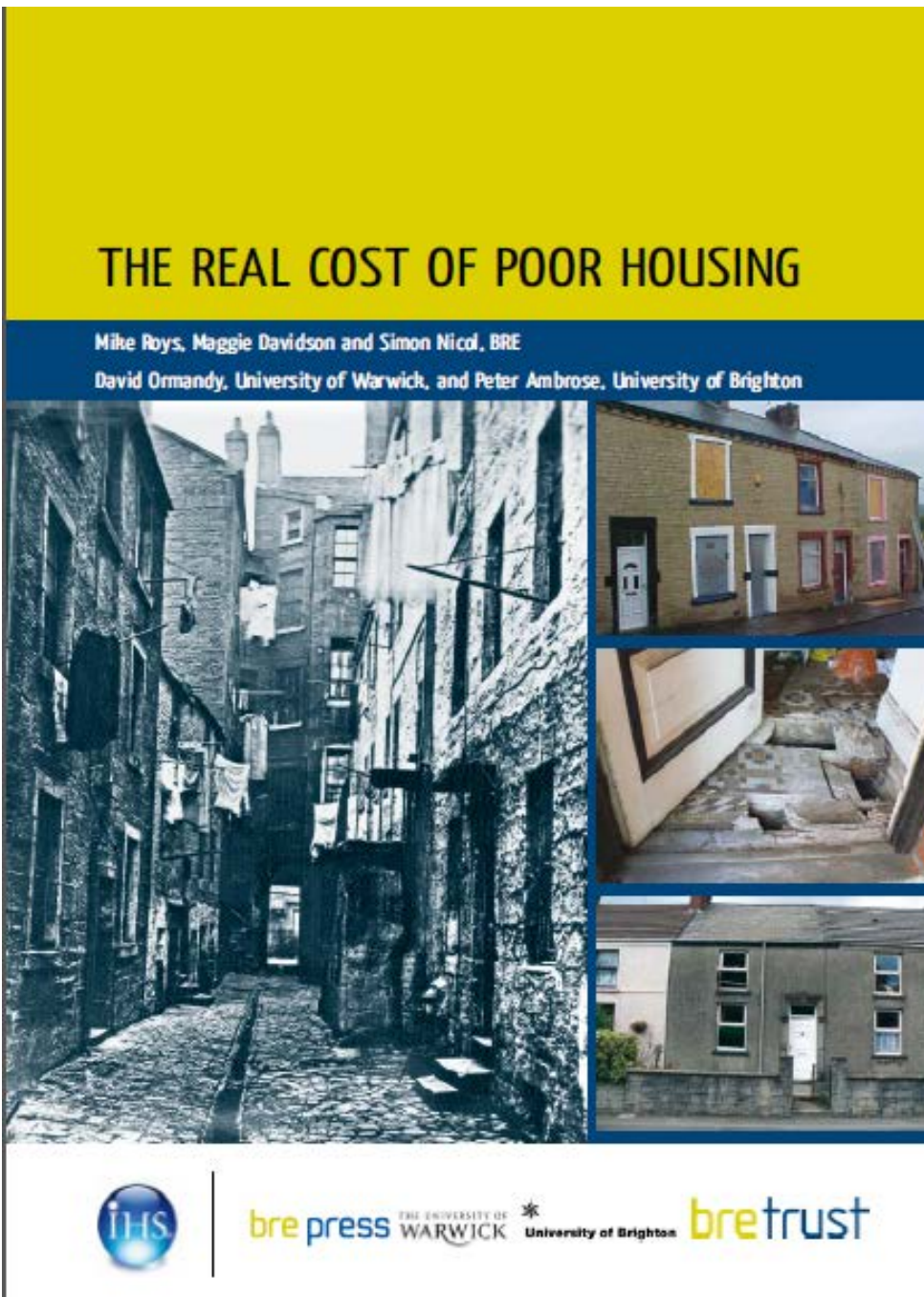
This is achieved by calculating the cost of mitigation of the different hazards over a 10 year period. Within this the costs of a percentage of works can also be calculated e.g. the easiest 50% and 20% of works etc. These costs are then compared to the expected cost of health care of occupants and visitors to the dwellings, if the mitigation work is not carried out. This allows a net present value cost benefit analysis to be undertaken.

The BRE publication 'The Real Cost of Poor Housing', on which the methodology is based, has been reviewed and updated. The cost of treating harms associated with housing defects has been reviewed and the new costs will be used to update the HIA.

The BRE has also recently developed a model which interprets health risks not only in terms of costs to the NHS but also in terms of gained Quality Adjusted Life Years (QALY). In addition to estimating the financial costs to the NHS from poor housing, we will also provide an estimate in terms of QALYs lost and QALYs saved through mitigating category 1 hazards. Estimating the cost of improvements can also allow us to produce an Incremental Cost Effectiveness Ratio (ICER) expressed as '£s per QALY' allowing further consideration of the cost effectiveness of intervention.

The information provided on potential cost saving to the NHS and the wider society as well as gains in terms of QALYs from proposed interventions should provide a basis for developing the housing element of a health and wellbeing strategy.

bre



The methodology detailed in this proposal is based on the highly influential 'The Real Cost of Poor Housing' series available from the BRE Bookshop.



Our understanding of the requirement

East Cambridgeshire District Council has decided that they require additional information on the quantitative health impact of the private sector stock in their area.

The estimated costs and benefits to health of possible housing intervention work within the area can be demonstrated with a prospective Health Impact Assessment (HIA) of the expected hazards to be found within the existing stock.

BRE housing stock modelling (the subject of another proposal) of the private housing sector will provide estimates of all the key statistics including the number of category 1 hazards and the dwellings whose SAP is less than 35 (this is equated to a category 1 excess cold hazard). The outputs of this work will feed into the HIA.

Once the information is available we will be able to estimate both the cost to health and the cost benefit of interventions to remove housing related hazards. A section will also be included on Quality Adjusted Life Years (QALYs). QALYs provide a common currency to assess the extent of the benefits gained from a variety of interventions in terms of health related quality of life and survival which will help comparisons to be made between interventions.



Our approach

We need to have a robust picture of the condition of the private sector housing within the local authority area as a starting point for the analysis. The BRE housing stock modelling database will provide this but will be supplemented by information to be provided by the Council.

The HIA includes cost benefit analyses where the cost of hazard mitigation are compared with the estimated benefits in terms of cost savings to the NHS and wider society. Therefore the council is invited to comment on the repair costs used in the evaluation. Whilst regional EHS data is used, if the council would prefer their own costs to be used, this can be accommodated but the data must be provided in a format compatible with the model. In addition, the local authority may have local health care costs which could be used in examples within the report e.g. treatment for a hip fracture may cost £18,000. Previous clients have also provided the following to be included:

- Photos of local housing hazards e.g. damp and mould, falls on stairs, excess cold to supplement the report and illustrate hazards in local homes
- Photos of local housing stock – perhaps to incorporate in the front cover design of the report
- Data which have been used to plot maps of housing related health issues e.g. prevalence of COPD to consider if there is a relationship between ill health and poor housing conditions or accident rates
- GP surgery data which have been used to plot maps comparing local health indicators at practice level e.g. life expectancy, prevalence of COPD, asthma, coronary heart disease, depression etc. with housing indicators for area

We will discuss this information with the Council so as to provide the most useful illustrations possible.

When we are satisfied that sufficient quality information is available, tabulations and graphs will be produced. A report will be compiled showing the potential savings to the NHS. This will also be given in terms of health benefit to individuals where there is sufficient data. We will then use the cost of mitigation work to assess the health cost benefit. The report should help the council, Health and Wellbeing Board and local NHS or commissioning body to make decisions on when and where the most cost effective interventions within the private sector housing stock could be made.

Housing hazards and possible interventions will also be linked to QALYs (Quality Adjusted Life Years) using the new methodology where hazards are found in sufficient quantities. This is a term used by NICE and understood by a wide section of public health staff and those employed in the NHS.

West Oxfordshire Council have chosen to publish the BRE Health Impact Report undertaken for them which can be taken as an indication of what can be expected from such a report. The report can be found following this [link](#).¹

1

<http://cmis.westoxon.gov.uk/Cmis/Document.ashx?czJKcaeAi5tUFL1DTL2UE4zNRBcoShgo=Kh1zvmmcDtiELHIJGoUndPvtksS5E3akoCudloZRkJyTGkh3mXZoVw%3D%3D&mCTIbCubSFfXsDGW9IXnlq%3D%3D=hFfIUdN3100%3D&kCx1AnS9%2FpWZQ40DXFvdEw%3D%3D=hFfIUdN3100%3D&uJovDxwdjMPoYv%2BAJvYtyA%3D%3D=ctNJFf55vVA%3D&FgPIIEJYlotS%2BYGoBi5oIA%3D%3D=NHdURQburHA%3D&d9Qjj0ag1Pd993jsyOJqFvmyB7X0CSQK=ctNJFf55vVA%3D&WGwmoAfeNR9xqBux0r1Q8Za60IavYmz=ctNJFf55vVA%3D&WGwmoAfeNQ16B2MHuCPMRKZMwaG1PaO=ctNJFf55vVA%3D>



Work Programme

Analyse and evaluate the BRE housing stock modelling outputs in terms of HHSRS category 1 hazards.

Discuss and review other relevant information concerning private sector stock within East Cambridgeshire e.g. enforcement or additional costing information. Additional data concerning disability, handy person schemes and antisocial behaviour if relevant.

Calculate the estimated number of category 1 hazards within the following HHSRS hazard types:

- ☐ Damp and mould growth
- ☐ Excess cold
- ☐ Crowding and space
- ☐ Entry by intruders
- ☐ Falls associated with baths
- ☐ Falling on stairs etc
- ☐ Falling on level surfaces etc
- ☐ Falling between levels
- ☐ Fire
- ☐ Flames and hot surfaces
- ☐ Collision and entrapment

Produce graphs and new tables

Estimate the effect on individuals and relate to QALYs where hazards are found in sufficient quantities.

Calculate the likely cost of these hazards in terms of:

- ☐ Costs to reduce the hazards over a 3, 5 or 10 year period
- ☐ Likely cost savings to the NHS
- ☐ Estimated savings to the wider society
- ☐ A cost benefit analysis over a 10 year period

Estimates will be produced for the different tenure groups of owner occupation and private rented properties and those in the lowest quintile IMD or health deprivation as directed by client



Receivables/Inputs

Additional information as agreed for example:

- Local health care costs which could be used in examples within the report e.g. a hip fracture costs £18,000
- Photos of local housing hazards e.g. damp and mould, falls on stairs, excess cold to supplement the report and illustrate hazards in local homes
- Photos of local housing stock – perhaps to incorporate in the front cover design of the report
- Data which have been used to plot maps of housing related health issues e.g. prevalence of COPD to consider if there is a relationship between ill health and poor housing conditions or accident rates
- GP surgery data which have been used to plot maps comparing local health indicators at practice level e.g. life expectancy, prevalence of COPD, asthma, coronary heart disease, depression etc. with housing indicators for area

Deliverables/Outputs

A quantitative HIA report giving a cost benefit analysis from potential health gains associated with mitigation of the main HHSRS hazards. The report will include estimates of the wider cost savings across the areas of health and social care where additional data concerning disability, handy person schemes and antisocial behaviour if relevant have been derived or delivered to us.

The report will include the methodology, graphs showing the greatest benefit over a number of years and maps where appropriate.

A presentation (if required) of the results

A glossy executive summary (if required)



Timescales

The indicative timetable below would need to be confirmed on appointment.

	Week
Receive housing stock modelling information	Week 1
Discuss additional information available	1-2 weeks
Receive any additional information	Week 2-3
Carry out calculations and produce graphs	Week 3-4
Produce draft report	Week 6
Council proof and sign off draft report	Week 7
Produce final report (subject to council meeting time set above)	Week 8
Presentation	To be agreed if required
Glossy summary report	To be agreed if required

The Council will have a two week sign off period (week 6 and 7) to consider the report and offer any comments or requests for revisions. If at the end of week 7 no communication is received from the Council then the Council will be deemed to have signed off and accepted the report and a final report will be issued.

Project Management

Our project manager (see Project Team) is responsible for the project and will be the main point of contact but you may also be contacted by other members of the team. Project team members may vary from those listed in the project team section depending on operational circumstances at the time of appointment. The housing stock modelling team comprises 8 staff members who are able to provide effective cover at all levels. During times of exceptional demand we are also able to call on the wider resources offered by the Housing and Energy group of over 60 highly qualified staff

On appointment the project manager or a member of the project team will contact the lead officer of the authority with a detailed timetable based on that included in the proposal.

Where an authority requires bespoke analysis the project manager is responsible for ensuring this analysis is undertaken and incorporated into the reporting and the detail of this will be included in the timetable.

The statistical analyst will be responsible for extracting the BRE modelled data from the database supplied under the separate stock modelling contract and undertaking the health impact assessment analysis.



The project manager and other members of the team are responsible for producing statistical tabulations and data for insertion into a template report prepared and regularly updated by our technical editor.

The template report text is then edited by members of the team to reflect the content of the tabulations and maps. The project manager is responsible for the final content of the report and database for submission to the project reviewer. Once reviewed the report and database is returned to the project manager for despatch to the client.

Despatch to the client is undertaken using a file transfer website due to the large size of the files involved. This is a simple but secure process initiated by email.



Fees and invoicing plan

1	Analysis and evaluate information concerning private sector housing condition	£2,000
2	Production of tabulations and graphs	£2,500
3	Calculate QALY cost and savings from housing interventions	£1,000
4	Report with cost benefit analysis	£4,500
5	Glossy report	£1,500
6	Presentation	£1,200
TOTAL		£12,700

All prices are quoted exclusive of VAT which will be charged at the current rate.

Invoicing plan

We will invoice for 50% on commission, 40% on the delivery of the draft report and remaining 10% on delivery of the final report.



Project team

Project Manager	Ian Watson	Principal Consultant
Project Reviewer	Rob Flynn	Director
Statistical Analysis	Kevin White	Senior Consultant
Technical Editor	Fiona MacKenzie	Senior Consultant and technical editor



Quality & Environment

BRE is a multi-disciplinary and world renowned research body that brings our research, knowledge, expertise and data into a series of products, tools and standards that make the built environment better.

Our Management System complies with the requirements of BS EN ISO 9001 'Quality Management Systems', BS EN ISO 14001 'Environmental Management Systems' and with the requirements of the appropriate international accreditation standards.

Our vision is a working life with minimal negative and maximum positive environmental, social and economic impacts. We shall ensure that our operations and activities are managed in an energy and resource efficient manner, in order to minimise detrimental impacts on the environment.

Our quality policy is to:

- provide authoritative, independent and highly professional services and products that delight our clients and that fully satisfy their requirements;
- continually improve the effectiveness of both the quality management system and the provision of our all services and products;
- ensure all staff are trained and briefed about all the quality documentation so that they can implement the policies and procedures in their work;
- comply with all relevant legislation;
- be beyond reproach.

The BRE Group Board is responsible for implementing the Policy.

This will be achieved by:

- establishing, implementing and maintaining a quality management system certified against BS EN ISO 9001 and which also complies with the requirements of the appropriate international accreditation standards¹.
- setting and reviewing measurable quality objectives and ensuring those objectives are met;
- providing the necessary resources and ensuring responsibilities and authorities are determined and communicated throughout the BRE Group;
- reviewing the effectiveness of the quality management system and assessing opportunities for its continual improvement;
- seeking structured feedback from our customers;
- ensuring everything we do is always carried out in accordance with stated methods and customers' requirements.

Our environmental policy is to:

- continually improve our environmental performance;
- contribute to economic, environmental and social sustainability in both the short and long term;
- manage our activities to minimise the risk of pollution and contamination;
- comply with all relevant legislation.

The BRE Group Board is responsible for implementing the Policy.

This will be achieved by:

- maintaining an environmental management system, certified to ISO 14001;
- setting and meeting objectives and targets to minimise the negative environmental impacts and maximise the positive environmental impacts of our operations;
- training our employees to achieve and maintain high standards of environmental performance;
- using products and processes to assist in reducing the environmental life cycle impacts of our activities and those of our clients and supply partners;
- communicating openly and consulting with stakeholders on environmental issues.

¹ BSEN ISOs 17020, 17021, 17024, 17065



Terms and conditions

This project will be undertaken in accordance with our terms and conditions of business, a copy of which is enclosed in Appendix C.



Appendix A: Curricula vitae of project team

NAME	Ian Watson
CURRENT POSITION	Principal Consultant, BRE Housing and Health
ACADEMIC QUALIFICATIONS	BSc (Hons) Environmental Health, Post Graduate Diploma in Acoustics and Noise Control
PROFESSIONAL QUALIFICATIONS	Chartered Environmental Health Practitioner and Associate Member of the Institute of Acoustics
SPECIALISATIONS	Public health, housing, social determinants of health, housing enforcement, programme management, project delivery

CAREER SUMMARY

Ian joined BRE in 2014 having previously co-ordinated development and delivery of the award winning 'Liverpool Healthy Homes' Programme which, in partnership with Public Health tackled health inequalities and deprivation by improving housing conditions and access to health related services, and delivering a range of innovative interventions. He jointly designed the service, and managed the dedicated teams of Environmental Health Officers and outreach Advocates & Case Support Officers.

He is a Chartered Environmental Health Practitioner having graduated from Nottingham Trent University in 2001. After working at Wrexham Council specialising in housing, with particular interests in HMO sprinkler systems, residential caravan parks and immigration, in 2007 he joined Liverpool City Council's Housing Market Renewal (HMR) pathfinder, managing one of the multidisciplinary teams in the 'Health Impact Team', delivering services to tackle housing market failure, and encourage regeneration.

EXPERIENCE

- Previously responsible for developing, managing and delivering a sustainable, high quality programme of housing and public health interventions to improve the health of residents living in 25,000+ properties in Liverpool priority areas.
- Built strong working relationships between local communities, public sector agencies, local businesses and other key partners.
- Principal EHO in Council's scheme of delegation authorised to sign enforcement notices, and initiate enforcement activities. Provided expert advice, guidance and assistance to professional EHOs requiring theoretical, practical and procedural knowledge across this specialist area.
- Implemented and developed the 'Healthy Homes on Prescription project', working with energy companies, DoH, and the UKPHA / HHFPF to secure funding and working with GPs, practice managers, and CCGs to implement and operate.



- Internationally recognised as a leading expert in field attending national and international expert discussions and conferences around housing and health – CIH, CIEH, International Energy Agency, NEA, PHE, BRE, UKPHA, LSE.
- Raised profile of housing for inclusion in JSNA, health strategies, clinical pathways and Public Health Annual Report.
- Managed the Emergency Accommodation pilot using sheltered accommodation to save the NHS money and reduce bed blocking for people in housing crisis.
- Worked with partners to deliver health promotion campaigns around housing related hazards e.g. CO awareness, child accident safety, Winter Survival.
- Living in Wales 2008 property surveyor.
- Chaired the North Wales Housing & Public Health Technical Panel.

PAPERS & PUBLICATIONS

CIEH publication (2013) Effective Strategies and Interventions: environmental health and the private housing sector
<http://www.cieh.org/assets/0/72/1126/1212/1216/1218/18e5b22f-3127-48de-a254-1c941748ad62.pdf>
 Pages 71 to 75

CIEH publication (2012) 'Our health our wellbeing – Environmental Health – securing a healthier future for all':
<http://www.cieh.org/WorkArea/showcontent.aspx?id=42440>
 Pages 33 to 36.

NEA and Impetus Consulting Ltd (2011) HHSRS Your power to warm homes in the private rented sector, Using the Housing, Health & Safety Rating System to tackle fuel poverty:
<http://www.nea.org.uk/Resources/NEA/Publications/Documents/00-%20HHSRS%20toolkit%20and%20appendices.pdf>
 Pages A23 to A31.

CIEH brochure (2011) Local Authority Private Sector Housing Services:
http://www.cieh.org/uploadedFiles/Core/Policy/Publications_and_information_services/Policy_publications/Publications/Local_authority_private_sector_housing_services_-_JAN_2011.pdf
 Pages 11 to 13.



NAME	Christopher Johnes
CURRENT POSITION	Principal Consultant, BRE Housing and Health
ACADEMIC QUALIFICATIONS	BSc Environmental Health BSc Geography
PROFESSIONAL QUALIFICATIONS	MCIEH Member of the Chartered Institute of Environmental Health
SPECIALISATIONS	Health and housing, energy efficiency, housing enforcement, social determinants of health

CAREER SUMMARY

Chris started work for the BRE in 2014 as a Principal Consultant in the Housing and Energy team. He is an environmental health practitioner with experience working in all areas of environmental health, the last five years of which were in private sector housing. During that time he was lead officer for the excess cold HHSRS hazard within his local authority, producing in-house training materials and running sessions aimed at improving officer confidence in assessing and enforcing the hazard. He was also a member of the steering groups that produced the CIEH Excess Cold Guidance and the NEA HHSRS Toolkit.

He used his experience of the excess cold hazard to develop a proactive project that brought in referrals of poor private sector housing from a wide range of organisations. To gain the funding for this project he was able to present data held by both the council and NHS to show the need for a proactive approach to housing issues in the area. He was able to demonstrate the worth of the project through calculating the savings made to the NHS and to wider society.

EXPERIENCE

- Promoting energy efficiency in St Albans and completing returns under the Home Energy Conservation Act.
- City & Guilds in Energy Awareness.
- Implementation of Northgate M3 software in Islington Residential Environmental Health Service.
- Designing and delivering training programmes.
- Developing local campaigns aimed at finding vulnerable residents in poor private sector housing.
- Obtaining funding from Public Health for an Environmental Health role specifically to bring in referrals of vulnerable people living in poor private sector housing.
- Developing joint working programmes with local organisations and community groups.
- Member of the steering group that produced the CIEH Excess Cold Guidance.
- Member of the steering group that produced the NEA HHSRS Toolkit.

PAPERS & PUBLICATIONS

Johnes, C. (2014). 'An avoidable hazard', *Environmental Health News*, 29(10), pp. 31.

Johnes, C. and Mason, A. (2011). 'Evidence Submission: The Green Deal – the Effect on Public Health', *The Lancet UK Policy Matters* (Online). Available at: <http://ukpolicymatters.thelancet.com/evidence-submission-the-green-deal-the-effect-on-public-health/>.



NAME	KEVIN WHITE
CURRENT POSITION	Senior consultant, BRE Housing
ACADEMIC QUALIFICATIONS	BSc
PROFESSIONAL QUALIFICATIONS	
SPECIALISATIONS	Development of mathematical models, Data analysis, SPSS programmer, Microsoft Excel Visual Basic programmer, Pascal programmer.

CAREER SUMMARY

Kevin White joined BRE's housing centre in 1996 as a statistician. His work was centred around the English House Condition Survey, a large scale survey that looks at all aspects of housing in England, and the development of BRE's Housing Stock Model, a mathematical tool for predicting house conditions within small areas. He has also worked on the living in Wales survey, examining housing conditions in Wales, and the WHO's LARES survey, analysing at the relationships between housing and health.

Kevin has also worked in BRE's impact assessment centre where he provided the mathematical modelling and analytical expertise in a group responsible for quantifying the effectiveness of government programmes.

EXPERIENCE

- Analysis of extensive data from the English House Condition Survey using SPSS. Manipulation and combination of assorted multi-level data sets.
 - Development and maintenance of a cost modelling program used to predict the cost of repairing the English Housing Stock.
 - Development and support of the Housing Stock Model
 - Development of the costing program for HHSRS hazards in the EHCS.
 - Development of an Excel spreadsheet used to assess and reduce surveyor variability.
 - Analysis of the attitudes of construction companies for the Government Construction Client Panel
 - Development and maintenance of the EHCS database.
-

PAPERS & PUBLICATIONS

"Older people, decent homes and fuel poverty", help the aged, 2006.

"Targeting resources using census data", ENHR, 2007.

Kevin has contributed to the English House Condition Survey 1996 (DETR, 1998), the English House Condition Survey 2001 (2002) .

**NAME****FIONA MACKENZIE****CURRENT POSITION**

Senior Consultant, Strategy Assessment and Evaluation team, Sustainable Energy Group

ACADEMIC QUALIFICATIONS

BSc Geography, MSc Environmental Science

SPECIALISATIONS

Modelling energy use and carbon emissions, data analysis, implications of climate change policy

CAREER SUMMARY

Fiona's background is in Environmental Science and she is a Senior Consultant in the Strategy Assessment and Evaluation team with over 10 years experience. The team principally work on the development of the Non-Domestic Energy and Emissions Model (N-DEEM) which is widely used to assess the potential for reducing the UK's carbon emissions. She also works on a number of other projects including work for DECC on the analysis of energy and carbon emissions on the Government Estate as well as work on the Green Deal, the Government's Market Transformation Programme and for the Carbon Trust. Fiona undertook a 3 month part-time secondment to DECC in 2012 to assist with developing the non-domestic Green Deal policy.

EXPERIENCE

- Extensive project management experience.
- Nearly 10 years experience managing the collection, analysis and review of the performance of the Government estate towards their energy and carbon targets. Much of this work involves conversion to carbon emissions, detailed checking of energy returns, identifying potential issues or anomalies and resolving through targeted questions and discussion. Recently produced the reporting template for departments to complete for the Greening Government Commitment which includes emission factors and guidance.
- Main areas of research are in energy use and the potential for reducing greenhouse gas emissions in the non-domestic building sector. Much of this work involves the implementation of database design and management skills.
- A wide range of computing skills, including several years experience of Excel spreadsheet design and modelling, as well as statistical analysis.
- Knowledge of a variety of energy efficiency measures and their economic potential for reducing carbon emissions in the UK non-domestic sector.
- The production of detailed, technologically disaggregated projections of energy consumption and carbon emissions trends to 2050.
- Undertaking data collection process audits for major UK companies.
- Part of the BRE Energy team which is responsible for managing site energy and carbon emissions.



PAPERS & PUBLICATIONS

C Pout, F MacKenzie, *Information Paper IP3/12: Potential for reducing carbon emissions from commercial and public-sector buildings*, IHS Press, London, 2012

F MacKenzie, C Pout, L Shorrock, A Matthews and J Henderson, *Energy efficiency in new and existing buildings: Comparative costs and CO₂ savings*, IHS Press, London, 2010.

C H Pout, F MacKenzie and R Bettle, *Carbon dioxide emissions from non-domestic buildings: 2000 and beyond*, CRC London, 2002.

C Ni Riain, J Fisher, F MacKenzie and J Littler, *BRE's Environmental Building: Energy Performance in Use*, Presented at CIBSE conference, Dublin, September 2000.



NAME	Robert Flynn
CURRENT POSITION	Director, BRE Housing and Health
ACADEMIC QUALIFICATIONS	BSc.(ECON)
PROFESSIONAL QUALIFICATIONS	Member of the Chartered Institute of Environmental Health
SPECIALISATIONS	National and local house condition and energy survey methodology and practice and local and housing and energy stock modelling.

CAREER SUMMARY

Rob joined BRE in January 2002 having previously worked as a BRE Associate on the English House Condition Survey (EHCS) both as a surveyor and supervisor. He is a member of the EHCS briefing team and has delivered briefings, organised practical fieldwork exercises and facilitated surveyor feedback sessions on the EHCS/EHS since 2002. He has also delivered similar services to the corresponding surveys in Wales and Northern Ireland. His other major role is developing and delivering local housing stock modelling and related consultancy to local authorities, regional and central government. Most local authorities in England have used the local energy and house condition models developed by Rob's team in developing their housing and energy strategies.

Prior to joining BRE Rob worked for over 10 years as a consultant specialising in local house condition and energy surveys and Neighbourhood Renewal Assessments. Previously he worked for over 5 years in local government as an Environmental Health Officer specialising in housing and urban renewal. .

EXPERIENCE

- Currently managing development of dwelling level modelling of SAP, CO2 and other energy models using GIS and commercially source datasets. Also managing integration of local authority data into these models.
- Manages the development, marketing and delivery of BRE's housing stock and energy modelling service to local authorities including models to COA level for SAP, CO2, Hard to Treat Homes, Fuel Poverty, Decent Homes and HHSRS Category 1 Hazards.
- Managed the development of a consultancy service advising on commissioning housing and energy efficiency surveys used by around 20 local authorities per year
- Prior to joining BRE Southern Area Manager for a housing consultancy -responsible for all aspects of housing consultancy and surveys delivered by the division in the southern half of England by a team of 12 surveyors and 4 consultants. Also responsible for technical and IT aspects of HCS and other consultancy, including development and implementation of data gathering using Palm computers.
- Director of Searchcast Consultancy Services - Responsible for all aspects of house condition and housing needs consultancy business.
- Managing Consultant NURAS National Urban Revitalisation Agency Services - Overall responsibility for developing company methods on stock surveys as well as full management responsibility of individual survey assignments.



- Special Projects Officer Hastings Borough Council - Planned implemented and completed Private Sector House Condition Survey.



Appendix B: About BRE

BRE www.bre.co.uk is an independent, research-based consultancy, testing and training organisation, offering expertise in every aspect of the built environment and associated industries. We help clients create better, safer and more sustainable products, buildings, communities and businesses, and we support the innovation needed to achieve this.

BRE Group is a world-leading centre of built environment expertise, research and training, and includes BRE Global a third-party approvals organisation offering certification of products and services to an international market. The BRE group of companies is wholly owned by the BRE Trust, the largest UK charity dedicated specifically to research and education in the built environment. Set up in 2002 to advance knowledge, innovation and communication for public benefit, the Trust uses all profits made by the BRE Group to fund new research and education programmes that will help to meet its goal of 'building a better world together'.

Please visit our BRE Group websites for more information about our products and services

www.bre.co.uk/global BRE Global is an independent, third-party approvals organisation offering certification of products, services and systems to an international market. BRE Global is responsible for the internationally renowned BREEAM and LPCB certification schemes

www.bre.co.uk/ventures BRE Ventures brings together innovators, networks and funding streams and leverages these against the BRE Group's world-class expertise and facilities to bring innovation to market quickly.

www.bre.co.uk/innovationpark The BRE Innovation Parks (are world leading and ground breaking demonstration developments designed to give a glimpse of how the future delivery of sustainable buildings and communities can be achieved.

www.breeam.org The world's leading design and assessment method for sustainable buildings

www.brebookshop.com The BRE group bookshop

www.GreenBookLive.com - GreenBookLive is the unique reference source and online listing of environmental products and services

www.RedBookLive.com Products, services and companies listed in the LPCB Red Book Database.

The BRE Group headquarters is in Watford near London and offices in the UK and around the world. For a full list of [our offices and contacts please see our website](#).



Nine things you might not know about BRE



BRE is a world leading research, consultancy, training and testing organisation delivering sustainability and innovation across the built environment and beyond.



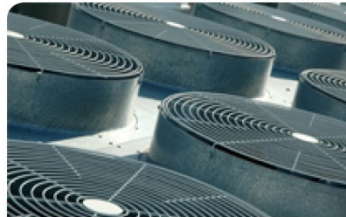
BRE has a unique range of testing facilities, including a structures lab that can contain a four-storey flat, an extreme speed wind tunnel, a burn hall that can accommodate 10MW intensity fires, and an anechoic chamber.



BRE was set up by government in 1921 and became an independent company in 1997.



BRE employs a team of leading research scientists, engineers, architects, surveyors and psychologists who have expertise in virtually every aspect of the built environment.



The BRE Innovation Park Network currently has parks at different stages of development in England, Wales, Scotland, China, Brazil, Canada and the USA. These provide opportunities for collaboration across the world.



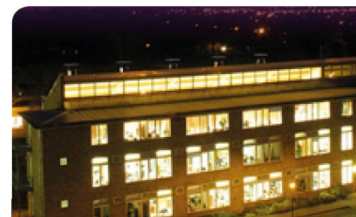
Over 20 years ago BRE developed the world's first environmental scheme for buildings, BREEAM. To date over 1 million buildings have been registered around the world.



BRE is owned by the BRE Trust, a registered charity. The profits made by BRE are used by the BRE Trust to conduct research projects that benefit society.



BRE is entirely independent of Government, commercial sector or vested interests of any kind. We are only influenced by the facts.



In 1940, BRE built the first model of the Mohne Dam used by Barnes Wallis in planning the Dambusters' Raid. It is now a Scheduled Historic Monument.



Our services include:

A

Accreditation
Acoustics
Air conditioning
Air quality
Airtightness
Alarms
Approvals
Approved certifier of design (ACD)
Assisted living
Aviation

B

BIM
BRE National Solar Centre
BREEAM
BREMAPP
Building Regulations
Building Research Housing Group
Building services

C

Cables
CALIBRE
Carbon footprinting
Carbon management and offsetting
CE marking
Certification
Cladding
Climate change
Code for Sustainable Homes
Composites
Computational fluid dynamics
Concrete
Conservation
Consultancy
Continuing Professional Development (CPD)
Corporate social responsibility

D

Dangerous Substances

Daylighting
Decent homes
Deconstruction
Demolition Design
Disability and access
Domestic energy assessor (DEA)
DSEAR
Dust testing

E

EcoHomes
Embankment dams
EMC testing
Energy
Energy efficiency and management
Energy performance certificates (EPC)
Energy Performance of Buildings Directive
English House Condition Survey
ENVEST
Environmental assessment
Environmental consultancy
Environmental impact assessment (EIA)
Environmental profiles
Eurocodes
English House Condition Survey
ENVEST
Environmental assessment
Environmental consultancy
Environmental impact assessment (EIA)
Environmental profiles
Eurocodes
Events
Expert witness

F

Facades
Facilities management
Fire consultancy
Fire Detection
Fire risk assessments

Fire investigations
Fire safety
Fire testing
Flooding
Floors
Foundations

G

Glass and glazing
Green Book Live
Green buildings
Green Deal
Green guide to specification
Green Print
Ground engineering

H

Health and safety
Healthcare
Heritage buildings
Home Information Pack
Housing
Housing stock modelling
HVAC

I

Indoor air quality
Industrial
Infrastructure
Innovation
Innovation Parks
Intelligent buildings
International

L

Lean construction (CLIP)
Leisure
Lighting
Loss Prevention Certification Board (LPCB)
Loss Prevention Standards (LPS)
Low carbon buildings programme
Low impact buildings

**M**

Masterplanning
Materials
Microgeneration
Modelling
Modern Built Environment KTN
Modern methods of construction

N

Noise

O

Occupant surveys (POE)
Offices

P

Planning
Pollution
Prisons
Procurement
Product approval
Product development
Property protection
Publications

R

R&D
Radon
REACH
Recycling and re-use
Red Book Live
Refurbishment
Renewables
Resource efficiency
Responsible sourcing
Retail
Risk assessment
Roofs

S

SAP
SBEM
Schools
Security
Site Waste Management Plans (SWMP)
SMARTWaste
Smoke alarms
Social research
Solar shading
Sprinklers
Standards
Stock condition surveys
Structural engineering
Sustainability

T

Testing
Thermal performance
Timber
Training
Transport
T-zero

U

UKAS

W

Waste and recycling
Water
Whole life performance and cost
Wind

Z

Zero carbon



Appendix C: Terms and conditions of business

1. INTERPRETATION

1.1 In these Terms

'BRE' means Building Research Establishment Limited (registered in England, No.33 19324), whose registered office is at Garston, Watford, Hertfordshire, WD25 9XX.

'BRE's Standard Charges' means BRE's standard charges for its services for work such as that covered by the Contract as may be determined and varied by BRE in its absolute discretion from time to time.

'Customer' means the person, company, firm or other body named on the Title Sheet for whom BRE has agreed to provide the Works in accordance with these Terms.

'Contract' means the contract for the provision of the Works, consisting of the Title Sheet, these Terms, the Special Conditions and the Programme of Works, as the same may be amended, modified or supplemented from time to time in accordance with these Terms.

'Document' includes, in addition to a document in writing, any map, plan, graph, drawing or photograph, any film, negative, tape or other device embodying visual images and any disc, tape or other device embodying any other data.

'Input Material' means any Documents or other materials, and any data or other information provided by the Customer relating to the Works.

'Output Material' means any Documents or other materials, and any data or other information provided or created by BRE relating to the Works.

'Programme of Works' means the works to be carried out in connection with the Contract as set out in the attached Documents.

'Special Conditions' means any special conditions which have been agreed between BRE and the Customer as applying to the Contract, in addition to these Terms, as set out in the attached Documents.

'these Terms' means these terms and conditions.

'Title Sheet' means the front title sheet to the Contract which, among other things, names the Customer.

'Works' means the services to be carried out by BRE for the Customer pursuant to the Contract, consisting of the parts of the Programme of Works for which BRE is responsible as set out in the attached Documents, together with any modified or additional services as BRE may agree in writing.

1.2 The headings in these Terms are for convenience only and shall not affect their interpretation.

1.3 Reference to any statute or statutory provision includes a reference to the statute or statutory provisions as from time to time amended, extended or re enacted.

2. COMMENCEMENT & DURATION

2.1 BRE shall commence the Works on the commencement date set out in the Programme of Works, or where none is specified, shall commence the Works at such time as BRE and the Customer shall agree.



2.2 BRE shall continue to provide the Works until they are completed in accordance with the Programme of Works, subject to earlier termination of the Contract as set out below.

2.3 Time shall not be of the essence of the Contract.

3. PROVISION OF THE WORKS

3.1 BRE shall provide the Works to the Customer subject to these Terms and the Special Conditions. In the event of any conflict or inconsistency between these Terms, the Special Conditions and/or the Programme of Works, the Special Conditions shall prevail, following which the provisions of the Programme of Works shall prevail over these Terms. Any changes or additions to the Contract must be agreed in writing by BRE and the Customer.

3.2 The Customer shall at its own expense supply BRE with all necessary Documents or other materials, and all necessary data or other information relating to the Programme of Works within sufficient time to enable BRE to provide the Works in accordance with the Contract. The Customer shall ensure the accuracy of all Input Material.

3.3 The Customer shall at its own expense retain duplicate copies of all Input Material and insure against its accidental loss or damage. BRE shall have no liability for any such loss or damage, however caused, including due to negligence. All Output Material shall be at the sole risk of the Customer from the time of delivery to or delivery or holding to the order of the Customer.

3.4 The Works shall be provided in accordance with the Programme of Works and otherwise as agreed in writing between BRE and the Customer from time to time, subject to these Terms.

3.5 BRE may correct any typographical or other errors or omissions in the Input Material without any liability to the Customer.

3.6 BRE may at any time without notifying the Customer make any changes to the Programme of Works which are necessary to comply with any applicable safety or other statutory requirements, or which do not materially affect the nature or quality of the Works.

4. DELIVERY AND COLLECTION OF MATERIALS

4.1 Where any investigations or tests are to be carried out under the Contract on any products or materials, the Customer shall be responsible at his own expense for delivering the products or materials to such premises as BRE directs for that purpose, and for collecting them when notified by BRE that they or any of them are available for collection upon completion of the investigations or tests. If the Customer fails to collect them within 90 days, BRE may, without prejudice to any other right or remedy available to BRE;

4.1.1 store the products/materials until actual collection and charge the Customer for the costs (including insurance) of storage; or

4.1.2 sell the products/materials at the best price readily obtainable and (after deducting all reasonable storage and selling expenses) account to the Customer for the excess over the price under the Contract or charge the Customer for any shortfall below the price under the Contract.

5. CHARGES

5.1 The Customer shall pay to BRE the charges set out in the Programme of Works or as set out in a quotation from BRE for the Works or in the absence of these, shall pay BRE's Standard Charges and any additional sums which are agreed between BRE and the Customer for the provision of the Works or which, in BRE's sole discretion, are required as a result of the Customer's instructions or lack of instructions, the inaccuracy of any Input Material or any other cause attributable to the Customer.

5.2 All charges quoted to the Customer for the provision of the Works are exclusive of any Value Added Tax, for which the Customer shall be additionally liable at the applicable rate from time to time.

Agenda Item 6 - Appendix 2 page 29



- 5.3 BRE shall be entitled to invoice the Customer following the end of each month in which the Works are provided, or at other times agreed with the Customer.
- 5.4 All sums payable to BRE shall be paid by the Customer (together with any applicable Value Added Tax, and without any set-off or other deduction) within 30 days of the date of BRE's invoice. BRE reserves the right to withhold the Output Material until payment has been received.
- 5.5 If payment is not made by the due date, BRE will exercise its statutory right to claim interest and compensation for debt recovery costs under the Late Payment of Commercial Debts (Interest) Act 1998 and the Late Payment of Commercial Debt Regulations 2002.

6. RIGHTS IN INPUT MATERIAL AND OUTPUT MATERIAL

- 6.1 The property and any copyright or other intellectual property rights in:
 - 6.1.1 Any Input Material shall belong to the Customer.
 - 6.1.2 Any Output Material shall, unless otherwise agreed in writing between the Customer and BRE, belong to BRE, subject to the right of the Customer to use the Output Material for the purposes of utilising the results of the Works.
- 6.2 Any Input Material or other information provided by the Customer which is so designated by the Customer and any Output Material shall be kept confidential by BRE, and any Output Material or other information provided by BRE in connection with the Works which is so designated by BRE shall be kept confidential by the Customer;
 - 6.2.1 the foregoing shall not apply to any Documents or other materials, data or other information which:
 - 6.2.1.1 was already in the possession of the other party prior to its disclosure to the other party or which subsequently comes into the other party's possession free from any obligation of confidentiality; or
 - 6.2.1.2 has been independently developed by the other party; or
 - 6.2.1.3 was public knowledge at the time when it was so provided to the other party or which subsequently become public knowledge through no fault of the other party.
- 6.3 The Customer warrants that any Input Material and its use by BRE for the purpose of providing the Works will not infringe the copyright, patents or other rights of any third party, and the Customer shall indemnify BRE against any loss, damages, costs, expenses or other claims arising from any such infringement.
- 6.4 Subject to obtaining the prior written consent of BRE, compliance with clause 6.5 below and compliance with any conditions relating to the form of the publication or reproduction attached by BRE to the consent, the Customer shall be entitled to publish or reproduce the Output Material or any part thereof.
- 6.5 Where the Customer publishes or reproduces any Output Material, the Customer shall:
 - 6.5.1 reproduce on any copy (whether in machine readable or human readable form) of the Output Material BRE's copyright notices, or where there are none shall request in writing from BRE the form of copyright notice that BRE would like attached to the Output Material;
 - 6.5.2 maintain an up to date written record of the number of copies of the Output Material (or any publication or reproduction thereof) and their location and upon request forthwith produce such record to BRE; and
 - 6.5.3 notify BRE immediately if the Customer becomes aware of any unauthorised use of the whole or any part of the Output Material by any third party; and



6.5.4 without prejudice to the foregoing take all such other steps as shall from time to time be necessary or desirable to protect the confidential information and intellectual property rights of BRE in the Output Material.

7. USE OF BRE'S NAME

The Customer shall not, without BRE's prior written consent, use the names BRE, Building Research Establishment or any other name used by BRE or BRE Global Ltd or suggesting an association with BRE or BRE Global Ltd or disclose to any third party the nature or existence of the Contract, and where such consent is given, the Customer shall comply with any conditions attached to the consent.

8. SAFETY

Where BRE is required to access any property of the Customer for the purposes of carrying out the Works, then the Customer shall provide unhindered access together with all relevant working facilities required by BRE and shall provide safe access and a safe working environment which complies with all Health and Safety legislation.

9. RIGHTS, WARRANTIES AND LIABILITY

- 9.1 BRE may perform the Contract using any other subsidiary of the BRE Trust.
- 9.2 BRE warrants to the Customer that the Works will be provided using reasonable care and skill and, as far as reasonably possible, in accordance with the Programme of Works. Where BRE supplies in connection with the provision of the Works any goods (including Output Material) supplied by a third party, BRE does not give any warranty, guarantee or other term as to their quality, fitness for purpose or otherwise.
- 9.3 BRE shall have no liability to the Customer for any loss, damage, costs, expenses or other claims for compensation arising from any Input Material or instructions supplied by the Customer which are incomplete, incorrect, inaccurate, illegible, out of sequence or in the wrong form, or arising from their late arrival or non arrival, or any other fault of the Customer.
- 9.4 Except in respect of death or personal injury caused by BRE's negligence, or as expressly provided in these Terms, BRE shall not be liable to the Customer by reason of any representation, or any implied warranty, condition or other term, or any duty at common law, for any loss of profit or any indirect, special or consequential loss, damage, costs, expenses or other claims (whether caused by the negligence of BRE, any other subsidiary of the BRE Trust, their servants or agents or otherwise) which arise out of or in connection with the provision of the Works or their use by the Customer, and the entire liability of BRE under or in connection with the Contract shall not exceed the amount which has actually been paid by the Customer to BRE for the provision of the Works, except as expressly provided in these Terms.
- 9.5 Except in respect of death or personal injury, the Customer will look only to BRE (and not to any individual carrying out the Works, including any directors of BRE) for redress if the Customer considers that there has been any breach of this Contract. The Customer agrees not to pursue any claims in contract, tort (including negligence) or for breach of statutory duty against any individuals carrying out BRE's obligations under the Contract at any time, whether named expressly in the Contract or not.
- 9.6 BRE shall not be liable to the Customer or be deemed to be in breach of the Contract by reason of any delay in performing, or any failure to perform, any of its obligations in relation to the Works, if the delay or failure was due to any fire or explosion, the loss of or damage to any products or materials in the course of the carrying out of any investigations or tests on them or any cause beyond BRE's reasonable control.

10. HIRE OF EQUIPMENT

- 10.1 For the purpose of this clause 10, Customer and/or its contractors are referred to as "Contractor".



- 10.2 The use by the Contractor of any work equipment owned by BRE (and/or its affiliated companies) shall be hired by BRE at its absolute discretion to the Contractor subject to BRE's prior consent and any conditions specified, and in accordance with the following terms and conditions.
- 10.3 The Contractor shall ensure that the use of that work equipment is restricted to those persons given the task of using it with BRE's consent, and who have received adequate health and safety training (and shall provide evidence thereof to BRE upon request).
- 10.4 The Contractor shall ensure equipment is used only for operations for which, and under conditions for which, it is suitable and the Contractor shall not use and immediately return to BRE any work equipment it does not consider to be in good working order. If the work equipment is involved in any accident immediate notification must be made to BRE.
- 10.5 The Contractor will be responsible for compliance with relevant regulations issued by the Government or Local Authorities, including regulations under the Environmental Acts, Factories Acts, Health and Safety at Work, etc Act, Provision and use of Work Equipment Regulations 1998, and the Road Traffic Acts as amended and applicable, including any insurances made necessary thereby and the Contractor shall indemnify BRE (and/or its affiliated companies) against any loss, damage or injury howsoever caused and for any charges or fines that BRE (and/or its affiliated companies) may become liable for as a result of the use of the work equipment to the extent permitted by law.

11. TERMINATION

- 11.1 The Contract shall terminate automatically on completion of the Works by BRE, but such termination shall be without prejudice to any provision intended to operate thereafter.
- 11.2 BRE shall not be required to fulfil its duties and obligations under the Contract if at any time BRE is prevented from fulfilling its duties and obligations by any acts or omissions of the Customer or the Customer's personnel provided always that in order to avail itself of this provision BRE must give written notice to the Customer of any such act or omission of the Customer within 72 hours of the occurrence of such act or omission.
- 11.3 Either party may terminate the Contract forthwith by notice in writing to the other if the other:
- 11.3.1 commits a breach of the Contract which in the case of a breach capable of remedy shall not have been remedied within 14 days of the receipt by the other of a notice from the innocent party identifying the breach and requiring its remedy;
 - 11.3.2 is unable to pay its debts or enters into compulsory or voluntary liquidation (other than for the purpose of effecting a reconstruction or amalgamation in such manner that the company resulting from such reconstruction or amalgamation if a different legal entity shall agree to be bound by and assume the obligations of the relevant party under the Contract) or compounds with or convenes a meeting of its creditors or has a receiver or manager or an administrator appointed or ceases for any reason to carry on business or takes or suffers any similar action which in the opinion of the party giving notice means that the other may be unable to pay its debts.
- 11.4 Termination of the Contract for whatever reason shall not affect the accrued rights of the parties arising in any way out of the Contract as at the date of termination and, in particular but without limitation, the right to recover damages against the other and the provisions of sub-clauses 9.2, 9.3, 9.4 and 9.5 and clauses 6, 7 and 16 shall remain in force and effect.

12. ASSIGNMENT

Neither party shall assign, novate, transfer, sub-contract or in any other manner make over to any third party the benefit and/or burden of the Contract without the prior written consent of the other, such consent not to be unreasonably withheld.



13. THIRD PARTIES

Save as expressly provided in this agreement, no term shall be enforceable under the Contracts (Rights of Third Parties) Act 1999 by a third party (being any person other than the parties their permitted successors and assignees).

14. ENTIRE AGREEMENT

The Contract embodies and sets forth the entire agreement and understanding of the parties and supersedes all prior oral or written agreements understandings or arrangements relating to the subject matter of the Contract. Neither party shall be entitled to rely on any agreement, understanding or arrangement which is not expressly set forth in the Contract.

15. WAIVER

No failure or delay on the part of either party hereto to exercise any right or remedy under the Contract shall be construed or operated as a waiver thereof or shall any single nor partial exercise of any right or remedy as the case may be. The rights and remedies provided in these Terms are cumulative and are not exclusive of any rights or remedies provided by law.

16. NOTICES

A notice to be given hereunder shall be in writing and may be delivered personally or by sending it by pre-paid first class post or facsimile to the intended recipient's address given herein or to any other address supplied with reference to and in accordance with this clause to the other party hereto at their address for the purposes of service under the Contract. A notice delivered personally shall be deemed to have been served on delivery. A notice sent by post shall be deemed to have been served at an address within the United Kingdom at the expiry of 48 hours from the date of posting and at an address outside the United Kingdom at the expiry of 72 hours from the date of posting. Where any notice is given by facsimile service of the same shall be deemed to be effected upon receipt of the normal confirmation of receipt.

17. GOVERNING LAW

The Contract shall be governed by and construed in accordance with English Law and the parties hereby submit to the exclusive jurisdiction of the English courts.





Acceptance of BRE Proposal for Work To:

(Please either post form to the above address, fax to: 01923 664097 for the attention of Ian Watson:) or email as attachment to: watsoni@bre.co.uk

I acknowledge receipt of your proposal reference number 300977, dated 10/12/2014, Title of Proposal East Cambridgeshire Health Impact Assessment (as described therein)

I agree to the detail proposal and accept the offer under the STANDARD TERMS AND CONDITIONS OF BUSINESS at a cost of £12,700 plus expenses where applicable.

I agree that your offer, comprising this BRE proposal and BRE's Standard Terms and Conditions attached hereto, contains the entire agreement and understanding between our two parties with respect to the subject matter and supersedes any prior written or oral agreements. Should our standard processes require the issuance of a purchase order or other document that seeks to invoke our standard terms and conditions, we will include expressive written text stating that our terms shall be superseded by the BRE terms attached hereto.

I agree to payment of the Fees and Invoicing Schedule as detailed in section Fees and Invoicing Plan of this proposal.

Name of Company/Organisation:

East Cambridgeshire District Council

Address:

"The Grange,
Nutholt Lane,
Ely,
Cambs CB7 4EE"

Signed on behalf of Organisation:

Please also print name:

Position:

Date:

Agenda Item 6 - Appendix 2 page 35