

**The role of crowd-sourced energy performance
feedback in low-energy building design and
management in the context of industry pressures.**

Appendices

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No.	Question Text	Question Type	Answer Choices	Collected Variable Type	Analysis Code
Q.8	How often is your organisation required to meet a particular building energy consumption or carbon emission target as part of your brief?	Multiple Choice, single answer	On every building On most buildings On approximately half of all buildings On a few buildings Never	Ordinal	EnerTarg
Q.9	What are the most important factors when setting your projects energy consumption targets? [Each of options had a five point rating scale: Not at all Important, Slightly Important, Moderately Important, Very Important, Extremely Important]		My clients' goals My organisation's goals My personal goals Familiarity with targets and how to meet them Mandatory targets (such as Part L) Other targets (such as CRCs or BREEAM) CIBSE benchmarks Planning requirements Other factors	Nominal Nominal Nominal Nominal Nominal Nominal Nominal Nominal Free text	ClientGo OrgGo PersGo FamTarg MandTarg OthTarg CIBBen PlanReq OthGoFact OthGoFactSpec
No.	Question Text	Question Type	Answer Choices	Collected Variable Type	Analysis Code
Q.10	How frequently does your organisation use the following techniques to rate predicted or actual energy performance? [The following had a frequency rating scale; On every building, On most buildings, On approximately half of all buildings, On a few buildings, Never, N/A]	Grid question, numerous variables, Likert scale rating	Part L design calculations (such as SAP, SBEM etc) Energy modelling software (such as IES) Display Energy Certificates (DECs) Energy Performance Certificates (EPCs) Meter Readings Bills CIBSE TM22 Our own assessment method Other Other Please Specify	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Open Text	PartL EnerMod DEC EPC MetRead Bills TM22 ResAssMet OthAssMet OthAssMetSpec
Q.11	When assessing the potential energy consumption of designs or new management strategies do you include any of the following? [The options had a frequency rating scale; On every building, On most buildings, On approximately half of all buildings, On a few buildings, Never, N/A]	Grid question, numerous variables, Likert scale rating	Regulated energy (as described by Part L) Building fabric measures IT Loads Equipment Loads (plug in appliances) Operating Hours Occupancy Levels Special Energy Uses (as defined by CIBSE TM46) Management strategy effects (control mechanisms, BMS etc) Other Other Please Specify	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Free text	RegEner BuiFabMeas ITLoad EquipLoad OpHours OccLev SpecFunc ManStrat OthEnAssInc OthEnaAssIncSpec
Q.12	Do you do anything to monitor the impact that your design or management decisions make on predicted or actual energy consumption?	Grid question, numerous variables, Likert scale rating	We compare our new data with previous design or management iterations We collect feedback from those organisations that have used our data We monitor energy consumption in our occupied buildings We monitor the parts of the	Nominal Nominal Nominal	CompDat CollFeed MonEner

			building our decision have influenced We don't monitor the impact of our decisions Other Other Please Specify	Nominal Nominal Nominal Free text	MonBuil NoMon OthMonIm OthMonImpSpec
No.	Question Text	Question Type	Answer Choices	Collected Variable Type	Analysis Code
Q.13	How often do you or others on your behalf, collect energy related data about your finished buildings, developments or managed buildings?	Multiple Choice, single answer.	From every building From most buildings From approximately half of all buildings From a few buildings From no buildings	Ordinal	OftDatColl
Q.14	What kind of data do you typically collect? [The options had a frequency rating scale; On every building, On most buildings, On approximately half of all buildings, On a few buildings, Never, N/A]	Grid question, numerous variables, Likert scale rating	kWh figures for total electricity consumption kWh figures for total gas consumption kgCO ₂ m ² for the whole building kWh figures for individual building zones kWh figures for individual systems (such as the HVAC or lighting systems) Occupant satisfaction information Physical Information about the building (room dimensions, construction, U-Values, window sizes etc) Data about internal conditions (temperature, humidity, light levels etc) Occupancy data Operating hours Other Other Please Specify	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Free Text	TotElec TotGas TotCO2 Zones Systs OccSat PhysInf IntConds OccDaa OperHour OthDatColl OthDatCollSpec
Q.15	Please rate the following reasons for collecting energy related data in terms of importance to your organisation? [Each of the below options had a five point rating scale: Not at all Important, Slightly Important, Moderately Important, Very Important, Extremely Important]	Grid question, numerous variables, Likert scale rating	Reduce carbon emissions Meet energy legislation targets Meet energy briefing targets Market successful buildings and management strategies Aid interdisciplinary work and knowledge transfer To improve your future designs To justify capital spend Track carbon emissions throughout the development and life of a project Reduce building running costs Other reasons Other Please Specify	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Free Text	RedCarbEm MeeEneLeg MeeEneBre Market KnowTran ImprFut JustCapCost TracCarb RedBuiRun OthEneColl OtheEneCollSpec
Q.16	How often do you use the following survey or discussion techniques to assess a building? [The following options had a frequency rating scale; On every building, On most buildings, On approximately half of all buildings, On a few buildings, Never, N/A]	Grid question, numerous variables, Likert scale rating	Occupant surveys Energy surveys Walk-through surveys Post-project reviews (with the whole team) Post-implementation reviews (with the Client) Technical discussions (with building managers and designers) Focus groups (with occupants and other stakeholders) Your own data capture techniques Can you tell us about your own	Nominal Nominal Nominal Nominal Nominal Nominal Nominal Nominal Free Text	OccSur EneSur WalkSur PostProRev PostImpRev TechDisc FocGro ResOwnTech ResOwntechSpec

No.	Question Text	Question Type	Answer Choices	Collected Variable Type	Analysis Code
			collection technique(s):		
Q.17	How often do you use the following methods of communicating your energy data? [The options had a frequency rating scale; On every building, On most buildings, On approximately half of all buildings, On a few buildings, Never, N/A]	Grid question, numerous variables, Likert scale rating	Graphs and charts Written reports Scientific papers Press releases Lectures Verbally and informally (without being written down) In informal written communication such as emails, memos etc We do not share our data Another method such as a web platform, like CarbonBuzz Other, Please specify	Nominal Nominal Nominal Nominal Nominal Nominal Nominal Free Text	GrapChar WritRep SciPap PreRel Lectures VerbInf InfWrit NotShar OthComMet OthComMetSpec
Q.18	How could the communication of data be improved to help you make design and management decisions?	Open text	Free text box	Free Text	
No.	Question Text	Question Type	Answer Choices	Collected Variable Type	Analysis Code
Q.19	Please rate the following in terms of disincentive to you collecting energy data from finished buildings or managed property: [The following had a rating scale: No disincentive, Slight disincentive, Moderate disincentive, Strong disincentive, Complete disincentive]	Grid question, numerous variables, Likert scale rating	Cost to your organisation Cost to your Client Client cannot see the benefit My organisation does not see the benefit Difficulty accessing buildings Inexperience in POE Concern over liability Other Other Please Specify	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Free text	OrgCost ClieCost CliNoBen OrgNoBen DiffAcc InexPOE ConcLiab Other OthDisSpec
Q.20	What would encourage your organisation to collect more information about your buildings or projects?	Open Text	Free text box	Open Text	
No.	Question Text	Question Type	Answer Choices	Collected Variable Type	Analysis Code
Q.21	Is there anything else you would like to say about sharing building energy consumption information? Barriers, incentives, problems, opportunities?	Open Text	Free text box	Open Text	

Appendix Table 1 Survey questions.

Appendix 2 – Survey sample size adjustment

Sample size adjustment calculation:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where n is the sample size and N is the population size. And N is the population size, in this case, 270000 members of the construction industry professions defined by the CIC survey (Construction Industry Council 2005).

$$n = \frac{385}{1 + \frac{(385 - 1)}{270000}} = 384$$

A reduction of a single respondent can be made for the target population (Field 2013).

Appendix 3 – Survey introductory email

The two approaches to sampling have different characteristics; the CSDG represents a group of interested and therefore self-selecting individuals with whom contact was made directly to potential respondents' email addresses. The LAF email addresses were taken from public domain websites and therefore had no self-selection bias but were company email accounts, often administrative addresses rather than individuals. This has a two-fold effect: the addresses are often controlled by administrative staff who may be reluctant to forward a speculative email to the rest of their organisation, and when emails were forwarded on to the rest of an organisation there is no way of knowing the true size of the population frame. According to Dillman (2007) a small incentive can improve the response rate. Addressees were encouraged to answer the survey by offer of a draw to win an MP3 player or a copy of an environmental engineering design book (Dillman 2007).

Invitation Process

Emails were sent out to both lists with an invitation to participate and a request to forward the survey to colleagues. The invitations contained a general invitation, not a personalised one; personalisation was not possible due to the nature of the list since access to individuals' names was restricted.

Dillman advocates four contacts with potential participants, and this study aimed to follow this model. The four stages are an introductory contact, a request to respond, a reminder, and a final thanks and reminder (Dillman 2007). In the event, it was not possible to carry this four-step process out due to a restriction of two emails being sent to the CSDG list placed on the process by the group administrator. The emails were issued to each list in parallel and to ensure consistency. The second email was sent out two weeks after the first.

First email:

Subject: The UCL Energy Institute and the Bartlett School of Graduate Studies needs your opinion!

Dear Building Industry Professional,

The UCL energy institute and the Bartlett School of Graduate Studies are carrying out a survey of the building industry to understand the role of energy data feedback in contemporary practice.

We would appreciate 10 minutes of you or your colleagues' time to fill in our survey. Please follow this link and forward this email to your colleagues!

<https://www.surveymonkey.com/s/LD9JTCX>

Win an iPod

All respondents will be entered into a draw to win an iPod shuffle loaded with building energy related podcasts or a copy of 'A Handbook of Sustainable Building Design and Engineering'.

If you have any questions about this research, please feel free to contact me, my details are below.

Thanks for your time and don't forget to share this survey link with your colleagues!

Yours sincerely,

Craig Robertson

Second email:

Subject: Reminder! Win an iPod by telling the Bartlett School of Graduate Studies and UCL Energy Institute your opinion!

Dear Building Industry Professional,

Thanks you to all of you who have already completed our online survey. If you haven't already spent 10 minutes giving us your opinion and registering for the draw to win an iPod please follow the link!

<https://www.surveymonkey.com/s/LD9JTCX>

The UCL energy institute and the Bartlett School of Graduate Studies are carrying out this survey to understand the role of energy data feedback in contemporary practice. Your opinions and insight will help us develop new energy data feedback mechanisms.

It will only take 10 minutes of you or your colleagues' time. Please follow the link and forward this email to your colleagues!

Win an iPod

All respondents will be entered into a draw to win an iPod shuffle loaded with building energy related podcasts or a copy of 'A Handbook of Sustainable Building Design and Engineering'.

If you have any questions about this research, please feel free to contact me, my details are below.

Thanks for your time and don't forget to share this survey link with your colleagues!

Yours sincerely,

Craig Robertson

Appendix 4 – Pearson’s r

Pearson’s correlation tests for a linear relationship between variables and will offer some further insights into how different aspects of the database can result in different relationships between design predicted and actual energy consumption (Field 2013).

Pearson’s r expresses a standardised covariance as a value between -1 and 1 where 1 indicates a perfect positive linear relationships and -1 indicates a perfect negative relationship. 0 indicates no linear relationship. r is calculated by dividing the covariance of two variables by the product of the multiplied standard deviations. The formula is as follows:

$$r = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{(N - 1)s_x s_y}$$

where x_i and y_i are individual data points and \bar{x} and \bar{y} are the mean values of each variable, s_x and s_y are the standard deviations of each variable and n is the number of variables. In this case x is the design energy consumption and y is the actual recorded energy consumption.

Appendix 5 – Semi-structured question themes

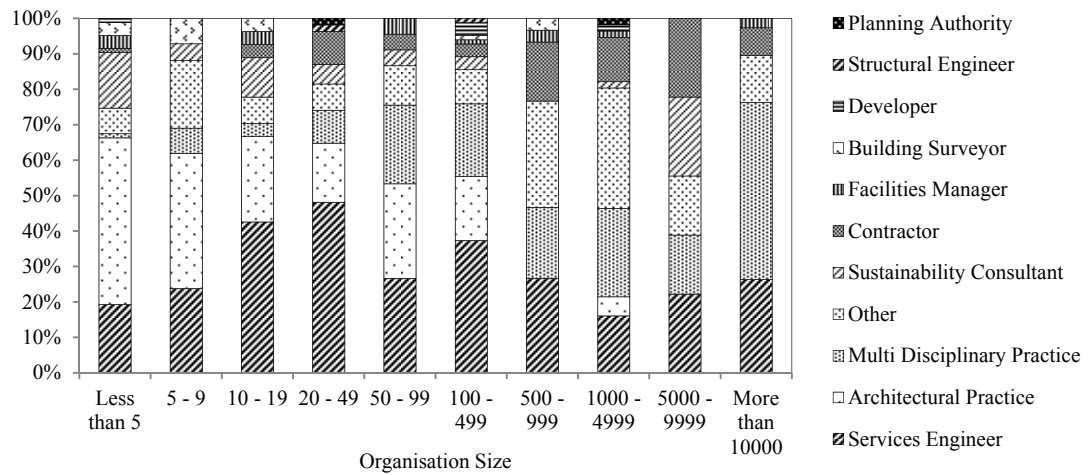
Main Themes	Sub Themes
Characterisation of Participants	Interviewee role. Experience.
Characterisation of Organisation	Organisations' main activity. Sectors worked. Client base.
Organisations' general approach to energy and carbon legislation and incentives	How energy and carbon targets are set. Who sets them. Which incentives are important. Which reporting methods or tools are typically used (if any). What kind of feedback information is typically used (if any).
The process of making decisions in interviewees' organisations.	How decisions are they made or justified. What pressures are considered most important. How design iterations are developed, compared and chosen.
When design, construction or management strategies have been developed, how the implications of them are assessed in the context of organisational or project energy or carbon targets.	How predictions are made. What tools are used. What data is incorporated.
How respondents and their organisations know if design or management changes have been effective?	How decisions are verified. What kinds of surveys or POE techniques are used to measure the efficacy.
How does that feedback into revised designs or management strategies?	How is the information integrated into project workflows if it is, and why is it not. Is a bespoke or standard methodology used for this process. What data is used to for this.
Any barriers or incentives that exist to collecting data	Including any inherent risks perceived in the process. Any opportunities inherent in the system or workflow. What would help to change activity and overcome these barriers.
What would an ideal feedback system look like?	What would it need to offer to be used and useful.

Appendix Table 2 Semi-structured question themes.

Appendix 6 – Survey respondents’ organisation size

Organisation Type	Less than 5	05-Sep	Oct-19	20 - 49	50 - 99	100 - 499	500 - 999	1000 - 4999	5000 - 9999	More than 10000	Total
Services Engineer	16	10	23	26	12	31	8	9	4	10	149
Architectural Practice	39	16	13	9	12	15	0	3	0	0	107
Multi Disciplinary Practice	1	3	2	5	10	17	6	14	3	19	80
Other	6	8	4	4	5	8	9	19	3	5	71
Sustainability Consultant	13	2	6	3	2	3	0	1	4	0	34
Contractor	1	0	2	5	2	3	5	7	4	3	32
Facilities Manager	3	0	2	0	2	1	1	1	0	1	11
Building Surveyor	3	3	2	0	0	1	1	0	0	0	10
Developer	1	0	0	0	0	3	0	1	0	0	5
Structural Engineer	0	0	0	1	0	1	0	0	0	0	2
Planning Authority	0	0	0	1	0	0	0	1	0	0	2
Total	83	42	54	54	45	83	30	56	18	38	503

Appendix Table 3 Survey respondents' organisation size.



Appendix Figure 1 Survey respondents' organisation size.

Appendix 7 – Survey respondents’ role

	List Frame	Area Frame	Total Sample	% of Sample
Services Engineer	205	4	209	41.6
Other	81	23	104	20.7
Architect	16	75	91	18.1
Sustainability Consultant	70	4	74	14.7
Facilities Manager	9	2	11	2.2
Contractor	8	0	8	1.6
Developer	2	1	3	0.6
Structural Engineer	2	0	2	0.4
Approved Inspector	1	0	1	0.2
Total	394	109	503	100

Appendix Table 4 Survey respondents' role.

Appendix 8 Survey respondents’ experience

Respondent Role	Not Specified	Less than 5	5 to 9	10 to 14	15 to 19	20 or more	Total
Developer		1	0	0	0	2	3
Architect	29	8	9	7	7	31	91
Services Engineer	24	7	16	4	0	158	209
Structural Engineer	0	0	1	0	0	1	2
Sustainability Consultant	3	7	6	4	2	52	74
Contractor	0	0	1	1	0	6	8
Facilities Manager	1	2	0	0	0	8	11
Approved Inspector	1	0	0	0	0	0	1
Other	12	7	11	5	3	66	104
Total	70	32	44	21	12	324	503

Appendix Table 5 Survey respondents' years experience.

Appendix 9 – CarbonBuzz organisation categories

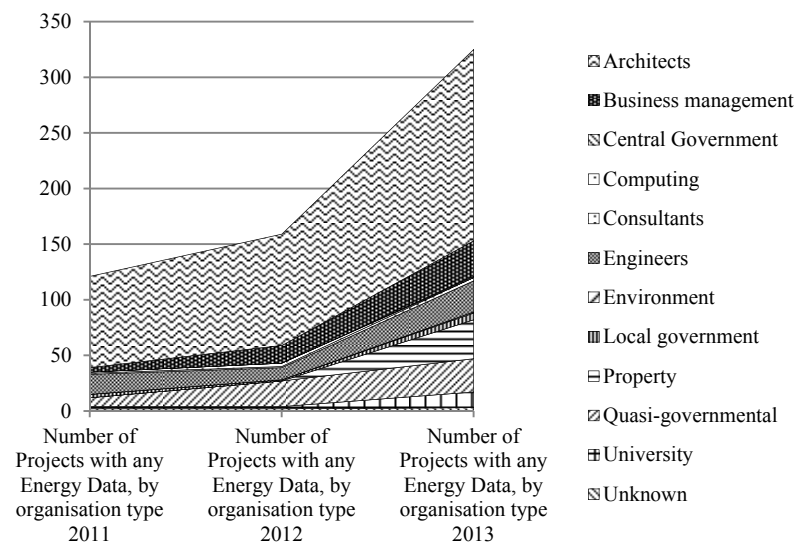
Company Categories	Number of Organisations 2011	Number of Organisations 2012	% Increase 2011-2012	Number of Organisations 2013	% Increase 2012 -2013
Architects	115	141	23	155	10
Business management	28	43	54	42	-2
Central government	6	7	17	8	14
Computing	7	16	129	14	-13
Construction	16	23	44	33	43
Consultants	39	59	51	85	44
Engineers	68	82	21	104	27
Environmental	3	3	0	5	67
Local government	6	14	133	19	36
Manufacturing	8	12	50	16	33
Media	2	2	0	4	100
Profession	3	3	0	5	67
Property	17	22	29	35	59
Quasi-governmental	16	19	19	28	47
Surveyors	3	3	0	6	100
University	41	74	80	114	54
Unknown	28	52	86	66	27
Renewables	N/A	N/A	N/A	4	N/A
Total	406	575	42	743	29

Appendix Table 6 CarbonBuzz registered organisations' company categories.

Appendix 10 – CarbonBuzz organisation types

Company Categories	Number of Projects with any Energy Data, by organisation type 2011	Number of Projects with any Energy Data, by organisation type 2012	% Change from 2011 to 2012	Number of Projects with any Energy Data, by organisation type 2013	% Change from 2012 to 2013
Quasi-governmental	8	23	188	30	30
Architects	82	100	22	172	72
Engineers	18	11	-39	28	155
University	2	2	0	14	600
Computing	1	3	200	0	-100
Consultants	1	1	0	3	200
Business management	4	16	300	32	100
Unknown	2	2	0	3	50
Local government	3	1	-67	6	500
Property	0	0	0	35	N/A
Central Government	0	0	0	1	N/A
Environment	0	0	0	1	N/A
Total	121	159	31	325	104

Appendix Table 7 CarbonBuzz organisations contributing any energy data, by year.

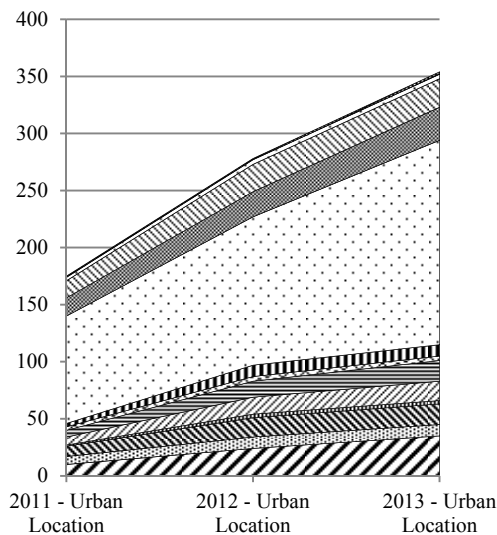


Appendix Figure 2 CarbonBuzz organisations contributing projects with design and actual energy data.

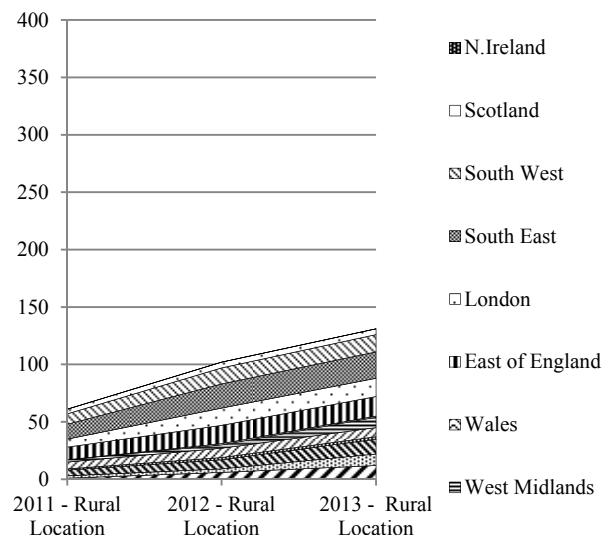
Appendix 11 – CarbonBuzz project location

Region	2012 - Location				2013 Location			Total	Percentage Change in Total Figure 2012 -2013
	"0"	Urban	Rural	Total	0	Urban	Rural		
"0"	1	24	6	31	1	35	12	48	55
North East	.	10	3	13	.	10	10	20	54
North West	.	17	8	25	.	18	13	31	24
Yorkshire and Humberside	.	3	2	5	.	3	2	5	0
East Midlands	.	15	8	23	.	17	8	25	9
West Midlands	.	14	3	17	.	18	9	27	59
Wales	.	4	1	5	.	4	1	5	0
East of England	.	10	16	26	.	10	17	27	4
London	.	130	15	145	.	179	16	195	34
South East	.	22	21	43	.	29	23	52	21
South West	.	24	14	38	.	25	15	40	5
Scotland	.	4	5	9	.	4	5	9	0
N.Ireland	.	1	0	1	.	2	.	2	100
Total	1	278	102	381	1	354	131	486	28

Appendix Table 8 CarbonBuzz project locations.



Appendix Figure 3 CarbonBuzz projects in an urban location.



Appendix Figure 4 CarbonBuzz projects in a rural location.

Appendix 12 – CarbonBuzz projects with value and area data

Sector	No. Projects with Value field> 0 2013	No. Projects with Gross Floor Area> 0 2013	No. Projects with Value field> 0 2013 (not including test)	No. Projects with Gross Floor Area> 0 2013 (not including test)
Civic & Community	8	9	8	9
Office	106	119	83	93
Education	123	185	111	169
Health	12	21	11	20
Residential	36	79	28	69
Retail	21	21	17	18
Sport and Leisure	21	24	20	23
Hospitality	4	6	3	5
Industrial	2	5	2	4
Other	4	4	3	3
Total	337	473	286	413

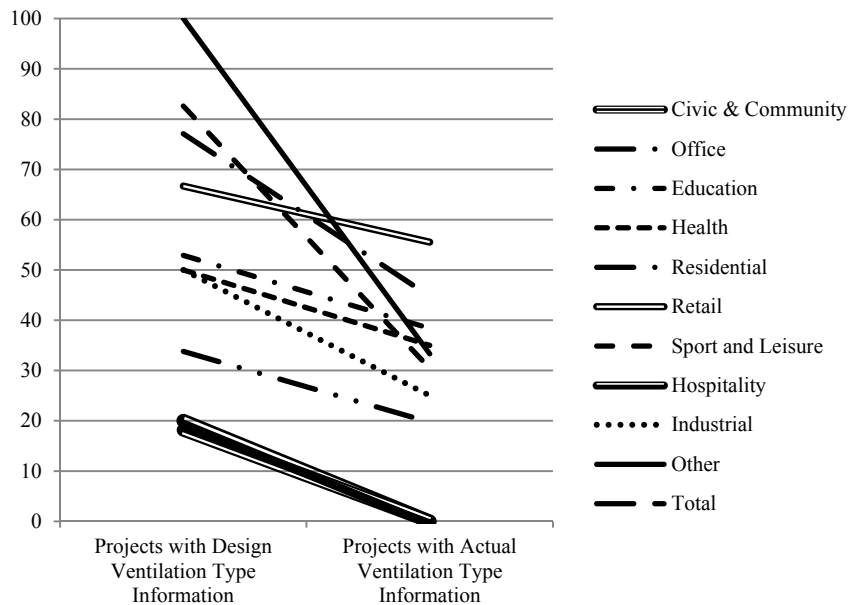
Appendix Table 9 CarbonBuzz projects with value and area data.

Appendix 13 – CarbonBuzz projects with height data

Sector	Not Inc. Test 2013	Design Floor to Floor Height>0 Not Inc. Test Projects 2013	Actual Floor to Floor Height>0 Not Inc. Test Projects 2013	Design No. of Storeys>0 Not Inc. Test Projects 2013	Actual No. of Storeys>0 Not Inc. Test Projects 2013
Civic & Community	11			0	0
Office	96	6	5	20	16
Education	172	17	11	31	24
Health	20	3	1	4	2
Residential	71	4	4	6	3
Retail	18	1		1	1
Sport and Leisure	23	3	2	6	4
Hospitality	5				
Industrial	4	1	1	1	1
Other	3	1		2	1
Total	423	36	24	71	52

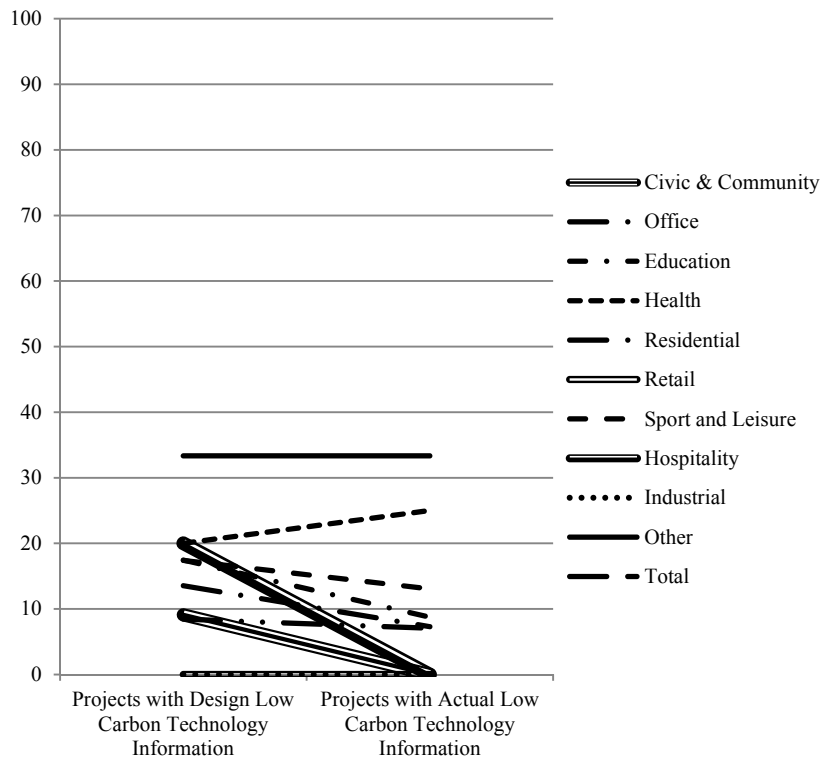
Appendix Table 10 CarbonBuzz projects with floor-to-floor and storey data.

Appendix 14 – CarbonBuzz projects with ventilation type data



Appendix Figure 5 CarbonBuzz projects with ventilation type data by sector.

Appendix 15 – CarbonBuzz projects with renewables



Appendix Figure 6 CarbonBuzz projects with low and zero carbon technology by sector.

Appendix 16 – CarbonBuzz projects with occupancy data

Sector	Total number of projects	Design No of Occupants>0	Actual No of Occupants>0	Design Operating Hours>0	Actual Operating Hours>0
Civic & Community	11	2	0	4	1
Office	96	56	38	54	37
Education	172	76	67	68	53
Health	20	5	5	7	7
Residential	71	18	10	18	10
Retail	18	13	10	11	10
Sport & Leisure	23	8	5	14	9
Hospitality	5	0	0	0	0
Industrial	4	3	1	3	1
Other	3	1	0	1	1
All	423	182	136	180	129

Appendix Table 11 CarbonBuzz projects with occupancy and operating hours data.

Appendix 17 – CarbonBuzz projects with a specified data source

	% Data Source Present 2013	% Data Source value "0" 2013	% Data Source field blank 2013
Design	58	35	7
Actual	23	69	7

Appendix Table 12 CarbonBuzz projects in Subset A with data source entries.

Appendix 18 – CarbonBuzz ‘other’ design data sources

Other Design Data Source 2013	No of Observations 2013
ACE	1
Bills	23
BRUKL report	1
Carbon Calculator	1
CIBSE Log Book	1
Energy and Sustainability Report	1
ESICHECK 6.6	1
IES + server room estimate	1
Metered data	17
n/a	1
Part L	1
PHPP	2
POE	2
Relazione sulle dispersioni (ex legge 10/91)	1
Renewable energy options report	1
SBEM + appliance loads	1
Stage D Energy Model	1
Sub-Metered data	1
TAS version 9.1.4	1
TBC	8
unknown	10
Total	77

Appendix Table 13 CarbonBuzz: 'Other' sources of design data.

Appendix 19 – CarbonBuzz ‘other’ actual data sources

Other Actual Data Source	No of Observations 2013
AMR	1
Bills	1
Commissioned POE evaluation	1
Meter readings	3
Monitoring data	1
Sub-metering	1
Verified meter readings and surveys	1
Total	9

Appendix Table 14 CarbonBuzz: Other' sources of Actual data,

Appendix 20 – CarbonBuzz total sample energy data

Sector	Subset A - No. of non-test projects with any energy data	Subset B No. of non-test projects with design and actual electricity data	Subset C - No. of non-test projects with design and actual heat data	Subset D - No. of non-test projects with design and actual heat and electricity data
Civic & Community	6	1	0	0
Office	74	27	18	18
Education	141	24	24	21
Health	12	2	1	0
Residential	22	5	4	4
Retail	11	1	0	0
Sport & Leisure	14	2	2	2
Hospitality	5	1	1	1
Industrial	4	1	1	1
Other	1	0	0	0
Total	290	64	51	47

Appendix Table 15 CarbonBuzz: Number of projects with energy data by sector.

Sector	Electricity					Heat				
	Mean Design Total Electricity Use 2013 (kWh/m ² /yr) Not Inc. test	No of observations 2013	Mean Actual Total Electricity Use 2013 (kWh/m ² /yr) Not Inc. test	No of observations 2013	% difference 2013	Mean Design Total Heat Consumption 2013 (kWh/m ² /yr) Not Inc. Test	No of observations 2013	Mean Actual Total Heat Consumption 2013 (kWh/m ² /yr) Not Inc. T _{test}	No of observations 2013	% difference 2013
Civic & Community	76	6	46	1	-39	62	4	0	0	N/A
Office	135	63	186	37	37	47	44	75	30	59
Education	67	64	131	98	94	79	59	153	95	93
Health	144	4	179	9	24	57	3	214	8	276
Residential	48	17	46	8	-4	81	13	87	6	7
Retail	170	4	291	8	71	0	0	84	6	N/A
Sport & Leisure	92	9	96	7	5	269	9	0	0	N/A
Hospitality	150	5	332	1	121	231	5	475	1	106
Industrial	139	4	515	1	271	26	4	41	1	58
Other	0	0	51	1	N/A	0	0	123	1	N/A
All	102	17 6	187	171	45	85	141	139	148	63

Appendix Table 16 CarbonBuzz subset A design and actual electricity and heat consumption means by sector.

Sector Category	No of observations 2013	Mean Design Total Electricity Use 2013 (kWh/m2/yr)	Mean Actual Total Electricity Use 2013 (kWh/m2/yr)	% difference
Civic & Community	1	46	46	0
Office	27	169	129	-24
Education	24	66	101	53
Health	2	150	187	24
Residential	5	30	43	43
Retail	1	161	183	13
Sport & Leisure	2	27	197	630
Hospitality	1	336	515	53
Industrial	1	412	1300	216
All	64	155	300	93

Appendix Table 17 CarbonBuzz subset B design and actual electricity mean values by sector.

Sector Category	No of observations 2013	Mean Design Total Heat Consumption 2013 (kWh/m2/yr) Not Inc. Test	Mean Actual Total Heat Consumption 201 (kWh/m2/yr) Not Inc. Test	% difference
Office	18	46	73	59
Education	24	65	89	38
Health	1	101	44	-57
Residential	4	69	77	13
Sport & Leisure	2	112	24	-79
Hospitality	1	426	475	12
Industrial	1	41	41	0
All	51	123	118	-4

Appendix Table 18 CarbonBuzz subset C design and actual heat consumption values by sector.

Sector	No. of non-test projects with design and actual heat and electricity data 2013	Design Predicted Electricity	Actual Recorded Electricity	Difference	Design Predicted Electricity Consumption	Actual Recorded Heat Consumption	% Difference
Civic & Community	0	0	0	0	0	0	0
Office	18	71	121	170%	46	73	159%
Education	21	56	106	189%	57	84	147%
Health	0	0	0	0	0	0	0
Residential	4	23	32	139%	63	77	122%
Retail	0	0	0	0	0	0	0
Sport & Leisure	2	27	27	0	112	24	21%
Hospitality	1	0	0	0	0	0	0
Industrial	1	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	47	71	116	163%	63	84	133%

Appendix Table 19 CarbonBuzz subset D design and actual heat consumption values by sector.

Appendix 21 – Description of interviewees

Architect 01 is a project architect with 7 years' post qualification experience who works for a small architectural practice of less than ten people in a large UK city. Her practice works mainly on '*mixed use brownfield development*' for small scale developers and owner occupiers of large light-industrial and warehouse properties. For her profit driven Clients, and therefore her practice, building energy consumption is not a priority.

Engineer 02 is the mechanical and electrical engineering manager for a large developer working nationally mainly, but not exclusively on residential projects. He works for the client side of the construction process and his and his organisations interest in energy is from a legislative and reputational point of view.

Architect 03 is a partner in her own small architectural practice in a large UK city. She says her practice will do '*anything that comes along*' and that happens to be mainly residential and commercial projects, incorporating quite a lot of refurbishment work. Her practices' '*primary focus is to create low energy buildings*' but does not have a particular in house energy target, instead, this is worked out on a project by project basis with clients '*where it fits happily with their budgets*'.

Architect 04 works for a medium sized architectural practice in the centre of a large UK city. She has studied environmental design and engineering to post-graduate level and has role in her practice '*to bring in environmental stuff...information about sustainability*'. However her practice does not prioritise energy it is '*secondary to the design, which is the prime concern*'.

Architect 05 is an associate at a medium sized practice in a large English city. His practice works in a number of sectors including schools and universities, private, social and student housing, commercial property and buildings for the arts such as galleries and museums.

Architect 05 does not consider sustainability to be at the forefront of his practices '*fundamental design*' approach, they do however have a sustainability group and try to develop '*sustainable ways of doing things*'.

Engineer 06 is a senior mechanical engineer at a large multi-disciplinary practice who primarily deals with HVAC design; he recently switched roles to the sustainable building physics department focussing on day lighting, thermal modelling, CFD and energy analysis. His department operates as a consultancy within a consultancy and has an overseeing role on all of the design engineers.

Architect 07 is a registered architect in both the UK with the RIBA and the USA with AIA; she is a freelance consultant and university tutor and has an interest in naturally ventilated

buildings. She works in an advisory capacity for a range of commercial and charitable organisations and teaches on a sustainable building course.

Architect 08 works for a large private architectural firm in a large North American city. His firm works mostly on public buildings such as higher education and university projects as well as healthcare, cultural and some residential buildings. His practice ethos is to *'go above and beyond, not just meet the code'* and he has seen the attitude of his practice change on energy from one led by individual project architects to a practice wide interest in sustainable building.

Contractor 09 is an architect by training, has qualifications in management and works for a large multinational contractor as a 'Design Manger'. Over the last 20 years he has worked briefly in North America but mostly in the UK at the British headquarters of the construction company. The firm's attitude to energy and sustainability is that it is something that needs to be done to remain commercially competitive *'they do things that they don't want to do to do the things that they make a profit from'*.

Developer 10 has an official title of 'Sustainable Development Executive' and is employed by a high profile commercial developer in a large UK city. Her job is to *'look after environmental and ethical issues on their construction and major refurbishment programme'*. Her organisation employ's her specifically to manage the sustainable aspects of their work and does not have any in house design staff; she is the interface between the aims and aspirations of her firm and the design teams employed by them.

Building Performance Consultant 11 has over 30 years experience in various positions, notably as a local authority energy manager and latterly as a building performance advisor working for a range of local authority clients mostly on school procurement and post occupancy evaluation. He is self employed and so his and his organisation's views on energy are one and the same – they aim to design and manage buildings for optimal energy performance.

Local Authority Policy Maker 12, works for an inner city local authority and while admitting that he is not a *'super energy expert'* his remit falls in two areas covering the development of planning policy on environmental, energy, carbon and sustainable design and policy that coordinates with wider national guidance and policy like BREEAM and the CSH. He also has a role in scrutinising planning applications for compliance with this policy.

Central Government Policy Maker 13 began her career for the civil service as a sustainability manager ensuring that her department met a series of sustainability key performance indicators (KPIs). Following this, her role evolved to encompass procurement and policy – to

develop and maintain departmental policy in line with central government policy and to support departmental capital expenditure on new buildings with sustainability advice.

Manufacturer 14 is the technical director in charge of research and development, production and the IT side of a high profile natural ventilation and day lighting equipment manufacturer. His organisation '*leads from the front of the industry and are very considerate on our energy consumption*'. They develop products that are low energy and market them as such in what they see as a very competitive market place.

Local Authority Energy Officer 15 is the energy conservation officer for an inner city local authority (LA) and runs the monitoring and targeting programme for the LA's own building stock. The LA falls under central government energy reduction targets and she carries out energy audits in order to implement measures to reduce energy consumption through the installation of technological solutions or managerial changes.

Sustainability Consultant 16 works for a multinational engineering company as a sustainability consultant. Her role is to work with project teams who are designing new buildings or to assist and to support decisions to help buildings use less energy, water and materials. She can be working on a dozen projects at any one time with varying degrees of involvement from liaising with project teams to communicating directly with client organisations.

Engineer 17 has been a consultant mechanical engineer for 25 years working as an operations manager on very large leisure and office development projects across Europe. He has set up his own consultancy which aims to help clients diagnose and resolve problems in building services systems from design to commissioning and operation with a focus on energy conservation. He works on '*whatever comes my way*'.

Facilities Manager – Developer 18 works for a large high profile commercial developer in a large UK city and has a range of responsibilities in his organisation. He is responsible for energy reduction and sustainability across the organisations existing portfolio of office and retail buildings. The organisation is unapologetically commercial developing buildings for sale and to manage as landlords. They operate responding to legislation, markets and occupant needs.

Facilities Manager – Local Authority 19 is head of facilities for a large LA in the south east of the UK. He has spent the last few years developing a category management plan to encompass facilities management, property management, utilities and management services for the LA. He is overseeing the installation of energy services contracts. He describes his role as at a strategic level with knowledge of and occasional involvement in operational processes.

Architect 20 works for a small practice in the centre of a large UK city. The practice have been shortlisted for national awards and their focus is very much on architectural design; environmental and energy concerns are low in their priorities. However, he is currently taking a part time masters degree in environmental design and has taken on the role within his practice of energy and sustainability expert.

Central Government – Consultant 21 is a building services engineer by qualification and works for a central government funding agency. He writes the specifications for the environmental side of buildings that feed into new public buildings briefing documents and design guidance. He had just completed a consultation exercise on a new piece of design guidance on energy consumption targets for new buildings.

Energy Consultant 22 works for a small energy consultant company whose client base is largely made up of large retail organisations and industrial companies with large process energy loads. Energy consultant 22's role is in energy auditing retail premises in order to identify opportunities for reductions and to propose technical and managerial amendments to building operations.

Surveyor 23 has over 40 years experience in the construction industry, beginning as a quantity surveyor and spending the majority of his career working for large contractors. He worked as the commercial director for one of the largest construction companies in the UK and sitting on the board of a number subsidiary companies. In 2005, he set up his own consultancy business dealing with commercial management issues and claims – settling contractual disputes. His focus has been on a range of projects, energy was one of many issues that fell under his remit.

Appendix 22 Interview Transcripts

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1.1 Architect 01

Interviewee:	Architect 01 (R)
Interviewer:	Craig Robertson (I)
Location:	Interviewee's House
Time/Date:	20:00 - 07/12/2011
Duration	41 minutes

Transcription:

I: Okay, so there are 6 themes I want to cover at some point through this but I thought we could begin by you telling me a bit about you and your role in the construction industry.

R: I am an architect and I work in a small practice, I've worked in the same practice for over seven years and the number of people employed has always been under 10, otherwise it has fluctuated.

I: Is that the only place you have worked?

R: I worked very briefly in the middle of my course in New Zealand on a small domestic job.

I: So your current job is the job you got straight out of university?

R: Yes, having completed my part II.

I: Can you tell me a little bit about that organisation, about the practice you work for? The kind of work it does the sectors it works in?

R: As I said it is a small practice, we do a reasonable mixture of work but not really much in the way of institutional work, so I think in the past we've done a bit more educational work but that has always been, it hasn't been schools, it has perhaps been doing up theatres, lecture theatres and that kind of thing, so small work within the education sector only and not recently. At the moment the main workload in the office is mixed use brownfield development, either converting an existing building which actually in the last few years has been almost exclusively what we have done but also you know a little bit of new build but like I said that has dropped off in the last few years.

I: And who are your Clients generally?

R: Generally speaking private developer clients that are of a fairly small scale also quite a lot of our work in the past has come from owner occupiers of buildings in the east end of London who have been employed in the rag trades or they have got quite a large building but their trade has altered so they no longer need the building for that purpose. Also a limited amount of work with housing associations; I think we are on one list with a housing association or something. But we haven't done anything with them.

I: Okay, so we are going to go on to talk about energy legislation and the kind of pressures that you work under and around when you are designing. Can you begin by telling me a bit about your practice's general approach to energy and carbon and energy consumption in buildings generally?

R: It's not a priority, the approach is, well most of our Clients want everything done on a small budget – an impossibly small budget and they are not interested really in anything other than making a profit or possibly making it look slightly okay; they are not really interested in energy concerns at all.

I: Would you say your practice is interested in that or is purely driven by...

R: I think theoretically the practice is interested in it, the reality, the way the turnover of work in the office works and the sort of fees that we end up charging we simply... and the fact that there is no will at all on the part of our Clients on this subject, it's not really considered at an early stage. Or it is only considered in terms of compliance with legislation.

I: So that is the kind of targets you work to? Legislative compliance?

R: Yeah.

I: What about planning requirements?

R: Well for example, in design and access statements we always put some sort of a phrase in that is fairly meaningless saying that cost analysis will be done on the viability of various bits of, you know, kit and that our principle is to highly insulate buildings and that is pretty much it.

I: You said that your Clients motivation is money and you put you put in something fairly meaningless about cost analysis, do you do a cost analysis? In your planning report you put a meaningless phrase about cost analysis of environmental measures is that what you said?

R: Yeah that's right.

I: So why does it remain meaningless? Why doesn't someone do the cost analysis in order to show your Client that it might be in their financial interest to employ these measures?

R: Because I don't think that we have the expertise in house and there is absolutely no way that any of these clients would pay for a consultant unless we could really demonstrate that it would be beneficial right from the outset which because we don't have the expertise, we can't. Also with the sort of building that we work in have often got limited possibilities anyway so, I think, there generally quite awkward anyway there's sort of certainly very limited opportunities for say ground source heat pumps in existing buildings in the middle of the city and the roofs are perhaps not very well, you know, they are so intensively developed that often the roof spaces are amenity space.

I: But you don't have the expertise to do the analysis that confirms this kind of gut feeling?

R: yes and again often things like fenestration are fixed and due to how much the Client wants to spend the way that we can insulate is also fixed and again that leads to planning also – they are often [the buildings] in conservation areas and we are working with brick buildings so there is limited opportunities and no will and not the expertise within the office or if there was the expertise the time to do anything about is – it's just not high priority with Clients and therefore the practice.

I: SO when you're making decisions, design decisions that may affect you're [building, how do you know you are complying with Part L?

R: Er well I suppose, at planning stage, we don't quite simply. I mean, we have a strategy that we have used before that has previously worked and that's more or less regurgitated.

I: So how did you find out that it worked before?

R: Buildings that we have already built.

I: So you use part L reports from previous buildings to inform your current design work?

R: Yes in principle, although the problem of course with then is you know, we don't have any sort of SAP calculator and I am never quite sure what sort of weighting is put on certain elements of the building construction.

I: What do you mean weighting?

R: Well I don't know what the calculation is exactly so for example I know that if the air tightness is less than a certain amount then that's good and that it will probably be okay and that similarly with things like the U-Value, I know that if I do X improvement on the typical U0value then it will probably be okay so that's okay so that's kind of what it's based on.

I: SO the stuff, the information that you are basing your designs on is a broad strategy that has previously passed building control?

CF; yeah more or less. And our knowledge of how the thing is going to be built.

I: What, in fabric terms, in construction terms?

R: Yes

I: So if it's a brick building you know how you're going to insulate it? Or if it is framed you how you are going to build it?

R: yes, more or less, that is pretty much it.

I: So at what point do you then, at what point in your workflow do you then confirm that it is going to comply with the legislation that you need to comply with?

R: Usually it is at quite a late stage, when we make, when, because often the Client – I am not sure what percentage of our projects end up getting built by the Client who is got us to get the planning for, a lot of our Clients are people, or a lot of our main Clients, our repeat Clients are people who buy up sites and get planning and then sell them on so they are not interested.

I: IN...

R: Anything else other than turning a profit very quickly, okay so obviously anything which is an increased cost from a report at the beginning, I mean they don't even want to do the reports that they absolutely have to do on the plans as required, never mind the ones which we would advise them to do because we think they are a good idea and our fees are always screwed down to a bare minimum so in terms of our time spent looking into that, well you know, i am not really allowed to spend time looking in to that sort of thing.

I: Sorry, what sort of thing?

R: Well trying to do an early stage SAP calc to try and figure it out myself.

I: so you said it was at a late stage, so what is late?

R: Well again if the Client is not too bad then we try and get them to get a SAP calculation assessment done at the time we are making building regulation submissions so that we can finalise how much insulation. But very after on conversations it happens even later than that. SO it has to be prior to construction, but even some times we have started stripping out before we have finalised...

I: How you are going to meet legislation?

R: Yeas. And as I said we can do details based on things we think are going to be complaint but we don't know for sure until we have got the calculations back.

I: So, when you get the calculations back what happens, what information do you give people to do the calculations, what is the process?

R: We give them construction details and U-Value calculation, generally speaking if we are using particular products we get the people, the product manufacturers to give us U-Values calculations.

I: like the insulation manufacturer?

R: Yes. And we send them along with a whole set of general arrangement drawings indicating where the different sorts of insulation is going to go.

I: and who does the calculation?

R: an energy consultant, usually a very cheap one and often, well, quite in my opinion, quite unreliable but I don't know how unreliable because I only get the final sheet, the worksheet. For example, I did two projects, almost identical, one I would of expected to perform worse but in fact it performed a million times better with exactly the same details than this other one – two different energy consultant firms and I don't know what to think.

I: Did you query it?

R: Well I queried the second one, which was significantly worse than the first one and you know beyond saying it is quite a complicated assessment and that we can't really send you the details of the sums that were done, they weren't particularly helpful so I am sort of only kind of a bit blind.

I: So they simply confirm whether or not what you have sent them complies with part l or not.

R: Yes.

I: And do they offer suggestions as to how to modify your design if it doesn't comply with part L?

R: Yes, sometimes they do, sometimes they are more helpful than others because I don't know how many SAP assessors you have worked with but often it is very clear that it is someone who has no idea and they have just happened to have bought the software so usually their guess is as good as mine and quite often they end up sending me generic information that is completely useless so you, know, a bit of part L legislation where they say 'if you've got this,' you know you get those tables where they say if you're doing this here and this here and this here and this here then you get this result, the they say 'well you need to do that there, but when I say the rest of it is not like mine but what I am actually looking to you for is a more specific bespoke 'what should I actually do' and quite often, they can't offer that.

I: So what do you do?

R: Try and figure it out myself. Haha.

I: and send them something back so that they can re-run the tests?

R: Yes/

CR So it is kind of iterative.

R: A little bit yeah.

I: and is there a financial penalty for this?

R: yes, the project I am particular thinking of where we have had to do this where we have got a rather unhelpful energy consultant is, it's a builder we are working for and he is a reasonable guy and I have explained the difficulties I am having so he hasn't objected to me doing that but nonetheless it's not a very good way of working.

I: To go back to the table – is that in part L?

R: Yes, you know they just give you example compliance constructions.

I: Alright.

R: But I think even with SAP assessors there seems to be some confusion as to what is actually required under current legislation.

I: There may well be. So the sort of verification of your design decisions are carried out by somebody elsewhere - do you meet with them face to face?

R: No.

I: and they just give you a simple yes or no about.

R: Basically yes, they give me a very simple and unhelpful yes or no or score that I can't relate to anything that I can't relate to anything other than it passes or not and no very helpful suggestions as to how I might change it either.

I: And you said previously that your practice doesn't have the expertise to process that or question it?

R: I am sure that I could if I had the time.

I: Okay, do you then carry out any post occupancy evaluation or assessment of the building that you have built to further verify those calculations and see if the energy consumption is as you thought it would be?

R: No. Partly again because there isn't the interest, also because there isn't the fees. And also most of the buildings that we end up doing are for private developers and usually the scale of them is such that they are under the social housing threshold, but not always, so they are often sold off immediately afterwards and access is difficult to arrange and the people then living in them have absolutely no interest of course either. SO, there are a number of reasons, the main ones are probably again money and time. Depressing isn't it?

I: probably quite typical and private rented, there is very little data on private rented buildings because they are so difficult to get access to so most of research done for the domestic sector is based on social housing because easier to organise access to and also the residential unit tend to be more uniform.

R: we only tend to revisit buildings when there is something wrong.

I: that's in the defects liability period.

R: yeah, although, you know if we have got a Client and a few years down the line they have problem we will go back. You so it's not like we don't offer any sort of help after wards.

I: So you are stiull in contact with your clients?

R: Yes, mostly not always.

I: but you maintain a working relationship with them, so making the leap from, I don't know what the nature of the problems are but, to go back and do an energy assessment might not be...

R: Yes and you know there Is casual stuff like at the moment we have just finished a building where we didn't do the planning for it but the planning consists of a two flats in particular on the top floor which have a huge amount of south facing glazing like it's almost fully glazed, there an overhangs, there is no overshadowing of building nearby because it is a little bit taller, and it is boiling hot and I am trying figure out, with the Client a way of dealing with this, again I think we put in some glazing that was supposed to reduce it [solar gains] so you know we will try and help and do everything we can to try an remedy the problem without having to get any, you know he's talking about putting air conditioning into these units that I am trying to make not happen so I am trying to look at solar reflective films that he can put on the outside of the glazing that aren't going to be visible.

I: And how are you trying to convince him of that?

R: it cheap, it's effective and it's easy to do. Save him money and he doesn't have to go to planning.

I: how is it effective how do you know? Are you modelling it, are you getting SAP calc done?

R: on the solar reflective film? Er well even it doesn't perform the up 70% reduction in UV rays that it claims to, it is still clearly going to make a difference – it is like a blind on the outside of the building - it is clearly going to make the problem a bit better. It may not do enough but in conjunction with internal blinds maybe it will make it reasonable. I don't know, it is kind of a trial and error thing you know.

I: and what's enough?

R: to make it relatively comfortable inside during the summer without having to permanently have your blinds down.

I: Did you rbrief have a...

R: a comfort temperature? Nothing that sophisticated. And also it is worth saying that most of the projects we are involved with don't have an M and E engineer attached to them.

I: do any of your projects have a brief requirement for internal conditions.

R: Nope!

I: Even the academic buildings.

R: I wasn't involved in any of that and it was some time ago so very possibly but again I think that was a refurbishment of existing and I think it was probably done on the cheap and I just don't know, it may well have done, maybe there was an M and E engineer who did some calculations for those to make sure they all worked okay, it is going back a few years, at least seven years.

I: So the problem that you are trying to rectify with the solar film, what are the criteria that your Client is using to define the problem?

R: probably as vague as mine are in fixing them. He just doesn't want it to be generally speaking uncomfortable feeling internally so I suppose he would like the temperature internally to be, you know, maximum of say 24 degrees.

I: are you guessing that?

R: Craig, he is vague!

I: Has he told you what temperature is inside the flat?

R: No.

I: That is all I am asking

R: I mean we know it is hot, you can tell!

I: Okay. There is no data?

R: No, Well there is a thermostat in the flat that we have had a look at it and you know...

I: A thermostat or a thermometer?

R: There is thermostat that gives the ambient temperature within the flat so he has been monitoring that, it is only just handed over last week and they have just fitted some internal blinds.

I: So there is nobody living there?

R: Not at the moment, although there will be very shortly. SO at the moment he is monitoring what sort of difference the blinds make but it is all very kind of you know...

I: So he has got temperature data of a sort and he is...

R: yes. I afraid it is not very scientific.

I: But he has been looking at the temperature, he has made an intervention with blinds and he is continuing to monitor it and he is feeding it back to you and telling you whether that is working or not and he is asking you for a more sophisticated solution?

R: Yes we have had a few discussion about it and we have agreed that the way to proceed is to fit the blinds see what difference that makes, fit solar film, see how the effect of that is and then and only then consider more er, more extreme options.

I: And the design of that building, you previously said that your designs were based on previous worked, so was that a design that was perhaps inappropriate for that location or was that something...

R: It was design that was inappropriate for its location, and we haven't done anything quite like it before, like I said we didn't get the planning for it, we did try and...

I: So it wasn't your design?

R: No, I did mention that earlier, it wasn't ours, we didn't get the planning. We did try and alter the design to incorporate some panels rather than have it fully glaze but the planners were really hard-core about it and they were saying that we would have to a whole new planning application and the planning permission was got some years ago and since then there have been changes in the planning legislation and they were concerned they wouldn't get the planning permission again so they didn't want to risk the planning permission and the planners wouldn't let us do a minor amendment or a non-material amendment. It is not actually exactly the same as the planning drawings but we were limited in what we could do and the same goes for there being absolutely no overhang externally, you know there is no form of solar control and really is due south. I wouldn't personally design that because I think it is a total mess, and I am not stupid.

I: Aesthetically you think it is a total mess?

R: Well aesthetically I don't think it is very nice and environmentally none of us are experts but we do try and do sensible buildings.

I: Like what?

R: Well so we try and avoid masses of south facing glazing if we can and we try and make sure that it is reasonable well insulated and that it is going to be possible for it to be reasonably well insulated without having cold bridges everywhere.

I: So have had similar feedback from other Clients, even other anecdotal feedback, like this client telling you the building is too hot and asking you for a solution, have any of your other Clients come

back and asked you for similar degrees of feedback, you said earlier you were going back to rectify some problems?

R: No that was a different issue. Although it isn't unconnected with how the building works, but that was to do with ventilate they were having problems with mould in the bathrooms and again it was just because, well it was a totally different reason, they were really three person but they were at least eight people living there, that sort of thing and they had turned off all of the overruns on the all of the fans and predictably the was mould in the bathrooms. SO we visiting then told them they really shouldn't turn off the overruns and there really shouldn't be eight people living there.

I: So the stuff that your Clients are coming back to with, would it fair to say, are things that they would expect to be correct?

R: Yeas

I: Giving the brief that they have given you.

R: It is not so much that its more that something isn't right and they want some advice, there isn't or there hasn't thus far been much accusation, there has never been a brief thrown back in our face saying you have to 'achieve this'. The sorts of Clients we have are the sort of Clients who don't have very specific briefs. I have worked on really major new building project with a housing association where they did have quite specific brief, but the building, the planning was got for it for one of the Clients that just buys land, gets planning and sells it on so again there was fairly limited ways of meeting the brief.

I: So the people that don't have specific briefs are just coming back to you with problems that they might expect not to exist?

R: Or yes, or problems that they don't want to exist, whether they expect them or not is another thing but problems that exist and they don't know what to do with them and they want our advice.

I: Okay would the come back to you with a meter reading, say?

R: No, I've never had it happen.

I: What do think might make them engage, you have talked a bit about the fact that they are only interested in money and that [unintelligible] may have a bearing on this, but what do think might make them engage more with the energy consumption of the building?

R: That's a difficult one, I suppose if there were a planning requirement for like a proper report then I think that would help a bit and I suppose I am also in favour of planning conditions for the same reason I mean, often with buildings, planning permissions we have got, there are sold on and then whoever buys them just wants to comply with but you know, sometimes, planning is our best weapon to try and make something better than total shit happen, so if there is a requirement in the planning for something to happen the at least that means that it will be looked into properly. Or maybe not properly but at least it will be looked into and that will be fulfilled.

I: When you say a 'proper report' what do you mean?

R: Well, I mean possible design stage SAP calcs or sap calcs at an earlier stage, of course the problem is it then becomes prohibitive for owner occupier Client that we have had in the past who are really not very 'cash rich' they've just got a reasonably valuable building is quite often they find it difficult to fund a lot of reports early on. But nowadays with pre application becoming more and more the norm...I think maybe there should be, maybe outline planning permission is perhaps that should be used a bit more, you know for the benefit of, and also as a way of letting people know that their development would be okay in principle but for a lesser amount of money earlier on and a lesser amount of reports so then it you know gives them some certainty to get some money from their funders to find an actual planning permission. You could have reports or certain element of the design that could be reserved matters, I don't know, I have really considered it much before.

I: And do you think planning is the only mechanism available?

R: Well building regulations but the problem is as we have said that happens too late in the day, it should really happen at an earlier stage but, you know, so that people that really don't care are forced to care a bit.

I: the people that don't care are the people who are turning sites for money?

R: yeah. Why would care how it is built? The really don't give a damn, arguably they might be able to sell it for more money but they want to get away with as few conditions as possible because it will be more valuable if they get a planning permission with as few conditions as possible.

I: So that goes back to planning, it is a planning issue rather than building regulations issue.

R: yeah, I think so. If there is an expectation that things have to happen earlier on then it is only going to happen with some people if they are forced to. On the flip side I suppose you don't want to discourage people from developing their underused property by making it massively expensive to do so then a whole plethora of reports – and there more and more reports required – does make it difficult for certain clients and very unattractive which is a shame because it may be that they have got really good site or a really good building that really needs changed.

I: and what do you think your role or your organisations role or your personal role is in making that happen? You may not think you have a role at all...I don't know.

R: Well with the private developers who, some of the, are more interested. I know I have said that none are interested, well they are not, but some are more interested than others about.. Some of them at least you can have a conversation with them about it you know they are not going to be massively interested but there is a chance you might persuade them. You might have conversation about what might work in the building. For example a ware house conversion I have talked to them about maybe putting some photovoltaic on the roof and that is something that they are considering you know because it is not such a bad thing, we could make the roof work fine with photovoltaics and they are talking about putting an extra floor on so there wouldn't be any issue with planning, we could deal with when we were going to planning anyway. Because that's the other thing, you need planning for all of the measures.

I: On what basis are you advising photovoltaics?

R: Well I am not advising them, I am suggesting them. Well on the basis that I have ruled out a number of other things. I also try and advise some communal heating systems and stuff, but again generally speaking the sort of properties that we work on they are not very interested in that because the tenant or people that they are getting to be they tenants or the people that are going to buy them they say it is not attractive to them because they don't really understand it and they are not used to it and they say it is less sellable to them. Apparently. I don't know about that. When it is individual home owners which we occasionally deal with – we are doing a conversion and extension sort of thing at the moment – we will have a conversation with them about things that they might be able to do and how interested they are and what, I try and give them an idea of what might be possible.

I: But without the expertise in your practice how do you now what is possible? How do you tell them what is possible?

R: I don't have the expertise to do the calculation but I do have some expertise in knowing what the possibilities are. Not enough to give them any definitive advice but at least enough to make them aware of options and where they might be able to get some more advice on the options. SO I am just saying I can't do in house SAP calculation, or at least I never have done, I am sure I could – but I think that's different from having some expertise.

I: So are you in advising these measures or say your experience in dealing with the overheating in the flats we talked about, do you build up a bank of information in your practice that you base new things on or do you simply – When you learn about that building overheating or what constructions have worked previously do you formalise your records, do you have formal records of that kind of information or is it kept as kind of tacit knowledge within your practice that is then applied to new projects?

R: It is mainly, I suppose kept as tacit knowledge although I am trying to instigate a bank of typical detail and typical U-Values for those details based on the sort of thing we often do but know of for a lot of them I am the memory bank.

I: So what is to prevent somebody in your practice going through the exact same process that you have already been through?

R: Nothing really, well it wouldn't really happen because our office is so small that everybody sort of knows what goes on so, also I imagine if I were to leave for example, the practice principle had involvement in all of the projects and she knows basically what we are doing and the strategies are ones that we have pretty much always used although in slightly different forms so at least she would know similar projects in the past with similar constructions for people to look at.

I: So is it fair to say it is not necessary to have an information bank in the practice because it is so small?

R: No I don't think that is true. It is something we are in process of changing and we need to change because I think it is useful to have somewhere where everybody knows where that information is and for everybody to be told that information is there but generally speaking, the QA in our practice is just

terrible and I am trying to instigate some changes so that people new to the practice know what to do, know how file things, know where to look for things. But again, for exactly the same reasons that we don't necessarily have enough time to properly do a proper investigation into what renewable are actually going to be sensible to use, I have limited time to organise all that as well. I am fire fighting Craig, I am fire fighting all day, every day. I am going through list of things I should have done months before and unfortunately any extras just go to the bottom of the pile.

I: Shall we stop here?

R: Yes. I think I have given you a good illustration of a shambolic small practice.

I: I think you have given me a good illustration of perhaps what a lot of practices do, fire fighting.

1.2 Engineer 02

Interviewee:	Engineer 02 (R)
Interviewer:	Craig Robertson (I)
Location:	Respondent's Place of Work (a residential construction site in central London)
Time/Date:	15:00 / 17.01.12
Duration	46:25

I: indicates the interviewer is speaking

R: indicates respondent is speaking

[square brackets] indicate notes added during transcription

... indicates pause/break in speech

Transcription:

I: So the process of this is that I have 6 vague themes that I want to cover but but it is kind of down to how you want to talk about it and I will go away and transcribe this and before I do any analysis or anything with it I will send it to you for agreement and if there is anything that I have got wrong, misinterpreted or on reflection you would like removed [from the transcript] that is no problem at all.

R: Sure

I: So I have told you a little about what I am doing, perhaps we could start by you telling me about your role here what [developer employer] are doing... Sorry, I didn't time that one very well!

[Brief pause whilst R eats a sandwich and R adjusts the recorder into noise off mode.]

R: Okay, shall I explain a little bit about [developer employer] as well?

I: Yes yes, and your role with them.

R: Okay [developer employer] are the fourth largest developer in London that's after Barclay, St James, Belway Homes and Barrats. Barclay and Barrats are fairly large but St James and Belway are way out ahead of anybody else and then Belway and use are very, very close for third and fourth place in terms of size residential developers in Greater London. So we are a sizable company with a lot of housing building going on and typically a couple of thousand units a year isn't unusual, sometimes more in the peak. We have obviously been caught like everybody else has with the recent tranches of changes in legislation be it building regs, the introduction of Code for Sustainable Homes (CSH) the lord mayors renewables requirement, the Merton rule 10% and the planners temporarily trying to push that to 20% renewables. So we are right in the mix with all of that, some of our jobs have a got a legacy element in terms of the kind of policy and previous regulations that we have to comply with on the basis that we purchase schemes sometimes from previous developers who have obtained the permission, so sometimes the scheme in terms of design criteria, what we specify and what we can do with it, sometimes our hands are fairly well tied but that is more on the bigger picture items rather than the actual technical solutions we can put in place to achieve the given outcomes as it were.

I: Have you got an in house design team, I see this is a Fosters building but is there a...

R: We employ consultants we don't employ internal designers, we do employ internal architectural design teams and we sometimes do entire projects in house. On the M&E front we employ four people, er, I am group M&E manager. We have the building services manager, a couple of other building services managers, site engineers who do like a resident engineers role on projects tracking contractors and consultants and tracking RFIs and the usual mix of getting construction projects delivered.

I: And you are just working in the housing sector or across....

R: Our primary activity is definitely residential and housing but we have built two or three hotels in the past, including a 400 bed hotel which we still own in Waterloo – it is the Waterloo Park Plaza Hotel, Park Plaza are operating that hotel for us.

I: But you still retain ownership?

R: We do, we are the freeholders of that.

I: And do you retain, this is service set of apartments this building?

R: This is 86 apartments here in the Strand, yes its serviced apartments, the hotel being built by Sol Melia next door, who are a Spanish hotelier, er, that will offer some services to the apartments. The apartments here – 86 apartments – we sold most of those in one trip to Malaysia

I: Right.

R: Which is very convenient!

I: Yeah, yeah, absolutely, do you retain the freehold?

R: I think on this particular building that is the case but it varies widely depending on what the deal is I think, you know, we may well have a 99 year lease or something like that on that one which we are selling on.

I: Okay, can we go on to talk about [developer employer]'s or your kind of attitude towards energy measures, you touched on it a second ago and environmental measures generally?

R: Well we find that it has been a huge amount of cost, erm, I will deal with that first off. Prior to about five or six years ago our primary kind of heating and hot water solution to an apartment was direct electric heating as space heating

I: Yes

R: With panel heater, so it's direct electric panel heaters with Economy 7 water heating. Now that was our typical scheme, we just kept repeating that. We got the price of that down below £700 pounds per apartment.

I: Right

R: So as soon as you compare that even with just an install of rads etc within an apartment even without a heat exchanger, you are talking about £1500 anyway.

I: Yes

R: So you have nearly doubled the cost, in fact we have doubled the cost before we have even started looking at further energy measures. On other fronts, the CSH has made construction more expensive, the other measures in terms of community heating especially have made the construction more expensive

I: Uh huh.

R: Erm, and there are a lot of angles in which the agenda which has been set was supposed to throw things to the market place for the market place to sort out which was the sort of almost the religious principle of the time; it has patently failed to achieve that in that there was no flexibility and then they have actually stirred it up by changing the goals posts in planning to move the goal posts every three years which is a crazy situation or scenario.

I: Hmm

R: We've got – for the different hurdles we've got to get over for the different planned changes in building regs – we've got solutions for those. Part of which is the work done to get to that point by whoever it be; manufacturers, suppliers or developers is wasted because we then have to move on in very short period of time to an alternative solution involving alternative design methods and products.

I: So you are building a kind of data base of detailed solutions for...

R: Yes, for something that is only going to exist for three years. You know it is patently obvious that what we have made for the first main change in building regs in 2016, sorry 2010, is kind of nowhere near what you will need for 2016.

I: Yes.

R: So why re-orientate everything and reconfigure everything to deal with that whereas it is only a short term problem by definition and I have huge issues with the fact that the manufacturers will not and do not and are not seriously trying to address issues that only give them the product lifespan of less than a few years, you know.

I: Hmm.

R: They simply don't go there and they haven't so that where I mean the lack of flexibility has been forced through policy.

I: And you are... are you continuing just meeting, and this isn't a criticism but a comment, you are continuing meeting the current regs, the current legislation...

R: We do, yes.

I: and going no further?

R: Well it wasn't difficult erm to work our way through the various renewable options on the table.

I: Yes

R: And of course most professional engineers when they saw the table like, the tabling wind turbines on urban building all kind of threw their hands in the air and went 'Woah, this is crazy' but then the planners and their Clients couldn't get buildings approved without doing it.

I: Yes.

R: So you can't sit at a table with a Client who is paying you a lot of money and stop them from getting planning permission by suggesting something different that the planners won't accept so it is a...it was not flexible, there was no flexibility; it was the desired solution to achieve a renewable target. We ended up several times, and this is by way of proof of this, with solutions developed early days in 2006 by consultants where after the event when we revisited we found a wind turbine on top of a large tower was becoming totally impractical and we then had to go for an alternative technology. In fact the one I am thinking of was actually solar water heating on top of a number of gardens over roofs on a building where the planning use of those roofs was communal space.

I: Uh huh.

R: So not only did we have something that didn't work, we had something that conflicted with the planning requirement from another time.

I: So X square meters per person...

R: So a lack of joined up thinking comes to mind here.

I: Are a lot of your developments in city centre locations where...

R: Most definitely.

I: where solar water, PVs things that you stick on the outside are...

R: Mainly urban, we did look at solar water heating and just dealing with a few flats at the top of the block because the principles of distributing all that low, at times very low grade energy down the building with all the losses and, you know, parasitic pump losses and so on and sending it back up the building; to anybody trying to design anything efficient that is anathema. So it is kind of don't do it, just crazy. It kind of took a while to get through all that, initially we all thought that this is madness and after five years we proved it was madness.

I: Yes

R: So, now the planners have realised it is madness so now we are going back to CHP and [inaudible word] community heating...

I: Okay

R:...but that leads on to lots of other questions.

I: So when you are developing these solutions how are you, kind of, assessing them for their, err, well its kind of, economic viability in the first place I suppose, and then their environmental performance. How are you verifying that they work?

R: We are obviously looking to meet the policy targets, but trying to do that in ways that aren't harmful to us in terms of additional costs. The, we did quickly look at the respective costs of various technologies and again that kind of, whether the regulators weren't aware of this but when you look at the price per kilogram of carbon dioxide equivalent that you knock out of your scheme per pound, there are couple of these things that are options that we originally allowed out on the table that are a country mile in terms of cost ahead of the rest. Obviously biomass, sort of three or four pounds, just off the top my head, you know a kind of a pound per kilogram of carbon dioxide you knock out your scheme in emissions, and you knot most he rest, solar, PV is still a country mile, several times, sometimes down to double figures, times the cost of that.

I: So in meeting legislation you are using technology to offset your carbon.

R: That is correct.

I: Are you taking any fabric measures to compensate that.

R: We are are indeed. But then again this would be another problem I have with the way things have progressed; is that all of the low hanging fruit is not being touched to an extent and I have structural problems with, err, the truly what needs to be a more up front and more prescriptive nature of the regulations in terms of say pipe insulation. Do we mean pipes or do we mean pipes or do we mean pipes, valves, flanges heat exchangers every single aspect. When you get in [clears throat] when you get in to an apartment and you have got a heat exchange or heat interface unit in an apartment

I: Hmm.

R: If you go to different manufacturers, the insulation on the pipework within that unit which is two or three metres worth of pipework.

I: Yes.

R: Which is worth considering.

I: Absolutely

R: Isn't insulated within the unit. But again then that is a cost pressure being put on the manufacturer of the heat interface units because they want to not insulate them because its about cost and is quite labour intensive but we then, that leads through, all of these issues leads through into to secondary and tertiary issues and then we then have one way of the energy losses to the apartment which at certain times of the year are useless, at the useless side of the equation.

I: uh huh.

R: We then have, er, gains in the summer which are undesirable which increase the overheating, possible overheating periods in the summer.

I: Yeah.

R: And complying with building regs on overheating and then putting in continually heated primary mains in to do domestic hot water is a bit of an issue. And some of these issues are not ones that it is easy for a developer to deal with. As I said before we sometimes buy schemes off plan from other people, so even if we have a very strong desire to influence the outcome in terms of, say for example of putting a hot cupboard or a heat exchange cupboard into a flat straight to the external wall within the internal corridor so that we don't have any length of uncontrolled primary pipework within the apartment, we couldn't do that because our lay outs are fixed. And quite often sold off plan by ourselves or somebody else at a very early stage. Quite often our sales team will get out there and sell schemes before we have even put a spade to the ground.

I: Okay, so you are absolutely stuck.

R: We are indeed pretty much. I mean we can make certain modifications otherwise we are stuck with it. So those kinds of things we can't influence the outcome because they are already locked into the scheme but those are the kind of things where the planners could be more prescriptive. It wouldn't be too difficult to say that in your scheme, you know, that the design of the apartment has to be such that the heating interface unit, for example, isn't accessed off the common corridor.

I: Hmm, yes.

R: And that improves maintenance, it also takes the gains away from the inside of the apartment and it could even be that sort of, you know, just push it to, it must be on an external wall [inaudible word or words] and every requirement like that, if it is not physically possible to do it because of some kind of site restraint, that wouldn't be very much different to lots of other criteria that are set by British regulations, British standards and these...

I: There are a lot of, having worked on a lot of housing schemes, social housing schemes, there are lots of National Housing Federation standards, social housing standards, there is a massive amount prescriptive stuff that is counter intuitive to everything else.

R: Cupboards in kitchens, storage

I: Yeah, yeah, exactly. The number of shelves you have to have in your airing cupboard which leave you no room for anything else. It is kind of a mess. If we can talk about the, this may well be a very simple answer, but how you actually assess the energy requirements of your buildings and the kind of impact, the way that you are meeting the legislation, how you assess that, do you do SAP calcs? Or anything else?

R: Yes we do, what we do; we obviously do the full submission for code for sustainable homes and all that implies, we do the... we fill out all of the forms for all the pre-assessment. We always start off with the pre-assessment at least at planning stage to find out roughly where we are going to be, then quite often we would commit to something; on some schemes under the old Ecohomes we committed to 'Excellent' and some schemes even early days. That brings in some energy carbon emission reduction aspects to that. Low energy lighting has gone through quite an interesting one, we jumped to quite a good fitting, which is generically referred to as cold cathode which they have now stopped making so in some of our schemes we have entire buildings full of cold cathode where we can't buy replacement lamps.

I: Right.

R: And the driver doesn't work with a conventional light so we are now, for some people, we are replacing those.

I: Right, and the pre-assessment process is presumably a means of getting some feedback from the planning department that you are...

R: That is correct yeah, it would be a requirement if you are Level 3 when it is err social housing funded, you know.

I: And is there a, there is a, you have to pay a fee for for a pre assessment now don't you?

R: Err, yeah you do a nominal fee to BRE. So that's all moving forward a bit now obviously, now they are looking nominally at level 4.

I: Yeah.

R: As a planning, a sort of, a base planning application now I believe would be pretty much a Level 4 application every time. Which is introducing slightly more stringent requirements in terms of energy and so on.

I: But it gives you some security as to the strategy that you are About to embark on and about to spend the time and the money on.

R: Indeed yes. The issue with the lights is a perfect example where the manufacturer is making a dash for a solution, erm, the light manufacturers have been going around in circles for a while and some of them have gone down that route of looking at alternative. Like a modified compact fluorescent type of light to get the efficiency and efficacy required for, erm, sort of meeting the low energy requirement. What has happened is that after a point the LED technology has started to move forward a bit faster...

I: Yep

R: and they have realised that, you know, hold on, as I have just said earlier where we want to get to is not here, 2010, where we want to get to is the right solution for the zero carbon approach that is inevitably at some point coming in. This technology is something that once we crack it we can make these and sell these ad infanatum.

I: Yes

R: So they really are looking into the future, they are looking for a replacement for tungsten halogen that they can make and just punt out of their factories in huge volumes at huge profit or reasonable profit for decades basically.

I: So...

R: they've all just suddenly, like the wind has changed direction, they've all suddenly gone from all those other options that were there.

I: Yeah.

R: Which, straight – one direction, everyone is doing LEDs now, you know.

I: because they are looking at the long term view on it whereas you are looking at the immediate...

R: That is right. So the fact that one day they are making cold cathode which is sitting, solving a problem for us, the next day they change their mind just because LED is now the way to go. Leaves us a bit high and dry really. That's the problem with the longevity of the technology and moving the goal posts, that's an example of that really.

I: Yes, I think the, I think the kind of technical, sorry, dig into your sandwich; I don't want to keep you from your lunch. The technical solutions are often the, are often the, our office has just been refurbished and it the UCL Energy Institute, which you would think would have some interest in how the building operates but our light fittings, it is a fairly cheap fit out, you know, Cat A landlords spec I guess, and the lights, we've got no light switches on the walls, we have got movement sensors which are on all the time and no controls to turn off the lights, they are set up in chunks that kind of span from the window to the kind of dark heart of the office so it is either, somebody is very dark, somebody's beside the window, so it is kind of...

R: Yep, someone's getting a sun tan and somebody's... yes certainly.

I: And the kind of energy ramifications of it are just...

R: hmm.

I: Are just kind of crazy and, some, it is a piece of, a kind of, piece of BCO legislations [sic] that somebody has followed to the letter without actually properly thinking about it. Err, how do you think, for instance the lighting stuff, and this kind of keeping, keeping up with changes in the legislation and ensuring the long term, there is a kind of dichotomy between the long term game that the LED manufacturers are playing and the kind of building fabric solutions and perhaps building service solutions which are looking at the most cost effective measures now. How do you think that kind of, err, different aspiration can be met? Or is it not an issue?

R: On a site that at Greenwich that is a thousand flats we are in a situation with the lighting option, we are probably going to go with a new LED lighting solution at a cost premium.

I: Right, okay.

R: And that's because it's offering the planners something that is a slight enhancement. We did have this excellent under Ecohomes as well, where we were going for excellent, and it adds something to the mix. It takes out some strategic losses for us in terms of having to revisit flats to fix lights in the early days of handover of the project.

I: Yeah.

R: And that's unreasonably, reasonably useful. It's also, it's a GU10, it doesn't have a driver these LEDs so we're looking for a trade off there; we're saying to the planners well this isn't a non-standard lamp cap but hang on a second these things last 50000 hours and the tungsten lights won't be available by the time these things start burn out, so we are, we are trading , hopefully getting a trade off with...

I: Do you offset some of your Ecohomes points elsewhere to get rid some, can you down-spec elsewhere?

R: Yes, well we can do, but it's more really just saying this is the easiest solution for us for the lighting but it has this side benefit that it lasts a lot longer than tungsten that won't be available so we've got no concerns on how it's non-standard lamp caps you know. Erm, and people understand how to replace a GU10, you push it in and you turn it, a lot of the other types of lamps we are getting, some ridiculous kitchen lights for under cupboards and all sorts, to the average person it is not always clear how to, to change the lamp and more elderly or visually challenged people have a problem actually changing the bloomin' bulbs so we end up, our [inaudible word] and/or our response maintenance people go back in just by necessity to, you know, help these people out with that you know. And it sort of gets reported as a defect so we have to go in and have a look, you know, so there are, there are strategic losses in all of that – it's too complex, it doesn't last long enough. And relamping for example whilst we dislike the cost as being an issue of capital cost, the scheme within the first year of handover, we might have almost relamped the entire lot, while we have been using the lights for beneficial use for decorating during construction you know,

I: Right

R: So you know we don't, then LEDs; presumably now if they last as long as they say they do.

I: You can put them in once...

R: Yes, they will still be there when we walk away so theres benefits in that, you know.

I: So would it be fair to say that the kind of design process, erm, kind of, decision making is primarily a kind of economic one? As it is in pretty much every office I imagine.

R: Yes indeed.

I: and that energy efficiency and environmental measures aren't primary drivers of your decision making other than to meet with the legislation?

R: No, having said that, we do try and do the right thing, we're not interested in doing the wrong thing and trying side step any of these, this legislation. Erm I think the consensus is it is generally a good thing, erm, some people come from the grounds of saying that they believe that climate change has run away with itself and that on those grounds alone we should deal with all of these issues, other people, actually like myself who would consider that it is a risk that we are not certain about yet that therefore needs managing but also I am primarily concerned with the wanton waste of energy and finite resources so the true kind of underlying sustainability angle is much more important to me personally but to the company, no we think it is a good thing that needs doing. We have a general in-house view though that the government and policy makers are asking the wrong people to deal with the problem.

I: Yes.

R: We are house builders, we are not utility companies, we do not supply energy and our customers in building the building [sic] we as developers do not control energy the utilities do.

I: Yeah and the...

R: Yes and therefore it should be dealt with more by those channels than it is by forcing additional measures on developers. The fabric stuff and so on, yeah by all means that is something that should be driven, so the current policy cuts across so many things and you know, they, the usual grants popping up, and enhanced capital allowances have been around for a long time but we have never managed to claim that successfully, I don't know anyone who has except by making a complete project within a project to attempt to claim it, you know.

I: yeah.

R: At huge cost and time and man hours put in erm, things like, err the RHI on the surface of it, it looks sensible and it looks like something we could tackle on a few schemes with biomass boilers but, having said that, err, I am sure that when I get in to read the detailed T's and C's that the err type of metering required and how it is metered will be so far away from what we have currently got that we won't be able to claim it.

I: And they [the government] are currently reassessing how that operates along as well with the FITs as well.

R: Yes, that's right.

I: So nobody is going to invests now when...

R: That right, again, you could take a decision in theory at the beginning of a project to put a larger biomass boiler in, in terms of a return on an investment due to the, the introduction of RHI

CR; Yes

R: and that liable to go the same way, as just mentioned, FIT is being, or they are attempting to change it as you probably well know it is being challenged, the change ,but, yeah I mean just complete madness, you know. Again, there is like, moving the goal posts in terms of the policies and requirements that we are trying are nevermind actually then introducing something that you pull the rug from under people as soon as they have got themselves set up to benefit from it.

I: Yeah.

R: And I think the number of companies that have invested serious money er, I can name a FTSE listed company, Mears Group, and they reckon they have binned 2 million pounds because they won't do PV for social housing which is the main strand of their work and they have binned two million pounds, or wrote off two million pounds in their accounts on the basis of the FIT tariff having been changed. They looked at new subsidy figure and they just ditched it.

I: yeah.

R: And they binned the two million pounds that they invested in th escheme.

I: I mean the PV industry is also in chaos it also has had the rug pulled from under it.

R: So I am not happy with all that kind of thing, it is not very clever really.

I: Yes, I think that you raise a good point about the energy supply, because the idea that you wrestling with whether or not to put a tungsten bulb or an LED bulb is going to solve the more fundamental structural problems with the UK and energy demand is, is kind of nuts.

R: If we had had a dash for nuclear instead of a dash for gas 30 years ago, we would be you know, in a different position.

I: Quite

R: So these are nationwide energy policy issues and you know utility company energy supply issues and, I don't know, a framework there on their side that is driven by commercial considerations and... so me sitting here and saying we use cost, the cost as a driver, well no shame on us because we use a fraction of the energy that, profligately waste a fraction of the energy that utility companies waste

I: Exactly

R: So why beat us with a big stick over a tiny bit of energy you know. I mean I know people put on these arguments about the fact that half the housing that will exist in 2050 hasn't been built well that figure isn't the same now that we are building a hundred thousand houses a year. You know.

I: Hmm.

R: SO setting policy off the back of un measurable things is never really a good thing.

I: Setting policy on badly measured things as well is not a good idea.

R: You shouldn't bet on a horse if haven't seen it., it might only have three legs!

I: Quite, exactly!

R: So...

I: So you touched on handover there, erm, do you use any, I mean I know Part L as built is coming in, whether there is going to be... I am not sure it is for residential as well and whether it is going to be a rigorous check of how buildings have been built but do you, and in commercial sectors and perhaps education sectors 'Soft Landing' is a way of kind of managing the process.

R: Yep.

I: And, would you use any particular method of managing that?

R: We don't. We have got schemes now, you know big schemes handed over in the last couple of years we do standard as built manuals and so on, we do bits along the direction of the CIBSE style kind of management plan for the building. There's no prescriptive requirement for us at the moment to do any post occupancy evaluation as far as I'm aware but one of the things that is a good idea is to do post occupancy commissioning. So revisiting commissioning after 6 months.

I: Hmm mm.

R: And test and just recommission, but obviously that needs to a third party company and not the mechanical contractor who was involved say, at day one. Because they have a vested interest in ticking a box and saying that the system is all hunky-dory.

I: Okay.

R: I think there are problems, it is a bit like, you don't, you know the, you can't sort of, have the police checking the police is not the right way of going about these things and some of the things in UK construction are, unlike around the work, set up on that basis. The police police the police, which is crazy.

I: Yes.

R: The construction industry, the main contractor pulls the purse strings and tells everybody what he wants and he gets it you know. Erm, in the States, someone at a recent conference made a very good point when he was talking through the comparison to commissioning in the States and commissioning in the UK. In the United States, the Client appoints the commissioning companies.

I: Right.

R: Directly. Not the contractors you know. So the commissioning company have a role to audit the contractors.

I: Right.

R: And they have a free reign on that because they're bills is being paid by the Contractor not the, sorry, by the Client not the contractor. And that makes perfect sense to me, that is just, you know, er I'd imagine most people would see that as such a, you know, quantum leap that we would never get it implemented in the UK or changed, there's too many vested interests an...

I: Yeah, yeah. People don't want their buildings checked.

R: They don't, that's right.

I: So, if you are using a secondary commissioning sort of 6 months later, as seasonal commissioning almost.

R: Yeah, that's right a seasonal commissioning. Exactly.

I: Are you, do you have a mechanism for getting that information back to the original contractor to, or to your original build team or design team to ensure that any issues that arise are picked up in future designs?

R: I've got a very wide ranging job in this company, and I'm kind of the key person that that information comes backward and forwards through, but I do find I devote a certain amount of time to those kinds of activities but I find that I am often beating my head against the wall. In that contractors, consultants, even the larger ones have little time again for commercial reasons to spend on these non-fee generating aspects.

CRL: Yeah

R: Even the likes of Hoare Lee, you would expect to have some element of an R and D sort of thing going on with their practice, we find it is a few directors with an interest who are hobby keeping ahead of the regulations. As it were.

I: Okay!

R: They have a more slightly formalised process when something new comes on the table in terms of regulations, building regs whatever, they have a few committees and they sit around and they probably consider modifying their specifications to reflect it, which is more than your tiny kind of, you know, under 10 person M&E consultancy, might do. They'll probably only do it when somebody else points out that they haven't done it. You know that's, there's a whole different series of modus operandi that goes to the different levels and size and shape of consultancy and contracting businesses.

I: Yep.

R: A lot of mechanical and electrical contractors are not terribly [inaudible] to it. But a little bit of a dash to design and build 15 years ago made a lot of think they could do design, you know.

I: Yes.

R: And, you know, it hasn't totally worked you, you know, it works out better in larger practices, in larger, you know, a hundred million pound contractors who are actually better because they can actually afford to carry a decent design office but some of the smaller companies we found there were issues with that.

I: So are, is it fair to say that you are the [developer employer] database for knowledge?

R: Exactly I have just come...

I: Are you checking, I mean I don't know what your actual kind of day to day work is, but are you checking a set of drawings and applying this knowledge which is held somewhere else to site rather than relying on [inaudible]

R: [inaudible] and now we have built three or four of these fairly large heat schemes I have now got a heating knowledge that goes back three years. So

I: Right

R: You know, It ranges. One of the biggest problems for us yeah, the biggest problem in terms of what we do in terms of sticking to the knitting which is to make properties that people like in locations they like and to a reasonable quality at the right price.

I: Yes.

R: Sell them off plan, get properties flow, that's how we make our money, I'll not make any illusions about that. That is primarily what we do. And the thing is that is hurting us most at the moment is the availability and down time of these community heating schemes. They actually don't work a lot of the time.

I: Right.

R: Now, I'm a 30 year experienced originally mechanical set engineer, I've been doing electrical and detail for the last 15, you know I know what is going on with all of this but consultants to a degree have sold us a pup. And told the contractors and controls companies how it should work and how we should set up the control philosophy wise, you know, details of where to position the various centres of the system and the systems just sort of dry cycles, they do all sorts and then if the pressure, if there is a very small leak, and the pressure goes down the range of low pressure limit is set too high and then that is an automatic disabling of all the boilers and that happens on a Sunday night and then somebody won't find out about it until resident complains about the next morning and if the systems been off for 12 hours plus and waters going round the system at 20 degrees centigrade and you know, that has happened on one of schemes four times including on Christmas eve.

I: Right.

Now, you've got a 70% occupied 220 apartment scheme there.

I: Right.

R: I think the first time that happened, especially as one of the glitches was shortly after people had moved in, they would probably say, you know, well ho hum, you know occasionally. you know, shit happens to not put too fine a point on it

I: yes

R: And therefore well, therefore okay we will accept that, and we are sure it won't happen again. But then after it happens for the fourth time you can be bloomin' sure that all of these people are running around telling their friends to never get involved in buying a house in a scheme that has community heating in it.

I: Yes.

R: So, the [inaudible - community heating?] is getting a really bad name and we are struggling with that because of the lack of knowledge with contractors and consultants about how the schemes and plant rooms and boilers should actually physically work, you know. They are not dealing with this as horses for courses, they are just sort of punting out the same old, you know, tired and work documentation for something that, you know, it is just not good enough for. Either in terms of running efficiently and/or keeping the scheme running, you know, that's, that's a big, big, big problem that's damaging our reputation very significantly.

I: So how do you stop it, do you think if they had a POE, presumably they don't do any POE on the stuff that they design, they don't come in and see if it's working or how it is working, they just kind of chuck out the drawings and disappear.

R: No, our, one of ways [inaudible] kind of thing is that previously within a defects liability periods we would of let the contractors who installed the M&E go back and do any sort of any kind of response issue.

I: Right

R: After, for the first 12 months, 'cause it saved us having too much in place in terms of response maintenance to go back.

I: Yep

R: So the first port of call would be them but when you get into the complexity of these community heating schemes that's no longer appropriate.

I: Right

R: And our whole reporting change actually looking back isn't really set up to deal with those kinds of faults and problems. So first of is the problem of picking up what happens very shortly after it happens, that's not working.

I: Right

R: Because quite often it can be after hours when there's no concierge there etc. He may call the wrong person, we initially get one person going in who might be like a boiler engineer.

I: Hmm mm.

R: But in reality it is a problem with the pressurisation unit.

I: Right, so it is kind of the complexity of...

R: So then he goes in; 'No it's not me, I've checked my bit', he goes away again. Then he comes in [gesturing to another person]; 'No it's not me, I've checked my bit', he goes away again, he comes back [gesturing to the original person] and, a 400 property scheme in Docklands we had a boiler outage for most of four days would you believe.

I: Right.

R: Actually, I only heard about it on Monday and it had been out since the Thursday night.

I: Alright.

R: Unbelievably, you know, haha. What it was, was the gas cylinder valve, and again this is down to redundancy and the availability things about redundancy in the system.

I: yep.

R: One gas cylinder valve served the plant room, serves the entire boiler house. So when that valve burns out or sticks: Off.

I: And you've got 200 houses...

R: 400 Properties, depending on space heating and hot water for that.

I: And presumably in the meantime, the measure that is designed to save energy in the long-term, 400 flats have gone out and bought heaters or air conditioners or whatever and plugged them in.

R: The big problem with this is comparing it to what people are used to. They are used to a gas boiler with hot water in the house.

I: Yes.

R: And if they have pressed the default, picked up the instructions once when they moved in and hit the default button for selections of time and on offs. They could probably, set the temperature to 21 degrees, they could probably live with that four years without doing anything else with it. And if you think about buying a house or moving into a flat, how often, over a period of five years, does your boiler fail such, you know, heating and hot water[inaudible].

I: Hmm

R: Very, very rarely, you know. I mean, I must look up the figures for it, but I'm sure its over a one, probably about a one in eight, nine, ten year occurrence, your domestic heating system, you walk in one morning or you get up and there's no heating or hot water.

I: Yes

R: One in ten years, you know. If you do a reasonable every couple of years maintenance on it.

I: Its true.

R: People are just not used to these schemes and just not having hot water and not having heating and at this time of year obviously it is a huge issue. You know. And hot water for people with kids, babies, you know the whole thing it causes, it is very emotive and people are quite rightly throwing their toys out of the pram over this. It is very, very damaging for us.

I: Yes.

R: But there is nothing in regulations that would have helped us to get round the problem.

I: So you have to rely on the leverage of the regulations these guys are designing to, I mean if you've got the knowledge to, you know, understand why this isn't working but they're, your consultants are

still producing things that are damaging your reputation. Is it because they are, you need that, you are kind of bound to have that system because of planning or Code for Sustainable Homes or whatever.

R: No, it wouldn't have covered it as far as I am aware. All of these problems are not addressed by policy in any kind of prescriptive way so the consultants really I suppose and the contractors haven't done their job properly is much what it amounts to.

I: Hmm.

R: That's pretty much what it amounts to. But we, we are able to look and see the various problems that are occurring in different types and I have now got a whole series of issues that I know right, next time we need to do that, we need more monitoring, you know we need more commissioning valves because sometimes going back to hotels and things we have built, the contractors going 'Yes, commissioning valve here, here, here, here and here' and then the last bit you need to trouble shoot it, there isn't a commissioning valve no means of measuring the flow rate.

I: Yes.

R: So suddenly at that point you have done a lot of work and don't where it is actually going wrong because you've found the fault but you can't test it. So those sort of issues do arise so it is not following, following good, good practice you know. I must confess that the consultants and contractors that we use, we don't pay a lot of money. We get very competitive rates from these people.

I: Yes

R: But it does have these other problems, so if were to say at the moment we were the wrong side of the line on that. We, we will undoubtedly have to spend some money to take us back across the other side of the line on it. To make it, you know the availability and less down time on these schemes and protect the schemes themselves and make them slightly more efficient and so. Because they are needlessly just not set up correctly, the boilers are dry cycling and so on but just not efficiently. Just because of the lack of detailed planning of the control philosophy for the plant rooms and stuff.

I: I am trying to think of a means of getting that information across to the consultants so that they can kind of design it out.

R: Some sort of, you know DCLG research led research and you know quick templating of how these community plant rooms are going to work.

I: Right.

R: You could do a couple of examples too, some for say a 200kW boiler serving 30-odd, 40-odd or 50 flats or 60 flats, something for a 200 apartment scheme and something for a 1000 apartments where you got like proper, almost a section of a recovered district energy network going or district heating network going. And how to set these up and how to do basic control philosophy designed for that. So it needs that prescriptive 'that this is the way you do it'. We don't expect to see something that, put it this way, this what I am saying; at the moment the one thing, if there is anything we'll say is 'we can't run these schemes efficiently.

I: Yes

R: You know, we are supposed to go in and commission them but there is no, there's nobody you know, police man coming along after us saying, well, have you done all this have you done that, you know, is the scheme operating efficiently? Which is when they might say, well someone's been tinkering with it, you know so, who cares? You know, there's no penalty, no comeback, no gains, no financial gain for us, no benefit. The residents yes we are concerned that they do not pay bills and are profligate .

I: Yes.

R: And are way over the top but on most of our schemes they don't. I mean, we've got some schemes we operate on a business as usual case, so present the heating scheme part of a variable charge on it, er some part of the service charge and we charge out the rest of heat recovery plus small administration fees to pay for billing and metering. Our rates are typically 6 - 7 pence per kilowatt hour which compared with 13 pence per kilowatt hour for electricity.

I: Yes

R: And that's pretty good. An ESCO I was chatting to recently was trying to charge the equivalent of 16 pence a kilowatt hour.

I: Hmm.

R: So that side of things we are not doing the wrong thing there.

I: Yeah, yeah, yeah, I am not...

R: because we could add another 10 pence onto that and make it 16 pence and pocket the cash ourselves. You know, we may do that on some schemes, we talking about, we may introduce an element of that but you know keeping it reasonable but that's.

I: The community heating scheme, will that still be a viable solution given the changes, the future changes, the 2016 regs?

R: I could answer that question if I had any confidence and/or proper knowledge of what the 2016 regs are going to look like!

I: Okay, so you don't know, I am just wondering if kind of developing solutions to problems that exist in this system is being hindered by the fact that nobody know what's going to happen or if there..

R: Second guessing it I would say, the idea of allowable solutions as I currently understand it is probably not going to be a runner.

I: Yeah.

R: I think the sort of things that have been mooted as falling under that top of the pyramid allowable solutions bit to have so many regulatory, tax, legal problems that we would need a hoard of barristers to work out the first contract on one of those. It's like, don't even go there, you know, it's like what a waste of time, energy and effort.

I: Hmm.

R: It's just, I don't see that they will really achieve what they need to achieve by doing that. Will it make us invest in wind whenever, what happens when, you know, people stop investing in wind, well then we will be the only people investing in wind. It will be like, you know well Great! Why? You know it's like, you know. It's, to use a phrase a colleague is very fond of it is like a bag of frogs, wrestling a bag of frogs. You push one and they all jump out the other side somewhere. There are just so many variables in this, that I can see why they have so many problems in pinning down a reasonable overall strategy to go forwards, you know.

I: Yeah

R: But I think they missed a trick on the basis that we're, out nuclear power stations are falling by the wayside, we have this often predicted, for thirty years people have been predicting this energy shortfall, certainly electricity generation shortfall heading toward 2030, that I think, imagine is definitely going to happen.

I: Yeah, Nobodies...

R: [Inaudible] nobodies done anything about.

I: Political paralysis over...

R: Yeah, so, exactly right. So if they had of made the decision then, to force through and to back a few nuclear power stations, we would be further ahead with all this other low carbon strategy has done.

I: I get the impression that that nuclear is deemed so contentious that nobody wants, everybody is just thinking I'm going to put that off, and hopefully it is going to be decided not on my watch. It is going to happen at some point, it is going to have to happen, I just don't want to have to make that decision.

R: It is clear that in the medium term it has to be in there.

I: Yes.

R: , I think that is clear. And [inaudible] should surely have worked that out, it has to be in in the medium term because if you take it off and don't do it you compromise the energy supply. You know, the volatility in areas that we didn't think we're going to be about oil supply and gas supply are there now.

I: Hmm

R: So it has proved to be entirely the wrong decision and could be very serious in the future, in the next 10 years or so.

I: Can we check the time, do you know how long we have been here for? 40 minutes.

R: Yeah, we're fine.

I: Erm can we go back, as far as I understand you've got, I may be wrong, you've got a kind of set of solutions that you have developed to meet the certain regulations and they are constantly changing and you have also got a load of information out of your buildings, a load of problems that you kind of identify during the defects liability phase or handover stage and I get the impression that the solutions you have developed are quite well managed and it is understood what they are and you are building them well but the problem is getting the information the information out of the buildings back into the process. Is that fair or not fair?

R: erm it's, the feedback loop is difficult to close because in our... We obviously make a decision, we are the Client, we are paying these bills, we are paying the lead consultant, we are paying the contractor to install these schemes but at the end of the day if we give them a document that is full of holes there, is anything they can do about it.

I: Yes.

R: So contractually, you know I don't have the, I can't, I can't force them to adopt something that something that is not in the specification.

I: Yeah.

R: I mean I can try, maybe somebody should. On the basis of oblique references to British Standards I should make them do everything lock stock and barrel. I think you could probably, in any specification with those oblique references to almost all and sundry building British standards you could probably bankrupt a contractor quite readily!

I: Yeah, haha!

R: I imagine that is true.

I: And end up with an incredibly expensive piece of kit as well.

R: Exactly, you know, because the things they buy are undoubtedly cheap because of various reasons.

I: Yeah.

R: Make them do things that are implied, well there is never enough schematic drawings, it was never on the drawing, well should have looked what's in the spec, you know.

I: So do you invite you, do your consultants ever approach you to come and do some POE stuff or...try and get in to your buildings?

R: Nope.

I: I think that is pretty much standard fare.

R: the closest I am getting is with [large consulting firm], I am talking to [First name, unknown to Interviewer] and [mutual business acquaintance] about doing this Technology Strategy Boards application.

I: Ahh right.

R: Which I was in today actually.

I: The BPE stuff?

R: Which is for the Post Occupancy Evaluation.

I: [mutual business acquaintance] sits on the CarbonBuzz development.

R: Yes, so they're looking at that, so we'll go back and provide the building and do as much help as we can.

I: Right.

R: Er, if one of our maintenance contractors combines their resources that would be quite helpful as well.

I: Uh huh

R: Looking at the things we need to look at going forward so, the idea is to monitor the first phase of the development of [inaudible]/

CR; Yeah, I was at the, the BPE non-domestic conference the other day, a load of really good information coming out of that.

R: Hmm, on what we are talking about here that would be the first sort of strand of

I: Okay.

R: of really trying to make that work and get these answers.

I: And try and formalise the feedback loop.

R: Definitely.

I: Okay, my last sort of question, you have given me lots of good insights, you are working to legislation and guidance which is fair enough, but what could incentivise you to go further or your consultants to improve their performance in terms of getting things right the first time and kind of improving the way they design buildings?

R: I thinking building regs is a way to change things but slower.

I: Slower?

R: Yeah.

I: or in bigger jumps?

R: Yep, It would have been better we should have set 20, we should three year of developing and researching properly spending the money on the 2016 target as appropriate then tested it and tested the impact assessments, done everything we want to do for regulatory change which I believe has been skipped on some of this energy stuff that has come through recently. So we should have done that properly and left it another five years the let everybody, every single new build commercial or otherwise would comply with a complete set of requirements, with their building you know.

I: Yes.

R: Do it once. Mark it, everybody would be behind that, they'd know the timescale that they need to develop it, they'd know they would have to do it and get that in one go.

I: Yes, rather piecemeal slow escalation is not,

R: there is a drag and , you know, inefficiency in that that is clearly seen I think,

I: All right, erm I think we have been at it for about 45 minutes, so I will let you get back to your sandwich but that was incredibly useful, I really appreciate that, it was great.

R: No problem, glad to help.

1.3 Architect 03

Interviewee:	Architect 03 (R)
Interviewer:	Craig Robertson (I)
Location:	Central House, WC1H 0NN
Time/Date:	12:00 / 20.01.12
Duration	35:27

I: indicates the interviewer is speaking

R: indicates respondent is speaking

[square brackets] indicate notes added during transcription

... indicates pause/break in speech

Transcription:

I: The idea is, as the information sheet says, to kind of understand how you, how you, how, kind of energy data impacts on your practice...

R: Hmm

I: ...and the way you carry out your practice ...

R: Right

I: ...and the way you design things. Err, I am going to ask questions in order to understand that not necessarily, I am not kind of here to criticise or anything...

R: Okay, no, that is fine

I: Which it may come across as. Errr, so yeah, it is kind of semi-structured, so I have got 6 themes.

R: Fine

I: so we can just go through that.

R: Okay

I: So if we could start by, if you could tell me a bit about your practice and the kind of work you do and...

R: Okay, well we are quite a small practice but we do, well, anything that comes along but mainly it's residential and commercial erm, quite a lot of refurb, err, or refitting, erm no er yes, kind of small to medium sized projects.

I: Right and your practice has a particular attitude to energy consumption?

R: Oh yes, yeah, yeah we do. And we try yeah, I mean our primary focus is to create low energy buildings where, we don't have a defined benchmark that we have to achieve on any particular project, it is kind of kind of worked out with the Client. So it's it's where it fits happily with their budget

I: Hmm

R: and their aims and ambitions and the building

I: So you do stuff...

R: So, in other words although we can, have done and are doing Passivhaus buildings, it's not the, you know, it's not, it's not only Passivhaus.

I: Yeah.

R: You know there is a kind of spectrum.

I: So you do stuff meets current regulations?

I: Well, always exceeding it yes, always exceeding current regulations so, but not necessarily going to, kind of, Passivhaus air tightnesses.

R: Okay

I: Does that makes sense?

R: and do you push your Clients to go beyond that, er b-er always exceeding it? Your...

R: Always...

I: ...commercial Clients in particular how does...

R: Erm, well we'd just, erm well we push to go always beyond building regs and then it's generally Clients will go along with ot when you explain that it's just the cost of the extra insulation [laughs]

I: Yeah

R: But, ahm, erm yeah, I suppose, yeah. Sorry what was the question?

I: Er, well there wasn't really a particular question.

R: Okay, nyeah, no, yeah we try and yes and I, it's actually. Most Clients are quite er, receptive to being better insulated etc etc... does that answer the question?

I: Yeah!, yeah erm do, so you like, in the sort of variance in Clients or aspirations for a project, do you use the same methods of making decisions or the same means of...

R: Err

I: ...reporting the, or justifying decisions?

R: Err... no not really, it's a, it's a bit, I have to admit, it's a bit ad hoc. To be honest. I think it depends er, decision are made, erm, a lot to do with erm, well cost, construction parameters, space, erm yeah, that's about it really.

I: So, I mean, I understand that energy isn't the, the primary [laughs]

R: No, no, well.

I: primary pressure on, kind of, development decisions... but I suppose I am interested in the difference between the people who are not particularly interested in er, a low energy building and somebody who is interested in paying for a Passivhaus and how, well, what your experience of the difference in justifying decisions or kind of...

R: Err

I: encouraging people to do that.

R: I think the big, the big difference is, I think it's it's a lot to do with knowledge that Clients who are wanting something like a Passivhaus are erm... have done some research

I: Hmm mm

R: and kind of understand the principles. I think a lot of people come wanting, kind of, low energy without really understanding what it means and there is quite a bit of, often you have to explain what that involves...

I: Right

R: and there is an extra cost. Erm, I mean there is a big reluctance in going for Passivhaus in particular because there is this big misconception about ventilation.

I: Hmm

R: Which a lot of people just kind of, can't get their head round. I mean we've got one project that erm, we, it's been design to Passivhaus standards but he just won't, he wants to put under floor heating in [laughs]

I: Right, which is

R: Well,

I: Anathema to the

R: Well yes, but I, it's quite interesting, yeah, it's quite interesting because they live, currently live in a very draughty old falling down house, so their only con... their only, their, their most focussed experience is being cold.

I: Right.

R: And that's what their terrified of in their new house.

I: Right, so they are just sort of throwing everything at it.

R: Yes, so in spite of, and it's quite difficult, I... we haven't quite discovered how to try and persuade that, well apart from telling them, to convince them that they just don't need it and erm... So I would just, there are kind of perceptions so it's quite, sometimes it's quite difficult to convince people the need of what you are doing.

I: What, so how do you try to convince them, I mean do you give...

R: Well we have...

I: them data or do you.

R: Well or no, contact with other Clients, er data is quite difficult for most, or a lot of Clients aren't really able to digest...

I: Yeah

R: ...data because it is kind if an alien

I: Well

R: value system

I: Yeah, yell I mean, Yeah, I mean like temperature, you know, its this warm in this room...

R: Ah, well, what we do do is erm get them talk to other Clients.

I: Right.

R: So they can actually speak to somebody who has lived in somewhere.

I: Okay, but its not a kind of formalised...

R: No, no

I: It's just 'phone this guy up'

R: Yeah. So perhaps we should I don't know... I think it's quite difficult ,I mean people can understand, well, it's even difficult for people to sort of get their head around kilowatt hours; I mean, how many kilowatt hours am I using? Erm obviously cost is one thing because people can relate to pounds erm but then its always marrying it up with understanding how comfortable they are going to be because there's the, you can, you know you can have a very, haha, you can have no energy bills and be bloody freezing.

I: Yeah

R: So it's, its, its, h-how you, yes I think it's quite interesting, how you can con-convey to people their reduced energy requirements and their increased comfort

I: Yeah it is the kind of...

R: without actually being able to experience it.

I: Yeah, and another, I think there is a sort of misconception about energy efficiency: it is assumed that if something is low energy it is therefore efficient but it's...

R: Exactly.

I: but it might just be freezing, or...

R: Exactly

I: Or it might be, it might be using far more than it kind of...

R: Well yes, that can happen. Hmm. So I guess the short answer is there is nothing really formal.

I: Hmm

R: Erm, Err, and I think that is a reflection probably of the fact that... We are always dealing with different people who have different knowledge levels so you have to kind of pitch it differently each time.

I: So in contrast to someone a Passivhaus say, like, if you are doing a commercial fit out for somebody who's not particularly interested in that, is their the same knowledge discrepancy in even convincing them to even go beyond, or is that easier to convince them to go beyond.

R: I think erm, I think in commercial situations its, its very much more cost driven in terms of capital cost.

I: Hmm

R: Erm, yeah.

I: So is it a payback period you have to convince them on on that or is it a...

R: Erm ahh, well I suppose it could be, er if one did it!

[both laugh]

R: Erm I am just trying to think. Erm...I think, well in recent commercial ones we have done we have actually just, we've I have to say we have just gone up to building regs actually because there's quite a few things that tip the balance with bigger commercial projects.

I: Hmm, yeah.

R: Once you get beyond certain, so er and that's really, I think that just driven by, by regs... so there's no need to give any, you just stick by what you've got to do.

I: Yeah, because of commercial pressures.

R: Yeah, exactly. Yeah.

I: Is there kind of, the n... the, there are kind of a number of incentive schemes...

R: Well for example, yeah, well, I mean also there are on, a recent project we had erm it was a practical consideration that if we'd gone any deeper on the roof we would have had to have changed the roof structure.

I: Right, you'd have had to have what?

R: Changed the roof structure.

I: Right, so your...

R: Because, you know, we were trying to do it yeah, so the cost would have gone up disproportionately.

I: So it is no longer just your deeper insulation it is your deeper

R: Yeah, yeah.

I: it is your deeper roof truss.

R: Exactly.

I: Yeah.

R: So we'd have had to have changed the existing structure as opposed to just sticking another sheet on top... So that, that would, that is the kind of situation where it kind of suddenly the cost escalates.

I: Yep.

R: So it's not just a bit of extra insulation.

I: Yeah, so how do you um, what software do you use, or do you use any software to analyse that.

R: Hmm.

I: The kind of U-values, is it SAP calcs or...

R: SAP calcs.

I: And you must, presumably use PHPP for your...

R: Yep, SAP Calcs I have to say we'd send, I send away to, nut we do PHPP.

I: and your SAP calcs, when you send them away, what information do you get back? Is, it, in, kind of...

R: Mind-boggling. Sheets of information that I have to admit I do not understand.

I: Really.

R: Hmm.

I: What sort of stuff though, cause...

R: Oh, oh god, I should have brought one for you, erm

I: Do you get back things like, if something's not compliant or isn't meeting the particular target it has to meet do they supply you with suggestions of how to...

R: No

I: ...how to then make it comply?

R: Err, oh sometimes if you ask yeah. Sorry I am just trying to think, it just this kind of sheet of kind of mesmerising numbers and I ca.. no I

I: No, no, I don't, I think the SAP calcs are kind of deliberately obtuse [laughs] because its just...

R: Yeah, so erm.

I: Do you think the person that sends, does them for has a handle on what it all means?

R: Oh yes they do and it's probably just me that is not focussing, I just erm, just wanted the kind of bottom line sometimes .

I: Yeah yeah

R: That just says, 'okay that's fine'. Yeah, erm, ooh, I would have to go and have a look, I can get...

I: No, No, it is just out of interest, other people I have spoken to, their experience of sending out sending out SAP calcs is they just get a bottom line back and then when they, if it's not meeting what they wanna, wanna get out of it...

R: Yeah

I: asking their extremely cheap SAP calculation person

R: What do you have to do?

I: What should I do do this?

R: That's kind of, that's kind of.

I: and they are kind of like [exhales to communicate 'I don't know']

R: Well, that's kind of, the guy that we use is actually quite knowledgeable on building energy use etc and he does think about it, but yes, we focus on the bottom line so okay, what do we do now?

I: So, kind of, is there sort of an iterative exchange of

R: Well sometimes.

I: between this guy and...

R: Sometime, sometimes, it depends on the project

I: yeah.

R: But it, there could be.

I: Right, and presumably with PHPP that it is an iterative tool?

R: Yeah that is, well that is, yeah that's a lot easier to

I: its

R: twiddle around with in some, well I suppose because we've got that in the office not S..., we haven't got the SAP one. So er that is easier to fiddle around with. Erm. Yes and it is, I mean that's that's the way it needs to be used, as a kind of design tool.

I: So that sort of validates your decisions?

R: Hmm, hmm

I: [clears throat]

R: and design changes.

I: Yeah, so its easy, would you say, presumably it is easier, if you are doing something to a passivhaus standard. Or can you use passive, can you use PHPP to design...

R: Anything.

I: Anything?

R: Yes.

I: Do you use it do design anything?

R: Yeah, well it's just a good way of knowing

I: Yeah,

R: it's quite good because you can err, I mean there are some kind of fundamental differences just in, that you have to get to grips with just in terms of what it constitutes as usable floor area,.

I: Right.

R: Which is totally different to the standard UK ...

I: Okay,

R: System, but once you've got that in and it's also got a very way of working out U-Values which is, 'cause I, we've got the er BRE one as well.

L: Which is that? What one is that?

R: erm it's just their U-Value calculator and they do actual come up with slightly different U-Values, because the PHP is slightly more in depth in that it allows you to put in cold bridging

I: Hmm.

R: erm specifically erm..but once you have got those in you can start fiddling around and then once you got knid of your main data in you can then start playing around with your U-Values and it very quickly gives you an indication of your energy consumption at the end.

I: Right.

R: Likewise with changing window sizes. Or glazing spec which it can make an enormous amount of difference if you are just to start changing your, you know, the outer pain for example.

I: Hmm

R: And you can see, then you've got, so, then you've got an immediate response and then you can then see the bottom line which, whether it gets to 15 or not [the Passivhaus kWh/m² standard] it doesn't really matter, you know if you're not...

I: Exactly.

R: but you can then see well its 20, well we know we can fiddle around with that and get it lower.

I: Right.

R: and if you using 15 as a benchmark which is the kind of point at which your then, pretty confident that you will be able to do without a heating system.

I: Hmm mm.

R: Then that's quite a good way of doing it.

I: I've never, I've got a copy of PHPP but I haven't...

R: It is extraordinarily difficult to use unless you have somebody to show you how to do it.

I: I am using, I have been just on my own house using energy plus, which is a horrible horrible thing to use so perhaps I will put it in to PHPP and see what helps. So do you, does, do you monitor, then go and monitor the houses after to find out if you are,

R: Well.

I: how close you are to the PHPP model is?

R: Well we ha... we are doing this one in Scotland we did, that is supposedly being monitored at the moment but not terribly scientifically...erm in that they have got energy readings kind of coming out of it.

I: right.

R: but we haven't really got that complimented yet with er room temperature sensors.

I: Okay.

R: To correlate

I: Yeah

R: Comfort levels erm, but er, and er we are, have got another project where we are monitoring and its really just a question of erm without funding it's just a question of taking energy bills.

I: Yep

R: So.

I: And do you still have a relationship with your Clients?

R: yep.

I: Do you presumably get

R: [inaudible]

I: anecdotal...

R: Sorry?

I: Presumably you get anecdotal...

R: yeah, no, yeah, anecdotal evidence [laughs]

I: of problems or successes?

R: And I'll tell you one of the biggest things is our renewable technologies not working. That is the biggest.

I: and what is the renewables on that.

R: on the one, this one in Clapham its erm, er PVT which is combined solar thermal and photovoltaics

I: Ahh, I've never heard of PVT.

R: Yeah, no, it's quite good. You get a PV panel

I: Uh huh.

R: and then under the thermal because when the PV

I: the PV

R: creates heat

I: Right

And then the thermal takes the heat away from the pV which actually makes it more efficient...

I: Yep .

R: and then you get the heat as well

I: Right.

I: For your hot water. Erm, er...yeah... so we have had issues with that but it is performing now better and... but em when I was monitoring, and I don't know if this is going off the track a bit...

I: No, No

R: when I was monitoring er energy use in our street, comparative, comparing other houses.

I: Hmm mm.

R: One of the houses has solar thermal panels on it, on a south facing roof

I: Yeah.

R: 'Cause the ones on our roof are actually east.

I: Right.

R: Which isn't ideal but, I'll come back to that. Anyway, so in the course of monitoring I was able to tell my neighbour that his panels weren't working because I could compare his gas consumption through summer with our house and other houses in the street and his gas consumption was hardly less than other people who didn't have...

I: Right

R: solar panels and there's only two of them so, and everybody else was four in their house so it should be much less and it's because he hadn't turned his boiler off. The timing on his boiler was such that there was never any time for the solar water to heat up the tank because the boiler had always done it.

I: Right. It was, and it was, it was just doing it at a pre-set time.

R: Yeah, yeah, yeah, so. Because we turned our boiler off in April until the middle of October.

I: Right.

R: Even with an east facing roof. But you'd, you'd only have picked that up if you had been monitoring your gas bill.

I: But it's kind of extraordinary, or I find it extraordinary that somebody would go to the expense of installing solar collectors...

R: Its.

I: ... and then not check...

R: No

I: Or not monitor it, you know.

R: no, no, no, well no. That exactly what people do! Because people believe that it is plugged and that it's doing its thing. Nobody checks, nobody checks!

I: That's crazy though.

R: No, it's because the people who are selling the kit are selling kit, they are not selling you a way to save energy. So the way it's, they just get it, say its, well 'I've plugged it in and turned it on', that's all they are interested in. They are not interested in then making sure that go, that the customer knows how to monitor it and how to check that it's working or that it's actually saving them energy, they're just not interested.

I: But it is extraordinary.

R: It is extraordinary. I, the vast majority, I mean it, and I think this is borne about. [R names mutual acquaintance of R and I] was telling me that somebody here had done research into solar panels and most of them just aren't performing.

I: Yeah, or there plugged in the wrong way round.

R: Yeah.

I: So that they are actually heating the air [laughs]

R: Yeah, or, I think the most common is that people don't turn their boiler off so...

I: So the boiler is coming on at 6 o'clock in the morning...

R: and the sun

I: by the time the sun comes up there is nothing for it to do.

R: Exactly. Exactly, that is exactly it.

I: Amazing!

R: But do you see, that's because, you see the, to do, the, I've, well. Some people say you should just have it on two hours in the morning and two hours in the evening

I: The boiler?

R: Hmm, in the summer. Erm, but even then I'm dubious. I think you just let the sun...anyway.

I: Have a luke warm shower.

R: Well you don't, I think you just have to turn it off.

I: yeah.

R: because the boilers are designed to never let you be without hot water, so as long as the boiler is on it will always just jump in there. Anyway, this is by-the-by.

I: But it's, I don't know, there is a water tank and a, it's essentially a combi boiler that you can kind of bi-pass the water tank> If the water tank is not up to speed, and you turn on the shower, does the, does the, tank have to be full of hot water to have a hot shower or if its not...

R: no because there's ta...

I: the boiler will heat it as it comes out?

R: Well the boiler heats the top part of your cylinder...

I: Right.

R: ... solar heats the bottom...

I: Right.

R: ... so if there is no solar, the boiler is just heating this top bit which you draw off ...

I: Hmm mm.

R: ...and, er, but if the boiler is not on, the solar heats the bottom and eventually it gets to the top... does that make sense?

I: Yep, yes.

R: and then you always pull off at the top.

I: Right, sorry I've just, I've got a combi boiler with no tank.

R: That is different.

I: Yes.

R: Yes.

I: Is it possible to put in solar thermal with a

R: I think you have to have a different, you have to have a tank somewhere.

I: Installed somewhere.

R: Yeah.

I: 'cause we have got a big bit of South facing roof...

R: best thing is to probably change you boiler. I think you can do it but you can't store it very much, I think you can only, you can do it direct to a tank if you see what I mean.

I: Hmm mm. Yeah.

R: And then pull it off there.

I: And yeah, you can put it direct to the tank and then feed that into the boiler so that the boiler...

R: hmm

I: ...so that the boiler doesn't do much work when heating it up.

R: Oh yeah, I suppose so, you could do that.

I: I assumed that is how you do it but that might blow up the boiler or something I don't know.

R: Well yeah, yeah, yeah.

I: When you put hot water into it.

R: No I, yeah, hmm, hmm... yeah.

I: So in accumulating all this knowledge about how things work or don't work, do you have a formal system of storing it or kind of amassing it to applied to future projects or is it, kind of, tacit knowledge in your head?

R: Err... Well it is kind of learning by experience, yes we don't really formalise the knowledge other than... er building it into the next project if you see what I mean.

I: Yes, but its built into the next project through your expertise

R: Yeah, yeah

I: Through your expertise and experience.

R: Yeah, yeah definitely.

I: And is that a function of, is it because you are a small practice you don't really need to?

R: Yeah, probably. [laughs]

I: Or formalise and kind of have a QA system...

R: Yeah, yeah, yeah

I: Erm

R: It is knowing about what to specify and what to check for and what, that kind of thing. Its evolving.

I: Aahm...

R: [laughs] Have I flummoxed you?

I: Well no, it's eh, I suppose it's kind of, I suppose the kind of feedback aspect of what I am think about is, er, I don't know, I mean, so that guy that you have spoken to with his solar PVs not plugged in does he now check them, does he now run a...

R: well he's changed his boiler settings.

I: Right.

R: Yeah. And I am now going to monitor it next summer.

I: And do you continually monitor, so the monitoring that you are doing on the buildings that you have built err,

R: Hmm

I: and you are making changes on them,

R: Hmm, hmm.

I: presumably you are still just getting the same anecdotal and...

R: Hmm, hmm.

I: and er, other feedback to check, sort of verify the effectiveness of your interventions.

R: Yeah

I: Okay erm. I suppose all I, the last thing I've got to ask then is er...how long have we been going [checks time on recorder] 25 minutes. The last thing I've got to ask then is erm... about problems of people, kind of making people more interested in this. Say engaging your commercial Clients in energy or even the guy with the solar PVs [sic] that aren't plugged in, how to incentivise those people to actually engage with their energy bills and act appropriately.

R: Erm... well... I guess we just indoctrinate people [laughs]

I: Right.

R: I mean it's just a question of, I mean, I suppose our approach is we start with a kind of, internal expectation that we are going to do something low energy, whatever that may actually mean...

I: Yeah.

R: ...which is a bit kind of slightly meaningless term but erm, and erm I suppose we just kind of plug away at it really...I am not being very specific. Erm well we just encourage people, we just explain, we do a lot of explaining about why they need to and how their comfort levels will increase, lower energy bills erm, and a lot about you know, the buildings going to last x number of years, you know, you're not going to do it again, the regulations will increase so you're getting ahead of the game by insulating more now because it is only what is going to be expected later. Erm and I, most people are pretty receptive although clearly it does have an impact on cost...

I: Hmm

R: Err, but it's not it's not that great an impact, I mean maybe 10%, 15%.

I: And how are you dealing with the kind of rapidly changing legislative kind of landscape? You know, is there another Part L coming in 2013 and another coming in 2016? I forget what's happening.

R: Well that'll just be, we'll just have to get up to speed on what they are and erm, I haven't, I don't know I don't actually know what they are going to be changing, fo you?

I: Err no. I don't know if they know what they are going to be changing...

R: Well I think...

I: ...other than this kind of drive towards zero carbon housing.

R: Yeah, yeah, well I think I remember [UCL Academic] saying they were going to go, go down to U-Values down to 0.15 I think.

I: Right

R: Erm.

I: Which is quite ambitious.

R: Yeah, well that's your starting point for Passivhaus.

I: Yeah.

R: So, er and I think, yeah, er, yeah I mean, I think the biggest thing, it depends whether you are talking about new build or refurb, I think the biggest things for a lot of people to get over is, we are talking about specifically insulation I guess, is you just have a greater thickness of wall...

I: Yeah.

R: And how we can achieve it and eh I mean we've got this one project where it's an infill in Dulwich erm and you know it is, I mean the Client, Clients want a Passivhaus but you know, it does take a big chunk out of the space to a certain extent.

I: Yeah, and it's an existing building?

R: No, it's new, an new building, an empty site, you know infill gap. And er, but I mean and they've embraced the whole Passiv. thing and that's okay but I, you could see that on a different , different

Client you know that would have been a no-no. You know, I don't want to have my walls any thicker than I need them to be.

I: Yeah, what do you lose on a Passiv, if it is a hundred square metre house.

R: Well,

I: I mean what is the kind of footprint of the walls.

R: Well depending on how you construct it 350mm compared to 250mm, well you are talking about an extra 4 inches probably.

I: 100 mil extra

R: Yeah.

I: Around the perimeter of a 100 square metre building is,

R: NO!

I: or a 50 square metre ground floor is quite a lot.

R: Well it is when you've got quite a tight sight...

I: yeah, yeah, no, no, several square metres.

R: and it's only, your rooms are, hmm, hmm. But erm, I know, Yeah so. Oh. I have lost what the question was, erm.

R: I don't think there really was one [laughs].

I: Err, yes in terms of encouraging people, yes so it is by erm, I suppose we get our, I think we actually enter into a Client discussions with an expectation that they will do, go beyond...

I: Hmm.

R: what they need to

I: and you will...

R: what that is has to be worked out but it's...

I: And through a variety of means you can try and convince them of that.

R; Yes, yeah it is, I think and it's not, we don't, we haven't yet erm bombarded people with facts and figures...

I: Right. Just a conversation.

R: Conversation and examples really and em experience in terms of contacting other Clients. Erm, but erm maybe we should, I don't know have some more facts and figures.

I: Do you think it would help?

R: Well I think, I have have started showing in terms of refurbishment projects, er, Clients statistics on our house...

I: Right.

R: ...compared to other houses in the street and that's, does look quite impressive.

I: Yeah.

R: I think the problem always comes with having to deal with the thorny issue of pay back.

I: Yes.

R: Because it doesn't really figure if you want to pay back, if you are talking about pay-back period in terms of capital costs.

I: Your house doesn't or refurbishment like that in general?

R: Well our house, the house, worked out at about, on a simple pay back, I didn't do the complicated one, er it was about 30 years.

I: Right.

R: Which is a lot!

I: it is a lot.

R: But its...

I: But, I mean, well yeah, I am not necessarily sure I would commit to a 30 year payback on my house because I don't know if I am going to be there in well, I probably...

R: Yes well, is that the right way to look at it because in the meantime you'd be comfortable...

I: Yeah in the meantime I would be comfortable

R; more comfortable

I: And whoever owned after me

R: Exactly,

I: Erm has reduced energy bills.

R: and its adding, yeah and it's adding value to it supposedly.

I: Yeah but from other people point of view...

R: No well, that's...

I: I can understand why people wouldn't embark on a 30 year payback...

R: No well that's the issue that's and that's that's where it becomes problematic if if you can kind of convince people it is the right thing to do erm, but it's kind of best not to talk about payback period basically.

I: Right.

R: In my opinion

I: The kind of green deal, are you involved in any of the green deal?

R: No, no er.

I: because it is all based on payback period of X years...

R: Yeah.

I: The golden, what is it, golden promise or the golden...

R: Yeah, yeah.

I: Rule

R: I have to say I am bit sceptical.

I: I think it is a horrendous scheme

R: I, well.

I: I don't understand why anyone would get involved in it.

R: Well I think it is getting the wrong people to drive it, I don't, I don't, it is getting too many hmm there is too many people who are going to certify it.

I: Yeah. But the people who are selling the stuff are also testing it's viability.

R: I just think it is too complicated, I shan't, can't believe there shouldn't couldn't have been simpler way to encourage people who've got disposable income to do it, ie through VAT or ...

I: Well I think this is it...

R: Or rate rebates.

I: I think the only people who will take this up are the people who don't have disposable income yet think it is a good idea to save themselves money yet it's not going to save them money in the long term. Anyway, we probably digress.

R: Yes, no, it is. Er, yeah. It is going to be interesting to see what does happen actually. I mean it's a good, err yeah, I think they could have done...

I: They could have done so much better.

R: They could have done.

I: It's so frustrating when you something like that rolled out and it's just kind of...half baked.

R: Well I think my biggest gripe is that it is totally steeped in administration.

I: Yeah

R: And it's not about getting on and doing it, it is complete kind of, you can just imaging some policy person has worked out some mega systems and that, they have focussed on the system and not the end results.

I: Yeah.

R: Anyway, it remains to be seen.

I: Yeah, so we were talking about er the changing legislation, do you think you are in a better position er given that you do buildings that go well beyond current, the current legislative.

R: Hopefully.

I: So when it changes, you kind of know what to do,

R: Hopefully

I: you've done it and you can kind of make it happen.

R: Hopefully {laughs} Hopefully, yeah, I think so, I mean its em, I say not knowing how it's going to change but yeah, but it's yeah, we will wait and see. I mean I think there's always scope for learning something new erm, yeah I would think so.

I: I don't think I've got anything else, to ask, unless you have got anything else you would like to say?

R: No.

I: About how you operate generally?

R: Erm well, this has probably made me feel to formalise things a bit more [laughs]

I: well, no. Everybody I have spoken to has said that just sitting thinking about, talking about this stuff is, is, everybody seems to be working in an ad hoc way which is fine, if it works it is fine I think.

R: Erm, I think yeah, er, I suppose it is partly the nature of buildings is that no two are the same you've got you've got no...

I: yeah exactly.

R: ...and also each building, every building, comes with a different set of parameters.

I: Yeah but it's also the nature of being a professional and an expert...

R: Hmm, yeah.

I: ...and you've got this experience and that you've got this body of knowledge ...

R: Hmm, yeah.

I: in your head that you can apply to things and you don't necessarily have to write that down and share it with. I mean I don't know, I suppose it would be good if it was written down and shared but it doesn't necessarily...

R: Well I suppose, it's just, yeah, well I suppose it is in a way there's a, that becomes the office practice as it were...

I: Hmm.

R: Hmm. But I think maybe I should. I will go away and think about that.

I: Okay.

R: And let you know what impact this conversation has had on my work load over the next few weeks!

I: Haha, get yourself a massive QA system!

R: oh God!

I: Thank you very much.

1.4 Architect 04

Interviewee:	Architect 04 (R)
Interviewer:	Craig Robertson (I)
Location:	Central House, WC1H 0NN
Time/Date:	12:00 / 20.01.12
Duration	35:27

I: indicates the interviewer is speaking

R: indicates respondent is speaking

[square brackets] indicate notes added during transcription

... indicates pause/break in speech

Transcription:

I: The idea is, as the information sheet says, to kind of understand how you, how you, how, kind of energy data impacts on your practice...

R: Hmm

I: ...and the way you carry out your practice ...

R: Right

I: ...and the way you design things. Err, I am going to ask questions in order to understand that not necessarily, I am not kind of here to criticise or anything...

R: Okay, no, that is fine

I: Which it may come across as. Errr, so yeah, it is kind of semi-structured, so I have got 6 themes.

R: Fine

I: so we can just go through that.

R: Okay

I: So if we could start by, if you could tell me a bit about your practice and the kind of work you do and...

R: Okay, well we are quite a small practice but we do, well, anything that comes along but mainly it's residential and commercial erm, quite a lot of refurb, err, or refitting, erm no er yes, kind of small to medium sized projects.

I: Right and your practice has a particular attitude to energy consumption?

R: Oh yes, yeah, yeah we do. And we try yeah, I mean our primary focus is to create low energy buildings where, we don't have a defined benchmark that we have to achieve on any particular project, it is kind of kind of worked out with the Client. So it's it's where it fits happily with their budget

I: Hmm

R: and their aims and ambitions and the building

I: So you do stuff...

R: So, in other words although we can, have done and are doing Passivhaus buildings, it's not the, you know, it's not, it's not only Passivhaus.

I: Yeah.

R: You know there is a kind of spectrum.

I: So you do stuff meets current regulations?

I: Well, always exceeding it yes, always exceeding current regulations so, but not necessarily going to, kind of, Passivhaus air tightnesses.

R: Okay

I: Does that makes sense?

R: and do you push your Clients to go beyond that, er b-er always exceeding it? Your...

R: Always...

I: ...commercial Clients in particular how does...

R: Erm, well we'd just, erm well we push to go always beyond building regs and then it's generally Clients will go along with ot when you explain that it's just the cost of the extra insulation [laughs]

I: Yeah

R: But, ahm, erm yeah, I suppose, yeah. Sorry what was the question?

I: Er, well there wasn't really a particular question.

R: Okay, nyeah, no, yeah we try and yes and I, it's actually. Most Clients are quite er, receptive to being better insulated etc etc... does that answer the question?

I: Yeah!, yeah erm do, so you like, in the sort of variance in Clients or aspirations for a project, do you use the same methods of making decisions or the same means of...

R: Err

I: ...reporting the, or justifying decisions?

R: Err... no not really, it's a, it's a bit, I have to admit, it's a bit ad hoc. To be honest. I think it depends er, decision are made, erm, a lot to do with erm, well cost, construction parameters, space, erm yeah, that's about it really.

I: So, I mean, I understand that energy isn't the, the primary [laughs]

R: No, no, well.

I: primary pressure on, kind of, development decisions... but I suppose I am interested in the difference between the people who are not particularly interested in er, a low energy building and somebody who is interested in paying for a Passivhaus and how, well, what your experience of the difference in justifying decisions or kind of...

R: Err

I: encouraging people to do that.

R: I think the big, the big difference is, I think it's it's a lot to do with knowledge that Clients who are wanting something like a Passivhaus are erm... have done some research

I: Hmm mm

R: and kind of understand the principles. I think a lot of people come wanting, kind of, low energy without really understanding what it means and there is quite a bit of, often you have to explain what that involves...

I: Right

R: and there is an extra cost. Erm, I mean there is a big reluctance in going for Passivhaus in particular because there is this big misconception about ventilation.

I: Hmm

R: Which a lot of people just kind of, can't get their head round. I mean we've got one project that erm, we, it's been design to Passivhaus standards but he just won't, he wants to put under floor heating in [laughs]

I: Right, which is

R: Well,

I: Anathema to the

R: Well yes, but I, it's quite interesting, yeah, it's quite interesting because they live, currently live in a very draughty old falling down house, so their only con... their only, their, their most focussed experience is being cold.

I: Right.

R: And that's what their terrified of in their new house.

I: Right, so they are just sort of throwing everything at it.

R: Yes, so in spite of, and it's quite difficult, I... we haven't quite discovered how to try and persuade that, well apart from telling them, to convince them that they just don't need it and erm... So I would just, there are kind of perceptions so it's quite, sometimes it's quite difficult to convince people the need of what you are doing.

I: What, so how do you try to convince them, I mean do you give...

R: Well we have...

I: them data or do you.

R: Well or no, contact with other Clients, er data is quite difficult for most, or a lot of Clients aren't really able to digest...

I: Yeah

R: ...data because it is kind if an alien

I: Well

R: value system

I: Yeah, yell I mean, Yeah, I mean like temperature, you know, its this warm in this room...

R: Ah, well, what we do do is erm get them talk to other Clients.

I: Right.

R: So they can actually speak to somebody who has lived in somewhere.

I: Okay, but its not a kind of formalised...

R: No, no

I: It's just 'phone this guy up'

R: Yeah. So perhaps we should I don't know... I think it's quite difficult ,I mean people can understand, well, it's even difficult for people to sort of get their head around kilowatt hours; I mean, how many kilowatt hours am I using? Erm obviously cost is one thing because people can relate to pounds erm but then its always marrying it up with understanding how comfortable they are going to be because there's the, you can, you know you can have a very, haha, you can have no energy bills and be bloody freezing.

I: Yeah

R: So it's, its, its, h-how you, yes I think it's quite interesting, how you can con-convey to people their reduced energy requirements and their increased comfort

I: Yeah it is the kind of...

R: without actually being able to experience it.

I: Yeah, and another, I think there is a sort of misconception about energy efficiency: it is assumed that if something is low energy it is therefore efficient but it's...

R: Exactly.

I: but it might just be freezing, or...

R: Exactly

I: Or it might be, it might be using far more than it kind of...

R: Well yes, that can happen. Hmm. So I guess the short answer is there is nothing really formal.

I: Hmm

R: Erm, Err, and I think that is a reflection probably of the fact that... We are always dealing with different people who have different knowledge levels so you have to kind of pitch it differently each time.

I: So in contrast to someone a Passivhaus say, like, if you are doing a commercial fit out for somebody who's not particularly interested in that, is their the same knowledge discrepancy in even convincing them to even go beyond, or is that easier to convince them to go beyond.

R: I think erm, I think in commercial situations its, its very much more cost driven in terms of capital cost.

I: Hmm

R: Erm, yeah.

I: So is it a payback period you have to convince them on on that or is it a...

R: Erm ahh, well I suppose it could be, er if one did it!

[both laugh]

R: Erm I am just trying to think. Erm...I think, well in recent commercial ones we have done we have actually just, we've I have to say we have just gone up to building regs actually because there's quite a few things that tip the balance with bigger commercial projects.

I: Hmm, yeah.

R: Once you get beyond certain, so er and that's really, I think that just driven by, by regs... so there's no need to give any, you just stick by what you've got to do.

I: Yeah, because of commercial pressures.

R: Yeah, exactly. Yeah.

I: Is there kind of, the n... the, there are kind of a number of incentive schemes...

R: Well for example, yeah, well, I mean also there are on, a recent project we had erm it was a practical consideration that if we'd gone any deeper on the roof we would have had to have changed the roof structure.

I: Right, you'd have had to have what?

R: Changed the roof structure.

I: Right, so your...

R: Because, you know, we were trying to do it yeah, so the cost would have gone up disproportionately.

I: So it is no longer just your deeper insulation it is your deeper

R: Yeah, yeah.

I: it is your deeper roof truss.

R: Exactly.

I: Yeah.

R: So we'd have had to have changed the existing structure as opposed to just sticking another sheet on top... So that, that would, that is the kind of situation where it kind of suddenly the cost escalates.

I: Yep.

R: So it's not just a bit of extra insulation.

I: Yeah, so how do you um, what software do you use, or do you use any software to analyse that.

R: Hmm.

I: The kind of U-values, is it SAP calcs or...

R: SAP calcs.

I: And you must, presumably use PHPP for your...

R: Yep, SAP Calcs I have to say we'd send, I send away to, nut we do PHPP.

I: and your SAP calcs, when you send them away, what information do you get back? Is, it, in, kind of...

R: Mind-boggling. Sheets of information that I have to admit I do not understand.

I: Really.

R: Hmm.

I: What sort of stuff though, cause...

R: Oh, oh god, I should have brought one for you, erm

I: Do you get back things like, if something's not compliant or isn't meeting the particular target it has to meet do they supply you with suggestions of how to...

R: No

I: ...how to then make it comply?

R: Err, oh sometimes if you ask yeah. Sorry I am just trying to think, it just this kind of sheet of kind of mesmerising numbers and I ca.. no I

I: No, no, I don't, I think the SAP calcs are kind of deliberately obtuse [laughs] because its just...

R: Yeah, so erm.

I: Do you think the person that sends, does them for has a handle on what it all means?

R: Oh yes they do and it's probably just me that is not focussing, I just erm, just wanted the kind of bottom line sometimes .

I: Yeah yeah

R: That just says, 'okay that's fine'. Yeah, erm, ooh, I would have to go and have a look, I can get...

I: No, No, it is just out of interest, other people I have spoken to, their experience of sending out sending out SAP calcs is they just get a bottom line back and then when they, if it's not meeting what they wanna, wanna get out of it...

R: Yeah

I: asking their extremely cheap SAP calculation person

R: What do you have to do?

I: What should I do do this?

R: That's kind of, that's kind of.

I: and they are kind of like [exhales to communicate 'I don't know']

R: Well, that's kind of, the guy that we use is actually quite knowledgeable on building energy use etc and he does think about it, but yes, we focus on the bottom line so okay, what do we do now?

I: So, kind of, is there sort of an iterative exchange of

R: Well sometimes.

I: between this guy and...

R: Sometime, sometimes, it depends on the project

I: yeah.

R: But it, there could be.

I: Right, and presumably with PHPP that it is an iterative tool?

R: Yeah that is, well that is, yeah that's a lot easier to

I: its

R: twiddle around with in some, well I suppose because we've got that in the office not S..., we haven't got the SAP one. So er that is easier to fiddle around with. Erm. Yes and it is, I mean that's that's the way it needs to be used, as a kind of design tool.

I: So that sort of validates your decisions?

R: Hmm, hmm

I: [clears throat]

R: and design changes.

I: Yeah, so its easy, would you say, presumably it is easier, if you are doing something to a passivhaus standard. Or can you use passive, can you use PHPP to design...

R: Anything.

I: Anything?

R: Yes.

I: Do you use it do design anything?

R: Yeah, well it's just a good way of knowing

I: Yeah,

R: it's quite good because you can err, I mean there are some kind of fundamental differences just in, that you have to get to grips with just in terms of what it constitutes as usable floor area,.

I: Right.

R: Which is totally different to the standard UK ...

I: Okay,

R: System, but once you've got that in and it's also got a very way of working out U-Values which is, 'cause I, we've got the er BRE one as well.

L: Which is that? What one is that?

R: erm it's just their U-Value calculator and they do actual come up with slightly different U-Values, because the PHP is slightly more in depth in that it allows you to put in cold bridging

I: Hmm.

R: erm specifically erm..but once you have got those in you can start fiddling around and then once you got knid of your main data in you can then start playing around with your U-Values and it very quickly gives you an indication of your energy consumption at the end.

I: Right.

R: Likewise with changing window sizes. Or glazing spec which it can make an enormous amount of difference if you are just to start changing your, you know, the outer pain for example.

I: Hmm

R: And you can see, then you've got, so, then you've got an immediate response and then you can then see the bottom line which, whether it gets to 15 or not [the Passivhaus kWh/m² standard] it doesn't really matter, you know if you're not...

I: Exactly.

R: but you can then see well its 20, well we know we can fiddle around with that and get it lower.

I: Right.

R: and if you using 15 as a benchmark which is the kind of point at which your then, pretty confident that you will be able to do without a heating system.

I: Hmm mm.

R: Then that's quite a good way of doing it.

I: I've never, I've got a copy of PHPP but I haven't...

R: It is extraordinarily difficult to use unless you have somebody to show you how to do it.

I: I am using, I have been just on my own house using energy plus, which is a horrible horrible thing to use so perhaps I will put it in to PHPP and see what helps. So do you, does, do you monitor, then go and monitor the houses after to find out if you are,

R: Well.

I: how close you are to the PHPP model is?

R: Well we ha... we are doing this one in Scotland we did, that is supposedly being monitored at the moment but not terribly scientifically...erm in that they have got energy readings kind of coming out of it.

I: right.

R: but we haven't really got that complimented yet with er room temperature sensors.

I: Okay.

R: To correlate

I: Yeah

R: Comfort levels erm, but er, and er we are, have got another project where we are monitoring and its really just a question of erm without funding it's just a question of taking energy bills.

I: Yep

R: So.

I: And do you still have a relationship with your Clients?

R: yep.

I: Do you presumably get

R: [inaudible]

I: anecdotal...

R: Sorry?

I: Presumably you get anecdotal...

R: yeah, no, yeah, anecdotal evidence [laughs]

I: of problems or successes?

R: And I'll tell you one of the biggest things is our renewable technologies not working. That is the biggest.

I: and what is the renewables on that.

R: on the one, this one in Clapham its erm, er PVT which is combined solar thermal and photovoltaics

I: Ahh, I've never heard of PVT.

R: Yeah, no, it's quite good. You get a PV panel

I: Uh huh.

R: and then under the thermal because when the PV

I: the PV

R: creates heat

I: Right

And then the thermal takes the heat away from the pV which actually makes it more efficient...

I: Yep .

R: and then you get the heat as well

I: Right.

I: For your hot water. Erm, er...yeah... so we have had issues with that but it is performing now better and... but em when I was monitoring, and I don't know if this is going off the track a bit...

I: No, No

R: when I was monitoring er energy use in our street, comparative, comparing other houses.

I: Hmm mm.

R: One of the houses has solar thermal panels on it, on a south facing roof

I: Yeah.

R: 'Cause the ones on our roof are actually east.

I: Right.

R: Which isn't ideal but, I'll come back to that. Anyway, so in the course of monitoring I was able to tell my neighbour that his panels weren't working because I could compare his gas consumption through summer with our house and other houses in the street and his gas consumption was hardly less than other people who didn't have...

I: Right

R: solar panels and there's only two of them so, and everybody else was four in their house so it should be much less and it's because he hadn't turned his boiler off. The timing on his boiler was such that there was never any time for the solar water to heat up the tank because the boiler had always done it.

I: Right. It was, and it was, it was just doing it at a pre-set time.

R: Yeah, yeah, yeah, so. Because we turned our boiler off in April until the middle of October.

I: Right.

R: Even with an east facing roof. But you'd, you'd only have picked that up if you had been monitoring your gas bill.

I: But it's kind of extraordinary, or I find it extraordinary that somebody would go to the expense of installing solar collectors...

R: Its.

I: ... and then not check...

R: No

I: Or not monitor it, you know.

R: no, no, no, well no. That exactly what people do! Because people believe that it is plugged and that it's doing its thing. Nobody checks, nobody checks!

I: That's crazy though.

R: No, it's because the people who are selling the kit are selling kit, they are not selling you a way to save energy. So the way it's, they just get it, say its, well 'I've plugged it in and turned it on', that's all they are interested in. They are not interested in then making sure that go, that the customer knows how to monitor it and how to check that it's working or that it's actually saving them energy, they're just not interested.

I: But it is extraordinary.

R: It is extraordinary. I, the vast majority, I mean it, and I think this is borne about. [R names mutual acquaintance of R and I] was telling me that somebody here had done research into solar panels and most of them just aren't performing.

I: Yeah, or there plugged in the wrong way round.

R: Yeah.

I: So that they are actually heating the air [laughs]

R: Yeah, or, I think the most common is that people don't turn their boiler off so...

I: So the boiler is coming on at 6 o'clock in the morning...

R: and the sun

I: by the time the sun comes up there is nothing for it to do.

R: Exactly. Exactly, that is exactly it.

I: Amazing!

R: But do you see, that's because, you see the, to do, the, I've, well. Some people say you should just have it on two hours in the morning and two hours in the evening

I: The boiler?

R: Hmm, in the summer. Erm, but even then I'm dubious. I think you just let the sun...anyway.

I: Have a luke warm shower.

R: Well you don't, I think you just have to turn it off.

I: yeah.

R: because the boilers are designed to never let you be without hot water, so as long as the boiler is on it will always just jump in there. Anyway, this is by-the-by.

I: But it's, I don't know, there is a water tank and a, it's essentially a combi boiler that you can kind of bi-pass the water tank> If the water tank is not up to speed, and you turn on the shower, does the, does the, tank have to be full of hot water to have a hot shower or if its not...

R: no because there's ta...

I: the boiler will heat it as it comes out?

R: Well the boiler heats the top part of your cylinder...

I: Right.

R: ... solar heats the bottom...

I: Right.

R: ... so if there is no solar, the boiler is just heating this top bit which you draw off ...

I: Hmm mm.

R: ...and, er, but if the boiler is not on, the solar heats the bottom and eventually it gets to the top... does that make sense?

I: Yep, yes.

R: and then you always pull off at the top.

I: Right, sorry I've just, I've got a combi boiler with no tank.

R: That is different.

I: Yes.

R: Yes.

I: Is it possible to put in solar thermal with a

R: I think you have to have a different, you have to have a tank somewhere.

I: Installed somewhere.

R: Yeah.

I: 'cause we have got a big bit of South facing roof...

R: best thing is to probably change you boiler. I think you can do it but you can't store it very much, I think you can only, you can do it direct to a tank if you see what I mean.

I: Hmm mm. Yeah.

R: And then pull it off there.

I: And yeah, you can put it direct to the tank and then feed that into the boiler so that the boiler...

R: hmm

I: ...so that the boiler doesn't do much work when heating it up.

R: Oh yeah, I suppose so, you could do that.

I: I assumed that is how you do it but that might blow up the boiler or something I don't know.

R: Well yeah, yeah, yeah.

I: When you put hot water into it.

R: No I, yeah, hmm, hmm... yeah.

I: So in accumulating all this knowledge about how things work or don't work, do you have a formal system of storing it or kind of amassing it to applied to future projects or is it, kind of, tacit knowledge in your head?

R: Err... Well it is kind of learning by experience, yes we don't really formalise the knowledge other than... er building it into the next project if you see what I mean.

I: Yes, but its built into the next project through your expertise

R: Yeah, yeah

I: Through your expertise and experience.

R: Yeah, yeah definitely.

I: And is that a function of, is it because you are a small practice you don't really need to?

R: Yeah, probably. [laughs]

I: Or formalise and kind of have a QA system...

R: Yeah, yeah, yeah

I: Erm

R: It is knowing about what to specify and what to check for and what, that kind of thing. Its evolving.

I: Aahm...

R: [laughs] Have I flummoxed you?

I: Well no, it's eh, I suppose it's kind of, I suppose the kind of feedback aspect of what I am think about is, er, I don't know, I mean, so that guy that you have spoken to with his solar PVs not plugged in does he now check them, does he now run a...

R: well he's changed his boiler settings.

I: Right.

R: Yeah. And I am now going to monitor it next summer.

I: And do you continually monitor, so the monitoring that you are doing on the buildings that you have built err,

R: Hmm

I: and you are making changes on them,

R: Hmm, hmm.

I: presumably you are still just getting the same anecdotal and...

R: Hmm, hmm.

I: and er, other feedback to check, sort of verify the effectiveness of your interventions.

R: Yeah

I: Okay erm. I suppose all I, the last thing I've got to ask then is er...how long have we been going [checks time on recorder] 25 minutes. The last thing I've got to ask then is erm... about problems of people, kind of making people more interested in this. Say engaging your commercial Clients in energy or even the guy with the solar PVs [sic] that aren't plugged in, how to incentivise those people to actually engage with their energy bills and act appropriately.

R: Erm... well... I guess we just indoctrinate people [laughs]

I: Right.

R: I mean it's just a question of, I mean, I suppose our approach is we start with a kind of, internal expectation that we are going to do something low energy, whatever that may actually mean...

I: Yeah.

R: ...which is a bit kind of slightly meaningless term but erm, and erm I suppose we just kind of plug away at it really...I am not being very specific. Erm well we just encourage people, we just explain, we do a lot of explaining about why they need to and how their comfort levels will increase, lower energy bills erm, and a lot about you know, the buildings going to last x number of years, you know, you're not going to do it again, the regulations will increase so you're getting ahead of the game by insulating more now because it is only what is going to be expected later. Erm and I, most people are pretty receptive although clearly it does have an impact on cost...

I: Hmm

R: Err, but it's not it's not that great an impact, I mean maybe 10%, 15%.

I: And how are you dealing with the kind of rapidly changing legislative kind of landscape? You know, is there another Part L coming in 2013 and another coming in 2016? I forget what's happening.

R: Well that'll just be, we'll just have to get up to speed on what they are and erm, I haven't, I don't know I don't actually know what they are going to be changing, fo you?

I: Err no. I don't know if they know what they are going to be changing...

R: Well I think...

I: ...other than this kind of drive towards zero carbon housing.

R: Yeah, yeah, well I think I remember [UCL Academic] saying they were going to go, go down to U-Values down to 0.15 I think.

I: Right

R: Erm.

I: Which is quite ambitious.

R: Yeah, well that's your starting point for Passivhaus.

I: Yeah.

R: So, er and I think, yeah, er, yeah I mean, I think the biggest thing, it depends whether you are talking about new build or refurb, I think the biggest things for a lot of people to get over is, we are talking about specifically insulation I guess, is you just have a greater thickness of wall...

I: Yeah.

R: And how we can achieve it and eh I mean we've got this one project where it's an infill in Dulwich erm and you know it is, I mean the Client, Clients want a Passivhaus but you know, it does take a big chunk out of the space to a certain extent.

I: Yeah, and it's an existing building?

R: No, it's new, an new building, an empty site, you know infill gap. And er, but I mean and they've embraced the whole Passiv. thing and that's okay but I, you could see that on a different , different

Client you know that would have been a no-no. You know, I don't want to have my walls any thicker than I need them to be.

I: Yeah, what do you lose on a Passiv, if it is a hundred square metre house.

R: Well,

I: I mean what is the kind of footprint of the walls.

R: Well depending on how you construct it 350mm compared to 250mm, well you are talking about an extra 4 inches probably.

I: 100 mil extra

R: Yeah.

I: Around the perimeter of a 100 square metre building is,

R: NO!

I: or a 50 square metre ground floor is quite a lot.

R: Well it is when you've got quite a tight sight...

I: yeah, yeah, no, no, several square metres.

R: and it's only, your rooms are, hmm, hmm. But erm, I know, Yeah so. Oh. I have lost what the question was, erm.

R: I don't think there really was one [laughs].

I: Err, yes in terms of encouraging people, yes so it is by erm, I suppose we get our, I think we actually enter into a Client discussions with an expectation that they will do, go beyond...

I: Hmm.

R: what they need to

I: and you will...

R: what that is has to be worked out but it's...

I: And through a variety of means you can try and convince them of that.

R; Yes, yeah it is, I think and it's not, we don't, we haven't yet erm bombarded people with facts and figures...

I: Right. Just a conversation.

R: Conversation and examples really and em experience in terms of contacting other Clients. Erm, but erm maybe we should, I don't know have some more facts and figures.

I: Do you think it would help?

R: Well I think, I have have started showing in terms of refurbishment projects, er, Clients statistics on our house...

I: Right.

R: ...compared to other houses in the street and that's, does look quite impressive.

I: Yeah.

R: I think the problem always comes with having to deal with the thorny issue of pay back.

I: Yes.

R: Because it doesn't really figure if you want to pay back, if you are talking about pay-back period in terms of capital costs.

I: Your house doesn't or refurbishment like that in general?

R: Well our house, the house, worked out at about, on a simple pay back, I didn't do the complicated one, er it was about 30 years.

I: Right.

R: Which is a lot!

I: it is a lot.

R: But its...

I: But, I mean, well yeah, I am not necessarily sure I would commit to a 30 year payback on my house because I don't know if I am going to be there in well, I probably...

R: Yes well, is that the right way to look at it because in the meantime you'd be comfortable...

I: Yeah in the meantime I would be comfortable

R; more comfortable

I: And whoever owned after me

R: Exactly,

I: Erm has reduced energy bills.

R: and its adding, yeah and it's adding value to it supposedly.

I: Yeah but from other people point of view...

R: No well, that's...

I: I can understand why people wouldn't embark on a 30 year payback...

R: No well that's the issue that's and that's that's where it becomes problematic if if you can kind of convince people it is the right thing to do erm, but it's kind of best not to talk about payback period basically.

I: Right.

R: In my opinion

I: The kind of green deal, are you involved in any of the green deal?

R: No, no er.

I: because it is all based on payback period of X years...

R: Yeah.

I: The golden, what is it, golden promise or the golden...

R: Yeah, yeah.

I: Rule

R: I have to say I am bit sceptical.

I: I think it is a horrendous scheme

R: I, well.

I: I don't understand why anyone would get involved in it.

R: Well I think it is getting the wrong people to drive it, I don't, I don't, it is getting too many hmm there is too many people who are going to certify it.

I: Yeah. But the people who are selling the stuff are also testing it's viability.

R: I just think it is too complicated, I shan't, can't believe there shouldn't couldn't have been simpler way to encourage people who've got disposable income to do it, ie through VAT or ...

I: Well I think this is it...

R: Or rate rebates.

I: I think the only people who will take this up are the people who don't have disposable income yet think it is a good idea to save themselves money yet it's not going to save them money in the long term. Anyway, we probably digress.

R: Yes, no, it is. Er, yeah. It is going to be interesting to see what does happen actually. I mean it's a good, err yeah, I think they could have done...

I: They could have done so much better.

R: They could have done.

I: It's so frustrating when you something like that rolled out and it's just kind of...half baked.

R: Well I think my biggest gripe is that it is totally steeped in administration.

I: Yeah

R: And it's not about getting on and doing it, it is complete kind of, you can just imaging some policy person has worked out some mega systems and that, they have focussed on the system and not the end results.

I: Yeah.

R: Anyway, it remains to be seen.

I: Yeah, so we were talking about er the changing legislation, do you think you are in a better position er given that you do buildings that go well beyond current, the current legislative.

R: Hopefully.

I: So when it changes, you kind of know what to do,

R: Hopefully

I: you've done it and you can kind of make it happen.

R: Hopefully {laughs} Hopefully, yeah, I think so, I mean its em, I say not knowing how it's going to change but yeah, but it's yeah, we will wait and see. I mean I think there's always scope for learning something new erm, yeah I would think so.

I: I don't think I've got anything else, to ask, unless you have got anything else you would like to say?

R: No.

I: About how you operate generally?

R: Erm well, this has probably made me feel to formalise things a bit more [laughs]

I: well, no. Everybody I have spoken to has said that just sitting thinking about, talking about this stuff is, is, everybody seems to be working in an ad hoc way which is fine, if it works it is fine I think.

R: Erm, I think yeah, er, I suppose it is partly the nature of buildings is that no two are the same you've got you've got no...

I: yeah exactly.

R: ...and also each building, every building, comes with a different set of parameters.

I: Yeah but it's also the nature of being a professional and an expert...

R: Hmm, yeah.

I: ...and you've got this experience and that you've got this body of knowledge ...

R: Hmm, yeah.

I: in your head that you can apply to things and you don't necessarily have to write that down and share it with. I mean I don't know, I suppose it would be good if it was written down and shared but it doesn't necessarily...

R: Well I suppose, it's just, yeah, well I suppose it is in a way there's a, that becomes the office practice as it were...

I: Hmm.

R: Hmm. But I think maybe I should. I will go away and think about that.

I: Okay.

R: And let you know what impact this conversation has had on my work load over the next few weeks!

I: Haha, get yourself a massive QA system!

R: oh God!

I: Thank you very much!

1.5 Architect 05

Interviewee:	Architect 05 (R)
Interviewer:	Craig Robertson (I)
Location:	Architect 004's Office, London
Time/Date:	17:30 / 27.01.12
Duration	54:26

I: indicates the Interviewer is speaking

R: indicates Respondent is speaking

[square brackets] indicate notes/removed names etc added during transcription

... indicates pause/break in speech

Transcription:

I: [recording begins mid-sentence – I explaining the themes of the interview] ...that I want to cover.

R: Okay.

I: So there's no, kind of, there's no sort of structured ...

R: Yeah.

I: ...set of questions.

R: Okay.

I: But erm, it is just a conversation generally... a bit of a weird conversation. [laughs]

R: Yeah, yeah.

I: but a conversation none the less. I generally start with er, getting you to tell me something about your role within [practice name removed] your practice...

R: Yeah, yeah.

I: erm within and kind of also about your attitude to energy and your practice's attitude to energy and kind of how you,

R: okay.

I: How you design.

R: Alright. Well erm, I'm an associate at a middle sized London architectural practice and erm we work on a number of different sectors from sort of education, private housing, social housing, student housing erm offices, commercial offices, ahm, then buildings for the arts including galleries, museums and then finally we also work on eh buildings for universities, both housing and, sort of, faculty buildings but we don't really see ourselves as a architects specialising in this, we, we will do anything really [laughs]

I: Yeah.

R: If that's not to er [laughs]... Right so, with respect to erm, the sustainability issues we, we have an in house sustainability group but I wouldn't say it is at the, sort of, forefront of the kind of fundamental design of the buildings it is more so as we er go along we try, try to erm develop sustainable ways of doing things rather than starting off with a say, I don't think we've done many, say, naturally ventilated buildings.

I: Right.

R: such... although we have done a naturally ventilated theatre in a large building. And in terms of materials it really depends on the, the nature of the Client we are building for. A lot of the colleges we have worked for have been fairly funded and had buildings in their estate which are hundreds of years old so new buildings have got a long life span.

I: Hmm mm.

R: So they'll use say, traditional natural materials whereas some of the student housing we are doing; much, much cheaper, much less erm, well much less of a lifespan expected and the material will be, you know, more un, more, or less likely rather to be stone and natural...

I: Hmm.

R:...materials, er more likely to be kind of rendered systems, things like that. Erm, we, wo, I suppose the practice is, is, it is, keen I suppose, as anyone is on sustainability and we do have the ISO 14001...

I: yep.

R: ...registered and we actually had the guy from the Lloyds registry come in the other day and we were certified and that all went well, he was happy with various checks we are doing.

I: and, is the sustainability group performing those checks or is that part of your 14001?

R: This is part of the 14001, we have a QA erm consultant whose erm employed by the practice and comes in kind of weekly to do a whole raft of things, not just a 14... to do 9001 and 14001 and erm

included in the 14001, as well as an office strategy for just erm, the kind of running a business from, from things like using better handwash.

I: Yeah.

R: [laughs] ah, er, better detergents to slowly upgrading the lighting...

I: Okay.

R: ...systems. We had, we had erm, we spoke to [Natural Ventilation/ Airflow Consultant company] a while ago

I: right.

R: who, or [name variant of Natural Ventilation/ Airflow Consultant company] at Cambridge...

I: erm...

R: the erm...

I: is that...

R: or, er, the used to be the...

I: is that [name of individual Natural Ventilation/ Airflow Consultant]'s...

R: ah yeah [name of individual Natural Ventilation/ Airflow Consultant] and I think it was er [name of second individual Natural Ventilation/ Airflow Consultant] that came in...

I: Right.

R: and we, they they delivered a natural ventilation strategy for our office so we've got opening vents...

I: Right.

R: ...erm sensor controlled...

I: Okay.

R: ...at the top of the office. This was, this was all part of an office upgrade generally we, we, we don't own the buildings but we split costs for upgrades with the owners.

I: Okay.

R: So we, er, we've got a plan er to reduce all the erm sort of high energy light fittings. So we are slowly replacing them, we've got a better ventilation system because it's typical of a two storey open plan, sort of ex-brewery ...

I: Yeah.

R: in that it gets pretty cold in summer and pretty warm in the winter [sic].

[Brief exchange about Interviewers old office building – also an ex-brewery]

I: [description of transcription process and reassurance of anonymisation of data]

I: So the erm, the kind of approach you are taking to your own office building and your ISO 14001, is that reflected in the kind of design process or you... the, the buildings that you design are you...

R: Well it is, I suppose when I say we're not, we don't focus as much on it as a practice I used to work for...

I: Hmm mm.

R: ...but er that's, that's that...someone else coming to this practice from another practice other than that one may actually think we do more than normal. SO I think, I suppose the erm, the angle I was coming from was we are less centred on sort of, innovative sustainable design ...

I: Yeah.

R: ...than the practice I came from. And I think that's probably because the practice I was at, was a, it kind of focussed on innovative low energy sustainable design. So...

I: Yeah.

R: ... more fundamentally than most practices.

I: As a proper kind of driver of the building.

R: Yeah. But we, we, we have, you know we have as I said we have the Green Group and we have the way the projects are set up and run we have erm a number of design reviews.

I: Hmm mm.

R: So like technical compliance reviews, erm design review before, when they are in the early stages and as part of that representatives of the Green Group will always be involved in the early stage so of design to try and help things along but they are not as influential as the particular Director and Project Architect designing that building. So it, its' I think it's more, if Director and Project Architect have a keener interest it will probably be more prevalent in that project...

I: Right.

R: ...than in another. Erm I suppose what Clients are demanding more and more is that, and indeed planning councils is that you have to be BREEAM rated.

I: Hmm mm.

R: I don't think they quite know what this means.

I: yep.

R: but just about every project we go in for now has to be BREEAM excellent.

I: Right.

R: Which is, as we have found, incredibly difficult to achieve and some sites we are given, you know you don't have the luxury of choosing a site.

I: Hmm.

R: Or choosing the urban, er sort of urban versus country side or er a brownfield site or greenfield site, you will just never do it. You, you can't achieve excellent er in our, in our kind of understanding and experience.

I: yeah.

R: So, we, we all of our buildings are generally heading towards a sort of sustainable nature because they actually have to be...

I: Yeah.

R: otherwise you won't get any work.

I: So it's driven, it's Client driven rather than...

R: Well, it's, it's, it's something that we are interested in ...

I: Yeah,

RL ...and I think it's actually helping, I think architects actually will be much more interested in this than other people in the building erm industry and to some extents BREEAM is helping architects achieve, what you'd like to achieve anyway.

I: Right.

R: and it's almost an excuse. Because someone's setting you these high targets...

I: Hmm mm

R: Of set BREEAM or LEED ratings, you, you've got that in your pocket to kind of say well, 'we need to do this'.

I: It's a lever on your...

R: Yeah.

I: ...contractor or somebody to actually spend money.

R: Er, particularly when it's a council and you won't get planning. We've had er examples where buildings go through the planning process where-in we've been debating what kind of level of BREEAM rating would be acceptable...

I: Uh huh.

R: ... when they've said something like 'the design must have a high quality of sustainable design' you say well, what, how is that going to be judged and, and the sort of safest way seems to be at the moment to say 'oh it's a BREEAM excellent or BREEAM outstanding or good or whatever' er but again we find that they are slightly behind because in the recent BREEAM updates you didn't have 'outstanding' so you had 'excellent', which was the best you could get and no an 'excellent' building on, say, 2008, I'm not too sure exactly, might only be a 'good' building now...

I: yeah.

R: but that doesn't sound very good because it's only called 'good' and not 'excellent' or 'outstanding' but it may be as good as your going to achieve.

I: and it may be the same standard as an goo... excellent buildings that is still able to...

R: Well yeah.

I: it still has the right to call itself 'excellent' because it was built two years earlier.

R: yeah, er, and particularly, a kind of gripe I suppose I've got with that, is that they've never even, buildings up until a certain point could be excellent...couldn't be better in terms of grade, it's like an A star grade, but they didn't even have to prove they did it.

I: Yeah.

R: It was a kind of a design process 'we will do this', 'we will endeavour to do this'...

I: Yeah.

R: ... 'we intend to do this' and you get the excellent for it and now you have to, it's a huge amount of work to say you're going to do it in design stage, then actually carry it through and get it monitored in the end to prove that you've done it and then to pay or to keep paying I think for the excellent rating, you have to get it re-graded every two years...

I: Oh really.

R: er, per.. That might just be to get the 'outstanding' but there is a kind of...you go back and make sure that management hasn't slipped or that they're not doing certain things. SO..

I: How does that verification process happen, how does that impacted on [Architect 004's practice] is it different to how you previously behave, I suppose?

R: Erm.

I: I'm thinking about your erm...

R: Well with our, sort of, I don't it affects us that much I think we find it difficult sometimes when a Clients don't fully understand what a particular target they have set means...

I: hmm mm.

R: ...and then it's erm a huge amount of work. But as I said you do get to do things that you might otherwise not get to do. You are able to encourage people to do the sort of passive design...

I: Yeah.

R: ...and the kind of aesthetics that that brings with exposed soffit and...

I: ahh.

R: ... things. So some things that architects are more interested in are, say , easier to push through.

I: And how does that communication work? With your Client say if they are saying, 'I want whatever it is' but they don't understand what it means and then there is a whole load of fabric measures they've got to take, a whole load of technological and energy measures they've got to take...

I: Yeah.

R:...how do you go about communicating to them that that's...

R: Well more often now we don't, we don't do it, we, we, we...what happens I suppose, well not that we don't do it, it's that someone more kind of er, more flexible in their kind of work I suppose will...no I don't quite mean that; 'flexible' I mean someone more enterprising, normally QSs and structural engineers adopt, they, they get people in to do BREEAM assessments...

I: Yeah.

R: ...and now we'll get the BREEAM assessor who will inevitably be from a structural engineers or QSs office...

I: Right.

R: and they, they're meant to, you know, they get their fee to administer the BREEAM...

I: Right.

R: ...process...

I: Right.

R: ...and they report back to the Client as much we do.

I: Right and is there, is there, a kind of, is there a kind of iterative design process with them?

R: Yeah, well we, when we've done it erm, I mean I haven't done too many BREEAM assessment actually but in, in, when I have done them we have gone through I think it is a pre-assessment assessment [laughs]...

I: Yeah.

R: erm. So you down really sort of sit first doors and you, when we've done this we've tried to ... this was almost, the Client was interested in getting a BREEAM certificate essentially because it helps show they're kind of progressively minded and er interested in green things...

I: yeah.

R: ... which is kind of important fr a lot of companies above and beyond...

I; Hmm mm.

R: Their actual ethics or morals, it's business thing. Erm and we've used a pre-assessment a couple of times to establish what we might achieve and then if it's 'good' the Client may not be that bothered with taking it any further – if it doesn't look like 'excellent' and 'outstanding'...

I: Right.

R: ... it's possible because it's, you know, you're not going to put a certificate in your entrance...

I: Yeah.

R: ...saying this building is okay.

I: Yeah, 'it's alright'

R: but what we have then again used it for benchmarking what we might be able to deliver to satisfy the planning...

I: Okay.

R: ...and the GLA sometimes without them saying 'this has to be 'good'' if your getting, or 'this has to be #excellent# or 'outstanding'' if your get in earlier and say ' we think this is a sustainable building for these reasons and it is BREEAM 'very good'' and we can say that with some certainty having done a pre assessment, er to make sure we are not going snooker ourselves by getting planning conditions saying this building must be 'outstanding'.

I: yeah. So it gives you some security in hat you are designing, it gave the planning department some security in what they...

R: yeah.

I: ...are going to get, it gives your Client some security in what they're investing in, sort of...

R: Yeah, well I, if, it's erm. It seems to have, it...I suppose as in any kind of...it's, it's almost sort of legislative now I think the way it's progressing...

I: Right.

R: Because it, as soon as the planning authorities start conditioning a planning application based on a certain BREEAM...

I: Hmm mm.

R: It's almost, it may as well be legislative...

I: Yep.

R: ... because you have to do it as a condition of the application. SO I think what it was intended originally for is, may not be, may not be what it used for at the moment, in it's, its', kind of, kind of, as a , as a, as a kind of, as a symbol that this building was designed in a spirit and er designed to achieve sustainable principles, it has almost become a benchmark tool for other people to define whether this is sustainable building or not...

I: Yep.

R: ...and I think w know that many of the sustainable things on BREEAM go way beyond what and architect or a design team can offer...

I: Hmm mm.

R: ...and depend on sit, and things like this so you may come up with the most energy efficient solution you can possibly come up with and that isn't necessarily reflected in it being a innovative low energy building in this particular system.

I: Yeah. Now's it... Can we go back to the design reviews you have in your design process generally...

R: Hmm.

I: and erm, what inf...well that process, and kind of what information you are kind of your...

R: All...

I: office and what the green, the sustainability group...

R: yeah.

I: ...are kind of recommending things on.

R: Well we look at er, things that, kind of key low energy things we'd look at would be kind of; ventilation systems and the potential and possibility to naturally ventilate in terms of er, site constraints which may be significant amounts of noise from a main public road...

I: hmm mm.

R: ...or it may just be sort of cleanliness of the air, so we may have to get air pollution tests and things...

I: Right.

R: ...erm, but we, and then focus on sort of the natural light, getting as much natural light in and I suppose the configuration of the plan to er, to erm, where possible because of then the site sort of pre determines this. But I suppose to, I am kind of rambling but the key things we would look at is; potential for natural passive measures, be it ventilation or lighting is the kind of two things that, and by configuration of the plan that the architect can really input in to.

I: yep.

R: and er they are just, they ought to be fundamental architectural sort of analysis as you deign a building. You know nice amounts of fresh air, nice amounts of artificial, er [laughs] natural rather light. Erm but it almost as if I think, I think, we have kind of lost view of that somewhat in the 20th century because when you didn't have lots of electricity for lighting and ventilation big deep plan buildings you wouldn't have ever designed buildings like we design today so it's almost like a kind of learning how to design buildings again without all of the ...

I: Yeah...

R: ...benefits of er natural, er sorry artificial ventilation and artificial lighting delivered through-out the 20th century

I: And are you building up a sort of base, a database, a kind of information bank of that kind of design...

R: We don't...

I: ...methodology that gets applied...

R: ...we don't really I don't think we do that well enough.

I: Right.

R: It seems to be a couple of things, things that a couple of people are interested in...

I: Yeah.

I: ...more so than others. I mean we have erm, we have er, a library and a librarian who comes in sort of once, er I think one and a half days a week and he compiles sort of latest best guidance, say of its an office building he'll have all the kind of BCO guidance which will involve the sustainable office developments and then so we've got folders of contemporary offices...

I: Right

R: ... or how to design an, a office building; we've got all the literature there. Which also includes a servicing and sustainability approaches you might take, er but we don't have a kind of significant erm library of individual buildings that this has worked well on or this hasn't. It's generally sort of published stuff rather than our own library.

I: And, put, and kind of tacit knowledge of the office being applied at these design reviews to sort of say...

R: yeah, yeah. So it's kind of word of...

I: Which is....

R: ...word of mouth.

I: Which is presumably how the design reviews work as well?

R: Yeah, there just er, em .Everything is recorded for our other QA 14001 thing...sorry 9001, where you record the design reviews of areas to look, areas to go away and research so at the next design review you will ...

I: Okay.

R: ...chase them up. So maybe, it may well be you know, one of the things is 'what is the potential for natural ventilation to this building' or 'what's the er what's the opportunities to increase natural lighting'...

I: Hmm mm.

R: ...and that will be what you go away and work on and design.

I: Right and how would you design that? Or where would you go to get information on that then.

R: Er, well again I suppose to some extent it's people in the office who have done seminar things before.

I: Right.

R: Er again, we've got our library but better than the library is the librarian.

I: Hmm mm.

R: Who erm is excellent at finding whatever you want...

I: Yeah.

R: so if you, if you, and not just sustainability things, if you were to say, I want know you know how to sus...naturally ventilate a theatre say....

I: Yeah.

R: he would just go and get you all of the publications, all of the articles on...

I: Right.

R: ...pub...naturally ventilated theatres and you look through all the journals...

I: Yeah.

R: ...and through all the articles that he gets.

I: And are you the other port of call for naturally ventilated buildings in the office?

R: Yeah, yeah.

I: You are the kind of...

R: Well yeah.

I:..the source of information...Allrigh, and if you come back to the next review, yyou've gone away and you've kind of looked and natural ventilation is a winner and you've designed it into your building, how do you then assess the effectiveness of that, how, do you use an external...

R: We don't have any modelling tools in house.

I: Right.

R: and indeed I think what we'd do is come up with a kind of 'we think this kind of works'.

I: Yeah.

R: Over to you mechanical and electrical engineer...

I: Right.

R: ...or mechanical engineer. Or, or, what we have done in the past on some projects is get [Natural Ventilation/Airflow Consultant] in again...

I: Uh huh.

R: erm when we were talking about erm , again a theatre it was for a college and we wanted to show them that this could be, we wanted to present to them that it might be a naturally ventilated theatre but we didn't want to do that without having any idea so we did call in erm [Natural Ventilation/Airflow

Consultant] to talk through how it could be got to work and I worked on a little sort of analysis of how I thought it could work...

I: Right.

R: ...and then called them in having worked with them before. We've also got them in to give a couple of CPD's to explain how a a, a, how er, previous schemes they've worked on erm were, were developed and how they, how they work.

I: and, and presumably you are assessing this stuff against the criteria of, I don't know, like an energy target or an indoor air quality target?

R: erm... not really. I think we probably tend to, although we know, you know, people that have worked on buildings like that before know about kind of quality sensors...

I: Uh huh.

R: ...and we've got quality sensors and things inside the office so people can see them and get the readings and know how many parts per million CO₂ ...

I: Right.

R: ... there are. You know, you know when it has got to 750 because the windows open in the roof.

I: Okay.

R: So, it's, so, it's. We would never, you know we are not in a position to set any of these levels so really we would work then with the engineers as a kind of, as s, as a, and it's almost a this is what we, it's almost an aspiration on our part because it's beyond our erm sort of experience really to then design it any further.

I: Right.

R: So in terms of what energy ot might save you we're not really into enough to be able to just tell, tell people how...we don't have that information at our fingertips. We, we work with a, an engineer.

I: and does your office work, does it work well?

R: erm, well it's well, it's, it's er. Because it's a two storey, I suppose three storey by the time the pitched roof is on it's, it's a fairly unsophisticated actuator which opens the opens the window at the top of the room so whilst it exhausts the stalest air sat the top it also allows plumes of cold air to drop down and land on whoever is below them.

I: Right.

R: So it kind of works for probably 70% of the office and it doesn't in the other areas where people get cold ...

I: Hmm.

R:...and have to put a jacket on [laughs]...

I: Yeah

R: ... in order to keep everyone else happy. It's just, I think it's just a fairly crude system...

I: Yeah.

R:... and it was, it's essentially the best we're going to get from a building which is hmm 200 years old...

I; yeah.

R: ...with a single glazing large roof light.

I: yes.

R: So. But I think it's erm i... as I say it's. it's. as, as good a natural systems as we're going to get. We had, years ago, a mechanical system installed which never worked and the ducts were just hanging in the air.

I: Yeah.

R: and they just didn't work.

I: Right

R: and I think about two years ago they just got taken out.

I: And do you, are you formally collecting information about your office?

R: We do yeah. Well, I don't but erm normally it's the, we work with erm we get quite a few students in from [a UK architecture School] doing their erm MPhil on sustainability in architecture...

I: Right.

R: I can't remember what the course is called. But erm we've got an agreement with them that, you know, depending on the position we are kind of in, we will take one of the students...

I: Right.

R: ...and erm, we normally get them to measure the energy use [laughs] erm er, as you know their particularly interested...

I: Yeah.

R: ...in those kinds of things, they are doing their MPhils in it. So we all, there is always someone monitoring it.

I: Right.

R: and there's an associate who is head of, who kind of leads and is chair of the green group who collects it.

I: Right.

R: Essentially.

I: Does he do anything with it?

R: So there's always someone. And we, we, what we've tried to do by these things...by kind of installing the the er opening roof lights and the er more energy efficient light bulbs is we've targeted as part of the 9000...

I: Hmm mm.

R: , er 14001, we've targeted a kind of year on year decrease...

I: Right.

R: ...in kilowatts...

I: Okay.

R: ..per year.

I: Right.

R: If that is the measurement?

I: kilowatts per metre squared ...

R: Energy reduction per year is you know is...

I: Yeah.

R: But there's a, there's a kind of strategy to reduce it.

I: Right so you're kind of actively making ...

R: Yeah.

I: ...changes to the way the building works and monitoring to see...

R: Yeah

I: ...if they function or not.

R: yeah.

I: I see. And does, do you, does that, is that reflected in your build... in you projects outside the office do you...

R: Erm, Well we don't have, we don't have, I'm not aware that we have done any post occupancy monitoring...

I: Right.

R: ourselves.

I: Okay.

R: we've had some students review buildings but we haven't as far as I am aware anyway.

I: Do you get any data back from your buildings, any buildings?

R: Erm Not often. We get feedback but generally not about the energy use.

I: What is it normally about?

R: erm... it's feedback from either happy or erm unhappy Clients [laughs]

I: Right.

R: Erm but it's normally about 'this building seem to be working very well it is very busy and...

I: Yeah.

R: [2(?) inaudible words] or you know, there seems to be a damp patch in the kitchen and that kind of

I: Yeah. Or crack in the..

R: or crack in the screed or something. It's not erm, it's not, we don't for our own surveys.

I: Okay. DO you em...

R: Again this is as far as I know, there might have been projects in the practice that have done that.

I: But in getting that feedback on the kind of quality of the building or any defects and stuff, pres... is there a procedure in your office for collating that and rectifying and problems or applying that knowledge to the next project?

R: We have we have sort of, I think everyone has, the last building you worked on, you know what went wrong and the don't go wrong on your next building...

I: Yeah.

R: because they are sort of the forefront of you mind but other things might do which went okay last time...

I: because you are...

R: so I suppose any kind of things obvious that went wrong you will, or you'd tell people about, you know, make sure you don't do this because this happened or things like that. We do always plan to have kind of end of project reviews and kind of sit down and say, 'right we must never do this again'...

I: Yeah.

R: ...'this was very successful', lets replicate it and I thin partly in the past we haven't done very repetitive work.

I: Right.

R: erm. So whilst it's all useful to sit down analyse what went wrong and what, it just hasn't... and actually I think that some people by the end, by the time that that comes that point comes to sit down and assess, you're on to the next project and it doesn't seem important anymore...

I: Hmm.

R: Although I think everyone acknowledges...

I: yeah.

R: it is, but for some reason it doesn't happen and you get onto reviews of the next project and it probably only filters through by your reviews – general design reviews – and knowing what went wrong last time and not suggesting people do them, or, or.

I: Yeah. SO the stuff that your Clients are coming back to you with its presumably... it's defects or kind of things that you'd expect to be right, you know in a normal building contract you expect the screed not to crack...

R: Yeah, yeah.

I: ...so you can go back and say excuse me I've got a cracked screed...

R: yeah, yeah but they may inform the er, the er, how we think about getting people into do CPDs

I: yeah.

R: You know, so we do have you know regular CPDs. erm.

I: Yeah. What I'm saying is if someone is saying I want a hall with a floor and the floor is cracked, that is a fairly obvious defect that you can go back and say, 'the floor doesn't work properly, sort it out'...

R: Hmm.

I: Do they come back and say, this was a BREEAM excellent and as part of that the energy rating was going to be X and it's not X it's 2X and...

R: we haven't had that, we haven't had that because erm I don't think we've built any, we haven't completed any buildings that have erm star... that have had the most recent suite of BREEAM assessment requiring all of the.. I think, I think this is an interesting point that...

I: Hmm.

R: ...it will come back no doubt the first time that that building is found, and this must be throughout the industry...

I: Hmm

R: ...that you will get Clients saying why isn't it BREEAM excellent...

I: or...

R: ...when it was designed to be BREEAM excellent, pre assessment said it would be BREEAM excellent the design stage assessment said it would and post construction assessment says it's not for whatever reason. Erm, I suppose it does give them, the Clients something to smack you over the head with and say 'you said it was going to be this, why isn't it?'

I: Or even do you pay much attention to the DEC rating, or do your Clients pay much attention the DEC rating, to the energy certificate rating of the building?

R: Erm.

I: I suppose public Clients would have one of them.

R: Er, DEC rating?

I: Display energy certificates, the...

R: oh right.

I: There's and EPC and then a DEC.

R: Yeah, yeah, erm. I don't know.

I: Kind of in theory, that is, I suppose that is something to come back on.

R: Yeah.

I: In theory someone could ask for a B rated building...

R: Yep.

I: and then come back and...

R: Well if it doesn't meet it yeah, then you've got the whole, I suppose technically that, our limits in achieving that...

I: Hmm.

R: .. or the things we can do in achieving these, beyond the design are actually quite limited because a lot of the system that will be measured, a lot of the time, a lot of it is the services, and the detailed design of the services...

I: Yeap.

R: ...that will, you know, using different fans or contractors substituting fans...

I: Yeah.

R: or just different pieces of kit is kind of outside...

I: yeah.

R: I mean I suppose it is more of an issue for services engineers, where we will design a building and if it stays broadly that design that orientation, that amount of daylight coming in, erm and if this, and if this doesn't we can't really be surprised at that at the end. Erm, like you could be if the fans aren't working particularly well and have to run faster for whatever reason and use more energy than expected. I think it's more that kind of thing that would trip you up or if people are subsidising materials that we have specified that aren't A rated and that kind of drops you points. Or...

I: And there probably enough in the actual building form and fabric design process, there are enough checks along the way that your M&E engineers going to say whether that's...

R: Well you hope so.

I: If you need to make a window smaller or a wall better spec then it's gonna get picked up by somebody.

R: You'd hope so, I think it's something you have to be on top of and as ever, anything changes you have to try and fully understand the implications of the change and all of the knock on effects.

I: Who does your SAP and SBEM stuff, is it in house?

R: We tend, no we don't do any SBEM or SAP in house.

I: Right.

R: Erm. We do it, the size of buildings we work on we always have full time structural engineers....

I: yeah.

R: erm, but we wouldn't, it's not we don't do any small scale buildings where we act as engineers...

I: yeah.

R: ... and architects at the same time, that is more of a domestic arrangement. So, and I understand the SBEM has got massively more complicated in 2010 so we steer pretty well clear of it to be honest. We give the engineer all the information they ask for; wall build ups...

I: Yep.

R: ...and then we talk to Kingspan, people like that for the insulation we are using...

I: uh huh.

R: ...but what's glass, what's solid, what's timber lined, what's zinc and all of this somehow seems to need to be processed by the SBEM...

I: Yeah.

R: Erm, we just tell them what it is and the engineer will do it all.

I: And if, if it doesn't meet, if it isn't up to spec, is there an iterative process...

R: Well if it doesn't meet, we have actually had an interesting case recently where the building was designed some time got planning permission some time ago...

I: Uh huh.

R: ...and er, was due to start on sight some time ago. So had it started before I think October 2011 it would have still been a 2006 Part L building but for a number of reason it didn't start by that date which triggered it having to comply with 2010. SO we had a building that was design for 2006 but because of the way we approached it we knew it would be well above 2006 But it was very close to 2010. So erm, and actually indeed part of it failed building regs submission er, so we had to tweak glazing spec slightly and some, we need ed to, we combined a couple of fans instead of splitting them to route them up to kind of tight paths and the, the ratio of the duct wasn't particularly good so tweak, we had to use the SBEM as a sort of tweaking sort of tool...

I: Right.

R: To see what we, what would, what would, what we could change to make the difference.

I: Olay.

R: and erm.

I: But your still using and external persons.

R: yeah, yeah. well we just worked with them quite closely.

I: Right.

R: I mean it's an external person but it's a core member of the design team.

I: Okay.

R: It's not erm, it's not like a kind of subcontract by someone else.

I: You don't just send it off and it comes back with yes or no on it, there is actually a knowledgeable person...

R: yeah, who knows the building well...

I: Right.

R: and we, they phone up with constant questions...

I: Right.

R: .. and we tell them...we, er...the things we had to on...funny enough, it appeared to fail but as we put the manufacturer specific information in, we found you know, using this manufacturer as opposed to using that manufacturer would give you better performance.

I: What for the same spec product?

R: For the same type of product. You know a little.. there were other cost differences...

I: Right

R: ... to take into account. But er, by using a I don't know a BACE instead of a Mitsubishi or something like that you may be able to get a better performance ...

I: Right

R: ... within the same constraints.

I: Ikay.

R: It's just some products work better than others.

I: Yeah.

R: So, and when you type that in it gives you slightly, you know marginally better performance on, I think that the key one for ours on SBEM was....erm...it was kind of something that covered all other power....auxiliary power I think it was.

I: Right.

R: And it was generally to do with fans and we found that tweaking the duct ratios improved that no end...

I: Right.

R: ...and having a better, more efficient fan helped lots and that's what actually enabled the building to...

I: Right.

R: ... to actually sail past 2010 then. And interestingly enough, SBEM was then flipped on its head and used as a method to see what you could not do but still pass.

I: Right.

R: in a kind of, in a value engineering...

I: Okay.

R: which is, you know, you would think the opposite of what it's for is, sort of so. I mean there was even a suggestion that was thrown out immediately by everyone, I think it was someone talking of the top of their head but 'What if we reduce the insulation to the external walls?', er, to save money as a capital cost. Could we do that and still pass SBEM? So I think I haven't seen it happen before but I think, as in BREEAM, it has almost become a sort of a quasi-legislative thing, SBEM can be used not only to make something better and to prove it but it can be used as it probably is in kind of the equivalent of PFI buildings...

I: Yeah.

R: ...to scrape past...

I: Yeah.

R:.. and rather than using best practice or designing to sail past, and have these highly tuned buildings it's kind of stagger over the edge and no more...

I: Right. I think that happens in a lot with BREEAM stuff, you know particularly with I don't know, volume house builders I mean they're going to do the absolute bare minimum to meet a standard, like, literally scrape over it.

R: Well, I suppose, that's, that's, that the good point about setting the standards.

I: Yeah.

R: That if you, if you don't have any standards they'll meet, well they won't have to meet anything.

I: At least there is something to scrape over.

R: At least it's there and you have to claw yourself over the wall and if it's, you know...

I: Hmm.

R: ...the taller the wall the better you have to climb over. I was just, I was just quite fascinated to see it working and it cleared, good, amazing. It means we didn't have to collect all of this waste heat.

I: Yep.

R: It means we can get rid of that duct system and erm, er, the er, heat recovery system and ditch it because we can save money,

I: So erm, Part L is I think, is it 2013 that you're going to have a 'As built' section' where like BREEAM you've got to go and asses, or theres going to be a kind of...

R: Err...I thought that, I'm not too sure but I thought 2010 had a, I thought you had to prove the SBEM...

I: Okay.

R: ...for that.

I: have you been involved in that, in any projects where that has happened yet.

R: Er, not really because it has just come in, it was all erm buildings starting on site after October 2010. Or maybe that, that was the last date, every building after that date has to be 2010, some before may have been. But I don't think we have completed a project just yet that has had to have an SBEM test. We have had all the pressure tests and things like that which are always a bit nervy.

I: Hmm

R: When they come to actually do the test.

I: Er. I am kind of intrigued by a practice which is very. Obviously very interested in collecting information and assessing buildings not having carried out any post occupancy evaluation. Or, why do you think that is.

R: Erm. I think there is, well there's a library we worked on...

I: Hmm mm.

R:...for a university, but I just wasn't involved in it, and I'm pretty sure the associate involved in that, who is no longer at our practice was very interested in doing a post occupancy and I think even went as far as to pull a survey together erm. I'm not too sure why we haven't done it. I think it's er...it's...at the moments it would be pretty much at our own cost.

I: Yep.

R: I don't think there would be al ot of funding for it, we are not that involved in kind of university funding bodies who may be able to give you a research fellow or somebody to do all of the...

I: Yeah.

R: So I suppose it may just be that we don't have to do it and it costs us money to do it and er, that's why we haven't done it. I think people are quite interested in doing it but it's again, you, you kind of, it's almost like you finish a project and you're on to the next one.

I: Yeah.

R: and, and, I think that will probably change with the BREEAM erm requirements.

I: Yeah.

R: I think, I think, If there were published surveys that you could just give to your Client rather than having to, and this sounds a bit lazy, but rather than having to spend time as a kind of busy architectural practice in tough times...

I: Yeah.

R: ...having someone working on a survey for post occupancy is probably not likely to happen in, at the moment you know, maybe, maybe when sort of good times come back...

I: Yeah.

R: it may be something that you do, but if, if you could get, or if there was such a thing, there may well be a published standard RIBA post occupancy for that you just give to you Client who just passes them out to tenants...

I: Yeah...

R: or erm estates department if it's a university and they tell you how much energy it's using and things like that. I suppose, we ought to use them, there may well be standard forms already!

I: Yeah there's the BUS building user survey. Which was developed by ARUP, Adrian Leaman and the Usable Buildings Trust.

R: Right.

[removed anecdotal statement about the survey made by I].

R: And is that a free thing?

I: Nah, you gotta, gotta, I think there is a 500 quid licence fee to use it but they store all the anonymous data and they publish it and you can see where your building sits within all of the other alike buildings so if you have got a secondary school you can see where it sits within the range of secondary schools...

R: oh right.

I: ..they've got under..

R: what you can see it and no-one else can?

I: Well everyone can see anonymous stuff I think, er.

R: So you can see, you can see that your building is...

I: No. no. You can see where your building is, you can identify your buildings

R: Compared to all the other anonymous....

I: Compared to all these other schools. Just kind of schools, anonymous schools.

R: Yeah.

I: Er.

R: I suppose there is always a slight nervousness in that when it is not anonymous that... you know, yours isn't actually very good. [laughs]

I: Well, yeah, yeah, it's a real issue.

R: I mean, Possibly through for no fault of your own.

I: It's the same with the BREEAM thing, if a Client can now come back to you and say this doesn't work, are you likely to go and collect the information to show them that it doesn't work?

R: NO.

I: Probably not.

R: SO how do you know if your design works or not?

I: Erm, I suppose we don't, erm I guess, err, you still tend to keep in touch with Clients and I'm sure all of our directors have conversations with Clients about performance... I suppose a lot of the time it's more like erm, less tangible things than how much energy is used.

I: yeah.

R: I think how much energy is used in buildings is something that the kind of services engineers have done kind of rather well at saying this is our design. As because it is more, how measurable, quantifiable energy that a piece of kit uses is kind of far more tangible than the experience of a nicely lit fresh building.

I: Hmm

R: And I think that erm, the whole thi... as ever architects are pretty slow of the mark in...

I: Hmmm

R: in kind of being BREEAM assessors and kind of being the people at forefront of sustainable design it seems to be that the services have kind of got there quicker, so erm, er, er, I lost my stream there.

I: It's alright, I am kind of, I am kind of interested in the er, cause there is this, there is a load of design information that you get, I mean you pick up an architect's magazine it's full of pictures about design and spaces that work really well, sorry, I am kind of going off on one myself now....

R: Yeah.

I: But those kind of spaces, there's things that people like and the kind of show each other, you know.

R: Yeah.

I: and even like the kind of casual, whether it's defects stuff or pleased Clients saying the buildings really busy and people seem to really like it, that kind of anecdotal...

R: yeah.

I: ...information feedback kind of, the, the, the loop already exists...

R: Oh yeah.

I: it just doesn't contain all of the information about the building.

R: yeah, yeah. And I think that erm, it's always nice when a Client says to you, this works well .

I: Yeah.

R: Everyone know when something works well and you think I'll have to do that again, but I suppose... its...I suppose what I'm saying in a roundabout way is that as far as architects are concerned the sustainable performance of buildings seems to be erm not hijacked, that's too strong a word, but we've let we've allowed ourselves to be at the edges.

I: Hm mm.

R: When the fundamental design of the building is actually what's, I would think is the most important thing, any building can have the best performing kit thrown in it...

I: Yeah.

R: Provided you've got a big enough plant room and a route for all the service to go, but that's kind of, I've always thought that that's the kind of erm, sticking energy efficient stuff into a building, or tacking on energy efficient stuff to the outside of the building isn't really getting it as a, as a sustainable architecture, its all good using the most efficient stuff...

I: yeah.

R: ...but it's not sustainable architecture, it's sustainable services...

I: yeah.

R: ... erm and the, the fundamental design of the building has more impact on how sustainable or low energy a building is going to be...

I: Yeah.

R: ...through being able to naturally light it, you know not using, not even using energy efficient light, juts not using the lights wherever you can.

I: Yeah.

R: And not using energy efficient ventilation systems; not using ventilation systems...

I: Hmm.

R: ...and I think we've lost, well we don't kind of sell that enough to Clients, we kind of let the technology side of sustainable design...

I: yeah.

R: ...er dominate.

I: You sort of touched on this at the start about the fact that we have lost the ability to implement these kind of measures. How do you think we get it back?

R: Well, I don't know if it's a kind of problem... if you want my... one of my favourite buildings in London is a fairly obvious one for architects, is the Soane Museum...

I: uh huh.

R:...and you just walk in and you look up and I've never seen on but I'd love to see a roof, a photograph of the roof plan and you just see all the different lanterns, and it just, you see how it delivers, due to the section, more so probably than the plan, but it just delivers daylight into all the different parts of the building and then it employs small courtyards, bigger courtyards...

I: uh huh.

R: ...double height spaces erm in, where the sarcophagus is, the kind of building within a building with light slipping down the sides and things. And it's a very complicated section because there weren't any electricity to light everywhere.

I: Uh huh.

R: You know there was obviously candles...

I: yeah.

R: ...but it seems just, the movement of air through the building and the ability to drop natural light in, at where possible, in the seasons. That was then no longer required and you could have fifty by fifty metre floor plates and it didn't matter because it's all lit to 500 lux or 300 lux or 1000 lux ...

I: Yeah.

R:... whatever it has to be, it's all ventilated because you've got your dropped soffit an you just take it all out. And I think it's that, the kind of ,something that we've prob...not necessarily lost but just don't do I suppose is the designing of something from its fundamental parts of how it's going to work, how lights going to get in, how fresh air is going to get in, it's just no longer as erm prominent ...

I: Hmm

R: ...as it once might have been once was.

I: yeah.

R: You see all these incredible natural ventilation systems in er you know major public buildings and the air paths and everything have all been worked, intertwined with cornices...

I: Yep.

R: ...and I don't think we think about it quite as much anymore, we just, we, I think architects as a whole probably and no doubt some people would disagree, design buildings and them service them...

I: Yeah.

R: ... as opposed to thinking about that at fundamental stage, at, at the very early stages.

I: Hmm.

R: It's probably not true, it's probably just a...

I: I think it is. We've kind of come full circle.

R: Hmm.

I: We've been going for about 50 minutes as well, it's probably a good point to stop.

R: Alright.

I: That was excellent though. Thank you very much.

1.6 Engineer 06

Interviewee:	Engineer 002 (R)
Interviewer:	Craig Robertson (I)
Location:	Surrey
Time/Date:	12.00 03/05/12
Duration	49.10

I: indicates the Interviewer is speaking

R: indicates Respondent is speaking

[square brackets] indicate explanatory notes etc. added during transcription

... indicates pause/break in speech

Transcription:

I: [recording begins with R reading through the consent form]

R: Yep. Fine – [mentions spouse' profession] so I know all about the data protection act!

I: Er. So I thought we could start just by you telling me a bit about yourself and the kind of work you do, what your role is...

R: Okay, fair enough. I'm a senior er, Mechanical Engineer...

I: uh huh.

R: ...at [names large multi-disciplinary employer] so primarily deal with HVAC design...

I: Right...

R: although we have just changed in the last 7 months, erm, I switched roles in so far as we set up a sustainable building physics department...

I: Right...

R: ...which is focussing on daylighting, thermal modelling, CFD, er all that kind of energy analysis...

I: Uh huh.

R: ...all that kind of stuff, so I have transferred over to that so my focus is now more on the sort of modelling and analysis and things like energy statements for planning...

I: Uh huh.

R: ...Part L assessment, all that kind of stuff we are trying to bring it all into one banner and trying to drive sustainability and energy efficiency through that sort of department.

I: Yep.

R: Even though all the design engineers should be doing it anyway we've got a sort of overarching sort of watching brief just to advice.

I: Are you sort of a consultancy within a consultancy.

R: Almost, yeah. Yeah we are hoping to sort of extend that to external...

I: Right

R:...External Clients. Possibly architectural practices who don't have their own...

I: Yeah

R:...their own sort of in house expertise on that so we can advise on sort of massing, orientation façade design, that kind of stuff.

I: and how, what do you use to advise them, what, do you use a particular software?

R: Yeah, er, we've got er, we've got an architectural, well a guy with an architectural background who is very very good with erm, Revit architecture.

I: Right.

R: erm, we've just got in Revit MEP...

I: Hmm mm.

R:... although we are still trying to fight our way through how to use that at the moment.

I: Yeas, I've had a crack at Revit and erm sort of gave up...

R: I used to be a CAD operator before I sort of worked my way up so I am pretty au fete with CAD but Revit is a completely different beast.

I: Yeah, yeah, I finished my , my last job just as, it wasn't Revit they were using they were using Microstation equivalent...

R: Ah right.

I: just as that began to pick up so I have only used 2d CAD.

R: yeah this is it. We also use erm, the IES...

I@ Yeah.

R: thermal modelling software...

I: okay.

R: We have used that for years so we will just see how that goes.

I: And what kind of work do you do, do you do kind, does that consultancy within a consultancy kind of do everything?

R: Yeah a broad spectrum. Well the only thing, the only sort of projects that we don't as a company really touch on is domestic.

I: Right

R: So we will do commercial, industrial erm,...

I: Anything really?

R: Hospitals...

I: When you say domestic do you mean one off houses or do you mean just all residential?

R: Pretty much all residential yeah, we haven't really as a company pursued that erm I think we are going to have to start looking at it.

I: Yeas everybody has to look at everything now.

R: 'cause that is one of the few, few sort of sectors that is still growing.

I: Yeah...just.

R: erm but no, we do er hospitals er the last sort of energy statement we did was for a erm proposed er [location identified] Fire Brigade Training centre...

I: right.

R: ...that was quite interesting that was a different type of building that we have never seen before. Erm yeah so that kind of thing.

I: Okay and the, the sustainability group that you operate in erm that suggests something about your company's attitude to sustainability.

R: Yeah very very high on the agenda.

I: and is that driven by erm current legislation or by a kind of desire to do the right thing if you know...

R: I think it's a bit of both. We recognise the fact that obviously the current legislation is moving that way but the company itself has a drive ...

I: Right

R: ...to promote sustainability and be as sustainable as it can in everything it does. We have a corporate sustainability department...

I: Hmm mm.

R: ...as it were that oversees our company sustainability but also advises on, I suppose large scale sustainability items like public consultation on new planning requirements...

I: Right.

R: ...ecological things like that where as we in sustainable building physics are very much focussed on the sustainability of the building.

I: Yep.

R: The wider site yeah, we will consider it but that is more the corporate sustainable group, we are just focussed on how can we make that building as every efficient as possible, as low energy as possible.

I: and you're looking at the whole package the fabric, the...

R: The fabric, the orientation, the services any potential renewables, yeah, anything we can pull into it really.

I: So can you talk me through the process of applying that kind of analysis of to a project, a kind of design project.

R: Yeah.

I: How early in the process you get to see the design

R: Well we...

I: and how late you are involved.

R: Well, yeah. We are trying er, traditionally we haven't been involved until quite late on so I would say probably equivalent of RIBA, RIBA stage D or E.

I: Right.

R: er, but we are really fighting now at the moment to get in very early on, sort of design stage A or B, right at concept so that we can say, you know, you've got to think about this, think of the orientation, think of the layout of the site, think about the massing of your buildings erm you know we could potentially use this that and the other and just try and get people aware of what can happen ...

I: Yeah.

R: So that we can incorporate it as early into the design stage as possible.

I: At Stage you are kind of limited by...

R: Well we are yeah, we've found that in the past that we have come and said we can do this, we can do this that and the other and the poor old architect is sat there going but I haven't got any space for that, you know. And end up with this sort of confrontation that needn't arise.

I: Yeah.

R: er. We're, we very much want to work hand in hand with people because at the end of the day we want a building that works on low energy...

I: Hmm mm.

R: the architect wants a building that's visually stunning.

I: yeah.

R: but we both want the same, you know WE want it to look good and we don't want to sort of tromp all over the er, the architect's design to achieve that so the focus is now, we are trying to get in right at the early stages erm so, we're quite new so and obviously with the current economic climate...

I: Yep.

R:... there's not that many projects floating around, erm but the way we would envisage it happening is that we would get involved very early on, do preliminary feasibility studies on renewables things like that, advise the wider design team as to what could be achievable, what's not achievable either due to site constraints or budgetary constraints or what have you.

I: Yeah.

R: and then kind of work hand in hand with them all the way through the process.

I: Hmm.

R: So we would say 'This is what we would advise' we would then let the mechanical and electrical design engineers go off and do the nuts and bolts design...

I: Yeah.

R: And we would keep reviewing it, we'd perform all of the thermal analysis, the modelling for it.

I: Hmm hmm.

R: If necessary we could some CFD studies if they are proposing nat vent or a particularly off the wall ventilation strategy. We could do that for them and advise as to whether that's going to work or not going to work.

I: Yeah.

R: what have you. And just try and see that a;; the way through to I would say probably stage F.

I: Right.

R: When it goes out for detailed design and then it is on site and it is in the hands of the gods then.
[Laughs.]

I: Okay. Erm. So what, you are using IES or.

R: We are using IEs for the, for the thermal modelling. We have er a different piece of software that we use for the CFD analysis which is Flowvent er, which is, er by a company called Mentor, Mentor graphics yeah.

I: Okay.

R: Whereas IES does have a CFD module to it, you know they all work of the same equations and what have you, the Flowvent is a lot more flexible and a lot more in depth. You can analysis it a lot more, you can produce moving images and movies to show how everything is working. It's just, just a lot more in depth...

I: Yep.

R: ...than the simple bolt on you've got with IES which is good for some small buildings...

I: Some of rough and ready quick...

R: We've just modelled the atrium area of an airport terminal building which was pretty erm pretty full on...

I: Some complex maths....

R: erm it was yeah, that was er, the poor old computer it took it 19 hours to run the calculations...

I: a bit of a monster.

R: Hmm.

I: I know you say it is quite early days but are you working with, is the design made of - you say it is a multi-disciplinary practice...

R: yeah.

I: company or organisation, Is the design team made up of your office or other, external consultants?

R: it can vary, it depends very much on the job. We've had, we've had a lot of restructure just recently. Sort of three years ago it would very much have been, we would have been an internal multi-disciplinary team...

I: Right.

R: We'd have said to the Client, right we can do your architecture, we can do you structural engineering, we can do your MEP, we can do your whole world. Obviously economic crisis has come in...

I: Right.

R: Things have changed a bit, we do strive to try and achieve that, we do like to keep it in house where possible but most of the time we piggy back onto whichever one of our discipline has gone in with the project.

I: yep.

R: It might be that we have been appointed as the architectural consultant on the project and they will then say, you know, we've got these guys in the background, would you like them to come in and perform this and sometimes the design team say 'no we've got that covered' or 'yeah actually that would be really good'.

I: So, er. This is kind of driven by your organisation...

R: Hmm.

I: ...are your Clients interested?

R: Generally they are, they are. It is a very very difficult situation erm because everybody wants to be sustainable.

I: Yep.

R: But nobody can afford to be sustainable.

I: Yep, hmm.

R: I think the number of projects we've we've come up with these incredible concept designs, really low energy, lots of renewables, lots of wizzy features and they just get chopped out in the value engineering because the Client just can't afford to pay for it, the pay back is too long for them.

I: So it gets cut back to.

R: Yeah to bog standard...

I: Part L...

R: Yeah, yeah. That, that, that is something I am noticing a lot at the moment.

I: Right.

R: I think again its, O keep harking back to it but I think that's a lot to do with the economic situation.

I: Yeah.

R: A lot of Clients these days are saying we really want this zero carbon building but what do who need to get, what do we need to get through legislation.

I: Yeah.

R: 'You need that' - 'Okay we'll do that'.

I: And how are you framing your advice, or what sort of Clients have you got I suppose because the sort of long term economics of low energy might...

R: Well this is it. The [location] fire brigade on was quite a good, quite a good er, example of this cause erm the [location] fire brigade itself has its own targets for sustainability and it had to comply with [local planning guidance].

I: Yep.

R: And er, and obviously with planning so we were commissioned to produce the energy statement

I: Hmm mmm.

R: To, to , to submit to planning to say this building is gonna use this much Carbon dioxide [sic]...

I: Yep

R: Erm... and what was interesting was we actually managed to erm, beat the Part L requirement by 23 percent...

I: Okay.

R: on carbon dioxide emission but we still didn't achieve planning. The planning requirement...

I: Right

R: Which was to generate 20% of your energy on site. That's, the...

I: That is a consistent bug-bear of [location] building...

R: So we said to the, we said to the client – 'Look, you know you can go absolutely silly on this....

I: Hmm mm.

R: You can spend a lot of money achieving the planning requirement...

I: Yeah.

R: You know we were meeting 15% of it I think, so we hadn't quite achieved the 20 and I spoke to the planners and I just said, you know, look, we are beating Part L by 26% it is a low energy building anyway.

I: Yeah...

R: Even though it is and it isn't if you disclose, if you discount the erm, some of the process loads because they were abnormal...

I: yep.

R: erm then it was quite a low energy building. Er, but er, and this er and the client was like 'okay we appreciate that', we're, you're, we're trying to say to you 'spend the money, you'll save the money long term'.

I: Yep

R: they're going okay but even if we spend money we are still not going to achieve planning and all, or the requirement. I spoke to the planners they said 'alright achieve 15 and we'll be happy'.

I: Okay.

R: which was, which was great.

I: and how did you achieve that?

R: that was erm, that was mostly through photovoltaic, actually it was a big photovoltaic area on the roof.

I: Right. And was that reduced by your early involvement in the design process by advising on the fabric and things...?

R: I think so yeah because we were part of a consortia, erm [location] fire brigade went out and said 'we need 2 new training centres in [location]...

I: Hmm mm.

R: they have to satisfy this criteria erm...go. Erm the 2 consortia that were involved had to then source the sites, procure the sites...

I: Right.

R: Obtain planning on the sites, so we were involved right at the start, erm they'd already procured the sites by the time we got involved and had a sort of preliminary architectural plan and we said, you know well you might want to change this, and move that and what have you so that was quite good, we were involved quite early and we managed to say to them, erm, 'look despite all this amazing design that you have done, you're still nowhere near achieving Part L even.

I: Yeah.

R: So we, we had to put in quite a lot of PV just to achieve Part L.

I: And did, did, was that working to BREAMM or that, or err the fire brigades own...

R: They did, the fire brigade, it was the fire brigades own, but they did require a BREAMM excellent rating.

I: Okay because I have never been involved in a project which has been working to BREAMM and the site hasn't yet been procured. And I wonder if the points you get through BREAMM for selecting a site close to public transport

R: Hmmm.

I: if that has ever been a consideration because it generally tends to be the economics of buying a site, you know...

R: Exactly.

I: you know, it, it, Its cost.

R: We can afford that we'll have it.

I: If it happens to have BREAMM points associated, that's a kind of minor if any consideration in the process if at all. I just wondered if that had come into the thinking at all.

R: I am not sure. I am not sure, I wasn't too, too heavily involved in that bit of it I know there was a requirement in the [location]FB spec to say we want to achieve BREAMM excellent.

I: Hmm mm.

R: So whether they have looked the sites to see, try and pick the best one they could that kind of...

I: Yeah.

R: But er, cause one we were looking at was right near a main road and right on a tube line so it was pretty well sighted. It was an old industrial estate so...

I: Has that been built?

R: No sadly we, we, we lost it, we lost it to the opposition. So err funny enough, on the running costs.

I: On the running costs?

R: cause the consortium was then to manage it for 25 years. For the fire brigade.

I: Was that a PFI contract, was it?

R: Yeah, yeah. And the, apparently the other crowd were, I think the comment was 'substantially cheaper on the long term cost projections' than,

I: Right.

R: than our partners were so...

I: Right.

R: so, I'm sure it is being built I am just not dare where.

I: But you know by whom.

R: HMM yes.

I: Okay so, in making these predictions you have talked about Part L.

R: Hmm.

I: Erm, so. But your also giving your clients an online, an on-going running costs.

R: Yes.

I: SO your building up a picture a full picture...

R: Yeah. Where we can we will try and do a whole life costing. Probably not an in depth one but we do try to say to them if you spend this capital cost then over the years you can reclaim this, save that you know, we don't do a full sort of net present value or sensitivity analysis or anything like that or though we would be quite we are quite happy to if that is what they want.

I: Uh huh.

R:er, I think more clients are starting to think that way now, they are starting to think, particularly the public sector

I: Hmm.

R: are starting to look at you know we want a whole life cost analysis of this.

I: How do you deal with, this is kind of a side issue, but the reliability of telling somebody this is going to cost x amount to run and then it turns out that it costs double or half or whatever.

R: Well, this is it. As we say, you, we explain to the client, all of this energy data...

I: Hmm mm.

R: Is based on an energy model that s been simulated in a weather year that has never existed so that's all we've got to go on.

I:Right.

R: You know, CIBSE and the Met office have determined that this is a god test reference year of, of data for a building, it could be and is wildly different for what it's going to experience in real life. All we can give you is our best approximation based on the best approximated data.

I: So you caveat the weather.

R: Yes.

I: What about the loads you apply to the building?

R: Yeah, Yeah...

I: How do you determine them and how do ...

R: Erm we either, we either determine it through the IES model, so we input what we feel would be reasonable light erm, power consumption...

I: Based on the lighting design.

R: based on the lighting design yep.

I: What about usage patterns?

R: Usage patterns that's, that's the big, the big tricky one because obviously in IES you can, you can input occupancy profiles and switch things on and off. Funny enough, coming back to [location] fire brigade, we did a lot of work on that.

I: Hmm mm.

R: Er because we were quite fortunate in that we were able to get hold of a training programme for the year.

I:

R: So we could see which areas of the building were being used on which days and from that we managed to build up quite a, quite a detailed occupancy profile to say well look, you know, most of these rooms aren't going to be on for quite a lot of the week. I think it worked out that most of the spaces were only being used for about 2 and half days a week

I: Okay.

R: So that's dropped your energy consumption right down. Erm, We said but obviously, again, this is our best intelligent guess as to how you are going operate the building. If you operate the building differently, your energy consumption could vary wildly. That's how we play it. So based on the

information you've given us, based on our experience, based on what we know, this is what we anticipate it being. But obviously if people forget to switch the lights off or leave their computers running all night or what have you.

I: Yeah.

R: that's, that's going to affect it.

I: Is the fire brigade job typical of the way you build up the profile of the energy consumption for...

R: Yeah, we, we, we try and go into, into as much detail as we can, obviously sometimes there isn't that much detail so we fall back on BSRIA benchmarks, we fall back on er the erm energy consumption guides...

I: Right.

R: Things like that.

I: hmmm.

R: Just, just...

I: [inaudible] loadings and that it . Equipment...

R: Yeah, and we state all that up front in the report and we, and we normally say on the report, if you have any more detailed information if you have your own energy data from a similar building that you are operating, great

I: Hmm.

R: let us have it. And we'll refine it but...

I: So have you gone through the process of providing that prediction to your, a client

R: Yeah

I: and then er got information back from, to see how close you were.

R: Sadly not.

I: Right.

R: Not yet, no er, I think that's, that's the problem with consultancy.

I: Yeah.

R: Four out of five jobs that we will design will never get built.

I: Right. It would have been perfect.

R: Yeah, it would have been absolutely brilliant.

I: Yeah, you would have absolutely nailed that prediction!

R: Yeah, well we are really struggling because our own internal sustainability groups, er they want to demonstrate in our annual sustainability report...

I: Hmm mm.

R: How our intelligent and efficient design has saved our clients carbon emissions.

I: Yeah.

R: SO you know, any building that's we have designed and have been built in the last two years errrr. No! Go back three years mmmm oh, there was one built 3 and a half years ago that we might be able to get some information. Erm so you've got all these amazing sustainable design but for whatever reason, whether the client doesn't want to progress with it, they run out of money, they change [inaudible] substantially or what have you but very few of the projects that we work on at the moment actually go through to completion and being built we were trying t5o think about it.

I: Right.

R: I think in the last, in the last three years, there has probably been five projects that we have worked on in the office that have actually been built and opened.

I: Right. Wow.

R: Er, so yeah.

I: That's, that's what's happening at moment...

R: It is, it is.

I: My last two or three projects I worked on in practice mostly just didn't happen, I have friends still working on things from ...

R: You get to a point when it all just sort of fizzles away. Err.

I: So you, you said earlier that you are kind of involved up to kind of Stage F. You...

R: hm mm.

I: And then it goes out to tender. IS that generally because it is a design and build contract you're working on...

R: Yeah.

I: Your working on the front end.

R: Yeah, yeah, Trad...More and more frequently when there is this thing now they are tending to go with a DandB so we'll produce the design F a stage F probably with a performance spec, equipment schedules and everything then hand it over to the contractor. What tends to happen is that we are then retained as the erm clients erm technical professional. Erm so we.. the contractor will then run away and design it and we will just get get technical submittals to review and approve. Well not approve, we comment.

I: Yeah. So you have some say .

R: Yeah.

I: My question was how you manage the client's expectations for energy consumption.

R: Yes.

I: through the value engineering and the scrimp backs...

R: that's it

I: That inevitably take place in that

R: That's it. So if a contractor wants to change anything, he'll submit it to us and as I say I will look really seriously at...

I: Right. Does your dialogue with your client then become one of you know, obviously it is much broader than just the energy, but if you do this then the energy repercussions are this?

R: Exactly. Yeah, yeah, your contractor's decision to go down this route, if you do this will impact that and the other, if you don't it will impact this. And we, we try and just keep the client aware of any implication of change in the design will have on the operation and efficiency of the building.

I: Okay, erm. So the data that you're not collecting I suppose, or that you don't have access to.

R: Yeah.

I: It is because it is not getting built.

R: Yeah.

I: Largely, but generally you retain a relationship with your client that means if it does happen you could access the data.

R: Yeah.

I: I was, I'm gonna refer to your survey answers...

R: Yeah.

I: But this is not a cross examination...

R: no no, that's fine.

I: If you said something different that doesn't matter. You said that kind of, the question where I asked about er, methods you use for building up a picture;

R: hmm

I: you said you sometimes use TM22, CIBSE TM22. Erm, how do you use that typically, if you do. You might just have rattled through the questions!?

R: I might have done actually, refresh my memory of what TM22 is?

I: It's CIBSE TM22, it is a building assessment method, it's for going into buildings and collecting data, it just builds up a picture of...

R: Oh, of existing buildings.

I: Yeah, of existing buildings.

R: Ah. Right! Yes, I think people, right, I am with you now. I personally don't.

I: Right.

R: Erm. Some of the other engineers in the office do.

I: Okay.

R: I put that down that we as a company. But that is very infrequent because at the moment we are not getting involved in any existing buildings either.

I: Yeah.

R: We are starting to now, we have just

involved in some frameworks with er lots of universities and they are looking upgrading lots of old buildings, and also with the [Client name] we are looking at upgrading some of their [typical building type] and what have you...

I: Hmm mm.

R: So I think that's going to becoming more and more to the fore but at the moment it is actually the design engineers who are actually going out and collating that information err, we're not seeing it yet, so I would say we are doing it but I couldn't, I couldn't tell you how we are doing it.

I: Yeah, the process is, is kind of universally the same I suppose. Erm. Okay. Can we go and talk about the things... I suppose, the the kind of conflict between the importance of the sustainability aspects

R: Yeah

I: ... to your company and the kind of fact you are unable to collect this information and how you deal with that from a, from a kind of public er public perception point of view if at all. I earn there is a marketing assort of marketing potential to being seen as green.

R: There is.

I: and, but without, you know, obviously your company is doing a lot to be green, but without the kind of proof...

R: This is it yeah. And I think this this is what the sustainability group were after, you know this, can you show us projects that have been built where you know, we have taken the Client beyond legislation.

I: Yep.

R: and I think the problem at the moment is, as we discussed previously a lot of Clients aren't wanting to go beyond legislation.

I: Right.

R: They are literary saying to us 'what's the minimum I need to do to pass part L

I: hmm.

R: and achieve the planning regulations and that's what we'll do.

I: Yep.

R: Erm. So it is very difficult for us as a company to prove that we are doing that,

I: Yeah.

R: We do try when we come up with the designs we will always try and give them the minimum they need and then as as a bolt on and we will say 'but if you do this, you can realise this saving, you can realise this efficiency, you know you can consider this that and the other and that would get you even further along'

I: Yeah.

R: And j.j. just try and ,make them aware that there are options out there. Where possible we give them a budge cots and that could be based on a number of things whether that's er PSA schedule of rates or we go to specialists and ask for a, ask for quotes or what have you.

I: Hmm mm.

R: then we'll just say, these figures need to be verified but er, but this is possible. Is that where you are coming from?

I: Yeah. Yeah, and the primary disincentive to that is the cost.

R: indeed, indeed.

I: and similarly if you were to go and get information out of a building through a post occupancy evaluation or similar.

R: Yeah.

I: well, have you tried to do that?

R: I think, er, I personally haven't but er, I am trying to think. About 18months ago we were taken over by [Company name]

I: Right.

R: So were no part of [company name] and I know they are quite interested in POE analysis, erm I am not sure that has sort of filtered down yet.

I: Right.

R: Purely because of the lack of buildings that we have built and that are running. So I personally don't do it but I think we are looking to increase the amount of POE that we do but again it is who is paying for it.

I: Yep.

R: Erm – clients not going to pay for it.

I: Do you not think?

R: I don't think, I don't think.

I: Right.

R: We could potentially say that we as a company would love to pay it, but.

I: Hmm.

R: ...Money.

I: At the moment its...

R: yeah, we have to write 14 page business cases just to go on training at the moment.

I: yeah, yeah.

R: It is all about utilisation.

I: Hmm.

R: So yeah., I think the big sticking point at the moment for a lot of this energy gathering thing is just money, who is going to pay for it, what are we going to get out of it, what benefits are we going to see. And whilst my boss and I can say to our director well it's going to be great because it mean that our energy analysis and our statements and our offerings are going to be that much sharper and that much better.

I: Yeah.

R: His response is, 'is it going to bring us more fees'.

I: Yeah.

R: at the end of the day is it, is it, is it gonna, is the fact that you've benchmarked it off existing data that's readily available or you've benchmarked it off data that we've had to send somebody off for a week to collect, how much better is it going to be. And we're a bit like, well it's kind of an amorphous blob. It's gonna be better but we can't tell you how much better.

I: Yeah.

R: And he's like well I can't spend the money on it at the moment.

I: Yeah. And it's also learning about, if what you have done has worked, your design strategy.

R: yeah and that's the other, that's the other consideration I know a lot of people a bit higher up in the company might have is is that right if we go in and do this post occupancy evaluation and we find out that it is not running as efficiently as we said it would what does that expose us to on design liability.

I: Right, quite.

R: erm, so it's kind of a double edged sword, it could brilliant or the client could turn round and say well hang on you haven't given us the flipping building we paid for!

I: This is a massive problem, people just don't wanna know!

R: yeah, yeah, it's working and the client is happy, leave 'em alone!

I: and as you say if you have got a process in place in your company which you can say you follow.

R: Yeah.

I: You provide advice, you kind of provide building physics advice throughout the design process, that is, that's brilliant, and I personally might not want to find out if that works or not because actually the kind of offer you are giving your client is actually brilliant. I think it is a real problem the liability issue of some of this data.

R: It is.

I: One of the things I am working with is CarbonBuzz, a website called CarbonBuzz, I am not sure if you...

R: Oh right, it rings a bell.

I: At the moment it is a website that explores the gap, the design gap, the predicted versus actual...

R: yeah.

I: Which is kind of targeted at raising awareness of the fact that Part L is only Part L and it doesn't cover all of these other energy uses.

R: No, No.

I: the typical... and also that fact that buildings are built not quite how you designed them and people don't do things properly and then they are run differently to how you think, so the fact that designed versus actual is typically three times as much or something.

R: Yeah.

I: So at the moment it is highlighting that, it is currently being updated to give an almost like a tracking...

R: hmmm.

I: stage by stage through your design process you can upload your energy data, erm, but the idea of that is to provide somewhere people can put anonymous information about buildings.

R: oh!

I: and you can filter and look at different bits and work out what works, this sounds like a sales pitch.

R; No, no it's brilliant.

I: I have no economic interest in CarbonBuzz at all! It just so happens that one of, one of the people I am working with in trying to get feedback into buildings...

R: no that sound excellent.

I: Yeah and also trying to remove the liability aspect from having this information in the public domain.

R: yeah.. I think one of my response was that, to have like an anonymous forum where you could, you know we all have access to it and you know the building type and and what have but who's it is and what it is and who did it is, is hidden.

I: and how much it has passed or failed by ...

R: Yeah exactly. 'Cause that's, you raise another very good point there, because that's the other thing we have to make the clients aware of is that, is that, the part L analysis is only on the fixed services, the , the ,the the kind of process loads, your, all your small power all this kind of...

I: Occupancy patterns...

R: yeah occupancy doesn't even come into it and I think, I think it shocks quite a lot of them. I know when we did the part L analysis for the fire brigade, we showed them that and they were like, yeah great and the we showed them the energy statement which took into account everything all the catering loads, the lifts, the external lighting, they like 'oh Wow', it's like. Yeah, there are a lot of things that Part L doesn't look at. So you can't base.

I/R: [inaudible]

I: multiply it by my bill or the price of gas and work out how much I am going to pay.

R: No! So er.

I: Okay, that is quite interesting. So the, the how does the iterative, kind of design process work then, I mean that sounds like a fairly stupid question in that you make a design iteration, and do you then check it with your model?

R: yeah.

I: I mean, how much to and fro is there? Is there generally a...

R: There is quite a lot actually, er we will, we will run a preliminary model jut to get a feel for what the buildings doing and what it's not doing and how its, how its performing, we will then discuss that with the M and E engineers, who will then go away and they will come with lighting schemes, heating and cooling schemes, taking on board any advice we've got for renewable systems.

I: yeah.

R: Erm, they will then come back and we will do a review so we re-run the model and see how that has improved, for example on the fire brigade on we went through ten iterations on the model,

I: Right.

R: Erm to get, to achieve Part L

I: Hmm mm.

R: To get it to as designed and then we did 2 more to see how far we would need to go to achieve the planning.

I: Right.

R: erm, and we sort of tabulated that all out and gave that to our Client to say look this is the iteration so first of base line model this is what you've got.

I: Hm mm.

R: this is what it's being compared to on the notional building.

I: Yep.

R: So its failed, so second iteration we've gone right, let's look at the fabric, lets really tighten all of the fabric down, what's that done for us? That's given us a three percent improvement, we are still failing. So then we have, we iterate, we look at better lighting schemes, better, er more efficient plant.

I: Is that coupled with cost information about how, how the change perhaps., if it significant architectural changes how....

R: Yeah, yeah, yeah, yeah, this is it. We did, er we did look at introducing solar shading erm to parts of it or the application of solar film to mitigate gains and try and just offset some of those cooling loads, er that was in discussion with the architect and sort of the overall, costing team to say if we change this. Er. It was really quite eye opening doing it in that iterative process for this one, just little bits at a time because it highlighted just how little or how much affect one particular are of the building can have....

I: Yeah.

R: for example we found tightening up the fabric actually had very very little effect on the overall performance of the building whereas when we trimmed down the lighting loads that had a massive effect on the building.

I: and in terms of buildability, trimming down, removing or not installing some light fittings or going round sealing up the fabric,

R; exactly.

I: I know which one I would like to do...

R: This is it. The air tightness had little impact, but again not as much as we would have thought going from ten metres cubed per second per metre squared er down to 5 and then down to 3, it really didn't pull too much out of it, so we said we stay at 5 because going to 3 is going to add build time and cost erm , yeah a lot of it came down to the lighting because her was a lot of lighting, a lot of high bay lighting.

I: Hmm

R: In er, in the training areas and the external lighting was quite a large chunk of it, even though that wasn't considered in Part L, that was still quite a lump of energy. So erm.

I: Okay. So if this hypothetical anonymised database existed, how do you think that would help that process?

R: I think, it would be good to, to, to get a bench mark erm [phone rings, short break in interview]... I think it would help us in benchmarking particularly if this database could have several, obviously as it develops you would have several different buildings so you could compare erm, it would also be a good frame of reference if we've, we've got a lot of information, we've done the model and we've got some results out,. Again it would be quite nice to sort of look at some existing data to say 'actually yeah, that's fairly close, or, or we're quite out on this, maybe we need to go an look at how we've calculated that, whether there is something we need to tweak, whether we have made the wrong assumption or something like that. So, so , I think it would help us a lot in refining it and just making sure the assumptions we are making are logical because we as engineers can sit there and justify anything in our own heads...

I: Yeah.

R: erm, the trick is taking a step back and saying, can we justify this in reality. If I throw this in front of my clients boss can I stop him tearing it to shreds...

I: Yeah.

R: 'cause it sounds good to me but he might go I've never heard so much drivel in all of my life, it's never going to be like that.

I: Yeah.

R: so that's, that would be good, just having a point of reference where we could look at it and say, well yeah we are there or there about compared to this actual building although we are high or low on this one, we are a bit out, that could be because its occupied differently, it could be that we've made a wrong assumption so I think that could be really useful.

I: I mean one of the things CarbonBuzz has thrown up, is even where the overall energy consumption prediction pretty much matches the actual, the proportion of where that energy is being used is often massively different.

R: Yeah, the split across the...

I: Yeah even just the electrical non-electrical split maybe it's 60/40 in design but its 20/80 in the actual

R: Good grief....

I: and it just seems often it is, for whatever reasons, an there are massive reasons for these things happening, but it seems like a total fluke if it's been correct.

R: You were lucky on that one!

I:but it's good that it's there, but its and understanding of where this actually going to be used and what's actually happening in the building which I think that can offer...Yeah. Erm. I am getting towards the end of where I need to be, er, let me just, I took some notes on the train...er yeah. The

final question I have is just about, it sort of echoes the one in the survey, about incentives or barriers to prevent you using this feedback or collecting it...

R: Yeah

I: We have touched about them a lot as we have talked about them,

R: Yeah.

I: but any, any other thoughts about them you have about...

R: Erm, No, I think, I think the main ones, the main ones I perceive for my company at the moment is cost and liability. As in the cost of obtaining the data, I think the cost for manipulating and handling the data is immaterial.

I: Yeah.

R: You know, because we will either create our own database or spread sheet and we will just pile it all in.

I: yeah.

R: Erm but I think yeah, the cost of who collects it...

I: Hmm mm.

R: Erm and also the liability of if it's one of our buildings, are we potentially putting ourselves in the firing line.

I: Yeah.

R: Which, in theory, if you have down good QA, good design, good due diligence, you shouldn't be.

I: But...

R: But there is always that danger, and I know, I know a lot of guys in the upper echelons of the company who are very risk averse.

I: Yeah.

R: Which is why they are there.

I: Absolutely.

R: Personally I would love to go out and get it and say how close was I?

I: Yeah.

R: oh my god I was miles out, what did I do wrong?

I: Yeah.

R: Because if we don't find out we are going to continue to potentially wrong...

I: Yeah.

R: Wrong advice.

I: Yeah.

R: So for me on the ground, I'd love the opportunity to go out and get a years' worth of data and see.. I think the other problem with that is I think for it to be meaningful, we might need to get that years' worth of data combined with that years' weather data for that location, erm. Because I think that's, as I said before all the models that we do are based on a standard year.

I: Yeah.

R: that has been deemed from the last 25/30 years' worth of info CIBSE have got it all from the met office and said this is a roughly standard year, erm, the weather is going to have a massive effect on the energy consumption of that building. So I think, the energy consumption data itself, yes would be very beneficial to have that alongside that buil, what that building experienced from a weather point of view would be absolutely invaluable because then we could put that data into the model and see if it comes out similar.

I: there is also what's happening inside the building, how many people are there...

R: exactly. yeah so there's a lot of info that would need to be collected but I think yeah the, the, the barriers are money and liability....

I: So how do you think you overcome them? How do you incentivise?

R: I don't know, I don't know whether the, eh, I don't know whether you, you, you set up something similar to BSRIA or where you pay an annual membership fee and this body would collect the data for you

I: Right.

R: erm and if, sort of you know, you get 10/15/20/30 consultancies all doing that, you get a massive erm benchmark of data, a massive database of information I don't know whether that would be of an incentive because then, you could almost illuminate the liability point of view because it would be completely anonymous.

I: Hmm

R: You could sell it to the Clients as you know, we are going to collect your data blah blah blah. I don't know how willing the Clients would be to release that data...

I: yeah.

R: That's another thing that, that I hadn't considered before and that's whether they would be happy for someone to come and take all there info...

I: Well getting DEC's onto commercial buildings is proving every difficult in its own which is just a letter in the foyer...

R: Exactly,

I: There is a lot of sensitivity around that as well

R: Er so, but yeah, maybe some kind of central body where you, where companies will pay I don't know x amount, erm and they , for that we give them a list of all our Clients for them to contact and arrange to go an collect the data and then we get anonymous viewing of everybody else's data...

I: Yeah.

R: and everything that might work...

I: hmmm.

R: that might be a way of doing it. Or I think er, or maybe a drive in legislation.

I: Yeah.

R: 'cause I think, I actually think at the moment that Part L is heading the right way but it is still lacking in a lot of area, there's still no, it's got no teeth. Erm.

I: And its, it's kind of thrown its hat in the ring with service design rather than fabric design to an extent.

R: Yes, and I thin fabric is very important, very important.

I: It is. 46.00

R: Erm. But, it was quite. Funnily enough my boss is just completing his EngD and he was chatting to erm a girl who I think was doing a PhD and she was looking at software simulation software models, now obviously they are all supposed to use SBEM which is what you use to do your Part L model and everything. Now what, what scares me is that she has found anything up to a 25% variation in the results depending on which software you use,

I: yeah, I think there is a...

R: What scares me, I could run a building on IES and it would fail, and I could run the same building n TAS and it would pass...How does that work.

I: I am ashamed to have been involved in a project where that is exactly what we asked our engineer to do! We failed and asked him to run it on something else and it passed.

R: and it passed. Yeah.

I: I think there is, in order, when bits of software are developed, I think in, certainly in America, building simulation software, there is a standard building which

R: Yeah.

I: you have to upload, into the standard, you know set of default values..

R: Yeah

I: for a building so, weather data and everything and the results have to be within 15% of a figure and...

R: Oh.

I: and then you pass your, that bit of software is licensed to be used on buildings... This is in the states, but 15 % either ways is massive!

R: that's huge!

I: If you've got 6 bits of software all 15% out by the time you get to the other end!

R: It could be ginormous!

I: SO...

R: I was flabbergasted by that so, I, I think yeah ,maybe introduce it into legislation you know that as part of complying with Part L you must at least perform a years' worth of POE.

I: Hmm. There is Part L as built coming in soonish...

R: yes, there is.

I: but I am really interested to see, because I think, and BREEAM as built as well, there..

R: Yeah.

I: Obviously BREEAM isn't legislation but I am keen to see how Part L as built is dealt with it opens., it completely rips open the can of worms.

R: It does, oh it does, big style.

I:and I think there might be...it's not like the construction industry needs much excuse to get the lawyers out, throwing around litigation threats...

R: This is it, but I think it is about time, because if we are serious about saving energy and serious about meeting our obligations under Kyototo, Montreal and all that lot, we've really got to pull our finger out.

I: Its true.

R: because the governments sort of tip toed around it for the last god know how long,

I: Yeah.

R: and we just, we need to do it...

I: I think we need the lawyers.

R: There are too many loop holes at the moment, there are too many ways to, to that we can just edge it if we do that...

I: I think I have reached the end of my list, unless you have got anything you would like to add?

R: No,. No, I am fine.

I:That was brilliant, really useful and very interesting, thank for very much for giving me your time.

R: No, thank you very much, no probs at all, thank you for travelling out here.

[ends}

1.7 Architect 07

Interviewee:	Architect 007 (R)
Interviewer:	Craig Robertson (I)
Location:	Energy Institute
Time/Date:	15.00 22/05/12
Duration	76:24

Transcription:

4.5 minute preamble, signing of consent form etc.

I: So I have got six themes that I would like to talk about and we will just kind of meander through them and see what happens.

R:Okay.

I: So if... it is a conversation but a slightly odd one in that I will try and wind through these themes. So the first question I generally start with is if you can tell me a bit about you and your role in the company you work for and a bit about the kind of work that you do.

R: Erm I am er, an American citizen, I have worked here for nearly 30 years actually and I am registered with both the RIBA and ARB.

I: Hmm mm.

R: ...and the American Institute of Architects, London chapter.

I: right.

R: er, I haven't practised very much in the States, only here and here it has almost uniquely been small firms in [Location].

I: Right.

R: er, my role in the company: I am at the moment a freelance consultant...

I: Right.

R: I have worked in 4 different practices I think in [Location] and erm, since 2006 over 4 years I was working with [names former practice] which is very well connected with [Location] Architectural Research with is linked into the University so very much at the forefront of low carbon design. Erm, in and I joined them just after they had finished refurbishing a corner shop which was complete recycled building which they used erm, [Name of Ventilation Consultant], which is now [Name of Ventilation Consultant 2] to bring filtered air into a plenum and ventilate the offices with erm internal

windows to a shaft for natural ventilation and super insulation bore holes, erm, ground source heat pump, thermal store from dah daha dha, and this was done from 2002 and 2006...

I: Right.

R: So it was quite early and very expensive.

I: Yeah

R: but, erm, most of it is proving to be part of what's happening now, except the ventilation interestingly enough because there is a whole other two schools that are naturally ventilated.

I: Right.

R: erm, and the MVHR.

I: Yeah.

R: and, in fact, although I was very interested in doing so, we never replicated bringing under the suspended floor in a sealed plenum, draw through the floor natural ventilation system because we didn't feel we could control the conditions in the plenum, it's just a crawl space and although we sealed it, we couldn't be sure there wasn't stuff growing in there or spiders or something, so, it was kind of disappointing to me but you know, it is quite sophisticated stuff actually.

I: Yeah.

R: It seems total free, well, cheap well the design of the shaft you...well. Anymore to that, is that...?

I: er, I mean...

R: I mean, er sorry the other thing was that, er in 1998, I had already been working freelance for a while and I went back the the Martin Centre at [Location] with a EPSRC, you know Engineering and Physical Sciences grant to do there environmental design Masters

I; ah, okay.

R: which was brilliant, building physics with erm [Tutor Name] and erm [inaudible word] various people and that set me up to be really hot property and I got a wonderful job and they wouldn't let me do anything because I was doing working drawings for buildings that were already designed, massive amounts of single glazing straight into the sun and you know, I could hardly do anything.

I: yeah, that's...

R: So that's why I really was glad in 2006 to get into a firm who really were doing right at the edge, looking at Code for Sustainable Homes, talking Clients into trying it, trying you know, different things...

I: Yeah.

R: based on what we had done on the building and what we are finding out.

I: SO what kind of projects were you ding, was that Corner shop One?

R: That is a very small firm, sort of high risk firm, very personalised firm and they, for whatever reasons which was a great disappointment to me again, they didn't feel some, a second director, they wanted to you know, the director didn't want to do that and they would have just lots of students.

I: Hmm, mm.

R: and so, basically we parted company.

I: Right.

R: and I, in the meantime had used some inheritance money to buy a property in London to fix up testing out PassivHaus.

I: Oh really?

R: You know, as we needed to do things, I would kind of weigh up the PassivHaus, what PassivHaus could do and see how, if we could adapt it to this building which is not air tight but we have done windows and we are just about to do MVHR in there...

I: Exciting.

R: and er, so I use that as a base in London and its available for holidays and things and we also let some of it so, erm, that's how I've scraped together and now I teach for the RIBA office based exam which is people in full time employment in architects practices who are not yet qualified and they are, on top of everything else pushing themselves one module at a time to get their qualification...

I: their part 3?

R: so within their firm they have to have a mentor and they have to have someone qualified outside of the firm to help them through whatever topics they choose for essays, technical studies and things and that's just brilliant fun really.

I: I am sure.

R: and, so I, work out of the hub at Kings Cross

I: Hmm, mm.

R: and I meet people whenever they can get some time together to do some more work on their work, you know their...

I: Hmm, mm.

R: modules, and erm I also do all the things one can do in the kind of green activist sector so I am giving...well I'm going to the institute for sustainability flash programme things for London SMEs

I: Yeah

R: and then I just make that into power points, kind of like [name of person] does,

I: Hmm, mm.

R: just constant power point, trying to work through the stuff and then I give it as a talk for Transition Towns [Location]...

I: Right

R: or for [Location] Carbon footprint and I do home energy audits, erm which is a gratis service [Location] Carbon footprint does and we are developing that because people come to me and I am now looking at an IT firm trying to develop that into more commercial...

I: Right

R: Institutional sector and looking at a little retail outlet and I am also looking at a church...

I: Okay

R: so, things come along, and I think, you get energy bills per square metre...

I: Yep

R: and look for benchmarks

I: Yep

R: and you know. A building, if you are going for the building fabric, there are a certain number of...the building doesn't know if it is a church or a you know a house or whatever, physics is the same...

I: Yep

R: it's the occupation and the behaviour that's different.

I: Yes, absolutely, so the, um, the benchmarks that you are using, the targets that ...

R: Well we are just getting, the, the, my commercial people at the moment have gone kind of... they are trying to, it's an IT firm and they are expanding by 25% and erm, so they've gone kind of quiet on me at the moment, but there hiring another 25 young people so I thought I would just stand back and let them do that first and then we will continue it so. I haven't I would be using erm, trying to cobble something together between usable buildings trust...

I: hmm mm.

R: and er, carbonbuzz which is very up market and general BRE, you know BREAM stuff...

I: yep

R: to get some notion of what a pretty basic IT firm ought to be expected to get for their number of people and the square metre-age but I don't quite know where I am going get reliable benchmarks that are appropriate

I: Right

R: cause, they tend to be, as I say CarbonBuzz is really upmarket type of stuff and this...

I: In what sense do you mean upmarket?

R: Well, I think high profile architectural schemes

I: hmm.

R: and this is in a warehouse, in an old road along the [local river] where the costs are very low and the maximum amount of employment is being generated and that's the whole idea...

I: yep

R: very interesting firm but architecture with a capital A is not there.

I: Yeah okay. Erm Okay can we, are you involved in much design work at the moment?

R: Only retrofit.

I: Yeah.

R: and er, I'm . at the moment there is a couple of small domestic things where its friends and they are taking a long time to make up their minds and I am just going along with that..

I: I have got some of them friends as well!

R: teaching design work is really interesting for instance I have been suggesting to one of my students that for his projects he look at school design, as this is a nice thing to have under your belt...

I: Hmm, mm.

R: and the most interesting school designs are PassivHaus school designs, not that he would necessarily use it but it is a way of working through what Passivhaus is

I: Yes

R: to do that , at least use them as precedent.

I: There are no PassivHaus schools in the UK, is that...

R: there are three passivhaus schools in the UK.

I: Really, right, apologies. Where are they?

R: Two in Wolverhampton and one in ...Exeter I am gonna say. Just open in September so you can Google it up.

I: So can we talk about the retrofit process? Particularly the low energy retrofits you are going through and can you describe the, this probably sounds like a stupid question but the design process and the the decision making process surrounding your energy targets.

R: Yes, well I have very clear precedents from practice at [practice name]

I: right.

R: so I know things that are um er, let's say how to, I know installers and erm, suppliers and I am looking for opportunities more than saying 'right lets analyse the whole situation and um go, and erm, its as something needs to be done: windows are in a terrible state so let's go for really good windows...

I: right.

R: because we are going to have spent so many thousands if we go for er internal inner city cuts out sound allows you to filter, you know be air tight to use mv...mvhr which would let you filter the air...

I: Yep.

R: there are various things, er, reasons for doing it most of which are not a rational analysis of the entire situation, I know that's what you should do and that's what I am trying to get people to do on my survey work...

I: Hmm, mm.

R: but its, the theory and what you actually get an opportunity to do are two different things.

I: but is the, also the tacit knowledge of being a professional and using you contacts and experience and your understanding of what's gone before and works..

R: what I've done for the. Er we have, well we start off with renewable energy for our forums for Transition Towns and what we would tell people about is solar panels and how they worked, there is a difference between solar thermal and solar photovoltaic and things.

I: Yep

R: and then we thought ' people are wanting to fix up, make their houses draft free and more comfortable so we then moved into draft proofing and air tightness and different kinds of ventilation systems and heat recovery and things. These are just enlightened householders and the turnout, you know, 50, 60 of them in a room.

I: Hmm mm.

R: um and er, and then again it was like well how do we make the walls, what the issues with insulation so I did another one on walls.. wall insulation, what have been done in London, interesting things. Er and Cause we find both through [Location] Carbon Footprint and Transition Towns that people in [Location] are very well educated, they will move things along themselves with information and that what they really need is to see someone kind of like themselves and what they have already done...

I: yep

R: and why

I: Yeah

R: so again, it's not really rational...

I: hmm, mm.

R: erm, er, exact calibration of value for money or anything like that it's what you need doing, what you are interested in erm, a lot of people just went for PVs because the opportunity came up and now

they are less interested in PVs suddenly so, you know it is very hard to say I have a methodology erm for retrofit its really where they are coming from...

I: uh huh.

R: and what I can kind of... first I had people who wanted to completely redo the ground floor of their house, so we did those, we figured out all of the ways we could reuse the rooms

I: Hmm, mm

R:and there was going to be a study for someone working at home etc but into that they wanted a new kitchen window so I said don't do a new kitchen window without putting external insulation onto at least than bit of the house cause it was rendered.

I: yep.

R: so we got a good go...

I: uh huh

R: at external insulation got pals with the installer and then I dragged them along to one of my workshops and they came and the guy was you know terrified of standing up and talking to somebody...

I: Uh huh

R: he put his tie on, terribly nervous of course and then he stood up and he said blah blah blah, he kind of burlled on and then he said 'I'll come to anybody's house here and don't worry, I will see you right'

I: right...

R: and he's had all these people getting him round to get quotes, you know for thousands for the north façade of their houses and how they are going to deal with the pipes and 'don't worry about that' so you know it is like pulling in and meeting with people who are keen but have to several steps to get an installer

I; hmm mm

R: and you could just kind of well, you know, get a quote and your probably gonna need someone to do drawings or get planning permission or something...

I: yep.

R: but you are just making linkages.

I: but how, but how is their keenness kind of nurtured what is their what's driving them, have they got a particular energy use target in mind for the house or a bill?

R: we are talking green activists group here...

I: okay.

R: and also[Firm Name]architects is just trading on energy, er low energy so these are people who come and say well that's going to be expensive but I wanna do it

I: hmm mm

R: so that's, that's quite a rarity.

I:yes.

R: most you find people who say ' oh, probably I should do that' you know listen to all this BS about sustainability, you know, keep hearing about it it won't go away so although I've got pots of money and although I have been trying to ignore it for years, I guess I will probably buy PVs 'cause it's a good investment.

I: hmm

R:That's the other...

I: yeah.

R: but I don't see those people very much.

I: okay.

R: They don't come to me, they don't come to women, er and they don't erm, go looking for ways to save the planet, it is very hardnosed, erm. Another thing that I do is advise a group of graduate student ins [Location] university which is engineering and various people having a sustainability society called Green Bridge...

I: Hmm mm.

R: and there people come in and there was a guy who was property procurer in London.

I: Yep.

R: Getting office space, completely classic property person,

I: yep.

R: He said I am coming here because I think the whole property industry is looking in the rear view mirror...

I: Hmm.

R: they won't do anything until somebody has already done it.

I: yes.

R: and he said, and we are headed for hell in a handcart really, we are gonna have to get a different philosophy and I have no idea how to do that.

I: right.

But he said 'one the people with kids, the kids are gonna tell them', the people with employment openings, they are gonna be grilled by their candidates, what's your companies policy on

sustainability, I am not coming here unless I can ride my bike, whatever and the people who are investing pension funds are not realistically gonna be able to put money somewhere where it is going to earn anything unless they bite the bullet on sustainability and say you know, a company has to look for that, by know of course it really coming of age with the energy bill...

I: Yeah.

R: apparently, hopefully, touch wood, maybe.. we are actually, you know we are all in a green industry and maybe

I: well I think the commercial property sector is yeah, er massively reluctant to do anything that nobody else is doing...

R: but this guy came and he just said, I am just going to tell you, that it terrifies me when I talk to colleagues and we have this nice cosy talk in the first class compartment of the train or whatever and the guy says to me 'oh you know I am a fund manager I'm moving around hundreds of millions every day but all this sustainability stuff is just bullshit...

I: hmm

R: it's like, well actually Mark, actually it's not, I mean how does he actually begging to get someone like that on board.

I: well I mean, I think as you say the only way is when it starts hitting the amount of money he is shifting around.

R: three different approaches completely unrelated to themselves. You say Huh maybe this has actually got something to it, but at the moment we are still miles from that.

I: yeah, yeah we are. So I am interested in your people who are already signed up to this...

R: Okay.

I: and your..

R: do you know about Transition towns?

I: yes I do know about Transition Towns.

R: you know what they are like...

I: yep.

R: they are techno, often, er, they could be full time but they are taking time out because they are worried about the planet and they are giving pots of money and pots of time.

I: uh huh.

R: IN the energy group in Transition Towns [Location] we've got, let's see, [quietly] one, two three [return to normal volume] four, three IT peop,, er, one, two, a PV guy who runs his own company, three retired engineers and they just, we just talk.

I: hmm.

R: erm, voltage optimisation, bio-charge

I: yep.

R: you know, somebody's got a thing for fair stalls, we do fair stalls try and get people, so you can have a bicycle that will heat a cup of hot water.

I: yep.

R: so you can have a cup of tea, or quizzes you know, how much energy does this use versus that

I: uh huh

R: so you can and er, we run these for, and now we are having an energy fair and I'm pulling in these various old guys I know from external insulation and Velfac windows

I: Hmm mm

R: or whatever I can, any contacts I still have, erm to, so that, the people who come to this are probably older, maybe the kids have left home but they are still working in maybe they have just early retired

I: yep.

R: that's typical and they have been looking after their property doing a lot of it themselves.

I: yep.

R: one guy did natural building technology stuff, insulation stuff in his bathroom, test out hydroscopic and he said, brilliant, warmest room in the house, no problem with the performance, and I know, if I have a shower it will take up the moisture and give it back on a hot dry summers day.

I: Yep

R: and I don't need to worry about what's happening behind it, well I guess, you would have to still worry about what is happening behind it, no if the water gets through the mortar it still dries.

I: so are you measuring this stuff, and recording it?

R: [Firm Name] architects built temperatures in, about 16 temperature sensors in

I: uh huh.

R: and just as things were headed for, I was put onto freelance there and it was, it wasn't a very good situation, I was going to technology strategy board stuff already...

I: hmm mm

R: so I put in this bid to be part of the, it wasn't retrofit for the future, it was building energy performance, to do a study of that building

I: right,

R: because it's not passivhaus, it is not airtight

I: yep,

R: it is interesting, it is low tech use of natural ventilation and I just thought if that came through, [person's name] has got 2005, probably by this time, years of temperature data synchronised with [Location] weather data.

I: hmm

R: exactly how that building was performing, temperature only, he didn't have CO2

I: okay.

R: or relative humidity but didn't get it.

I: okay.

R: so, that's the closest I ever got, I mean I keep putting in everything they ask, I go to seminars, I go to stuff at Ecobuild, because I know you can get, and I have seen it in retrofit for the future stuff, TSB retrofit for the future, you can get wireless monitors and I've done it for the environmental design masters.

I: yep.

R: you know, radiant, inside, external temperature er, air temperature and CO2, whatever

I: Yep.

R: and you synchronise it with eh weather and you see what the winds doing and you can get a performance rating on a building.

I: Yep.

R: and, but I did it all with wires but now it is all wireless and it dumps it straight onto a computer.

I: yes, we use hobos and the like.

R: and I keep begging the RIBA or people erm, through the institute of sustainability to give us a seminar on cheap stuff so, like your theodolite and you laser measures if you just had a little kit and you talked to your Client and say right if you would like to do this, get a few measurements of your house, first, get a baseline.

I: hmm hm.

R: then of course you are going to make more space you are going to use more electricity and stuff so it's not going to be like with like,

I: Yep

R: But we are going to get a reading to help us evaluate...

I: The square metre value.

R: it just, that bit of time and that bit of expense, at the moment the profession is just on its knees...

I: yeah, I know.

R: small guys are really...so maybe this is gonna pick up but it needs pushing

I: yeah.

R: by somebody bigger than me,

I: So in, in , in the meantime do you do any analysis, like, models, modelled analysis of a design?

R: Right. Model.

I: or...

R: I use a thermal imaging camera at erm, eh [Location] Carbon foot print and then we are gonna buy another one for Transition Towns those, we can't do enough seminars to get people trained up because it is so quick: you can see if your cavity insulation has settled,

I; Yeah

R: You can see, you know, if you have got leaks around the windows any of that.

I: Yeah.

R: so that's brilliant a lot of fun, uh, I am now getting, trying to get people to calibrate their gas and electricity bills with essentially gas equals space and water heating [inaudible] usage.

I: Yep.

R: and again, most people don't know what a kilowatt hour is

I: Hmm mm.

R: they don't look and see that it gives them the 12 months on their bills but you know you could but we are getting that now

I: Right

R: and we feeding that now into our survey stuff for erm what's called 'Climate Friendly Homes' run by [Location] Carbon Footprint and we've got about 100 houses now.

I: Right.

R: But we haven't been collecting that stuff well we have only done it may be the last 20 houses.

I: Right.

R: That's, that's about it.

I: Right.

R: you, you can't erm. Even to get a square metreage, people don't even know how to get the square footage/metreage of their house. So you know I could go in with the laser measure but its more time and I've got to draw it up and work it out on a computer and stuff but there isn't there's nothing in it yet. I am trying to get myself Green Deal advisor training and get myself into a position where I can actually do this and get a little bit of the ready cash to actually make it worth my while to do it. At the

moment it is just interest and theory and trying to help people. So I am telling people 'you figure it out, you go and measure the bits of your house, get some idea'. That's the closest I am getting, to say here's what the passivhaus asks for, here's the average in the UK and where did {name} get those things? One of the engineers has done this 'cause [Location] Carbon Footprint has something called Open Eco-Home where 26 houses last, just last weekend and another weekend coming up open up and they let people go around.

I: Hmm mm.

R: and it is either a new house or an extension or a completely retrofitted and sometimes it is diy and sometimes it is very simple and sometimes it is you know vastly expensive and [engineers name] has taken all those houses and tried to align them so that they can compare which ones are getting the best result

I: Hmm mm.

R: but it's purely kilowatt hours, maybe per occupant or per square metre but that's getting ermm..

I: okay.

R: In term of performance you know windows or CO2, anything like that its just, air quality, humidity, nothing, nothing on humidity even.

I: Yeah, yeah okay. Do the people that are say, installing new windows in the back wall and then you were convincing, or you know someone was convincing them to external render and insulate whilst the do that are, what information does it require for them to be convinced to do that...

R: Well these are friends they asked me because they trusted me, I brought them into [Firm Name] and there was all this business where [Firm Name] finished the job, which was awful, anyway er, I was giving talks, you know I twisted your arm into doing that insulation, well that guy is a good guy would you come along and just say I am a householder, because we have found people respond very well to that, when a householder or somebody who has done it they will say we don't give two hoots about external insulation,

I: hmm mm.

R: we wanted a new window an [name] for heaven's sake just finish the job get the whole wall instead of just the window, particularly as you are moving the window and you could put it into a thicker wall.

I: hmm mm.

R: so they did it, but it was just something that I sort of said, you know, do this because you'd be silly not to. The whole house is render and you know maybe if they were going to have the house re-rendered they wouldn't just paint it maybe they'd hack it off and put external insulation everywhere but then they would have to pay

I: Yeah.

R: for the cills, you know and the pipes and the dpc

I: yeah

R: pretty good overhangs so they could do it but would they?

I: hmm

R: they don't give a toss about the planet, they did because they wanted a spanking new kitchen and new window. Mysteriously because the old window was actually okay.

I: okay...

R: new windows so I said fine great, I'll, you know get somebody in there, Webber,

I: Yeah.

R: Bedfordshire, big company, big sponsors of EcoBuild and stuff.

I: Yeah, yeah

R: erm and they have come to a couple of our things now.

I: Right

R: that was and they had this little plasterer who came – terrified – and I will see you right and that has been great for them actually. SO I mean it is a big team effort and to some extent, keen people I have found are householders. They have the time, semi-retired people, the wife or something is reading, most people in employment don't have time to read anything...

I: yeah of course.

E: So they then get interested and then you know you can get the builders who have worked for [Firm Name] who know what they are doing and they are not going to bodge the air tightness or you know, they know what they are doing with under floor heating so..

I: Yeah

R: and you know you are getting the under floor heating people who have you know done a lot of it and there's a sort of...and then you really do need an architect

I: Hmm.

R: and that's where we really should be in there.

I: Yeah yeah, we should be.

R: and my teaching I make my people not just do beautiful CAD castles in the air, I say 'okay, you're going to put spikes in there, it's going to be ventilation shafts man', you're going to learn how to use ventilation shafts because I don't want spikes on there for no reason, just because you like spikes erm, so, er, and the same now with another one, well the one now who is going to be doing passivhaus who had never heard of passivhaus and didn't know anything about any of this and the third guy is really very well up to date and he is trying to do rammed earth and I think hmm well okay, hey, great, look at it but you know in terms of mainstream...

I yeah

R: er, you really want to know your way around erm, well retrofit is tricky stuff because you are thickening walls, one way or another you are coming outside and losing all the character or you are coming inside and losing all the floor space.

I: so are you using PhPP for you PassivHaus retrofit...

R: I have it. I am supposedly learning it, I am trying to get the commercial property in there but as I say they are kind of on hold at the moment and I am supposed to be going to the University of [Location]. And working with a guy there on the innovation, Flash innovation voucher to work through it, when he gives me an apartment I will get my mind around it.

I: hmm yeah, similarly...

R: it just spread sheets isn't it?

I: I have a copy also that I haven't..

R: and I have been along to IES

I: Hmm mm.

R: They had a session at Southbank absolutely people standing the aisles there were so many people there.

I: Really?

R: Because they wanted to talk to architects and they had a erm, School and they were looking at part of it and they were showing how you do it in Sketchup and then you can just say the different facades and the different orientations, the percentage of window, it didn't give you a real façade but it gave you a erm, numbers so that you could say, you know, if I made the windows bigger or smaller, you know, how much of an issue am I gonna get with heat gain or overheating in winter.

I: Uh huh.

R: and that was brilliantly interesting and I use TAS.

I: Right okay.

R: for my Masters.

I: I also used TAS for my Masters downstairs.

R: I used it in dinosaur form, if you made a mistake you had to [makes noise]

I: Yak I think TAS is a dinosaur piece of software, it is a horrible piece of software to use...

R: I would love to use iES but again it is a question of time and I think I could negotiate a beta copy out of them and get my...

I: Yeah.

R: I am so old, I can't learn this stuff very quickly but I got students who can do computers with their left hand in their sleep.

I: hmm.

R: an I just dump it on one of my guys and he can figure it.

I: yeah

R: at early design stage which is really neat. We need to get people using IES really early on, fiddling around with it.

I: Yeah, that's...

R: and the new optimised stuff which is what they were talking about at Southbank...

I: What is that?

R: well, what it exactly showed and this is going to show you my understanding of it: you can take factors and they looked at cost, which you can cap.

I: Hmm mm.

R: for a project and user comfort so that's bypassing the owner to the user and again so that's a graph. How much can you save on costs and avoid people being uncomfortable so perhaps you say well we are gonna be set the temperature down but these people don't like it

I: hmm.

R: or we are going to have massive shading on the windows but they can't see out or whatever. And it runs you, you load in relatively small amounts of information about a particular wall construction, particular kind of windows; area orientations but you try to keep it pretty slime and then it does all the permutations and plots them on a curve...

I: yep.

R: where you are getting the maximum, most cost saved versus the most comfort and then you are looking for the ones where you are satisfying both

I; hmm mm.

R: and you can interrogate that dot and say what is it?

I: and it will tell you....

R: and it will allow you to eliminate a whole bunch of type of things where your particular configuration of rooms and storeys and over shad... erm overhangs and erm ...did it have roof overhangs? I think it did, the sketch-up was just blocks, maybe it didn't have roof overhangs and they just put in an amount of shading – you put in numbers for the various components.

I: yep.

R: U-values, thermal bridges and various things and fix that and then say, you know, tell if we have this much insulation or we orient, there are various things you can look at

I: yep

R: and it will help you eliminate a whole range of possibilities

I: so if...

R: and it optimises the best, but you don't, it doesn't tell you 'Do this' it says take some of these on the curve here and see...

I: see what's going on.

R: maybe you know it just isn't on to have a particular kind of shading, you know would never get planning permission with that kind of ...

I: I wonder if you, if you took one of the permutations and built it exactly as IES said and then went round and surveyed your occupants and it turned out 90% of them were dissatisfied whereas IES said 90% of them would be satisfied what would the comeback on IES be.

R: Users, use behaviour and user satisfaction seemed to me to be pretty dicey to deal with

I: absolutely

R: but then Usable Building Trust and people on the old Probe studies really did ask people

I: yeah, yeah.

R: so they got people saying actually I love to work here.

I: yeah, yeah, no I it absolutely happens. But also one of my concerns with modelling and with IES is that it is just an algorithm that is nowhere near as complex as the buildings is going to be, as you say the user needs and the user comfort is something quite quite difficult, the way a building is built, the factors, the guy hasn't put the insulation into all the places, the window is not installed properly, there is cold bridging where the design says there is not going to be, it's a design and build contract so some things are changed, HVAC system isn't the same as it was going to be or you know, whatever, you know whatever all these massive permutations of all these different things that can happen between that IES model and the finished one, tracking that through and making sure it happens is kinda...

R: but it's gotta be better than SBEM.

I: Yeah, oh, absolutely.

R: as a way of just narrowing down your strategy and the concept of microclimate on site as I try to teach my students as the very first thing we do: what have you got for free and are you getting pelted by the rain cause you are exposed

I: hmm mm.

R: you know, urban sites means that it is all turbulent and erm ah, just starting to think about the way these things interact is really critical and a beta version maybe for free to maybe fiddle around with it

I: Yeah.

R: erm and erm, em. Sketch Up has solar shading.

I: hmm, sketch up is amazing. Powerful bit of stuff.

R: You know, for free, god I just call up this guy and get him to do, you know you can do stuff where you actually study the sun in the summer and in the winter, just as a design tool you know, beautiful change of shadows if you do certain times or slats or openings, or whatever you know.

I: Hmm.

R: and you know, I just don't think people are teaching that. I think we are allowing people to graduate a straight architects and then then they do Masters

I: hmm.

R: but they get an architecture qualification but they don't know this stuff

I: Yeah, I certainly agree.

R: Because the tutors don't know it.

I: IN my architecture degree. I studied at Edinburgh College of Art and in my final year I studied in the sustainability unit which was kind of seen as a kind of novelty kind of bunch of weirdoes that were kind of

R: Nerds...

I: But I remember our final Crit we stood up and presented our buildings, you know all forty students were, it was a small year, only 40 students and you have to go a suit through everybody's Crit that was how it worked, you were there for 3 days or something and I remember the sustainability units Crits and it wasn't, the critiques wasn't about architecture, it wasn't questioned in the same way as say somebody in the whatever it was, say architecture and urbanism unit or the art and architecture unit it wasn't critiqued in the same way, it was sort of 'oh, well we think this is kind of a good thing that you are trying to do here erm don't really understand it, I don't really know why you are doing, I don't really think it is architecture so we'll just kind of gloss over it and move onto the next one we are here to talk about' so I think...

R: that is where [University Professor] comes in, I mean okay you may or may not like the sort kind of Lutchens kind.

I: I really like [University Professor]

R: I love Alan Short, I do like his architecture I do think it is really it's what, I do believe that is the way forward for the profession if it has got any future. It's to be the one that takes the structural and the site and the services and the users and the brief and these constraints I know this is why the engineers do it and not why architects do it and get these dots and the you loosen up and you do the beautiful curves and lines and things that link them uniquely so ,

I: Yeah

R: I mean not uniquely but that satisfy but also look good but it's the last, it's not the last thing, they are right in there at the start

I: Yeah.

R: That's where you need a guy who is good at aesthetics

IL Yeah

R: to make it work so that it doesn't look like a bunch of engineers at the [Location] engineering department which is unbelievably badly designed because they are all..

I: I don't know that building..

R: it's all just guys in workshops and they link them up you know, incredibly! And next door is the architecture department but nobody every asks.

I: Right

R: But you desperately need somebody who knows the building physics but who will not let something go through looking like that.

I: Yeah.

R: Make it look right and we are not training people to do that.

I: Yeah I know. I think..

R: and its tough stuff.

I: I think the RIBA has some responsibility in driving this or not driving this.

R: its [inaudible]

I: yeah, it is, there are always horror stories of various architects outright dismissing the environmental performance of their buildings as an engineering matter and completely beneath me.

R: And it comes out when we meet the federation master buildings on the erm, Flash programme for the Institute of Sustainability that erm there is still this sense that the architect is saying well 'I want this'

I: yeah.

R: Get on it laddie,

I: Yeah,

R: Chappie, do it the way I want. And the builders really don't take very well to that

I: NO.

R: because they have a got a lot of site experience as to whether you can really get air tightness or how in heavens name you can get a whole envelope and then you put sockets in it, what if they move a socket afterwards.

I: Yeah.

You know there is a whole lot of actual practical stuff that a builder does know.

I: Yeah.

R: and you ignore them or talk down to them at their peril.

I: Hmm

R: and the same goes for this attitude that is, you know, my vision is a, you know Corbusien or you know whatever it is. And you come over and figure out how to structure it and you tell me how to meet the targets for comfort or whatever. Instead of saying right here's what we've got going for us on the micro climate of the site,

I: yep

R: Here's some interesting strategies that people have done successfully maybe we should be considering this this and this, and then we will rule out this one and rule out this one and rule out this one and no wind turbines its too turbulent, whatever it is

I: Hmm mm.

R: and then you weld together the ones that work

I: Yep.

R: I mean no Clients are going to pay for that at the moment.

I: Well...

R: But that's what a design team is.

I: Yes.

R: Really fusing stuff so that the finished design tells you a bit about the M and E and structure and is still uniquely interesting

IL yes.

R: I mean just photovoltaics I mean they are very interesting, you have got people designing wall pane or you know windows and ignoring the fact that photovoltaic are incredibly interesting looking

I: yeah.

R: And you could be getting the company some carbon reduction points, you could be giving them a logo that is uniquely theirs but they don't know anything about photovoltaics.

I: Hmm

R: so there you know they are putting some design in there where they are doing dichroic or something but the, okay its interesting but ..

I: yeah, you are not getting any payback or anything.

R: Yeah..

I: Yeah. So I suppose part of my research is about the fact that the building building performance evaluation programmes in - and there is going o be Part L as built so there is going to be massive encouragement for people to collect information..

R: IN 2013? Their gonna do that? Let's hope so

I: so a lot of POE evaluation data is going to be there...

R: They are gonna do that? In the building regs?

I: well quite what it will be I don't know but there is an as built...

R: we so desperately need that and building regs is the only post completion legislative, statutory intervention.

I: Hmm.

R: so if you could just tag it onto that and of course the EPC for the property market, the EPC I mean the stuff is so poor. EPCs and SBEM are just you know cringingly simplistic.

I: but the commercial market won't take an EPC or a DEC its, its, DEC in particular that commercial offices are just absolutely not interested in because they know fine well its just gonna make the building look not very good so why put, why find out. The whole point of it is to find out that you building is an F and the benchmark is a C or whatever it is so it encourages you to do something better about it but erm nobody wants to know because they find out things that are not working well.

R: Well I remember I was working on a project in the [Client] in SOHO and I was quite struck cause I had been to a talk about the water table in London and flooding and it said in 2007, you know a lot of properties flooded so I though well people will now be trying to think about sustainable drainage and run off.

I: Yep.

R: But I was seeing repaving going everywhere and there was clearly no statutory obligation to do sustainable drainage in London.

I: Yep.

R: and on the SOHO project the said well we don't need to worry because we are above grade and I said' What! Soho is all paved,

I:Yeah

R: where do you think that water goes? If it doesn't sink into Soho it goes straight down to , you know the Embankment and into the Thames so this is the one place where we really need to look at green roofs and sustainable drainage because it is all paved. A place like you know, Regents Park or somewhere it sinks in. Ah well, this wasn't really a concept that people had taken in.

I: It is someone else's problem, they are above grade...

R: And yet, and I thought so I tried the other way, so people who have had properties flooded they must be concerned to do something. And they were concerned, they were concerned to hide every bit of evidence that they'd ever had a flood because the value of their property was going to plummet if they had had it anywhere within any information about the property.

I: Hmm

R: So we are really doing, ostrich head in the sand erm, and you know, they talk about a hundred year flood

I: Yeah

R: erm statistics, and there are talks from the Mayor's office that was saying hundred years instances is just a guess and every time we have a flood we have to recalibrate all those,

I: yeah and it is always recalibrated downwards isn't it.

R: ON in 20 years or something and again people don't want to know that, they have bought on the basis that it was once in a hundred years, they got insurance on that basis, they really don't want to be regarded. And I think that is part of all of this, that people are terrified of the implications.

I: What about the implications of a say Part L does come in and POE does become a mandatory part of the building process and people are going in and finding out that there building don't work as they were intended to do and the existing threat of litigation that surrounds that or the kind of chance of additional costs how do you think that is going to be dealt with?

R: As I understand it, the RIBA quite benevolently put POE into one of the work stages, M I think it was going to be.

I: Yeah, I think it was.

R: and then they said, they kind of like stopped in their tracks because of course if you have it on record that you could have done a better job, anybody that finds that out who's got their building they are naturally going to be pretty peeved and they are gonna take you to court.

I: Yeah

R: so what you do, you quietly evaluate of course but to do it statistically and actually with your reading is almost suicide, business suicide

I: Hmm

R: 'cause your documenting what you should have done and if they were to sue you you would have to show that information was not available. The chances of your CPD programme being good enough so that you are really up to the mark on everything that is available is slight and that the average practitioner would not have known

I: hmm

R: that, it is sort of in Tort, it is not like contractual so how the RIBA can embrace er POE except in an anonimised for I don't know.

I: Yeah I think it has to be, well I don't know if has to be anonymised or we have to wait and see what happens when the first Tranche of 2013 as built buildings come back and see what happens in court with...

R: and the other thing that O find interesting was that at EcoBuild I went to a thing on building information modelling.

I: yep.

R: BIM. And it said erm for a project – and these are big projects obviously you got to budget for that – there's got to be an independent model where the structure interlinks with the services which interlink with the, you know,

I: Hmm mm.

R finishes and geology and public transport and all and somebody from the design team will actually be managing that model and essentially they will have some legal liability if they, if you give them information and they don't feed it in correctly or they misunderstand it or whatever

I: Right

R: but that everyone will supposedly pull together instead of covering their backsides which is what we do now, so something goes wrong, well, not me! Not me! And you, your insurance company won't let you do more than just keep your mouth shut. SO whether you can foster an atmosphere of people all pulling together to get a building the best erm. I mean we have done that to some extent at[Firm Name]by using contractors design as part of the contract for small stuff but you can use it for big stuff, where at least it is one person and all the specialists answer to the top guy and so I mean if the Client has to go to the central contractor and wait for ever for it to percolate back down but at least the liabilities are there with one person they can't say well this is...

I: Yeah.

R: Solar thermal, it doesn't work with the heat pump or whatever where nobody particularly the Clients don't exactly understand how the interaction is between those two things or why their house is cold, ha.

I: Yeah.

R: You know, erm.

I: So now the result is that architects are now getting sued by the builder rather than the Client...

R: There is going to have to be some sea change their

I: Absolutely

R: pulling together and I don't know how.

I: Because the construction industry is a, it's not a friendly industry, it is a fairly litigious happy industry.

R: Well that's what I, because I write for the AJ's sustainability blog

I: Okay.

R: I usually cover something in EcoBuild, not, happen to go to that and they said the government has determined that by contractors not knowing where everything is...

I: Hmm mm.

R: erm, so they go and do some work and they hit a water main or whatever, a BIM model is going to be everything locatable by GPS

I: Right

R: so, in 3d, so just that alone. If a contractor goes in and hits a service or existing structure or something you can see the lawsuits just exploding in the air. Erm so the government had worked out that it was something like 20% factor of inefficiency and cost just for the fact that people didn't know actually where the existing things were and where they related to each other. And so they were now from 2015

I: Hmm mm

R: for all government contracts are going to be required to have BIM.

I: Right, really.

R: SO that will then force people if they want government contracts to put up with the conditions of BIM which will mean if they start being litigious, somebody else will go for them. So...erm

I: Right

R: you know, so it's a hope but that is seen to be a major element of sustainability to force that kind of corporation on big projects, and maybe like the Olympics it will percolate down.

I: SO how, I conscious of the time, you said you had to be at...

R: Yep, 3.30

I: So, a final question then, if it is half past four,

R: Sorry

I: No, no!

R: You can see, I discovered I quite like teaching and I quite like doing workshops because I have got all this stuff that's just churning around in my head otherwise,

I: Yes, it's great...very insightful

R: and if you do the Flash programme, which I highly recommend if you can be counted as an SME and go to this, well its finishing now, and go to these interdisciplinary seminars, it is utterly fascinating.

I: I will look them up.

R: well flash is now finishing the end of June but the Institute of Sustainability should have some stuff on it, maybe the institute, the Energy Institute can get in on some of these where you pay, erm This was all free.

I: So my final question then is given the sort of multiple problems that you have identified and that we are talking about with the sort of litigation and people not being educated to take into account the complexity of or the opportunities afforded by the environment, if, yet there is a lot of post occupancy evaluation that is going to take place, if all that data could be anonymised somewhere, how might it be of use to people in industry to kind of address these problems?

R: Well the technology strategy board is doing the retrofit for the future and trying to make a standard set of data and make it available in the public domain.

I: not the TM22 was that?

R: I don't know,

I: Okay.

R: I have yet, I have been waiting, waiting to be told that and there was something on an email and I haven't had time to kind of open up and look through because I would like to get better benchmarks, more kind of ordinary benchmarks

I: Yep

R: erm and I'd also like to tell people, that is one of the main question you get talking to householders and interested people: 'How can I find out what a house like mine has already done, because I see all the things you are talking about but it is not my house, my house is a semi but its orientated another way or it's a whatever, you know Edwardian and it's in the city and you're looking at the country side so erm, there's a lot of factors that have to be analysed.

I: Absolutely.

R: So there does need to be a databank where you can say er, various levels of erm identification of your property and domestic is going to be different from institutions that is gonna be different from commercial where you have tenant landlord erm, we need that.

I: Yeah.

R: and we need researchers to be pulling together, kind of like the way Passivhaus pulls things together, er on a structure, I mean there is CarbonBuzz, there's erm, usable buildings which was like the Probe studies and er and that's a very very big thing from a little house right up to a corporate headquarters or something but we really need that.

I: Yeah.

R: so your question was, how would I..

I: yeah

R: what do we do?

I: What do we do with it. I mean it is a very vague question.

R: we need, I mean somewhere like Holland which has got very big government involvement in the construction industry, particularly in provision of housing

I: Yeah.

R: they have a whole research network.

I: Yeah.

R: England is kind of a nation of entrepreneurs, somebody has this, somebody has that, it's not quite as bad as the US where it is all in the private sector, England has got some public and some but, I don't know because the government is now going a way, I am not unsympathetic with the ideas of making it pay through bottom line and business it's got to be usable and maybe you charge a small amount...

I: yeah

R: that the government just doesn't just give you lots of money and then they have no way of telling whether it is what's needed and there is no accountability, I, I I don't know how we are going to get that but I hope the TSB will set a structure for these. I mean retrofit for the future is 86 houses and they have all been analysed in the same way, they have been pushed to extreme solutions

I: Yeah:

R: but that's okay

I: Yeah.

R: and all those factors, I think they have tried to get a wide spread of types, erm,

I: Yep

R: there's presumably electrical and gas figures that are available. So you could just simply attached the amount of energy used to the property and that would give you something but we really need configurations

I: Yes

R: of house as existing, with the energy usage and then, the measures that were done, how much the measures cost and again, the net difference isn't always going to be relevant because if you upgrade a building and you put more sockets in it so people can use computers more or wireless or something, the electricity use is gonna go up, even though it is a better building

I: Yeah, yeah

R: because what they do in there is gonna be different.

I: but if you have that information you should be able to see that that is exactly what has happened.

R: and you should be able to do it both on square metreage and on occupancy and the numbers of hours its occupied. You have you know, turned something into a library and its open you know from ten in the morning until midnight its obviously going to use more energy than when it was a rundown

old building, so it's quite sophisticated stuff but there is desperate need for that and I think it is going to have to be monitored by the government because if I am a business and I get a good solution, why I am I going to publicise it.

I: Exactly, or if you are, yep, or if you are a designer and you have developed a good way of designing buildings, why are you going to tell people about it.

R: The best thing I have seen is housing associating which has always had a erm, so I guess they had some non-profit,

I: hmm mm.

R: Probably some subsidy not quite sure what a housing associations fina.. economic make-up is and they, this is one in east of England, where they have always tried to do progressive revolutionary kind of design.

I: Yep

R; So they have done small site in a very nice area, and they have managed to get the council to support them, the erm parish council to support them to do 14 passivhauses, really quite revolutionary, they got on a good architect who was prepared to talk, you know talk to people and things...

I: Yep

R: and these finished now and they've done things like get groups, a room full of property agents and say, it cost us 180 thousand to build this on and our marketing people say, well we don't mention all the passivhaus stuff and we just say 'see, nice location, big rooms you know all the things' and people are saying, 'does it have all the MVHR stuff because we have heard that's good?'

I:Right.

R: Ah, right, so little note here that people actually asked about the MVHR and they said, er they gradually thought, they started saying well 'it has this very comfortable ventilation system which has got extracts like most houses but it also supplies fresh air and its quiet and its continuous and erm it regulates the humidity and the CO2 and things. SO then they were starting to feedback to the builders and saying you know, in fact the meeting was called because they reckoned for 180 thousand build they could get 279 thousand selling price because people were now catching on to this and saying, so what are my utility bills gonna be?

I: Yeah

R: and say Ah! Well I'll buy them and it happened to be a very nice middle class area where there were no kind of...but it was clear if you kind of isolated out all that, people were interested and they were prepared to pay for the passivhaus features,

I: hmm interesting

R: so they were saying 'listen valuers, it has value'

I: Yeah

R: erm, and so expect that. And I have read that the NHBC is now reckoning something like MVHR is going to be a standard offering.

I: Right okay.

R: so somehow or other something's getting through and whereas the developers are all saying well we've tried that but nobody wants it, nobody's ever asked for it. Its being stood on its head, if you give people the choice, they jump at it.

I: Yeah it's the standard housing, certainly in mass housing developers argument.

R; or a certain type, a segment of the market that some people are happy to go for,

I: Oh yeah, but I am saying the mass house builders standard argument of offering sub-standard accommodation is 'we are giving the people what they want' they don't want anything else but as soon as they have the opportunity...

R: Yeah, it won't sell, it won't sell.

I: as soon as an opportunity for something else comes along they find that actually, people are interesting in this.

R: Yes and this is a company well I guess it is a non-profit organisation called [company name] which has done this and they reckon that uplift to build passivhaus was 12% so they've done that and they are all occupied and now they are moving on to another 14 houses.

I: hmm mm.

R: and they reckon the uplift is 6% now because the supply chain is better

I: people now how to do it

R: they've got builders that know how to do it they know when to do the air tightness testing and they can pretty well know now that they are going to get a good result so it is one less thing to worry about and they know they did overkill on some things they were so worried about not getting certified so they could just ease of on that so it's a little cheaper and and erm, they've got various components that work well so that's interesting.

I: Yeah, yeah.

R: and that's really in the commercial sector with a little kind of benevolent...

I: do you know what the price uplift was to offset the 20% or the 6%?

R: 12% then 6%

I: so that was the construction cost uplift, do you what the selling price uplift was?

R: er no. All I know is that those figures are for I think a 2 bedroom house, costs was 180 to build selling, they reckoned, the marketing department who were very cynical on this, they reckoned that they could get 279. So that's a pretty good profit rate, I mean obviously you've gotta get the right site, you've gotta get a parish council that's gonna not panic.

I: Yes.

R: and that's going to, well this was, this particular site, you might be interested, you can go every month, they have a public session.

I: Oh really.

R: you can go and the architect and the council and er, I guess it is the architect and the council explain how how they got to doing it and the architect explains how passivhaus works and then you go around and you can, they pick houses where people are going to be in...

I: right, who was the architect...

R: I had the book because I was showing it to my student and I have let him have it. They are in they are in [location] somewhere, I will have to Google it, you can look them up [name of project] it's a full website.

I: I will look it up

R: [attempt to remember the name of the practice] erm they are very active in erm just explaining, talking to people and they are doing the next one so it has obviously paid off. And erm, I have talked to somebody else a [Location] and they thought they were rubbish

I: right.

R: They were doing something completely different in [Location] and they wouldn't tell me exactly because it is a trade secret and if it works, they will let me know, it is some advance on the standard passivhaus house,

I: okay

R: and everybody is saying they are trying to get rid of the really horrible impermeable petrochemicals that you have to have at the moment to get the passivhaus airtightness and highly enough insulated. to trying and just nudge it into natural.

I: yeah.

R: There is a guy in [location] who is doing that

I: Right.

R: who is putting Cork under external insulation.

[Conversation about friend of I's domestic project and the role of monitoring in teaching moving on to other architecture]

I: I am really conscious of the time

R: Yep, you probably have to go

I: Yeah, but that was excellent, I really appreciate your time. It was great.

ENDS

1.8 Architect 08

Transcription:

Begins with I explaining the transcription process, anonymity etc

R: I work for a large firm, a large private firm in New York erm, we do er, mostly public buildings, er a lot of higher education, so University buidings...

I: Yep.

R: of all sorts, like and some er, some Lab and healthcare....

I: Right.

R: As well as er we have some cultural buildings whether it is Museums and Libraries and er yeah we do some, a small bit of residential and hospitality...

I: Right, okay

R: So...

I: Er, I dunno, in the UK that , is the University stuff, is that publicly funded in the States?

R: Um, we've, er, yeah I guess like um, for our higher education work we have, we do projects for privately funded and publicly funded institutions so like state, state schools, er which is what, how a lot of the time refer to public institutions or private universities

I: Right. In the UK all universities are stat funded to a degree. So any, any building work commissioned through public money generally has to meet a, a sort of energy target or something

R: I see

I: or a sustainability target

R: Right

I: Built into the brief in some way. Is that similar?

R: Erm yeah. What I have found is that erm, well a lot of times erm the jurisdiction or the the code that is, kind of er, the code that the architect has to adhere to in the building design erm adheres to erm, energy standards oftentimes adopting a kind of a LEED certification as a benchmark.

I: Yeah.

R: SO for example a lot of the projects you know for higher education but also some other public projects through [Home City]'s department of design and construction...

I: Hmm mm

R: Like say we've done er some healthcare projects through that organisation...

I: Right

R: so that's a publicly funded, I guess kind of owner for these buildings. They have er, they have an executive order for the projects, for the project to meet LEED silver which is you know the second tier of the er certification.

I: Yeah, I worked on an education building in Chicago once upon a time.

R: Okay

I: Which was, I dare the standard has changed since then

R: Yeah, oh yeah, well yeah, So that erm what I found that a lot of the projects, you know, they don't, not only does the client wanna achieve a LEED certification but we often find that it's just by code that we have to reach a certain stands so, erm I believe there are some other, there are some exceptions erm but I'm, er recent projects er, yeah I feel most of it has been dictated by LEED er by a certain LEED standard and if not sometimes you find that the code refers to ASHRAE standards for example for HVAC performance and um, and there are in the United States it's the building code often is defined by state um for a specific project you often have to adhere to a state code in some cases like [Name of City] you have to adhere to a City code.

I: Right

R: Some states have er if they don't um prescribe a specific LEED rating they might say that a building has to meet a certain...there might be an energy code for that state

I: Right

R: that links to some ASHRA standard or something.

I: Which applies to all buildings state funded and private sector?

R: Right exactly.

I: And what about the private sector stuff you are doing, like hotels and commercial things?

R: Er private sector. We, yeah like some private health care work like we would be the design architect for er, say a hospital or like the design architect for like the envelope and the core for a hotel

I: Yep

R: We have one that's on the boards and we finished one a few years ago, as far as the, I haven't worked on any of those private projects.

I: Sure

R: so I am not familiar with the process for like compliance with energy standards in those cases

I: But does your practice have a general ethos to energy standards?

R: yeah we uh, we do try to uh, we try to go above and beyond, not just meet the code requirement but er push the er performance and the um the er environmental impact in a positive way a little bit further

I: Yeah.

R: So er and I have seen that ethos in a way kind of evolve a little bit over the course of my time at the firm

I: hmm mm

R: I have been there for five years. Only last year, a year and half ago we hired a director of sustainability

I: Okay

R: So, you know, in this firms existence for a while a lot of the um, efforts for sustainable design came from either the project designer or the project manager in a, in a kind of case by case manner whereas now um, there is, you know, the adoption of a of a person who is the leader of the sustainability efforts in the office

I: hmmm mm

R: reflects a kind of comprehensive attitude for the entire office towards sustainability. Um so what I have noticed since we have had this director er, the office culture in terms of sustainability has evolved a little bit and changed er, we have um, you know, since it is a large office one of the nice things is that there are kind of internal presentation for continuing education and for advanced communication amongst the studio

I: Yep

R: and we have seen a lot more discussion about sustainability issues like day lighting, energy modelling, er cost benefit, er toxicity of materials things like that so kind of presentations that were in house, not necessarily bringing someone in else.

R: Yeah, yeah, yeah.

I: that have happened a lot more frequently and starting to become part of the conversation that we are having in the office.

R: SO are, you said your firm had 80 architects, so are the other people, energy modellers and...

I: Right its only, really only architects, so we hire consulting engineers for the for the structural services, mechanical, you know but also for sustainability, we um, we usually bring on er, a member or two from a sustainability er consultant that that oftentimes they are engineers who do other things but we hire them for sustainability and they provide kind of a, for lack, er, in a less glamorous sense, an accounting effort.

I: yeah, ticking the boxes for LEED.

R: exactly, making sure we are on target for that but also we often bring them in to do energy modelling because you know, er, for a large part LEED is, the one er probably the arte where a project can gain most credit would be for energy performance, improved energy performance over a base line, so often the same sustainability consultant will do an energy model based on information provided by the architect and the mechanical engineer and other engineers like the lighting er consultant and er, one of the challenges that I feel that we face in our office is that we often bring in

these sustainability consultants to the table a little bit too late, they are loosely part of the discussion in the concept phases of development but don't provide these types of service where they are getting very involved as a team player in the beginning phases.

I: Hmm mm.

R: For contractual reasons I assume, it is too expensive for us to involve them.

I: Yeah.

R: and um, one, as I described before working in a large office such as this has offered us the opportunity to to have kind of almost I would say extracurricular activities like giving presentation and so forth, um we have committees inside the office and one of them is dedicated to sustainable design and it has become more er, I think the er, more important and erm maybe er, a little bit more effective with e adoption of our sustainability director

I: Hmm mm.

R: and one of the things that we are trying to do is figure how to integrate sustainable concepts into our projects ate earlier stages, you know whether it is through looking at our contractual arrangements with our sustainability consultants to see if we could bring them to the table earlier, you know or, er what could we do to our own architectural work force that, it, what, how can we analyse the way that we work in these early stages to be able to integrate sustainable concepts and high performance ideas to the design at earlier stages and erm some of the things that we talked about was maybe setting up a peer group of architect, you know within the office that could provide reviews...

I: Crits

R: yeah in-house crits exactly , just to you know provide feed and comments on how to either improve on or make changes to some of the or to massage some of the concept design in order to push it to a higher performance form the beginning. Another is you know potentially educating some of the staff in different types of analysis tools in daylighting or energy modelling or even understanding g some of the erm solar analysis sunpath diagrams, overshadowing.

I: so that earlier decisions are better informed

R: exactly and that's, the that latter, latter point is something I am very interested in at least in our office yeah. SO , I am hoping to give one of those presentations later in the year to see what software is out there how we have been using it some projects and how we can do to better integrate it into the design.

I: SO what are you using at the moment?

R: We use Ecotect occasionally and our consultants use er EQuest for energy modelling.

I: EQuest, I have never heard of EQuest.

R:EQuest is, I think it is probably, it is most common in the United States because it's a tool that is developed by the department for energy the United States Department of Energy.

I: Right

R: There has been talk about making a changeover to Energy Plus but I am not 100% sure about when that is going to happen or we are sometimes our daylight, our lighting consultants use radiance for lighting analysis and or often, or for specific projects when funds are available and there is a specific design or issue that needs to be resolved we will use them for um looking at or the thermal bridging issues in the external envelop

I: Yep

R: At a later phases

I: So the, I should have said earlier I have 6 themes that I want to cover.

R: sure.

I: SO generally the conversation should flow but occasionally I will make weird interruptions and start talking about something else.

R: That fine, we don't want to be...

IO: No.no, It is interesting I think the iterative process you are describing is quite common in the UK as well and that there is people struggling or trying to integrate energy modelling better into their design process. One of the things that I am interested in is also the integration of actual energy data from buildings that are finished and if that's applied to the design process at any point.

R: Yeah.

I: [Inaudible] and I wondered do you do any kind of, post occupancy evaluation ?

R: It's great that you mention that because that's one of the things that we don't do enough of that and that's one of the issues that we talked about at one of our sustainability committee meetings recently actually and it's been identified as a goal for future work or that we have some sort of template or some kind of process for post occupancy evaluation erm to my knowledge though we or, we haven't, we haven't done that work extensively and or if we have that information certainly isn't shared or at least to kind of my level in the firm, I am not aware of it.

I: Right

R: but I meetings with the sustainability director of our office and some other kind of associates and project managers who are also interested in sustainable design it sounds like it is something that is lacking in our office and its something that could be very positive to learn from past case studies and past mistakes and try to improve or...

I: SO the modelling stuff that you do, you never find out if that works or

R: Right

I: You use that as a best guess based on the parametric model.

R: In my or, to my understanding or we I don't think there has been a lot of comparison to how our past projects perform compared to how they are initially modelled, I could be entirely mistaken but at

least from the from what I am aware of and what I have been involved with we haven't really done that work..

I: Yeah, that's kind of typical I think. DO you know why it is not carried out?

R: I thin er, if I had to, it sounds like a multi-facetted, you know there are probably a few reasons why

I: Yeah

R: but I wouldn't be surprised if maybe that information is not extensively pursued for liability reason for the management um there could be concern over, and I am just speculating, over issues um when an owner finds out that their perhaps building isn't performing as well as an initial concept model did perhaps that could be a legal battle that we don't want to face but you know I am almost positive that in our contractual agreements and in our disclaimers, whenever we share a design phase energy model the information is always er, it's always design and not, it's not contractually binding.

I: its, this is based on set of assumptions.

R: assumptions and...

I: A set of sums that we have done which are best information that we've got..

R: right exactly but yeah and so if I had to guess there is reluctance because of that kind of legal side but also embarrassment or it could be what if the project is not performing how we said...

I: mmm

R: it could be potentially embarrassing to the project leaders. Um although I think there are certainly people in our office who would say, you know what we need to learn from this and er, it's just hard for er, you know without really directly asking the higher ups in my office to really understand what the situation is for post occupancy evaluation I wouldn't really be able to provide you with the best answer but there are some ideas.

I: No, no, is, there, do and this might be something that other people in your office do as well but do you maintain a relationship with your Clients that for instance in the UL you have standard building contracts that have 12 months defect liability period where you know if something goes wrong with the air condition you call up the architect to get the M&E guy down to take a look at it, so there is an on-going relationship where potentially you could be looking at that sort of stuff.

R: yeah

I: People in the UK generally don't do it either...

R: Oh really

I: For the same reasons because they are scared of being sued and it costs too much. But is that the same process in the US

R: I am not familiar with that part of our contractual agreements, yeah, I can't really comment on that although I do have to say our office we do try to maintain that relationship with our Clients we have oftentimes a lot of repeat jobs from Clients who are satisfied with our initial designs for a former

project and they definitely like to nurture that process and build a strong relationship with a client, just exactly how well performance um fits into that equation, I would like to know more, I don't know right no though.

I: Yeah, it is perfectly possible that an on-going relationship could be destroyed by you go through and finding out the mistakes you have made or perceived mistakes, whatever, you know because buildings don't perform for a massive number of reasons, it hasn't been built properly because someone leaves the lights on, it's not just a design issue is it.

R: Right. That right

I: but if you go and say your energy bills three times what we said it was gonna be that's your relationship with that Client gone, potentially.

R: it could be potentially dangerous.

I: Erm. So what are you doing on a day to day basis then?

R: AT the office?

I: Yeah.

R: well on, we typically work on one project at a time with a few exceptions but erm, er pat, almost I suppose the past couple of years I have been working on a state funded university project for a school of agricultural sciences in [location] and my role was as design support for the design leader for the project which is one of the partners of the firm er but erm it, it was a large project er that is currently going to begin construction

I: Hmm

R: and for, for quite a while since the inception of the project it was a small team developing it, there was er a couple of er architects,

I: Hmm mm

R: myself and the project architect who was my supervisor working directly on the project developing it, actually producing the product and, and er producing the project and um working on the design and there are the is a management figure and lead designer but they weren't the ones actually doing the work.

I: right

R: yeah so for about a year the project, er, well maybe like 9 months, my role was not just design support but also kind of drawing up everything, computer modelling, yeah producing drawings, er some coordination with consultants and as the project continued on its phases through its erm phases er, I was involved with setting up and managing the building information model so in revit so I took on the point or the lead role in making sure the revit model was built correctly and that we, the drawings that we would produce from it were accurate and visually the way that we wanted them to be and that er, we the and that we could also have it set up so that we could use it as the design tool for design studies and er so I would, building the model occasionally do renderings but also er assist the

projects, my supervisor and project manager with um coordination, with our consultant then I was involved in producing sketches or helping out with various issue for several disciplines, so structural lighting, er, civil engineering and landscape but I was primarily working directly, er primarily working with a mechanical engineer

I; right

R: and electrical engineer for their specific coordination.

I: How many times do you in that design process do you kind of involve the energy modellers

R: Right

I: and how does that feed into the iterations that you are making.

R: Sure, okay yeah I made it clear actually er, when I described my role now if I use a specific example for this project.

I: yeah, Yeah

R: the point is that I consider myself like a designers, and , a designer with technical ability

I; yeah

R: So I am still kind of in my trajectory but I like to have a well-rounded approach I am interested in all facets of building design so I don't have a specifically clear role in the office

I: No.no

R: no yeah, it fine, but I wanted to make it clear in the development of this project because I hadn't had experience with it really in the past that I wanted, it would be interesting to me to er coordinate with the energy modeller for the that specific LEED credit. SO , how did we integrate that into eh project, I remember it happened er almost, I would say during the design development phase

I: hmm mm

R: which I know there is different terminology for that

I: Yeah well, in UK we work to RIBA stages so design development is like Stage D, which is , the end of stage D you go to planning, you submit a planning application after which your buildings is kind of, the form of your building

R: Right exactly

I: The form and the size...

R: That sounds

I: Is frozen.

R: Right

I: Stage C, stage D...

R: Right that's probably about when...

I: but in the UK for similar reasons that you describe, often an energy modeller or energy analysis isn't done on a building before stage D you know so you get planning permission for a building that you've got to build for

R: Exactly

I: urban design, form, density reasons but you've then gotta try and crowbar a particular energy performance out of a building which is completely the wrong shape or whatever.

R: I see right, that is sort of when it is involved in the big picture and on this project and many projects that we work on, often after well after well after the massing is decided

I: yeah

R: well, the the specifics of envelope and things are being develop this is when the model is integrated and we , we usually sit at a table with the architect the sustainability consultant and the mechanical engineer and we strategize how to set up the energy model and we er, coordinate what information needs to be shared in order for the sustainability consultant to er proper er to develop an energy model who's inputs are accurate for the specific building design.

I: Yep.

R: so um usually er, the I think in this case the mechanical engineer sends a a document that contains all the inputs and parameters and descriptions of the system and as many details as possible in addition to the working set of drawings

I: Hmm mm

R: Er for for HVAC and electrical and erm in the you know, again like the description of the system accompanying the drawings and we kind of usher that to the sustainability consultant who plugs it into their energy model, we usually here back from them within a couple of weeks and they come to us with a report that describes all of the inputs that they had made and any assumptions that they had to make and you know along the way we may have to field any questions that they have, you know like what type of chiller did you say you were using or what not and we kind of mediate between the mechanical engineer and the sustainability consultant and we ...

I: Hmm mm

R:and yeah, we er, we receive a report and eh sometimes we you know we if there's, a few revision that need to be made to that report until we are satisfied with the accuracy of what we get

I: Yep

R: So er and I would say that there, that happens during design development and again during construction document just to make sure any changes to the project er were properly recorded or included or incorporated in to the report.

I: Okay, do you similarly track through, for instance in the UK there is lots of opportunity during construction and building programme

R: Yeah

I: depending on the contract type for a building to make something become something that isn't necessarily as you drew it or as you designed it

R: Right

I: so do you also track that? To monitor what the final energy consumption will be?

R: That's a good question, this project is going to be the first project that I am going to be working on in the construction administration phases so I hope to learn about what will happen...

I: yeah yeah

R: uh in that case, I don't know, we'll see er, yeah I, we still haven't received the most recent energy model for the final, the final construction documents phase so it might not be that likely that that many of the changes in the field get picked up but I would hope that as accurate as could be the better.

I: So I have got one final question.

R: Sure

I: which is, given the the kind of disincentive of potential litigation and all the other things we talked about

R: yeah

I: with collecting information out of a building and the way that you currently integrate design model data into your design. If there was a, a database of feedback, like of empirical data erm, how might that help, or how might that incentivise you to use data, or how might that best help you?

R: I didn't mention this before but our office and our office, especially now with our sustainability director erm has raised awareness of the existing databases that we can reference, like the CBEX er database that but before we design the systems for our buildings and even before I think it is encouraged before we even put you know put pencil to paper and come with ideas for massing or siting we should have an awareness of energy use intensity of our specific building type for the specific climate. I haven't actually worked with that, I haven't um, I haven't actually entered a project into CBEX and checked

I: I haven't looked at CBEX either.

R: oh, that might be something that is just done in the United States.

I: nothing...

R: I think its C B E C X.

I: I think I have seen the name about but I have never kind of logged on and had a rake around

R: Yeah, um, but so erm, I am curious to try and integrate that into my next project to you know, to better position a project from the very get go and to set clear goals, you know sure a project might be performing 20% better or 40% better than base line but if its er if it's not, you know if we don't have

an understanding of its energy use intensity relative to a similar typology in a similar climate often you know we won't have the best I guess understanding of how of its performance, I find it very valuable based on you know things I have been recently learning to er understand a projects performance relative to existing data so it kind of er clears things up er, it allow you to take a step back and set some goals for a project from the beginning. Er you know I don't know if that is the type of database that your ..

I: yeah, yeah. Absolutely, absolutely. I should probably have said at the start my er, we can probably stop that there, that was excellent thank you .

ENDS

1.9 Contractor 09

Transcription:

[Begins with I explaining the anonymity clause and a chat about the job market]

I: Yes, so if you could start by telling me a little bit about your er role in er...

R: Okay I will start because we do this at companies all the time, my name is [name] I am registered architect in the UK, registered with the RIBA in 1982 so I guess it's my 30th.

I: Wow, congratulations.

R: Thank you very much!, well I think it is this month, I will have to look it up. I'm trying to live it down because...

I: Haha.

R: erm, I wasn't always a good boy, no, no I was perfect! Anyway so er, I did my training in the US for parts 1 and 2, did my part 3 at PCO and then went on to do a Masters in project management and construction in 1992 at Kingston, so that's my academic background. My er company or professional background has always been with working with architects in London and a few years working in New York and in Connecticut in the US. Er some major practices there, probably always on the more production side of the business but still very much in the design orientated practices.

I: Hmm mm.

R: Even in the UK, I worked for very design orientated practices like [name of large, well known UK practice] or like [Practice Name]

I: right.

R: and then people within the sector who are well known like [practice name] for commercial work

I: Yeah

R: I always tried to stay on the design orientated side of the business. IN 19...2008 I found myself switching sides because I was working, I was caught between jobs, something didn't work out ion the

practice I was with and they, they lost the job that they had nailed me for and I had to go and find something in a hurry.

I: Hmm

R: and it happened to be with a company who was a contractor I had worked for before called [name of large contractor of international repute]

I: Yep.

I: I had worked for them before so I thought well, this may not be as painful as it sounds and I am not earning any money so let's go work for them for a few weeks or months whatever they are taking and then I will go and find something proper so I did and they were lovely, they were as good as I remember and we were all pals, I was doing basically the same thing I was doing before but on the other side except you got an enormous amount of respect for what you did haha! As opposed to

I: haha!

R: as opposed to being sat on by the same people that would have done my job on my side!

I: Yeah!

R: so instead of getting sat on all the time, I was the one sitting on other people's heads and I, I warmed to that enormously, so that's my joking way of saying I became a design manager working on PFI, PPP projects where I, which involved hospitals [location], erm schools [school name] for the, it's called non, I fumble on the name, they don't call it case studies, it's called the sample, non-sample schools, oh sample schools.

I: Right

R: They had to do a few schools to start off with to show that they were really good at it and then they would get some more

I: Okay

R: So then they did a few and then they got some more and I worked on a big one called [School name] which is just off [location] and then erm joined a team with then started doing housing, they had done more housing than hot dinners in, in France, they hadn't done any housing here, got I think 8 or 9 projects for housing here, including the ones we did for [local authority]

I: yep

R: at once and they needed a housing team and I thought 'good opportunity, place to grow' we're off and I worked in that which is how I met you. So in summation I suppose my interest in energy in buildings was through that all the building experience

I: Hmm

R: but in mid, let's say, early 80s I was a project architect for a school in [location] and I was, am as, am was then and am still, as I am still very interested in low energy buildings. And the opportunity came up to be able to produce a science building

I: Right

R: which was the lowest energy usage building in the UK.

I: hmm mm.

R: which it would have been is it hadn't gone south badly, um through no reason or fault of my own and all those policies that worked out were part of the reason I thought I would come along and talk to you.

I: Yeah.

R: because it is all part of the learning experience.

I: Okay, excellent.

R: and other, and there are other low energy things as well but it is always a matter of opportunity as much as anything else.

I: yeah, so, er, ok, erm

R: sorry that's my whole...

I: no, no you've.. as somebody who has been on the end of your sitting on!

R: haha!

I: I have been sat on by worse people I have to say!

R: haha. I think that's probably, I am not so soft but I suppose there is always some point which I say 'I have been on the other side'

I: yeah

R: give the guy a chance.

I: haha!

R: all I am sitting on him for is to keep trying, just keep trying .

I: yeah, so erm at [contractor] and the sort of PFI process, I am particularly interested in that procurement route for

R: yeah, yeah.

I: delivering buildings. What, what erm, well I suppose we should start with what [contractor]'s general attitude to er energy and environmental matters was erm if they had one, or if it was..

R: well I think the things is that it well, it, it is always difficult to know exactly how, erm the motivation for somebody or an organisation that is com, essentially commercial.

I: Yes.

R: one can always take a bitter view and say that it's wholly commercial and it's wholly on price the, the issue is that, I mean they are a commercial company, they need to make a profit

I: Yep.

R: they do things that they don't want to do to do the things that they make a profit from.

I: Yep.

R: but the measure what those things are, what those activities would be against the price that they put forward. So if, if... what they money from is pouring concrete and their buildings are, er I could say that as a generalisation because buildings are made of all sorts of things but literally, [contractor] do pour everything out of concrete, there is a bit of a joke in there and you are smiling and having a laugh because if they could make the doorknobs out of concrete they would!

I: ha!

R: I mean they are just comfortable with concrete, it is just a medium they are comfortable with.

I: Yeah, yeah.

R: and which they put a lot of energy into because they get a big good profit return on it.

I: yeah, and they are good at it.

R: and they have become very good at it. Um the direct answer to the direct question is that they wouldn't be interested in energy if it didn't mean that when they poured concrete they didn't make a profit from it.

I: yeah

R: So if concrete went out of favour and it wasn't environmentally sound any more they would have very great difficulty in supporting that until they couldn't any more, they would have to keep pushing concrete until they, you know they would have to push concrete to be environmentally friendly rather than the other way around they can't just drop it from the agenda

I: Yeah

R: I don't think they can, that's my opinion. So what needs to happen for them is they need to...the will be backing things that the industry, the professions, the industry as er, environmentally concerned citizens need to be pushing.

I: hmm

R: so they are very interested in the environment because it makes them a profit pouring concrete.

I: Right.

R: so the targets that they are working to on a project, say the Code for Sustainable Home or whatever it was, the BREEAM levels on the schools, that's not driven by [contractor] that's driven by...

I: well it's driven by [contractor] by being driven by clients who are then part of the finance, the PFI finance so you, PFI finance process, which because that part of the getting the job, you've got to finish the job.

I: Hmm mm.

R: the difference between [contractor] and other contractors is that once they've won the job, they've won it so they do it properly, they haven't won so that they then spend time trying to wriggle out of it.

I: Yeha

R: there is less wiggle out time, unless they can actually prove that they can make more profit doing something else, they are not going to spend time doing it...

R: Yeah

R: They have to continue to make a profit and they are very oriented to local profit centre so they not going to let one part of the organisation suffer because the other parts are making money, you have to make money locally.

I: But is it fair that to say that the environmental targets and the energy targets that they are working to are things that they have to do whether it is contractually or legislatively they are not saying, they are not sort of pushing the envelope saying, here is a building that needs to be Code level 3, let's do it Code level 5 because we can. Because we want to show it.

R: No, yeah, I think, I understand the question I will answer it differently. The way that the projects are won is that these are big projects at a large governmental level.

I: Hmm mm

R: So the private finance, the private finance initiative, PFI is the mode that they use to gain the projects, that's how they come through as, what's wanted and how they are tendered so they find the bankers they find the finance they can find the development sites which means they can produce all that, make money on that as well, they will sell their own site. SO there are lots of opportunities in there but because they hold the whole shooting match the whole thing, they've got the bankers on their side, they've won that side, they don't have to worry about the bankers, the bankers are, they've got them, they are part of this process. The end user is part of the process so the local housing association will be part of the organisation that, that.. what's the word... procures the building.

I: Hmm mm.

R: and they will have an agenda, the bankers will have an agenda, they're pretty much [inaudible] they'll be just asking relevant questions about have we considered this, have we considered that, what's our risk?

I: yeah

R: We don't want to be flying out and finding out we've got a risk, were bankers, we don't do risk. So the, and then the local authority will be interested in, the housing associated or local authority who it will be delivered to as the end user are interested in getting the best they can for what they are willing to spend and [contractor] will be interested in making a profit out of the whole process, pouring concrete. At the end of the day, it's the poured concrete that makes the profit

I: yeah

R: but it's all the other things that are necessary and you have to comply so its compliance. So what I am trying to say, quite roundabout I suppose, is that once you go through the whole PFI process and and you get down, tier down to where [contractor] are making their profits or whatever all the other elements that feed into that are merely elements that feed into that, the end all question is 'have you made a profit?' and if you have made a profit you are fine. And then you tier back up and say well I have got to get Code 4 because that's what the local authorities are now demanding because that's what their agenda is.

I: Hmm mm

R: So I've gotta get code 4 so you know what I've gotta get for code 4, I've got to do this, this and this. I've got to pick and mix, I can do lots of different things

I: yep.

R: I can upscale down scale whatever, now, which is the one that's going to deliver that project to me at code 4, what have I got to do to get that? Have I got to, is it part of the process, which is going to allow me to do it or the physicality of what I produced? Sometimes the process will earn me more points or enough points to keep me clear

I: hmm mm

R: and so the physical thing that I spend money for isn't so bad but then I've got to pay for the process sometimes as well.

I: yeah

R: SO when, when deciding on the tenders in the first place you have to decide well am I going to spend more money on the process or the product or whatever and you know and then what's the legislation doing, I am not going to prejudge legislation that's coming through, I have been doing this project for 10 years, I've got my sign off years ago so I don't neces... I mean, I , at the time we were, talking about Code for Sustainable Homes and I am still building EcoHomes.

I:yeah yeah, that's what we were doing.

R: because I've got sign off for EcoHomes, I don't have to do any more now if it happened to be that they'd done the same thing and I can score some points for the next job I've got and it doesn't cost me anything, I am interested in calling a EcoHomes Code level 3 or whatever because if I can get that signed off then, and I haven't paid anything and I can put it down to marketing, and I get some more work because people understand Code rather than Ecohomes

I: hmm mm,

R: done, job done.

I: yeah

R: but I am not going to spend any money on it – no value.

I: so how, what erm, how are they assessing it then? I am totally ignorant of the process within [contractor] are they using? How are they...

R: yeah, well, basically, a design manager, which is basically the job that I did, at earlier stages because I was on later stages but the earlier stages would make an assessment about what the client requires, what are we contractually obliged to provide, what is in the employers requirements, so it , its. We will create the employers requirements, we will massage that through erm there will be decisions about what actually needs to be done, we will query whether it actually needs to be done or not, erm to satisfy whatever requirement. I mean if somebody says let's make it code level 5 or 6 because it would be a good idea, I mean why are we being asked to do that, who is going to pay for it?

I: Hmm mm

R: is it a legis..., you know, what is the reason.

I: Yep.

R: If it is actually required by tier down through documents and you've got to do this and you've got to do that and in order to get to the point where okay we've got, our hands are tied we've got to have level 5

I: yep

R: that's done. I mean okay, I'm resisting because it's gonna cost me but I can pass that up the line that we've got to do it so when the director comes along with his [location] accent and says you know why have we got to do it, I can say 'there it is, nailed and he can go 'yeah, okay'

I: Yeah

R: you've got to do it, have we budgeted it in, of course we have yeah it's in and I've allowed a little bit of tolerance on it so that we have a bit of room to play with if we, if there's an adjustment to be made or the information was incorrect

I: Hmm

R: okay good, risk is down, money is there it is being for by the client it is not being paid for by us.

I: Yeah

R: So I don't know if that has got to the end of a sentence or

I: yeas, yeah, so once you have established that you have got to do it.

R: Yeah.

I: How do you go about doing it? How do you go about during the process, how are decisions made on which particular ... whether you apply something on the process ort the actual or the phys, the end product, how do you assess each bit?

R: well you basically have to make a matrix of everything you could possibly do and then there is a tick box system against against which is, how much it is gonna cost

I: yep

R: cost in terms of pounds

I: hmm mm

R: but also cost in terms of time which, then might, on the next column be allowed for how much that costs

I: yep

R: so if you're talking maintaining something, a high maintenance element and that's gonna be maintenance that the end client is going to then take exception to, one might end up having to pay for a lower maintenance item because they might not accept that, but they might not have an opinion on that yet, you know that particular thing, they might not realise it or they, we don't lead people down the garden path we don't not tell people you know that something is going to be high maintenance and they are going to have to pay for it but if something is not on their agenda then there's, we'll have to erm we can allow for the cheaper thing that has to be maintained .

I: Yep what energy targets, do they come into it.

R: well not as boldly as that because I wouldn't start looking at energy target and then thinking what have I got, I have just gotta get Code 4 that's is, level 4 I've just got to get it, so I am looking for a target which is based on attaining that signature, once I have got my signature I am done.

I: Okay, what...

R: is that the right...

I: yeah, yeah.

R: What do you mean?

I: Well, hey,

R: The reason is, the reason is, because, you know I am down the hall

I: yeah

R: and I've got to maintain the conditions down the hall.

I: yeah

R: and I can look up and see oh energy targets and they've got all these great ideas about energy targets and getting lower levels but all they've got to do is get, to maintain the level I'm on.

I; yeah

R: and in fact if I get to do any more I haven't got an incentive other than my own personal ambition to do it and I thin well my own personal ambition would be to get something that is recognised but who's going to recognise it?

I: Right.

R: and who will that actually be something, you know I will spend the hours, spend the time and nothing will come of it, it will, nobody will appreciate, you know it is dead.

I: Right. What about, yeah, what about, we are kind of talking about Code for Sustainable Homes but you've got an energy target within your building regulations sign off...

R: Yeah

I: How do you go about ensuring that is met.

R: Oh okay well one of the issues with it is that you get, you know your targets, you will have your consultant explain because we are not the energy experts and we don't do consultancy, you know we pay a fee because we don't take the risk ourselves, we get experts to do this.

I: Yip.

R: as far as we're concerned, once the experts sign off, that's it. We second guess everybody, because we have to ask questions

I: Yeah.

R: and also they might not understand our way of working but what we expect of the expert is that they will tell us um what the energy, the realistic energy targets and I say because those are the ones that are encapsulated in some sort of document not, not an imagined element, or industry standard or we always do it like this, I want to see the paperwork and where it says I have to that.

I: yeah.

R: So, what I am saying is I'd like, the the, that consultant would then ask us relevant questions as well and then we would look for an energy target and we would agree that that would be what we wanted to do but moreover it wouldn't be just the target, it would be the specifics of how the target is met that we argue over. We might have a general idea okay, we are trying to get this because it says it in Part L but okay, is, is there only one way to achieve it? Now...

I: so talk me through the process of arguing over the targets. Because as you say there are many ways to skin a cat.

R: Yeah

I: If you've got a target and your expert is recommending a particular fabric measure or but you can see a service measure or a process measure that might give you the same result er how is that iteration dealt with?

R: Well I think it all comes down to the the consultant will probably throw up the options so what we will want to do is look, basically look before very simple, look at a list of options and cost against them and then have them usually we wouldn't know necessarily maintenance.. you know, they come from the, usually our consultants for this area would come from mechanical services background because it is most heavily mechanically services so we've had on occasion had people come through as experts but have been more architectural background so we have looked at the fabric etc. like, but then in the end because they are highly serviced buildings, those elements weren't as important as the

services and the M&E. The M&E really drove everything and we recognised overall that its M&E that's got to be self-sorted and then they know enough about the fabric to at least direct us so that we can ask the questions, which is all we really need to do which is ask question about it so fabric issues about say insulation level or how to deal with a a build-up or whatever is something that usually, it isn't, it tends to emanate from an M&E consultant, we will give them some options and then they will work out the loading. And it all comes down to preliminary er calculations anyway, so we need your design SAP calcs for a sense...

I: Right.

R: They have given us a direction we know are we in trouble are we not in trouble? How much is it going to cost us to get out of trouble

I: Yes

R: and that's all its, its, very defeatist – we have lost, ok, what do we have to do to win? Er do we have to any more than that, it's like lifting up the dead man.

I: haha, yeah, do you, so in deciding what you have to do to win, once you have won, you can implement that?

R: once you've won it means you know how much you can spend so there is creativity in working out how much you can spend because if you can spend less and you still, and it means you get more profits, I mean if you've got the same chunk of money and you spend less and get more that brilliant but the thing, the end all is well is that one always needs to be aware that you are going to get another job from the same client

R: yeah

I: so you don't want to be [inaudible] anybody off but basically, the other is you want to, er I mean we would always be aware of the targets that we have to reach, what has to be signed off – can the commercial boys say we can sign off this as a requirement under the employers requirements, can we sign it off? Yes we can, have we got to do anything else to get it signed off, how long is that gonna take, what's the risk that we get it? Okay no we are okay, and then once we have got the sign off we are done. Sorry that is just repeating the same thing.

I: No, no, I am probably provoking you...

R: It sounds a bit emphatic but it is a fairly simple process really.

I: And on I don't know the [location] jobs where we were doing several similar buildings, so... re-applying...

R: Yeah we were...

I: re-applying lessons..

R: Yeah we were trying to, we were trying to, we were trying to erm learn from errors and some errors you couldn't do anything about because for instance one of the big issues on [location] was that we put the insulation on the inside of the concrete walls

I: hmm

R: and that was basically a big mistake but because we rolled it out on every single building and it was tied, tied to the room size everything was too far down the line to be able to change it

I: yeah

R: okay you can learn from your mistakes – no you can't. And when buildings needed to be adjusted for reasons which are well outside any of this kind of finality someone you know, got the property boundary wrong and you have to make the building smaller and you have spent money getting the e wall thinner and you know it's a big mess.

I: yeah

R: so erm...

I: so we talk... we talked briefly earlier about erm going back in and finding out if this stuff works and learning from mistakes in that way, do you go in and assess buildings afterwards.

R: Yeah well the...because {contractor} use the system they are familiar with in [country] in the UK which has different expectations there is always a er overall requirement that we comply with UK regulation from a company that wants to build it differently so you are starting off with something new anyway. They would have, what I am saying that for is because usually within practice you have two ways of doing things you could us robust details and do things the way everybody always does things and it's all been signed off ...

I: hmm mm.

R: because somebody did it in the middle of the country donkey's years ago and now we are going to do it the same way now. Or you can go through and create your whole building and prove that you have done the right thing by testing.

I: yeah.

R: if you are going to take the risk by testing you want to be bloody sure it is going to be right so you have got have enough test data beforehand or reports form experts because I don't want to get stuck telling somebody that they should do something and then it's wrong, somebody else needs to take the risk and they need the insurance to do it right. So we are all trying to make sure that the insurance stays with the consultant

I: hmm mm.

R: and we don't become responsible for the decisions that leave us to get stuck if the mistake had been made we need recourse to something else. So the consultant will tell us that a certain structure should meet the requirements.

I: Yeah

R: that there's a low risk that it wouldn't because that's what we like to hear, that its low risk, get it tested, testing is at the end and on the [location] jobs we we'd go through, we went and did our acoustic testing and air pressure testing and it was way above the industry standard

I: yeah

R: because of the way the build. We could say we knew that already, we made a profit and feel all chuffed. So it was happy days.

I: an then you've got a database of test results that are then applied...

R: yeah then we've got a data base yeah...so the design SAP calculations for instance would show us that this should work without any troubles, cold bridging show be no trouble it should be all fine er, the er, I only looked at the insulation on the inside of the building rather than the outside, it was going to work environmentally it wasn't a question about that it was only about building it that was difficult so we knew we were going to be down the road, nobody knew for sure until it is tested so we wait till it is tested, you've got to finish the building and you've got to handover in a month, Ha!

I: yeah

R:but you know it's got to be done so you get your test done, signed and hopefully it is good, a sigh of relief and everybody hopefully goes away happy with money in their pocket.

I: do you do any energy recording or metering as part of those testing...

R: no well, just as part of the getting another consultant hired into do the test...

I: I mean post occupancy..

R: post, well not post occupancy because well you've got people in the building and its, in terms of getting in and being able to do tests. There will be a test if there's an issue if somebody complains for instance if the flat is too hot are too cold but that's part of the compliance with the erm the employers requirements in any case

I: yeah

R: come back and do, er if you've got water on the floor: is it a leak or is condensation has it become something that has arisen out of some design fault...

I: yeah

R: and if that design fault is related back to, or could be related back to something to do with the thermal performance of the building, its hot cold or whatever for the tenant

I: Yeah

R: then it then it's by, it's on a complaint basis.

I: yeah.

R: because you have to be able to go back into someone's private dwelling and test

I: yeah

R: and it's not invasive relatively....

I: yeah but there's a whole load of...ethical issues and privacy things

R: exactly, privacy things and that so we, it would be nice to go back and get more performance data on buildings we are doing and perhaps newer legislation will allow us to be able to do that because some things will be linked to leases and that will allow us to go back and do that but those days aren't here yet...

I: Yeah, particularly I imagine if allows you to down spec a bit and save a bit of cash...

R: yeah

I: but still achieve your...

R: I think the thing that always is of benefit is to go back and find out that what you have done is as good as you could have done and if it isn't, where you can improve it and that might be down specing and er getting you know specing in terms of maintenance levels and down specing in terms of actual cost, down specing or specing more closely I suppose to, we should, we should really call it. Because the specifications for a lot of the items that we use are, are given by what we can get off the shelf. If you can't buy it you can't use it.

I: yeah

R: we don't make anything that, to standard within a fine tuned level, we buy what we can that meets the requirements at the cheapest price.

I: Yeah. How and on that erm that particular PFI job who erm, who paid for the buildings. So the consortium paid for the maintenance of the buildings...

R: well the building has to.. the object of the exercise of PFI is where clients who occupy a building might in one day have paid for their building and then paid to maintain for the rest of 40 years on and on.

I: yeah

R: the PFI basically says take the risk out of it...

I: yep.

R: pay a wee bit more but er build a new building and essentially it is like a leased to you, we do all the maintenance for you you just have to cough up a certain amount of money a year.

I: Yeah

R: so you get a bespoke building that meets all of your requirements it's all maintained year in and year out for 40 years, the advantage, which is the whole big debate around it and this is slightly being, overly generalising the point here, it might sound a bit naïve but that is the problem with generalisation, you end up sounding a bit naïve. But the whole basic idea is that it de-risks the end client

I: Yeah

R: it keeps them from getting stuck with someone who has put in the cheapest shoddiest stuff that they can so that initial price looks good but then they pay so much on maintenance that they end or not maintaining it which is more likely that it doesn't get any maintenance so you get constant complaints and poor performance out of the building and it's a choice between the two and the clients and local authorities decided that they liked the idea that they would be de-risk and that the people who build the building hold the responsibility because both were in partnership to ensure the building was of quality, not Rolls Royce quality meaning expensive quality for no sake but quality in the sense, in the real sense that it is fit for purpose.

I: Do you think it was a good way of delivering a building? This is probably a bit of topic but...

R: Well the thing that works in the process is that coming from the professions, one always want to build the best thing one can for the end user and you know one is always trying, struggling a bit with erm ensuring that you get something that is as good a quality as you can for the end user. One thing the professions can't control is how that building is used over 40 years afterwards

I: yeah quite.

R: so you build your fantastic building and then you find that nobodies maintained it for 40 years and the simple detail that would have been fine if someone had taken a broom to it once in a while or painted it.

I: Yeah

R: falls through. So you've got a multi-million pound building and they haven't painted it on the 5 year cycle or 10 year cycle and so every time someone walks down the street they say your building is rubbish and it falls apart, no it doesn't if you just took a broom to it or painted it

I: yeah

R: or made sure, I don't know that some simple item of maintenance was not resolved, was resolved than you are all right. I think as professionals we want to have a more holistic view of the building that we have built and so erm, I am potentially naïve, but meant to be in a generalised way what I am saying is, we would like to know more about the whole thing

I: hmm mm

R: and that is why it becomes an attractive process but in the practice of doing git it probably has difficulties cause the moneys spent, we suddenly realise where the money is spent...

I: Yeah

R: maybe just, our eyes have been opened by the fact that we realise that oh, it needs to be maintained, oh right, what is the reality of that, okay. But its good fo, it will be good for everybody eventually. It's a new thing I think wait four years and see how it goes.

I: Yeha, who, here is a , sorry to keep going on about energy, it is a trivial part of PFI process!

R: I did manage to divert the subject from that a couple of time!

I: Who paid the electricity bills, do the individual households pay the bills or are they paid for by the council?

R: No they are paid for by the council so you get a red...as far as I recall I have never heard to the contrary that the, you pay your rent and the elec...well the service and electricity is paid by the, within the rent, I don't think you pay separately. But it's a good question, you know I think, I had always assumed it was standard rental agreement...

I: Right and what everybody...

R: But the thing is because they are low income I think you pay your energy bill through the council to the energy company so the, the energy company, the buil...the landlord takes your energy payment and passes it on.

I: Okay.

R: now the reason I am...I should be aware of this it is reasonably simple question but for instance we had biomass boilers well it's all central isn't so you're not going to be able to pay anybody this whole bio...you know getting the energy on site.

I: because there wasn't any heat meters was there, there was individual gas and electricity boilers for some...

R: for quite a few of them yeah

I: yeah but not...

R: yeah the biomass, how do you pay for that? Well yeah, I must admit I just assumed that everybody paid their own electricity bill but considering they are low income you, you need to have some sort of device otherwise people are paying a fortune and they are not realising it. It's not supposed to be people are just going out to the general market; these are people who are being assisted so where is the assistance?

I: Yeah. Did those biomass boilers, were they up and running?

R: They were up and running they they did, they did run there was some issues about storing the wood pellets which ran them and the right kind of pellets because there is some difference of opinion about

I: yeah, moisture content or something...

R: Well the thing is pellets are, you can get high grade pellets which you need for domestic or these sorts of boilers, you can get sort of farmyard ones

I: Right

R: which you can throw into anything and they are away but what we understood was that the, the , it was a matter of the kind pellet, how it was produce, how much water content was in it and then the space that you put them in.

I: Okay.

R: It ended up becoming a little bit more complex that we realised and then, not not that we realised, that would be unfair it's not an easy, er, it's much more specific about things that you've got to get for the pellet

I: Right. Okay, I am interested in ...

R: but they are bloody good things and they give a good level of work. I think for me to pass along an opinion about this I thought: if it is there you can use it but I think initially it was taken as a kind of just put a big thing in there that is expensive because it will pass us...

I: yeah

R: this requirement and the client has to pay for it anyway because it, this is how we are going to be able to achieve the aims.

I; Yeah

R: but I think if you've got a , this is my personal aside: I bought a solar panel for my phone

I: Uh huh

R: for when I went camping and I was reading about how to save energy and they said, if you've got a solar panel don't, for your phone, why put it away? Why not use it to charge all the time?

I: Use it at home, yeah.

R: oh right, that's a good idea

I: Yeah

R: So that's what I do.

I: Hmm

R: but it takes a bit of thought doesn't it?

I; to make the leap.

R: You think, any object you have doesn't need to be used on a specific occasion, you can use it all the time, why not?

I: Hmm

R: You know, solar panels are something you can use all the time you know if it charges you at a campsite it can charge you at home.

I: mm

R: and I think the same is with a bio- boiler, once it is there people realise it works and you it can actually be used it can take a little bit of setting in to the maintenance regime to use but...

I:so we are nearly through these questions but I would like to come back to your idea of your personal ambition being lost within the kind of framework of the delivery mechanism because that is part of

my frustration when I worked on, not on the [contractor] jobs, I remember working on a different job which was in [location] erm...

R: [location] is a good council for your energy people. Boy they were the ones...

I: yeah so we were going for, Code for Sustainable Home, only level three I think and the way the best way of doing it was deemed, there are a number of ways of doing it but the most economical way of doing it was quite different to the best way of doing it and we ended up doing things that I didn't think were, er the best way of going about it but I had no way of you know, as you say, my personal ambition was to get this, make the good decisions for the right reasons

R: Yeah

I: Erm my clients motivations were slightly different and I no way of doing this without spending a massive amount of time, all this kind of stuff and I'm kind of...

R: that's a frustration of the profession and well, can I answer the question with an example?

I: yeah, of course, please.

R: I will make it as short as possible, I can ramble on. Low energy School in [location] the client for the school had no agenda for energy saving at all this was not anywhere near where we are with BREEAM standards, couldn't couldn't and I think we would have struggled to label something to say, this this because we have to do this oh we are going to spend less money on our energy in this building...

I Yeah.

R: but I had the mission under my belt when I was a happy chappy trying to do a low energy scheme

I: Yeap

R: I did lots of research on low energy schools and systems. I found a fantastic school in Wales

I: Hmm mm

R: Which had lots of really simple low energy mechanisms that dropped the energy level and were also demonstrable because it was a science block in the school . One of my other key ambitions was that the students should be able to see and impact on themselves and understand daily how they were saving energy.

I: Yep

R: so it wasn't just good enough to say oh we've lost it through the insulation, who's gonna know. If it is a science block they should be able to see it

I: yeah

R: and the school used light shelves which was the big thing for them: light shelves. But we had no data on light shelves we didn't understand how much light we could get and the school did it brilliantly but we could get no data. Anyway we ended up finding them and having to work it out, calculate it so the energy consultant for that was able to calculate because they were very thorough,

we did that, we did an energy calculation that showed because of the use of the school, where one usually did on all the energy schemes when I receive, had seen in all the energy sort of pamphlets from energy conscious centres that you do, you do a sort of glass wall, sun comes in, heats up the glass er brick wall behind

I; hmm mm

R: er heat for school or building er it's the opposite of what you want in a school. The energy calculations that came back from us from the consultant was that the biggest energy savings we made was insulating under the floors so we insulated the floors rather than the walls so when the sun comes through in the afternoon it is not heating up the rooms you don't want heat in a school

I: yeah

R: you are occupying during the day not at night

I; Yeah

R: we also had existing boilers within the school, an old 1960's school and we strapped on, I am going to forget the name of these things, reverse heat boilers? so we attached, er all our heat came from the waste heat from the existing boilers.

I: Ah, clever

R: so we had light shelves, er insulation in the right place to do the right job, we had all the energy off the existing boilers that was being used anyway, it was a science school we didn't know which science lesson would be taught in each room so we had to be flexible

I: Yeah

R: and so we put in, because biology is one of the things one does in science, so we put in greenhouses as part of each classroom.

I: Right, nice

R: So rather than the windows we had a little greenhouse between the building and that helped on the energy use because it meant we had 2 levels of glass before you reached the south, it was demonstrable because the children could all see and it was green house.

I: Yeah

R: there's the light shelf

I: Yeah, you couldn't see the boiler but we knew it was there so we were lovely lovely environmentally conscious, ably bodied professionals who managed to produce a building that did all of these wonderful things

I: Hmm

R: But, schools are procured through a political process which mean that councillors have to pay, sign off the payment

I: yeah

R: for building the building and we were between terms so it meant that they didn't want to sign off the building that would benefit politically the next party coming in

I: yeah

R: that was the end. It would have been by points measured advised by the consultant that we used, levels, levels better than any other school building in the UK demonstrably wholly, completely levels better but the energy saving attributes had to be watered down to basic building standards in the end

I: right

R: because they would sign off any more money to save money long term because it would have benefited the next party in power, not themselves.

I: Yeah yeah, scandalous!

R: SO in the end result we realised that our ambitions are always bounded by the reality of the environment, political, social, economic that we live in.

I: hmm

R: I wouldn't have not done it again cause you always have to have a trier and you always have to learn from what was done. And a lot of the measures couldn't be removed from the energy thing, the light shelves were the light shelves because they were just built into the building and that's how it is done...

I: Yeah

R: the greenhouses were there but we lost some of the insulation levels that we wanted to achieve because that would have meant more money and we couldn't get rid of it, couldn't shift it, I couldn't hide it someplace else!

I: yeah

R: and back boilers couldn't be hidden, I could pretend it was something else and get paid for it then get stuck in...

I: yeah

R: so at the end of the day it wasn't what it could be and the twist in the tail at the end of the story is that for my only young years in the profession, I am probably one of the few people who can say I have built a project, was project architect for a building I got it built it went through on cost and time, it did alright even for all the political machinations and I returned to find that under the new schools initiative at [contractor] they tore it down and it's now a completely new school and where it was is now in the middle of a playing field.

I: Right.

R: so I got to not only build a building but see it demolished!

I: You are a member of the rubble club!

R: haha! I am a member of the rubble club! I am an initiating member of the still alive rubble club. I didn't think, I thought you had to be a lot older to do that.

I: Yeah, excellent, I think that is really good, really interesting, really helpful and insightful I think we should er, stop there.

ENDS

1.10 Developer 10

Transcription:

[Tape begins with the interviewer explaining the interview process and asking R to explain their role and their personal and organisation's attitude to carbon and energy.]

R: That's fine. Erm I am [name] my official title is Sustainable Development Executive which is a bit of an odd overwhelming title but my job is, is to look after environmental and ethical issues ...

I: Right

R: On our construction and major refurbishment programme so, and I do that through, er we don't have any, at [company name] we don't have any designers, project managers in house it is all external...

I: Okay

R: So my job is basically to help them through the whole process in terms of what they should be thinking about when they should be thinking about it, how to put it in the contract documents and then making sure it is connected up with the handover process to the operational side once we manage the buildings or once our management company manages the buildings erm I have a counterpart who looks after the existing buildings as well.

I: Right

R: erm and the issues that I cover everything from predicting energy use in buildings, meeting building regulations, BREEAM to sourcing of specialist stonework from all over the world and the ethical issues associated with that so it is a kind of broad scale of things, what I don't tend to do is manage environmental impact assessments or erm I mean I get involved in the planning process but I don't lead on that so...

I: erm so the energy stuff you are, you are, you are...that's working to a particular set of targets

R: Yes

I: are you mostly commercial sector is that correct?

R: [Company name} mostly builds central London offices and out of town retail

I: Yep

R: erm we don't have... we have corporate for energy targets in our existing – portfolio wide objectives for energy use in our existing portfolio properties – in our new builds we go for BREEAM excellent for offices and BREEAM very good for retail and that drives us to the minimum standards within BREEAM to meet regulated energy use so BREEAM excellent, it is an EPC rating that we have to meet ...

I: Okay.

R: that going to back to some sort of no EPC related formula of calculating it going forward but

I: Right

R: that's kind of the... its regulated energy that BREEAM is interested in which is a smaller subset of total energy use.

I: erm and so your existing buildings targets they're obviously taking into account much more that regulated energy use

R: hmm, the whole thing

I: so how are you setting your targets for that.

R: hmm [colleague's name] is leading on that but I think a couple, three or four years ago we said 'you know what we feel, based on what we have done in a couple of buildings, we feel that portfolio wide we can do a 20% reduction in 2 or 3 years ' and we'd just made a big investment into smart metering that we thought was going to help us.

I: Hmm mm.

R: We didn't actually have a portfolio breakdown, we didn't know where all of those reductions were going to come from we didn't have a huge action plan

I: Right

R: but when we started to look at it we realised that most of our energy use that we control comes from our central London office portfolio, about 85% of it...

I: Uh huh

R: there is another big chunk that comes from our shopping malls, shopping centres, and in our retail, out of town retail portfolio, occupiers buy their own energy we pay for lighting in the carparks and management of the facilities. What we don't get into we don't pay [national retailer]'s lighting bill inside their store so our scope is different. In an office we do actually have lot more to say about how the building is run and we've, we've over the past 3 years begun to define that control...

I: Yeah

R: a bit more with it. So our 20% reduction covers things that we control and things that we influence so it covers air conditioning and cooling and heating, but it doesn't cover the computer use in a [bank] trading floor because we don't feel like we have control over that but it would cover their air conditioning so that's, so that reduction covers that, we managed 27, 29?, 27% in three years

reduction across our portfolio and this is a like for like portfolio so its buildings that we owned then and still own today...

I: Hmm mm

R: erm so that reduction is not down to change of portfolio. It's not down to the fact that we have bought or sold a building....

I: Right, it is actual genuine reduction

R: those buildings themselves and erm, that is on a, that 27/9% is where we are now compared with where we were then, it is not cumulative savings

I: yeah.

R: we talk about savings to occupiers in terms of the cost savings to them: that we do cumulatively because we feel that they are continuing to make those savings but the straight forward 27% is an absolute reduction

I: okay

R: erm. It is all quite technical stuff but I hoping you understand it because we, there are very few people who do get their heads around all of this. Er and then we have set now going forward for the next 2 or 3 years I think based on our original 2008/2009 base line a 40% reduction plus a commitment for all new buildings that we either finish building and or take by that we will have a 15% reduction over the same period.

I: so the the stuff you are delivering through your...

R: because we recognise that we bought a couple of buildings recently and there not in that scope but we still think we can improve them significantly. And that's just because we think we can manage buildings better than anyone else and have the resource use.

I: okay.

R: So we are really confident that if we buy a building from our competitors we can actually reduce the amount of energy that building uses by about a third.

I: The new buildings that you are building, are they in ...

R: yes because the first, their design based design is often, their first year or two often quite messy. I mean it is actually about actively working with the engineers, bringing the engineers back in and to re-commission and to rebalance the cooling system for example and work with the occupiers with operating hours and lighting and out of office hours stuff and we think 'we can bring that down'.

I: and what is driving this 20% or just general push downwards?

R: The, the actual number is based on what we think we can realistically...

I: yeah, but the general push downwards...

R: the push for it is that we fell that our occupiers like us more for when we do this with them, we save them money

I: hmm mm

R: we do have a lot of repeat business we have occupiers who say 'ah, our lease is up we kind of need more space can we use to your other estate, we like you, can we move somewhere else with you.'

I: is that because there is a knock on improvement in the kind of environmental conditions as well as the cost savings...

R: it is all wrapped up in the fact that they see us as a really good landlord basically you know quality service, good landlord, we help them reduce their energy bills it's all part of that, that sort of thing. We turn around requests to change the building quickly, we deal with insurance properly all that kind of stuff.

I: Right

R: Erm, so that's, there is that driver there there is a because we are a listed property company, there is shareholder pressure to address this

I: Yep

R: erm and I think there is some sort of reputational pressure that we put on ourselves. I think it is fair to say that we want to be good at this compared to our competitors so

I: and what are your competitors doing, do you know?

R: some of them are other property [inaudible] just like us, [property company name], [property company name] other are fund management people so [fund manager] er what are they called [fund manager] for example have a very big property fund they also report that they also look at what they are doing and we... they are quite active in this area and there is a kind of we are better than you are straight forward

I: yeah

R: who's got the shinier shoes kind of thing haha! That drives a lot, some of what we do as well.

I: alright

R: so...

I: so in your, you said your day to day kind of thing was delivering new buildings and refurbishments...

R: hmm

I: the kind of front end of this. Can you talk me through the process of this, the decision making, and the targets you are trying to achieve and how you go about ensuring a new building meets the targets that you are aiming for?

R: erm fairly straight forwardly we have got something called a sustainability brief for developments where it is really a process for our project managers to follow it doesn't give our design teams guidance about 'ooh you should look at energy use' we only work with people who are good at this stuff now we don't ...we don't tell them they have to pay attention to flooding anymore because they should be doing it. So it's...it's basically a to do, it's basically a process for project management and major design team members to follow and that sets out what they need to do a different RIBA stages. It is closely linked to BREEAM...

I: hmm mm

R: Because BREEAM is something that our occupiers ask for

I: Yep

R: so we need to continue to do that. Er it, but it does go above and beyond that. At the moment our energy targets within that generally relate to regulated energy use but we are starting to look at ways to setting unregulated, setting whole energy targets for buildings. We also do have set specific targets for embodied carbon in main structural materials like steel and concrete...

I: hmm mm.

R: it is very hard to set embodied carbon targets for whole entire buildings but we can do that in areas that are particularly energy consuming materials, so.

I: and the, the targets the energy targets are wrapped up with BREEAM and all these other planning requirements because...

R: yeah BREEAM [hits table], Planning [hits table], building regulations [hits table]. We usually want to exceed, we usually aim to exceed the relevant building regulations by 10 or 15% at least

I: Hmm mm.

R: because there is a thing about saying to occupiers we didn't just scrape past regulation, it is a good building it will, it will hold it's, it will act like a new building for a number of years, it will compare nicely that kind of thing.

I: presumably if you want a fifteen per cent reduction over the next three years you want a reasonable idea what it's going to be using in total out with the kind of target setting stuff.

R: er we do get there at the end of the day er with building log books and the fact that you do have to do predictions but a lot of those are based on a very theoretical assumption of how the building is going to be operated. SO there is going to be very few cellular office, mostly open plan a density of one person per 10 metres squared operated from 9 to 5 that is everybody has a computer at their desk....

I: Hmm mm.

R: that's actually not the way most of buildings are fitted out.

I: Hmm

R: a law firm may have lot less computers but may have a huge catering and reception kitchen that serves 600 meals a day, you know that and you may end up with people who work there until midnight every night, a sizable percentage of the staff. A bank you may, you know, you've got lots more small power. So we can set, what we're talking about doing on some of our projects now going forward is base build energy use assuming standard densities and things erm and that's what we've...on one of buildings, which [name] we've come and said 'ah, there are lots of variables let's try and make something that we can actually use to discuss with our occupiers' that's responsive to all those variables.

I: and, and the different variables you have got there [referring to a company feedback document], the kind of, the equipment per metre squared is that based on, is that based on your existing stock and what, how people are using the spaces or is that kind of an open free box....

R: it is open free boxes, I suspect it has limits if we go back to [person's name] because all the cause all the limits, I suspect he did it in bounds of 30 or something, you know like...

I: right

R: the certain, it's not accurate up to the nth degree so, erm but this is all still fairly new weirdly enough, this concept of getting engineers to predict energy use, actual energy use, er it's not something they ever seem to have done, there is no standard methodologies for doing it where you can compare building between buildings, there is no way of saying sort of standard document that you fill out to show how you have got to that...

I: Yep

R: and it's, it's a bit weird that you don't have that whole energy use building. But occupiers are beginning to ask how much is this gonna cost them to run a building.

I: and do you, can they hold you to that?

R: erm. No! Likewise I can't hold my M&E engineers to that at the moment either, it one of my favourite things to threaten them with! At some point...

I: You will be able to!

R: You will, if the building doesn't make a DEC rating of C you won't get you bonus or fee or whatever! They, they, it is very, I don't think anyone is confident enough to get there yet what we do with occupiers is say we have based this on some modelling by our engineers and comparison to some of our other recently completed buildings, it is going to be in this range...

I: right

R: Here is how we work with you once you are in the building or how we work with your fit out to address all of this. So.

I: SO what erm, here is a really geeky question, what kind of modelling software, assessment software are you using throughout the process, does it vary from consultant to consultant or do you have a standard?

R: Hmmm. It all seems that but everyone uses IES or TAS. Every once in a while someone tries to use Hevacomp but we tell them to go away and try again!

I: Quite.

R: if we notice what they are doing, I tell them that is not appropriate because it doesn't model air conditioning systems appropriately, erm, but...

I: Okay.

R: and I do have a very big spread sheet somewhere which compares, which gives the predicted CO₂ emissions regulated EPC rating and the software used, and the model of that software and the date it was done somewhere, I can dig it out..

I: Like a software comparison?

R: yeah, well I have not done different building, different software on the same building, although we have done that.

[Short 'I' led digression about the comparability of modelling software and how the margin for error may make some minor adjustments in target values meaningless (a 2% reduction can be generated by simply changing software rather than an improvement in the building or system)]

I: So the relat... working with the people when they first move in to ensure everything is working properly, can you tell me about that process?

R: Erm, it is probably best if I start by saying what we do with our existing tenants that we have had in buildings for a while. They have, first of all we had, we have quarterly working group meetings where we get all the occupiers in the same building around a table with someone from our, from [R's company]'s point of view who is not the person the deal with in leasing negotiations with.

I: Right

R: It is something that took us about three years to learn. It's just that if you put the guy that does the leasing negotiations in the room with the head of property they don't actually talk...

I: or they tell you everything is terrible....

R: yeah, there is a constant barter, there is a constant positioning that goes on....

I: There is no conversation

R: and then if you are trying to negotiate, if you know that they have got a lease break coming up in three years then suddenly you can't to talk to them about a whole bunch of stuff because it starts getting commercially sensitive

I: Right so we just said 'fuck, sorry, we'll just' we, we sort of brought in customer service people for a couple of reasons but it turns out that they have been very helpful in kind of providing neutral ground

I: hmm mm

R: a neutral representative from our side who has attended the meetings so do the building management and building engineering team and they go through the energy, water, the energy and water performance of the building compared to previous quarters but also compared to previous years, we have that data. And it is important to say that the reason we are able to do really detailed occupier comparisons on things like cooling usage you know is because we put in incredibly high levels of metering and thermal metering in most of our buildings.

I: Yeah.

R: So. And that working group thing throws up quite a lot of things. So for example er one of our occupiers wanted to extend their evening working hours and was planning to put in their own extra chiller on the roof but then in those kind of working groups they learned that is someone else in the building who has a chiller that they are only using at a third of capacity in the evenings and they can run that chiller at better usage. So its kind of things that you think would be standard in a multi-tenanted building but they often aren't.

I: Yeah

R: Er it gives them a really good forum to discuss that and it creates a little bit of competition about, a little bit of momentum about their own initiatives so you are the office manager and you know you are supposed to be going around and resetting all the lights but you've also got to do a million other things you know resetting the light time off when there, is at 5 minutes or 30 minutes after a motion sensor trigger knowing that you've got to back in a quarter and talk to some people about what you have done adds a bit of initiative.

I: and is there competition between tenants?

R: yeah there is a little bit of competition between tenants, there's not a huge amount but, healthy stuff.

I: Yeah.

R: Erm so we have those meetings with them and to get those in place often requires some quite senior meetings to get the er, the right people at those quarterly working group meetings to attend on a regular basis often required our very senior directors to speak to our occupiers very senior directors to say we are quite serious about this and we think you will benefit from it, you know who is the best person from you end blah blah blah. It is a lot of time to set up and er, in terms of new occupiers coming in , there is always a series of initial meetings about service charge budgets and associated with that we say we have a lot of, they have a fit out guide. Which is part of a leasing package that they have to adhere to anyway...

I: Right

R: so as part of that we try and influence some of the specification and the way that they connect, that they are connected to our central services and we also have review procedures over all of that. So, overall those connections, so we try and influence them at that stage.

I: What is your spec based on, is it what previous owners have done and the kind of energy consumption associated with their fit out types or is it...

R: We have a longstanding fit out guide which we update, so...

I: based on new data?

R: new data? a lot of it is we used to not require new tenants, we now, now we suggest to them quite high level metering within their own demise and we tell them we find this very helpful because if you don't know, if your entire kitchen has one electrical meter it's impossible to tell when stuff is just broken or running all the time or using energy so we say you know break, there is very simple things breakdown, make sure that your own engineers and your own fit out people are putting in a good level of metering so you can see where energy is being used in the building. The kinds of , we don't really suggest you know you should use laptops instead of computers and things, we don't really get into that but it's you know, low VOC paints, which is reasonable, air quality and all that kind of stuff.

I: Hmm mm.

R: So there is a fit out guide that is part of the lease and then through the review process of them sending in their design and servicing drawings to us and us reviewing it it instructs a dialogue about and sort of sets and expectation that we do care a lot about how the building is managed and work with you and also the service charge negotiations that happen because we give them a budget which says this is how much we think your service charge costs is going to be, insurance, trash all that sort of stuff...

I: Hmm mm

R: but as part of those energy discussions we get really involved in erm not necessarily procurement of the energy but how we are going to bill them and the fact that we can give them a really detailed level of billing to help them manage their own areas better and how our own management of the building relates to their quarterly, to their bills that they get.

I: okay, and that data that you get out of their metering strategy if they kind of follow it, do you, you use to bill but do you also use it to inform your future design work?

R: we are starting to do that because we have had, we installed all the new metering system, metering and monitoring system in all of our existing, most of our existing offices...

I: yep

R: and it is just it is only in 2 of our new, 2 of our recently completed buildings because they are still not completely fitted, you know we've got a huge development going on now, so we have done some lessons learnt from those two buildings

I: Uh huh.

R: a lot of it has got chiller sequencing and reception areas to be honest! They keep coming up again and again, we don't have enough chillers or we have to run everything, you have to run them all to get enough cooling where actually if you sequence them differently you can...same thing with boilers as

well, also the reception design is a continual issue cause we are often having to heat that area almost year round which is a bit silly and there are better ways of doing it but it turns out that in a lot of our buildings the services engineers avoid heating around the receptionists desk because they know they are going to need to run cables there at some point so, putting under floor heating with water and electrics under it so they sort of leave this zone of exclusion around the receptionists desk who is the person who actually needs the heating, so we have this weird combination of where the floor under the receptionists desk is freezing cold and the rest of the reception is nice and warm...

I: And they plug in a fan heater...

R: It is kind of stupid things that are squaring the circle on some pretty minor things that don't make a huge difference. Erm we are also learning from a TSB funded study that we did of [building name] which was completed in 2009? I think? But occupied very slowly and has just recently been fully occupied and the TSB study is about a year and a half old and the findings in that were about cooling particularly in the upper floors it's a, it's floor to ceiling glass, not interstitial blinds, no external shading devices...

I: right

R: a building that would not pass building regulations now on any kind of cooling or energy use problems but the, how significant the cooling issues are on the un-shaded upper floors is something which we are learning from that process and it's driving energy use in a lot of the rest of the building.

I; presumably you can associate that with a fabric measure for the rest of the building .

R: Yeah, so we are paying a lot more attention to U-values and G-values going forward on our buildings yeah. And trying to balance day lighting and the amount we need but we are generally going to less glass which is a good thing...

I: really?

R: not completely but often putting in external shading devices is hugely material resource wasteful, if you just put in a little bit more solid in the skin of of the building...

I: get rid of the shades and brise-soleil and things and stuff

R: yeah which is horrible to clean and all that kind of stuff. It does add a lot visually to the building but there are smarter ways of doing it so.

I: yeah', so the diagnostic process of making those associations is that just by somebody going around and looking at things, I know it is early days but is there a formalised process...

R: we don't have a huge...we do lessons learnt on some of our buildings and then we do kind of meeting reviews where we get the building engineers from some of our existing buildings to sit down with the M&E engineers in particular of our new of our current buildings coming into design and often the issues there are procedural, they are the commissioning contracts weren't done properly. I think people are very hesitant to say like you designed the building badly' but there are some things which come of that.

I: yeah, In the same way that you are, in the future you are going to be able to hit you service engineer with a fee reduction if the energy is not there, the building design is the same. So it is all kind of, I mean we are talking a lot about services and systems stuff, rather than building for or what architectural parts...

R: It is very rarely architectural things, it is almost entirely erm the actual engineering or the services engineering.

I: Why is that.

R: I think it is because our building engineers and building management team don't think about architectural design in a big way. I just think that it doesn't cross their mind to say you shouldn't have put floor to ceiling glass on the windows! You know I don't think it does...The other thing is that the people who are helping us with this review and doing a comparison against log book data against a years' worth of running, which is what we are doing on some of the buildings are energy services specialists so it wouldn't occur to them to say 'you could reduce the cooling load by changing the glass specification' they would say you can reduce the cooling loaf by re-sequencing the chillers or putting in this kind of chiller instead of that kind of chiller. So.

I: DO you think there is a significant, is there a cost difference between having floor to ceiling glazed office space rather than a 30% solid?

R: not really depends on the the glass, the cost of the glass and things. Some of the newer glass that's coming out is very good on thermal transfer but you end up with really tinted glass façade and some of its quite expensive so I think there is a kind of mild cost argument but we are talking about central London offices so it is very rarely a brick versus glass discussion, it is often glass versus big sheets of stainless steel or something like this or aluminium or, you know it is not as straight forward as you think. ON the retail side this is becoming more interesting not because we are doing any kind of back and forth reviews but because often our retailers preferences for façade designs are not making it through building regulations.

I: Right

R: there are a couple of examples where there is a south facing unit and they want 2 storeys of floor to ceiling glass on the front with a big lobby thing before you go in to the mezzanine and other floors and this just doesn't pass building regulations any more.

I: hmm mm.

R: Because of the G-values and the air conditioning as well so, that kind of thing where we are having to turn around to the likes of [international retailer] and a [car dealership] and just say, you can't do this. You could do it with a fritted glass or you could do it with a fritted glass or you could do it with kind of funky panels in your glass but you cannot do a, just a straight forward, unless you put some really expensive glass in there.

I: Yeah.

R: but that's er, that's more interesting than.

I: Yeah but do you think that will make its way into, I can't remember what number of [Street name] you said...

R: [number]

I: but with the massive overheating on the upper floors...with

R: hmm. I don't think we will design stuff like that anymore. It's, it's just, we really aren't design stuff that looks like that anymore at the moment so it's kind for a shift overall in architecture thing at the moment.

[a brief discussion describing the appearance of one of 'R's buildings identifying where it is, what it looks like]

I: so you are collecting like temperature data from inside it...

R: most of the time we aren't collecting temperature and comfort data but because of the TSB funding for [building name] they are.

I: right. and is that feeding into your lessons learnt stuff as well.

R: yeah and also because they have come to us and said it is way too hot all of the time you have to pay us for extra blinds and that kind of thing.

I: Right, I am conscious of time. [another meeting is scheduled immediately following this interview]

R: That's okay

I: My final question is always kind of, if you could bundle all of this information into one place to help you do your job better, how would you do it? I know that is a very vague thing...

R: Well we have talked about whether we want to put some all this in a big document, the problem is that we are, we are such a, we are a fairly small company in terms of head office staff in here so when I have these meetings, for me to, I have make sure I remember what I have learned and it is there but the, making a document that replicates my mind or some of the other people's minds and what we have learned actually isn't worth our time and money...

I: hmm mm

R: now [company name] might decide if I want to leave [company name] or something like that they it would be worth their time and money to sit down and do a brain dump off of me for two days properly rather and sit there and make a note of it...

I: Hmm

R: but at the moment we got some emails and I do a lot of, like when finish the TSB study I am gonna invite all the people who are working on our current buildings to come to it but it's not finished yet...

I: yeah

R: so that kind of a thing we will do some of those more formal things but a lot of it is us, it's literally our me and there's 4 guys who manage projects in here, 4! they have worked on projects before where

they have had issues with commissioning they now know when they get to a certain point in design, like, I bring it up, they bring it up, that we need to re-look at the commissioning contract...

I: Like what, give me an example of how you bring it up and what an issue might be, like is it...

R: well, like the quality of the commissioning which commissioning engineers we don't want to use, what kind [facilities management company name] really despise to say it's [commissioning engineers name] commissioning services you know these kinds of things. But it's also the fact that we used to make the main contractor responsible for some kind of post construction commissioning that would happen 6 months to a year after they finished the building when it was starting to be occupied...

I: Yeah

R: and contractually we are taking that out of their job and just putting that money, giving it to our building management to do and for them to hire their own engineers and deal with it differently. SO, we've decided on almost all of projects now to bring in our building engineers on-board about 6 months before we finish literally there was a kind of week of handing keys in training. We now have a 6 month process because we learned our lesson a couple of times about how badly that could go if you don't have properly trained engineers to take on a really big buildings.

I: Yep

R: so it's a very personal lessons learned thing here.

I: Okay.

R: and I am sure we should be scaling this up at an industry level but it's...at the moment it, there just, it's kind of, we just kind of we know it we learn it and its happening that way.

I: so what kind of driver would it take to scale it up, if that's not a dumb question, to make this an industry wide thing

R: I, there's a part of me that really thinks that some of the professional training and services accreditation bodies need to get a handle and they often offer courses on what the legislative environment is

I: Yep.

R: or some key issues to think about in leasing but the day to day building management, how to manage a building I don't get a feeling that the British Institute of Facilities Management is that clued on all of these things or the RICS is that clued up on any of these things or takes it seriously, so, I don't know if this is kind of a big, if I am pushing the blame bit don't know.

I: but legislation isn't the way to do it you don't think.

R: erm, I think it, the log books which are a very very good tool which are very rarely completed properly or very rarely used properly by other... when we buy a building and ask for the log book it often doesn't exist.

I: Hmm

R: or it exists but it has 4 numbers in it. And I am talking about buildings that were built 3 or 4 years ago,

I: Right

R: I mean it's, these are things that actually you should, we've talked about this a bit more, so that kind of thing, where we have had to make it much more focused. I mean even, one of our big showcase buildings they didn't, the building engineers didn't complete the log book very thoroughly and we got back them and said that was in your scope of work and 2 years later you need to give us the numbers that should be in that.

I: Okay, alright.

R: so there are existing tools, it is just a matter of using them better.

I: Okay, shall we ...

R: wait for them...

I: finish that now, that was great though, really insightful thanks you very much.

R: Talk talk talk!

I: No no, it was great thanks very much!

ENDS

1.11 Building Performance Consultant 11

Respondent:	Building Performance Consultant 011 (R)
Interviewer:	Craig Robertson (I)
Location:	Via Skype
Time/Date:	11:00 19/09/12
Duration	56:15

I: indicates the Interviewer is speaking

R: indicates Respondent is speaking

[square brackets] indicate explanatory notes, removed names etc added during transcription

... indicates pause/break in speech

Transcription:

[Recording begins with introductions and a discussion about interviewers PhD and research topic , setting up the Skype system and passing some documents through]

I: So can we begin by you kind of out... giving me a brief description of what your role is, how you interact with your Clients and what they come to you for?

R: Right well this started back in the er really the mid 80's when I joined [local authority] as energy manager...

I: yep

R: so not only did we have the energy management system that we had to set up but we also interacted very heavily with the schools design process.

I: Right

R: The person who was the director in charge was [name] a RICS member who was on the examining board at RICS and he did a very very good job in saying that because we had a programme of 27 schools to build we were going to get it right so that we would have no changes to our design at all. So we front ended the whole design process.

I: Right

R: We spent a long time getting the basic design right. We built two schools and went over them with a fine tooth comb before we handed the plans over to the constructors. Then we reviewed everything with the Clients finalised detail items and locked-down the design. Then we built another 25...

I: Right

R: With no changes, we did not need our own internal staff dealing with variations...

I: Okay.

R: We didn't have any cost variations, we didn't have any claims for additional time.

I: How did you manage that sort of contractually?

R: We got the specification exactly as we wanted, a very high level of detail and the contractors just had to live with it. They were used to making their money from all the claims and there weren't any!

I: Yeah, Okay!

R: If we wanted to move a doorway as we had to do on about the fourth or fifth building, we waited until the job had been handed over and then in a fairly short amount of time we just cut in another doorway etc.

I: Right, okay.

R: So no changes at all because we got the design right.

I: And did you pay a, do you think you paid a cost premium on the contract for that set up.

R: No, not at all. Our main costs were staff time in-house – once only at the beginning of the construction programme...

I: Right.

R: We had very experienced designers and enough knowledge of what had gone wrong in previous contracts. All in a culture set by the director of (name of director] of no blame...

I: Hmm

R: we could all see what had gone wrong on other contracts even though we had hidden it from him. The director said you are going to get it right, and we did!

I: and what specific things were you looking for that had gone wrong or were going to go right, presumably it was the building as a whole, so everything from the architecture to the use of the spaces to the energy to the...

R: We included productivity in the workplace. We had a lot of day-lighting – north light day-lighting...

I: Hmm mm

R; We had the windows in the right position, we got the structure of the school right, quite fundamentally, we got the transit routes for the classroom exchanges as short as possible.

I: Yeah.

R: We worked with all of the users, to get the best layout / grouping within the school. They contributed to the optimisation.

I: Okay

R: The key message is if the Client can accurately define what they want, then there are far fewer complaints. A similar example is [Coleraine Causeway hospital] ...

I: Yeah

R: That fairly large hospital took five years to get the design 'right'. It really is an exemplar hospital.

I: Okay.

R: Again, that hospital was built only when the specification had been bottomed out among everybody concerned.

I: Okay. So is your role, your current role, are you, you are a...

R: The current concentration is on public sector buildings – hospitals, leisure centres, schools etc. This included work for national level audit bodies. This built on my earlier local authority work throughout the 1980's. During the 1990's I worked at the [built environment quango] where much of my work was on the UK government's energy efficiency programme - the Energy Efficiency office, and then the [national-level carbon reduction organisation] programmes. I 'retired' in 2003. But then worked for 5 years in Northern Ireland and then went to Scotland for a couple of years and then things just slowed down because of the funding reductions.

I: yes

R: So in Northern Ireland I was working very closely with the Clients -0 the [national carbon reduction organisation] was, as soon as they knew there was a project they just sent me in too identify how we could get energy efficiency into the project without additional cost. If additional costs were necessary, we helped management understand the benefits.

I: Hmm.

R: The intervention was to make them very comfortable with what we were doing that it really had an implication on whole life costs.

I: Yeas, and what, how were you assessing the costs and the energy consumption of the buildings?

R: most of the time I was using a presentation technique called base budget and avoidable waste.

I: Yes.

R: Which was simply sitting down in a blame free situation with the Client.

I: Yeah

R: Identifying at component level and system integration level of the impact of doing things various ways. For example we ended up with quite a few of the Northern Ireland buildings being super insulated.

I: Right.

R: With heat recovery on the ventilation air.

I: hmm mm.

R: and though there is higher up front cost, the running cost is much lower.

I: Yep

R: Once one person had seen the impact of that in actual costs then the word spread around the design communities and more people wanted it. So we were achieving a culture change by initially concentrating on those projects where we had a very fast implementation of my thinking

I: Yeah

R: and then we simply put that message back to our other people saying ' Well this is what other people have done, can we help you do the same'.

I: yeas. And were using a particular assessment method or bit of software to generate the energy models to make these assessments about the base budget and energy consumption levels?

R: Well what we had for base budget we looked at, we just hand held the Client even though they had little technical knowledge.

I: Yep.

R: We said if the lights are going to be all opening hours then you'd have say 2400 hours at 10 watts per metre square with no day light displacement

I: Yep.

R: and that would cost you so much.

I: yep

R: and they accepted that 10 watts a metre square was the right kind of figure even though by doing a little bit of checking we showed that some of them were running at 13 to 15 because they had old kit installed.

I: Hmm mm.

R: er, and then we said well let's look at using daylight to displace some of it. And we need daylight controls because humans won't react, they will turn the lights on but they won't turn the lights off.

I: Yep.

R: and er so we worked things through and eventually we generally got, not in urban situations, not in city centre situations, they were generally out of town where we had a daylight coming in at a low angle with an urban horizon angle less than 20 degrees. Instead of an annual average of 10 watts a square metre, we had 4 watts a square metre because of a lot of daylight displacement.

I: Yes.

R: and er, what we said though theoretically we should get 4 we will probably achieve 5 and a half or six which, in practice, was achieved.

I: Hmm.

R: because of non-ideal controls are weather not being quite as expected and so on.

I: Yep.

R: So we never promised the earth we er, the approach was to work with people and to help them understand in simple language what we, what our thinking process was. We used the domestic model in so many instances...

I: Okay

R: because they know what goes on in their house and when we knew we had won when the said 'what shall we do in our own house?'

I: Right

R: and often the change of behaviour in their own house produced a significant saving and they said well we will have that for our offices or whatever.

I: Yes. What was driving the kind of push to lower energy in the first place from your Client was it the general legislative er...

R: Being seen to be green.

I: Right.

R: and costs. Pure [fuel?] costs.

I: So costs and reputation?

R: yes. But what we were also telling people was that if you go into town today at around say seven o'clock in the evening, how many offices have the lights on?

I: hmm mm

R: I said if there was an awareness of of that issue in most cases wasting a lot of money harm to the environment would you be putting your lights on like that? They all said 'no'. So what we did in several towns was we just got an awareness campaign that you don't need all your lights on when there is no one in the building or there is one or two cleaners, you can do it far more economically than that.

I: yes.

R: and, er, that was just put out as a message. At many generally small meetings we just got say the shop keepers together and when the shop had been refurbished we had a meeting of shopkeepers, er one hour probably early in the morning just telling them what we had noticed and we got that group of people, er, not quite fired up but we made them aware of how they could easily reduce their cost so it's getting, it is not preaching to people it is giving them practical examples.

I: Yeah.

R: of how they can achieve change themselves. And that was also used when those say the shopkeepers wanted some refurbishment or design, they called us in, we then helped them but on the basis we could tell other people what we had done.

I: Yep.

R: That then included their customers and that, within each town we could get quite reputation.

I: hmm.

R: not as case studies this was example after example, painfully obvious, of what works.

I: yes. So in working at very early stages with your Clients, am I right in saying you are dealing with kind of the people who are spending the money and you are using the sort of financial lever to convince them that a different approach is going to work?

R: the thing that we ended up on each er meeting we had when we are all sitting around a table rather than public meeting, we looked at the avoidable costs, the avoidable waste and we didn't go into the esoterics of the internal rate of return etc

I: hmm mm.

R: we just used a simple pay back which everyone understood.

I: Yep

R: So there are all of these wondrous approaches to identify the cost of money in the future and so on.

I: Yep.

R: We kept the financial esoterics in the background and noted the impact of uncertainty in assumptions of interest rate on the financial outturn. Most times we came back to simple financial calculations such as simple interest.

I: yeah

R: so you can go that way if you want but the uncertainty is so big, they are bigger than your need for precision in business transactions.

I: Yes.

R: For issues such as degree days, we identified that the uncertainty in the degree day normalisation is so high (typically 7%) that you can't rely on it.

I: yep.

R: and er a lot of people sort of appreciated the being realistic on this.

I: Yeah, I kind of, I suppose I am interested in the disconnect between pragmatic approach that you describe and the realism that is required to deliver good buildings versus the kind of rigid....

R: what I've been doing is I've, I will Skype over some of the document we were using, these were checklists, they were, I won't search for them now but I will pass them to you. We did, so when people had a sketch level design from say the architect we often entered into a constructive dialogue

I: Yep

R: Well, call it constructive but the architects thought it highly destructive.

I: Well, quite, how did you get this into the design process and make sure it got built.

R: Well because these communities did know we had done a good job elsewhere they were calling us in.

I: Okay.

R: and because we were free as well, that also helped.

I: Right, okay, okay.

R: and we met the architect, we met the financiers, with Client and we ran through a design appraisal identifying what was good, what could be improved and what wasn't good.

I: Uh huh.

R: We went through every point, answering every point, but the meetings were done in a culture that we weren't blaming anyone, this is our view and this is our justification for taking that view.

I: Yep.

R: so all the time we were able to quote peer reviewed research and we had a stack of about 200 peer reviewed papers which we are quite familiar with and we said to the architect, here is a peer reviewed paper a substantive paper, not commercially biased, here's the information that could help you.

I: Yes.

R: and on the other hand the Client realised that here was a potential cost saving or here was a waste of money on some architectural artefacts or here is an opportunity to reduce operating costs.

I: yep.

R: and we just offered these at, and also new the building regs fairly well, so that whatever came up we had an answer to.

I: yes, so as I described earlier, that was part of my frustration as an architect not having this repository of information and not being able to convince people...

R: well you will see the, the useful documents, I don't know if you have had a chance to look through them at all...

I: I have got them here, I haven't opened them up because I...

R: We didn't have them much say 10 years ago, but we have built them up in the last 5 years and er, but we had that in informal lists which we were quite familiar with.

I: Okay, so, so the kind of tension that exists between the pragmatic approach and an architect saying 'Well, you know it's my PI insurance at the end of the day' and you said earlier you never promised the earth. How do, how do you convince an architect that it is the correct approach to take and ultimately that they are not going to get sued? I mean that was the terror of working...

R: Well there are 2 levels: one is we gave the architect information which generally he wasn't aware of.

I: Hmm mm

R: so CIBSE information er, costing information, er reports of other buildings as case studies, that was the the gentle approach but sometimes I took the architect to one side in private

I: Right

R: and said you are making a proposal that is outside your knowledge therefore you are in contravention of the Architects Registration Act 1997.

I: Yep.

R: and therefore, er I can help you get achieve a factually based decision.

I: Right

R: and I did that quite a few times.

I: Okay

R: No one ever complained about it, quite a few came back to me subsequently and said 'thank you very much for that' even though it shook me at the time it was a wake-up call to a different world of information.

I: Right

R: and I think that, was the different world of information, I had a CD which I passed on to people and this included er, where I could copy them, quite a few of the copies of case studies and papers and I just said have a look at them, and general after what was generally, quite a few of them were quite fractious first meetings...

I: I can imagine!

R: subsequently there was full cooperation because they obviously knew the level of knowledge that I was bringing to the table was way beyond what they had been used to .

I: Yep.

R: It comes back to, again, to they didn't know how little they know.

R: Yeah, Yeah.

R: and this is an education issue especially for architects where the architectural artistry seems to be a major component of training whereas the use of daylight, keeping things ventilated etc...

I: Yeah, I know.

R: has gone right into the back ground.

I: Yeah, although, I do a little bit of teaching at the Bartlett on the undergraduate architecture course and there is a move to try and reengage the architectural education with the sort of, the climate and the microclimate and of a site and get people thinking very early on about...

R: I did Crit sessions at several universities. Time and time again it was obvious that the architects hadn't been taught anything about building regs and they had made fundamental mistakes time and time again.

I: Yep.

R: for example if they were doing a school hall I, I said how are you going to ventilate it, where is the air coming in and where is the air coming out? And how do you maintain comfort on the air coming in. And quite obviously they hadn't even thought about it, because the engineers will sort that one out won't they?

I: Yeah.

R: So there no space for any preheating of the intake air, no heat recovery, windows are in the wrong place so you get glare, er lights are in a position where you couldn't maintain them...

I: Yep

R: er, a whole load of sad errors.

I: yep. But I mean it's not just in education, it is in practice as well. I mean, a previous place I worked we had a Monday lunchtime CPD every week and someone came in to give us a talk about natural ventilation and overheating. They used an example of a school, a school with a ridiculously enormous south facing curtain wall, glass curtain wall which of course overheated but one of the, one of the quite senior people in this practice at the end of the CPD asked him 'why are you here, this is an engineering problem, this isn't an architectural one, we don't need to know this.' Which I just found amazing, astonishing, the lack of joining the dots between, if I make a decision about putting a glass wall in here then there is a subsequent impact on the users of that building and if I had made a different one that could be a very different space for those people. There is kind of no coherent thought about the cause and effect.

R: Well I used to do charrettes. And I have got a charrette guidance document that I can pass on to you, and but to one of the groups in the charrette 'cause we normally had an initial session and then we split groups for 90 minutes.

I: Uh huh.

R: 'Who owns the windows'.

I: Yes.

R: Daylight? Cold spill if the glazing was single, some people were still proposing that as it satisfied the building regs. Ventilation they said well we pass it on to a window supplier, a glazing supplier. Sorry, what does he know about ventilation? Is he trained on ventilation? No.

I: Yeah.

R: So er who's taking responsibility for when it doesn't work.

I: Hmm

R: and very quickly the people in the charrette realised that they had to take some of them had to take responsibility. And the projects manager started assigning responsibilities.

I: Right.

R: so I have got this charrette guidance and I have got a series of what we call matrices.

I: yep

R: Which show a, if you want to use them er other that internally I will get clearance from [organisation who owns documents] these are assessment tools for say ventilation for heating for daylight for project management and so on.

I: Hmm mm

R: and we used the same tools to assess bids.

I: Right

R: er, initially we had some very arrogant architects coming in.

I: Yep.

R: and we'd sent the assessment tool and we'd sent the useful documents to them 3 weeks before and we said to them whenever you claim expertise in the, we had a scale of 1-5 on expertise, meaning a high level of expertise level 1 or level 2, expect to be asked question on it.

I: yeah, yeah, quite.

R: so they had difficulty if they put 3's on everything they were unlikely to get the project so they had to have some ones and twos. We said you can bring 10 people into the interview er who can, and anyone can answer.

I: HMM, but you need to be able to justify those ones and twos.

R: yes we asked them question and we were say, I was quoting the building regulations, Part F generally which in Northern Ireland is the equivalent of our Part L or Part J in Scotland, they were, er the party piece was in Section 5 say 3,2,1 it says, er so we just quoted it, we didn't read it we just quoted it from memory...

I: hmm mm

R: and asked them how are you going to meet that with your proposal and it really did shake them...

I: yeah I am sure, I'm sure.

R: because they then wondered what else we knew.

I: Hmm

R: so there is psychology in how you ask the questions.

I: Yes.

R: We never read from any books we just quoted the figures

I: yeah, yeah, yeah.

R: or quoted the section and how would you respond to that.

I: yeah

R: We said you can come back in 10 minutes if you want to go and check. We were quite helpful to them. But very well-known architectural practice, er one of the big ones, er came in on a hundred and twenty million pound project and they scored 18% where we had a pass mark of 60.

I: Blimey. It doesn't surprise me. Sadly, it doesn't surprise me.

R: er and we gave them this assessment tool we were completely transparent, we said this is how we are going to assess you and the principal just came in and said we don't do it like that, you are going to do it our way.

I: right

R: They insisted they were going to win. And so what we did with them was to run through with them showing them how the scoring was developing and get them to agree with each of our scores as we went through the interview so we are keeping things transparent. The architects who got the 18%, we trained them for the next project and they won it.

I: Right

R: but the arrogance had gone, they were, they really had introduced sustainability, previously the image was all that mattered. And you've seen the Building Design journal Carbuncle Cup haven't you?

I: Yes, yes, of course.

R: I think we need a variation of that for some of the poor interiors.

I: Yep, I think we also need performance as part of the Stirling Prize and the other RIBA awards. Actual energy performance and other interior comfort levels and things.

R: There is an architectural award in Northern Ireland while I was spending a lot of time over there and I had a quite word with some of the entrants saying that I've, if you want to continue with your entry it's going to get scored very low because, do, are there any other jobs which we can help you with?

I: Okay

R: and some of the, 3 of the big names in Northern Ireland all withdrew projects.

I: and they were going to be scored low on energy?

R: or it wasn't nice for the occupants, it overheated in summer.

I: Yep

R: again one of the hospitals we helped design, we took the design team into the hospital one very hot summers day, 23 C outside which in Northern Ireland is hot.

I: Yes!

R: it was 34 C inside

I Yeah

R: and we kept them there and went through why it was overheating.

I: Yeah

R: and on the basis that of you are going to put that in your next bid, you are going to lose it.

I: yep

R: and that was the first time the feedback had been so factual to them.

I: Yep

R: because they are standing there experiencing it rather than...

R: yes, the acoustics there is a college in [city] with very very poor acoustic properties, er footfall noise going through the structure, or acoustic leakage over the partition walls.

I: hmm

R: partition walls only giving about 25 or 30 dB attenuation instead of 50 plus.

I: yeah

R: and again we, we took the designers into those rooms so that they could hear what was going on.

I: yep.

R: have you seen the snagging list for Potterow?

I: I haven't seen the snagging list for Potterow...

R: Potterow is...

I: I studied in Edinburgh so I know Potterow very well

R: Yes so, on the web there is a copy of the snagging list with 1400 items on it and if you look up that, and because it is a public document it far easier to comment on. I think and you went through and you asked, look why have we got these problems?

I: yep

R: Some are construction detail but are a lot are avoidable if the design had been thought through.

I: is this the new Bennets building there?

R: yes.

I: Okay

R: so again if you look at the useful documents you will see that list there.

I: yes I am going down the list at the moment, that is very good. I am conscious of time [R's name]

R: right

I: You , a final question I suppose erm, the, are you going back into, are you doing sort of extensive, I know you are taking people into the space and letting them feel the heat and the problems but are sort of formalising that data, the sort of post occupancy evaluation data in any way to then share?

R: No, what we did, what we generally did was to say 'there are more formal POEs available'.

I: hmm mm

R: and people like Bill Bordass really do have some skill on this.

I: yeah.

R: but I took people on a walkthrough of the building to point out what we would pick up if we were doing a survey for the Audit Commission.

I: right.

R: and they just didn't realise all of the issues that we were picking up, and it is that lack of knowledge.

I: Yeah. So how do we get the knowledge into, say you have got a naïve client and a naïve design team but who are interested in getting these things right, how do we get the knowledge which is in people like you back into the broader construction industry and design community?

R: I think the most effective route is to have informed Clients.

I: Right.

R: it doesn't take much time.

I: Hmm mmm

R: because if the client er say, this is why I have got the matrices and some of the other guidance material

I: yep

R: and we have also got a time line, which is the decisions that have to be made and it puts quite a few decisions, like the window sizing in the planning application.

I: yeah, of course.

R: and the architects don't even think of that, they just draw it, think 'oh that's pretty' and go for planning.

I: yeah

R: and you've frozen the window sizes so that it sometimes over heats, or impacts on the acoustic environment from traffic.

I: Yeah., though, I mean, sometimes there are a lot of planning departments that impose certain design decisions on architects that also take, don't take this into account.

R: I've been into quite a few planning meetings where we are talking to the planners about say at the, there is [building name] at [location]...

I: yep.

R: we wanted it 40 metres back from the road, the planners said it's got to be 25 metres.

I: Yep

R: and, so we got them, the planners to agree that this was a technical issue, we had already agreed with them that, sorry we had already sent them the acoustics research, which showed the road noise would preclude natural ventilation at 25 metres whereas at 40 metres there would be sufficient reduction so that road noise would allow natural vent.

I: hmm mmm

R: again I took the planners to one side and said you are making a decision er on technical information that you are not understanding.

I: yes.

R: er I said I don't want to do this but if you insist. I am going to go to your professional body and make a complaint about your competence to the professional practice committee. I had to do that and it has got results every single time.

I: Right.

R: and we are doing the same now with chimney height for biomass because what I am currently doing is the biomass heating application manual for CIBSE and we are finding that the architects don't want the flue heights, the planners don't want flues of sufficient height, but you've got to have them.

I: Yeah.

R: the cold that is

I; it's just physics

R: yeas. Basic physics.

I: yes.

R: and 3 times this year I have been into planning meetings and I have had quiet words with the planners. Confirming that this is private between us. Stating the need to observe basic physics if there is to be satisfactory operation of the boiler and flue.

I: yeah

R: and you are also operating outside of the extent of your training.

I: Yep

R: er unless, and if you continue I will make a reference to your professional practice committee.

I: Okay

R: and every time they have agreed to our requests.

I: right

R: so there is a lack of, architects, planners operating outside their skills area. And that is serious.

I: absolutely. I suppose, in targeting information to these people is to allow them not to perhaps, we are not going to give them the skill sets but we are going to give them enough information to know that they don't know the information that they require.

R: er one planning authority wanted bio mass and we said if you want biomass the chimney height will have to be 18 metres and you are only allowing 11. At 11 you are going to get fumes into the adjacent office.

I: hmm

R: and they just didn't realise it.

I: Yeah

R: so the day, the problem the architects have is that they are passing on, or passing over, they get into investigation into the windows but they haven't got the skills to integrate that knowledge across the professions.

I: yep.

R: you need someone and I think this is almost another profession and BIM I think is going to solve this one that someone who can integrate the technical knowledge across professions.

I: Yep. I think, I think that's a a, good place to stop if that's okay with you.

R: I hope that has been of use to you.

I: that has been absolutely brilliant; I really appreciate your time.

ENDS

1.12 Local Authority Policy Maker 12

Respondent:	012 (R)
Interviewer:	Craig Robertson (I)
Location:	Respondent's office
Time/Date:	16:00 19/09/12
Duration	39:37

Transcription:

[begins with I explaining his research aims]

I: perhaps we could start with you telling me a little bit about your role erm if that's okay?

R: Yeah, yeah, I mean my role is quite broad and I mean it's probably, probably er good to to say at the beginning that I am not, I am not a, a super energy expert.

I: yeah

R: We, we have an in house energy team who I work quite closely with but my remit covers kind of sustainable design, environmental design, er more broadly so it, it and it basically falls into two halves so I develop the planning policy covering everything to do with sustainable design and so that is energy carbon targets and offsetting and policies around that but there is also policies on things like BREEAM and Code for Sustainable Homes and water efficiency biodiversity enhancement and

materials and embodied energy and er climate change adaptation so SUDS and overheating mitigation and that stuff so, I, my role is, half of it is on writing the policies and the guidance for developers on those issues.

I: Yeah

R: and then the other half is actually scrutinising the major applications that we get in er to make sure that they complying with all the policy

I: Yeah

R: and to advising planning officers accordingly, erm so er, er but I, I am particularly have become more interested in these feedback platforms and this, this potential to kind of close this feedback loop having become aware of all this evidence about this big performance gap

I: Yeah

R: and so I'm starting to think well actually even if our policies are extremely effective at getting all these modelled schemes ' Yes you've hit your targets, this is going to be a brilliant sustainable building and everything else' if actually the reality is something totally different then that's a big problem,

I: Yeah

R: because we have got carbon targets for the borough and there is obviously you know, regional London plan, national targets and it's not good enough to say well ' that's not planning' you know er or there is limited things that perhaps we can do to close that gap which the add on to this work to try and erm develop this green performance plan stuff and other things.

I: So I have had a look at your environmental design planning guidance.

R: Yes! Yes.

I erm briefly erm, can you, can you, so from from my, my understanding of that, that is kind of putting together how existing policy is going to be applied to...

R: Yes.

I: planning applications and how people can attempt meet and...

R: Exactly

I: gain a, a permission and kind of weave their way throw the policy, it talks about integrating this into the policy kind of very early on

R: Yes.

I: and I wondered how you went about that. Sort of making sure it gets into the policy early?

R: Well, well, I mean, yes, some of that is perhaps more of a, we would seek to to encourage as strongly as possible. I guess the leverage we have as, through the planning process is that we do require major planning applications to come in for this pre application advise phase...

I: hmm mm

R: before planning phase, erm so I mean hopefully by flagging up into the guidance it gets picked up as early as possible when people start thinking, well what, what do [local authority] require us to do, let's check. But at the very least at the pre application stage we can be banging on about that and saying well you know it is in the guidance you know you should be doing this and really you need...it's really, I guess the other kind of pinch point is that a lot of our requirements, and also outside of planning if these new requirements for erm national SUD standards come in then developers would need to do that detailed work up front to comply with those standards so it's, I think there is more and more pressure on them to do a lot of this work erm as early as they can in the design process and not just say 'that's detailed' stuff that we can potentially bolt on just give us permission and we can condition the details...

I: yeah

R: and you know we will sort that out later on.

I: Which is...

R:let's not worry about that for now.

I: which is kind of one of the tensions in the process from a, from a developers point of view, they kind of to get as much certainty in the process as they can to minimise the risk on their investment...

R: yeah and they don't want to invest in all these specialists.

I: by pushing the process forward...until they are sure they are going to get permission.

R: Yeah, yeah, yeah. No it's a, I mean there is obviously a tensions there but it is pushing as much as we can and yeah.

I: So what information do you ask for from people.

R: well we have a very, we have quite a detailed erm template erm this has got very lengthy appendices now [referring to policy document on table]

I: yeah

R: I mean we have er this is based on our existing template

I: Yeah

R: er where we do ask them to er specify, er so that includes very detailed guidance on the energy statement in particular but we also ask them to give us quite detailed information on basically on you know, asking them how they are complying with all of the relevant policies but particularly we are getting quite specific on the overheating. We are looking for a for kind of thermal modelling of the scheme...

I: yep.

R: erm at at, er at application stage is what we are hopefully going to be seeking.

I: Okay and are you, are you following this, I know this may be beyond the planning remit, but are asking people for as built performance information?

R: well I mean that is where the green performance plan comes in, yeah. Which is to try and, because at the moment the systems tend to be voluntary, carbon buzz and so on...

I: Hmm mm

R: Which is great but not a lot of people seem to be using them alas. Erm so the idea of the green performance plan was to keep it as simple as possible but to say just give us some data. erm I had two years post occupation,

I: Hmm

R: er, you know they already have set out their modelled performance on part of the end use statement and on er wider kind of sustainable variables as part of the sustainable design statement so all we are really asking is you know, read some meters and get some data where you can and feed that back to us.

I; yep.

R: and then ideally, well not ideally we are saying that that should be er packaged in a report which then gives a level of analysis about comparing that to the modelled performance...

I: Yep

R: and what kind of lessons have been learned and of there is a big discrepancy how they are proposing to manage that and close that gap. Erm, it is a difficult, it is a new approach, no one had kind of tried this before as far as I am aware through kind of planning policy through making a requirement, and it is based on the kind of green travel plan model, if you are familiar with that...

I: Yep.

R: and you know that is seeking data post occupation and there are obviously variables depending on, you know how many people are actually using the building ...

I: Hmm.

R: kind of, what data you get back erm but it's it is quite a difficult thing because we, the expectation is there when you look at CarbonBuzz and you look at all those studies that probably the performance will fall short but my feeling is that it wouldn't be reasonable to be jumping on the backs of all these schemes giving us this data and saying 'well this is an enforcement!', you know you are not delivering er what you said.

I: yeah

R: so I have tried, I have tried er to tread quite a fine line between saying obviously we are looking for the performance to be as close to or obviously better than ideally...

I; yeah.

R: Than the modelled performance erm but ultimately we do see it as a kind of learning process so hopefully, the performance will be revealed to be not a million miles from the modelled performance and hopefully it would at the very least lead to some very useful lessons for them in terms of perhaps fine tuning the performance going forward and for us refining our future policies and guidance about perhaps what types of systems or what types of assumptions are used in the modelling and so on and so forth.

I: Hmm mm

RL yeah, so I mean it's definitely pushing the boundaries a bit, and it is yet to be, we we are going to examination with our planning inspector in December so..

I: What does that mean sorry?

R: er so the policy document where this sits er, the guidance is all in here but the actual statutory policy is in a document that isn't quite adopted yet so we've gone through this long process where we have gone through this long process and we are at the last hurdle

I: right.

R: where an independent inspector has to judge that the policies are sound and er we can start applying.

I: is this part of the London wide suite of policies that which are in the process of being...

R: well this is [local authority] policy.

I: yes but this has been happening London wide, in each borough has it, over the last...

R: yeah, every borough every borough across the country has to go through that same process to adopt their local policies yes. So fingers crossed we will get them all through ten we can start applying them from the end of the year, yeah, yeah but we are not quite there yet it probably proper to mention.

I: This document mentions [local authority]'s Evidence based Study as part of the I think er justifying...

R: zero carbon phase 2 or something...

I: yes but particularity community wide heating applications it was talking about...

R: Yes.

I: I was wondered if you could expand on that a little bit?

R: Er yes, I mean those evidence based studies are available on our website if you were interested. Erm the, the phase 2 one er, it looked, I mean , a lot of the focus of the phase 2 was actually on smaller schemes.

I: Hmm mm

R: and what was kind of reasonable in terms of carbon targets for smaller schemes because our initial big evidence based study would look much more at the major developments...

I: Yeah

R: and it also looked at erm carbon offsetting quite a lot...

I: Yeah.

R: and did a little bit of a review of the different approaches out there and also then looked, did a bit of an evidence gathering on the kind of the state of the building stock in the borough and so the opportunities for refurbishing the existing stock and then the potential carbon saving from different measures taking into the account a lot of the easy wins would be kind of picked off by existing funding streams...

I yeah.

R: er so it applied a lot of evidence to underline, to support that carbon offset policy I suppose, yeah it was quite focussed yeah.

I: and has that fed into broader policy as well?

R: yeah, so that then informed er one of the string policies on carbon targets in this, again in this other policy document that this expands on erm because this, this document, amongst other things sets out the carbon price for that carbon offsetting. So basically the policy says that you, er you are having to meet a carbon reduction target on site or do as much as you can

I: Hmm mm

R: to hit that target and the remaining emissions er would need to be offset to zero through this financial payment...

I: yeas I saw that in this...

R: which would then finance a refurbishment measures. Yeah, yeah so for small schemes it is kind of a flat rate just because they won't be doing the same level of modelling and so forth and then for large schemes it is a , it is a price per tonne, 920 pounds per annual tonne...

I: Right

R: Which they, er hopefully pay us and then that will, so then we will have this carbon offset fund, so the work we are doing at moment is er, working with the energy team to pull together a working list that, er of kind of the preferred projects that we can allocate that funding to, which hopefully will offset the amount of carbon we said it would so that we can er, you know it all kind of ties up.

I: and all the refurbishment projects are within [local authority]

R: and a lot of it will be I anticipate a lot of the priority will be insulation of social housing, erm because a big council priority is fuel poverty at the moment, you know the the focus here has shifted quite a bit from er kind of climate change per say to fuel poverty and minimising bills ...

I; the social aspects...

R: absolutely.

I: but the the, the carbon offset, that is still based on modelled performance?

RL It is yeah, yeah, er, yes I guess in an ideal world you would, yes, perhaps in time you would well, well we would say we will measure your performance we will measure your emissions after 2 years or something and then we will hit you with that cost and...

I: by which time the developer has sold the building...

R: well yes exactly that would be slightly problematic the timing I think, how you would construct legal advice as to counter that.

I: yeah but I think there is a, there is a kind of there is a real difficulty in getting anything other than modelled data at the planning stage because it is so early in the process...

R: yeah

I: I just wonder if you are asking people for other information that they might not want to gather for a whole host of reasons such as their client might not want to know how badly there building is running or whatever...

R: Yeah

I: How you can ask people to do that without you know exposing them to you know litigation or...

R: and this is, and that seems to be the biggest issues, that kind of concern over litigation and that impact over reputation erm, and that is again we tried to package this whole thing as, you know almost in a user friendly...

I: Yeah.

R: I don't know, er feel and really tried to emphasise that this a lesson learning process and it is not about trying to kind of er identify shortfall and immediately try to pin the blame on someone, I mean we are not going to kind of drag of the people through the dirt or something, but yeah it is a big problem.

I: Does the council feel similar pressure because an architect taking a measure in a building design which then doesn't work presumably similarly on a much larger scale the council is implementing a lot of policy and guidance and factors that are designed to deliver a performance reduction across the borough and, and not measuring it or measuring it, it there a similar pressure in exposing yourself as having a policy that is not as effective as it could be or...

R: erm I don't know about that, I think, there were these low carbon zones around London and we had one up in [location] and I wasn't directly involved in it but I know they had to try and evaluated the savings being generated...

I: generated by the policy?

R: Well generated by the actions that they had promised to kind of implement in that area.

I: Yeah.

R: and I think they kind of did that through a mixture of kind of modelled you know benchmarks for if you put in new lighting or insulation or whatever as well as some measured from meters erm so I guess that approach, I guess that in a sense it is just pragmatism

I: hmm mm

R: That ultimately we can't er you know if we wanted to measure the actual impact of our planning policies across the borough you know there is always going to be a limit to what data we can actually collect...

I: Right.

R: er, you know there is a whole lot of things beyond energy and carbon that we would like to collect and in an ideal world if we had you know more staff and more resource you know I would be undertaking a lot more er or I would be undertaking any follow up visits to completed schemes to actually see what it looks like on the ground and again perhaps a bit of visual verification of what's there and er what's being used an so on.

R: Do you do that for erm just the architectural design? Do you have a post completion visit for that?

I: No

R: No, again, it's jus, it's just, there isn't the resource basically. The only, the only er time when that will happen when there is an enforcement issue.

I: Right

R: So when a neighbour has raised a concern that it is not built in accordance with the plans or that's sort of issue and obviously a lot of energy and sustainability issues are not going to be things that's the neighbours are going to pick up on.

I: so all those times when I have fretted about builders putting copings 100mil too high expecting an enforcement was, making a builder extremely angry by altering things was unnecessary.

R: Yeah, it depends how sharp they are. I mean the building regulations guys would obviously you know do their visits but often that's a kind of independent assessor anyway these days.

I: SO am I right in saying, we talked in the phone about a school you are looking at...

R: Oh yeah

I: is that part of, that sounded like a kind of a more detailed post occupancy evaluation of that building.

R: Yes, yeah, er so that is the new [name] school.

I: Yeah.

R: so yes, that's, that's one particularly because it is one of our more recent semi council projects if you like erm and particularly because it was trying to be zero if not negative carbon because it is exporting heat to this neighbouring estate...

I: yeah, it is mentioned in this document [refers to document on table]

R: yeah, we put it in as a little case study. Erm so I, I was very keen to push for monitoring partly to get just to try and you know get some practical experience of, of how you can do that well to potentially then inform you know this other work and and and guidance that we might give on it. And, and just because yeah, I think we are very keen to get a better grip on how some of these new buildings, particularly our buildings are performing.

I: Hmm

R: I mean our energy team do do a lot of energy management for existing school buildings so they do do lots of monitoring and and kind of refining the management and so on and so that was potentially going to happen anyway but I was keen to try and formalise a process er while construction was still on-going and especially as they were to some extent following the kind of soft landings approach...

I: yep.

R: so I saw that as a bit of a hook as well but er to really try and get that embedded and really try to get the commitment up front erm so that we could try and get some good data and again not just on energy but trying to broaden it a bit to try and look at user satisfaction, water consumption and potentially you know manage to try and work in the possible, you know the optional involvement of er some of [supervisor]'s students for some kind of wider monitoring perhaps. SO, it's, it's personally something that I am very keen on so in a sense it has been slightly peripheral to my core activities but it is something that I have been keen to try and push and get established.

I: and does it inform policy generally or is it peripheral enough to..

R: well I think, as I say, maybe in the longer term once we gain some of the...I mean in a sense some of the work that I had done to develop this policy informed what I was pushing for in this monitoring and I think hopefully the practical experience we gain from erm some involvement in monitoring some of these building in a bit more of a formal manner erm will then inform you know future updates to this sort of guidance and kind of practical guidance that perhaps we can give to the process to developers or occupiers that we are asking to undertake that process.

I: hmm

R: albeit on the school we are doing a lot of quite erm, detailed additional work, it is not just reading meters and keeping it very simple which er cause of the demands of trying to not making it onerous on developers or occupiers this has been streamlined quite a lot erm but we are keen to try and do some you know co-heating tests and some maybe some infrared camera work...

I: Right

R: and get involved in some of these other kind of more intensive methods potentially.

I: and the, the kind of onerous-ness of the policy or not on developers.

R: hmm

I: I have been quite often or told quite often that actually, [inaudible] in my experience as an architect, if I have had a client who has been particularly reticent to erm put up the investment for you low energy measures, you know actually having a bit of planning policy behind

R: Yeah

I: me as a bit of leverage is actually quite a good thing.

R: Yeah,

I: to make people do it.

R: yeah I know, I have sustainability consultants who say the same thing, 'oh just tell us we have to do this and then we can [inaudible] need to put this in.' haha!

I: yeah, but I guess, you, you, it's, you're probably in a more, er nuanced position because you have got a particular relationship with a developer who is building something whereas I, you know...

R: Yes, yes, yes, yes, you mean when it is kind of a corporate project or something?

I: yeah presumably you are trying to get an S106 agreement with them which erm may or may not be quite lucrative for your erm, yes. Hmm. Er I am conscious of the time. But er, I suppose I have a final question which is if we, if you were monitoring things or if there was a body of data which is generated by all of this POE what, you know which is being carried out.

R: Hmm

I: which erm could overcome all of the problems with legality and responsibility and all of those things...

R: yes.

I: what might it offer your process of erm working with your applicants and your designers in the design and application process?

R: You mean if there was a, if somebody set up this?

I: Yeah, if this bank of data existed, what might it, how might it help you? Or if your Islington wide data was available...

R: I mean, I mean I think there is a whole variety of ways. Er I think because we have quite detailed guidance for our sort of requirements for the energy statement for example it might be that erm it would reveal that certain benchmark assumptions about erm unregulated energy use for certain building types were you pie in the sky.

I: yeah

R: and it might er if we were able to build up or working with er you know a CarbonBuzz or a national platform build up a better er a more useful average or whatever erm then potentially we would be keen to try and write that into our guidance to try and say well we wouldn't accept the use of this old benchmark because our evidence shows that it is not useful so you should be using this one instead. I think that would be one er potential role where, we are kind of, we, we, we, would identify

problems with the assumption used and it might not even be just a benchmark I guess it might just be more just about more carefully interrogating those assumptions, I mean we know some of this already from the well the PROBE work and so on that the assumptions about IT kit , or, or user density and so on are often you know off the mark...

I: 3 times or whatever...

R: yeah, yeah and erm and so already when we have had a kind of a round of of schools applications over the last 3 years, because we knew that we were pushing those erm, erm schemes to, to actually give us a bit more evidence about what assumptions they had used for their IT kit and had they actually talked to the school who were going to be using it

I; right

R: and got an idea of what kit would be there. Erm. So yeah, I think those sorts of issue around assumptions would definitely be important. I think another example would be actually perhaps specific technologies which just don't seem to perform.

I: hmm

R: and I mean again an example at the moment is that we are very er, we are very, although we are technology neutral in essence we are very er reticent about the use of air source heat pumps.

I: Right.

R: because we have seen the energy saving trusts field trials and there is a lot of other data to suggest that actually you know, their performance especially when they are used to heat domestic hot water as well as heating is much er much poorer than the claimed coefficient of performance...

I: the 4.5 CoP or whatever it is...

R: yeah, yeah, erm and so I can see, I can potentially see that we might get some data to back, suggesting that you know certain systems er just don't perform anywhere near what we'd expect or perhaps they're too you know certain control systems or energy systems are just too complicated for users to understand.

I: yep

R: and so again they are just you know, and then again the, the, the, the guidance, is, is much more flexible than our ability to update it, I mean it does, it's does have less kind of er weight in decision making erm but nonetheless I think if we can, if we can, er right those kind of lessons about assumption or technologies or interfaces into erm revision of that guidance and if that's backed up by evidence so that kind of a developer can understand where we are coming from erm then hopefully we, we, although it is not as strong as having it in a policy erm we can er we can then have greater leverage on future projects and we can kind of in a way er, erm, force as much as we can almost developers to kind of take those lessons on board I suppose.

I: yeah, sort of eliminate strategies that don't really work.

R: Yeah, yeah, exactly.

I: what are you using for your unregulated benchmark at the moment? I noticed unregulated energy was mentioned which I was quite impressed with, it doesn't normally make an appearance...

R: no, well it's the frustrating thing that the London plan used to talk about total, you know regulated and unregulated, so when we first developed our strategic policies we went down the total route, made perfect sense you know big targets are about total energy so why shouldn't everything else be. The London plan has now moved away from that and it is a revised version to regulated energy which is frustrating but we stayed with total erm so yes we do refer to in here, I can't remember of the top of my head, ah here we go, er, er, CIBSE guide baselines, Energy Consumption guide 19 or evidence established from previous development work. I think, I think we are fairly flexible albeit they have got to, you know demonstrate the sourcing.

I: why it is robust.

R: yeah, yeah, and we have had, we started, we had some interesting examples where erm schemes, because consultant are picking up on this and and coming to kind of talk to us and saying er, if we er, committed to er installing er higher efficiency IT kit than the norm, whatever that is...

I: yep

R: erm could we then claim some savings from the un-regged. Or if we committed to installing kind of kill switches and we could source some data on the potential savings that we could generate could we.. and our response is always, er you know 'yes potentially' but show us the data kind of thing.

I: Yeah

R: and and, it's, and a lot of these cases actually we are waiting for them to come back at the moment. but I think it is particularly difficult where they say we will put in some higher efficiency kit compared to what you normally would do, I think the biggest problem is probably trying to define that base line of kind of what's normal, you know and , what, what's your uplift?

I: and what's the saving you get off a...

R: and therefore what, yeah what are the numbers. Especially if you have got things like er our Code/BREEAM requirements anyway which are pointing you towards you know A / A plus rated white goods anyway then that's almost raising the bar above whatever the norm already so er, I think it, yeah, it could potentially get quite complicated but we are yeah, we're potentially open to looking at the strategies on that side albeit the are likely to be I mean much savings or similar.

I: ands is people are paying for an offset for anything above a particular level then the encourage is to specify all this stuff to begin with whereas ...

R: or well, yes, it, there is there is that incentive, I mean the off-setting is actually relatively cheap, I haven't well, suggested...compared to well at least regulated kind of onsite savings measures...

I: yeah

R: but yeah it is still a cost to their pay...

I: yeah, because, I am just trying to think through, do you still, well, have you ever asked for a kind of proportion of the regulated energy to be delivered via renewables? Or was that...

R: that was, we used to, yeah exactly that was the old approach, it is still in the London plan in the supporting text, it is a bit odd, so they kind of, they have almost moved away from it and then almost felt like that was a bit scary and then put it back into the supporting text, that they expect 20% CO₂ saving from renewables.

I: the encourage for that I always thought that for your planning prediction for your energy consumption to be as little as possible so that that 20% was as little as possible..

R: yeah, absolutely

I: rather than take a whole approach with then an offset beyond that which presumably makes a more realistic approach to the energy prediction.

R: Yeah, I mean er, we, it was useful I think to that extent that it did, that it did, even though it was renewables target it drove energy efficiency which you know we all want to do, erm, but I think, I think it did become a bit of a, on a lot of the schemes we saw it became a bit of a hang-up. That they were trying to kind of, they got really hung up on trying to find this 20% through renewables.

I: hmm

R: er and on some of our sites that was not going to be possible, you know constrained sites and overshadowing or not much roof space or whatever, erm and so in a way we felt that it was a bit of a distraction so we are almost stepping back and kind of saying well just a minute the ultimate goal here is to minimise the emissions from the scheme as a whole erm and yes we want, we are pushing energy efficiency and we have suggested the standards we are looking for in here erm but ultimately we, we are quite happy if it is a very efficient building plus CHP perhaps and you know, they are put, put putting a bit of PV on, as much as they can but if they can demonstrate that they are using a kind of combination of approaches that, that has maximising their savings within you know, within reason erm then that's fine and we are not really gonna worry about have they maximised their renewables kind of thing.

I: Yeah

R: in and of themselves. Yeah, yeah, so I think that makes sense really. I mean the other problem with a fixation on renewables is you often get we were getting lots of people kind of er, being forced down the er biomass boiler route.

I: yep

R: er to try and get these savings now biomass is very cost effective, technology erm but our air quality colleagues were getting very worried that we were going to be getting all of these new boilers everywhere...

I: every new block of flats....

R: yeah and then there is obviously transport implication and other issues as well, erm so, yeah, yeah I think it's er, makes sense to us at least.

I: yes that is very interesting. I am conscious of the time so perhaps we should draw a halt there, but that has been really really useful, really insightful thank you very much.

R: Right no problem.

[finishes with a chat about I's research]

1.13 Central Government Policy Maker 13

Respondent:	013(R)
Interviewer:	Craig Robertson (I)
Location:	Respondent's office
Time/Date:	11:00 25/09/12
Duration	64:05

Transcription:

[begins with singing consent form, and I explaining the interview process and his research aims]

I: perhaps, erm we could begin by you telling me a little bit about your role at the er at the [government agency]?

R: Well, er, I have, I joined [defunct government agency] 2 years ago er while, whilst coming towards what was then the end of the [government funded building programme]...

I: Hmm mm

R: it was not known, that was not known but when the change of government came in obviously, the, that programme erm ceased to exist in starting up new ones. There was still obviously a considerable amount of [building type]s involved erm and essentially I joined as er a sustainability manager and the scope of my work followed through a number of the key performance indicators that the organisation had erm which had been set from government and they ranged from erm, and how we divided the four areas that my role would cover was including: policy erm and that is essentially keeping in touch with our own government department plus others which essentially would have been [government department] to do with Climate Change and [government department] to do with building regulations. Erm so policy from that side er the main bulk of my work is involved with procurement so we have er, within our organisation [organisation name], we have erm we're we're essentially [organisation name] but I still have the same remit, it is how to support the procurement of capital spend on [building type] buildings....

I: Hmm

R: and I work within the group, the the team which support erm the what we call maintained capital so we don't cover [building type funded by private sector], we don't cover free [building type]s

I: Right

R: we essentially cover the [building type]s which will carry on under local authority control

I: yep.

R: and receive funding operation. Whereas [building type funded by private sector]'s, free [building type]'s, [building type]'s erm those to a certain extent are autonomous, you know have their own autonomy and control their own spending.

I: Hmm mm.

R: They still obviously receive funding from [government department] but we have little involvement moving forward with those, so, our team concentrates on capital spend on programmes so the [government funded construction programme] was obviously one of them...

I: Hmm mm

R: We are just about to move into, we have been the team behind the next building programme which is called [name of programme]

I: Right.

R: Which it says in the title are the [buildings] which have the greatest priority as in either they don't have enough room to put enough [occupants] in or their buildings are in a poor condition where they require, er capital investment. Er often the decision is to new build

I: Hmm mm

R: Or they have, combined with erm [social indicators] there is kind of a whole range of remits as to why a [building] would be eligible for capital investment under that pot. SO in terms of the headline...in terms of my role I will go into more detail on that one....

I: Yeah.

R: So, There is essentially policy level, procurement level, er I also do what we call research not necessarily research ourselves but to keep in touch with what research is happening.

I: Yeah.

R: er on [building type] but also em carrying out research ourselves so two years ago we carried out erm an evaluation of a number of [buildings] which had a direct impact on our approach to energy.

I: Right.

R: so again I will come back to that and then I also had a role which was erm it was called leading by example and it was about how to support sustainable operation within our own organisation, since, we

since we moved into the [organisation] because the [organisation] were part, were part of the [government dept] group

I: yeah.

R: The, the last role which was about a sustainable operation of an organisation, there is an overarching one within the [government department] so that's not within my remit anymore but just to finish on that one I did carry out a two energy audit on this building that we are in [address]...

I: Right

R: which was literally working with the FM person to understand what the monthly bills were, what the er, what the kilowatt hours were

I: Yeah

R: and we plotted them across an annual graph erm and then we split them down to...we then after year one we, we got some energy management, some monitoring, it was one of the the kind of [building type] programmes...

I: Hmm mm

R: the kind of [sponsor name] programmes we actually got energy monitoring in here so that we knew what we were asking [buildings] to do.

I: Okay

R: and so we broke it down into we had 24 hour, you know half hourly capture and we plotted that and we showed where our energy was being used which then led to a group of, a list of actions which have taken place which was essentially to do with nothing that affected the business because we were going through a real big period of change

I: Yep.

R: and we said that we didn't want to bring in anything that was going to affect the day to day erm, kind of, erm behaviour that we were asking our staff to do because we just knew it wouldn't be priority but what we did do we worked with all of the stuff that was out of hours so that we then had erm the security guard at a certain time would ensure that all printers, all the peripherals were switched off...

I: yeah.

R: Water heaters...would check, would you know go through a kind of methodical process erm, and, and we, we kind of ...so we had two years, first year was kind of set the story, then we got support from senior management to do more which was then get the monitoring in, break, break it down erm, interestingly enough our costs reduced, our energy costs reduced by a third but our consumption went up.

I: Really?

R: Even with these actions.

I: Right, why?

R: Because the daytime actions er, and were considerably outweighed. The change, the huge change that was going on, those, they what we could see those daytime usage,

I: Right.

R: went up considerably compared to what we were doing in the night-time, so even though we were reducing our night-time and our efficiency

I: Yeah,

R: The actual overall usage went up.

I: Did more people come in during....

R: yeah, there were more people...

I: a squ..., a p... a per square metre measure us kind of meaningless because...

R: exactly, exactly, so erm...

I: the first year was kind of headline data though to sort of, is that right?

R: It was basically monthly, monthly data and monthly costs.

I: yeah.

R: between, erm, between er, there is no gas in this building it was just pure electricity so, and then I related the whole issue to carbon you know, electricity and carbon issue, you know. SO basically spent a year getting the story and people understanding what the story was and then the second year it was implementing actions and then this year obviously we have changed into the [organisation] and that's now over to the sustainable operations of the central kind of government...

I: Yeah

R: So I am not responsible for any of that anymore which is....

I: but is that a similar kind of process that you are asking [building] managers to do?

R: Erm, well, if we come back o what, what, what say, in terms of the main kind of working backwards between those four areas, the main piece of research erm that we carried out in 2011 was erm, a post occupancy, across 2010 and 11 we took 25 [buildings] which had all been built to 2006 Part L standards...

I: Yeah

R: all completely, erm procured in different ways mixture of [2 building typologies] erm and we went in and the objective was to understand how those buildings were performing both to satisfy the [functional] erm kind of functions erm satisfaction of users and then we did energy and carbon monitoring.

I: Right.

R: Again very headline stuff.

I: Yeah

R: and again the objective was to , rather than look at best practice was to look, just to look at a random sample in order to get a better picture of, as I say a better picture of what was happening with these [buildings] which should of all been designed, well the same specification, they were all of a consistent era...

I: Yep.

R: Just to kind of get that picture. And from that has then unveloped, er unveiled that we have now, have , with this new programme have now had the opportunity to look back on and reflect on what was asked for, was it strategically the right thing and to actually wholesale review that whole...

I; Yeah

R: energy requirement for what we were asking for new buildings, for new [type] buildings to do, so that's the kind of process that we are in at the moment...

I: Right, interesting...

R: so it was the research and the evidence which then gave erm, essentially gravitas to the issue.

I: Yep.

R: From my perspective none of the issues which came out of the POE were anything new: energy consumption was, was out of control, we only had two buildings which were meeting our energy benchmark ...

I: Really? And er...

R: and we know fully why they are, because they are part of a, they were from erm two local authorities [local authority] and [local authority] who have very clear erm control of their portfolio of their buildings....

I: Hmm mm

R: work with their asset teams, have energy management, have energy managers monitor, they do the whole

I: yeah

R: As the book should say, we know that we have those, there's those mechanisms which...

I: they were still unable to meet the benchmarks?

R: No those two did .

I: oh, sorry, yeah right

R: Those two did, if you look at the support and the process that all the others, it is so fragmented...

I: and did, do, what did you do with that information? Did you kind of, was there any action?

R: Yeah, so..

I: I know the [government funding programme], I did a couple of [government funding programme] projects at early stage before they retendered it, er, retendered post planning erm and I don't know how, er, how accountable you were for the sustainability standards to meet these various things. If, if the buildings weren't working properly there was no recourse to the design team, not that there necessarily should be but...

R: erm well as a starter, I am not sure there is any recourse to see whether they were working or not, the buildings were performing or not.

I: Okay.

R: that's essentially, if you look through all, all of the contractual information there was a requirement to deliver a design to 27 kilograms of CO₂ per metre squared per year

I: Yep

R: there was no....

I: leap from the design to the actual finished...

R: no and there was no process trail or requirement to erm actually demonstrate that that was achieving that.

I: Yeah

R: it's just, was not part of the...

I: and the design was an SBEM model?

R: errr...

I: rather than a full energy model.

R: To be honest I wasn't involved at that stage but what...they had to fill in a complete, at bidding stage they had to complete a, it was called a carbon calculator

I: Yes

R: and it was an excel spread sheet which you basically had to demonstrate, go through and demonstrate what technologies you were using and out popped a figure.

I: Yeah.

R: below twenty... seven.

I: Yeah.

R: and if you did that then you got a considerable amount of more money to make that happen.

I: Yeah, but it was a kind of a technology centric .

R: technology centric process, er after erm that process I would say it was very much left to the contractor to deliver that as to whether they were achieving that or not: don't know, that bit of process was missing.

I: Yep.

R: But that's where we came in and said okay, we need to do an evaluation.

I: Yeah.

R: because there's been no requirement to ask that so, erm we er, so in, in setting what the evaluation was to, was to cover erm from the energy performance perspective the whole, the whole kind of language that we have, that we have kind of introduced is rather than consumption it's performance so that instantly brings on board you have to manage, you have to monitor in order to manage

I: Yeah.

R: because you have no idea whether it is performing or not. Erm so what we did was, I used all the factors that were supposed to have influenced those [type] buildings to actually achieve their performance so we went through the BREEAM assessments for those [type] projects.

I: Hmm mm

R: we went thought the DEC ratings for those projects, so these were all projects that were designed to 2006 Part L and were 1 year of occupation.

I: Yeah.

R: minimum one year of occupation so they were between, it turns out they were between 1 and 3 years.

I: Hmm mm

R: SO we have BREEAM, DECs certificates erm, actual erm energy consumption figures base on kilowatt hours per metre squared per year erm split between fossil fuels and electricity...

I: Hmm mm

R: and we ke, compared then against our benchmark figures for our targets...

I: and is that a DEC benchmark figure is is that?

R: no that was, that was erm well the benchmark was 27 kilograms of CO₂ that's purely what our benchmark had been.

I: that is calculated as you average figure across you portfolio or is that the CIBSE benchmark?

R: no that was the 25th percentile of [building type]

I: Right, okay.

R: so obviously all the [buildings] across the whole country, they don't just include new build...

I: Yep

R: but erm its , its, and before, it's basically the CO2 equivalent of the energy...

I: Hmm mm

R: Erm...So we set everything against, so we basically analysed everything against those tra..those targets. Erm. So we obviously did it, the raw data that we gained was from the [building type]'s annual erm kilowatt hour per metre squared and the first point was to get the information from the DEEC and then we cross checked it against what their bills were...

I; yeah

R: which said erm and so we got the cost as well as the erm kilowatt hours per metre squared and the actual total consumption, so we did a number of cross checks.

I: Yep.

R: and we set out [building type 1] so they were both refurb and new build

I: Yep

R: er, [building type 2] we had considerably more [building type 2] which were new build and refurb essentially because [building type 1] we have very little engagement with, literally the capital is , is described as thrown over the fence to them and they can do whatever they like with it...

I: Really! Right.

R: there's actually, because there is 22 and half thousand [buildings] over the country and 17 thousand of them are [building type 1]

I: right.

R: and the remaining 5, is it 5, odd, the remaining 5 odd are [building type 2] so the economy, the economy of micro managing 17 thousand and the reality of those [buildings] don't have proper energy managers...

I: Yeah

R: they don't have, and the energy bill s of those [building type 1]s are still only, in terms of a [building type]s costing, budget they are only around 5%, staff is still about 90%. Staffing costs in a [building type} are 90% .

I: Right

R: so the, so we knew that the interest in this issue at [building type 1] level, it was not a priority for [building type] and the staff that they have and the ability to actually carry out measurement and monitoring and all of those, erm, it was not starting point of , of how you tackle things. SO [building type 1] by far are always, even though the energy, the cumulative energy erm profile of [building type 1 and 2] are exactly the same

I; Yeas.

R: we knew that in terms of position of influence and position of them having a, being able to have a continuing conversation lay with [building type 2]. So that's kind of quite an interesting way of you, of you start to tackle things. Cause it's not just as straight forward as energy, this energy, it's actually is this a priority for [building type] or not.

I: yeah and have...

R: what action...

I: what leverage have you got to reach.

R: so erm, what we found and [building type 1] to a certain extent were pretty simple straight forward, you know what we are finding er fossil fuels were still way, er majority for [building type 1] and fossil fuels was the , was the element that was considerably more than what our, our benchmark were..

I: I am surprised by that.

R: Yeah yeah.

I: we have erm, a colleague and I have just been writing a paper on the DEC data base again looking at [building type 2] erm and we have found...

R: [building type 2] is different...

I: yeah, yeah, yeah

R: [building type 1] as I say, [building type 1] cause they have very little, they don't have IT, they are very simple buildings they literally lock them down shut them up when they all leave, do you know what I mean...

I: and do they keep them a bit warmer for [occupant type 1]? Is that perhaps, I don't know..

R: they do but this was, er the one [building type] which was erm erm you know, nearer to, it was performing better than our benchmarks for fossil fuels was a building that was part of this local authority who have very good attention to detail, very good refurb, it was a refurb, erm ,er no beg your pardon it was a new build, erm attention to detail of fabric first principles, all of those things, the majority of the others, if the heating is on, the heating is one, it goes on in October and gets switched off in May.

I: Yeah dis you record all of the characteristics of these buildings that you described earlier so the procurement routes the..

R: No, non, no,no, again this was very high level. So this was high level, it doesn't show the diagnosis because what we wanted to do, was rather than, what we wanted to do was get some traction into the issue

I: Yep

R: rather than saying loo, that procurement route is better than...

I: yep

R: every time you start to fragment you di, you dilute the issue.

I: yep

R: we purely wanted to sort of say look these [building type] buildings are not doing what they should be doing unfortunately it was as blunt as that.

I: yeah, yeah, well sometimes the issue is as blunt as that isn't it.

R: It's get the agenda on the table.

I: Yeah

R: so for [building type 2] obviously erm we had erm, we had a raft of new build erm...

I: hmm mm

R: and a raft of re...refurbishments, and when we described refurbishments it was a refurbishments that was over £500,000 of money was spent on it, so we are talking major refurbishment here.

I; yeah

R: Where you would expect upgrade of thermal, of the fabric, looking at the systems which use energy you know, upgrade of boilers all of that sort of thing and erm, against our the benchmarks, the 25 percentile and then we put in the 10% benchmark as well just to go you know, you guys, new builds should be actually here or better, not just the 25th percentile.

I: yeah

R: that's our payment mechanism and what we were finding if you look at the new builds, obviously when it came to there were more, there were more that had, that, I don't think any refurbishment had any renewables so if you take the whole renewables issues, what is quite interesting is what we were finding was this [building type] was when I joined I was told this was the most sustainable [building type] in the country and I said ' Oh well I will wait to see' and lets go and do some measurements on it so we had to kind of get this system. What was happening is in this [building type] they have a er CHP rape seed oil CHP...

I: Hmm mm

R: Absolutely beautiful, must have cost a fortune because the actual energy use is so high, what they were doing they were, er in order to redress that balance they were using that system so mush in order to offset that, Okay?

I: yeah.

R: so rather than getting that [referring to an energy bar in a document] down to there and the system designed to only meet that that.

I: Yep.

R: It's the system - which is so beautiful - but it is so complex it requires such experts to do it, they required a whole new road to be built to bring the tanker in for the rape seed oil...

I: Right

R: with turning circles. Er because the rape seed oil, obviously because the usage was a requirement so much more, er the local supplier has gone 'ooh' rubbed their hands, 'this will cost you some more'...

I: yep

R: So they have now, they've, they've met the benchmark target but what they have done they have now switched off this system and they have a complete gas boiler back up...

I: Really

R: they are now all running it off of the gas boiler....

I: Right

R: Because when I I said I wanted to go into the boiler room when I went up there, which took three attempts to get into the boiler room...

I: Hmm mm

R: Because I wasn't allowed and all this sort of thing and this was through a PFI contractor. We got into the boiler room and literally told to put the , put the earphones on because it was going to be so loud and I could see this dial that said zero and I was think that's not working, do you know what I mean, basic stuff like this...

I: yeah.

R: and I could tell it wasn't working and the whole [building type] and this was a [building type] manager, facilities manager, who was showing me round who was not responsible for the energy manager, the PFI contractor was...

I: Right

R: so we literally opened the door of the boiler room and stunned silence...

IL Nothing to do with me...

R: No, no, it wasn't working and so there was this whole, you know, well why isn't it working, this mental, you could see the mental...and I genuinely believe that the [building type] thought that their system and the story they were telling, it was off this rapeseed oil, CHP plant dah dah dah. In fact it wasn't even being run of that, it was being run off the straight forward...

I: But I think, I have been involved in PFI jobs not [building type] but [building type] where we put in a wood pellet burning CHP

R: yeah

I: system which similarly it kind of runs for long enough for the guy from the council to come and check that that part of the employers requirements have been met...

R: Yeah.

I: the door is shut, the kind of back up boiler is turned on and then we forget all about it...

R: Yeah.

I: which is...

R: Yeah. So for me one of the recommendations that came out of this was that the drive for a carbon target was actually a complete distraction from energy, energy management you know building regs are energy efficiency but not energy management or energy reduction or buildings physics that actually support a straight forward easy to support easy to manage, as easy to manage within the reality of [building type] are not blue chip companies...

I: Yeah

R: They do not have money to operate technically challenging complex, so you've gotta take a step so through having got this raw data at very high level, you are able to go and

I: Hmm

R: go the carbon agenda agenda has taken erm our eye off of the basics and we've leapfrogged from erm what is appropriate for [building type]s, what is appropriate for tax payers all of those things, public buildings we have completely erm took our eye off the ball on this ...

I: SO are you now asking for energy targets in your new...

R: exactly. So we have, so it's, it's brought the whole, it's kind of, it's stopped it's stopped this thing going off erm it's, this is what we are saying within the new programme...

I: yep.

R: erm within the existing [government programme] that is still a requirement to meet 27 kilograms cause the cost of changing, it went out to OJEU....

I: Hmm mm

R: all of those things...

I: Right

R: we have been through the lawyers and the cost of being able to change that programme is considerable more than the cost benefit which could be made in the whole management and the whole change, there is just no the people to do it

I: Yes

R: since the [government programme] stopped even though they are still delivering at local authority level all of the skilled staff have been you know, laid off, there is just this whole exodus of people being able to address these issues

I: yeah

R: so we know that we have still got this thing going forward and it's still delivering these things but the skill of being able to change it is deemed to be too, the resources to do it are not their so the point of influence is always at the beginning of a new programme.

I: Right

R: so this had helped to steer that new programme.

T: so how... the energy you are targeting rather than carbon what else has em fed into that?

R: so erm, what has, so just, and just, sorry just to complete this.

I: Yep

R: What we found was that after having got this energy data, obviously after translating it into carbon which was then checked against the DEC targets and you know DEC's to be honest, the DEC certificates are there on the wall of the {building type} there was literally only one erm, which was this one which new that the DEC rating helped them to be able manage their billing, all the others, the people we talked to had no idea it was something that they did...

I: yeah, they don't pay any attention to it...

R: so erm, but the most important thing which got erm, erm attention from here was that we then translated what those energy issues that we found in those [building type] what it financially was meaning...

I: Hmm mm

R: So, we set out erm the best and worst cases for [building type 2], so this [referring to document] is [building type 2] and this is [building type 1] and again this is only 25 [building type]

I: yep

R: not a big benchmark [sic] nut erm so again best and worst, best and worst, cost of you know broke it down into electric...then we basically said that the cost difference between energy each year between the best and worse [building type] was 85 grand based on those kilowatt...

I: yep

R: and it was that, that somebody sort of said okay the spec is the same, the procurement presumably was the same – don't know, we didn't look into the procurement – but one [building type] is

I; yep

R: spending that so between there and the worse [building type] was 85 grand a year,

I: hmm mm

R: so you're going that is nearly a million pounds in about 12 years.

I:yeah

R: a million pounds! Is being wasted in that [building type] it's bonkers so that was...

I: and it's also kind of talking the language of that...

R: everybody understands...

I: and makes things happen.

R: exactly, so a business manager in a [building type] could understand that so it was actually that that drew the attention from our senior management team not the energy itself, obviously, they completely, because we set the case out

I: Yeah.

R: breaking it down to electricity you know for even that was very important so that they could understand that the carbon you know the carbon agenda that had been driven by the wrong thing

I: Yes

R: and then had been translated into costs.

I: yes

R: I would say that to me was the thing, in order to change something that was the thing which actually focussed everybody's attention.

I: yes, completely

R: which then unlocked the ability for us in the next building programme which was so the priority [building type] building programme erm we as a team we are a technical team for this priority [building type] building programme is we are working directly with our procurement team who as part of that team are the legal team who erm essentially are the owners of this document and they are the ones to ensure that the contract with the design teams and contractors, all of those contractual documents

I: Hmm mm

R: then are aligned to suit what's I here so we've basically taken this document and have erm done two things, oh I was going to say, the other thing that has come out of this

I: yeah

R: from an environmental point of view was the fact that when we erm worked with the both the staff and the pupils and we did it for [building type 1], [building type 3] and [building type 2]

I: hmm mm

R: Across every single [building type] that we did was that erm the the erm being hot in summer, the indoor air quality er was consistent across all of the, all of the [building type] types as the biggest issue so so what we asked loads of questions but this shows the most positive and the most negative top three.

I: right and the internal temperature came in the negative top three most times.

R: every single time, most times, this was the [building type 3] this this was cool in winter so it was basically a temperature issue,

I: yep

R: temperature and ventilation issue so by having those two factors again the environmental and our ministers believe that sustainability is about getting the energy bill down

I; yep

R: but what we were able to do was to kind of use this as a bit of a Trojan horse to sort of say, let's have a look at the whole environmental design

I: Yes

R: and design, and and actually ask for [building type] that erm that recognise that in use they can't consume resources and that's resources of people time

I: Hmm mm

R: Resources of money, resources of management and erm if you work the sort of steps backwards is what we have asked for and what we had tested it against what we are a calling a base line design so we are saying that all buildings

I: Right

R: that go forward, all bids that go forward will be tested, we have now a benchmark design and the key objective of that benchmark design from an environmental perspective was focussing on ventilation, day lighting, acoustics er ... there is a fourth one...er... I will come back to that, and then how the buildings are managed, obviously energy water..so

I: Yeah

R: so erm and we worked with a group of consultants who literally went through and developed the design based on principles that we set out and the objectives that we set and erm in a climate where the funding envelope, the funding for it

I: Hmm mm

R: Is greatly reduced

I: yep

R: and we were being asked to reduce the area of the [building type] so what we did within our team we set up th principles and objectives for the consultants to respond to and from a sustainability perspective we set up that passive design measures would be optimised

I: Hmm mm

R: That energy that that the performance of the building would be a requirement of the contractual...erm, of the contractual requirements of any building

I; yep

R: erm that what we have asked for is energy end use modelling using TM22 at design stage checked against in use...

I: Right

R: and it will be based on, it is a less stringent carbon target so it is not 27...

I: Right,

R: we ask for 40 which is essentially building regs, so all we want is a building that is simple to operate, uses day lighting, uses, erm had all those measures and is actually easy to manage and it's energy consumption and it's energy bills are erm what they should be and the if you are to decarbonise then there is a business case after a certain period of time that you can then add on renewables if that is the case or you can then do ESCOs you know there is a whole load of things but actually we haven't asked for any carbon technologies if the solution, if they come forward with that solution absolutely great but the cant have missed the first stage...

I: Right

R: and also what we are asking for in the bidding process at design stage er we are asking for an environmental strategy report

I: Yep

R: which includes the erm, the from a day lighting perspective and from a ventilation perspective we have changed the criteria so ventilation is now using adaptive thermal comfort modelling...

I: Right, excellent

R: er and they basically have to pass 2 of the three criteria

I: Hmm mm

R: and on our baseline design, so we basically tested our baseline design

I: yep

R: using everything or, and then we developed what modelling could be used so that we could ask for that in our output specifications. And so we tested it against that, and then we tested it against what we had previously asked for and with single sided ventilation it failed...

I: Right

R: Even up to Newcastle it failed erm so we ...

I: it being too hot, it failed?

R: IN performance yes so in our baseline designs and what we are asking for is cross ventilation, in summer mode cross ventilation

I: yep

R: In winter we want heat recovery. And so we looked at breathing building and we looked at, we looked at a whole raft

I: yeah.

R: and because we can't define, we can't name a product, we have set the criteria that the energy usage in winter, you know the thermal

I: Yep

R: element, the heating element erm should be. You know we should be able to manage that because we are asking them to do heat recovery in winter...

I: Yeo

R: We have also done things like, based on talking to people [detailed discussion about the nature of the building type] so from the heating perspective I am not sure if we actually said do not use under floor heating but in a [building type] where you have a rapid change from the [room] is out of use, to in use [description of function] any of the environmental controls need to be local controls and

I: yep

R: and local, fast response anything that is not can be slower response so you've got a simple radiator in a [room]...

I: this sound really exciting actually...

R: yes we feel really excited about it...

I: you touched on earlier with the carbon agenda I think couple with the building regulation increasing thermal performance or fabric plus throw a load of technology at a a building...

R: hmm

R: While omitting these really simple design measures like cross ventilation, natural light, you know all these...

R: Yeah

I: what should be real common sense stuff...

R: yeah building physics...

I: yeah simple physics and simple kind of design measures that you can take at early stage just making

R: yeah

I: so that you can take the right decisions

R: yeah. Right decisions, right modelling so in the other factor is so erm, and also we were checking this against cost.

I: yeah

R: and you know we knew that under floor heating you know it works in a church but not when [function of building type]

I: yeah

R: Erm, it's too, you can't manage it the response time is too slow. So simple things like that, it means a simple bod can come along and check the thermostat you know you can manage it some much more easily...

I: Yeah the [occupant] can

R: simple technology

I: they can work their [room]

R: they can work their [room]. SO day lighting we have made the argument er as with, er so the essential story is that air and light flows through the building.

I: Hmm mm

R: SO people can get that we've said cross ventilation and double sided day light.

I: Yep

R: so we've got daylight potential, small atria with small slots which are....

I: Air goes up, light comes down...

R: yeah air goes up light comes down, really simple, everyone can get that.

I: yep

R: and because we've got, because you are having to model it - they will want to fill these in - but the building, in order to meet these criteria the building won't work.

I: yeah, so how do ensure that that stuff stays in?

R: So at bidding time, the environmental strategy report has to demonstrate that you meet these, climate, the adaptive thermal comfort the day lighting is , we are using erm, we are not using uniform, we are using climate based daylight modelling not uniform...

I: yeah, 300 lux at working plane etc

R: and its 2 degree, what is it 2& uniform distribution.

I: Yeah,

R: so what we are saying is that you can, you can, it doesn't necessarily have to be absolutely equal across, you can, you can get change...

I: Right

R: but as long as at the working surface, erm you can also , the other thing that this has driven is that the erm the external elevation, erm we have, in order to deal with solar gain er, we have said that the optimum window area is 30% of the , in order to meet the daylight criteria and to keep the solar gain

down we have said 30% glazing and 30% solid and of the composition in order to get the ventilation working we've got windows that partially open and are acoustically attenuated, grilles, vents what do you call them...

I: Louvers?

R: louvers, that's the one at the side so again, the other classic thing that was happening was blinds would go down in order to see the white board, the ventilation strategy was bugged...

I: Yeah

R: so this deals with that also it has meant the argument that we've had, thermal mass, so we've, so there was, the QS was pushing us to make a crinkly tin roof but we have kept thermal mass.

I: Right.

I: The other thing is that the building form they are pretty dull but they are incredibly efficient as in floor to wall you know volume ratio,

I: Yep

R: so the majority, cause, because the size of the [building type] and the design of a [building type] is determined by the amount of [occupants] who are going to [use that building – there are a number of standard combinations of occupant numbers]

I: Right

R: and so, our base line designs are based on [number of occupants for building type 2] and [number of occupants for building type 1] which are the most common types.

I: Hmm mm

R: because actually those are the most efficient ones in terms of building form to meet the money, if...

I: [occupant ratios]

R: all of those things and what we have sort of said to our, you know to our whole funders, you have to realise that is you go lower than that it is gonna cost more money

I: Yeah

R: er so [building type 1] has recognising [a location dependent type] normally have 3 stories, we haven't shown a 3 storey [building type 2] but we have shown a 2 storey [building type 2] so removing the kind of drive that it is all single storey.

I: Yeah

R: er worked through the whole [occupant organisation], you just distribute that and so it is a change, a cultural change, do you know what I mean?

[short discussion about building height]

R: to me it is about er, your building has to suit a number of factors

I: Yeah

R: and because we tested it against cost erm you know the argument is, if you've got an endless purse then of course you can do what you like but if you are trying control energy and control...you need a building form that is efficient.

I: yep

R: you needed environmental criteria that were supporting to to to ensure that the building was doing for energy, how they manage it and its simple to operate,. Simple manage, how they then choose to plug in stuff er, there is a whole question mark, there is a bit there that has not really been erm kind of its, we are not allowed to tell people what to do when it comes to what they plug in.

I: Yeah

R: we can recommend

I; Right.

R: we can guide but there seems to be a whole procurement issue to do with procuring [service] , [organisations] do that themselves.

I: yes that does seem to be a bit of a mess area.

R: there is a mess area going on there. Then we have defined, we have tried to define where, where, so taking the principle that pushing server free [organisations] or cloud based [organisations] we have kind of done, we've been working with, we have got a [service] team in here

I: Yeah

R: What we feel we can push at the moment within this building project but with all of these factors in what we are saying is within 12 months of defects so 12 months of operation is that because this aligning PFI contract as well as design and build is that in 12 months, by 9 months most [organisations] start in [date].

I: hmm mm

R: 9 months is [period of time] at 9 months they needed to have reported and know what their end use has been on a quarterly basis.

I: Right.

R: end use in energy

I: Right

R: based on the TM22 end use data so that we know at 9 months, we haven't got a full year, we know that but we will have been through a full heating season and a hottest season so at 9 months and we want an occupant survey done as ell

I: Yeah

R: in 9 months the [organisations] and those who are responsible need to be in a position to know whether the building systems are working

I: Yeah

R: and erm this is all tied in with Soft Landings as well

I: yeah

R: so they need to know at 9 months whether they are on course for what should be moving forward they are meeting their energy targets.

I: and you said it is tying a PFI and a design and build together, what's, is the procurement route is it a PFI model or is it a...

R: er, well its first rolling out on a PFI model but what we, the reason why, and everyone within our legal team has said, they are tied in for 25 years, of course they are gonna do all this but we know they are not doing all this...

I: yeah, yeah

R: so we actually wrote it as a D and B, thinking through it as a D and B contract so that's why we have brought forward the at 9 months you need to have, you need to have set up the processes for management, you need to have started recording it, you needed to have, so you need, there is a position of knowing at 9 months.

I: so are you retaining a kind of 12 months defects period within that contract so that you have 3 months to deal with that or is the 9 months purely because it is [period of time]

R: no because it means that the contractor hasn't walked away at that stage...

I: yeah, yeah, that's what I mean, so the contractor has got the 12 month period so he is still there after 12 months.

R: yeah, yeah, so you are saying 75% within that,

I: Yeah, okay

R: so we are rolling it out, a similar, it is a similar thought process ...

I: yeah

R: so you can't at at 12 months go 'oh, we will start energy managing'

I: Yeah

R: because actually we just know that with D and B they will just push and push and push but what we are sort of saying is that you have had to demonstrate that you are on the way to achieving that

I: yeah

R: and in PFI we know that after 3 years they then renegotiate their energy based on the previous 3 years energy benchmark, actual benchmark.

I: Right

R: they renegotiate, what do you mean?

I: they renegotiate, they pay this standard amount

I: right

R: so what we have said is we don't want to get to a three year position to know that this system is all out of control that is why we are saying at 9 months everybody whether it is a PFI or a D and B needs to have implemented management and reported into the [organisation] do you know what I mean [inaudible]

I: yeah.

R: so basically and that, so that can be, do you know what I mean so that the whole cost thing can go to business managers and things like that...

I; and is that written into the PFI maintenance contract,?

R: yeah

I: the 25 year maintenance contact as well so that monitoring, amending...

R: yeah, we can only do it up, we have only managed to do it up to so far up to 3 years .

I: Right

R: I am leaving to our lawyers to and our procurement people who deal with PFI to...

I: is that because they are erm it puts too great a cost premium on ...

R: I think they don't realise, I think they don't know how to, they don't know is this going to be a lever to do it or not? So it's kind of we from a building capita team have said right 3 years is the point at which you can stop influencing ...

I: right

R:It becomes a procurement issue but we have set the stall.

IL so the building should be manageable.

R: should be ...

[R's phone goes and has another meeting]

I: perhaps we should stop there then

R: yeah.

I: that has been incredibly useful,

R: I think that gives you a good feel...

I: yeah yeah, brilliant, thanks very much for your thoughts.

{ENDS}

1.14 Manufacturer 14

Respondent:	013(R)
Interviewer:	Craig Robertson (I)
Location:	Telephone Interview
Time/Date:	15:30 10/10/12
Duration	18.47

Transcription:

I: ...first of all thanks very much for your, for your time on this, I really appreciate it. Erm, as I aid it will be about half an hour's worth of conversation er, I can't remember how far we got on Friday....

R: It wasn't great 'cause we literally started and the line just died.

I: Yeah, yeah. Er, yes so I think so I will start from the start, I think I maybe explained what I was doing but maybe not so my research is about feedback, information feedback to design decisions and kind of technology, implementing technical solutions to building comfort condition and the kind of energy implications of that and the legislative guidance or other motivations that people have for implementing these, these things. Erm so I, I generally, I have got kind of 6 themes I generally like to cover, cover so erm, this will just kind of be a conversation in which I will er occasionally but in and direct it in particular directions if that is okay with you.

I: No problem at all.

R: er first of all I generally ask people to describe what their role is and their company role and their kind of general attitude to energy if you don't mind.

R: yeah no problem at all so erm er my er [company name] itself is a manufacturer of natural ventilation and low energy ventilation systems. Erm we also have a product range on natural daylighting.

I: Hmm mm.

R: so as far as energy is concerned we have been involved in the industry for many years. We originally erm persued an avenue of health benefits so we were pre energy considerations...

I: Right.

R: we were, we were more trying to sell our products on erm er, on the health benefits and I often had people when we were first doing the natural daylighting systems sort of 1520 years ago saying why would I fit one of these when I can just have a one hundred watt light bulb...

I: yeah.

R: but now the market is, you know starting to change and you know trhe the idea of doing away with light bulbs and just having natural daylight in spaces is a readily available concept and if that... that translates back to our ventilation systems as well.

I: Uh huh.

R: So, as far as we are in the pace we believe we are innovators we lead, all our products lead front eh front of the industry we are very very erm considerate on our energy consumption when we are designing products – they have to be low energy and in fact in some ways we actually erm do ourselves disservice in some ways be because we actually go the hard route in order to put a product into the market that is low energy and er its very easy for someone to take our design and say well I'll do it this way but it will consume more energy and the building industry being the way it is is very price driven

I: hmm mm.

R: so you know, as far as we are concerned we believe we are right at the front. My role in the company is technical director. I am in charge of the R and D production and er the IT side of the business. So my remit within R and D is to develop products that meet [Company Name]'s requirements and therefore energy consumption is a huge part of what we, what we do.

I: Hmm.

R: We have recently launched a natural cooling system so 6 to 7 years ago we erm we embarked on a research program to investigate a low energy cooling systems to provide an alternative, a viable alternative to air conditioning for buildings er we launched the first one in 2009 we're now on our third revisit of that product and er so now we are embarking on mass manufacturing techniques to really reduce the cost price...

I: Is that [product name]?

R: Yeah and and we have been able to show an energy reduction there of 90% compared to air conditioning...

I: Right, and when you say you have been able to show that's through er empirical data collected through...

R: yeah empirical data...

I: or testing a lab?

R: er a bit of both actually we, we do er a lot of lab testing to quantify the energy performance and then we do with every system we sell it comes complete witha data logging function.

I: oh really.

R: Yeah, we er, we er, in order to provide sort of provide that sort of er feedback er input for people er everything gets data logged.

I: Right, and what sort of data does it collect, like for instance...

R: er it collects internal temperature, external temperature, PCM temperature er what the user input is, CO2 levels, fans speed, just basically all the information in a data dump goes to an SD card...

I: hmm m

R: and that, that SD card is good enough for sort of ten, ten years worth of data.

I: Right and that data is used by the build...the facilities managers as well as you or...

R: we...er after our one year service data we will download that data and we can either issue as a report to the Client or we will erm look at in house to see how the system is performing.

I: Right and then they, your clients can tweek how they are running the building?

R: Yeah, er the benefit of [product] it's a sort of fit and forget system unlike air conditioning where the users can dial the temperature down to 18 leaving it running 24 hours a day er [product] is a er from an estates manager point of view er, they fit the system the worse thing they can do is increase the energy consumption by 20 Watts.

I: Right okay, so there is not much damage they can do. So the other systems like your erm [natural lighting product] I suppose they are probably more straight forward in terms of the kind of...

R: Yeah...

I: light level replacement. But the natural ventilation products how do they, how do you... is there a similar data collection programm with the,?

R: no we erm, this is very much a mechanical product that [inaudible]

I: Yeah.

R: these are they, they are a tubular er erm reflective aluminium tube that comes through the roof

I: Uh huh

R: Clear glazing at the top and a diffusion level at the base and we erm fit them we have been fitting them for 20-odd years so they are very much a mainstream product now. Erm in the outset we did a lot of research and we had a long term monitoring station build at one of the universities, at [University name]...

I: Hmm mm

R: and we er we data gathered over like a 5 year period I think, that information was then fed back into a, a computer programme which we developed so we could accurately predict what sort of light level we are going to get inside the room.

I: [phone buzzes due to message being received]

R: So yeah, as far as data gathering goes we have passed that stage and erm, we are where we are.

I: Yeah. So how do you go about, say I am a designer, well I am an architect by profession erm if I come to you with a building design I am interested in using, in naturally ventilating it, naturally lighting it as much as possible, how would you go about kind of assessing, or do you, do you have a

consultancy wing that I can kind of come to and erm you would apply your products to and kind of give me advice on how I can integrate them into my design?

R: Yeah, unlike any other company in the industry we have... we don't use any subcontracted labour and we have our own chain from inquiry so an architect... we would have an external sales team which we class as technical consultants who go out they talk with consultants, with architects, contractors about buildings in general...

I: Hmm mm

R: They speed that data, that enquiry erm so the plans of the building the elevations so we have an internal design team

I: Uh huh.

R: and erm we have a number of tools that they use ranging from in house bespoke software that we have developed over the years

I: hmm mm

R: Through to er commercial modelling software such as TAS, IES, Radiance, Dialux

I: Yep

R: er, all the main packages erm and we would put together a design and a set of er results erm that would go back to the client we then have an internal and external service team that would ensure that that goes through the chain and until we get an order...

I: uh huh.

R: and then we have our own contracts team so we would actually go to site, fit the kit, erm and erm if there is electronic controls such as our ventilation or our mechanical vent er we would actually commission them using our own commissioning engineers.

I: Right.

R: and we would actually then train the users on site how the system operates as well.

I: okay and do you then er, monitor the building at all to, er...

R: Yeah, so going back we always offer a one year return visit to site because what we find is that – and that's free of charge – we find is that a lot of people although they are there when you do the training they don't listen or they actually move on.

I: Yeah

R: So we go back a year later half the people have left, they don't understand the system they have got so we have to do a retraining exercise erm and we offer a free er software tweek at that moment in time just around the building, 'my room's too warm, too hot, too cold' you know we can just make those changes there and then.

I: Hmm mm. And the data that you collect from that, is that fed back into your development system? As part of your design process?

R: Yeah. All data we get from case studies we feedback into our control. We are also one of the only manufacturing companies that actually has our own control division so we manufacture our own control systems...

I: Right.

I: Which is microcontroller driven so we have our own internal electronic engineers working within R&D that develop PCB's and firmware for those er, you know we don't use bought in controls.

I: Hmm. And if say, this is a probably boring quite typical construction industry kind of question if I say you know I need my energy consumption to be whatever and I am going to do that via natural ventilation and natural light where possible and then I find out that my energy consumption isn't what, what we thought it would be, it is four times as much, what, do you have any, does anybody ever attempt to kind of you know...

R: I am pleased to say no, er, erm I have got a feeling that in the future those types of conversations are going to be had more often er particularly with the way – I have already been involved with one client who expects dynamic simulation to equal real life.

I: Yeah

R: except that where you are modelling against a weather file

I: Yeah

R: and er I think that sort of understanding in industry has still got to go through yet. Um I am, it's going to be interesting following in future years er the tender processes when erm clients actually specify the energy consumption of the building...

I: Yeah

R: and when that energy consumption of the building is not met and there is a penalty clause in place...

I: Hmm

R: and I have a feeling that that is where the industry will arrive at sooner or later. At the moment there is so much laid out in erm legislation to just derive how energy consumption should be achieved it's almost missed the bigger picture because you can design building so many different ways ...

I: hmmm mm

R: but the end result is is just, just trying to achieve X amount of kilowatt hour per metre squared throughout the year.

I: yeah. And you can use a building in some many ways, you know

R: Yeah

I: you can design it any way you like and then fill it with people who do something completely to what you thought they were going to do. Er so, so with BREEAM as built and also Part L as built coming

R; Yeah

I: out presumable that is one of the drivers, is that the kind of legislation and guidance you are working under at the moment or are planning to work under...

R: er...

I: or is there any particular legislation that is pushing people towards your products? Or

R: er not really and er the one thing that did drive natural ventilation forward was building bulletin 101

I: Hmm mm

R: When that came out it was was a key driver for natural ventilation in education buildings erm the one difficulty for natural ventilation in ... is that air conditioning has a premium for offices space and therefore landlords prefer to put air conditioning within the building because it has that perceived erm, er value to the building.

I: Yeah. Er...

R: erm how we crack that I don't know.

I: Do you do any erm like building user surveys or occupant satisfaction surveys to kind of measure...

R: Not on, not on erm er air conditioning or, the er air conditioned building er what we prefer to do is purely look at [company name] products and how that they are being perceived in the industry.

I: You do that though sort of?

R: yes we had a four year post occupancy evaluation carried out by [university] erm and that looked at erm 28 projects of ours erm all classrooms looking at the actual ventilation performance achieved through our products.

I: Hmm mm. And presumably you can compare that against say a building user survey that has got air condition spaces in it and try and convince agents that naturally ventilated is as good as air condition for productivity etc.

R: Yep.

I: Erm okay so er, my er kind of question sequence has kind of run of order a bit I suppose though the that the data that you are collecting erm allows you to put together better products or better implementation of your products in a building design erm you are obviously collecting a set of data that is of use to you erm for your particular product but I suppose I am interested in how that data could, what other data you might be interested in that goes beyond your product or how the data you collect could be disseminated to a wider audience if you were interested in doing that to kind of

benefit industry, broader industry you know if its about getting air conditioning out of office buildings or just reducing energy generally. Does that make any sense?

R: Yeah. I think it is a key driver to erm companies that er you know, they go into to office space in particular er because there is this perceived air conditioning issue

I: Uh huh.

R: erm and erm you know they then have to pick up the energy cost and the servicing cost of that equipment and I don't think they understand that when they , when they take on that property whereas it should be if you think of [product] where we have got a viable alternative

I: Hmm mm

R: where the servicing regime is ridiculously low

I: Hmm mm

R: and the erm the energy consumption you know we plug the unit into a lighting circuit which you would never get an air conditioning system doing that.

I: Yeah yeah, amazing, er your energy models that you are making to predict you energy consumption are they, you are using IES, TAS etc but er is that kind of incorporating all energy use, not just regulated but all equipment loads and things...

R: Yeah we have to take that into erm into account within our heat gain analysis so and that's the angle we take on that. What we don't do is the reality as a manufacturer we don't want to step on the toes too much of the building consultants

I: Hmm

R: Because you know you end up... we are offering this as a free design service and the consultant is saying you know, their fees that they, they are they're picking up for the building um you know you can we can start to sort of cross er, cros swords as it were.

I: Of course. Erm, I am sorry something has just gone completely out of my head there, I don't know what I was going to say. Erm I think we have rattled through my topics though so erm...

R: Excellent!

I: Unless there is anything else you would like to add, erm I think perhaps that's, erm, that's...

R: No trouble I mean if you can think of anything else stick it in an email erm, if you need another call no problem at all.

I: Yes that's great I really appreciate your time, thanks very much.

R: Not at all.

I: I will transcribe this and get it over to you and if you have got any comments and if you have got any comment or anything you would like edited – I will remove all names and stuff and I will send it over to you.

[Ends with conversation re ethic form]

1.15 Local Authority Energy Officer 15

Respondent:	Local Authority Energy Officer 15 (R)
Interviewer:	Craig Robertson (I)
Location:	Respondent's Office
Time/Date:	11:00 16/10/12
Duration	65:42

Transcription:

[begins with I explaining the interview procedure]

I: ...I generally start with asking respondents to give me er a quick description what you do, what your role is and what you role in the company, er

R: Sure, sure...

I: organisation is.

R: Er, my job is energy conservation officer and er, that is er basically that means that I run the monitoring and targeting programme for er a subset of buildings that isn't [inaudible] so our own building stock erm and also our leisure as well erm so sort of energy audits.

I: Okay

R: and then from that run er implement a few projects to basically install measures...

I: okay.

R: and make improvements. Er I also advise planning on erm major applications on the energy strategies er and run a few insulation programmes.

I: So when you said erm, this is er, you said this not much use to me, this is exactly what I am interested in actually. So what kind of monitoring programmes do you do then.?

R: Erm yeah so we visit them, visit our buildings at least once annually...

I: Right

R: I have two colleagues who do the same job as well, one colleague looks after schools another colleague looks after our estates, communal heating estates and our libraries. Erm we visit all of our sites at least once and erm the bigger sites we visit multiple times but we erm we basically, it is a two pronged approach we do the immediate kind of what are the controls set to...

I: hmm mm

R: er usually they have been tinkered with. Er change those controls, have a chat with the premises manager and the other approach is to do a more kind of long term erm programme...

I: Hmm mm

R: where you look and you know do your energy audits so you see if it's you know er what kind of lighting it's got things like that.

I; Right and are you also collecting energy data in that process?

R: yeah, yeah oh yeah. We've got a system called 'Systems Link', I don't know if you have heard of that?

I: er, I am, I haven't.

R: yeah we went, they went from Stark to systems link, er on erm on a lot of our big sites we have half hourly data on. So on our schools we have AMR as well.

I: Right, which is...

R: Er, now you have got me! Er Automatic Meter Reading.

I: Right,

R: it is usually about half a day delay on that or a day delay but obviously half hourly...

I: Right.

R: Half hourly, so erm but that's for our sort of like major sites.

I: Right and do you, where does that data go to, does it go to you or the facilities manager or...

R: Er it comes to us.

I: Right.

R: er, we are kind of the energy bods and then there is, the FM run the buildings, they put the tea and coffee out and toilet rolls...

I: Right.

R: and organise, you know if there is some problem with services they deal with that, the day to day running but we are the ones that deal... focus on the energy of it.

I: Right, their remit isn't to kind of monitor or ...

R: No.

I: No.

R: No.

I: Why not?

R: Good question! Good question, because they have got us!

I: Right. So the targeting you are putting in place, is that, presumably they are not working to an energy target then, it's your role?

R: Erm yeah, erm, we used to have targets we used to have a 15% target erm part of, when was that? That finished I think the year before last or last year. Erm and we were supposed to have a 40% target by 2020...

I: This is reduction?

R: Yeah as part of the erm I think it was Friends of the Earth or someone's initiative that we signed up to and a lot of councils signed up to 40% target but that, the current economic climate appears to have dropped off most people radar but erm,

I: Okay

R: We do, so, we have a monitoring and targeting programme but I wouldn't say we set; we don't seem to set targets now we just make sure energy isn't creeping up.

I: right

R: and implement programmes to reduce energy but it is tricky because we are consolidating our buildings portfolio...

I: Hmm mm

R: so we have huge movements of people.

I: Right

R: so you know, this building, the amount of occupants in this building has probably gone up by about 30%...

I: Right, so you're not necessarily comparing like with like.

R: Exactly. Yeah.

I: hmm. So what other erm, you said there is a Friends of the Earth target or something like that...

R: Yeah something like that.

I: Presumably you are working in the you know sort of statutory and legislative...

R: Well yeah well there used to be er targets NI186 I think erm and that was obligation from central government to monitor your carbon emission for the whole borough...

I: Hmm mm

R: and I think NI185 was your own, the councils emissions, I can't remember the ins and outs of it, but I think they got scrapped by the last government, or the current government. So...

I: SO you are now working of your own initiative essentially?

R: Pretty much yeah.

I: So erm, how, how do you, if you get your data, you make an assessment of your building and set points and how everything works, how do you then implement changes in the building?

R: What at a controls level?

I: Well yeah, at a controls level or if it is services, systems levels or if, I don't know if you can necessarily have an impact on behavioural, changing the way buildings are used or, or...

R: Well I mean we do that to an extent we erm 'cause I am the point of contact for our what they call corporate landlord, so you know our own stock

I: Yeah

R: Buildings erm and it's a mix of behaviour change and, well behaviour modification and erm you know hard measures and then the soft measures are just adjusting controls and stuff. We implemented a heating policy a few years ago er because at one point we had probably about anywhere between about 30 and 40 plug in portable heaters around the building which was quite a substantial load...

I: Yeah, yeah.

R: Erm so we implemented a policy whereby we wouldn't issue heaters just because people felt they were cold...

I: Right.

R: Erm if we could prove that the temperature was 20 degrees then they had to...

I: Buy a jumper...

R: Exactly, exactly. So those kind of things and we have driven down our own reliance on portable heaters things like that.

I: SO presumably, well I don't know, do you have to keep saying well this is 20 degrees and therefore you should be warm and you then backing that up with British Council for Offices legislation or guidance...

R: Yeah well our policy took two years to write, no it didn't take two years to write it took two years to go through...

I: Okay

R: because of those, you know, all of those you know it has to go up through the executive and through to all of the unions and all of that...

I: yep.

R: But I mean the Unions, health and safety I think recommend 16 degrees so we are will clear of that and I think British Council for office or CIBSE recommends 20 to 23 something like that our range I think is 19 to 23 so it will within that...

I: and these are open able windows so you, can you use an adaptive measure for comfort rather than...

R: Er yes, yeah and that is the first, the process that we have adopted is that people who have an issue with it to then complain to their line manager the line manager will then check the temperature on the thermometer and then handle the complaint from there. Invariably it is that someone else is warm, they have opened the window and the you know, what are they asking me to do!? Speak to their colleagues before they start whinging to FM.

I: SO with the difficulties with talking solely about energy is that it is intertwined with all these other kind of complex things about behaviour and buildings...

R: Massively.

I: and stuff but in monitoring your building how do you associate erm particular rises in energy use or problems with energy or areas where you think buildings could be doing better with particular aspects of say a hard measures or soft measures, how do you kind of allocate the problem or diagnose the problem.

R: yeah, it's really hard. Erm you know the current building that we are in at the moment is a complex and complicated building...

I: is that this building?

R: yeah sorry, erm and we have got the server room, all the servers for the entire council downstairs

I: Right.

R: in the basement, so that blurs things because that is such a large load. Hmm mm, and we've got a heating system that doesn't respond to solar gain particularly so you've got one part of the office gets nice and warm, the other part of the office literally you know a few metres away is quite cold, or certainly people's perception is, so we've got one thermostat in the whole building...

I: Right!

R: it's quite an antiquated heating system...

I: and it is running east-west the building?

R: yes

I: So you've got a south facing side and a north ...

R: Yeah er, and plus you know, you've got a heard of individuals

I: Yeah.

R: I think one programme we ran a few years ago was to try and reduce the cooling loads but you couldn't measure it really you know, it's too hard. It is very hard to tease out the end uses of energy and the tease it out from behavioural...

I: the half hourly data that you are collecting from other buildings is that just headline data or is it disaggregated down to end uses or...

RL yeah well in this building we have got one load that we suspect is the server room because it is quite stable or relatively stable and then the rest, we don't we've got three er meters that we have got no idea what they serve so things aren't separated out, unless they are new buildings.

I: Right.

R: IN which case with building regulations they would have t be separated out.

I: Yeah in theory yeah.

R: but most of our buildings are not new so...

I: Yeah...

R: and it becomes complicated as well when you are sharing a [inaudible] you know erm because we try and divide out our er energy uses by service so when we target or when we send round how usage each service has used, how much, how much they have consumed...

I: When you say service...

R: So, erm we break it down into sort of departments I suppose within the council

I: Right

R: We don't have energy budgets which again is difficult because we can't then spend to save because we don't have a budget for energy...

I: Right

R: We just pay it.

I: Yeah.

R: but we do try and separate it out across the different departments so they get an idea but of course when you live in a building like this and we've got several other large buildings, large buildings which have got large number of departments in it and you can't separate it out.

I: yep.

R: and you've also got er you know different floors have different services; some floors have got air conditioning some floors don't

I: Right

R: and you can't separate that out, so, so it is very difficult.

I: So who, yeah and so the council pays the energy bill has one presumably because it is one bill and it's kind of so you can, so each department can't tell if they are doing things better than they were before.

R: No.

I: what so the, the, what about the other buildings that you are monitoring elsewhere? How do you check that what you have done has been successful?

R: Yeah, yeah, I mean we do, we do post measure analysis so if we do, if we've implemented measure, you know think about the smaller buildings that we have got, you know...]

I: Hmm mm

R: Libraries smaller offices, you know it is so much easier their...

I: Yep

R: and if you've implemented a measure or even changed the controls it, its ice to have a look and see if that has made an impact. Not for everything we do but for a large portion of what we do we do retrospectively analyse if the er savings equal what they said they would.

I: Right

R: erm and you know it is interesting, it's, it is much easier to do for things like lighting.

I: Yes, because it is a relatively straightforward calculation and it's...

R: yeah and it's fairly definitive whereas for heating it is much much harder because you have got no control over people opening windows so...

I: Yeah, does that often meet what you think it is...

R: er no, heating is much trickier, heating is much much trickier.

I: What is the average kind of uplift in the predicted to actual?

R: I don't know I looked at savings on a communal heating estate, a communal housing estate erm after cavity wall insulation was installed and it varied between a few percent to 15 percent savings on gas bills...

I: Right

R: it was...

I: Yeah.

R: because there are other things that influence on it you know the er, erm the layout of the building, the quality of the the existing pipe work, the services the types of controls things like that, erm it is very very hard to tease out savings...

I: and hundreds or I don't know how big the estates are but X number of different households all behaving differently....

R: that is why lighting is probably the easy, one of the easiest things to monitor haha.

I: Yes.

R: So what do you use to make your energy predictions?

I: Yeah.

I: Well your reduction predictions?

R: Well what we do is we look at erm the previous year's consumption, er degree day adjusted consumption...

I: Right

R: for, well if we are looking at heating [inaudible] gas [inaudible]. Previous years degree days adjusted er gas consumption er and then we utilise some sort of in house calculation tools that we have developed over the years erm for savings attributed to reducing compensation settings on heating controls or er you know reducing thermostats things like that er and when it comes to making recommendations erm on what we would presume the savings would make we use heat loss calculations...

I Yeah

R: so the area of the erm you know, area to be insulated and the before and after U-value seems to be quite conservative.

I; and it's an in house job if you know what I mean, it it, you are not going through a series of consultants or sub-contractors or, so there is no chain of, the chain of responsibility is all kind of within the council.

R: Yeas, yeah. I don't, I mean I don't think other councils are necessarily erm the same us but yeah, er we keep it all in house, we don't use...

I: So, where, I, I am an architect by background so if I make recommendations to a client who then insulates their house and it turns out – and I say that there is 15% savings – it turns out that it is only 3, they might want to sue me, how, how does that chain of responsibility work when it is within one organisation?

R: Yeah, er interesting. I don't think we have ever had anyone come back to us and say 'we haven't saved what...' but then that is probably because they didn't check.

I: yeah!

R: to be honest! Erm yeah, no, we have never, I have never had anyone query our calculations or what we have said they will save erm hmm. Good question.

I: no, I am talking hypothetically...

R: No, I am curious, non, no I am curious because er, I mean I think it is because invariably for instance if you take the schools and we have, we have made recommendations for installing loft insulation or things like that erm, invariably the council has found a budget to pay for it, so the schools hasn't had to pay for it so they are not that concerned about whether or not it has made an impact!

I: Right

R: So erm, it is devilishly hard to actually, I actually did an analysis after our insulation programme we rain in schools and it was really hard to make any meaningful conclusion, Er, the main reason

being that the billing data that we use can be quite inaccurate. Even though we have got consumption data it is based on bills for our smaller sites of which schools mostly are quite small.

I: Hmm mm

R: and unless the schools religiously provide their data, their meter reading which mostly they don't the bills are invariably estimated and they get an actual reading a couple of times

I: Yeah

R: a couple of time a year. So if you are taking a year, the last years consumption and then the next years consumption and then doing a sort of regression analysis to see the impact you have to be very careful to see if that is the real data, the real consumption data erm so that has caused a few problems but also a lot of this stuff gets taken back in increased heat as well.

I: Hmm, yeah, so how does the council justify the expenditure?

R: Yeah, yeah, yeah. Erm previously we have worked on a 500, was it 500 pounds per ton of carbon saved, er but that s all hypothetical obviously.

I: Yeah

R: Erm, yeah it's tricky because invariably, like I say Invariably it's taken back, a lot of it is taken back in increased warmth because the trouble with heating is is because it is so behaviour related...

I: Hmm

R: erm you are also reliant on, our schools in particular have pretty poor distribution systems so there tends to be hot water leaks

I: Right

R: or the heat doesn't get certain areas or it does and the heating needs rebalancing so even if you put loft insulation in the heat is not getting up to the fourth floor anyway...

I: Right.

R: So... it is hard!

I: You are keeping the body temperature in ...

R: Yeah so when you are working an imperfect system, this is not a new build ideally you would scrap all of the heating systems and reinstall them!

I: yeah sure.

R: erm but we are tinkering at the edges of stuff that is decrepit.

I: yeah but do you then, if the kind of energy data isn't showing you return are you doing like a...your post implementation surveys are they taking into account occupant satisfaction or internal temperatures or....

R: No if only we had the time...

I: yeah true.

R: No, I mean this is, we don't have to, we are not obliged to follow up, do an analysis after work that we have done to see if it has worked, it has never been required, unbelievably it has never been required of us because it is what we do for professional interest, no-one has ever has come back to us and said ' I am actually saving what you have said' and no-one's ever queried it and we just, if we do do it, we do it just for personal inquisitiveness or professional inquisitiveness.

I: Why do you think it doesn't happen at the moment?

R: Erm purely time erm and also there is I think, I don't know about other organisations but in our organisation because we don't have energy budgets because that could cause massive problems if you think about the size of the council.

I: Yeah

R: If you had energy budgets and they went over their energy budget, you are not going to not heat a school because they have gone over their energy budget.

I; yeah

R: They still need to be heated and they still need their lights on.

I: Of course.

R: I think because of that we don't have energy budgets no one pays any attention really

I; Hmm

R: to what, you know if school has reduced their energy by 5% I don't think anybody particularly notices.

I: Yeah

R: and that's the unfortunate, there is not so much joined up thinking so, yeah...

I: is there, I don't know how much you know about other departments or I don't know, about how IT systems for instance for schools are implemented, you I can imagine that if a department spent x millions of pounds on an IT system and they didn't get what they said they were getting or something wasn't working with it, they, something would be done about it...

R: Hmm, hmm

I: There would be some justification in the expenditure tree or something I mean does it, I am just thinking about a feedback loop in other, in other services, if it exists...

R: Yeah, yeah, I think because as it stands at the moment we have not had huge outlay on energy erm, I suppose we have spent we have had million pounds worth of budget over the years I suppose. Hmm. Again I think it is because no-one holds that particular budget if you are looking at specifying IT system someone has held that budget but kn-one holds the budget for energy.

I: Right

R: It is just paid, and I am sure it must be different across various organisations but yeah, I am presuming that is why, also a number of the measures that we are doing, that we have done are fairly low to medium cost, we have not really had huge outlays of cost.

I: Hmm

R: One project that I will be doing this year which absolutely will be followed up on is 'cause it is going to be fairly costly is looking at reducing the outlay of our server room so you know we are looking at, I don't know if we go for the low cost it is going to be 68 thousand so and the medium costs will be a couple of hundred so that will definitely be, be looked at.

I: yeah, and it's something absolutely everybody in the space is connected to at the moment so anything goes wrong with it is gonna be their....

R: Yeah, absolutely. So erm, that will, because we are putting in what they call a spend to save budget so, er bid for that, so that will definitely be followed up you n=know, are we actually saving what we said we would save?

I: and are you working under, when you doing these loft insulations and various other measure is that in response to anything other than... what is that in response to? What is driving that, what is pushing that?

R: Er yeah, I mean previously it would have been driven by our own internal erm er carbon management plan.

I: Yeah

R: Which was drawn up in response to our former 15% target.

I; Hmm mm

R: erm so yeah so previously it would have been driven by that. Erm but also if we are looking at doing things in housing you know we are looking at leveraging in as much CERT funding as possible, things like that.

I: Hmm

R: SO erm, yeah, there is different drivers for different projects, we have also got er a decent sized energy project where we are currently in the middle of laying pipe work and linking together erm a number of our sites...

I: yeah I saw...

R: with a massive CHP engine so...

I: I say a school up; I can't remember the name of the school but linking heating with the adjacent housing.

R: Yes! [Name of a school].

I: [name of school] is that it?

R: Yeah that's another one up in the north. So erm you know these really high profile projects will be mentored and we've got some post occupancy monitoring going on.

I: Okay.

R: at [name of school] erm and obviously, you know the savings associated with a [government agency] project erm will be closely monitored, you know the CHP engine will be closely monitored

I: Hmm

R: Erm

I: but at the moment is it motivated individuals like yourself that are driving this? There is no...

R: erm I mean we have got an energy strategy that is just emerging at the moment.

I: Right.

R: er but we have had change of administration a few years ago so priorities change so that has been our response to that. I mean where we have got new builds that, councils had new buildings and we take over the running, or not the running but the monitoring of those buildings. Erm for instance I've got, taken responsibility for a new build that I actually advised planning on.

I: Right.

R: so I know full well what it should be achieving and I went and visited the other day and it's, it's not doing what it should have been doing so obviously I am going to be looking and assessing as to, is it actually doing what it was designed to do?

I: Yeah.

R: I would absolutely place my house on the fact that it is not doing what it is supposed to be doing!

I: Yeah, yeah, me too. What, that's really interesting so are you there in an advisory role to kind of help them make it work?

R: erm yeah because I don't think anybody has followed up on the commissioning, I don't know who received...it's a bit disjointed our, it's a bit difficult because our FM, our corporate landlord...

I: Hmm mm

R: Our corporate landlord and then facilities management deal with a lot of these things and then get us in later on,

I: Right

R: after the horse has already run down the road.

I: But it also, the whole industry is, you know, you planning department is, and you have advised or recommended that they do something or approved a particular design and then it comes back to you after it is built and commissioned...

R: Hmm

I: whatever procurement route or whatever building strategy, whether it was a design and build...

R: hmm

I: or PFI or whatever happened in the middle, there is so much stuff that can happen to the design of the building that means...

R: Yeah, absolutely our BSF schools use more energy than they did before they were knocked down.

I: Amazing, really.

R: It's a world, you know it's, it's a well known fact that if you are going to have, well I say a well known fact, I mean it is cynically laughed about amongst our team if we are going to have a new school built in invariably uses more energy than the old school that it replaced. I have no idea how that happens, I think it is mostly IT or something like that. They tend to be over designed, over engineered; they all tend to have...

I: Over glazed...

R: Yeah, over glazed, windows firmly shut, ventilation on, not commissioned properly, a million different reasons so yeah.

I: So how do you, do you rectify that...?

R: Well because of the BSF framework, procurement framework we don't!

I: Yeah, I don't mean you in particular I mean how does one?

R: yeah, I think it comes down to procurement I think BSF we got some fabulous looking schools but no-one seems to be that concerned about the energy usage. I think they are allegedly tied into, they are tied into having it perform, I think there are planning or procurement restriction based on them but in operation I don't know I am afraid.

I: No, I did work on a couple of BSF schools and ...

R: Yeah, they get handed over to ...

I: yeah we worked until I think just before stage D or sort of half way through stage D so we didn't go to planning or anything and then they retendered and someone else won it and of course if someone else wins it they want to say well this is a rubbish school, we should do this and they do something completely different and then some of the things are lost...

R: and its value engineered...

I: yeah and then it gets design and built then it gets lost further... anyway that's... Er so you mentioned earlier that you also advise on policy.

R: Hmm mm

T: so how does the kind of work we have been talking about feed into, into the policy?

R: erm yeah, well I mean when we, when I erm one of the policies that myself and [name of colleague] who I think you have spoken with worked up which was the green performance policy.

I: Yes

R: and that's to try and address this whole design versus actual argument more to kind of, we don't want to kind of hit people over the head it is more a case of trying to get people to even kind of look at what the buildings are using in operation and just to try to inform them in future designs, like, you know please stop designing massive glass atrium and expecting people to work in them in the middle of winter without surrounding themselves with masses of plug in heaters.

I: Yeah

R: These things don't work!

I: Yeah yeah of course.

R: so er, yea, so erm, what else? I guess also because I have hands on responsibility for running buildings on a day to say basis and I advise developers and consultants and they invariably want to put in things like you know multi splits or VRF systems

I: Hmm

R: You know a system that does the heating and the cooling.

I: Yep

R: erm and one of the things that we will, it sort of falls outside of planning remit but we try and strongly urge them to really focus on the controls and put in a sort of sizable dead band and where possible sort of limited occupant control beyond a certain level because erm you know, I know through looking after these building that if erm occupants you know they sort of 'oh, I feel a bit cold' so the ramp it up to 26 degrees and then it gets really stinking hot and then they have to put the cooling on in

I: Yeah

R: the middle of winter.

I: Yeah. SO that's kind of imparting you tacit knowledge on an individual basis...

R: Because the designers don't really think about that, they think about that this is going to be a beautiful system that in theory works really well and they think that is how it will work but having dealt with these buildings in operation I know that is not how they work.

I: But you haven't got that sort of knowledge into a policy, that if I was designing a building in [area] I could kind of have a look at and...

R: Erm, it would have made it, I mean there are lines in the policy, in the policy that we have written in terms of you know specifying controls etc but planning policy can only stretch so far...!

I: yeah, yeah, and there is a, a kind of, there is a kind of conflict between well the limitations of planning policy and as a... there is certain incentives for me to make my energy look a particular way at planning stage and then look a particular way at building regulations and look a particular way elsewhere...

R: Absolutely...

I: so there isn't necessarily a truthful design put in place at planning.

R: Yeah, and I think that is why we are hoping that this green performance or policy will force people in a nice way to revisit their projects and see if they, you know, if it actually performs as they thought I would.

I: yes. How are we for time?

R: It's alright.

I: No, NO, it is your time I am taking up. Erm I suppose I have got a final question then, or two final questions actually...!

R: That's all right.

I: what erm are the particular barriers in place at the moment that prevent you as an organisation collecting information and acting upon it or monitoring properly, what do you think they are?

R: I would say the main barrier would be that there is still no joined up thinking with regards to energy use.

I: Right.

R: Erm and I don't, I think it's tricky with erm with local government, I am sure it is the same with other government agencies as well because erm, the way budgets are spent erm and the way money is allotted we really need a much more erm yeah a much more joined up approach to energy right from the commissioning of new buildings to the erm...the building stock needs to be looked at holistically and at the moment our building certainly isn't looked at as a whole from an energy perspective. It is looked at from a how many people can we ram in there and ...

I: Hmm.

R: and it's looked at from an operational perspective and energy is not considered at all, well it is a tiny bit but not really.

I: yeah

R: and what really needs to happen and we keep pushing for this and I hope this is what will happen is that with our what we call corporate landlord erm the people that look after our building is that we get involved at a high level and we get involved right from early on looking at what buildings should be disposed of and sold on and what improvements can be made but the difficulty for us is that when you are looking at energy saving measure, certainly the cheaper options, you know, putting in a bit of loft insulation or a bit of cavity insulation or you know T5 light adaptors things like that you know the cheaper ones they pay back in a few years there quite easy but when you are looking at wholesale you know relighting design, you know moving to LEDs, you know things like that these will pay back sometimes plus 5 years

I: Yep.

R: and we don't know if we will have that building

I: Yep

R: in plus 5 years, erm so I mean it is happening, it has already happened in the few years that I have been here, we have put energy measures into a building only for it to be disposed of only two years later.

I: Right.

R: so that probably tells you the how joined up the thinking is in term of energy!

I: and how long term it is.

R: Yeah so, and I should imagine that, I should imagine that other sectors do it bettering some regards and not so good in other regards and that is a whole culture shift, so that would be my, from looking at our organisation that would be the biggest er barrier.

I: Yep. That, is that, is that kind of short-termism kind of because of the political cycle,

R: Yeah

I: rather than, which is, kind of, perhaps, an insurmountable barrier. When it comes to it...

R: The political cycle and also erm financial er you know things, you know we've...you if things don't pay back quickly or erm...you know, like I say, our building are assessed operationally

I: Hmm mm

R: you know rather than from an energy perspective, erm energy still I s not particularly high up, certainly not energy of the council's buildings erm we are moderately high up probably higher than a lot of organisations but still not as high as we would want to be.

I: Yeah

R: Er fuel poverty is a big driver for our current administration so we are currently looking at how we can help our residents, you know domestic environment erm so our operational buildings are less so...

I: yeah, the operational data that you are collecting for people and departments in there...

R: yeah

I: so there is an information stream coming back to somebody.

R: Yeah

I: so to tie in the energy data...

R: yeah the difficulty is as well because we don't really have fixed energy pricing people look at the bills they don't really look at the consumption...

I: Yes okay.

R: and consumption could you know...it is hard trying to explain to people that you are mitigating you know they just think you know you did this, we did this and changed boilers her and we haven't

seen the ills go down that much. Well here's how much it would have gone up by is not such a winner
...

I: Right

R: avoided costs!

I: Yeah

R: is, is, is less of an easy sell than actual cost savings.

I: Right so my final question: if you could put all of the data you have and knowledge and things you have into a system, a feedback system to try and overcome these barriers, erm what might that system offer the various people looking at it?

R: Hmm. Yeah we've looked at these kind of massive things and it's really hard we've got a patch work of different systems that we use from erm databases that look at condition surveys.

I: Yeah

R: Through to our own energy consumption data bases erm, ideally what you would have is some sort of massive data base that tracks each site that has the in depot herm information about the structure, the, the ,you know the condition of that building

I: yeah

R: Er and then what measures, what potential measures fall out of that you know all of those things, er coupled with what is the user profile of that building and then also the half hourly data of the consumption of that building and it being accurate rather than estimated erm you know so you've got essentially three areas you've got the building itself and the services they are the hard things and you've got the user and then you've got the consumption data those are the three things you would really want to have in one place and to see how those things interrelate with each other.

I: Yeah. That is interesting

R: because you can put in all of these fantastic controls and you can do all of these things but sometimes it depends on the people that use the building.

I: yeah absolutely.

R: I think that is the problem with a lot of the feedback platforms at the moment they've either got a lot of building characteristic information

R: hmm

I: and no energy data. Or they've got a bit if energy data and very little building characteristics or universally they've got no occupant data because it is really hard to capture occupant data

R: yeah

I: so none of them have managed to put together those three bits that really you need.

R: Yeah and like I said for use it's and ever changing moveable feast because we have, oh we are moving another team with 30 people into this building and it changes its month by month

I: yeah yeah

R: and we have smart working as well which make things really hard to ...measure

I: yeah. I can see through an estate departments eyes that there is another 40 people down the middle of this room for instance!

R: Absolutely, I mean we had another 15 move in last week.

I: Yeah

R: You have actually come in on a quiet day but invariably if you are not in by 9 o'clock you can't find a seat,

I: Oh right, is it all hot desking?

R: Yeah

I: Right okay.

R: Or smart working we call it!

I: Smart working. Sorry! Hot desking 5 years ago, smart working now, in...

R: Yeah try to make it sound nicer!

I: It will be share-o-rama in 5 years time or something.

R: Yeah. Haha!

I: That is great, I think I have probably come to the end of my questions and I don't want to take up too much of your time.

R: Yeah sure.

I: But thanks very much.

R: But I mean yeah just sort of, we would like to monitor more if we do measures in a building, you know er, I mean I've done lots of things in this building, because I look after this building in the time that I've worked here and invariably it just gets lots, I mean even when you try and tease it out...

I: Hmm

R: It's just really really hard.

I: Uh huh

R: Because you have done one thing and something else has happened. Like for instance one year I erm replaced all of these at great cost, all of these outlet here [points to ceiling diffuser] the the ventilation because when I arrived they were these screw up things and everyone, and this is where our hot air comes from, well our tempered air, erm and people had screwed then all up because they were too...and the whole thing was, the ventilation was completely unbalanced

I: Right.

R: it was a nightmare, so we spent a lot of money putting these in and I thought great, we are going to see a great improvement in the consumption, I also did a thermostat, I did something else er but it got all lost because our boilers just decided to keep packing up.

I: Right

R: you know you can't...

I: So you make one measure and you start monitoring and then something else happens and you can't sort of...

R: yeah it is like this sort of big jelly blob, you do one thing and you sort of hope that it's going... because these are old buildings; I mean this isn't even that old a building but it's oldish.

I: It's pretty simple in terms of the fabric.

R: Yeah but you would be surprised at how horrendously complicated this building is.

I: Oh yeah, I don't doubt.

R: the more you work with a building like this the more you realise that you know you are doing these things in the hopes that something will work.

I: Yeah

R: we don't, we don't really know and what you end up doing is trying to improve the comfort of people so that they complain less. So that you give out less heaters...

I: Yeah

R: you know, we just stumbling on from one year to the next, at the moment we were supposed to get new boilers over the winter or the summer but because the current boilers are knackered, every morning someone has to come here at 6.30 in the morning to make sure the boiler is running!

I: Really!

R: So it's you know you end up just kind of trying to get by at the same time as implementing energy saving measures so it's ...

I: but somebody must hold the key to that, you know if you can give whoever has the budget for ...

R: well that's what we're trying to do because we have just moved to this whole corporate landlord [inaudible] we just did that this year.

I: Right

R: Previously it was just based on geography so we split the buildings up based on geography.

I: right

R: and now we are hoping that if we have one person who deals with that contact we will have more joined up thinking ...

I: and you can sort of say...

R: and we can start to get involved. Yeah

I: all this stuff...

R: because this is, this is horrendous, you're kind of it's a pull between trying to implement energy measures and trying to keep the bloody building going.

I: Yeah yeah and that is one of the problems with looking at energy in particular as a single aspect thing

R: hmm

I: because it is not single aspect, it is involved in all this massively complex web of stuff which affects...

R: Yeah

I: impacts the energy but also impacts on all these other things you are trying to do.

R: you know I am trying to do these server room improvements you know to reduce the cooling load in the server room but the main driver is you have got to keep that bloody thing going, you know you don't want the website of the council going down, you can't pat council tax bills and blah blah...

I: Yeah

R: It is a nightmare, so you know it is a pull between reducing energy consumption and making sure that we have an interrupted service, you know.

I: yeah, and from a policy point of view you know, energy policy is very important but some people might argue that the urban parts of the planning policy, you know are equally important or more important from a kind of a kind of built environment point of view there are lots of other bits of the policy which are fighting against each other...

R: Hmm

I: so it's kind of... I think the whole thing is this amorphous blob which...

R: People. It's people. That's what we always say in our techy thing, if it wasn't for the pesky people we would have perfectly run buildings but, it, its, the major difficulty we face as well is that one person is happy at 18 degrees, another person is happy at 26.

I: yeah

R: and that is probably the crux of a lot of problems.

I: yeah and in a smart working environment it's particularly difficult ...

R: well it is supposed to be better, but in our... for instance that is the cold part, in this building, just in this room here, this gets nice and warm [gestures to a part of the room]

I: yeah

R: or at least perception is the air the air temperature is not that different...

I: Right.

R: because of the radiant heat coming from the sun, this part of the building is nice and warm...

I: yeah.

R: over there, particularly that corner is cols.

I: Yeah, yeah

R: the idea is that if you want the heat you go over there, but people are people and they get stuck in habits and the come in at 6, 8 o'clock in the morning and they still sit in the same cold bit...

I: Right, okay.

R: and then complain that they are cold. Haha!

I: SO I think...

R: and we try and explain to them you can go and sit somewhere, you can go and sit there, there is sun coming in the window.

I: Yeah

R: so yeah.

I: So i think this information about energy as well as going to whoever are making decision about the building it has also got to go to the people who are using the building as well so they can make...

R: Yeah, yeah. Erm But people don't have much buy in either to you know the energy. So I have tried, I tried to work the guilt trip at one point, I think when we worked out that we had 40 electric heaters on the go. I said that was the equivalent to spending, it was well over 20 thousand pounds a year.

I: Yeah

R: for having all these three kilowatt portable heaters that invariably get left on over night because they are not controlled and I said, you know that's an officer's salary.

I: Hmm

R: How do you fancy firing one of you colleagues?

I: Yeah

R: that didn't go down very well either!

I: Yeah

R:haha! But people don't, you know...

I: its framing the problem in such a way, you know telling them that it is 30 thousand kilowatts or whatever energy use just having those 30 things on means nothing but actually framing it in a way, you know, it is one of your salaries.

R: hmm

I: that means when ...it's trying to find a way, that, that actually makes somebody think

R: Yeah

I: 'ah, maybe I should be doing something about this.'

R: but people, some people felt an entitlement to certain level of heat when they get to work and you know that the way it should e and that is that.

I: Hmm

R: it's a different, and the mindset had changed a lot over the last 15 years I think., you know I find it fascinating, the heating system of this building was designed when the building was built so what , the late 70's early 80's about 82, 81 this building was built erm sine then we have shoved in loads of IT and probably quite a few more people and yet in the middle of winter we have got this heating system running flat out and people still complain of the cold...

I: Really?

R: so there must be a massive difference in peoples tolerance to when this building was built

I: yeah.

R: up to now because we have got much more heat in this building in the middle of winter than they would have ever had when it was built and designed. So?

I: No, it's true, the building I work in [description of the UCL Energy Institute and the recent refurbishment and problems with the heating system] but as you say, this building, has been there for 70 years, 70years ago, you know it was probably pretty cold in the winter but people, people worked in it, nobodies died, people must of just put more clothes on, you know?

R: Yeah, I am just a firm believer in that the more crap you overlay on a building the worse it gets. I mean there is a school up the road over there which I have now abdicated responsibility for, but I was tearing my hair out, they have just built anew bit and it is just layer upon layer of complicated servicing.

I: Yeah

R: and they all, all the various layers are competing with each other so there's and incredibly complicate, in fact, I don't know , I almost see it, you know because it is my job to kind of look at these things

I: Yeah

R: and you look at it and you know you have got electric under-floor heating you've got [inaudible] ventilation, you've got this 9inaudible], you've got radiators...

I: haha!

R: and they are all ...

I: system on system, yeah.

R: I mean I have been into some buildings where they have got, it was another councils building, I was asked to go and do energy audits for them and they had split that had the whole building services re-done

I: uh huh

R: and they had put in a VRF system, you know it does heating and cooling and six months later they said, this is working, in the middle of winter, it is too cold so they put in electric flat panel heaters alongside which invariably do not have any form of control on the, so I went to this building, did I go there in the s... I think I went there it was sort of spring./ autumn that sort of time and a lot of the overhead units were set to cool, the electric ones were on hand so pumping up constantly and then some people had fans on . So I am like...

I: Yeah.

R: Such an intense, such an immense waste of energy. So the reason their system didn't work was because they hadn't switched it to heating after the summer ...

I: Yeah

R: so they just went oh it's not working so they just put electric heaters in without ...

I: actually engaging with it and trying to learn.

R: it's like, this is insane!

I: that's a commissioning problem I suppose...

R: and then someone goes it's too hot in here I am going to put a fan on!

I: Our building is newly refurbished and it is terrible, no one can work it, [description of UCL Energy Institute heating system] the frustrating things is the Energy Institute is full of people doing research into systems control!

R: there is an irony there.

I: There are people who know quite a lot about this sitting about that building and they kind of, and it's kind of unfathomable and useless and the estates department, you know we have done various surveys and people have done their masters dissertation on it and stuff and given them all of this information on it and you go round other new buildings and they are putting in exactly the same systems.

R: You see I think the answer lies in having a person which is, I don't know, I wouldn't even call them, I hate the work sustainability consultant, it is such a crap word, but you need someone who understand building physics who understands, they might not be able to design a system but they understand how they work, the building services...

I: Hmm

R: and someone who understands, I say building physics you know, sun rise over there blah blah...

I: hmm

R: and how ventilation works, how natural ventilation works, you need someone who can just see that and they should be involved right at the start, they should be round the table talking to the architect and talking also to the s... you know they should be ...

I: Hmm

R: that's the only way, I mean because you've got the architects, I mean I know this is not quite how it works now but this used to be how it worked when I started as a sustainability consultant years ago, the architects design this lovely building, it looks very nice and then they hand it on to the engineers and they have to make that building work and invariably it is not working...

I: Yep.

R: so then they tack a load of services on to it

I: Hmm

R: to make that space liveable

I: Yeah

R: and then you have got the FM how manage it and neither of those things work, they don't know how to manage it and so at every step it gets more complex and more energy.

I: No, I couldn't agree more.

R: and you know I think you need, even if it someone form FM who understands you know, maybe it could come from FM and they could inform...

I: Yeah, no, I agree and that's my interest in this is exactly that [brief description of my frustration in architects who see this as an engineering problem, nothing to do with them]

R: it is everything to do with them!

I: yeah, yeah of course!

R: they are designing the building!

I: you have put a massive glass wall here that is why it is hot; it is not the engineers fault.

R: yeah.

I: it is the actual physical architecture of this building that is causing the problems...

R: Yeah absolutely.

I: so I am kind of interested in how we can use this data to reconnect designers and design teams with these decisions.

R: yeah it is almost like getting something who is experienced in FM to sit in on these meetings, I don't know someone that's go to actually mange these bloody buildings in the end.

I: Yeah but, we, another reason why I am interested in this is that we used to be able to do this but you know, cheap oil, abundant never ending oil allowed us to disconnect from this

R: yes

I: [description of interest in climate driven vernacular architecture and the empirical, failure driven 'design' process]

R: but now you look at building in Abu Dhabi and they have built massive goldfish bowls in the dessert.

I: yeah massive glass boxes when it is 60 degrees out.

R: Insane.

I: but when you look at the vernacular it is thermally massive, courtyards with perhaps some water inside...

R: with some natural ventilation

I: and perhaps evaporative cooling...

R: evaporative cooling yeah

I: and you look at the tacit knowledge that has been built up over generations creating this stuff...

R: yeah

I: but shaped by the climate and shaped everything...

R: Hmm

I: and then we just go bleugh! It doesn't matter we can do what we like... we have never ending energy.

R: So I am interested in exactly as you say, reconnecting people with really simple building physics.

[conversation about career plans and refurbishment of old buildings and decisions to knock them down]

R: That's what I am absolutely fascinated by; I would just love to be able to look at a building and almost be like some sort of super human...

I: Matrix style!

R: Yeah! And just be like where is the ventilation going to come from? What are the risks? Obviously you won't be able to get that level of ventilation all of the time and lighting but you know what are the bands I suppose, I would love to do that.

[conversation about the the Soame Museum, the need to design with ingenuity due to no energy and other buildings in the city that do and don't work]

R: This is another thing, energy is just not expensive enough, I mean it is painfully expensive for most householders but if you look at a big company in London you know their lights are blazing all year, all night and you know there is no one in there...

I: but in the context of what that company is turning over on a daily basis...

R: Yeah, I mean that is thousands a night right,

I: yeah

R: but the image for them is more important for them to be seen operating 24 hours a day that image is worth more to them than the thousands they spend maintaining that image every night.

I: yeah

R: and that, you know only government regulation can overcome that, only someone saying 'you do not have your lights on unless there is someone in there...

I: yeah

R: only that will overcome

I: yeah

R: something like that you know...

I: and also yeah, there is a reputational thing about being seen to be green seems to be creeping in more to, not into city institutions like banks and stuff...

R: no not in to the city but in supermarkets and thing like that and they do really well some of their new supermarkets are really quite snazzy aren't they?

I: but getting that kind of mindset into the commercial sector and the banking sector...

R: and also in the retail sector, their energy consumption is greater than the cost of their staff whereas, well not greater but you know it is closer whereas in the finance sector, you know their energy consumption is still you know even though it is huge it is still nowhere near the cost of their staff.

[Interview ends on conversation about energy in retail and new developments and new and innovative ways of consuming energy and excuses in the development sector]

1.16 Sustainability Consultant 16

Respondent:	016(R)
Interviewer:	Craig Robertson (I)
Location:	Wilmington Arms
Time/Date:	12:30 17/10/12
Duration	26:59

Transcription:

[begins with I explaining the interview procedure and initial question on role]

R: Okay, My name [name] I work as a Sustainability consultant at [multinational engineering consultancy] my role is to work with project teams who are designing new and refurbished buildings and working with them to design buildings that use less energy, water and materials. Erm I work across, I probably have about a dozen projects at any one time and my level of involvement with design teams varies from a couple of quick phone calls to some projects that they just want a bit of information and then they go away and do their own thing, erm, other projects I'd sit in every couple of weeks and help them from the beginning stage to do layouts and choose mechanical strategies and that kind of thing and I also negotiate quite a lot with the Client to explain the process to them and to justify things that we want to that will make the building better and more sustainable but sometimes they don't understand the implications that has for them and why it is a good thing.

I: Why...so what is leading that, if they don't understand that, is it your Client that is leading the drive for lower energy and resources or you are leading that and trying to persuade your client that it is a good thing?

R: In some cases we are trying to use strategies that will use less energy and we would like to do that but they don't understand what the implications are for them, so for example we recently tried to, we wanted to use chilled ceiling on a project and there was quite a lot of argument about capital cost versus ongoing cost...

I: Hmm mm.

R: and quite a lot of architectural considerations and it was... the client found it quite difficult to understand kind of what the chilled ceilings were really. It emerged that that was the problem that they didn't really, didn't know what chilled ceilings were...

I: right

R: and once that had been explained to them then that opened up a whole other possibility of them understanding how much money they could save but they weren't able to...they were sort of embarrassed to admit that they didn't really understand what we were proposing.

I: Right. So how did you go about explain it to them then?

R: We made some quite simple sketches and talked about water and things like that. I think the whole ceiling word distracted them.

I: Right.

R: I think what they could have done with was ten minutes on Google and looked up chilled ceilings on Wikipedia but...

I: Okay.

R: they don't.

I: Yeah, but convincing them that cost benefits and the energy benefits and the comfort benefits. How do you go about convincing them of that other than saying this will be good.

R: I think a lot of the time it is breaking it down into language that they understand, so you know life cycle costings, spread sheets that look really dull but actually make a lot of sense to them. You have to kind of speak to them in language that they understand. When they do and they can see they will ask questions about what discount rate you are using but if you frame it in language that they understand in numbers of quantify...

I: hmm

R: then they are much more responsive to that than general hand waving; this will save you money in the long run.

I: Are these er commercial developer clients or...

R: Yeah

I: Yeah, so...

R: and sometimes the question comes from the other way in that either they will have planning conditions or they will have their own commercial KPIs that they want to achieve things like BREEAM so quite a lot of the time we go into them from a BREEAM and LEED perspective.

I: Right

R: and the reason for doing that is that that's what they want, they understand achieving planning conditions.

I: yep.

R: and we find it much easier to frame the question through a, through the perspective of a formal sustainability assessment that...where they end up with a badge they can put on their website...

I; yeah, yeah...

R: and they can tick of their planning conditions and if we can frame the question about energy efficiency in terms of do this it will do you benefit in terms of BREEAM credit then suddenly you are a whole step further towards getting them to listen and understand

I: yeah

R: That it's...you'll find a way to give them what they want...

I: Yeah

R: Which is exactly the same as what you would give them if you framed the question in another way but putting it in terms of something formal like a sustainability assessment is a, is a one of the, is, is a pretty powerful argument.

I: Hmm. And the assessments you are making in a sustainability assessment if it is a design or [inaudible] it's a model?

R: So in all cases, sometimes we use LEED sometimes we use BREEAM and sometimes for Middle East projects we use Estidama and they all kind of shout about how different they are but they all work in exactly the same way.

I: Hmm

R: er you make a model that is a nominal model according to the parameters laid down in the building regulations of the country that you are in so for example if you are here and you make part L to make or part L to set how your nominal building is and then you make a proposed building and the difference in the energy consumption of those 2 models gives you your performance improvement. If you are starting from LEED then you would use an ASHRAE energy model but it works in exactly the same way.

I: are you going beyond the SBEM model and actually doing a full er, energy end use model into that?

R: No.

I: Regulated energy only?

R: Regulated energy only er LEED has become better at taking unregulated energy into account just because ASHRAE has got a slightly wider remit.

I: Yep.

R: But in both those cases you are really only focussing on regulated energy. Both BREEAM and LEED have ways of adding up unregulated energy but they are much cruder tools.

I: Hmm mm

R: so for example BREEAM has a tool that is about procurement...

I: Yep

R: that is about making sure people have a procurement policy to buy energy efficient equipment but it's not as sophisticated as...you know anybody can...it is quite easy to sign a commitment to do good things in the future.

I: Yeah so how do you deal with that then? If for instance you, your, you're your convincing your client that a chilled ceiling is going to be save them x amount of money via x amount of energy saving based on regulated energy only when they then pile in all their various bits of equipment and realise that you know just through the nature of the calculation that it is different do they then come back to you and ask you?

R: I think this is a really difficult question and I think it will get more erm er, conflicted and contentious as time goes on because I think there is a really clear break between what we can do in designing a building and what we have legally delivered as a designed building so for example if we have designed a building and calculated that it complies with Part L...

I: Hmm

R: then and the the building doesn't perform as expected is it because we didn't design it very well in which case we are in legally difficult position or is it because as you have said they have just plugged in loads of stuff.

I: Yeah but it ...

R: but I think as, I think as we focus on this more and more we are going to start to get cases where people start to go back and start to try and answer those questions which I think will be interesting but I can also see that people are very wary of putting themselves in a positions and laying themselves open to, to one your building's not performing, is it because we didn't design it and you know, why doesn't the model match the building performance?

I: yeah

R: and given that given that it is quite difficult for people to understand something like, something relatively simple like what is a chilled ceiling getting people to understand the difference between what we can realistically model and

I: Hmmm

R: and what happens on the ground and that we can't model accurately. People just don't think of that as something that, you know they think of it as something that, you know if we just tried a bit harder we could do.

I: Yeah

R: 'How come I am paying you all of this money for a model and it might be as much as x percent out...

I: Yeah.

R: GO away and do it properly.

I: Yeah, yeah. SO do you do anything to er offer people like a full energy model or a kind of more accurate idea of what their building might use if they put in one computer, one [inaudible], one person per ten square metres, and all that kind of stuff?

R: The kind of things that we can do and again all of these are picked up in LEED has a way of dealing with this which isn't, which isn't very good but it's a start which is erm, it gives you credit for a commitment to taking your energy model and over the first year calibrating you model against your building performance...

I: Okay

R: so taking your model and putting in actual schedules and weather data

I: Hmm mm

R: and at the end of it coming up with something that you know because you have calibrated the model against the building should then allow you to test the building against the model so for

example, you know if your building says that you are getting this much air through and your model says your getting that much you check your model and make sure it's right and if there is still a discrepancy you go and look in your duct and there is a dead pigeon in there erm it's fiendishly difficult to do actually in practice.

I: Right

R: to calibrate the building against the model is a much bigger job than generally people are prepared to pay for.

I: And what is the benefit of doing that?

R: Because then in year two you can use the, you can use the model to see whether your building is running properly.

I: Right

R: so in theory if you building the model and it's a bit of hand waving and you build the building and you run them in parallel for a year.

I: Hmm mm

R: and where there is a discrepancy you go back to the model and you tweak the model after that the model should represent the building.

I: Assuming nothing changes in the building ...

R: or if things change in the building you update the model constantly.

I: one begs the question why, why don't you just monitor the building rather the model.

R: er yeah it's a good question but the model tells you what your theoretical question performance should be.

I: Hmm

R: and the building tells you what the building is actually doing and in reality there has got to be a lot of performance improvement that has got to be getting your theoretical performance out of your building...

I: So are sort of benchmarking against yourself.

R: Yeah. Because the model does not have things like dead pigeons in ducts so it allows you to identify areas where you are not getting the performance that you should and therefore address them.

I: So why are people unwilling to pay for that?

R: because it is really expensive.

I: and what the, the savings offered aren't apparent or aren't big enough to offset that?

R: or it hasn't been done often enough for people to be able to justify the savings. Or because it is just a long time in the future.

I: Yeah.

R: Or because we have to get over this, in order to sell this as an idea we have to be able to, to we have to articulate clearly that we have built a model and it is a bit random...

I: Yeah

R: but you should still trust us to do this thing. And that's quite a difficult...

I: Hmm

R: You know that is quite a difficult sales pitch to make, especially if you know you are at that point in the building – like at the very beginning of that process everybody loves each other -

I: hmm mm

R: by that point the process people just wanna finish and get paid and get out of here and...

I: because of the trials of procurement generally?

R: Yeah. People don't, I mean sometimes people get to the end of projects still loving each other but sometime they don't haha!

I: So your involvement in a project, you are involved all the way through to handover and beyond...

R: yeah

I: SO you are able to track changes that happen you know from planning to, in construction and blah blah blah.

R: Theoretically. But again, it is kind of, it is people.

I: Yeah

R: as the kind of sustainability person theoretically you are kept in the loop and kept in but actually not everything, sometimes you will just end up picking up a conversation, just randomly, picking up a conversation that you prick up your ears and think 'oh, better check that, that changed 6 months ago and nobody remembered to tell me'

I: Yeah, but is there, it's probably, it is one of the problems in talking about energy is that it is often linked in, well it is linked to lots of other things involved in the assessment process and there is always lots of other things happening, particularly in BREEAM but in BREEAM is the any, there is not comeback, if you don't actually, I know there is coming in to BREEAM but now, if you don't actually deliver what you said you were going to deliver...

R: Yeah erm. What, what there is in BREEAM is, that to get one of the higher ratings, to get an excellent or an outstanding rating you are obliged to do another set of assessments which is in use, which is monitoring the building over the first three years

I: Right.

R: Erm there is nothing in that that says you have to achieve the performance that you have set out to

I: Hmm

R: but it does force you to look at what you did achieve

I: Right

R: erm and the good thing about that is that if you've paid to do that then you might actually look at the data and ask yourself why you haven't...but it would be very difficult to legislate to say that a building has to, has to achieve, you know, that would everybody in a, quite a combative positions with each other.

I: Hmm, but from another point of view, or from a large building consultancy being able to say we generally get this more or less right that's quite a big selling point

R: Yeah

I: to be able to offer. So do you use, if you are going through that BREEAM process to collect that information do you do anything [inaudible] kind of legislated or mandated processes? Like post occupancy evaluations generally.

R: We do do.erm; it is easier to get into some types of buildings than others so we have got more schools ...

I: Hmm mm

R: who are always a bit more enthusiastic about letting you come back than say offices where we can ask them, we can ask if we can come back but they are not always interested.

I: Yeah

R: Especially if you have got multiple tenancies. Erm negotiating access is, it's not a problem, I am making it sound like it, obviously we can't do it, I mean it is not a problem, but it just makes it very faffy...

I: yeah, yeah exactly, it is very difficult.

R: and you get certain distance down the path and...

I: Developers sell it on...

R: yeah, it has passes through three hands and

I: Yeah

R: Nobody really wants to know you are standing there outside the door saying 'please can I read the meters?'

I: yeah.

R: people, people lose [inaudible]

I: yeah, of course they do. SO what do you do with that data when you get it, if you have done POE stuff?

R: so the kind of things that we do is we look at types of buildings together we have got a bunch of buildings we look at, what are the outliers, why, and you know look at the outlier buildings and say okay why did that one do really well, why did that one do really badly.

I: when you say do really well is that closeness to the model? Or closeness to a benchmark or...

R: or, or just use less energy than and try and work out why that is and sometimes we can and it might be reasons like for example we model for this many people per square metre and actually they have just spread themselves out

I: Yeah, there is just nobody in it.

R: Yeah or it has not been let or the people who are in it are painters or something and don't use computers or something.

I: and do you also kind of identify design things that have helped or not helped?

R: yeah and we aim to capture those on our you know and input that information back on to, into the, there is always information about each project,

I: yeah

R: so we capture kind of who did it, how much it cost and what is it and the aim is to capture that output information and put it back into the original design information so that then when you are building a building you could look at that lot of buildings that we have monitored and say well my building is like that what were the outliers? Let me go back to the project information about those and see what, what was interesting.

I: and that project information is er, that is accessible?

R: not publicly accessible but internally accessible, so anyone who is searching for that kind of project has a chance of coming up on it, it is not a perfect system because you would have to know it is there and look for it and be interested and want to have a look at it before designing this building...

I: but there is a formalised process for disseminating the information.

R: Exactly

I: Throughout the office to attempt to kind of feed into the, feedback in some meaningful way.

R: Yes. And there are kind of a little team of people who are responsible for for sort of doing it. Making it.

I: DO you quantify the impact of that in any way, it is very difficult.

R: No. I don't know how we would do that. I think we could say I mean I think we could certainly say it does happen but I don't know how we would begin to say ...

I: Yeah, I suppose it is not making the same mistake over and over again really [inaudible]

R: Yeah but how do you know that somebody didn't make a mistake because they read it in a project sheet as a kind of watch it, look out for this or just because they are not stupid in first place and make less mistakes?

I: yeah, well yeah

R: or whether they took it in subconsciously or whether it was a conversation they happened to have because I think there is a lot less that is formal about design.

I: Yes

R: I mean all the formal processes I think there is an awful lot of bumping into each other over a cup of tea and passing information that way.

I: and an awful lot of 'this has got to get out tomorrow just do it, just get it down'

R: Yeah, it is not a theoretical exercise.

I: yeah which I think is why, I don't know which is why I am kind of interested in this I suppose it is such a messy procedure that involves so many different people and so many different pressures and so many different things and so many you know things that, decisions that were made because somebody had a hangover one day or whatever...

R: yeah

I: You know it is such a messy procedure.

R: and then someone else did it because they picked up a kind of, this project which [name] did with [name] but the picked up a bit that, they picked up that bit that the person did with a hangover and thought well he did that before and thought 'well that must be the way'

I: that must be how it is. Yeah do you share the information you get out of that, do you also share that information with you, your clients? Or... I am also quite interested in this kind of, presumably you are, you have, you are in contact with the client

R: Yeah

I: but if you are uncovering bad news how, how, how do you deal with that?

R: Okay there is a service that we sell which is going back into buildings and doing this

I: [name of methodology]

R: Yeah the [name of methodology] erm and commercially we are pretty keen not to do for nothing something that we sell.

I: Hmmmm mm

R: and also it takes time to do it well, you know you can stand there and read the meters and give a hand wavy first pass at it quite easily but actually if we send a team in to do it properly it's, it's quite a big chunk of stuff.

I: Hmm

R: so it's not, it's I think one of things that people think of it is that it's lightly done...

I: Hmm

R: or sort of easily done and that's, that is a barrier...

I: yeah

R: People don't realise that if you don't design it in properly how difficult it is to carry I out.

I: Who pays for it then when you do do it.

R: erm it should be the client who pays for it...

I: it should be yeah

R: but sometimes we can only get it done if we, you know if we are really interested in some particular... in some case you know we are so interested to find out what the outcome is – we have got a big client who we have just started a process of doing this and the only way we could persuade them to do it is if we went haves with them.

I: Right.

R: which is not a very commercially sensible decision...

I: but from their point of view you are, you are benefitting from this, and they are benefitting from this.

R: yeah, and it made sense and when the answer came out of that first building they then went on to get us to do four more buildings because at that point...I mean it was good investment on our part...

I: and they paid for the four more?

R: They paid us full price for the four more but in erm three of those cases the return on their investment paid for itself in the first year.

I: Right.

R: so it did make sense. But we did have to, they wouldn't have gone for the first one, we could think of no other way of persuading them...

I: Yeah yeah, so how do you then, how do convince new clients, can you use that information from those three other buildings, they paid for this and in the first year...

R: you can but there is a limit to how much information you know you really have to, because that information is commercially confident and people are very rightly wary about people being able to extrapolate backwards from ...

I: yeah

R: to extract...I mean what kind of commercially sensitive information I have no idea but obviously competitors rent floor space as well that what people do.

I: yeah

R: but people are very wary about it and we have to be very conscious of that and make sure that we maintain the commercial confidentiality of one client and not got to another client and saying well look.

I: of course

R: and that, and that so again that is a barrier to being able to sell, to cross sell

I: Yeah

R: once, there are more enlightened and less enlightened clients

I: hmm

R: and we tend to choose our, choose the people we pitch it to according to whether we think they would be up for...

I: so there are some people who it is just a non-starter...

R: yeah, it is just a non-, it is just a non-starter we have long conversation with them that you know they are just not interested. And maybe you have got, you know sometimes you want to have other negotiations with them about something completely [inaudible] and you don't want to muddy it with this conversation about 'is your building really as good as we sold it to you as...'

I: and is energy generally a large concern for your clients anyway? Other than the fact it is tied into BREEAM?

R: more than it used to be (I need to run in a minute) erm partly because it depends on the nature of the client because some of our developers rent whole building out and then somebody moves in, they pay the bills, the developer doesn't care ...

I: Hmm

R: others tend to be like we have a got a client who's, who's sort of who's major focus is old rabbit warren buildings...

I: Yep.

R: with lots of little clients and lots of landlord areas and part of their pitch is about saying to people we will work with you as tenants to try and get your energy bills low and in exchange we will expect you to make an effort for on, on the common areas. And we are going to turn the lights off after nine

I: Yeah

R: but we will give you a manual override but you know that's just what we are doing to do and we expect you to divide your recycling and we will give you, you know all of those, you know more negotiating but it depends, but those work really well because there is quite strong incentive on the behalf of the client...

I: Hmm

R: partly because they have massive landlord area, their landlord area bills absolutely huge, they are big enough to be an item on the board...

I: hmm. I am conscious of the time

R: I need to run, do you...?

I: Hmm let's stop there.

R: I think the barriers, the big issue is that there is lots of very small barriers and you can't get any where until you break them all down and they are all sort of break down able on their own but it is not worth it...

I: but you have identified kind of costs and perhaps reputation...

R: yeah I think that's unspoken but I think it is much bigger than anybody is prepared to acknowledge. The risk, or if we went to look at it and it was crap.

I: how do you get past that?

R: I don't know. I think the things that we do very much clients do the things that they are forced to do. Some of them believe, you know I am not saying that all of them... we have, we do deal with unexpected clients who actively want to do thing...

I: Right

R: and say things like I, I don't care about the BREEAM points do it anyway but they are not...

I: They are not that usual

R: and in comparison the number of people that come to us you know BREEAM, BREEAM is a very blunt tool.

I: hmm

R: but in comparison to the number of people who come to us and say you know, devise me a sustainability strategy

I: yeah

R: that is one in twenty maybe...

I: Yeah

R: in comparison to the number of people who come to us and say I need this BREEAM thing, you know what can you do. So for me as a pragmatist I am like, right, we will start with what they want and work towards what we want...

I: Yeah. But what you want it sounds like is what you organisation, there is space for your own kind of ambition involving that...

R: Yeah

I: and trying to persuade someone of that is encouraged?

R: yeah definitely. Because I think we have a erm...

[Ends]

Thanks very much for your time and insights.

1.17 Engineer 17

Respondent:	017(R)
Interviewer:	Craig Robertson (I)
Location:	Coffee Shop local to participant
Time/Date:	15:00 23/10/12
Duration	1:28:46

Transcription:

[begins with I explaining the interview procedure and initial question on role]

R: Erm, alright my, I've been a consultant engineer probably for 25 years now...

I: Hmm mm

R: Er I started out as a contractor

I: Yeah

R: did my apprenticeship blah blah, erm left them as a design engineer moved up into consultancy for eight to ten years er for big practices up in London...

I: Hmm mm

R: er moved from there to [theme park] for 4 years ...

I: [theme park]?

R: [theme park] for four years where I was on the client side...

I: Okay

R: I was operations manager for er the hotel operation we opened 5,812 hotel rooms...

I: Right.

R: Erm 90 restaurants and 120 retail outlets all on one day...

I: Small operations then!

R: yeah we called it hell! Erm from [theme park] I came back [geographical information] erm and went back into consultancy erm and and that's what I am doing now. I started my own firm in February...

I: Right

R: called the [consultancy name] basically looking to help clients resolve problems and challenges in buildings so commissioning not worked properly, this problem has been here forever and no-one can tell me what it is ...

I: Hmm mm

R: Er that's all, all simple design now, whatever comes my way ...

I: Yeah

R: Er my biggest client at the moment is [energy infrastructure company]

I: Right

R: Er I am working with them at [location] on the [project description] and their concept of energy conservation is bizarre! But er, it it, the scale of things, they are in a different league ...

I: Yeah

R: They're, they're interest is in transferring power [geographical location] with as minimum, as small an electrical loss as possible...

I: Yeah.

R: They forget that in the transmission and the heat rejection they are losing that energy still and they don't have, they are in the middle of rural [location] and they could have come to arrangements to put it in the green houses and that sort of thing cause they are rejecting a lot of heat...

I: Right

R: I mean losing 1% of 2 giga-watts is significant...

I: Yeah, yeah, yeah

R: But to them it is just bi product of the transformation because they transfer from DC to AC...

I: Right

R: And it is a common process and and it seems to be the norm that lost energy is not picked up...

I: So is one of the things you are doing trying to convince them to do something with it?

R: I am talking to people, they have a very compartmentalised [inaudible] so it is not easy er my role has been trouble shooter there er they had air conditioning problems, the rooms are air conditioned at quite high tolerances and pressurised because with 400,000 volts ac and 250,000 dc floating around you know there is a lot of static charge in the air and dust just congregates ...

I: Yep

R: So that's more what they have been talking with me about but, because I am, I will ask questions I have got them drawn into other issues while I have been there but they are not energy related issues it is an observation that...

I: Well this is one of the difficulties of looking specifically at decision which affect energy because it is, it is such a kind of complex thing and there lots of other things which impact on it that don't necessarily get picked up by it.

R: and I think, I mean, practically I mean I, I have designed from very early days probably, when I was doing my apprenticeship as I was part of [company name]'s energy group in [location] and that was 30, just under 30 years ago now and it was amazing what you could do with some time and a client that would listen.

I: Hmm mm

R: I did a lot of kitchens for [company name] in flight catering at the time

I: Right

R: erm we did seven or nine in this country and half a dozen around the world for them and the first one we went into was a designed by a consultant and we just did an installation for them and validated the design, we translated the design from American to UK standards...

I: Hmm mm

R: but in essence it was a steam kitchen just make it work, don't change the design, just make it work to UK standards. And, and that was fine, steam was a good choice for them because they had high process loads...

I: Hmm

R: but it had other problems with it because, because and they were 24 hour operations so steam doesn't have the disadvantage of the start up and shut down in that environment ...

I: Yeah

R: er but it was really useful because again the high grade heat to do the sterilisation of the dishes and things like that so it had advantages but the craftsmanship technologists to just maintain it are disappearing out of the system

I: hmm

R: there are just not that many people who know steam now.

I: yeah, I don't I don't remember, certainly I never worked on a project that was using steam so...

R: it, it is going to be interesting because on large estates where you are doing central heating steam had got a lot going for it...

I: Yeah

R: Because you don't have any motive power so, I, I was doing a study on one of the midlands universities for another practice and we looked at it and the most advantageous solution was steam even taking into account the heat losses of the transportation involved and and the condensation that drove all of that,

I: Yeah

R: the next was a variable speed drive pump system and the last which was what the client opted for was a traditional constant volume pump system.

I: Right

R: and it was quite interesting because the client wasn't interested in, they had political issues for wanting to get rid of steam and most of that was to do with trade unions ...

I: Yeah

R: rather than taking on the technology [inaudible] issues they didn't want to go to MP or HPHW because of the issues with, they associated the same issues they had steam with those two systems. They would have been much better technically to have done that because; it was a huge distribution...

I: Hmm mm

R: and I worked out and it was a crude calculation not...but in crude terms it was paying back in 6 months to go variable speed drive with 2 port control

I: uh huh.

R: but they weren't prepared to make that leap of faith from a system, they were familiar with which was constant volume and three port valves ...

I: Hmm

R: and the insisted on low temp hot water [inaudible].

I: Yeah.

R: it was real uphill battle to get the hot water to where it needed to be...

I: right without losing...

R: yeah...

I: so when you say you were doing a study, a feasibility study?

R: yeah, I mean I was brought in and it was contractor that was doing ere r feasibility and I was brought in to try and find ways of doing it better to operate, more efficiently to operate and make sure that the control strategy was robust.

I: So the, what, was that kind of target, was it a formalised target so more efficient and better to operate...

R: No, the target from the contractor's point of view is I want it cheaper ...

I: Yeah, quite.

R: er and if I, I went in and said well the way to make this cheaper is to do these things and if they bought into that and went back to the client and the client wouldn't buy into it...

I: and is that cheaper...

R: and its cheaper from the contractor's point of view because of you are doing variable speed pumps then you statistically reduce the size of the pump system...

I: Uh huh

R: and er two port are obviously cheaper than three port with all the valves and all that ...

I: Hmm mm

R: it is cheaper from a clients point of view because it doesn't cost as much to put in and it is cheaper to run erm it was cheaper from everyone's point of view they just wouldn't, because it was to them, it, they said this won't work it is something that you would do absolutely bog standard in the states but not over here yet

I: Right

R: erm, two port valve control technology is only really starting to be accepted technology over the last five to ten years and it is being driven by costs not energy

I: yeah

R: erm because suddenly clients have worked out that if I have a two port valve I only have two valves to protect with a control valve rather than one, two three four, five...

I: Hmm

R: that you have with a three port valve and I don't have all that hassle with commissioning...

I: is that the sort of kind of typical work that you do for clients, try and ...

R: I try and talk them through that process yeah. And I er it is really strange you get a whole range of different clients

I: hmm

R: so, I mean I have worked for [government agency 1] I have worked for [name of company] I have worked [government department 1]

I: Yes

R: and, and and the [government department 2] to a certain extent and their attitudes and philosophies are completely different erm [government agency] priority is front line, buildings can fall down dah, dah, dah erm not interested, as long as they are, and it has changed a little bit over the last 10 years probably because er, they, they have got all of the covenants with the [department branch] and housing accommodation has had to be lifted with [department specific standard]...

I: Yeah I have done some housing with the [department branch] in [location]

R: yeah but the, the it is deplorable that as an estate it was ever left to get to that level.

I: Yeah.

R: I mean I did a report for the [government agency 2] while I was there and every 5 to 10 years the government do a report on the historical estate.

I: uh huh

R: and it is an internal report, it just goes round...

I: Hmm mm

R: and the [government agency 2] came out reasonably well because they do look after their buildings because of the nature of their business...

I: Yeah

R: and the [government agency 1] was bottom of the pile because they didn't give a damn about historic buildings or any other buildings to be quite frank and erm that range of attitudes is reflected in all, you get a small developer who is doing a commercial office block and, and it has to work and who is really interested in maximising his revenue dah dah dah and he is hands on on it and you get a larger developer, an estate developer and erm all they are really interested in is whether they are going to let the building...

I: Yeah

R: and, and that's, I, I don't know the exact numbers because I haven't done an office building since the mid nineties now but the last time I did an office building it was in the city, we were at the edge of the city and we were targeting a rent of around 70 – 100 pound a square foot.

I: Hmm mm

R: erm there, the energy cost, even if I really screwed up my design would have been 2 pound a square foot. Er if you are going to save half of something, what are you going to save half of? Erm and and, it it is so, when you are talking to a tenant and he is saying well it is cost me a hundred pounds to put that waste paper basket on the floor

I: yeah

R: er, I don't give a damn about your two pound...

I: yeah quite.

R: and that is the reality we are faced with in the city and it is only through building regs and things like that that they have started to squeeze that a bit but it is still up hill,

I: yeah

R: erm and I don't, they'd be much, at the moment the legislation is all about compulsion and and you will comply with this minimum standard and building reg...

I: Yeah

R: that's fine, that's a safety net...

I: Yeah

R: but that would be, if you worked the legislation that said erm if you consume 100 watts a square metre it is going to cost you this much land tax, if you consume 50 watts it is going to cost you half that

I: yep

R: if you consume ten percent we will give you ten percent back.

I: Yeah

R: some sort of sliding scale.

I: do the Carbon reduction commitments sort of ...

R: CRCs started to do it then they got cold feet and it became this carbon reduction tax...

I: Yea, but it is a kind of year on year progressive...

R: Yeah but they took away the... if you achieve x results we will give you some money back.

I: right

R: they, they abandoned all of that, they said it was unaffordable.

I: Right, so you are back to the building regs.

R: you are back to minimum standards and minimum standards are always going to be, I mean we had a, a school I designed and it was er, effectively a donut...

I: Hmm mm

R: with an ETFE roof in the middle...

I: Yep

R: and it was such a large volume of space in the middle that if we had counted that as internal space it would have crippled us on building regs...

I: yeah

R: so we did the external walls were the two walls of the donut and the courtyard was, from building regs point of view for thermal purposes was a covered external courtyard.

I: right

R: no prime energy input. And they accepted that.

I: Right.

R: You know, it was a, a, see, why accept something like that that was obviously a fudge because they had to because the minimum standards said it is not part of the building...

I: was it heated? The courtyard, once it was occupied?

R: Erm we put a, we went to great lengths, we used an air sourced heat pump...

I: Right

R: which was powered off of the photo-voltaics so there was no prime energy that went into that heating...

I: Right

R: and they accepted that argument.

I: right

R: But it is, it is, it's just a nonsense.

I: hmm

R: and it was a commercial decision and you fight for your client,

I: Yeah

R: My client was the builder who wanted to build it cheaper, if I was on the other side the regulatory side I would have been saying no, go away. It shouldn't be that.

I: No, it shouldn't. So how do you go about, if you have got a client, you know a builder, how do you, I know it is very difficult because your client is your client and their remit is to get something done cheaply, how, how...

R: and, and, and I think it is, I have always believed that you design a building to operate as effectively as you can.

I: Hmm mm

R: er and, and that means that first of all it has to work, whatever work might mean but it has to do, if it is a factory it has to produce widgets, if it is a school it has to be suitable for a school ...

I: Hmm mm

R: if it is an office building it has to be suitable for offices.

I: Yeah.

R: If it doesn't do that it has failed somewhere badly.

I: Yeah

R: erm, then you design the services to provide what the client wants and different clients in the chain want different things.

I: Hmm mm

R: So if you are working for a contractor they want it built as cheaply as possible...

I: Hmm mm

R: they are not interested in how much it costs to run, erm they are not interested in the life span of components, they are not interested in erm where the components come, you can't go pro British or pro this, all that sort of nonsense just goes out of the window they, the, the, they, they've tendered effectively so many pounds per square metre to build that building and they want it to be less than that cost, if it goes over it they lose money that is all they interested in and, and, BSF tried to get round that by putting an energy target on it but then they, the energy target was so wishy-washy erm and if they'd have, if they had interpreted the energy target literally you couldn't achieve the result but they had to water it down so much that you couldn't fail to achieve the result. It is such a wide chasm of the cut threshold that it is a nonsense and you just can't work like that.

I: So how do you get the contractor interested in, given his responsibilities, [inaudible], remit...?

R: I think the only way, if you give each discipline the role of doing what they are best at...

I: Yeah

R: Then I think you achieve the best product at the end of it. So the client, let's use a school, it doesn't matter what it is but let's use a school. You're client is your teacher, you're headmaster, the local authority and they want that school to be fit to deliver – not fit for purpose, I am not getting in to that argument – fit to deliver education. Er, you get a good architect and he designs a building that has all of the right shaped spaces, they, they orientate properly, they talk to their structural engineer and their services people and they tweak it and they fine tune it and you get the best out of that building you can after it's delivered the education. Because it doesn't matter how energy efficient it is, if it doesn't deliver education it's failed again.

I: yeah

R: But we, we did lots of, I mean at [school name] we looked at [school name] and we shaped the classroom so that we had a seven and a half metre erm depth to a very deep plan space to a very deep plane space, we missed one bit... it was erm, the space was erm [sketches plan] like that...

I: Right

R: and we missed that bit of space with the seven and a half metres...

I: Is that for daylight

R: yeah for daylight and natural vent, I mean it, and this was er, 240 square metres, there were huge, there were four classroom spaces including toilets and storage and corridors put into that one space

I: Right

R: we called them pods.

I: Right

R: and the original architects plan was can we do it, can we do it deep plan, nice rectangle, blah blah blah. No! It won't work. And this this shape ended up making quite a, it got silly because we, these started becoming, the whole language around the architecture became teeth. So it was denticulated er façade...

I: Right

R: and this was the crown line...

I: Right

R: this was the gum line haha!

I: That analogy can, can begin to get a bit...yeah!

R: Haha. But by using the architect and the engineers to talk to each other and the architect had a preconception and I had a preconception and I had preconceptions and by talking we moved them together...

I: Yeah

R: erm and then you bring a builder in and you say this is what we want to build, how can we build this slightly more efficient?

I: Hmm mm

R: And if everyone on the chain thinks about what else in the chain

I: Yeah

R: then normally you can bring it together. The problem with D+B is you have got all of the, I talk about aces...

I: Hmm

R: the client has got an ace, the designer has got an ace the contractor has got an ace ...

I: Yeah

R: er, but if you give the builder all those aces and he employs the designers er, he becomes the client as well so he's got three aces so he is never going to be beaten in any discussion and he can manipulate price in any way he wants...

I: Yeah

R: So if he doesn't like an idea you can bet your bottom dollar it's gonna be expensive to build.

I: Yeah, yeah, absolutely.

R: er if he likes an idea it is going to be cheap.

I: Yep

R: er so I think, to a certain extent that traditional tiered structure that it needs to be... er the closest I ever got to it was when we built [project name] which was a three hundred thousand square foot office block - gross...

I: Hmm mm

R: and we had er [practice name] were the architects, [agent name] were the agents and project managers erm [consultancy name 1] did the structures

I: Right.

R: [consultancy name 2], which is where I was working did the M&E ...

I: Right

R: and [contractor name] did the building.

I: hmm mm

R: and [financial institution] were the client.

I: Right

R: [financial institution] had acquired land over a number of decades, maybe even centuries; I am not sure, but... And, and it got to a point where it needed to be redeveloped

I: Yeah

R: er they appointed [agents name], [consultancy name 2] came along, [consultancy name 1] came along, we did our bits, erm, and to be honest [financial institution] and [contractor] weren't too interested in the energy side although we er, I mean their priority was about maximising gross er net let able space...

I: Of course

R: erm but we, we managed, I mean it was the first time I had ever designed er an air handling system that was 2 air handling units at 70 cubic metres a second each.

I: Right

R: erm I had fire alarms and emergency lighting inside the air handling units.

I: Right

R: er they were four and half by four and half by thirty metres.

I: a gym hall.

R: er but but we designed the system on erm low temperature variable air volume.

I: Right

R: so we had 5 degree c air coming down the building, er, we then mixed that with air locally through a terminal device which then introduced the air at more normal temperatures into the space. Now, that was selected for lots of reasons but by using low temperature air we reduced the volume of air we need to move around the building erm, at the time VAV was the erm cities darling in terms of deisng concepts so anything that wasn't VAV, the agents said they couldn't sell...

I: Hmm mm

R: so it was VAV it meant that when [agent name] came back to us and said we have got three, three cores but we want to sublet the building in four how do we do it, I could find a solution...

I: right.

R: er, we had an interesting argument with the acoustic consultant over what a horizontal distribution network was...

I: hmm

R: and we ended up on an understanding that we had vertical risers and horizontal risers and horizontal distribution haha!

I: right

R: erm because if I'd used the velocities they had wanted on all of the horizontal ductwork you wouldn't have got it in the building.

I: right

R: erm, and what we needed up doing was we had a [inaudible] duct, a ring duct around the floor and that was fed from three positions with primary air and then all the horizontal ducts that went to the final terminals was off of that.

I: right

R: the, the definition that we came to agree was that the ring duct was a horizontal riser...

I: right

R: which meant that I could go up to ten metres a second it, fairly critical with the volume of air that was going through it.

I: yeah, yeah, yeah, yeah.

R: and, and I wouldn't take any horizontal distribution duct off it with a terminal closer that 2 metres I think, so we had a set of rules, and it worked, they only noise problem that we had was the contractor bridged one of the floating floors for one of the chillers and that noise got into the space.

I: okay.

R: that was the only noise issue we had on the whole job

[private aside]

I: you said that on that job and on the [project name] that that was close to where you got everybody signing from the same hymn sheet to use a construction industry cliché, what kind of communication methods are you using on those projects, what models...

R: it, it, it was tendered absolutely traditionally so [contractor] who came on board, came aboard in a three way tender competition

I: hmm mm

R: and we did the evaluation and the lowest price was from, I can't even remember the contractor's name, but the lowest price was so diabolical that we actually persuaded the client to ignore it; the highest price was from memory maybe 5 or 10% higher than [contractor]

I: hmm mm

R: but it was close, so we went to [contractor] and we said 'look you are not the lowest', which was true...

I: yep

R: 'but we want to use you'. And, and this is how we want to play the game and there was, you had the usual storming their way forward type relations and wrong way round, ignore me and [contractor] came onboard and predictably it was a JCT form of contract based on 63 or 65 version

I: hmm mm

R: erm and and [contractor] came on board and said 'we want all of this information' and there was reams and reams and reams of it. I wrote back to them and said I accept that you need all of that information to build the buildings but while you are digging the foundations, do you really need to know the colour of the pump for the plant irrigation system...

I: hmm

R: could you please schedule the information in a, a deliverable format that says this is when you need it.

I: rather than racking up a claim, an extension of time...

R: and all this, this went back and he came back and said no, 'I want it all now', this bounces back and forward three times and then I got arsey myself and went to the contract and said under form of contract blah blah blah clause dah dah dah dah and I sent that to him, and he picked up the phone and talked to me and that was the last letter we wrote.

I: right

R: so, we started out very formal contractual dah dah dah, hardnosed but we developed a relationship and that was true of the project managers, the architect, we all had, it was quicker to pick up the phone than it was to write a letter so we had to get to the point where individuals trusted each other to answer those questions.

I: hmm mm

R: when I started on the project [consultancy 2] had quite a bumpy ride for all sorts of reasons and I was probably the fifth or sixth associate director or that level that 'this is the man that is going to solve your problems' [agents name] were understandably sceptical...

I: right

R: and I went in and I said I need ten square metres and erm [name] and [name] looked at me and said well if you say ten square metres that means you need twenty and we can't give you that. And we

went through the same process there of 'no, if I say I want ten square metres I want ten square metres' not eleven, not nine, ten.

I: hmm mm

R: and that took them about 2 weeks to have the confidence, and understandably given the history of the practice, with the architects, I am not criticising them at all for that but it was really quite a – my senior electrical and senior mechanical thought I had lost it because we would go into and we'd be you know, but they had to, they could keep throwing history at me or we could start believing that we were going to start finding solutions to problems and the solutions might be different to what they were told but we were going to stick with what we asked for and and over those two weeks we did the sketch designs, concept designs, square metres of risers, this is what I need, this much plant room and we stuck to it.

I: hmm mm

R: and I think, you need people and there is not many of them in the industry now, you need people who can go away and think and go away and come back with real answers, where they don't have any information. I know that sounds really daft.

I: yeah, yeah, I know what you mean.

R: but, I mean, while I was at [theme park] I, I got a phone call 'how much is this swimming pool gonna cost to run?' what, what information do you have? 'Erm, its big' yeah, 'does a million pound a year sound enough?' Argh! No!

I: yeah

R: and no was the right answer in the end, erm and he said, 'why' and I said, I don't know yet but it just doesn't sound enough.

I; yeah

R: he said well you are going to have to know why, I said well give me some numbers and I will work something up. So he gave me square metre-age of water, square metre-age of the building and with that I worked up some numbers and then they changed the amount of pool they were gonna have and I was doing this all manually because this was right at the beginning of spread sheets.

I: right

R: and changing a manual calculation isn't difficult you just get a rubber out

I: Yeah

R: But you have to remember.

I: [inaudible]

R: erm and the third time when he came back and changed the area or something, I said, I said, no I have seen these new things called spread sheets, I want a computer and a spread sheet and I taught myself levels 1, 2 and 3 and I taught myself to do the calculation...

I: Right

R: and after that, I mean, and it was really crude, I mean this model was definitely not something I would show to many people because I mean I had formula to calculate the volume of air into the pool hall which were 12, 12 lines of code in a cell to calculate it...

I: Right

R: and it looked at the [inaudible] are dah dah dah dah and it converted that into air power and then into motor power and then into consumption over a year, it wasn't rocket science...

I: No

R: but erm and, and I came up with a figure of twelve million pounds...

I: Right

R: and [theme park] operated a very logical system that said, erm, this attraction will earn this much revenue.

I: Hmm mm

R: erm that much revenue will support this much development costs, therefore we have to construct that building for that money or less or it is not worth building. Erm there are some flaws in the system because they gave all the aces to one party in the chain but ignore that for a moment, the logic is sound.

I: Yeah

R: and and the... if you, the point of that model was that they took out how much it was going to cost to run the building a year out of the revenue some saying it was twelve and then saying it was 1 made an 11 million pound plus difference to what they could build.

I: Yeah

R: and they weren't happy with that, so they challenged it.

I: Uh huh

R: and, and so I gave my model to the development team and they tried to shred it and they couldn't so they gave it to a [location] consultant and he came back and he tweaked it around the boundaries and he said your hours of operation for the car park lighting aren't long enough...

I: Hmm mm

R: it is gonna put a bit more energy in.

I: yeah

R: erm, but you've over egged this a little bit but...and in the end they came back with an answer that was 98 or 97% of my answer and my boss was going up the wall; 'they are saying you lied', I said no, no, no, [name] if they had been within 20% I would have been delighted!

I: Yeah, yeah

R: I wouldn't have argued, on the basis of that model for two engineers to be 2% different we are saying the same thing.

I: Yeah, yeah

R: just say yeas. Ha ha! And I think that is the problem, we don't, there are very few people that would be willing, able to build a model that [inaudible], and it has tolerance, it has inaccuracies It has errors and all the rest of it, I am not defending it as an absolute model but it gives you a fell for...

I: and it takes into account all of the energy end uses that building regulation doesn't actually do?

R: this was, I mean this was [location] law but it took into account how much we were gonna consume, what we could recycle, because, I mean we were paying [local cost] a litre for water.

I: Right

R: er, a cubic metre for water, erm that's £1.70 at that rate at the time, that is an outrageous amount of money...

I: yeah, yeah

R: and we were dumping on the pool to do the pool back flushing the pool we had to dump 100-200 cubic metres a day.

I: Right

R: so we just, I, we just, part of the water pump became a moat where we dumped the backwashed water which we then used to irrigate the golf course...

I: Right

R: The [local population] didn't like that because that saved us 340 grand a day that we dint have to pay them...

I: Yeah, one of things that I am interested in is the - particularly with Part L as built and BREEAM as built coming in - is the idea that people, consultant are possibly in the near future gonna be held to their energy predictions is the, did [theme park] hold you to your model?

R: No, the water park is only just being built now

I: Right

R: so, but I have come, I have done, I've done models that, I mean I did, er, er, I did a water park when I was at [consultancy name] way back

I: Hmm mm

R: er and that was for [local authority] and the council asked us how much it would cost to run and we did the calculation and and it was fairly, it was all manual at the time...

I: yeah, yeah

R: but we were within 5% ...

I: of the actual

R: of their first year bill, we were within 5%, and that to me is near enough.

I: no, no, I am thinking about the....

R: it is possible but the difficulty and, and talk to [mutual contact] there was a study that they had at one of the [professional networks] as part of the knowledge exchange ...

I: Hmm mm

R: where the student had looked at design parameters versus user parameters and how they impact energy consumption

I: Yeah

R: and what that showed was that they user had far more impact than the designer ever did and so you can hold me accountable for everything that I am accountable for but if I design the system to work for eight hours a day and you run it for 12 that's not my problem...

I: yeah, yeah

R and that's the difficulty.

I: Quite

R: because if you look at schools, schools are designed for education.

I: Hmm mm

R: education happens between nine and three – ish. Er Monday to Friday. Er you show me a school that is only used in those hours.

I: yeah quite.

R: so, who's going to be accountable for the out of hours use and how that energy is monitored because you can't say to the designers, you are designing this school on a department for education budget to department for education rules and we are gonna use it for another effectively probably another twice as much as the educational use for community use...

I: Hmm

R: and that was always the problem with the 27 megawatt per... they never defined how it was going to be measured because what ...

I: Yeah

R: the problem they had the department for education couldn't acknowledge the community use...

I: yeas

R: Because they don't.

I: Right, I didn't know that.

R: They started to a little bit in BSF ...

I: Hmm

R: but very reluctantly. And, and, and I...

I: I suppose, I suppose the accountability of designers is not, I don't know I think there are interesting things going to happen with the ...

R: I am quite happy to be accountable for the things that I have designed and the way that... I don't have any problem with that, erm, I think the difficulty is that – this is grey hairs - when I first started in consultancy, fees were probably three quarters of scale rate...

I: Right

R: Scale rate was outrageously, scale rate had gone just before I started in consultancy, scale rate was say ten percent...

I: Yeah

R: for a job and you were winning bids, and the bidding process was more gentleman's agreements more than anything else

I: Hmm mm

R: you were winning bids at 7 to 8%.

I: Hmm

R: an, and you would deliver a service for that.

I: Yeah

R: and., and, er then clients decided that they'd competitively tender and then the first thing it was down from 7 – 8 down to 3, 4. 5 if you were lucky but half the rate and since then it has become half that.

I: yeah

R: there is no way a consulting engineer can deliver a full service for two percent.

I: No, no it is similar in architecture...

R: and the reality is that you deliver the minimum amount of work that you can to keep the client happy...

I: Hmm m

R: that you are complying with your obligations.

I: Yeah

R: That is not the way to design a building.

I: Course not.

R: It is like going to a – car analogy – it is like going to a garage I want a ford Granada but I only want to pay for a mini.

I: Yeah

R: when you get a mini, don't be surprised.

I: Hmm

R: and, and it, if, if you wanna go design and build, that's fine but don't think you are getting design for nothing.

I: Yeah, yeah. I suppose my erm, my interest in is say your [them park] case, or any other case, say a car analogy, I might want to buy a ford Granada on the basis that I know how much it is going to cost me to run it year on year. You know depending on if I drive it around like a boy racer or not it might cost me 10 or 15% more or less...

R: but that's, that information is available and could be available for a building...

I: yeah it could be available for a building...

R: but you can't ask someone you are paying a pittance to...

I: No, no I am not suggesting we should be...

R: No, and I, I am, it is important not because architects, consultants we will look after ourselves at the end of the day if you don't, you go out of business.

I: Yeah

R: but you can't then say, building regs say you are liable for the amount of energy this building, uses and and it's over energy so here is your bill when you are not being paid for that risk.

I: Yeah

R: so, the model is fine but are clients going to be prepared to pay the extra to get the insurance...

I: hmm

R: to cover that risk?

I: Yeah

R: no. so are consultants going to pay the insurance for that risk? No, because they can't afford to so all that you are going to achieve by doing that is driving practices out of business not, it is not going to solve the problem because the problem is inherent with people not understanding their buildings.

I: Yeah but it is in everybody's interest to understand these building and use that information to design better and make, make sure everything works better and...

R: but you don't do that by threats...

I: No...

R: you do that...

I: I think the construction industries knee jerk reaction to solve any problem is the threat of litigation and that's kind of the historic sense and way of dealing with this kind of stuff but I am kind of interested in looking at a, your, your [location] example of everybody kind of working together and understanding something and making it work properly in a pick up the phone manner rather than a throw a contract at someone is more interesting to me than...

R: and that works, the problem is there is very few contracts where that works, I mean the [project name] was probably the smoothest example and had the potential to be the roughest ride.

I: Yeah

R: and it was a very tight programme and it was a very tight site we had [location] archaeologists on site...

I: Hmmm

[conversation about precise location of project]

R: but it, it, there were lots of things because we designed it dah dah dah dah, [contractor] came along and they said to make this programme we need to make it water tight but the stone's on too long a delivery, how do we get round that? They talked to their people we talked to our people...

I: Hmm mm

R: we sat down and they needed it waterproof for me because I can't start putting a lot of my stuff in until there is some semblance of waterproof-ness. So what we do, we put the block-work up, we Ribbed that er put temporary windows in, polythene windows in with timber round it and the inside was dry

I: Yeah

R: Ish

I: Dry enough to...

R: and then behind that process they came along with the Portland stone and clad the building effectively, not literally but it was proper Portland stone but it was tied into the block work that was already there and by doing that they allowed almost two parallel operations which are not normal in construction...

I: hmm mm

R: but that only worked because they talked to the architects they could talk to me, how dry is dry and it, there there was all that give and take in that relationship.

I: Yeah

R: Now, contracts don't allow for that, contracts are, contractor asks designer provides or contractor get extension.

I: yeah

R: well this contractor had signed up to a programme knew it was going to be tight and difficult, he knew what we had designed and he, he, it must have been a fairly large leap of faith to come on board with that contract...

I: yeah

R: but at the time there wasn't that many jobs that big around...

I: yeah

R: the M and E budget in 1990 sixteen and a half million pounds, the building was about 70 million pound.

I: Right

R: so it was a big building...

I: Yeah

R: er, and, and, but it, I mean [project name] went sour in the end because we had some fire issues, the architect had forgotten to talk to the fire officer about our covered internal courtyard...

I: Right

R: and the fire officer had a different view of what it was.

I: Right

R: and understandably so

I: Yeah.

R: and we had actually dealt with it earlier in the design because we had put cut of sprinklers on.

I: Right

R: but the contractor had looked at them and said, did I need them and I said well that's a question of how the architect does the fire compartmentation, I can't tell you that you need them, I suspect you will so I have shown them...

I: Yeah

R: and the sprinkler people said if that's a covered external courtyard you don't need them, because your separation is sufficient.

I: Yeah

R: Fire officer viewed it as an atrium...

I: Right.

R: and suddenly they were necessary, but they were necessary very late, and at that point it all got very ...

I: Yeah

R: ' he said, 'no I didn't' oh, oh oh, and 'I said'

I: Yeah, yeah, yeah been on a few of them myself.

R: there, there's... I think the problem with most of construction is that you are always dealing with scratch teams.

I: yeah

R: how many times do you work with an engineer?

I: yeah exactly.

R: Once? Twice? Three times?

I: depends on ...

R: Depends. How many time do I work with an architect, once maybe twice, not because of choice but if a clients competitively tendering everything for the lowest bidder that's what he gets and and if you are forming a relationship with every project with a new team...

I; yeah

R: you don't build that, you don't build the relations; you don't build the common core understanding

I: Yep

R: and you don't build the trust in each other.

I: yep

R: if you don't have those things then the, the, the communication is always is always gonna be fraught because there is always 'will they stitch me up?', 'will they do what they say?' 'Will they deliver?' can they deliver?'

I: yeah

R: people have never seen my design you don't know whether [project name] design worked or not, I am gonna tell you it did...

I: Yeah

R: erm, I will also tell you that it had a couple of problems.

I: Right.

R: but that's unusual erm because every building has problems.

I: Yeah

R: erm but they weren't insurmountable, they were resolvable. You had some, we had some nonsense with the interpretation of British standards on water and stuff like that, I mean I had, we were doing

rainwater harvesting and erm we had each pod had a set of toilet in it and we had a feeder tank for each of those.

I: Yeah

R: SO I took the rainwater harvesting up around a ring main upstairs.

I: Uh huh.

R: fed each of the tanks erm I had an electronic control valve that shut it down if there was rainwater available or opened it up to mains if there wasn't and you couldn't have both valves open at the same time.

I: yeah

R: You had a type A air gap so 150 above the water line...

I: hmm mm

R: Totally no contamination issues erm the rain water was on a delayed action ball valve so the tank had to be empty before it pumped ...

I: Hmm mm

R: the mains water was on a Portsmouth valve but would only flow if those valves were open so, no it is the other way around, the mains water was on the delayed and the, the rainwater was on Portsmouth

I: Right

R: so it would normally fill up with the Portsmouth but if the Portsmouth failed because there was no rainwater then the water would drain down to the bottom of the tank and then the delay valve and it would fill up with mains.

I: Right

R: with a bug fuddle of a ball valve. So it would fill up the delayed action ball valve would close, the tank would fill up and then because it floods over the top and then shuts down and it wouldn't fill again with mains water until it got to the bottom.

I: Hmm mm

R: so mechanically it wasn't going to run both at the same time, er, we dosed the, we we had a very coarse filter in the tank...

I: hmm mm

R: We had vortex filters on each of the outgoing on each of the tanks, automatically cleaned and drained...

I: Yeah

R: we had UV on the outgoing water and we had slow release chlorine tablets in the tanks.

I: Hmm mm

R: and I was told it wasn't safe.

I: Right.

R: er. Bollocks is the technical term.

I: yeah, yeah

R: I mean that water was purer than the mains water.

I: Yeah

R: because the slow release chlorine meant nothing could build up in the tank.

I: Yeah

R: and that was alarmed, I mean alarmed, there was a timer in, in the BMS system that said...

I: you need to replace this...

R: Yeah, and it would shut the system down until you pushed a button to say that you had so the only way you could override it was wilfully neglect and I can't ...

I: yeah, yeah, nobody can...

R: er the the UV killed everything nasty going and the vortex filter took everything that was dead out because it was 15 micron, 18 micron fine filtration which was why it was vortex...

I: Hmm mm

R: and you had the, a company come in and say it wasn't safe.

I: Yeah

R: and its, we had spray taps on the erm taps which were wash hand basins and it was hot water only in the tap...

I: Yeah.

R: we blended, we gave them blended water and kids aren't gonna drink warm sprayed water!

I: No

R: and the only other place it was used was in the WC.

I: Yeah

R: so why is it not safe.

I: so do you, my next question, you were saying that your buildings, you were going to to tell me your building worked, er do you go back and do post occupancy evaluation or do testing? I know that in the rainwater case, no...

R: there is no money in it,

I: Yeah

R: Is the frank, I mean I talked to the [building] a couple of times, I get messages

I: Hmm mm

R: but real post occupancy evaluation, no.

I: what about the work you are doing, the sort of diagnostic work you are doing at the moment?

R: some of that, I have, I have I wouldn't say it is post occupation but you feedback is the problems gone away and erm that is normally a good sign.

I: But it is still going in to a building and kind of looking, collecting data and making an analysis in order to make a ...

R: and, and, a lot of what I am doing is going through a control system.

I: Right

R: People don't understand control systems. What is really frightening is control engineers don't understand controls.

I: Hmm mm

R: when I start talking about PID and three term control and proportional constant and interval constant and derivative constants...

I: You have lost me.

R: and and the control engineer is glazing over, that is frightening.

I: Yeah

R: When I have to explain psychrometrics for the control engineer that's designing controls for a tight tolerance erm air conditioning system it is petrifying...

I: yeah, yeah, quite.

R: I have had all of that.

I: Yeah

R: Erm, and I don't claim to be the world's greatest controls engineer but I know how to make them work.

I: yeah.

R: er, er the the industry isn't investing in training.

I: no

R: in any level erm and it is symptomatic in practices where you are expecting a CAD jockey to do design.

I: hmm mm

R: and they are not capable, they don't understand. Er there were exceptions but most CAD technicians that you get now know how to draw lines and shapes,

I: hmm mm

R: they, the first thing I learnt how to do was lay out a plant room, sounds really mundane but when you layout a plant room by making sure that you get to things that you need to maintain, erm that you can get in an out and erm, and that that you can get all the pipes to where they need to get to and that you can get all the ducts in and out.

I: Yeah

R: all that. People can't do it anymore, you look at some of the abortions of plant rooms that you get and and plant rooms are essentially very simple space.

I: Hmm mm

R: because they are mine, you are not really interested as an architect, the client is not really interested, all they want is it as small as possible but they don't want it to be...and if you can't design a space where you can't have any constraints around how can you go on to work out what is going to work in the front of house, how can you work out erm, I don't want to see any services in the entrance hall – quite right you don't.

I: Yeah

R: but they still need to be there and if you can't make it work in a plant room where you don't have constraints how are you going to make it work in a space where you can't see it? And having the ability to say to an architect, this is what I need how do we make it work erm

I: Hmm mm

R: erm, it would have been early 80s mid 80s we did [project name] three buildings and a retail outlet and a restaurant about a million square foot altogether

I: yeah

R: erm, [practice name] were the architect [consultancy name] were the structural engineer [consultancy name] who I was working for at the time erm [practice name] had designed the first building as architects it looked pretty but it didn't work.

I: hmm mm

R: er it didn't work because there were no risers and I do literally mean no risers erm there was no plant space and O do again literally mean no plant space.

[conversation about the particulars of practice personnel]

R: erm, went to a meeting on a Friday afternoon and I worked and worked and worked to try and get all of the stuff in and I just, I can make it work, I just can't, I need space, I don't have a fan that will work in a triangular scroll it is not made.

I: yeah

R: I have tried every single...

I: yeah

R: and and [names] said well make it work, our people say they can make it work, I said well they can't! I can't get that shape of air handling unit.

I: Hmm mm

R: it's not made; you can get a fan that goes like that as it goes round the scroll!

I: yeah haha! A variable fan...

R: and I really did try and I said it is physics; I have got a volume of air, I've got to have an area to get it out, I can't it doesn't matter if you have got Einstein sat here, he can't change that bit of physics.

I: a free area...

R: at this point my boss who was a director, I mean I was quite junior I had been with the practice about a year at this point, I just happened to be in the office on the wrong day and the client had come in looking for consultants because they didn't want [practice name] environmental group to do the design.

I: Right

R: and they had gone round town and they had brought a, a consultant from [location] with them and they came in to the office and I got grilled all day,

I: Yeah

R: I mean real technically Reynolds number Reynold numbers [inaudible] numbers dah dah dah

I: yeah

R: and because I was still at university effectively, I did my degree part time.

I: right

R: erm they, they put me in the room with them because I would know all of that sort of stuff

I: Right

R: and we sat there and we had, I had, walking out the office in the evening and probably the first time the director responsible for the office had talked to me for more than five minutes and he said 'well how did it go?'

I: yeah

R: and I said 'well, it was hard it was like sitting an exam all day', I said 'but I don't know, it think I did alright but I don't know, I don't know what they want'.

I: yeah

R: and so, Monday morning I am walking across [location] and [name] is sat on the doorstep and he's [mimics] and I am 'oh shit, what's wrong' and and he couldn't hold it and by the time I get half way across the square he has got this half smile and we had got the first phase which was, it was the first

building in [location] that was over three storeys tall and it was with [practice name] and it was one of our whole series of wins that year for large offices ...

I: Right

R: and erm he said they like you the want you to do it so here's your job get on with it.

I: Right

R: so three weeks later sat in this office with [name] sat at the head of the table [names] er [consultancy name] weren't there because they were in [location] at the time erm and me and my director and I am thing well how are you gonna make this work. And I said 'well this is what I would like to do but I need some space to make it work dah dah dah.

I; yeah

R: I can have a plant room at the bottom or at the top I don't mind... er but I need space and this went on for about an hour and a half and you know, no you can't have it it is not there, we have already got planning permission, dah dah dah dah.

I: Yeah

R: and I said but it doesn't work, I can't make it work.

I: yeah

R: 'well you've gotta make it work and I said well I can't, not with what you have given me. And and this was going back and forth - my boss Bang! On the table.

I: yeah

R: he's told you it won't fucking work!

I: Yeah.

R: literally, I mean, I had never seen my boss like that 'you've gotta give him some space' and and [name of architect] suddenly took part in this and said 'gentlemen, gentlemen calm down what we have here is a plastic dynamic situation'...

I: thanks for that haha!

R: I've got the drawing somewhere where he wrote it down. What the hell is a plastic dynamic situation! 'Young man, [name] isn't it?' I said yes, yes! He said, 'how long is it going to take you to design this plant room for us?' and I erm, didn't give much thought to it...

I: Yeah.

R: I said you can have it Monday lunch time. This was Friday at sort of 6 or 7 in the evening.

I: Right. okay.

R: haha! Erm fine you have got until noon on Monday then.

I: Right

R: so I have sat there all weekend and my drawing, my drafting is no pretty...

I: Right

R: it really isn't. I am not a design engineer because I can draw.

I: Right.

R: hah, I can, I can convey information but it is not pretty.

I: Right

R: okay, but I did all sections and dah dah dah.

I: Right

R: because I knew what volumes of air because I had done all of that, so all I had to do was make it fit.

I: yeah

R: and I don't know [location]

[conversation about the appearance and location of the building]

R: so I produced these drawings, I booked the courier for 11 o'clock so that there is no chance it can't get from [location] to [location] in an hour, but it means I've got an hour less!

I: Yeah, yeah, quite.

R: I was in the office Saturday Sunday 12-15 hours.

I: Right

R: erm I got into the office early on Monday walked the drawings down to get the prints: 'don't do anything to these drawings' haha. This is in the old dye line days. And erm fold them up and had them couriered them off.

I: right

R: [name] phone up and says 'I've got your drawings, you can't have this you can't be serious!' I mean I literally, these weren't pretty drawings I have said that but they showed the physical size of the air handling units base on manufacturers [inaudible] this wasn't me...

I: Yeah, yeah.

R: Because a fan, it doesn't matter whether it's AEF or IAX, a fan section is typically that long, er, er a filter section that long dah dah dah.

I: yeah

R: and you can go to anyone's catalogue and use their lengths

I: yeah.

R: and use, as long as you in the right sort of volume of unit you will get the right sort of length, you then have to work out a cross sectional area but that is not difficult erm and I literally have drawn, and I have even made the allowances for the support steel work and stuff.

I: uh huh.

R: Not pretty, the drawings weren't pretty, the drawings were a real pig to read but it was all there.

I: Yeah

R: and he is still saying you don't need this much space...

I: Hmm

R: and and I'd sent a set of drawings down to [location] which weren't going to get there for noon they got there at about 2 o'clock in the afternoon, which was where the client was based.

I: uh huh.

R: and and er, [name] phoned me up and said 'this is brilliant, this is what you need?' I said I can't make it work if it is less than that and it is quite tight in places but let's be realistic tight, ... my boss didn't find out until we had commissioned that 25 metres a second of air in the plant rooms haha! We had 20 metres in the riser haha!

I: Right.

R: haha! Erm so I hadn't been erm...

I: generous.

R: erm it did mean that, I mean the reason that we got away with the high velocities was that we had quite sophisticated attenuation where it came out of the risers and they thought I was being a right pain in the arse where I insisted they were completely sealed up acoustically.

I: Yep, yep.

R: But, we didn't have a noise problem on the floors. You can do anything if you design it.

I: yeah of course, and pay for it.

R: Yeah and erm would you use 25 metres a second today, probably not, but in those days, square metre-age was important.

I: yeah

R: and energy not so, erm and er, there is always...if you go low velocity, you have, you've got lots of space you take in a building.

I: yeah

R: and the difference between 5 metres a second and 25 metres a second is, is 5 fold increase in take of space.

I: yeah

R: but it's not as simple as that erm and, there there needs to a balance in this equation somewhere I I thought that balance would be...because it doesn't mean that because I am using high velocities it is not efficient, because if you can go circular duct I need less acoustics.

I: Yes

R: Erm, there is some research that was done in the states and the circular duct will absorb more noise and produce less noise than a flat, oval or rectangular.

I; yeah

R: so, if I have deeper voids and I can use circular ducts, I need less attenuation. And and I can more than eat the resistance of the attenuators by decreasing the velocity.

I: yeah

R: it its, and and that's the problem. When you get someone writing a piece of legislation that says you have to have one Pascal per metre net fan power, it doesn't allow design solutions that say, alright my ductwork is 100 Pascal's,

I: Hmm mm

R: if I went up to 25 metres a second and went to circular ducts, I could do that with 50 Pascals perhaps because I don't need all the acoustic attenuation.

I: Hmm mm

R: and I and, there is no rigour or science to that, it is just using numbers to illustrate.

I: Yeah]

R: and I think legislation needs to be careful that it doesn't prescribe design solutions that give you better results [sic]

I: yeah

R: and that's difficult, I actually think that they would be better to say that to a certain extent the hang up we had was that on the face of it building regulations are based on an energy consumption for a building.

I: yeah

R: but if you look at how that energy consumption was derived, if you go back to the 92 building regs that were the last ones that were the old thermal model. It said that if you had a u-value of this for a wall and a u-value of this for a window and this and this and if you constructed a building to all those u-values you are gonna consume this much energy.

I: Yeah

R: you converted that energy into a model and they said that's what we have to build and all they have done is taken some of that off each year. They haven't gone back and and said what what is achievable in a building. You can't model lighting realistically. I can put lighting solutions into a

building which would provide better lighting for less running costs but the the energy model in the building regs doesn't give me any credit for it.

I: Yes, so how do you incentivise people to do that?

R: You can't, they are either going to spend money that particularly if it is a commercial development where they are going to get more rent than energy, the only way you can do it is if you make, you either make it something that is morally necessary and energy is not on that agenda yet.

I: morally?

R: yeah, like what they have done with alcohol and drunk driving, it is morally unacceptable to drive a car when drunk these days.

I; but do you not think energy is getting on to the moral agenda?

R: not to any extent, erm, you you, pass legislation that incentivises not disincentive...

I: yeah

R: not penalise but incentivise so if you achieve this energy consumption, we will give you some money back, if you achieve this energy consumption we will let you build the building.

I: hmm mm

R: and you can't build the building if it less than that, but do it on a watts per square metre.

I: Yeah, rather than carbon?

R: Yeah, well you can do carbon, because carbon is just a conversion.

I: Yeah

R: I don't really care what value you use to measure the achievement, that's not...

I: hmm

R: but you need to be realistic about what you are doing and you know, following on, if you say er, 2000 kilograms of carbon per square metre per year is all you are allowed to for that building and and I design a building which has higher velocity ductwork that achieves that so my client gets more net let able but he is below your energy consumption, why should he not be able to do it.

I: Hmm

R: or if, if my client wants to go for gold and he says, the incentive is there if I put everything into this building I can make it really energy efficient and then I will get some tax break on it then that works for him. But the building regs are a minimum standard and minimum standards do one thing: they drive them to achieve the minimum standard.

I; yeah

R: and you will find ways round it.

I: yeah quite. So do you think er DEC's which exist just in public buildings at the moment introducing a DEC, or a DEC or similar kind of benchmark to a commercial building may, for instance there is an example of Green Star in Australia where it has been a kind of benchmarking system for commercial buildings that has been voluntarily entered into and actually it has set off a bit of competition between prestigious offices trying to better each other on the reputational value of being seen as green rather than being hit over the head, it was found that they were able up there rents...

R: I mean I know they have they do this social responsibility bit in their report...

I: yeah

R: How many of them have you read?

I: I have read some and they are always of dubious value...

R: yeah, but I mean, you read it because you are looking...

I: yeah, yeah, yeah.

R: for research. How many have I read? None. How many has the lady over there read? She probably doesn't even know they are there.

I: yeah exactly.

R: I mean, we went into erm a very very big marketing organisation.

I: hmm mm

R: Probably the top ten in the world.

I: Right

R: who know all out CSR and and marketing and incentivising people to work with them and all that because that is their business and we had their energy, worldwide energy manager in the office and he basically said we will pay the carbon tax, it is cheaper.

I: yeah

R: and he said I have got 5 million square foot of office in the UK. Some of it we own, some of it we rent some of it we have on long term lease.

I: Yeah.

R: but that costs me 500 million a year, carbon tax is 2 million.

I: Hmm

R: we will pay the two million; we will do a little bit of green here and there just so we can say we have done it but not hi phraseology but...

I: yeah, yeah

R: but if, if a marketing company has that approach,

I: yeah that is interesting, because you would hope that there is some market value in...

R: there is none.

I: Telling people you are green, some reputational value...

R: as long as they can put the right words in their CSR reports once a year, we spent a hundred thousand pounds this year on greening. What does a hundred thousand pounds do in 5 million square foot of office estate?

I: Yeah, Exactly.

R: and it's the the biggest projects I have done around energy are where I have been able to show a client a better way of doing something. SO we, I was doing some work and I was an apprentice at the time so it was a long way back.

I: yeah

R: and it was [client]

I: right.

R: [description of industrial process specific to client] reasonably big business.

I: yeah

R: But it was very energy inefficient.

I: yep

R: and this is in the days of having to draw graphs of things, and and it took me about three months and because I was an apprentice nobody really worried about this, it took me three months of calculating and tweaking and working and understanding but in the end I worked out how they could take the warm moist air of of that [part of process] and put it through that [part of process] to heat the new [product] and the dry heat off of that one could then go, and I can't remember all of the details but...

I: Yeah, but there is some symbiotic relationship between...

R: they had 6 or 8 [process machines] and by carefully timing when you started and stopped different [machines] you could use the energy over and over again. I don't mean that literally but it was quite I mean, when I took it into my boss, he looked at me like I had cracked and I said, and and and, [name] was a Scotsman and [name] would go through a calculation, run his his finger down it and tell you to the third or fourth decimal place that you had made a mistake.

I: right.

R: so he's... and he comes out and says 'your right!' so he says 'go away and do this and do this and do this and we will have another look', and we tweaked it and tidied it up and they took it to [client] and we did the work. They did not because it was energy efficient but because it saved them money.

I: of course.

R: and that's, I don't care whether you measure it in Watts or pounds or joules or kilograms of carbon, at the end of the day most companies look for bottom line. Erm consultant canst do the work because they are looking at their bottom line, client looks at their bottom line and says there is nothing in it for me, the government says this is the minimum standard; that's what everyone achieves.

I: yeah

R: erm it, it's frustrating.

I: no, it is.

R: I have designed so many energy use [inaudible] and then had it taken out because there was no money in a project.

I: But it is finding the , the particular level and whether it is like you say carbon, energy more often than not it is the bottom line that actually makes somebody think about it.

R: It's got to be an incentive. You are either gonna find a way of doing it on bottom line. I mean [catering company] who we did lots of kitchen for, we did seven kitchens and each one we did we did more efficiently than the last one

I: Right

R: to a point where we did the 7th one which was [project name]

I: Uh huh

R: It was running at half the cost of any kitchen they had in the world. Er and they viewed that as huge success.

I: Yeah

R: because every percent off their energy bill was a percent on their profit line. That's how tight that business was.

I: Right.

R: Er, now we did some things that you can't do now.

I: Yeah

R: But at the time they were accepted as being not unreasonable. So we used all of the low grade to pre-heat the hot water storage.

I: Hmm mm

R: er and I mean every single bit, at one point the highest utility bill in the place was the water bill.

I: Right, for a kitchen is quite something.

R: it, because what we did was, we took so much energy out of this building and put it into the hot water and things that we had to dump heat.

I: Right

R: and the way we dumped heat because it was never going to happen was we had plate heat exchanger where we ran mains cold water through it...

I: Right

R: and we had to dump that much heat that the water bill [inaudible]

I: Right

R: so we put a small cooling tower in and that solved that problem and the water bill went down.

I: Right

R: but it had half the square metre running costs of any unit in the world and that was achieved because we knew the client...

I: hmm mm

R: I knew his business, not [detail] or things like that we recycled everything we possibly could, we had and and you could do even more now

I: Yeah

R: but, and and if I was still working with the client we probably would cause they were, at the time they were taking their waste of site and putting it in landfill and stuff like that and it is pure organic waste you would put it through a bio digester and use that now but that wasn't a viable option then erm and and its, I, I, the, the, the commercial side of things have driven it to a point where that sort of a relationship just doesn't happen now.

I: So, I am conscious of the time, I am taking up enough of your time. SO a final question would be, if the legislative framework as it is, the landscape around legislation was to stay the same as it is, how would, what would in your view, be the best way of encouraging this communication and this recreating that kind of working relationship that you had that perhaps allowed you to do these kind of successful schemes?

R: I think, I think it does come down to incentivising.

I: Hmm

R: b because if, if a client, the person that is commissioning a building believes that he is going to get a reward for doing it right,

I: yeah

R: then he will use people who are going to do it right for him

I: Yeah

R: if those people are more expensive but he is going to get that money back then he will use them.

I: Yeah

R: If a consultant has slightly more time, and architect has slightly more time then they will do it right...

I: Yeah

R: Whatever right....

I: yeah.

R: and if they are doing it right, when it gets to the builder he has the, the skills to do it right as well because he has got the right materials, the right, I mean if you engage with him in the right way as well.

I: hmm mm

R: and that is about, I don't believe that frameworks and erm partnerships are necessarily the best way of achieving good relationships, I know that sounds bizarre.

I: no, I've ...

R: a framework makes people lazy because you know the work is there, you just have to wait for it.

I: Yeah

R: Partnerships mean much the same thing.

I: hmm mm

R: the way you building strong relationships is you work with people, you get them to trust each other and you get them to want the next job: if you do this one right I will look at the next one favourably with you and and, you build it that way, not, if you do this one right then there is another one in the pipeline...

I: yeah

R: not, there is another one in the pipeline regardless of what you do...

I: yeah

R: so I think there has to be some competition in it.

I: Hmm mm

R: and competition, I don't mean competition in terms of price, I mean competition in terms of don't screw me over on this, get this one right, make this one right er, deliver to you promises, er if we have problems and there will always be problems, I want to know that you are coming back to help me solve them

I: hmm mm

R: and and have the right contingency in projects to deal with issues because and it varies, if it is a new build building there is less excuse but there is always a junction that is not quite how it is supposed to be and you need a bit of money to deal with it.

I: Yea, yeah

R: it is not anyone's fault but it needs to be dealt with and it is not reasonable that the contractor should be asked to do it for nothing because he should have read all of the drawings it is not reasonable on the designers who relied on a bit of information and and, there is so much blame culture in it now erm...

I: Yeah

R: erm I mean, it's been sad watching the way the industry has evolved down to a pure blame culture now.

I: Yeah, I agree with you and the cost thing [conversation about pay, costs and ability to offer services]

R: I mean I say I don't like frameworks but they are a necessary evil in the market

I: hmm

R: because that, if you are not on a framework you are not likely to get work

I: Hmm

R: so like all practices, not my current one but previous ones we were on frameworks and I was on a framework with [local authority] which was a 4 year framework. [architectural practice] erm but it was, it included M&E, so we set up an M&E department...

I: yeah

R: and we were on it for four years and in the four years we took the original budget per square metre

I: uh huh

R: and we maintained it, we didn't increase it over four years and it was a reasonably inflationary period, we kept that cost per square metre the same erm, but we improved what we put in.

I: hmm mm

R: so we butted out the standard prismatic lights, erm cheap radiator, cheap this, cheap that...

I: hmm

R: at the end of the four years we were putting in a nice German luminaire with up-lighting dah dah dah, nicely designed bit of illuminance, we had nice, I am gonna say [company name] but they weren't, but that end of the market...

I: yeah

R: radiators. Under floor heating quite often, er much better control systems...

I: hmm mm

R: er [client] had a, a peculiar thing where if you put on a single class room extension they wanted to put individual boilers into them

I: right.

R: but we went for a good boiler and we used that boiler all through the county, and so we we improved the quality of the installation. We improved the environment, we decreased the energy but that wasn't because [client] wanted to do it, it was because the people that I put together wanted it and the challenge was to , if you've got, and we built about a hundred classrooms, a hundred bits of school each year

I: Yeah

R: and that ranged from one-off classroom extensions right up to a couple of primaries and two secondary schools.

I: Yeah

R: so quite a wide range of scales.

I: Yeah.

R: but we talked to manufacturers and we said we want a [client] rate for this luminaire...

I: Right

R: and we will specify you on all of them.

I: Yeah

R: but you have to give it to everyone.

R: and you had time to build those relationships?

R: yeah and the supplier had to believe that we would honour our part of it.

I: yeah.

R: and [client] were sort of slightly 'oh, we are not getting best value for this, how can we demonstrate best value?'

I: right

R: and there is an equal [inaudible], if they screw me, we go equal and approved, but they are not going to because there is too much work in it for them...

I: Yeah

R: and you show me where you can but a luminaire of that quality at that price because if I have got, if I have stuck for four years at that price, it's competitive

I: Yeah, yeah, definitely.

R: and this was in the late 90s so the prices weren't you know...

I: Yeah yeah.

R: So we had effectively designed down the costs per square metre...

I: and getting quality up

R: and quality up, now you can't do that all of the time but we had the unique position of being client and consultant.

I: Right

R: not many frameworks allow you that flexibility and that, that ability of talking to [client representative]

I: Yeah

R: er it, it's, that sort of thing though, repeat business and building on relationships, that allows

I: hmm mm

R: because county council's as clients don't have the the support infrastructure that they used to have, they rely more and more on standard specifications and standard specifications are either bomb proof or lowest common denominator, there there is nothing in the middle.

I: Yeah

R: and if you look at most consultants' specs of old what they did was the ironed out the problems they had erm in that process of standards and quality...

I: yeah

R: if you go to boiler plate or lowest common denominator you get neither of those

I: Yeah

R: and but that is what the industry has been driven to because the cost of maintaining a specification is high. And I don't know of any practice that does it with any real....

I: No

R: and it is about they, they teach architects and they teach engineers lots of things and, but they don't teach them, they don't ask them the question what's your building going to do in the real world, how is your system gonna work in the real world

I: Hmm

R: er what's going to happen when the kid gets hold of the radiator and uses it as a trapeze or

I: Yeah

R: and and I have got grey hair and thirty years of experience and you can't mimic that but you can get people to think, You have to know how you are going to get it to work not just what size it needs to be...

I: Yeah

R: and that true of the shape of the space, that's true of how you are going to heat it how you are going to use it, how you are going to service it

I: Hmm

R: all of those things need to be sorted out and people don't.

I: Yeah and that's one of the points of my research to try and kind of yeah make that happen better, one of ...

R: When I came back from [position at theme park], one of the businesses I looked at trying to get going and decided against was, I think I could save clients money.

I: Yeah.

R: on maintenance, in hotels.

I: Yeah

R: I knew a lot, I know a lot about hotels. I mean I have open 11000 rooms-ish

I: right, okay.

R: Hanoi, Ho Chi Minh,

I: hmm mm

R: er dah dah dah, er the problem is that a hotel operator will spend absolutely a minimum amount on maintenance so he has, if you've got a hundred room hotel you have probably got a porter that does the maintenance...

I: Hmm mm

R: and his remit will be when the light bulb blows out, go out and buy another one.

I: yeah

R: and he will buy the cheapest light bulb he can otherwise the general manager will give him hell.

I: Yeah

R: so in that environment how do you save client money?

I: Yeah yeah.

R: because what they have done, the first budget that takes any hit in any clients establishment is maintenance, is running costs. Turn the radiators off for a month, no one will notice and if they do, we will tell them we are turning the boilers on today and by tomorrow they will have forgotten.

I: Yeah

R: There is too much of that attitude. People buy a building and forget they are going to have to run it.

I: Yeah yeah.

R: and that's if if if you ultimately if you are going to reduce energy and you are going to reduce the impact of a building then you have to get to a point where you have educated clients. I don't mean

clients that understand what building services do or what architecture is but a client who knows that if he cuts his maintenance budget in half he is gonna pay for that.

I: Yeah

R: I mean at [theme park] I ran the [name] which was an 1100 room hotel for 6 months

I: Hmm mm

R: and in that 6 months my only, my priority task, we operated a maintenance data base system and my priority task in that 6 month period was to get that up to date because it gave me all the ammunition at budget time that I needed to go and say, I need more money.

I: Hmm mm

R: so it came budget time, there are seven hotels on the property.

I: Yeah

R: mine was the only one that had a budget it could defend.

I: Right

R: it had painting, it had dah dah dah.

I: Yeah, yeah

R: all scheduled,

I: Right

R: that's what [subcontractor] says I need.

I: Yeah, yeah yeah.

R: Yeah but why do they need less; I mean mine was like ten times everybody else's...

I: but there was a reason.

R: and I said I don't know that's what [subcontractor] says I need to do these things. You tell me what I don't need to do on this list and I will take it out, but if that's what, if you want me to maintain the show quality of this and the on stage experience of the guests, that's what I need...

I: Yeah

R: and I, I need the cast to support the staff to support err... and that is what the coputer is telling me.

I: yeah

R: but no-one else had bothered.

I: Right

R: and and it was the case of all their estimates were based on what developments said they would need

I: yeah yeah

R: and this is tender won, haha lets not really put the wrong number in their because we won't be able to build it.

I: Yeah. That's interesting. We have been going for an hour and a half actually which is far longer than I said I would be.

R: That's fine

I: perhaps we should stop there but I really appreciate your time and thoughts.

R: That's alright.

[ends]

1.18 Facilities Manager – Developer 18

Respondent:	Facilities Manager – Developer 018(R)
Interviewer:	Craig Robertson (I)
Location:	Respondents Office
Time/Date:	09:00 24/10/12
Duration	41:15

I: indicates the Interviewer is speaking

R: indicates Respondent is speaking

[square brackets] indicate explanatory notes, removed names etc added during transcription.

... indicates pause/break in speech

Transcription:

[recording begins with respondent signing the consent form and a brief introduction from I and initial question about R's role]

R: Okay, erm, I mean I have a number of different responsibilities at [organisation] but I suppose the one that is relevant to this is erm I erm, look after, er, I am responsible for our energy reduction and our sustainability across our existing portfolio.

I: Yip. What is driving that kind of aspiration to reduce your energy consumption?

R: Erm I mean I think there are three, there are three or four key drivers. One we want to do the right thing in everything that we er, everything that we do through or CR strategy but that we do through our business I mean one of our core values is we want to be, we want to d things with integrity ...

I: Hmm mm

R: and er, erm certainly we want to do the right thing. I think that there are er legislative and government drivers and er you know the government is has made climate change targets erm public and er legally binding targets and erm and as a result of that has introduced the climate change act and has also introduced the erm energy act and so there is the Carbon Reduction Commitment and the minimum energy performance standards and all these sorts of things basically government has flagged clearly that they see that this is important

I: Yep.

R: that it is legally binding for them and that they want to find ways, erm, so we feel that we can see that there's er, erm this will only get bigger...

I: Yeah.

R: and therefore we need to address it from that stand point but I think that we would be doing it irrespective of whether or not the er government were putting these things in place again our occupiers are er telling us that erm that er this is important for them. In our 2011 survey occupier survey, occupiers' survey, 95% of our office occupiers said that the work that we do in sustainability in er our offices they value and is important for them.

I: Yes.

R: er again, er the BREEAM standards that we erm that we set in our new developments [mentions colleague]...

I: Hmm mm

R: have been raised as significant reasons for taking space in our buildings and there is a whole range of er of occupiers through our occupier survey who have said that you know our BREEAM standards and sustainability standards in our new buildings is the reasons they have taken the space. Erm and there are I mean again I think our desire to reduce occupational, total occupancy costs for our occupiers is another reason, you know we can see that there are erm er, erm savings that we can make and that the more we can reduce occupancy costs erm the, the more possibility over time there is to increase rents. And the third key stakeholder group where er erm er the the that is a reason for us doing this is our investors.

I: Hmm mm

R: and er, [bank] talks of erm ESG, Environmental and Social Governance issues in the property sector as being strategic and central to the whole value proposition and I think you can see with er you know the environmental agenda if we weren't doing these sorts of things you know, although there isn't necessarily yet been proven I think more and more it is that there is a correlation between asset performance, financial asset performance and erm environmental performance of assets.

I: Hmm mm

R: erm but you know, I think that we can show through the anecdotal information that you know that we let our buildings more quickly, our occupier like it so we think you know we can, that it will over

time and I think that [bank] is saying that you know that investors are saying that you know 'we need our buildings to be environmentally sustainable' and at the same time our whole social agenda around community activity, I mean clearly if we are not engaged with the community it is going to be more difficult to get planning permission so all of these things lead us to to erm conclude that it is actually very important that we do all of these things and that it is central to the whole value proposition.

I: Yeah. Would it be fair to say that kind of the legislative and the guidance and the CRCs and all that kind of stuff is almost er by the by, I mean it kind of provides an aspirational backdrop in terms of central government stuff but it is the the kind of thing that you are doing anyway and you are going beyond it and sort of ticking those boxes is something that happens...

R: er I think I mean I think that, I think that government, government's role in this is important and I think that there is no one single thing that actually necessarily causes it to happen but I mean certainly the introduction of CRCs created more interest from occupiers

I: Right

R: and and erm and so perhaps the interest from occupiers has in part been driven by the fact that they see the same legislative imperative that we do and and certainly the message that we give erm government is 'don't take your foot off the gas on all of this'.

I: Yeah

R: erm because it, because it is imp...and I suppose the other, the other key thing that ultimately erm I am interested to see happen is at the moment these things are largely, these things are largely driven by government legislation and erm and then you know we've got erm, we've got investors and occupiers, customers, also saying well you know this is also important for us...

I: Uh huh.

R: but you know in Australia erm, erm now it, it, through the operational rating in buildings.

I: Hmm mm

R: erm occupiers are actually saying you know 'we will only occupy a space with an operational rating of of four and a half stars, a NABORS rating of four and a half stars...

I: Yeah

R: and that is, is, is resulting in minimum standards being set by occupiers which is driving landlords now to be greening their buildings ...

I; yeah

R: and so there is much more market drivers in Australia today than ex, that are explicitly exists today in the UK and I think that is where we really need to focus.

I: yes I think the Australian system is a bit of an anomaly in that it seems to be entirely market driven initially.

R: Yeah.

I: Erm on one of your blogs you did talk about the kind of – and I think [name] made a comment underneath about the position that you are in between the occupiers energy use and the landlords influence on that and the er issue of DEC's being split in a particular way which may give occupiers this influence or this kind of lever on their landlords to do that so I suppose you are probably in a an awkward... a position as a developer/owner/landlord that is more complex than perhaps the legislation or the guidance takes into account?

R: I think., I think that I mean I suppose that one of the reason for blogging is is, I think that the thing that particularly is not, very, that that is becoming clearer but certainly was very hazy two or three years ago was actually 'who has, who actually has responsibility and influence for energy reduction in buildings'...

I: Hmm mm

R: and I think this is reflected through all sorts of things, erm through the green house gas protocol and the way that it is applied in multi-let buildings there is no, there is no consensus currently

I: Hmm mm

R: what is scope 1, scope 2 well, basically the the boundary between scope 2 and scope 3 between erm, I mean I think it is pretty clear that erm energy directly consumed within an occupiers own demise is, is really occupiers have far more influence

I: yeah

R: and therefore it really is their scope 2 and not our scope 2....

I: Hmm mm

R: But then I think you know erm there is, there, I think that there needs to be far clearer understanding around well where does the landlord actually have influence and it was through the work we started to do when we started to do when we started actually to put metering in buildings and how do we actually want the boundaries to be set for landlord and occupier and actually how can we actually start to achieve these reductions? And it became very clear to me that in offices, really through the work that [monitoring company] have been doing in [location] and I think it, all the learning that I have erm derived has really come through the [location] experience.

I: Right

R: and and so, and I think it is , it is...here in the UK I mean I accept that er, I mean in Australia there are there is more conformity around the way that HVAC is, is delivered in buildings, er there are more modern buildings, I think also the fact that the NABORS scheme has been in place for longer has actually driven standards more er erm you know to central HVAC and erm and er, here in the UK there are far more erm variants, variances around actually how HVAC is delivered and so I think there are you know it is fair to say there is er at in some buildings it is not always clear cut the extent to which it is actually the landlords influence.

I: Yeah

R: But I think in a building like this...

I: yeah

R: where all...throughout all of our stock where we have central erm HVAC erm you know I'm convinced that that the landlord and building manager has significant influence, much more influence erm than the...but in some senses one that, whether or not...and I think this is perhaps [name]'s point that one doesn't necessarily need to well the occupier clearly has some influence and the occupiers clearly you want, you want the occupier to put pressure to bear on landlords to, to reduce energy...

I: Yeah

R: but I think the fact that [name] is sort of saying that occupiers can put pressure to bear on the landlords sort of also concedes the point that actually the landlord...

I: Ah no, I think that is exactly what he did say in a kind of roundabout way...

R: yeah

I: sort of backed up your position.

R: Yeah and the thing that I think I feel most uncomfortable about with DEC's is the way, the way the methodology works where basically they seek to allocate all the common parts and erm and central HVAC back into an individual tenancy DEC...

I: Yeah

R: and the fact that there is no landlord DEC because it's it, because it then actually lets the landlord off the hook.

I: completely

R: and if you look at the Australian system with the base building erm er energy ratings scheme you know the landlord and that is the basis actually which is now driving erm letting in Australia, it is not the tenancy NABORS ratings, it's the base buildings that is actually er driving, driving standards...

I: Yeah

R: and so that's where we've really got this gap here in the UK, erm and so I think that, that there needs, that there, there needs to be far greater understanding and and I think actually the more that...I think against you know the likes of [name] and others sometimes are perhaps unwilling to sort of make it seem like a sort of very straight black line...

I: Yeah

R: and they want to have shades of grey because there are and there is clearly nuances around influence.

I: Yeah

R: But actually what we need is some clarity in all of this because there isn't sufficient consensus increasingly there is, I mean in the [industry group] this time last year I was saying to all of the other landlords - you know the [industry group] has 13/14 landlords...

I: Yep

R: in London, and erm I was saying that central HVAC has you know it should be the responsibility of the landlord and most of them said 'don't agree' particularly [large landlord] was saying 'don't agree' and it was only in December last year when I started to show them the sort of impact that we were having and the reductions that we were achieving and that we really needed to have a landlords energy rating that they all agreed that that we should bring common parts and shared services and now so that the landlord energy rating erm pilot that we have got going you know we have stipulated a specification er which [company] and [name] actually led...

I: Hmm mm

R: So we now have a landlord energy rating erm specification and we are now piloting that and we are at the second phase of this project...

I: Yeah

R: and erm er we are now piloting to see the extent to which other landlords actually can provide the sort of data so that we can actually start to see landlord energy ratings, I think we may well find that one of the problems in the UK is that there is going to be insufficient clarity around the way that the metering has actually been installed in buildings...

I: Yep

R: so it's, it's, it's gonna...provided we have got two or three landlords who can show that it works then hopefully it will start to create an example and will start to drive a standard

I: and generate a bit of momentum...so the kind of m that leads us on quite nicely to the the way that you are going about finding out this information. So you have got a metering strategy and you are actively managing that, I think active management is the word you used, can you talk a bit about that? What active management, what information you are using and how you are kind of finding out the fact that this landlord's influence is such a factor in the energy consumption?

R: erm well I mean I suppose the, the thing to say is that erm the metering erm partner that we work with [name] actually provides a erm erm off site erm service...

I: Hmm mm

R: er to where they are actually reviewing the data for us erm and er and and where they provide guarantees but the way, they way that, they provide guaranteed savings that enable us to recoup the cost of the investment and the fact that they are providing, they fact that they are providing guaranteed savings means that they need to have a robust process in place because if they are providing those guarantees they need to ensure that the savings are actually going to be achieved.

I: of course.

R: so the way that they, the way that they do it is you know we have got the data online, building management engineers can actually see the data [management company] in Australia can see the data. {management company} is looking at our buildings on an ongoing basis and identifying opportunities for savings and so the way that we, they produce a report that for each particular observation, they show the observation graphically to show actually what the opportunity, to show what the anomaly is.

I: Hmm mm

R: they then show er what the opportunity saving is on an annual basis...

I: Right

R: In financial terms ...

I: okay.

R: and also in kilowatt terms and then they said but we don't necessarily understand completely what the issue is it, it may well be that they find that there is a three kilowatt constant use in the building and they know that the building isn't occupied 24/7 so they say but they don't necessarily, they have across their metering, across the metering in every building they have a er, a metering tree that shows for each meter pieces of equipment that actually...

I: Right, like a TM22?

R: they have an inventory of all of the, of all of what's off all of the meters.

I: Right.

R: but they won't necessarily be able to isolate exactly what that usage is so then the engineer is then tasked to go away and to find out what it might be and it may well take the engineer several weeks to find that out.

I: Yeah

R: and erm but then as a result and in that particular instance it was found to be a fan constantly running in the er kitchen here.

I: Okay

R: erm and so, again it may well be that erm, you know, they will find that erm the heating is on constantly and they will they'll are raise this with the building engineer will then go along and say but the BMS is telling us that the heating is not actually on so then actually find that there is a faulty erm sensor with the BMS that has not detected that the heating is on so we can then replace the sensor so the way it works they, now email us over these observation as and when they happen we then have a monthly meeting with erm, with [monitoring company] and with the building engineer where all of these observations are identified and where they either close them down and [monitoring company] do not close them down until actually the building engineer has either said look we can't address this because the occupiers are saying you know we need to have the plant running at five in the morning. But otherwise these things remain open until, until...

I: Okay.

R: until they are resolved.

I: and the anomalies that they are identifying, that's against a benchmark energy consumption? Or a kind of calculated predicted? Or what is the ...

R: er the anomalies the erm, the anomalies, for instance some of the other anomalies will be looking at erm occupation, so for instance they will see, and in some buildings they won't necessarily have access to the erm er, security gates as to who is coming in and out but they can see when the lifts for instance are operating and the can see when the lifts aren't operating and that the lights are off on most floors and that for some reason something is running.

I: Right

R: and so they can typically detect erm er out of hours activity will be, will be either detected because it is out of hours or because they will see that there isn't occupation within the building erm and yes there will be some benchmarks that they have established around chillers and things of that nature through the discussions...

I: Yeah

R: Typically things are erm are you I know the understanding is derived through conversations that take place through these monthly meetings where where the building engineer is telling the [monitoring company] analyst look we have these chillers and they typically, this is the strategy of how they come on and off and and er ,a and so, it is, it's true on that basis that they can start to understand what the base line should be and [monitoring company] will then be liaising with the engineer to explain that erm you know perhaps you ought to be reviewing your erm your chilling strategy in terms of when these chillers actually come on and erm...

I: so it's more like a grounded understanding of the building that is built up over constant analysis rather than sort of a kind of remote benchmarking?

R: it is and I think that is the strength of all of this.

I: Yes absolutely.

R: the, that actually there is no substitute for actually getting into the detail and once you get into the detail er, I mean it's incredibly powerful when you are sitting here in erm er with a list and you've got a conference call with them in Australia and we've both got the er things up on the screen...

I: Uh Huh.

R: and er, they are telling us from several thousand miles away you know what they can see and where the opportunities arise...

I: Yeah

R: erm but but they are also learning through the discussion that is taking place so it is an iterative process, it is about actually going into detail...

I: Yeah

R: It is about understanding that you have to spend time on this constantly and I think if again one of the challenges is once you have actually achieved your 25 30% reductions and you are paying [monitoring company] 15 thousand pounds a year and you know, people start saying well you know well we have achieved the savings and we are paying this 15 thousand pounds a year well we should stop now.

I: Right.

R: erm and erm and it may well be, I mean certainly there is a process where engineers become educated through this process so our engineers now are much more conscious about what they should be looking for.

I: Yeah

R: erm but whether or not you do it through educating your engineers and educating them on sight or whether or not you have a continued off site service you need, you need constant monitoring.

I: Yes. You mentioned earlier the the guaranteed savings. I am kind of interested in the whole field of feedback and particularly Part L as built and BREEAM as built coming in the idea that erm an understanding of how a building is going to work is gonna have to go all the way back design team being able to understand this and almost guarantee a performance out of a building. Who... the guaranteed savings from [monitoring company] was that something you imposed on them or that deal or was that something they offered you to...

R: It was erm it was always important because I think they may well have volunteered it, they may well have said they have done it in Australia.

I: hmm mm

R: but it was always clear in my mind, we went out to tender to three, to three suppliers and it was a requirement that that guaranteed that they would guarantee the savings because we were looking for a way to recover the investments costs from occupiers and I knew that we would not get occupiers to agree erm to , to recovering the costs if there wasn't some sort of guarantee so you know the way it works; [monitoring company] will typically guarantee 10-12% savings, annual savings over the course of two or three years...

I: Yeah

R: and typically they will then save in excess of 20% and then if they don't achieve those savings they then have to pay out of their pocket they have never paid out of their pocket...

I: Right

R: erm er but those guarantees were very important because ultimately when I went I had to go to each occupier in turn in all our buildings...

I: yeah

R: and I had to give them sort of a er no lose proposition and even in those in some cases you got scepticism and they said well you know, what's in it for you and er...

I: Yeah.

R: and I suppose the one thing I didn't say in term of why we do all of this, ultimately we want to green our buildings because we do think it will increase value...

I: Yeah

R: er so, so that guarantee was critical.

I: yeah that was my next question, how, how, how you persuaded your occupiers to take on this responsibility or to share some of this responsibility but if that's the guarantee then...

R: yeah, well I mean it was, I went and saw each of them in turn...

I: yeah

R: er we met with them, we explained the [monitoring company] process, how it would work. Erm we basically had to give erm, we had to explain how the costs would be apportioned and allocated within a building, how the costs would be, how we would seek to recover the investment costs but the we had to give them er comfort that it wasn't in any way going to impact on the operation and it wasn't going to create any disruption...

I: Hmm mm

R: and, er and I suppose the other thing is that in most cases I had been speaking with occ...because we had had environmental working groups in place for two, two years or so, so I had working relationships with these people already.

I: Yep.

R: so I wasn't going into them cold and they knew that we were looking at ways to try and look at energy reduction and typically there were quite high levels of scepticism from most of them erm but on but basically on the basis that we said look we will guarantee this and we will run it completely transparently and we got acceptance to do this in all but three buildings erm and one of those buildings basically has got 15 or so occupiers and they are mainly sort of financial traders and it is quite difficult one to actually be able to get in front of the right person in the organisation erm and then one of the other buildings basically they, one of the two occupiers said look the savings are just not worth getting out of bed for...

I: yeah

R: it was, it was a, despite the fact that we were going to make savings for them and erm...

I: yeah is they are making whatever it is a square metre...

R: yeah

I: You know saving 5 quid a square metre is... er we are talking mostly about er systems, energy systems, HVAC and systems one of your blogs explored the issues around retrofit and the

improvement in energy performance that that can offer, does your monitoring strategy feedback loops, does that apply to building fabric in any meaningful way?

R: er one of the things that we are currently involved with is a TSB study which [name] is actually running at [location] erm where he has whatever the piece of equipment is called outside that basically gives air temperature but also he has been looking at, because one of the things is around shading and erm glare and all that sort of thing so he has been looking at and the extent to which actually it brings, the HVAC systems actually kick in as and when the sun starts shining into the buildings and er start to understand whether or not there are any deficiencies with the façade erm but also to start to understand whether the HVAC system actually responds as, as, as efficiently as it might.

I: Hmm

R: so we are looking at it in that building but we are not looking at it in any of the other buildings.

I: But there are kind of lessons to be taken from, I mean I don't know if you do kind of comparisons across your portfolio with bits of data and basic building characteristics sort of your buildings with floor to ceiling glass, south facing floor to ceiling glass have higher energy costs that perhaps your more solid façade buildings whether you do that sort of...

R: We haven't done much of that in some senses that is clearly an opportunity...

I: hmm, hmm, er okay. Um...

R: but what we do, again I mean what we use systems for is you know we have done quite a lot of lighting replacement and particularly to justify costs and investments to er, to occupiers erm we can you know, you know we can say to them up front to them this is what we expect it to save and then we can demonstrate to them what it did save...

I: yeah

R: and again where suppliers come into us and say look, try our new piece of kit it will save you X well we say okay, and in one case we found that it didn't save us X so we said look take it out, it hasn't actually delivered. So it enables us to actually to validate er, erm savings you know sales erm assertions.

I: Okay and I am aware of the time and grateful for you spending the time with me, my final questions is perhaps, one of things I am looking at is the barriers that exist in industry to preventing people erm collecting data and actively using it to change designs or management strategies, it sounds like at [R's organisation] you have managed to overcome a great deal of those barriers, um but is there any, I wondered what you thought about any major impediments to actually rolling this out?

R: There is loads...haha

I: haha

R: erm, er one: there, there's a sort of culture...

I: hmm mm

R: between building design and erm well particularly at building design of sort of almost ticking boxes around metering around, and is it Part L you know specifications I mean typically you know one we find if we follow Part L guidance that we end up putting far more metering in that we actually need to put into a building.

I: Right.

R: What [monitoring company] have found is that you can put far less metering into a building ...

I: but still get the kind of insight that you need to make these diagnostics...

R: Yeah.

I: right...

R: and and so what what typically used to happen was we used to flood buildings with metering...

I: Right

R: designers would say 'ticked that box' then they were never used; they were never ever used...

I: Hmm

R: and so we had, even we had thermal metering in buildings and it was never properly commissioned because they were installed to meet erm BREEAM excellent standards or whatever it may well be but then there was no understanding, well why are we actually installing this stuff and what can we do with it so the building engineers well they never used it.

I: right

R: erm there were there was there was no erm emphasis, direction from the landlord to building management that managing buildings efficiently was important so building engineers ignored erm the implication, the cost implication particularly in building and they just focussed on comfort.

I: yeah.

R: erm and so as a result you know, there was no, there was no imperative, there was no urgency to look at managing buildings efficiently erm and and so there was levels of understanding as to how you do this...

I: Yes.

R: erm and and so there was levels of actually having to educate building engineers as to how to do this. With the commercial decision making. erm asset managers the commercial peoples view of metering was it is a cost and they don't see it as something that can actually derive benefit...

I: yeah

R: and so when you come to them to ask them to install things of this nature typically their answer will be no, what is the value of us in doing this. So I think there you know the the challenges in , in finding ways to get asset managers actually to invest in this stuff, added to the fact that you invest in this stuff, you make the savings, you don't actually derive, there is a split incentive, you don't derive

any of the benefit, occupiers derive all of the benefit, so. Then there is the other issue that where you go into multi let buildings and existing buildings and you want to install this stuff if you follow the service charge code you typically need to get consent...

I: Yeah

R: getting consent across huge numbers of occupiers is very challenging and typically and so, and it is very time consuming, it took me 18 months really to go around all of our occupiers and to get them to install this stuff er, so I mean there are all sorts of issues around, and even in new buildings erm where you install this stuff, you know again the view is this is just a cost and typically we were installing this stuff to meet BREEAM standards to enable us to get BREEAM excellent erm but there was never, there isn't an understanding as to really what all of this can generate, what the benefits are.

I: yeah

R: erm and again then there is complete, erm haziness around er who is responsible and how do you make this work in a building between building management and occupiers and that is why I think that and and and yet none of this actually is very complicated.

I: yeah

R: but, and because there is so many cooks and you know and there's that and you know there is no consensus around where responsibility lies and everything else and government hasn't really provided much direction around this and they have sort of, you know some of their initiatives are at least encouraging reduction but they don't, they don't really understand the importance, particularly in management...

I: Yeah

R: and you know their focus around the green deal has really been about installing erm erm plant and infrastructure whereas you know it is much more around management so there are also issues around erm you know basic, I think what it comes...generally across the whole piece is there is little understanding as to how to do this and what the benefits are and I think the other thing is there are there aren't market mechanism to encourage this because of the split incentive...

I: hmm mm

R: erm so I mean all those things...

I: so kind of having trumped that with a kind of guaranteed savings for your occupants...

R: yeah

I: and having persuaded them through that mechanism are they now coming back to you and saying 'brilliant'!

R: yeah they do they they and what we are doing more and more with them because again a lot of the stuff that we were doing in the base buildings was just in the central HVAC and common parts but we can also identify where their BMS is actually conflicting with us...

I: right

R: and so we are now at, we are and we can also have discussions with them around reducing operating hours or where they are actually calling on central plant to cool a small part of the building where they may well have their own dedicated cooling that they don't turn on because they don't need to, so we are having all those sorts of discussion now with them...

I: Right

R: in terms of how they can make their space more efficient.

I: Right, so is that making kind of future implementation of this in other buildings easier because you have got this wealth of experience...

R: yeah it erm, but again it's there are also I suppose big issues around the fact that in multi let buildings and in the UK the general principle is that each occupier should be able to control their owned temperature and so as a result typically each demise has its own BMS, has its own engineer...

I: Right.

R: whereas if you look in Australia...

I: hmm mm

R: they have one system erm enshrined in the lease are er contractual er temperature settings that...

I: Right

R: that will actually be delivered across the whole building...

I: Okay

R: so there is no need to have erm, so it's much more inefficient in the UK and then when one starts to try to unravel it to try and make building more efficient you have got very many different entrenched interests...

I: yeah

R: and people who may well worry about the fact that they may well lose their job and so are actually quite often erm you know put obstacles in way to enable you to...or they may well feel that actually if you start showing reductions in a building that it may well show them up...

I: Right

R: so there is all sort of, er complex reasons why I think all of this, why I think it is actually very problematic and even today for us, er, even having achieved all of these savings I haven't got to the point here where we can just, I mean we still have to continue to justify these things financially...

I: of course

R: and erm because w don't derive direct financial benefit from all of this I think we do a lot more.

I: Right

R@ erm so that's one reason particularly there is two things I would particularly like to explore one is actually trying to get this landlord energy rating actually embedded so that it becomes market requirement and er you know it was government that sort of really drove that in a sense and said occupation look you won't occupy, we won't rent a building unless it meets a certain standard I'd like to see that happen more in the UK. The other thing is whether we look at all inclusive leases. I have discussed it here and where actually we include the cost of provision of heating and cooling and things in the rent and the surveyors here erm have all sorts of concerns that it that it would not necessarily be recognised in the valuation process...

I: right

R: and that you know we may well be generating more income but because it is potentially more risky income whether or not we would actually derive the same yields, erm and when you then come to sell a building because it is, it's not the norm and other landlords will see it as risky and they don't understand it and so there are issues around trying to move the industry where you know, yeah.

I: But it sounds like you're...

R: making progress...

I: well on your way to solving a lot of those issues. OIO am conscious that it is coming up for 10 o'clock.

R: That is great thank you very much.

I: I really appreciate your time.

R: Pleasure.

[ends]

1.19 Facilities Manager – Local Authority 19

Respondent:	Facilities Manager – Local Authority 019(R)
Interviewer:	Craig Robertson (I)
Location:	Respondent's Office
Time/Date:	14:00 24/10/12
Duration	46:02

Transcription:

[begins with I describing his research and asking R to describe their role]

R: I am head of facilities, erm basically what we have done over the last couple of years is in terms of developing category management plans that encompass facilities management, property management, utilities er managed services and when I say facilities management that is the hard stream and the soft

stream so effectively we are now acting or we are working as a corporate landlord in terms of the landlord tenant type relationship...

I: Yeah

R: but the reason as well that we amalgamated the two under one single portal was to ensure that there was a clearer understanding in terms of the property management guys talking to the FM guys...

I: Hmm mm

R: so if they were going to undertake work on a building you know they could merge together to understand the complexities of that building in terms of leasing and in terms of landlords, in terms of licences, in terms of the property management aspect in terms of the longevity so there was closer working and also within that group are our energy management team because this is all run through [private management company (PMC)]...

I: Right

R: so [PMC], we went to the market May of last year and the contract was awarded and actually operated from 1st of October last year, so it has been running for 13 months now.

I: Right.

R: Yeah. Not been without its issues erm but you know like any contract of quite a large size like this you are going to hit those issues and its really, cultural alignment is one of those issues. I think within this contract as well we have the ability to procure energy...

I: Hmm mm

R: because we had a company called [Company Name] you may or may not have heard of them, part of [local authority]...

I: Yeah

R: That contract came to its natural expiry September of this year, but in, while we looking at procuring this contract we wanted the all encompassing package and [PMC] had recently bought an energy company called [company name] although they had erm energy awareness and energy teams because they also bought [second company name] er which were really a tech... well they were an energy company a French energy company...

I: Hmm mm

R: so to cut a long story short we went through the procurement route through [company name] because a: the whole modelling of that was probably 50% cheaper than the [second company name] model...

I: right

R: and also it was slightly changed in terms of the way they accrued savings er there was an incentive put in there for them in terms of probably a form of gain share...

I: Right

R: and also on the top of that, probably riding on the back of that is installations of energy performance contracts...

I: Right

R: and capital investment as well by [PMC] in terms of schemes and we are looking at our top fourteen energy consuming buildings out of our portfolio which probably and don't quote me verbatim on this but the top 14 probably consume about [figure removed] of our energy so that is why we are focusing into those areas and then we will go further down the route. I am going to jump around just a bit because I know you asked me the question 'what's my role'...

I: yeah

R: and that really is it's a strategic level but I do get down to operational levels as and when required...

I: hmm mm

R: because obviously we have issues on a new contract: number of operational issues so we have to come down the chain just to sit and understand that. If we focus into energy, energy is obviously a big driver for us...

I: yeah

R: er, our energy spend is in the region, when we did the analysis and again these figures just need final verification but was in the region of [tens of millions] of pounds....

I: Right

R: for the consumption profile year 10 -11 and we are going to use that as a benchmarking year you know for doing...

I: Right

R: all our portfolio changes because we are going through a major property transformation as well which will obviously impact because of new ways of working so the building stock will change in terms of we will be selling off a number of buildings but likewise we will be increasing the density in a number of buildings as well.

I: Yep. And sorry, the benchmarking year is that the first year of that [PMC] contract?

R: Yes, erm the [PMC] contract, yes it is just for easy purpose that aligns that, yeah, yeah. So what we will do once we have got that energy data finalised and that's more or less done now that exercise we can then start closely looking at our building stock in terms of monitoring and targeting

I: Yeah

R: developing energy strategies for each of the buildings, so we know what the base load is for each of the buildings and then we can monitor and target against degree days.

I: and what are you, what is driving your targets, is that a?

R: two things, a: our commitment in making the environment much more palatable, better control, better insulated buildings...

I: yeah

R: but the other thing that is driving it is probably the CRC.

I: Okay

R: so in terms of, I mean this year we are paying 12 pounds a tonne per CO2 of emission and we just paid 1.15 million for that...

I: Right

R: For the pleasure of using energy...

I: yeah

R: and obviously, and I have just done a paper on this, how it is going to impact and just give some broad outline for our senior leadership team and directorate leaderships team and the prediction is you know based on best knowledge etc at the moment, just keep numbers round, our energy, now we have just procured it we have procured it for around 20 million...

I: Hmm mm

R: but by, after three years, static situation it will go up to 30 million.

I: Right

R: you know that is the prediction and within that figure I have included the er 1.1 million at 12 pound a tonne for CRC...

I: Right

R: but in three years time we predict you know probably 16 pounds per tonne.

I: Right

R: so there is a drive obviously to reduce our consumption, to reduce our tax because that is what it is at the end of the day...

I: yeah

R: It's a tax. Er. And likewise you know if we look at it as public money at the end of the day we are custodians of the public purse and we have got to spend public money as efficiently and effectively as we can...

I: Yeah

R: so that is the drive on that. So you asked me there were two areas I am looking at, the CRCs are the main driver...

I: Yep

R: and I suppose the other driver, you know driving down costs but is image.

I: hmm

R: you know we have to lead in terms of er we are a public body and we have to lead by example. So to do that leading by example we've got an overarching corporate emissions strategy...

I: Right

R: but within that are a number of umbrella strands and the strand that I operate most closely in is obviously within the built environment.

I: Yeah

R: because is we then look at that you know we have the offshoots in terms of street lighting you know road sign lighting, vehicle fleet etc

I: Uh huh.

R: now that comes under the corporate emissions strategy overall

I: Hmm mm

R: but as I say my focus is on the built environment.

I: So that financial planning is presumably tied into the energy reduction targets you are doing?

R: Yeah.

I: And also your performance contracts that you have tied in [PMC] to?

R: Yes, yes, yes.

I: So they are...

R: The energy performance contracts are, er are at the, er what stage, we are at the what we call the CMA stage, which is the cabinet member action and basically what that means is any major change that we are going to introduce has to go through a due process in terms of audit, in terms of compliance, in terms of governance the proposal is put forward, the paper has just been drawn up, we are just doing some final verifications on it then it will be put forward to what we call our operations board er, they will either approve it, well after questions...

I: Hmm mm

R: generally the ops board will raise a number of questions...

I: Hmm mm

R: they are then answered, once the ops board is satisfied because it goes through various changes, various legal implications in terms of what they call the monitoring officer which is financial regulations and then the [specific organisation code] officer, which is the legal implications so we ensure that everywhere is covered from a due diligence point of view. SO because that links into, I don't know if you are familiar with government contracts, how they operate?

I: Yeah, I am, I am an architect...by trade.

R: Right, right, I won't teach you suck eggs on that one then Craig, but you know when we go to the market place on OJEU and procurement processes...

I: Yeah

R: so what the CMA really does because they are documents that can be released into the public arena also under freedom of information you know we have to ensure that everything is covered in that aspect and that we have gone through that process.

I: Okay, of course.

R: SO that is where we are at. Now, terms of the energy performance contract obviously that links [PMC] into a relatively long contract but the contract the [PMC] have is a ten plus five year contract anyway...

I: Right

R: so that gives some dimension of you know partnering collaborative working etc...

I: an opportunity to build that culture of how people work together...

R: Yeah, yeah exactly.

I: So prior to this energy contract, did you have an energy monitoring strategy?

R: We did but I think it never really took off.

I: Hmm

R: er and I think this is now a goal... because we had an energy team that was directly employed by [R's organisation]

I: Right.

R: and at the moment that energy team is now transferred under [unclear word] to [PMC]

I: Right

R: but they have the bigger arms of [PMC] if you like in terms of going into other areas of [PMC]. If I have a problem with the energy team it is getting them to understand what I want them to deliver.

I: Yep

R: and what I mean by that is that I want an energy strategy for our top 14 buildings and utilise that strategy going forward that actually anybody can pick up and understand how that building is going to operate.

I: Right

R: It's there but not fully there. When I say it is not fully there what I want to establish and they always tell me how hard it is but I have been an energy engineer myself so they are not pulling the wool over my eyes and I don't mean that as it sounds but all I am after is very simply is you tell me the base load of these buildings, what our minimum energy requirement is and then and I just want

how we are going to monitor and target the degree day activity.

I: Right

R: You know we don't have a lot of cooling in our buildings, but you know when we get into winter months and the slope of the graph and we can then monitor and target and predict and do some forward thinking they just don't seem to grasp that for some reason in terms of providing that information back to me.

I: Right, so what sort of information are you looking for to meet those outcomes?

R: Well, really, basically from there, I want, if we just take this complex [indicating the building the interview is taking place in – a circa 60's municipal building with piecemeal upgrades] right, I would say, I want them to be able to say, an ambient of 18 degrees Celsius our base load is x...

I: Yep

R: Right, for each degree day difference whether it be up the scale or down the scale if we are going to include e cooling it will impinge on your energy footprint by y. quite simple.

I: hmm mm

R: So on that basis I can say 'right, so for every degree day difference my change or my energy consumption profile will be thus and the cost that comes out of that will be this'.

I: yep

R: and as a consequence of that I need to be able to budget and I can allow for the rational that supports that. So, for arguments sake, if we are going up and down the slope in terms of the scatter diagram...

I: Hmm mm

R: you know if they some activity that's going off the y of course $mx+b$ the old slope of the graph if I can remember rightly, going back a bit here. But that's really what I am saying Craig, just to ensure that we monitor the way that slope is moving.

I: Okay. And presumably from an investment point of view at some point that will justify a refurbishment of the fabric or?

R: yes, well there, basically there are two things this is my philosophy: insulate first, control second.

I: Right

R: and then third, perhaps introduce behavioural patterns but I have tended to discount that...

I: Right

R: and the reason that I say that is because at the end of the day the mindset is; there is a little switch there [points to light switch] that says 'turn off this light when you leave the room'.

I: Yeah

R: when I came in here I didn't turn it on...

I: Yeah

R: So whoever left it on didn't even read that so the point I am making is that as much as we want to try and change behavioural patterns, because it doesn't actually impact on that individual, it does overall but not individually, they don't bother turning them off and I think that is the most difficult part. SO my philosophy is we control as much as we can rather than rely on...remove as much human interaction as we can.

I: Right

R: But then there is a cost involved with that so everything would be done on payback. You know if it's going to, 36 months is a normal rule as we know, anything beyond that and we might not consider but I think probably because of the way energy is becoming more and more volatile in terms of pricing and in terms of the green issues and in terms of the political arena you know probably we may extend that payback period.

I: Right

R: Other regions, not just cost but you know the political impact that it gives as well because we will have you know, members of the community contact their local councillor, it comes through and we have to respond.

I: Yeah

R: so...

I: and are you limited by the 5 year political cycle...

R: Yeah, yeah, that's it, got an election next year so the politicians here are going to be wanting to obviously get their candidates on their sides, they want the votes basically so er you know, no, I say won't have any rocky boats but yeah, it does become quite political in saying that, er our member, councillor [name] a very focussed individual he has seen what we are doing in terms of the energy arena and he gives it whole backing, puts a number of challenges in which I would expect erm we have the, not always, but we can respond to the challenges which is good for him because it gives him that level of comfort that his officers have investigated, undertaken and reviewed and done what they have needed to do.

I: Yeah. And the er, this is perhaps something that you may not want to get into but the energy performance contracts and monitoring stuff...

R: Yeah

I: Having outsourced your you er ...

R: Yeah

I: to [PMC} does that allow you to apply some sort of er, punitive is perhaps too strong a word, but...

R: no it is because we do it through a key performance indicator

I: Right, which is what?

R: Which is, there are two key performance indicators if we look at energy and one basically is to ensure that the...because we have got a mixture in terms of the way we monitor or the way we get our readings, because we are not fully A+R we have got half hourly readings, there shouldn't be an issue there but those non-half hourly readings where it is not via telemetry or whatever erm in past we have tended to, usual thing, to overpay.

I: Right

R: on estimated, you know because it is always in the energy companies remit to charge you more. So part of the KPIs is to target in on that monitoring in targeting much more closely, I won't have any tolerances from half hourly meters because what we actually read on the day is what we are actually pay for. Straight forward.

I: Yeah

R: er but we've, I have reduced the tolerance band because the research that we did over the last few years, we were over paying by as much as 25%, I know you get the money back at some stage but why should the energy companies have it...

I: In the meantime.

R: Yeah, we could be doing something with that money in terms of opportunity costs. So that is a KPI I am looking at in terms of I think we have put 10%, there can't be a variation greater than 10% and then there is various other adjuncts to that KPI in terms of monitoring the billing. Because as I said, in round numbers our bill was 20 million pound a year and you know if we are over paying and I know we make the adjustment but I want the money on our side of the fence rather than their side of the fence. SO that is one and the other KPI really is with regard the built environment and again, there are various anomalies, well not anomalies but various points in there that they must achieve in terms of balancing the building, in terms of monitoring and targeting, in terms of the base load identifications and in terms of predicting that buildings use against degree days.

I: Right

R: SO they are the two KPIs. And in terms of penalty and I can't remember the exact numbers but it hits their profit line and if they fail they lose an element of their profit.

I: Right

R: So that is really how that works.

I: Right, and the predictions that they are making that is for, just projected buildings that you haven't made any interventions in the systems or the fabric...

R: Yeah, I mean we weren't joined on that, er so for arguments sake, this site here is a variation of buildings, that being our newest building there...

I: Hmm Mm

R: so the other side of county hall which was built in the 30s, some of it is listed etc so where I am really coming from I mean that's E block, we do have some sub metering...

I: Right

R: so basically I am saying E block right I don't expect to see the energy consumption profile exceeding per degree day I want to see so many kilowatt hours per year going into building, nothing more, if you can trim it down further fine. So that's really determining that, so that's the type of methodology I want to instil into [PMC] for them to actually utilise in terms of understanding how that building operates and from there they can then determine...I mean A block there, typical 60s building er, insulation value quite low etc etc so I would expect that to be quite energy hungry so it's actually getting a handle on the consumption profile of the building. The building type and the activity that is being undertaken in that building to enable us to say yeah we know per degree day that will consume x number of kilowatt hours. Everything is based on consumption because that is always a fix and then the costs is going to be the variable and then we can relate the costs back to that.

I: Yeah. And you are removing the behavioural aspects from that.

R: Yes.

I: that removes the, as a designer, I have the classic designer get out of you are using it differently to how I thought you would...

R: Yes.

I: That removes that.

R: Yeah, the other thing I have found as well is where we have controls and building management systems, unless someone is quite capable, quite competent, they are just glorified time clocks, with massive investment sometimes with no real benefits...

I: Yeah

R: and again I am focussing in to those areas where a: we ensure we have a regular maintenance regime and more so that - people who are actually working on these systems and making adjustments understand what they are doing.

I: Right.

R: and that is where it links back to the energy strategy and until they get that energy strategy out, they can't then control the BMS.

I: Hmm

R: and it is something that I will be banging the drum, I am, they know my views on it...

I: yeah

R: we had a meeting the day before yesterday, or was it yesterday, yeah, they know where I am coming from and the drive really is, I want to be in a position where if we are challenged, if anybody challenges us we can say, yeah, A block at county hall at a constant level will use this as a base load x kilowatt hours, and for every degree day we are using y plus, z blah de blah.

I: and you have got that base line and if you are not using that then you have got some questions to ask.

R: Yeah, exactly and then we can, from there we can then say okay we have got all that, what can we do in terms of, because bearing in mind we have managed to get control but we have got this thing called CRC that each year is going to come and bite us on the bum...

I: Yeah

R: because it is going up each year and it could be significant amounts it is going up by so we then have to look at the magical alternative sources so we look at alternative sustainable green energy scenarios.

I: Right.

R: and so that is all so within our method of approach in terms of how we are looking at managing... well procuring and managing our energy over the next few years.

I: with the CRC I am not familiar; if you source your energy from a carbon free...does that count?

R: Yes, if it is carbon free because there is no emissions or we then benefit from the CRC...

I: Yeah

R: because our reduction in carbon emissions is much lower so we are paying less in tax,

I: Yeah, but there is premium, so there is a balance to be made...

R: well there is... yeah because I think as well yeah, sometimes you pay a bit more for that type of energy but again with technology moving on, again if we look at say photovoltaic cells, which we do have in this building ...

I: Hmm mm

R: er but I think if you are going to go down that path I think you have got to clearly understand and have a level of detailed knowledge about what you are letting yourself in for and what I mean by that, the system that has been installed on here, I don't know it at all...

I: Right

R: But all I do know is that it is not working.

I: Right

R: so there was a huge investment from what I am picking up...

I: Hmm mm

R: with er with very little return.

I: Right

R: So straight away from a member's perspective, they are asking a number of questions, you know, why have we spent all of this money on something that doesn't work? Well I can't answer those questions because it happened before I got here...

I: Right

R: erm but where, I am coming from on that yeah we do have salesmen and marketing people wish to come in and sell us their product and then if we get into the political arena that then creates other problems because as what's known as a small or medium sized enterprise erm they feel they have a right to be able to buy in on any public authority types expenditure...

I: yes

R: so I then have the noise if you like from the members but we stem that because I have seen a number of people erm but nothing really but...some of the concepts are good but then when you look at the tie ins and the legal framework and the permissions that are required in terms of licenses and leases it becomes quite a legal nightmare.

I: Yeah.

R: SO you know, at this moment in time we we are in my view, it is a bit; we are too premature if we are going into that arena. It is on the radar...

I: Yeah

R: But not at this moment because we need to do step changes and get out ducks in a line for want of a better expression sin terms of the points I have said, in terms of how our buildings operate. It is further exacerbated as well because of this major transformation project that we are going through...

I: hmm

R: So the portfolio will change considerably over the next or by no later than year 4.

I: Right

R: erm it is dragging its heels a bit slightly but then that's typical local government in my view, things never work to a plan as much as you'd like them to, but that said we are progressing, we are progressing.

I: So this information is feeding into your development plans?

R: Well yes it is.

I: And have you identified building characteristics that...work.

R: Well yes, it is an interesting point. Erm because one thing that this authority was not very good at in my view was acquiring a building and understanding how that building operated.

I: Right

R: so they would acquire it and then the fm team would then have to go in and rectify a lot of the issues and what I have said going forward we must ensure that we identify issues required for that building, be they any form of M and E system, and form of control in there anything wrong with the

building must be included in the project costs, they can't just be, they can procure a building with a hope that they are going to lob a load of costs back at the maintenance team, it is not going to work like that.

I: But you must be getting a good idea of which buildings work...

R: oh yes, yes we are...

I: And you are monitoring particularly with your focus on degree days...

R: yes and the guys, the guys are talking very closely on that so they recognise this in terms of what investment of any is required to bring it up to the requirements we are looking for for that operating criteria.

I: right, are you building new buildings?

R: no.

I: just if you need to acquire new buildings...

R: Yeah, we er, yeah because basically we erm...let me just think, no we are not acquiring any, it is just not in our remit. Because we can't be seen to be spending public money when there is a building stock...

I: Yeah

R: You know, I mean one...there is nothing, no spec buildings, anything we have procured over the last few years has been previously utilised or whatever but I mean it probably does suit the purpose for what we are looking at.

I: yeah

R: we had bought some pubs as well though...

I: Right

R: where we have, but again I think because the... we are not like a high street retail outlet that needs a presence in the high street, you know we are a local authority at the end of the day, this is my argument anyway.

I: yeah

R: and okay, the only real issue we need to consider is access for the public because it is all fine and dandy saying we buy somewhere that is really cheap in the middle of nowhere but if it is a public requirement or public access is required you can't do that obviously so that is probably the major consideration. But it is not about location location location, we don't have investment properties or anything like that but we have property that is fit for the business and what we are doing there is a gentle twist and change coming now because local authorities by their nature always tended to be always quite democratic and they would listen to their user requirements etc but now we are operation under a corporate landlord mantra...

I: Right

R: It is more, I don't mean a dictat in that sense but we can procure... we will listen to what our customers' wants are not so much their needs, okay needs and wants but we will then will say this what you are going to get ...

I: hmm

R: and it's as simple as that because you know, there are two reason for that because a: it gives us much better control and b: erm you can deliver the project more quickly because you always get those that straggle on, they want this, want that and everything else and you never get anywhere.

I: Do you do any sort of user satisfaction surveys or post occupancy evaluation?

R: In theory yes.

I: Right

R: You are asking me now why does he say in theory? It's a very, there is so much going on at the moment erm, and I... I mean I come from the private sector and I find, in terms of noise, in terms of complaints etc, it is fairly quiet.

I: Right

R: we do get noise, of course we do but not to the extent I have experienced in other walks of life so that is probably not a bad thing.

I: Yeah

R: We do do customer satisfaction surveys, I know what you are saying in terms of the before and after, they are not that robust and generally what happens is, we will do a follow up but I think the difficulty is actually ensuring that you do one before hand and then you bring all the changes and then ask how was it for you, the same sort of questions to see where the gap was and how it has closed.

I: I mean similarly with your energy, you energy model, making changes and seeing what is happening.

R: I think the issue there is yeah, this is my argument, you know, users of a building, they are there to do there to do their core business...

I: hmm mm

R: the only time they become rather concerned is if the lights flicker, the lights not working too hot, too cold, lifts don't get them to their floors, toilets re blocked, from an environmental perspective that is probably the five or six key areas where it gives them cause to complain.

I: Hmm

R: I look at the hard arena, you may get a... I look at this [PMC] contract for the moment, the majority of the complaints come from the hard FM side, which is systems, too hot, too cold, because.. and the reason for that obviously is because it is so instant once your lights gone off and I am just using that as an example it impacts on you...

I: Yeah

R: if there is a bit of dirt there, well it could be there for a week, I know I am taking the extreme but I am doing it for a purpose.

I: Yeah yeah

R: unless it is a hazard of some kind it is not really going to affect you. SO that is an area we are working on and we are trying to erm understand what the clients concern is and we have undertaken a lot of road shows and we have lots of employee engagement within this local authority and employee feedback forums etc which I attend as well so I can get it straight from the horses' mouth as it were.

I: Okay

R: and part of what we did from earlier on this year from the employer engagement survey, what we call the 'you voice' survey

I: Right

R: erm we have instigated these road shows which commenced about a month ago

I: hmm mm

R: and there are, there is a presentation I have developed on this in conjunction with IT and we actually go along to you know individuals we have invited through our intranet or however, to come along to these shows and they can just pose their questions and I mean, but we will pick up on the key points in terms of the thread that is coming through from the previous surveys and really it is there to be a real face to face, it is not there to be a power point presentation all glitzy and glam...

I: Hmm mm

R: it is for the individuals to really air their concerns because and I will tell them straight there will be some buildings that are not fit for purpose and because of that the investment just wouldn't be worth it erm and you know you are just going to have to live with it.

I: Yeah

R: you know not as harshly as that but that is the reality of it....

I: Yeah yeah

R: and I will talk them through the rationale behind it.

I: and does that extend, you talked earlier about erm the kind of councils image within the broader community, does that kind of road show go beyond internal...

R: er no, because it is only the internal people who are affected. Because if we look at it from our corporate landlord philosophy our customers really are just our internal employees.

I: so the image that you are portraying beyond your own employees how is that communicated to broader... is it more when people ask you questions rather than...

R: Yeah, yeah, it is an interesting one because we we probably a number of ways people can ask questions: the press they will pick something up so it goes round the press office...

I: hmm mm

R: we will have to respond, and through freedom of information. They are probably the most direct routes in so we have to be er... a freedom of information request can come in and has to be responded to fully answered I think within 21 or 28 days.

I: yeah

R: and you, we will get a lot of FOIs from the local journalists etc or I will get the press office phoning me up quite readily saying oh we have had this question boom boom boom, then we just formalise the response. Yeah.

I: You don't have a for instance in my local authority we get a...

R: is that Newham?

I: yeah, we get a fortnightly rag through the door which is total waste of money I think but ...

R: yeas

R: and a mayoral puff piece, but, but it is a kind of a method of communicating with the population and because I am an energy geek I am interested to hear where my council tax money is being invested to make these changes,

R: Yes

I: you don't have a kind of direct line to your population like that?

R: erm we do, but probably not as regularly as that, we do through two routes...

I: Hmm mm

R: one is obviously the local boroughs when they send out the council tax then there is an [location] flyer that goes in there and then probably every so often depending on what goes on a flyer may go out but not to that extent because if you look at it in [location] the population of [location] is about 1.2 million so the the cost they would be would be horrendous and B we are quite well advertised in terms of hoardings in terms of hoarding on buses or bus lay-bys, bus stations, bus stops etc, so it is done probably more in terms of indirect impact as opposed to direct impact. Yeah. That is, but the other thing just in saying that is that [name] is our chief executive erm and [name] who is the leader, they obviously engage with the communities through districts and boroughs and they have open road shows that he public can attend and ask questions

I: Hmm

R: so there's another method there...

I: okay.

R: and I suppose at the end of the day which is the best method, I mean I get a bit of paper comes through the door it invariably ends up in the bin...

I: Yeah.

R: you know I may just have a quick glance through it and then it's gone, if I think god, that cost a few bob to print and develop and deliver, yeah.

I: Okay can we go back to the slightly more geeky methods of actually predicting your energy consumption...

R: yeas

I: and your forward predictions. Er are [PMC] using a bespoke bit of kit for that or are they using an IES or a TM22 method of doing that...

R: er there are a number of methods; one is called System Link...

I: yeah

R: erm and then [PMC] have one which we are moving away from System Link because System Link was what we used in the council erm there are two or three and the names escape me at the moment...

I: right.

R: but they are there...

I: hmm mm

I: er whether or not they are effective at the moment I am not exactly sure.

I: right

R: and the proof of the pudding really will come in when we actually test them and the question get asked and once we receive the benchmarking data and we can then start doing the comparisons...

I: Right

R: er ...

I: but it's a full, I mean what you were talking about earlier sounds like a sort of heat loss calculation, are you taking the, I know the behavioural side of it isn't taken into account...

R: yes

I: but the base line is taking into account the equipment that is in the building ...

R: oh yes, yes

I: so you have got a...

R: yeah, so we have got a...I mean if we look at it base line ultimately is heating and hot water...

I: yeah right.

R: you know because we have hygiene issue so we have to provide hot water etc er and lighting.

I: Yeah

R: you know so, what more would I want in base lining data, if I look at how, what do we as facilities management professionals need to provide to enable people to come into that building to basically undertake a role of work...

I: right, so the IT st...all of the IT plug loads that's, is that separate from the FM?

R: well that's an interesting one, IT have what they call night-watchmen...

I: Right

R: so that comes in at around 8 o'clock every evening and shuts everything down we are also moving to end user computing and this is what makes it a bit difficult because end user computing under mobile and flexible working means that in terms of desk ration we are probably looking at a desk ration of one to two, so ...

I: What does that mean?

R: basically what that means is er, this desk, er hundred desks out there right which implies 100 people working out there, we want to reduce that to 50 but still have the ability for a hundred to come in through mobile and flexible working.

I: Right

R: because all our libraries are now wireless,

I: Right

R: so under end user computing that programme finishes around March next year, everybody will be assigned with a new laptop desk tops go; laptops are much more economical ...

I: Yeah

R: so the draw you know on the base station here for IT equipment will be considerably reduced, and taking it one step further going into cloud computing as well so, so as we are moving forward in other areas of working that will obviously impact on the energy profile as well.

I: yeah

R: Now the difficulty is in keeping that appraised an I think the only way we can do that effectively is to benchmark just year on year and know what the activity has been for that year and adjust our calculation accordingly for that.

I: yeah, so that you are comparing like with like.

R: Exactly

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I: And it might actually be that the kind of population density of a given floor goes up because you are assigning 400 people to this floor when there was only 200.

R: yeah, yeah, that is it...where we are intensifying our buildings you know through property transformation the profile invariably may well change.

I: yeah

R: and it is not necessarily just a linear, you know it could be exponential, you know and we all are acutely aware of that...

I: Hmm mm

R: er that will be factored into our reports and our calculations to take that on board.

I: Okay and what about the broader benchmarks you were, you are using sort of national benchmarks you were talking about the CRCs...

R: yeah

I: Are you looking at...

R: well we're, on the performance league table on CRCs we are bottom.

I: Right

R: erm and I think partly we are bottom because you know I look at the CRC and the way you get the scores and it's er not, its scientific but I think it is a nightmare to be honest because it is too complex but where I am coming from, we could have made an investment to have AMR all over place, I mean we are looking at early action metrics here under CRC and erm we made the decision why are we going to invest 600 and odd thousand pounds everywhere where in time it will be installed anyway...

I: yeah

R: er why, why waste all that money it is better to take the hit on the CRC er cost I mean when you just run the numbers it was a much more economic way of doing it...

I: Right

R: and does it really matter if we are bottom of the league table with many others ...

I: yeah

R: you know, are we that proud? I don't know?

I: on a league table that nobody looks at...

R: exactly that's the whole point, and I think that's why we took that decision, we not taking a blasé approach, we are taking a pragmatic and a sensible view.

I: Yeah, you know you said it is public money so you have to make a sensible decision,

R: exactly...

I: What about DECs?

R: Yes

I: do they affect you, impact on what you do at all?

R: erm all our buildings fall within the DEC requirements...

I: Yeah

R: and I understand that is going to come down even further in terms of floor area...

I: yeah from a thousand down to, I can't remember...

R: 500 I believe, half...

I: Right

R: so all of our buildings that fall within that remit do have DEC's and from those DEC's we will carry out whatever we need to do to make, or maybe we won't carry out anything...

I: Yeah

R: but maybe if we get, depending on the rating that goes with the building but if there is anything we can enhance that ABC, D, you know if we can lift that just by some form of simple intervention we would do the cost benefit analysis and maybe run through that...

I: It sounds like it will fall under your, your [PMC] contract...

R: yeah it will fall under that anyway...

I: and it may just happen anyway.

R: well DEC's is part of their remit anyway because the [PMC] spec is all output driven and there is a section all about energy in terms of what they should deliver under the energy [inaudible]

I: Okay. Erm I am conscious of the time...

R: Yeah go on.

I: so a final couple of questions then, in attempting to manage your energy and reduce your energy and reduce your outgoings there are a number of barriers which it sounds like you are overcoming...

R: yes

I: a number of them but are there any other particular barriers that you think are preventing you taking more effective action or effective action?

R: er I suppose really the only barrier will always be is there funding available to undertake certain activities...

I: Right.

R: but if, if the activity or, we often work to the benefits realisations...

I: hmm mm

R: and you know if the benefits are beneficial to the authority as a whole you know we will no doubt find the funding, it may well be funding that particular initiative at the behest of another initiative because the benefits we can get from that are greater...

I: Hmm

R: so there is always going to be that balance in terms of the Peter and Paul scenario...

I: Yeah

R: erm just go back to that question again Craig?

I: Er, barriers that might prevent you doing this...

R: barriers yes, I think the only barrier probably is, is proving the technology because we wouldn't jump into something that hasn't got a proven track record...

I: Okay

R: and I think, as I said earlier, in terms of photovoltaic cells where these were installed here...

I: hmm

R: I think they were installed some six years ago, they are not even connected not to the grid er and I just wonder why and I have been shown some fabulous examples you know a Seimens product...

I: Hmm mm

R: Manufactured in Germany and the sales behind it is very good, you know it is one of those things there is no such thing as a free lunch...

I: Yeah

R: but the one withdrawing factor on that is that they need to rent our roof space on buildings and then they take over that are so from a legal perspective...

I: Right

R: the legalities of it are quite intrinsic.

I: Right

R: no the issue there is while it is good, that time invested in researching and doing all that we need to do is better spent on doing other things at the moment in terms of proven technology so I would say probably, you know one of the main barriers...cash will always be a barrier, or the ability to secure cash to undertake a task...

I: hmm mm

R: but if you have got a good business case it will come through.

I: Yeah

R: and I just think in the technological field in the proven technology erm I think in terms of procurement of energy we have just gone through that major exercise...

I: Yeah

R: erm I don't, I can't really see any other major barriers really.

I: yeah so, there is no particular risk with you going into a building doing an energy assessment and finding out there is something wrong with it because it is your building and it is in your interest to do that...

R: Yeah

I: you are not getting yourself into any particular er legal problems by finding out something isn't working....

R: no, no and I think the only time that would happen is erm if we have misread the lease or something, you know, if there is a liability in there that we have overlooked or whatever, but we shouldn't do, I mean it...and in fairness, where would that really happen, most energy contracts with a supplier no longer than two years, I suppose in terms of the energy performance contract that we will enter into with [PMC] we have just got to look at the, the close scrutinise the contract terms and conditions on that...

I: okay

R: probably a bit more closely...

I: Yeah. Finally then, it sounds like, or would it be fair to say that the RC are the primary driver of you activity or the cost benefit, the long term cost benefit?

R: Partly. I wouldn't say the primary driver; I would say the primary driver is probably the political arena...

I: Right

R: and I say that because it is on the agenda in government at the moment...

I: hmm mm

R: I mean CRCs are the spin off that comes from it...

I: yeah

R: but it is to be seen as an authority that is effective in efficient in the use of its resources...

I: Hmm

R: now anybody can go down the road and say bloody hell that street light is on and it is daylight...

I: yeah

R: we know it happens and that is life, so I think the main, I think our biggest driver here as an authority is reducing costs...

I: yeah

R: so whichever route we go down to reduce that cost, I would say that really is our biggest driver...

I: hmm

R: then following that very closely in this particular arena is that we are a caring authority; we understand the impact that we have under corporate social responsibility and as a consequence of that these are the measures that we are taking to reduce our impact on the environment. Because there is that environmental aspect that sits there as well.

I: Yeah. As I said at the start, looking at energy in isolation...

R: exactly you know it just becomes a mine field doesn't it really.

I: yeah] R: and that is really where we sit probably within, you know I said at first within the corporate emissions strategy

I: yeah

R: so in the bigger picture that is where we would park that.

I: Okay

R: so if we look so in terms of electric vehicles, in terms of the way the fleet is operated, in terms of minimising journeys al wonderful wonderful theoretical models but in reality doesn't always work...

I: yeah

R: so that's really where we are at.

I: Okay.

R: Is there anything else?

I: No I think I am conscious of the time...

R: has that helped?

I: that has been absolutely brilliant.

R: Good.

I: It has been really great, thanks very much for your time, I really appreciate it.

[ends]

1.20 Architect 20

Respondent:	020(R)
Interviewer:	Craig Robertson (I)
Location:	Central London Cafe
Time/Date:	11:00 18/11/12
Duration	46:40

Transcription:

[begins with I describing his research and asking R to describe their role]

R: Okay so I'm, I work for a small practice called [practice name] em we're, I guess you could describe us as a boutique architectural design practice...

I: Right

R: There are three people in the practice it is quite small. Er, we've er expanded and contracted quite a lot over the recession...

I: hmm

R: I think we were maximum nine people and then we are currently five but there's sort of three core people. Erm [name 1] who is the director is 33, [name 2] and I are both, I am 31 and [name 2] is 32 I think, so it is quite young and it is, we were just recently shortlisted for Young Architect of the Year...

I: Oh Wow.

R: so like, I think erm that's, I mean our focus is very much architectural; environmental, energy stuff is quite low down in our priorities...

I: Hmm mm, Yeah

R: erm on our kind of agenda.

I: Yeah

R: er, or at least it is for [name 1] who's our director I am personally, I am doing a, er a masters course in energy and environmental studies...

I: Right

R: at the [education institute]

I: Are you?

R: So I am quite interested myself and I am leaving the practice at Christmas to start my own practice...

I: Ah.

R: and I want to do things that are a bit more sensitive, so that's kind of a funny one I suppose...

I: No. no. it is really interesting. Have you got work to go to?

R: Well I have got bits and bobs and I'm, when I first leave I am going to, I have got, I need to take some time to do my thesis project erm which I want to do about straw bale buildings...

I: Right

R: And erm, I've got somebody who is interested; who has approached me, a friend of a friend in doing kind of office garden sheds...

I: Right

R: You know like sort of...

I: Studios...

R: Standardised studios to put into gardens.

I: Kind of mass production?

R: Yeah

I: Right, Wow.

R: Which I am quite into.

I: Yeah.

R: because I have, offered to do that as a sort of joint venture with them and hopefully take a sort of royalty from them as they as they get implemented. I am really hoping it works out well because erm, yeah I just feel that I spend such a lot of time just doing sort of one off designs and then they only ever get used once...

I: Yeah

R: It is almost like we build a prototype and then we never, you know it never really goes any further than that.

I: Hmm

R: so that's the major thing. Er.

[short conversation about educational institute]

I: So have got this, you are in this strange position where you are in a practice at the moment...

R: Yes

I: Which has a very kind of design orientated...

R: Yeah, I think within the practice my role is definitely erm kind of more towards the technical side of things.

I: Right

R: so erm [Name 1] you know gets work and does a lot of the initial sort of design stuff and, and he sort of leads the sort of stylistic design.

I: Yeah

R: erm and then often he will kind of say to a client we are going to, he will convince them to do something that it turns out to never have been done before, or not been done in that same way...

I: Yep

R: and then its, and I feel it falls to me to kind of try to get them to do it.

IL Yeah

R: and it, they are quite experimental and sometimes they don't work out and we get to...we haven't got into proper trouble but we have had a few near misses...

I: Yeah. Experimental in terms of...

R: one time we did a door which was a wooden door with a bi window, er the door was about three metres by two and a half metres...

I: right!

R: sort of like a timber frame glazed door with another little door inside it and then there was a giant window sort of two by two window that slid on the door and we got this like kind of track that kind of matches up...

I: what, when the door shuts...

R: it is perfectly aligned...

I: Right

R: and the window is supposed to slide onto it and it open. And then he, he, I remember being in this client meeting where he was going to, you know this sort of residential, this private residential extension...

I: yeah

R: and he is going yeah, yeah, we can do that we can do that and I am sort of sitting there thinking 'I don't know if we can'...

I: I am more concerned about the joiner, the joiner's ability to align the doors.

R: Yeah, we did do it...

I: Right

R: It has had loads of problems though that's kind of like; the thing is it has got us quite a lot of work because the photographs look so nice, of it...

I: Yeah.

R: and erm, people really like that kind of thing, so erm yeah, no, I think, it's kind of partly why I want to go on my own...

I: Right

R: because I just, yeah, I feel a bit, sometimes I feel a bit vulnerable to that because I am put in these positions where I don't feel particularly comfortable.

I: So it is mostly domestic work is it?

R: Right we do two sorts, we have got erm we do quite a lot of kind of house extensions...

I: Yeah.

R: sort of bread and butter and we have also done a couple of quite big school extensions for us, er primary schools and the one I have been working on for about three years solidly on a, on a, er on an extension to a primary school which is seven new classrooms...

I: Right

R: and kind of quite a lot of internal refurbishment...

I: Okay

R: extending the hall we have massively kind of overhauled the kind of school services.

I: Okay. So the energy targets you are working to on the resi and schools stuff, are they client driven or are they base building regulations?

R: the residential stuff is all building regs, erm we have, we have got a couple of clients who are interested, we had one who was quite interested in feed in, er solar panels for the feed in tariff...

I: yeah

R: erm but generally clients aren't bothered; our clients aren't really bothered about it...

I: Right. What about the schools?

R: Well the schools are a bit different because erm the funding comes from the local authority...

I: hmm mm

R: who are just only interested in cost and risk.

I: Yeah

R: and the erm, between sort of I guess about stage D of the process the school academised which made it even more awkward because what that means is that the local authority are paying quite a lot of money to the school...

I: hmm mm

R: but the school is no longer their property so it erm, when I kind of, I suppose it makes sense because at the end of the day there is, they need places for school children in their area and it doesn't really matter who, whether they have control of the school or not

I: hmm

R: and in a way it's probably better for them to fully academise, because it is out of their hair.

I: Yeah, it gets it off their books...

R: But at the same time they are spending 5 or 6 million pounds and an, to you know something, on a building that they when they signed up for spending that 5 or 6 million they owned...

I: Yeah, yeah

R: and now they have given it away for a hundred years to an academy.

I: Right, so I know talking about energy in isolation of everything else is slightly false...

R: Hmm

I: because it's entwined with everything else...

R: Yeah,

I: Yeah, but er, so the, there, was there like a planning requirement or a local authority requirement to meet a BREEAM target or a...

R: Yes, so the local authority had a target for BREEAM very good, erm it is [local authority] the local authority...

I: Hmm

R: so they have also got a requirement for 10% renewable in their planning policy...

I: Right, on site?

R: yeah, erm and we also did a deal with the local authority building control department to, basically, we snuck it in to get into Part L 2006 regs...

I: Right

R: by getting it in before a certain deadline in October 2008.

I: Right

R: but we did a deal with them to say that we would do insulation levels so fabric standards to 2010 in return for erm waving certain er kind of criteria that of you went to the building regs you wouldn't, it would of, it just wasn't applicable to our building because we were doing such a lot of internal refurbishment and things so I...

I: Right

R: I am particularly talking about consequential improvements so for example we were doing, I can't remember now because it was such a long time ago but I think the deal was that we would do the consequential improvement you had to do such a lot of work to the existing building

I: hmm mm

R: the actual net benefits of the energy efficiency would have been nothing but we would have spent hundreds of thousands of our budget on things that didn't really help whereas if improved the fabric standards to 2010 we felt that it would have had, we argued that it would have had a better, a more benefit [sic] to energy efficiency for less money.

I: How did you frame that argument?

R: like I just said, probably a bit more elegantly!

I: No, I mean...

R: How did we justify it?

I: Yeah, did you model the building?

R: I worked it out on a spread sheet

I: Right

R: because it was a cost benefit analysis really rather than an energy balance argument...

I: Yeah

R: and er and the, we had our service engineers demonstrated the difference in energy efficiency, I think through, to be honest with you I don't know how accurately it was done it was so obvious...

I: hmm mm

R: It just didn't really need demonstrating.

I: Because the margin of error was absorbed by the massive difference in the two.

R: Yeah.

I: and who, to whose benefit was that cost reduction, you were saying that...

R: The local authority...

I: and was it the local authorities building control officer as well?

R: Yes.

I: so it was to that entire organisations benefit.

R: exactly.

I: Okay, and is that building built?

R: it's becoming finished, it should be finished by Christmas but it will probably be summer next year ...

I: Yeah

R: when it is finished.

I: Erm, do you then go, or are any plans to go back and check to see if that cost benefit is followed through and if it is going to work properly with your...

R: As in post occupancy evaluation?

I: Yeah

R: erm, right, not formally...

I: Right

R: Erm there is no requirement in our brief from the local authority.

I: Right

R: having said that we do a lot of work for the head teacher of that academy, he runs four schools and erm he's one of our best clients, we don't say no to him and er, I think he you know, we keep in very close contact and we get a lot feedback from him and from the teachers, er so, and that definitely feeds into what we do next er but erm, in terms of looking at the ills and figuring out exactly how much, what the difference is, I don't think we will be looking at that stuff.

I: So what sort of feedback do you get then? Is it qualitative stuff about...

R: Yeah, 'it's much warmer in here' 'isn't this nice', 'how lovely and comfortable it is' ...

I: Right

R: erm, we have saved, you know, I don't think, I don't, the thing is with this school is it is such a can of worms because it had, it has been, it is a Victorian school that has been extended every ten years...

I: Hmm mm

R: over a hundred years and every single thing in a different style, most of them have their own independent services so it's like; it had four or five boiler rooms to begin with...

I: Okay.

R: which we have consolidated down to two and erm, you know I think when it is, we have finished...and we are also doing it in phases so it, so, in terms of noticing a difference in the energy bills it is going to be so difficult to unpick that because we have expanded the school by about 50% and then we've we've changed its boilers in certain areas...

I: right

R: probably about 75% of the school has got new heating boilers but the existing radiators and things are all exactly the same...

I: Hmm mm

R: and then erm, it's been taking place over about three years so...

I: and is it still partially occupied?

R: it has always been occupied the whole way through.

I: Okay, so you are not able to compare like with like.

R: there is temporary cabins and...

I: Right

R: when the dust settles I am hoping they will be using the same energy as before but we will have increased the occupancy by about 50%.

I: yeah

R: erm, just because the boiler, the old boilers were so old, they were about 30 years old, maybe more...

I: yeah.

R: erm and erm I think, they were using electricity for some stuff as well, so they will be using only gas and also we have done quite a lot of insulating to existing parts...

I: Yeah

R: One bit where, one bit where we have got three classrooms and a kind of wing, we have taken the roof off and built a second storey over it...

I: hmm mm

R: so their roof was partially, not very well insulated...

I: Yeah

R: so that should [inaudible] that should benefit, we have; the money for providing the new accommodation but we have used that to improve that to improve the existing just sort of coincidentally...

I: do you measure that at all, you said you did a cost benefit analysis justifying sort of broad strategy, strategic approaches but do you do a, presumably for your BREEAM you need to do an energy model of the building, is that somebody else that does that?

R: well this is another can of worms because the BREEAM erm, they wanted to go for very good and we were just scraping very good when we did the initial BREEAM assessment...

I: Right

R: But since then, there has been a whole number of problems on the project and BREEAMs been slightly scrapped, they still want us to officially go and get but officially we have run out of time, so we wouldn't get the certification anyway, we would get a letter saying we would have achieved certification if we had done it on time...

I: Right

R: so that is one thing.

I: and second project management department who is running the project is at loggerheads with the planning department, and BREEAM is a planning requirement...

I: Hmm mm

R: and erm it's seen by the project management department as being an unnecessary expense so they said, do your best but if it doesn't achieve very good, it doesn't achieve very good and they will sort it out with planning.

I: Right

R: and I don't really know.

I: So that is someone else's area...

R: yeah, and then in terms of the energy audit, erm we started off with a services engineer who were, who were eventually, who were actually sacked, and we had an interim service e engineer to help us finish off that bit of one phase that was still on site and when we started a new phase we got a new service engineer, so we were on our third service engineer.

I: Right

R: and we were on our further project manager and erm our SBEM, our original SBEM calculation that we were using erm was quite out of date because we have got a lot of, we have had to value engineer the project and take quite a few areas out...

I: hmm mm

R: so to be honest with you it is a risk at the moment, it could, we could, we need to catch up with it and I am not particularly worried because of the nature of parts of what we are doing and I think we will be okay, there was spare capacity in our, uh, to meet you know, building regs...

I: Yeah

R: but how many BREEAM points we will get for it...

I: But nobody, nobody is going to check if they do meet [inaudible]...your SBEM just has to show that you pass building regs...

R: Exactly.

I: Nobody is going to...there is no formal post occupancy thing; nobody is going... it is not under Part L as built...

R: No, this is true...

I: You know nobody has to go and look at it.

R: No

I: In your cost benefits, did you go through...was that a running cost, or just capital costs benefit analysis?

R: erm,

I: You haven't, nobody's looked beyond the SBEM? To get the kind of the overall...

R: no, the erm we have had a lot of trouble with service engineers on this project...

I: Yeah...

R: er they really were reluctant to do any kind of, er even the SBEM to be honest, which was bananas, because you have to!

I: Yes, that's why you are here, that's why you employ them in the first place...

R: Yeah

I: I am kind of interested in the feedback routes that come into your practice because I agree that erm one of my frustrations with architecture was the we went around buildings, prototype buildings erm, certainly in the practices I worked in erm, there was no kind of formal way of collating this information and reusing it and actually learning properly and perhaps I would work on something, you know it just felt like in my office, and there was maybe something like 40 people in my office, there could have been any number of people making the mistake that I made 3 months ago and I probably made the mistake that somebody else had made 3 months before me and then somebody... so there is no formal way of gathering up this information, even if it just a teacher saying this room ins really nice now because of this, this and this, you know just getting that information somewhere to be on hand to use, do you have a kind of way of collating that information so that it is accessible to the whole office, or I suppose with so few of you then maybe it is ...

R: No...

I: no

R: We do talk to each other a lot though erm because we are small enough I would say that we do have very good communication...

I: hmm mm

R: so whenever there is a new project, sort of once it has gotten past...to be honest with you I'd say with you once it has gotten past stage D so up to sort of feasibility and planning we kind of I think recently I said to [name] stop drawing the walls 300mm wide they need be 400 now because we need more insulation in them at planning stage and you do this every time and I, and every time I come to turn your stage D drawings into stage E to F drawings for construction I always have to increase the thickness of the walls, that's all coming out of the internal space because we are held by planning for the external...

I: Yeah

R: dimensions. So he was like [inaudible] and he started doing it, well we compromised on 350...

I: Yeah

R: erm but erm, so but more it actually happens after stage D once we have got planning we tend to use em, reuse successful details...

I: Right

R: and erm so things like erm we do a lot of timber windows that we design ourselves and we have gotten that down to a really decent design now ...

I: right

R: that works...

I: right

R: and that has quite a good U-value, well centre pane U-value. You know they are not; they are not thermally broken windows...

I: Yeah

R: but they look really nice.

I: Yeah

R: erm and erm, things like I have been trying to push the office into doing much more timber frame...

I: hmm mm

R: and cladding er timber frame even if it is clad with bricks, partly because it helps with getting er not having insanely thick walls...

I: Yeah

R: but getting the insulation values that we need...

I: Hmm mm

R: partly because erm the kind of embodied energy of it I suppose...

I: Yeah

R: and also because we are building house extensions, single storey house extensions, the spans and the frame, you know the structure doesn't need to be brick and steel which is what we were doing before...

I: Brick walls and steel roof?

R: well brick walls and the usually whopping great steel beams over massive openings and then erm timber infill for the roof, that's what we were doing...

I: yeah

R: and what I have been trying push us into doing is just doing a complete timber frame and either clad it in brick if its needs to be brick or clad in timber...

I: Hmm, how are you, how are you, how are you trying to, what information are you using to convince them that that is a reasonable thing to do?

R: erm well erm I am sort of I suppose I came back from my modules at [education institution] and I say why are we doing this, you know, there is no need to be using all of these materials that span there we did with a massive great, it was a bespoke steel beam is the one I am thinking about...

I: right

R: but absolutely completely unnecessary...

I: Beautiful though probably?

R: Yeah it was nice, although it was hidden!

I: Right

R: it was nice when it was up though...

I: for a couple of weeks before the plasterer came...

R: yeah and it's just sort of...and also there's the cost argument because er you know er, timber frame is cheap, much cheaper than you know steel and brick.

I: Hmm do use a kind of thermal argument at all?

R: Yeah, well that is the other thing it is not so much of a thermal argument as a space to achieve a thermal requirement that we have to get...

I: Yeah

R: so you know I am sort of saying, well if we did it, if we do, if you insist on carrying on with cavity walls erm we, we we are now having to bump up our, the last extension we did with a cavity wall we had a cavity of 100 mil...

I: Right

R: and then mostly to, to achieve area weighted SAP calculations, are weighted U-Value calculations because we have got so much glazing...

I: hmm

R: we have to bump up the walls and the roof and the floor to compensate...

I: Right

R: because these things the extensions that we do are like Swiss cheese, they've got massive amounts of ...

I: and you have got your bespoke glazing, non-thermally broken timber bespoke glazing...

R: exactly so we have to really bump up the walls and so if you use the timber frame you can go, you can insulate between the frame and then have another layer of insulation between the frame and the skin...

I: Yes. Okay. I agree. It's a kind of, I had forgotten about the area weighted U-values thing...

R: Well that's what kind of suits... our clients don't especially want...basically what they want is to get rid of a pokey little kitchen and a separate dining room knock it all together and have a great big opening window door set leading into the garden

I: Hmm

R: with some sort of barbecue area, it is what we specialise in they just love that...

I: Yeah

R: they are really nice...

I: Yeah, yeah

R: but that's what all, all of our clients who want an extension that is what they want ...

I: you said a couple of them were vaguely interested in energy stuff... I mean what sort of targets are they asking you to achieve? Or are they

R: they are not asking for targets, they are not into that kind of, they don't really know about it in that sort of detail, but the one that the one that we were, the one that I was thinking about that wanted the solar panels he was a erm an investment banker so he had read about the feed in tariff and obviously at the time, before the government slashed the feed in tariff it was an amazing deal...

I: Yeah

R: a really good investment, because you could invest about the same as you could in an ISA and get a, you know, what was the return?

I: I can't remember...

R: I think it might have been double digit?

I: yeah, I, I can't remember, it was good...

R: Yeah

I: whatever it was, it was far higher than what...

R: I think it was 11%.

I: Hmm

R: so you know, that what had attracted him to that and then we were saying you know, it is kind of just a way of allowing you to play at being green it is not gonna do all your electricity and you could probably save that amount of electricity by buying more decent appliances or and you know if you are gonna do anything for your heating which is where most of you energy is being used...

I: Hmm mm

R: so insulating....

I: yeah

R: would probably be a better way of doing it.

I: right

R: but you know there is only so much you can ...I mean like you can say that, if you say that to a client you need to sugar coat it ...

I: Yeah

R: because, it's, it doesn't go down well if you are accusing someone of playing at being green...

I: Yeah

R: but they are spending...

I: yeah

R: 20 thousand pounds of fees on you...

I: Yeah

R: it is a bit patronising.

I: Yeah, exactly, you are kind of walking the tight rope between they're your client, they're paying you so you are kind of paid to do what they want ultimately ...

R: yeah, yes, oh but they like to be informed, they do, in fact, I think that is something else is that clients do actually...erm, a lot of, we have had three clients who wanted us to do extension to their houses, who are architecturally trained...

I: Right

R: and erm maybe not completely qualified but erm but you know, who are interested in this and a couple of them have used having us do a house extension for them as a way of erm, [inaudible] for themselves...

I: Right

R: so we are both doing it for them and teaching them how to do it.

I: So you are doing their part three log sheets?

R: Well kind of, well not really, well not log sheets but just you know just erm, I think people who have worked for big practices who have only ever worked on big buildings and maybe got, and maybe then wanted to start their own practice and who are independently wealthy anyway...

I: yeah

R: because there are many of those around and having your house extension done is a really good way of seeing how it happens at the small end I suppose.

I: Yeah, yeah, I know it is true... [anecdote about large practice work] So I am, I am er, interested in the er, your, the way you have, so your practice, isn't particularly interested in energy stuff at the moment, which is, why should they be? [inaudible] but the best way you have found to fulfil those ambitions is to leave rather than persuade them to ...

R: well there are other reasons as well it is not just that, [talks about personal reasons for leaving practice]

I: So erm, I have got a er couple more question if that is okay?

R: Yeah

I: So I am interested in the fact that we build these prototypes and we don't get information out and we just keep as you say, keep building prototypes, keep building prototypes...

R: Repeating the same mistakes...

I: Yeah erm how do you think that that might be rectified, how, is there a piece of legislation or a piece of, I don't know is there some way of engaging practices, like the one you are currently working in, in ,in collecting information about building, I mean not just about energy...

R: Er I think, er, okay erm, I think, I think there are people in practices who are very, who are quite erm techy...

I: hmm mm

R: who are really interested in erm kind of fabric standards and kind of the challenge of reducing you know energy consumption ...

I: Hmm mm

R: so I think I'd see myself as one of those people and I have introduced into our practice things like a U-value calculator, no one knew what one of those was before...

I: Right R: right, we used to get [brand name] to do it for us...

R: Yeah

I: and erm and I kind of bought one and it was a hundred pounds...

I: Hmm

R: and I taught everyone how to use it...

I: yeah

R: and now it is a really kind of indispensable too, we use it all the time and I always, I always {inaudible] to start, erm I am thinking about doing the passivhaus, the passivhaus course...

I: hmm mm

R: and learning how to use the erm is it Passivhaus planning...

I: PHPP...

R: yeah, I have never used it before but I am going to try and get to grips with that and , I will, once I leave I am probably going to still be around and I am gonna be working one day a week on the school until it is finished from a far, erm you know I generally write the bits in our, any kind of fee bids that are to do with eco stuff so er, I probably come in, I will maintain links with them and I probably will, when I get to grips with PHPP I will probably do a CPD for them on it...

I: Right

R: the question, the question was...

I: yeah, what do you think might make, make people engage with the idea of getting post occupancy information and feedback...

R: I think if it was incentivised...

I: Right

R: so I think if there was a financial carrot for getting that information it would, it would definitely incentivise people, so just in the same way that you give a, you hold back money as a retainer for a contractor when they are building a project and then they get it a year after they have finished the project, if the same was to happen to any one building sort of designing

I: right

R: erm they get, they pay maybe over the odds for their building control fee and there is a sum added on which they get back if they can prove that they did what they said they were going to do...

I: Yeah

R: would be a good way, that would definitely galvanise us into doing stuff...

I: yeah yeah, it is true

R: and then, um, um, I think the other things is that there, there, is the obstacles for gathering that information, I know that when speaking of going back and sorting out the defects and getting the retainer back to the contractor ...

I: Yeah

R: That's the point where we've maybe not seen a client for a year after it has been built

I: yeah

R: ...and all the little problems start creeping out the woodwork, there has usually been, you know you can't get through a building project without a little bit of argy bargee and it all just, it feels quite depressing because you are, basically you hand over this building and usually the client is ecstatic about it, they love it...

I: yeah

R: and then the next time you see them it is sort of lots of little niggly complaints and you don't wanna here that!

I: Yeah

R: partly because there is nothing really you can do about a lot of them and without spending money which you don't have...

I: Yeah

R: you know, you have got, the last thing you want to do is be spending money out of your own pocket to fix a building, we, we don't do that...

I: yeah, yeah

R: we haven't got that money and people think architects you know are we, we, have been scraping along the bottom for five years...

I: Yeah, everybody has...

R: you know we don't make profit, all we do is pay the salaries and erm and so I think there is that kind of, if you start kind of poking around too much you will find you know bits and bobs and and you are opening yourself up to sort of liability...

I: yeah,

R: Investigation

I: Yeah, no, no, that's that's, you are setting yourself up for a, for a court case by going and finding that stuff out...

R: Yeah, I mean, maybe not a court case but an unhappy client, you know, at best. You know it is just sort of erm, so yeah, I think, I think, if you could, if there was some way of maybe installing some kind of monitor that you could watch from afar...

I: Yeah

R: but without having to go through the client to get...

I: Right

R: that would probably make you feel a bit more happy about doing something.

I: Yeah

R: so for example if I was party to their electricity bills for two or three years after building was – and their gas bills – but without having to go and ask them for it...

I: Yeah

R: I think that would be very useful...

I: yeah

R: I know it is a bit big brother but...

I: no, no, no I suppose soft landings or that kind of way...have you done any soft landings?

R: No.

I: [explanation of soft landings framework]

R: Although I think we do do that, you know because clients aren't shy about calling us and asking if they don't understand something...

I: yeah as I say I think soft landings is for I think bigger, you know, when an organisation moves in and there is hundreds of people moving in who haven't all been party to the design process...

R: Exactly...yeah. Hmm.

I: Something else that occurred to me there, your erm this is the kind of issue of going in and finding out information about a building that might make your client unhappy...[inaudible] is there kind of a liability issue as well of going and finding out things that have gone wrong that might be your fault and when you said rather than getting [brand name] to calculate your U-values, per...er, has anybody,

is there an issue with kind of liabilities, it is [brand name]'s problem if it doesn't meet U-values and they have calculated it and its now your problem if you calculate it?

R: well it is no one's problem because there is no, there is no incentive, there's no, you don't have to actually, you know, you all you have to do is demonstrate that your design meets that U-Value...

I: hmm

R: not the building because nobody ever checks

I: Hmm

R: So for example, if you, if the insulation was badly fitted and there were cold gaps and things in it between the frame or, or say, erm you had used cavity insulation and the builder had got all mortar in between bits of insulation, you know like rock wool kind of full cavity insulation we use sometimes, erm you know that would show up on a thermal imaging camera and it would...

I: hmm mm

R: erm and it would, I don't think it would really, I mean when you do your site inspection you go and have a look and you try and check, I check anyway, to make sure that they haven't been getting mortar in the cavities...

I: hmm mm

R: but you can't be expected to be there every day, it wouldn't, it wouldn't be reasonable, you couldn't reasonably you know sue and architect for a bit of stray mortar getting in to that.

I: Yeah

R: you know, I mean er so I don't know, erm and also, to be honest with you [brand name]'s U-values are quite dodgy, because they don't do it properly, I found out, they tell you a quote, and then so for example, not [brand name] but erm the not [brand name] but [another brand name] they do the [product]...

I: yeah

R: they give you a U-value for the [product] but, and they portray it as a U-value for a wall built out of those blocks but it isn't...

I: Hmm

R: because they don't take into account the joints ...

I: Yeah

R: which makes it worst.

I: Yeah. Erm one final question if I could. If er, there was a repository of data, energy data from houses or schools or whatever, which could help you make decisions about how you design buildings – this is a very odd question – what might that look like? What might it offer you? If you could access lots of energy data?

I: Okay, yeah, erm...

R: How might that help you?

I: right it would need costing information in it, it would be great if it had standard details in it, erm er it would be really good if it had erm the way that different systems interlinked, so for example erm a certain kind of window, how that coordinates with a certain kind of wall building up...

I: Right

R: because you can often get information about systems...

I: Right

R: you know like a cladding system or whatever, an insulation system ...

I: hmm mm

R: or a window system but sometimes it's the junctions where those two meet that is the problem er, and then, I don't, I think there is that and I think there is also, there is also there is a whole question about service cause I am kind of, I suppose I am talking about fabric [sizes?] because that is what I can change myself but I can't really, I don't feel like I have enough information to be able to properly question a service engineer when they are saying...

I: yeah

R: that they wanna go this way or that way and erm it would be really nice to be able to point to some examples of well they used that sort of, that strategy and it was x times better than the one that you are proposing so what gives...

I: yeah

R: That would be really useful.

I: Excellent, I think I have, we have gone through all of mu themes, thank you very much. That was very useful.

R: that is alright.

[ends]

1.21 Central Government Consultant 21

Respondent:	Central Government Consultant 021(R)
Interviewer:	Craig Robertson (I)
Location:	UCL
Time/Date:	14:00 21/11/12
Duration	51:21

Transcription:

[begins with signing consent form and reading information sheet, I describing the procedure and asking R to describe their role]

R: I am working in the [Government department] [funding agency]...

I: Yeah

R: and I write the specifications for new [type] buildings on the environmental side...

I: Okay

R: I am a building services engineer.

I: Right. Erm and the specification feeds into the briefing for...

R: Yeah, I have got it here it is the [central government building spec] is the latest thing we have been doing...

I: Right, this is the new, the new design guidance...

R: Yeah design guidance...

I: Yeah

R: so for instance we have been working on base line design...

I: Okay.

R: and, so we produce a number of reports, this one is to do with energy efficiency...

I: Right

R: and [consultancy 1] produce this for us.

I: hmm mm

R: and [consultancy 2] have been working with them and we've tested out this specification, er on a base line design, a theoretical design...

I: Right

R: erm so there are quite a lot of innovations in here about energy ...

I: yeah...

R: energy modelling, reporting...

I: okay how, how are you modelling your energy, how are you testing that baseline?

R: er, it is not actually specified in the method very much apart from using TM22 as a sort of recording mechanism.

I: Right

R: so we are using that at design stage and also we are suggesting that they do in use energy end use analysis and again TM22 can be used to record those and compare what they predicted but we are also, I am quite interested in iSERVcmb, which is a programme developed by Ian Knoght at Cardiff University ...

I: hmm mm

R: the website is iSERVcmb...

I: Right

R: dot com I think, and what they have got, they've got a European EPBD directive project...

I: Right

R: to do about 300 buildings and what that will be is continuous monitoring and benchmarking...

I: Right

R: That is why it is CMB...

I: Right

R: iServe CMB and what their idea is [name] is the professor there and he's erm produced a er facilities and services spread sheet which I have specified that people complete before financial close which basically records the equipment the meters and the sensors...

I: Yeah

R: That are being logged.

I: Right.

R: and then the data is fed up to, well not actually Cardiff but K2N their sister company and they can then produce live benchmarks depending on the equipment...

I: Right

R: so it is zonal benchmarks...

I: Right

R: but based on the equipment that is being monitored in that zone and the EPBD were interested in this because instead of having the assessments of air-conditioning plant that someone has to go in every year and do an assessment report, this continuous monitoring and benchmarks, the idea is that that takes the place of erm experts assessors and so it is online continuously comparing and the idea is that equipment will then be compared with other equipment...

I: Right

R: at a level of equipment. So for instance he was saying that they have got sensors built into pumps these days...

I: Right

R: so taking straight from there and...it is a bit like an electronic er O+M manual if you like.

I: Yeah

R: that records all of the equipment in the...that is being used in all the different systems ...

I: hmm

R: and it is designed to benchmark HVAC systems...

I: okay so are they compared against a collection of similar HVAC systems...

R: Yeah in different buildings...

I: in different buildings.

R: They do it on activity zones, so if a [building type] has a server room it could be compared with other server rooms.

I: Uh huh.

R: and office could be compared with an office in any building.

I: Right

R: so you can build up a building out of activity zones....

I: right and similar equipment buildings and...

R: yeah and compare different types of equipment, the performance of different types of equipment and what the benchmark is for that equipment. That's the plan.

I: Right.

R: That's quite an ambitious plan.

I: It is an ambitious plan and how does that fit with the TM22?

R: well TM22 is a more, erm manual auditing system...

I: Yeah

R: but it has got an in use energy metering now...

I: Yeah

R: erm the trouble is with TM22 and any design prediction software is it tends not to reflect what you actually read on the meters so the advantage of iSERV is that you are actually recording the kind of consumption and you are not particularly worried about the design.

I: Yeah

R: er so our problem is to reconcile design with in use, so we have put them all in to use them and and the contractor to come up with a way of reconciling them and we have used this IPMV protocol...

I: Okay...

R: International Performance and Measurement Verification protocol which has been mostly used on energy performance contracts like Re-Fit...

I: Yeah

R: there is a programme in London I think. So Re:Fit uses the IPMVP way of reconciling your predicted savings with your actual savings so we are saying you produce a baseline model which could be a TM22 model which should be broken down by end use...

I: Yeah

R: and tied in with your metering strategy...

I: Yeah.

R: and then in use, you compare your in use with your base line and you use IPMVP to make adjustments and corrections to your baseline model.

I: Yeah

R: then once the model has been agreed then that is the model on which you go forward with your payments for the rest of your PFI contract.

I: Right, not actual meter readings?

R: well it is because by the time you've produced the in-use energy model, they are not quite the actual meter readings because they have got to take the risk on certain elements...

I: Yeah

R: so the other side of it is that erm we are specifying that only the volume risk on heating and internal lighting is shared with the contractor all the uses which are the [building type]'s responsibility like ICT equipment, stuff like that is paid for by the school.

I: Hmm mm

R: the volume risk for these other end uses isn't with the contractor. But they have got to produce a design prediction for those two elements, the lighting and the space heating and the hot water and then after it has been corrected using IPMVP protocols, they can justify higher consumption but they can't justify wrong design assumptions.

I: Right.

R: so that will be the interesting bit and we are saying if there is disagreement that will be adjudicated by IPMVP certified or equivalent energy assessor, so we won't end up in court.

I: Right

R: before payment mechanisms were down to benchmarks...

I: Yeah

R: and people saying oh well we will need to benchmark, and they had to say that they will need to otherwise they wouldn't get the contract...

I: yeah

R: then they signed up to arbitrary benchmarks and in reality they were double those benchmarks, and then there is a legal battle about how to resolve that.

I: So, so, what are they targeting now, I know they are targeting a realistic TM22 based end use model but is there an upper limit for the end use?

R: We put in an upper limit on a base line model with default equipment in...

I: uh huh.

R: of 110 kilowatt hours per square metre, total energy consumption.

I: Right

R: 50 electric, and 60 thermal and in the case of all electric heating would be 90 total. 46 kilograms carbon that is...

I: right

R: and the other equates to 40 kilograms carbon dioxide /m².

I: Okay.

R: So we think that is a reasonable, quite a hard design target actually...

I: Yeah

R: Whereas before we were saying you should give meet 22 kilograms carbon dioxide /m² which is an impossible target and so it was just chaos really and they had to take the volume risk on the whole consumption, including everything the [building type] did which is mad really. So at least we are now being realistic and now we have said it is the responsibility of the contractor to tell the client where they are going to expect bills on their own but not to take the penalty for them as well.

I: Right

R: so basically we are trying to make a transparent auditing process.

I: hmm mm

R: erm that's the idea.

I: erm so I am being a bit slow here I think...when, when you finish the building and then the model is kind of verified against the actual consumption...

R: Well you have got an initial model at bid stage...

I: Yeah, which, for arguments sake say it meets the 50/60...

R: You try and meet that, with default equipment in ...

I: yeah

R: and then you are allowed to go up above that because we have got legacy equipment coming across from [building type]s...

I: Okay

R: they have not got new equipment...

I: Right

R: they have got old furniture, old ICT equipment, old...could be anything.

I: Yeah

R: so based on the actual equipment we expect them to do an energy en use prediction to collate all of the data plus model simulation of the thermal and lighting...

I: yeah

R: to get more accurate assessments I: yeah

R: part of the contract and then that is then their base line, their final baseline model if you like but then they are also allowed to adjust that for weather, occupancy, different hours of use in their in use energy model which is reconciled against actual energy consumptions at the end of each year.

I: Yeah

R: reasonable adjustment...there could even be things like, we got the wrong factors for design so there is a little bit of play in there...

I: hmm mm

R: After adjustments to the heating, internal lighting and hot water loads the contractor will share the payments for excessive energy use above that prediceted by the in-use energy model agreed with us.

I: Right

R: and savings are shared as well, so on those two aspects..

I: Yeah, so once they make a sort of adjusted model for the actuality of the design, they build it and start running it...

R: yeah

I: and then it is assessed after the first year or...

R: yeah once it is it is after the initial bedding in period.

I: yeah

R: then that's compared with their final model and they can make claims, for other adjustments but we must agree to the adjustments as being reasonable. We will use a third party assessor and the IPMVP in dispute resolution I: right

R: so it is with us to approve any additional cost change.

I: but then that once that is verified against the original model and everyone agrees...

R: yeah

I: then that's what they are billed for the...

R: and then the weather correction should be in accordance with IPMVP as well...

I: Yeah

R: so the statistical validity of the correction must be within certain confidence limits, it is laid down in IPMVP; it is also in ASHRAE guideline 14...

I: Yeah

R: so that gives you a framework that the contractor can claim the weather data but he can't just do a degree day annual comparison that won't work...

I: yeah

R: he has got to do a proper correlation, month by month....

I: yes

R: to see how the building is performing on space heating relative to degree days or outside air temperatures and then claim it through the proper relationship that he has proved.

I: so the ongoing incentive for him is to keep the energy consumption below his agreed bill?

R: yeah and then, well I think, I think, there is also a mechanism in there to allow him to make invest to save measures.

I: right

R: so if, if the contractor can see a way of saving money he can propose that, he is required to but I don't know how much of that they will do, obviously they have got to get a return for their money.

I: yeah. Presumably in collecting this TM22 data...

R: they should have enough metered evidence to prove that a a measure was effective or not...

I: Yeah

R: So simple measures, they should install when they become economic.

I: Yeah.

R: hopefully there won't be too many because it will be pretty efficient already.

I: Yeah

R: but the way, one area where there may be is replacing existing equipment so legacy IT kit...

I: Yeah

R: we would encourage then to, to do that with the [building type]s, same with server rooms and things like that. But we have also looked at, quite extensively at server room loads and quoting maximum temperatures and things which should mean that you don't need to mechanically cool your server room...

I: Yeah

R: so saying that the contractor should assume that all servers will operate up to 27 degrees...

I: hmm

R: continuously and up to 200 hours at 30 degrees...

I: right

R: and up to 35 degrees, because that's the, there is an ASHRAE standard on IT equipment that has been signed up to by the IT industry and it classifies IT equipment as class A, B, C and D ...

I: hmm mm

R: and I think class C is what most [building type]s already have which is this 27 degrees....

I: Yeah

R: but in the past we were getting IT companies er issuing warranties for 21 degrees and stuff like this...

I: Right okay.

R: so we are just saying assume that that doesn't apply. Then the other thing is battery backup, people said that the UPS needs to be at 25°C...

I: right

R: but when you look into that we found out that they degrade the life but the economic return is much better to let the UPS battery last for 3 years instead of 4 years...

I: right

R: and not use cooling. So I think we shot a few of the myths down about server rooms.

I: Right

R: because so many commercial servers aren't cooled quite often now...

I: Yeah

R: they have got them all outside in some places too...

I: Yeah like California ...

R: yeah a bit eye opening to me, people saying to me 'oh we have got 70 kilowatts of cooling in this [building type]' in an academy – well, what's that for then, it is for the IT equipment...

I: right

R: you know, why? And and do you know [name]?

I: yeah

R: he was sort of prompting me on all of this because he is a bit of an expert on computers...

I: yeah I spoke to [name]

R: so that was where all that came from...

I: right

R: Our IT people were initially conservative as they had worked in the industry and they just thought that 25 was the upper limit for room temperature in server rooms.

I: so how did you convince them?

R: well we did a calculation on UPS because that was a sticking point [consultant 3]'s engineers said' oh yes it is all equipment will work but the UPS's require 25...

I: Yeah

R: so then they said oh we will have 25 then, the IT people said we have to have 25, before it was 21, then they went up to 25...

I: Yeah

R: and the we looked into it [name] and I just looked up the battery things and worked out over the phone with the IT guys I think that it would be £15 a year to have this battery replace early because it is 65 quid for this battery...

I: against the space cooling costs...

R: well we thought it was more expensive yeah...

I: Yeah, yea. So I am interested in the the 50, first of all where the 50 and 60 came from.

R: Yeah, so we did some POEs last year, 24 [buildings] I think it was...

I: hmm mm

R: or was it the year before last. Two of the buildings were performing at that, below that level, all the rest were miles above it.

I: Right

R: and then we got all of the DEC data [consultant] analysed the best DEC data from 2006...

I: Uh huh

R: there was only a hundred [buildings] I think and they were suggesting 135...

I: Right

R: Was where that's coming in as good practice.

I: Hmm mm

R: but we know that [buildings] aren't very efficient and [consultancy] do you know them?

I: Yep

R: well their [building type]s are performing down at 30 on the system. Do you know how there system works?

I: [Name], I am vaguely aware of it but remind me.

R: well what it is premixing of the outside air with the room air so that you don't need to heat the air until the outside temperature is below about 5 degrees.

I: Right

R: Cause in a [room type] there is 3kW loads in there, people and there might be other loads as well.

I: so most other systems of natural vent take the air, heat it through a cabinet or some other system and then throw it away.

I: Yeah

R: So they are heating the air every degree below 15? So [name] have got an 11 degree advantage.

I: hmm mm

R: also they are very low speed, they have got these large sweep fans which are very low specific fan power, I think they are .2 or even .15.

I: Right

R: Whereas if you have got an MVHR system you are up at one if you are lucky...

I: Yeah

R: one and a half.

I: So [name] I assume the free areas are much higher because of the air speed is lower...

R: er they have got big openings yeah erm but they are boxed in so the acoustics is...

I: Right.

R: and they do an atrium system...

I: right

R: where the air comes into the atrium and the atrium acts as a ...

I: distribution duct...

R: Plenum. So the atrium is about 15 degrees, which is quite cool.

I: Hmm mm

R: but the room temperature, the temperature in the [room type] is about 21. Erm and then in summer time mode, it goes into natural vent mode so the window opens...

I: hmm mm

R: The fans can actually boost it, they can turn backwards and use as extract instead, or it can just work as natural out.

I: hmm

R: so we have, that was one I wanted to introduce into the baseline designs but because it is the only manufacturer, everyone said well you can't specify a manufacturer...

I: yeah

R: so the final baseline design has got MVHR in it which actually on the TM22 calc is difficult, because you have to work out how many hours it will be operating...

I: Yeah

R: and that is where things, simulations and things all go wrong because, I don't know what they do actually, some of them assume that the room load is capable of heating the room, even though you are going to get cold air dumping onto the occupants so it won't be used like that...

I: Yeah

R: there is a lot of wrong assumptions in things like IES models, if you use the wrong, so its say, my latest task to [consultant] is to get an accurate prediction of the MVHR hours of use.

I: also because [building type] are such complex systems, the use of the [building] is such a complex thing in itself, it is rarely a nine hour day, eight hour day 9 to 5, it goes beyond that and is broken up...

R: well it can be less than that as well.

I: yeah it is broken up...so the [rooms] are not always used.

R: Yeah, so the [name] system is better because it is room based, it is not centralised...

I: yeah

R: so with MVHR we have got two systems, one is room based...

I: hmm mm

R: that is probably more efficient then we have got central plant for a whole wing that is less efficient definitely. [Name] is better still, so we didn't go to the [name] level but we have gone to a level

I: Hmm

R: that is going to be pretty hard to reach with MVHR...

I: Yeah

R: Impossible to meet with er normal Nat vent, impossible to meet with mech vent...

I: right

R: well it may be just possible...just possible with MVHR

I: but it is a challenge.

R: yeah they will have to set it up properly and monitor it properly, they can't have it just working, erm.

I: Okay and then after that initial assessment when you are agreeing the level at which they have achieved, erm if they are above that 110, is there a penalty? Other than the costs to themselves.

R: er there should be, yeah, yeah.

I: but there isn't?

R: no.

I: Right

R: but there will be a penalty, whether it will be very onerous is another matter but there will be a penalty.

I: Okay

R: Well, they will be paying the costs; there will be no other penalty other than that.

I: Right

R: they pay for the extra energy.

I: right

R: That is not a huge amount if they are within good tolerance but if they are double which was happening on PFI and quite a lot on the [building programme] then we have got a problem.

I: yeah. So when you are, you said earlier that you look at the actual energy consumption versus their model and make adjustments for that depending on where the responsibility lies, how do you attribute, if it is a design flaw or how do you attribute if it is a kind of use thing, how, I can imagine there being lengthy conversations...

R: Yeah well it is only on the heating...

I: Yeah

R: and the lighting.

I: Yeah

R: so they would have to prove that it is more hours of use for instance, that would be a valid...

I: hmm mm

R: so they have got to record the use on those circuits, and if they are more than what they said they would be, that would be one...

I: hmm

R: er, then it could be their use of the blinds could be wrong...

I: hmm mm

R: er. Things like that.

I: and are the client team simultaneously going around checking the insulation levels in the walls that mean the heating loads aren't higher because they have fudged the build or...

R: oh, I see what...

I: I am being very cynical; I am an architect by profession...

R: there should be a permeability test on the walls any way...

I: yeah

R: quite a lot depends on the handover being good...

I: Yeah

R: tests being done...

I: and the construction process being monitored properly to check that they are...

R: yeah, yeah

I: doing everything...

R: there is somebody called the independent certifier who has got to sign off the project...

I: Right

R: erm so quite a lot depends on that individual.

I: are they a kind of clerk of works, as a clerk of works...

R: glorified!

I: glorified...

R: well they are not there much but they are there at the critical moments and they can ask for things...

I: okay

R: so they can ask to witness the permeability test or something.

I: Right

R: and actually you could ask for the permeability test to be repeated if it was a big problem later on. I don't think just one issue is going to cause it; it is going to be a whole catalogue of things that go wrong...

I: yeah

R: er, I think changed occupancy hours will be quite easy to record...

I: hmm mm

R: so we have asked the [building] to record hours of use of different spaces, out of hours use so presumably they will be able to reconcile that part of it and the weather data will be quite accurately done.

I: Yeah

R: but I wait to see what happens in practice and that is the value of having iSERV, you actually can you are not down to estimates of things, you actually know the hours of run of that say [manufacturer] plant...

I: hmm

R: so you can get to that if you need to.

I: and the sub metering that you are stipulating is going to...

R: well we have asked for quite a lot know because it is based on what [name] was wanting most, well it is TM39 which is the standard which is advisory in Part L but we have made that a bit more prescriptive...

I: and that goes beyond zonal, it goes to end uses...

R: yeah it goes to the actual equipment and things but not right, it is still open, er I have a long list of things in here that need metering and this is for new building where it is not too expensive to do. Er so I mean I am waiting for the contractor's reaction to all of this, I mean they don't like it...

I: of course they don't!

R: They may like it when they realise they won't get penalised arbitrarily on benchmarks.

I: yeah yeah, exactly.

R: I mean it is better than what they have got now.

I: yeah

R: Because they are only being assessed on space heating, hot water and internal lighting...

I: and on the actual building they are producing...I mean it is set against actual...

R: yeah but only on those elements...

I: yeah

R: not on everything

I: yeah

R: so small power is out of it, a lot of the vent is out of it, not all of the vent; it is the heating and the vent, not just the heating.

I: yeah

R: er

I: so through the...

R: things like external lighting is out of it, only internal lighting is what we are talking about. Er, it is all listed down here.

I: so is this a PFI?

R: this is a PFI, now for the other ones that aren't PFI, we haven't got this, but what will the contractors choose to do, er, we still want the meters in ...

I: yeah

R: the first lot of capital build in the new programme is using the old spec which has still got the old carbon ratings and things in. So it is only when the PFI comes in that this will have a big effect but it might have some effect in renegotiating existing [building programme] because this could be used in court for instance or as a model to reach agreement...

I: yeah

R: where you have got a dispute rather than go to court over energy payments like many do at the moment.

I: yeah, so on the list there, the design team would be employed directly by the contractor?

R: Yeah.

I: Because the design is having an impact on the contractor's long term goals.

R: Yeah

I: So when, in the, during the design process they have access to the iSERV data? Do they to make these ...

R: well there isn't much at the moment...but they will fill in, the yeah, so eventually we will move from a hundred and ten to what iSERV tells you it should be....

I: Yeah

R: that will be a more, well we haven't actually done that exercise yet.

I: right

R: er it may be possible for the main contractors to do it now actually because they have got a number of buildings now, erm but at the moment but we are using it as a means of making them report in a sensible way because I think it is more accurate than trying to do it through TM22...

I: hmm

R: TM22 is probably alright in some ways, I have never used it on an existing building, it is quite intensive to put the data in ...

I: because you can get lost in the hierarchy...

R: I am not sure how accurate it is, but what we have done is on the base line we have done the base line primary...

I: Uh huh.

R: and the base line secondary, we have got [consultancy] to put all the data and the simulation data into TM22 and work out what comes out at the end and they are meeting 110, they are below that, as you would expect I suppose.

I: Yeah

R: but then when we add in the real equipment then it could all change, then it could go above and we have not modelled the buildings properly yet either and this can change things in a major way. We think designers can get within 20% in predicting the energy use of buildings as this is being achieved in Australia where it is required. We are now setting the input data parameters for the energy end use calculations for the contractors so that they cannot fudge the initial baseline or final baseline energy models.

I: so the and I suppose I am asking that because that diagnostic information within that one project you know you are kind of working out what is happening and...I am interested in that getting beyond that design team and obviously if that contractor is working on a number of different buildings then...

R: yeah that is what I hope to be happening...

I: then there is going to be some dissemination of that data...

R: what I am hoping as well the [POE funders], you know there is 8 [buildings] that had a TM22 done on them...

I: Yeah

R: and they are up and running

I: yeah

R: and so what I was hoping was we could compare our baseline TM22 with those 8 [POE funders] actual TM22 to see where the errors are and things...

I: Yeah, is that stuff going into CarbonBuzz?

R: er don't know, the last I heard it wasn't available publicly...

I: right

R: because [name] said when you have done yours let's compare them, so I should get back to him now...

I: Right

R: They have had trouble with the meters...

I: Right

R: getting the meter information in the spreadsheet and things.

I: into the TM22 spread sheet?

R: I don't know if that is the problem but it might be the problem with getting that information in, it might actually be a problem with the meters.

I: Right.

R: that is the one thing with IPMVP, it asks you to have a metering strategy that allows for meter failures, things like that.

I: Right. Okay

R: But [POE funder] hasn't been that critical because they are not relying on it for payment are they, it is all research thing...

I: Yeah, but...

R: so if something goes wrong are you really going to follow it up?

I: no, yes it is a research thing but I think there are some payments to be had...

R: Oh right from the data?

I: no from the [funder] to carry it out...

R: well I am hopeful those 8 [buildings] will be quite useful...in a research context anyway, I mean we haven't time, that's the other things, when we get all this data in, what are going to do with it?

I: Yeah, yeah exactly, exactly.

RL That is why iSERV is such a beautiful thing, if they have got the money from Europe to analyse 300 buildings and feedback monthly so the contractor, [name] is part of the iServe group so is someone called [name] so what we have tried to do is contact [name] to see what [buildings] they have already got...

I: right

R: and work on it like that, so it goes beyond this little programme because this programme isn't that many [buildings] it is 261...

I: Yeah yeah

R: that's including the ones that aren't PFI, so they might be 70...

I: yeah

R: so it is a bit of an academic exercise.

I: yeah yeah

R: and the [building programme] has already been built.

I: Hmm mm

R: and to a different, worse spec so the key is to get to the contractors and the clients I suppose...

I: Yeah

R: and to say don't do what it says in the spec, we'll do something along these lines, to make it fairer for people...

I: yeah

R: and build up a database through iServe of actual online benchmarks. The trouble with CarbonBuzz is it is dead data in a way, it is not live data, someone has to type it all in.

I: Yeah

R: whereas iSERV will take emailed data straight from the meters...

I: and make an immediate adjustment to the benchmarks.

R: yeah

I: based on that...

R: well it might be monthly reports. And also because it is looking at functional uses instead of buildings...

I: hmm mm

R: it can build up a picture for offices from all buildings that have got an office in it and all pieces of equipment in whatever building they are in can be compared with the manufacturers' data sheet...

I: uh huh

R: so they have got theoretical performance of these things often on their system right.

I: hmm mm

R: and they are working with the manufacturers so hopefully it can be quite fruitful in the long term.

I: Yeah, no that sound really interesting.

R: and CIBSE and REHVA? are supporting iSERV...

I: right

R: it has got a lot of European partners now. So they probably need to sell it in England a bit now after having sold it all round Europe.

I: sounds really interesting.

R: yeah it is interesting.

I: so, the, erm, what it also seems to do, or does it, erm is remove, I mean one of the big barriers to going and collecting information is the fear of getting sued when you find out something has gone wrong in your building that what this scheme seems to remove...

R: well we ask for it to be done, so as a client any other client could do the same...

I: Yeah

R: there is still that thing in certain, previous PFIs, would the contractor want to do it but it can be anonimised and as it is product based and zone based rather than building based it could get rid of the blame game a bit...

I: yeah yeah

R: because the idea is just to make the data transparent not to penalise anyone, it is to find out what works and what doesn't and gradually improve things.

I: hmm

R: we know this type of chiller works here....

I: hmm mm

R: or something, this type of pump, whatever.

I: and what other building characteristic information are you capturing, is it actual design things?

R: it doesn't worry about those; it doesn't really worry about that.

I: but just in terms of what works and what doesn't work...are you trying to...

R: well what we...

I: what about iServe?

R: well iServe doesn't really log that sort of thing but its its comparing the performance of erm types of equipment in different buildings so it doesn't really take account of, or I don't think it does, but you would probably have to talk to [name] to confirm that.

I: Right

R: er it does log the facilities, I mean you can put anything you like in there, it is a spreadsheet, but erm, I don't know whether they have actually got design data in there as well.

I: it would be interesting to see.

R: rather than plant data, he has got areas ...

I: yeah

R: and use, occupancy and things, erm. Well he has tried to make it as simple as possible so he has removed as much data as possible...

I: hmm

R: because what he has found in the past is there is too much data and it doesn't relate to reality so you can simulate all this stuff and it is still not right, whereas he just wants to measure it.

I: hmm mm.

R: and he must have some design data in there I think.

I: Yeah but you can, you can end up with benchmarks so unique that there is only one building there, with that particular set of characteristics.

R: it is a good thing to ask him actually, how he deals with the performance of the building fabric you know because I am not sure.

I: yeah, I think a lot of...

R: because TM22 does, well it doesn't actually...

I: I think it captures some basic stuff about erm...

R: what you can feed in...

I: areas and stuff...

R: you can feed in your IES thing which has already taken account of that...

I: Yeah

R: but it won't do the calculation for you in TM22. That is where we are at anyway.

I: Okay. So the I have got a final question then about the barriers and overcoming these things, the penalty is built into this arrangement in that the person who is making the design is paying the bills so they have...

R: well maybe, I mean the treasury is not keen on having any volume risk transferred to the contractor, so we are talking to them at the moment we still think they should take some risk for their design whereas what the treasury is thinking is that we should make sure that the design is alright rather than expect the contractor to take the risk because there are so many things in volume risk I suppose.

I: yeah

R: if we are happy with the design then that should be good enough.

I: But that is the situation we are in at the moment. We are happy with the design and...

R: well we don't check them enough I would say.

I: well of course.

R: if we had a good enough check on them, in use, we wouldn't need to penalise the energy perhaps, I am almost coming round to agreeing with them....

I: right

R: I mean it is so complicated to do this adjustment that you might as well not do it but make sure that the heating design....I mean I just specify [manufacturer] I would at the moment...

I: right

R: because there is not another system as good, but for instance on server rooms [name] was saying well why don't you just specify that there is no external insulation on server room walls?

I: yeah

R: and you know air coming in and out of that room and that would probably be enough...

I yeah

R: but instead of that we go the long way round and say the PEU on the server room should be 1.5.

I: yeah]

R: erm so, I don't know, simple PFI, there is going to be an announcement on the 5th of December by treasury infrastructure group on the new PFI model called PF2. There is going to be big changes in PFI. [all this is still being discussed and PF2 was not such a big innovation as I thought at the time of the interview. Actually we had got it right in our PFI sped more or less and PF2 borrowed heavily from our Spec. We are still discussing how we might change our Services Output Spec but we have it right in essence although we may change it slightly to align with latest thinking.]

I: Yeah

R: and that was one of them. They are trying to talk to us about; they don't talk to me but to the commercial team....

I: yeah yeah

R: but you know they are saying we want a simple mechanism. They quite like IPMVP as a third party certification process...

I: Hmm

R: what Treasury and our Commercial Team don't want is for the contractor to be forced to do IPMVP analyses.

I: Right

R: but I am quite easy with that actually, I think it would be quite a good discipline for them but then I am not that close to the contractor, and I have heard that a lot of these contractors don't even use M and E designers...

I: yeah, I have worked with a few...

R: [name of building] have you heard of [name of building] the one that burnt down, the [contractor] one?

I: no

R: but anyway, that was in [location] and was meant to prove that you can build much cheaper...

I: right

R: the contractor, [name] as far as I know didn't have an M and E designer, they let the M and E sub-contractor do the design and it has flaws in it...

I: Yeah yeah I have worked with [contractor] in the past, not on a [building type]

R: I mean for instance the plant room on the roof, which was meant for the vent plant hasn't got any plant in it because the contractor wants to put the plant direct on the roof, outside the plant room in the rain.

I: right!

R: so you have got an empty plant room on the roof...

I: and a whole load of plant sitting beside it...

R: outside! Because it is easier to install. So stuff like that, which is disconnect between design and contractor...

I: but in disconnecting the financial risk from the design to actual use, how do you prevent that happening then?

R: well that is what happened in that case, it is not a PFI it is a design and build...

I: yeah but I was just thinking, it sounds great...

R: with PFI they will have to maintain it still so if they put the plant outside that would be the main problem, not the energy efficiency but keeping it working.

I: I understand but is sort of, that sort of problems in energy terms, so if you are using these benchmarks, say iServe is well populated and it has got a lot of benchmarks so your contractor...

R: ah, once we have achieved that we can hold them to it, because they are real benchmarks, they are not theoretical ones based on IES or SBEM or anything, they are real.

I: yes, but if the contractor is then got no financial link to the actual performance, they produce a design

R: Yeah yeah

I: which is based on the all the information all the benchmarks that seems absolutely excellent,

R: Yeah

I: you can't fault the design model but for whatever reason something changes at construction, something you know...

R: there is no incentive to come back you mean...

I: yeah, how do you ...

R: that's the advantage we've got isn't it, but keeping it. They will come back and sort it out, because I know PFIs that have never worked.

I: any building contract, the contractor scarpers...

R: you know all the under floor heating is full of sludge well that is defiantly his fault...

I: yeah, yeah yeah

R: there is nobody else you can blame for that.

I: yeah, but if it is his responsibility to pay for it, then he is going to clean it and make sure it works properly and maintain it and keep the energy down but if there is no financial...

R: so we are arguing to keep this in, that is where I think treasury is wrong,

I: yeah, yeah.

R: and our commercial team do as well.

I: hmm

R: but our commercial team want to have a cap, this 110, they don't want them to get away with designing something worse than that.

I: yeah yeah

R: so I am a little bit hesitant because [consultancy name] are saying it should be 135 but I think that is based on some really inefficient buildings.

I: right

R: but you know we have designed in the baseline a four storey atrium

I: yeah

R: and that could be incredibly inefficient...IPMVP says it is, atrium are one of the hardest to measure or predict the consumption of...

I: right

R: and that is because they just throw away the air out of them...

I: yeah

R: they heat them up to ridiculous temperature and it all goes up, they have got doors opening into them opposite each other....

I: yeah

R: we have seen this when we are round on POE, they have got a door that end, and a door opposite and you have got a four storey atrium in between...

I: yeah

R: and it is just freezing, the whole space is freezing.

I: hmm

R: so

I: and and sorry, just finally I suppose, presumably you are still these things have still got to meet building regulations...

R: yes, that's the bottom line.

I: so you have still got to do an SBEM calculation...

R: yeah, but we don't want to see it, throw it away. I am not interested in carbon ratings really, we have said an aspirational 40 kilograms of carbon but that is equivalent to 1 hundred anyway...

I: yeah

R: so what we are worried about is the 50 and the 60...

I: based on actual modelled end use data...

R: yeah, they should be able to do that...

I: yeah yeah

R: er it is not an impossible, I think it is easy for the engineers really, if they really went into it.

I: yeah.

R: they did a proper bin analysis of temperatures outside...

I: yeah

R: and then we have got a weather station specified...

I: right, okay.

R: so they can actually perfect their, I mean it maybe it needs to be simplified a little bit, it is too gold plated at the moment...

I: I think...

R: it would be okay for a [building type] and prestige [building type] they can afford all of these things, maybe the [building type can't]

I: but I mean if you offset against the savings that you are going to make on the energy bills...

R: yeah and what we are saying is that we would rather have AMR data and iServe than the BMS...

I: yes

R: so you instead of using your BMS and have local controls and upload that data to iServe...

I: will they then have somebody to respond to it?

R: well iServe will do that as a service...

I: but somebody has got to be in the building making....

R: yeah so what we said was the [building type] should employ an energy manager...

I: yeah

R: not full time but, so you don't just have one on the contractor's side but the Authority has energy Management expertise also.

I: yeah yea

R: and the other thing that has already happened in this PFI is that soft FM is out.

I: right

R: there is no soft FM; the [building type] is responsible for soft FM.

I: soft FM being?

R: being cleaning...

I: right

R: catering...

I: right,

R: security...

I: okay

R: and I would argue day to day building control and energy management...

I: right

R: day to day operation...

I: okay

R: erm, day to day maintenance.

I: and the [building type] is now responsible for all of that?

R: well you have to, there is a services output spec as well which defines those things but there has to be quite a complex, er agreement between the [building type] and the contractor about who is responsible for what.

I: yeah

R: Soft Services Interface Protocol or Agreement it is called and has to be written up by the Contractor and agreed with the School/Authority.

I: yeah

R: but you know my thing is really that I think the [building type] should have an energy manager...

I: hmm

R: a bit like the local authority has one.

I: yeah

R: to keep an eye on the contractor.

I: yeah yeah yeah.

R: and also the contractor must report monthly and quarterly

I: hmm mm

R: but you have got an intelligent person to examine what they have been fed.

I: yeah

R: you know and actually ask for data, not just get...

I: Yeah

R: because quite often with PFI data it is just a long load of errors or something

I: yeah

R: that someone gives you oh that's very nice....

I: yeah.

R: It's too much isn't it, too much data coming out of a BMS or something or a help desk reporting system...

I: exactly. I think it sounds really interesting.

R: we have looked again at PFI but there is a limit to what we can do but, hopefully this thing wont just limited to ...well we are looking for some existing [building type]s actually that we can pilot iServe on...

I: hmm mm

R: like, say some of these [POE funder] [building type]s they have already got that data, can we upload it into iServe already and then gradually...the good thing about iServe is it can take what you have got.

I: yeah

R: you know if you have got it down to equipment level you know it will take that but what we need to do is make up a model iServe template...

I: hmm mm

R: we have got the model; the model already exists with all the office types, with all the room types in it...

I: yeah

R: what we need to do, like we have done for TM22...

I: yeah

R: construct a [building type] from the baseline,

I: yeah

R: the first I want to do is construct a server room for a [building type 1] [building type 2] for our IT people...

I: hmm mm

R: find out what the kit they will have, the sort of thing they will have erm, the tolerances of it, the air flow, design an efficient one...

I: yeah

R: and put that in. and then actually measure a few...

I: yeah

R; and measure some bad ones, measure some of these 70 kilowatt ones....

I: yeah, yeah

R: that might be the name plate but they might hardly ever be in cooling mode.

I: yeah

R: or they might be all the time running as well, you see if you have insulated the envelope and you have say 21 as the set point the cooling is going to be working all year probably.

I: yeah yeah

R: even though, like if they just had a vent in the wall and no insulation you wouldn't have to have it on at all.

I: yeah yeah exactly

R: so what a waste you know.

I: yeah

R: and there are servers in [building type]s in [location] with no cooling there is a new [building type] a passivhaus one that has got no cooling.

I; yeah

R: and they have also got, there was an article this week in {institute journal] about the kitchens that [name] wrote...

I: I haven't seen that article.

R: there there's two kitchens in [building type] up there, they have got induction hobs, so they have reduced the vent right down...

I: yeah

R: the performance of the equipment actually in the kitchen so you would probably find that that kitchen is actually a third of what a normal kitchen is in energy terms...

I: yeah

R: but in cost, it would be more expensive I expect.

I: but the payback must work out.

R: don't know it is a good exercise to do and once you've got monitors on that kitchen you can actually, you don't need many meters do you.

I: well with iServe we could be, you could do that cost benefit immediately...

R: there is a [building type] in [location] we went round when we did the POE it's got a switch board next to the business managers office, never reads them.

I: yeah

R: we read them two weeks between, you know went one, came back two weeks later, and so putting a little logger on to those meters can't be that expensive can it, you could do all 8 with own logger probably...

I: yeah

R: and then just send an email up to [name] and you would have a thing for your building.

I: if the guy doesn't look at them then I wonder if he knows what they do, which bits of the building...

R: well I don't know about that, the labels tell him which distribution board it is but you would have to work it out.

I: yeah I went through a [building type] in [location] recently and the similarly had I think they had 7 meters...

R: 'cause they have to have that for part L don't they?

I: yeah but they...

R: they just don't use them

I: they had no idea what they were for though, no idea what was doing what! So we went round...

R: the scope for money making here is quite a lot I should think...

I: so we went around turning off things to see if it made any difference to the meters we managed to get it down to one we thought was the server room because it was reasonably constant but the others, they had no idea. And it wasn't, you know it was a 2 year old building.

R: at the grossest level you know you can benchmark on the financial returns that [building type]s have got to make.

I: yeah

R: you know every year they have got this consistent financial returns model

I: hmm mm

R: which is got the total energy consumption, it doesn't break it down but when things are so inefficient...

I: yeah

R: that is a good starting point, just upload that.

I: and is there any continuous checks on the 110 or whatever target you agree?

R: well yeah there will be...

I: I mean maybe I should write that into here, I think I have actually, erm that could be revised as benchmarks change.

I: yeah, so they have got to stick to that.

R: trouble is, things haven't been getting a lot better though have they? In the past.

I: no

R: the benchmarks now are higher than...

I: yeah

R: than they were before...

[conversation about increased methods of using energy, traffic light countdowns and battery operated waste paper bins]

I: this is why the benchmarks are getting worse!

R: it is only a battery mind!

I: yeah I know but it is just this need to make things use more energy.

[conversation about web location of documents and guidance]

I: that is brilliant; I really appreciate your time.

[ends]

1.22 Energy Consultant 22

Respondent:	Energy Consultant 022(R)
Interviewer:	Craig Robertson (I)
Location:	UCL
Time/Date:	11:00 19/12/12
Duration	36:43

Transcription:

[begins with I describing the procedure and his research asking R to describe their role]

R: so, er in terms of our company, I work for a very small company erm we are, we, I suppose are energy consultants but we like thing that we are a little bit...we are a little bit sort of more than that because we er put together energy efficiency projects for our clients but we also do the implementation and erm and review the actual savings from the projects that we have implemented...

I: okay

R: erm and the majority of our work is in energy efficiency erm although there is a portion of it that is also in power generation....

I: right

R: and that, that's pretty strictly by installations of CHP.

I: Right. [short explanatory point about anonimisation of transcript]

R: erm a big part of our work is with retailers...

I: right.

R: mostly supermarkets, erm I have been working for the past couple of years with [supermarket chain]...

I: hmm mm

R: as erm as a part of the uh, sort of the energy team with [supermarket chain] my biggest part of my role has been as a projects surveyor...

I: hmm mm

R: so I go into supermarkets all over the UK but mostly in [location]...

I: right

R: erm and find projects, energy efficiency projects related to er lighting, heating and ventilation, refrigeration erm sometimes power...

I: yep

R: erm and, and, yeah that's...

I: so when you say erm, before we go into talking about what you do for [supermarket chain], the energy efficiency projects that your company does, what, what does that mean?

R: erm I suppose that means er sort of er retrofits to building services, like existing building services...

I: Right

R: so some might argue that some of the projects that we do aren't necessarily making er systems more efficient...

I: right

R: but you can inherently make the building as a whole more efficient by controlling it better...

I: okay

R: erm and er sort of well, mostly it is around controlling things better.

I: so who are your typical client?

R: er mine? Or our company?

I: or generally, who comes to you?

R: our biggest clients are erm [multi-national company], that's pharmaceuticals and er supermarkets, like I said.

I: is that like the estate departments of that or pharmaceutical companies?

R: er to be honest I don't really know, I guess they are...to be honest I am not sure how [multi-national company] works as an organisation.

I: but it's people who have a load of buildings and they wanna make them use less energy.

R: hmm mm. Well we have a, we have a background in, our directors have a background in process engineering...

I: right

R: so er and a little bit of mechanical engineering as well...

I: okay

R: er so it is making their processes more efficient, pharmaceutical sort of big R&D...

I: right

R: and manufacturing sites have er, have some er sensitive things going on...

I: hmm

R: so you have to understand that

I: yep

R: and also make their estate more efficient.

I: so one of the problems of looking at energy as a kind of single issue is that it is, er, you have got to look at in the broader context of what companies, what people are doing, and what this whole kind of network of other stuff, so do they, like do they look at the processes, beyond energy?

R: yeah, yeah, like the actual processes...

I: like how to run a factory more efficiently kind of thing.

R: erm they probably do to a certain extent but I couldn't really elaborate on that to be honest.

I: yeah

R: we have got a background in brewing...

I: right

R: I know they are really into brewing so you have got high temperature processes...

I: right

R: and things like that erm you can make more efficient by recovering heat or yeah controlling things better.

I: right. So looking at er supermarkets energy system as a kind of, so are you looking at it as a sort of processing engineering point of view rather than as a building consultancy?

R: yeah sure I suppose although there aren't that many processes in a supermarket other than refrigeration.

I: yeah true, so what do you, when you um, you, when working for [supermarket chain], we talked about this a little bit the other night but I am going to repeat that conversation...

R: That is okay yeah, yeah.

I: just so it is on this tape if that is alright?

R: Yeah, yeah.

I: erm the er, why, why, why are they doing that, I know you...

R: erm, I think it is based on their CRC commitments...

I: Really

R: but erm I'm not directly working for their procurement guys, or there, the guys who are managing their energy budgets...

I: yeah so they, do they give you a target for the next year or how does it work?

R: erm they get a budget, they apply to erm their, I don't know, finance guys?

I: yeah

R: for a certain budget to do these energy efficiency projects...

I: right, a financial budget, not a carbon budget or anything...

R: a financial budget yeah, but I believe that there are, there are, they are all linked so there is a certain percentage savings off of their bill, off of their kilowatt hour consumption and off of their carbon...

R: right

I: though we are more incentivised by the, the first two so energy consumption and er their bills that we are on their carbon.

R: so their target they give you is a, both an energy and a financial one or...

I: yeah, yeah it is, so I suppose that comes out in that all of the projects that we do have to meet a four year payback...

I: right

R: and er, we have to bring stores to them that have between a 5 and 20% energy saving target. Now you can argue that you can maybe get more than 20% but that is quite hard to do without spending more than they probably want to spend

I: hmm mm

R: on any given store...

I: yeah, yeah, so what do you do when you get a new store with er whatever your target is, what do you do, what is your first move?

R: what is the first thing?

I: Yeah

R: okay so ener...sorry, [supermarket chain] will give us say a list of ten stores...

I: uh huh

R: erm and part of my job is to develop the surveying schedule for those stores...

I: right

R: so we say okay, we are going to go and see this store, in this order and we are going to need all of these people with us and those people normally are the controls guys...

I: hmm mm

R: so the BMS controls guys, erm an electrician and sometimes a mechanical specialist as well.

I: right, why?

R: erm because they have got more knowledge of the estate and of their specific building services areas...

I: okay.

R: than we do as consultants.

I: right

R: erm so, if the controls guy is sitting there next to me he can look through all of his, his strategy...

I: hmm mm

R: and I can look at an air handling unit and say, [name] can you tell me why that is running right now or why...

I: why, erm it is not running in this mode or that mode or whatever, and he can say the strategies telling it to do this, oh actually it should be telling it to do that.

I: right

R: erm or we could optimise it in that way and that is how we make projects.

I: when you say 'make projects'?

R: well so we develop of sort of erm, you could say, er, your boiler is set to run on an 80 degree return temperature...

I: uh huh

R: which it doesn't need to and so drop that set point down...

I: so making projects is identifying...

R: opportunities...

I: places where they can...

R: save on.

I: right

R: yeah

I: okay.

R: ...save on electricity or gas or water. Consumption.

I: er how well are, before we get into that, how well sub metered are [supermarket chain], this is a really boring question...

R: no, no, no that is a really important part of what we do before we go on site that I should have touched on, so before we go in, I will gather a whole bunch of data...

I: right

R: erm the data that I gather is first I try to get drawings of the store...

I: Uh huh

R: because that will help me identify where all the plant is and that is a huge part of going into a building, as you know, understanding what is in there, the second thing I will do is go on to their, sort of, erm their sort of very broad er, er billing data website so they have got gas and electricity billing data...

I: right

R: erm...

I: like, top level?

R: yeah at the very top level, yeah, so we look at that to see trends...

I: uh huh

R: so some stores have a high winter electricity load and that would indicate that there is electrical heating in that store...

I: yeah

R: erm some stores have a high summer electricity load...

I: hmm mm

R: and that would indicate that erm the refrigeration systems aren't operating as well as they could or the y are just not set up very well erm...

I: right

R: so that is that, we can sort of look at annual trends in the data and ...

I: sort of doing broad diagnostics before you...

R: go in and look at the very specific stuff. Erm and the there is some sub monitoring on a few of these stores, erm normally it has been put in by people like us so energy efficiency consultants...

I: okay

R: In the past and they only pick up certain circuits that are of interest so f I have done a project on refrigeration I probably would have put a sub meter on the fridges...

I: right

R: however, for the past couple of years every new build store has had what we call comprehensive sub monitoring so they pretty much stuck a sub meter on everything...

I: right

R: so you should, if they have set it up properly be able to see the consumption of erm, all of the different kinds of loads in the store, erm normally they break down into er refrigeration, lighting, HVAC...

I: Hmm mm

R: erm CCL which is a er climate change levy...

I: right

R: which is erm your anything that includes cooking, your bakery your food to go, because they can claim the tax back or a tax break...

I: okay...

R: on that energy consumption because they are cooking food for people.

I: yeah.

R: I think that is how it works.

I: yes, is that what the pasty tax hit?

R: ha, I don't, I think that is different, but I don't...

I: right okay, I thought it was like cooked stuff kept, yeah right, probably a different...right

R: I don't know if there is an energy implication to the pasty tax.

I: I think there is because you had to, if you, I can't remember, if you keep it warm then you have to pay tax but if you sell it at room temperature you don't pay tax...

R: oh is it?

I: something like that, or the other way round, I can't remember anyway, there was something... anyway, not important...

R: okay

I: erm

R: so I went, so that, that is in sub monitoring oh there is another level as well so the BMS has some er data and again it depends on the store and what the BMS guys have set up...

I: right

R: but you can basically log various outputs, inputs, temperature sensors, potentially consumption if you have got er, if you have got the right input...

I: yeah

R: erm available there.

I: so if on the sub-meter, the website that they have got that shows you the top level stuff, if the store is highly sub-metered like a new build one, does that, is that also on that website?

R: it is a different website but it is available online...

I: it is available for you...

R: hmm mm the same as the BMS, they are all available on line.

I: right.

R: if you have passwords and stuff.

I: okay, so erm, when you go into the stor8 and do your kind of initial diagnostics about what you suspect is going on before you go in...

R: hmm mm

I: I'm er, imagining what you might do...

R: yeah yeah

I: so when you go in and you take a look at other things, do you er, or kind of the specifics of what is happening do you then model that information to show them what their building could be doing?

R: no, no, no, no, we don't use any modelling tools other than maybe excel...

I: Right

R: and then so we will create a, you know very basic excel models...

I: Uh huh

R: to look at erm various sort of projects that could be developed over a series of stores so you input your motor consumption, so you sort of say I am going to put a VSD on this and there is a certain...

I: what is a VSD sorry?

R: oh sorry an inverter? A variable speed drive...

I: I am an architect!

R: yeah okay, sorry, sorry, okay so an inverter, what an inverter does, do you know what an inverter is?

I: well I know, probably not that inverter no...

R: okay

I: I can imagine that it makes something do the opposite of what it was doing before...

R: No that's not what, no, no, no.

I: Okay.

R: so it is like a variable speed drive is, so you have got a motor, right and erm it gets a signal from something that wants it to run, say a temperature sensor, a space temperature sensor says...

I: right

R: okay fan: run and so that motor is just gonna run until the space temperature demand is met...

I: okay

R: however you maybe don't need that motor to run a 100%...

I: Right

R: so you can actually ramp it down to say run at 50%...

I: hmm mm

R: and if you know how cubed law works?

I: yeah

R: basically if you reduce the speed by 20% you reduce the energy consumption by 50%...

I: yeah

R: so er what we will do is stick some stick inverters in and only drive the motor up to 100 percent if erm if there is a big demand.

I: so if that is as close...the speed goes down the closer you get to your target temperature the speed goes down so you get that kind of exponential benefit...

R: I think that is how it works yeah.

I: okay...

R: I don't actually know exactly how that works but yeah.

I: right.

R: yeah so those are the kinds of things that we would model or say we want to do a dimming project...

I: hmm mm

R: this is a newer thing that we are doing for some of the stores, say they have got dimming on the cross shop...

I: yep

R: and you are currently controlling it to a certain lux level and but we go in and say oh well it could be you know, it is currently 1100 lux and it could 900lux or even 800 lux and you can, you can say right I have got this many lights across my shop floor erm it is currently running to output this many lux and I want to bring it down to this...

I: hmm mm

R: and so here is your savings from doing that. SO those are the types of things that we model but we don't actually model the physical building.

I: so what about the other, er, see, I mean you could go into, what about the other parameters that you have still gotta achieve like comfort temperatures and light levels and stuff, how do you know, if you are just doing a sort of cost basis and saying in order to save 20% on this building you could just do this...

R: Hmm mm

I: I could do that; just say turn of 20% of your stuff!

R: No! We like...

I: or, but you have got to like keep food, er, so how do you incorporate all of the other parameters without modelling or...

R: well there is a certain, well there is the [supermarket chain] specification so every project we do has to meet the specification...

I: uh huh

R: and that, their specification is for every different kind of thing that you could imagine we would never propose a project that didn't meet the specification so we would never say we are going to turn off all of the heat in your store and just see what happens, the BMS still controls the systems...

I: Uh huh

R: so you still have to meet a certain temperature set point and you still are going to get a certain lux level output it just depends on what you inputs are.

I: Hmm mm

R: so like I said most of our work is around controls erm say you have got a store that only operates from 8 o'clock in the morning until 10 o'clock at night but somebody has done something silly and they have left the shop floor lights on all night...

I: right

R: so I mean obviously you can still maintain a good light level for your colleagues to restock over night erm but, you know turn off half the lights on the shop floor.

I: yeah

R: er but we have to prove that we have still maintained conditions in the store...

I: so how do you prove it?

R: well erm every project gets signed off by an independent auditor...

I: Right

R: so they go in and they review the projects so, sorry, before even that happens all of the projects have been reviewed and signed off by [supermarket chain] energy and engineering teams so they have said yes you can do this initiative, you can do this initiative, you can do this initiative...

I: based on your costings, your cost savings?

R: They are not just based on, I mean it is a technical discussion so we will go in and review the technical aspects of the project with them and if they see any kind of threat to regular operations then they will flag that up and we will say well no everything is still gonna be okay.

I: but you are just giving them the, you are sitting down with the excel spread sheet that you have developed...

R: Yeah or pictures from the store or drawings or yeah, but mostly they are just modelled...

I: but photographs?

R: yeah.

I: Okay

R: yeah, yeah, yeah

I: highlighting like, what, light levels or stuff running that shouldn't be or?

R: well we have got so we have got electricians who will go in

I: Uh huh

R: and they have relationships with the guys in [supermarket chain] as well ...

I: Yeah

R: so erm they'll do, they'll do a map of the shop floor and they will do light level readings in a whole bunch of places and take that in and say well we've done, we have tested in and this is what we have done...

I: Okay

R: we have walked around with the store manager he said he is happy with it and that is usually good enough, erm sometimes we get the big engineering guys down to come down to store with us to take a look at new projects...

I: Okay

R: so it is a very comprehensive signing off process.

I: Yeah

R: they don't just let us go play.

I: Yeah, yeah, yes. Sounds interesting, but are the problems you are finding kind of relative to the er kind of easy ones? Kind of the low hanging fruit, are you finding stuff like people leaving the lights on all night rather than...

R: erm, it depends, well a couple of years ago we were and that was really easy...

I: yeah

R: but because we have been doing this for about four years with [supermarket chain] now so all of those simple ones we have done already...

I: okay

R: and now we have to go in and get a little bit more inventive with our projects...

I: right

R: erm so sometimes we will go in and find a store where we have done everything [makes quote marks with fingers].

I: Yeah.

R: already – air quotes! –

I: yeah, I will put that in square brackets! - [air quotes]

R: I don't even know what that is. SO that is one of my favourite parts of my job actually is erm trying to find something where there isn't anything...

I: Yeah

R: sometimes it's potentially duct work modifications...

I: Right]RL so you have got erm like that image that we looked at of that parasite thing [referring to a conceptual individual homeless shelter that utilises waste heat from small air conditioning units by Michael Rakowitz] ...

I: you have got an extract that is spitting hot air out of one end of the building...

I: yeah

R: but then you know, a few metres away you've got a supply to another area so why not come up with some sort of reclaim option to ...

I: hmm mm

R: reuse that extract air.

I: hmm

R: er I am trying to think of a, oh one innovative project which is really simple actually was erm so the refrigeration system is all about rejecting heat...

I: yeah

R: that is the biggest thing with refrigeration so you wanna come up with the best method possible to reject heat, erm [supermarket chain] went through a stage where they were putting all of their condensers inside...

I: right

R: which is fine if you are taking that heat away effectively but if you are not it can cause real problems for your refrigeration system and the energy consumption will go through the roof...

I: hmm

R: so we found one store where they have internal condensers

I: Right

R: that is what they are, um, you know it was getting really hot in the room so they weren't effectively extracting all of the heat so what we did was, there was some, there was some open dampers on one side so we kind of cleared them out and opened those up and we just installed a simple fan on the other side to help sort of achieve a better air flow...

I: Hmm mm

R: through that space, erm we made the fan. Well we proposed to have the fan powered by a solar panels erm, that didn't make it through [supermarket chain] planning but erm...

I: right

R: for a less than one kilowatt fan erm, you are probably saving you know maybe 5 kilowatts of erm compressor consumption in a day on summer time.

I: yeah

R: erm so, so yeah those types of projects are very much site based.

I: so as you're projects are getting more sophisticated and you are kind of having to look harder and be more inventive about how you are finding it has your model, has the information that you are exchanging become more sophisticated along with...

R: to an extent, er...

I: rather than...

R: yeah, to an extent erm I don't know I guess erm our knowledge of how these things work certainly has...

I: Right

R: sometimes that comes out in a model but erm you have to be careful about over engineering these things because actually retailers are quite simple erm, they like things, they like things that they can understand...

I: hmm

R: so erm, to an extent I wouldn't necessarily say that our models become more complicated, it has probably become more sophisticated, erm but our ability to, to generate and deliver projects has definitely er changed, I don't know, I don't really know.

I: okay I might come back to that.

R: okay

I: but er I am going to try and go through this in some order so that I don't erm lose ...erm so once you have done that, er, once you have kind of made a project you presumably, it sounds like you go or somebody goes and checks that it is working, operating like you are getting the savings that you thought you would get?

R: Yep, yep, yep. So after we've implemented all of our projects we will review them.

I: hmm

R: erm so we will say I was going to achieve 5% in that store and every week [supermarket chain] will put out erm a report, to all of the contractors who work on this...

I: Right

R: to show what the actual weekly and year to date savings are [conversation diverted briefly by noise]... so somebody will so say, I've said the store is going to make 5% and we get it back in our report that they are only making 1%...

I: uh huh

R: and you are like 'oh dear' so we review all of those, all of those things that I mentioned before...

I: yeah

R: mainly the sub monitored data and er the BMS information

I: Right

R: to see how our projects are actually working, so have we made the savings on the lighting circuit that we said we were going to...

I: hmm

R: have we seen the savings on the refrigeration circuit that we said we were going to, erm is the temperature set point on the shop floor being met, is there flow from the main sales...

I: yeah

R: er fan erm and then we monitor that, well it supposed to be for a period of three months but we tend to monitor it for the whole, for almost a year

I: right

R: post implementation and that's because and that is because our contract is based on meeting the targets that we have set...

I: yeah. I was going to say, so [supermarket chain] have come back if you are not meeting the targets?

R: yeah well it is in our interests, because if we, if we don't meet the target that we said we were going to we don't get paid.

I: at all?

R: well we get paid for the projects but we don't get, [company name] don't get paid a consultants fee for kind of doing everything.

I: right

R: there's a, there's sort of, there's a we get we get something for each stage so going in surveying the store and putting together a proposal and doing implementation and then making the saving that we said we going to.

I: yeah

R: so

I: that is interesting because a lot of, a lot of the time there is just no connection, often the problem with people doing this kind of work, or not doing this kind of work is there is no connection between whether you make it or don't...

R: yeah

I: so erm, and one of the reasons is that there often isn't a connection is because there are so many variables that you know, people might use the building differently, people might not implement things properly...

R: Yeah

I: you know so a lot of consultants feel like they don't have enough control over the way a building is used to actually take responsibility for the energy consumption...

R: hmm mm

I: Why is that different, is it because [supermarket chain] is such a kind of predictable, you know it is a shop, it is open these times, there is a management structure...

R: yeah I suppose to that extent 'cause the building users are so, they are, there there complex building services right...

I: Yeah

R: erm and store managers and colleagues don't really have much involvement with how that works...

I: really

R: erm they are managed by FM teams who we also work with...

I: right

R: so I suppose to an extent erm although in some stores you will find people manually turning off all their lights and all of their air conditioning units...

I: hmm

R: to get their energy costs down erm they don't have that much control it is more, it's more the facilities managers...

I: right

R: who do and they're involved in the implementation part of our process so, technically, that is a big technically...

I: yeah

R: they should be on board.

I: yeah

R: with the projects that we are installing.

I: but you are relying on them to get paid essentially, you are relying on them to implement your stuff properly...

R: no well basically, no because they don't do the implementation we do it so we have our own teams...

I: well control it properly...

R: yeah we are relying on them not to go to the wall and turn of the inverter...

I: yeah

R: or undo all of the set points that we have optimised, and that historically has been a huge problem.

I: Yeah I can imagine, I mean I, I have been involved in, I am trying to think of how many buildings that I have worked on that haven't resulted in some sort of law suit or arbitration or reconstructing an entire paper trail of everything you have ever done in order to prove what we did wasn't, didn't result in this problem and I...that sounds to me like a, coming from sort of er construction industry litigation happy mindset sounds like a massive problem but perhaps I am, I don't know...

R: well the problems that we are doing aren't they are not even CDM notifiable really so...

I: yeah

R: so they are, erm they are light touches.

I: hmm

R: I think that there probably is a big issue in the construction industry but erm...

I: your guys come from process engineering; they are not from the construction industry...

R: No. No, no, no, no.

I: do you think that means they have a different attitude to the idea of getting sued and kind of...

R: I don't know, I don't know, that's something; it is never something that I have thought about really because it has never come up...

I: hmm

R: we're more; we are more worried about health and safety erm...

I: right

R: on our projects so if somebody were to, another part of my survey that I haven't talked about at all, it is not even part of energy related, is looking for health and safety issues...

I: right

R: so I am going into electrical panels all of the time and if there is something that is not, oh and walking into air handling units, so I have to be able to properly isolate this machinery

I: yeah

R: and if there is a, if there's a rodded floor if there is some cable loose 8you know whatever I could fall through the floor or I could electrocute myself...

I: yeah

R: erm so we have got to be aware of these kinds of things and that's more of a risk...

I: right than the...

R: than. Than, yeah.

I: okay.

R: than erm, but I guess at the same time we are pretty safe in our projects, we don't do, we are not cowboys, we don't do...

I: yeah, I know, that wasn't...!

R: I know that wasn't your implication and I am sure that you know in the buildings that you worked on you weren't cowboys either but erm...

I: ...no we weren't...!

R: but er, yeah the health and safety is much more of a concern...

I: right

R: in the, in the retrofit, or I don't know, it's not even retrofit really, but small scale retro fit environment.

I: Okay so erm, the knowledge that you build up is obviously very valuable to you 'cause you get paid on the basis of making the building work, so you have in your office a sort of bank of information that erm other people say I don't know if somebody else is doing an energy audit of another building that your knowledge is available for them to use or is it just in your head or...

R: well that is something that I am trying to develop with one of my colleagues is this like energy efficiency guide so energy efficiency in supermarkets...

I: Yeah

R: here is all the different kinds of projects you can do but at present it sort of lives in our brains, and it is sort of our intellectual property

I: yeah

R: so I think as a company at moment we are a little bit nervous about putting that all down on paper actually because it's like, that is our strength.

I: yeah

R: erm er but then, I suppose the knowledge base, the real knowledge base is with the partners who have decades of experience...

I: hmm

R: In process and mechanical engine...and electrical engineering.

I: so what happens when that er you, someone comes and undercuts you at [supermarket chain]...

R: er

I: on price...your knowledge just disappears.

R: well we are pretty cheap! Erm er they like to [supermarket chain], in the project I am working on they like to have lots of different people doing the same thing at the same time because they think that that creates a competitive environment and they get the best value for their money...

I: yeah

R: actually of the 5 or 6 [company name]-esque people we are, we are the best ones...

I: right

R: we are probably the most expensive...

I: hmm mm

R: but that is not expensive. Erm, I mean you get what you pay for, I think that is true erm I don't know if you are looking for something different than that...

I: no, no, no. I, just kind of interested because...

R: it is a huge problem like the financial or implication of, of energy efficiency, I mean that is what big business is driven by, they can say it is carbon but, It's not really.

I: But they must be making more on savings than they are paying you...

R: er yeah.

I: or on their CRC, I suppose they removed the tax break from CRCs haven't they, I mean are CRCs even and incentive anymore?

R: I am not really sure, I mean they are gonna; I haven't really been following it too closely...

I: I haven't been following it too closely either...

R: erm there, this is something that is really interesting with [supermarket chain] specifically, erm they have an engineering team and an energy team...

I: right

R: the energy team is incentivised to reduce energy consumption on the existing estate erm the engineering team is incentivised to reduce carbon emission for the existing and new estate...

I: right

R: but these two teams hate each other...

I: right

R: and so that, and they don't work together at all...

I: excellent.

R: they are both doing projects in very much similar stream they are not the same exact projects but there is not crossover and this has been driving me nuts because I really want to go and work on some of these other projects...

I: hmm

R: and I don't understand why you can't do big carbon, carbon saving retrofits while doing the energy efficiency.

I: it would seem to make sense...

R: but it's this, I think it's the way that the business thinks it will get the best out of their organisation...

I: why do you think they have chosen different incentives, carbon and energy?

R: erm I think they are trying to create a competitive environment within their organisation...

I: hmm mm

R: so each team is trying to outdo the other one...

I: but you're, you are working with the energy team?

R: hmm mm

I: but that is to try and meet a carbon reduction commitment? Rather than the carbon team who are presumably...

R: well they are probably incentivised at a high level by the same target...

I: yeah, the same goals...

R: there are just different pots of money, different people...

I: that is really interesting, erm Normally I finish with a question about barriers to doing this work but it sounds like you have, your company has sort of cracked the barriers, there doesn't seem to be, because a lot of people don't do this work, don't go and look at buildings and don't collect information or if they do it is really piecemeal and they don't do it for other reasons like they are scared of being sued or they are...

R: hmm mm

I: or they don't have the money to do it or whatever, but you are, I mean I suppose you are working for a company which specialises in this kind of stuff but is there anything that I suppose we have talked about company set up and the different incentives between energy and carbon but is there anything that prevents you doing this stuff as well as you could do other than the stuff we have already touched on?

R: erm yeah, yeah, I have got a couple of like projects that I am working on that are quite innovative...

I: Right

R: erm and they seem like no-brainers even to some of the people within the organisations that we have proposed them to however...

I: hmm mm

R: in big organisations, like these big supermarkets, you have to get sign off from so many different people and you have to get so many people in a good mood on the same day at the same table that that can be a huge barrier...

I: yeah

R: erm, so you know I have spent years trying to, I spent a whole year trying to develop a project, erm that was, it was so obviously a good idea...

I: Yeah

R: erm and, and once they grabbed it, they really grabbed it and we did, we did a whole roll out of that project erm but it shouldn't have taken a year to get it through...

I: no

R: if you see what I mean, they are slow to change and then when they take up change they really take it up.

I: yeah.

R: erm so that's a barrier and a frustration I suppose.

I: But are you also talking to these different people around the table in different metrics, are you having to tell one of them it is worth their while financially, another one it is worth their while in carbon

R: Yeah, absolutely

I: and another that it is worth their while in energy consumption so you are having to present your information three ways...

R: yeah yeah yeah absolutely and sometimes actually it is best and I guess you assume that I didn't mean literally but I think it is best to get these people one on one...

I: hmm mm

R: because then you don't have the dynamics of the group so people...

I: yeah yeah yeah...

R: saying things because they , everybody else is around, erm but then you can actually have a conversation about specifically what they are interested in and you don't have to go through everything for everyone at the same time.

I: okay, erm I think I have exhausted my list of...

R: was that informative, was that useful?

I: it was brilliant really interesting, it is rare I talk to, in fact I can't think of anyone I have talked to who has actually been sort of comprehensively doing this stuff and having a real kind of clarity of thinking on it actually, really useful. Thanks very much.

[ends]

1.23 Surveyor 23

Interviewee:	Surveyor 023 (R)
Interviewer:	Craig Robertson (I)
Location:	Phone
Time/Date:	14:00 30/08/2013
Duration	76:24

Transcription:

I: preamble

R: I started working in 1964 at a firm of chartered quantity surveyors, where I worked for five years, when I moved to the construction of the business and started working for contractors where I worked thereafter...

I: Hmm mm

R: er, ending in 2005 by which time I was commercial director of two operating companies for one of the largest construction companies in the UK and was also on a number of joint venture boards, thereafter I set up my own consultancy business dealing with commercial management issues but primarily claims etc between 2005 and 2013, disputes, settlements of disputes and also commercial management issues.

I: So what sort of sector were you working in? Typically infrastructure or...

R: worked in erm all sorts of areas but primarily infrastructure I would suggest, in the latter part of my career it was infrastructure related projects, in the first part of my career I would say it was more commercial type projects...

I: So the... I am kind of interested in the claims stuff you have been doing latterly, because the infrastructure stuff, interesting though it is is not the focus of this so I am kind of interested in the kind of disputes that you were dealing with and what er I suppose what er, what the disputed issues are.

R: hmm mm

I: and if are they regulatory, contractual or what, so I don't know, can you give an example of a recent dispute that...

R: well er, there were different levels of dispute in as much sometimes I would be representing, or even when I was working as, even when I was working as a commercial director, when I was working as a commercial director I was always working as the main contractor to a client...

I: hmm mm

R: but also when I was working er as my consultancy sometimes I was working for the main contractor working for clients, but sometimes I was working for a sub-contractor working for a main contractor, sub-contracted to a main contractor, and the disputes can be quite different then in terms of what drives the dispute...

I: yeah

R: so er, in terms of the main contractor to client disputes, erm I think it invariably arose from a term an interpretation of contracts, I mean that's in the simplest form of it, obviously there are lots of different parts to contracts...

I: yeah

R: but basically an interpretation or a failure to comply with contracts.

I: But what particular aspects of the contracts, I know that's a very broad question but was it a. was it erm a technical aspect of the contract or a, you know, how big an issue?

R: some of them were technical, some of them were pure contractual matters, you know...

I: like what?

R: in as much as obviously one party thought there was a requirement to provide something...

I: uh huh.

R: and the other party felt there was a requirement to provide something else under the contract.

I: Yep.

R: so I mean, in, in very simple terms if you are working on say a sewage treatment plant...

I: yeah.

R: the, er one, one side might think that you have to provide X cubic, a plant that treats X cubic metres of water, of sewage you know per day and you know reduces the sewage content to however you measure sewage content in treated water...

I: uh huh.

R: erm and er the were, it is amazing to think that what you think of as factual, or what you think would be as factual as that...

I: yep.

R; erm would, could actually end up in dispute about what it is you are actually supposed to do but it often, it quite often did.

I: Right. Could one of the key things that has come up in the previous interviews that I have done and the research that I have done is that when it comes to energy consumption in buildings is one of the primary reasons people don't er [break about web cam focus] er so one of the key, er primary barriers that stops people actually going and finding out if buildings work or not is fear of liability, you know discovering something that's...

R: yeah

I: not going to, that doesn't meet their briefing targets, if there is an energy target built into the brief at all, which generally there isn't, er so I have a question here but your camera has put it out of my mind. Yes, so your sewage treatment example, erm that requires you to go back to the finished building, finished piece of equipment and measure it and see if it working properly. Was it is, were the disputes generally about finished, completed projects, that something has been found out to be not working properly and then the dispute happens or...

R: well, fundamentally yes, well: two things A not working to a particular standard that the client and obviously ...and also the time taken, usually the time taken to actually get from A to B on a contract erm...

I: yeah

R: was the other main area of dispute.

I: I suppose, I suppose the, is it generally the culture where people will go back and look at things once they are finished, whereas in buildings, in buildings people don't go back and check that what they have asked to build actually has been built, generally, in terms of...

R: Again it comes back to I suppose the type of contract you enter into. If it's a, what you'd call a traditional contract with a full specification etc erm, well the client really takes in the responsibility of saying that a piece of kit will adhere to an output or a wall, you know, they will design a wall and say that the heat loss from that wall will, you know, the heat loss from that wall will be whatever in however you measure heat loss etc.

I: Yeah

R: and therefore if it doesn't do it, it is not the contractors fault if he has done what he has been asked to build. But you don't check in that situation there is far more checking as you go through the job

I: Hmm mm

R: as to what is, is being built and that it is being built correctly. Where as a design and build contract or a design and build and maintain contract the clients are far more hands off approach because what they are ultimately interested in at the end of the day is something that performs to the standard that they want...

I: hmm mm

R: so they are not going to check going through the building as the, as the, as the things getting constructed that you are necessarily, you know that you are doing what you day you are going to do. I mean they do to a certain extent but nothing like to the extent of what I call a traditional contract.

I: yes but even with a traditional contract it is very difficult to, as you know there is mechanisms built into that to allow me as an architect to go down and get a wall opened up at my risk if...

R: yeah, yeah, it is at your risk if it if it...exactly. I mean both contracts have that, always have that proviso in them even, you know that the client's representative can always go down and ask for something to be opened up at his risk.

I: yeah. But, so even if I go down and spend every day, or there's a clerk of works, there is a traditional clerk of works on site making sure everything is happening as I have designed it, everything gets built, I am happy with it, everything has been built as I have designed it, the contractor is happy with it everything has gone to plan, everybody walks away assuming that things are fine. What doesn't tend to happen is that somebody goes back and then actually does the, if it's a heat loss calculation, then does the heat loss calculation because if it doesn't work and everybody has done their job properly then it is probably my fault for not designing it well enough...

R: yeah

I: and I don't want to know about that because my PI insurance won't blah blah blah. So, there is probably...that kind of stipulation isn't generally built into building contracts, like that sort of qualitative performance guarantee...

R: is it not building CIC standards?

I: probably but it is not built into your employment agreement, so I don't have to check...

R: but if I have to build a wall, or if I have to house...

I: Uh huh

R: and nowadays, you know there are properties that have, and not being in the housing market for a long time, as I understand it you know, houses, buildings have to have a certain heat loss attributed to them ...

I: well they have to be designed to a certain level; they don't have to have it that is the problem. So the calc...the energy balance calculation that is done on housing is SAP, the standard assessment procedure which takes into account the building fabric measures the heating system and location to a certain degree, using twenty years of data to ...[short break while window is closed] so in the building industry, same with non-domestic buildings but domestic buildings since we are talking about that, there is the standard assessment procedure a SAP calculation...[another window break] so the standard assessment procedure calculates an energy, does a heat loss calculation for a building but it's based on the fabric, heating system and the energy data [sic] so degree days, how many heating days you need to provide for or a change in temperature but that design calculation doesn't, isn't real or, it is a model, so it can't be accurate but it doesn't take into account other energy end-uses like plug loads or other systems that aren't heating in the building, so it isn't accurate. It is just a compliance calculation.

R: yeah.

I: so the calculation you have to do, the design standard is just a design standard it doesn't actually mean the building is going to use that much energy or is going to perform thermally to that and there is no, there is no standard built into the contract to say it actually has to do this. it is just a compliance calc. so there is no ...part of the building is the conservation of heat and power which is energy and heating and stuff but that similarly...it uses the SAP calculation or SBEM for non-domestic buildings which is a limited energy calculation. They are introducing and as built portion of it, or have been talking about it for a while, so that you actually have to go back and check it which I think will be very interesting when people start getting sued for it not performing as well as it should do but at the moment it doesn't because it is not measured.

R: hmm mm

I: so I am kind of, I suppose I am interested to hear what you think you might apply that and given the complexity of it, you given we are saying that measuring a wall type, but you know there are many things that can go wrong with a wall or changes that can happen to a wall that might mean that it doesn't work properly, so the sort of complexity of the claim that you might put in to attribute

responsibility for why that wall isn't performing as it should of done is a total, as you say with sewage output, what you think should be completely factual actually can be..can be very difficult to unwind it so energy consumption in a building whether it is weather the construction, the design, different people doing different things, people using buildings in different ways than they might have been designed to. I don't know. I wonder what your thoughts are on that?

R: well I mean the sewage example that we talked about that you get a bit of kit and it's supposed to this and it's supposed to do that. It is a bit like what you talked about in the building because I mean you know, there could be a rock festival on some weekend in the vicinity of that sewage treatment plant and you know it completely overloads the plant and it is not something that you have allowed for in the calculations you know....

I: Yeah

RL it is very difficult to cater for all situations so therefore...but you must be able to, there must be I suppose a minimum standard that is applicable if you like so that if the temperature outside is 10 degrees for example and you want 21 degrees to be the temperature inside...

I: yep

R: erm the most efficient way of maintaining that, you know, and you heat, and having a particular type of heating system that produces x amount of heat and you have got a particular type of wall you know, because you never cater for what's in the building, the number of people that are in the building you know the or, as you say people will turn on a fan heater or open a window or do lots of things as well...well or something that affects the balance all the time ...

I: yeah

R so, it's very very difficult so therefore, I mean I think you are stuck with a system that says, in an ideal situation of an office that has fifty people for example – you know how much heat they give off – you calculate, you do a rough calculation for that and for the type of heating system you are going to provide therefore the type of, that should generate the type of floor walls, ceilings and windows that you need. That's fundamentally what you do.

I: yeah, that's the basis of the calculation at the moment.

R: which is just now, but I don't know how you can move passed that you know, I mean, obviously I think you should test it at the end to see that it does achieve that...

I: hmm mm

R: erm and if it doesn't achieve that then there is a question of why is it not ...that's, that's when the investigation starts into, or why is it not being achieved,

I: yeah

R: er now, I mean is it because, I mean these should be, these should be, I mean it is almost like arithmetic to get to that point you know 50 people will generate x, this heating system generates y, the wall has a you know a thermal warmth capacity however you measure it of this, this ceiling does this

and the floor is that, you know. So it shouldn't be rocket science in that sense of the word in terms of that.

I: yep.

R: but I mean it doesn't work that's you know where the investigation and that's where you know where I think claims and things in the past have come about.

I: yeah.

R: and more often than not in these situations that I can, I mean I haven't been involved in many of that type of situation that I can remember, but more often than not it has been because of things like: they didn't have windows that opened or they had windows that opened and people were opening more than they should have, you know you know, sort of daft, almost sort of common sense type of things...

I: yeah yeah.

R: erm, that happened that weren't truly or weren't fully taken into account in the calculation of how you do things. So, you know, you can have a calculation that is just pure, you know if you test it, you have to test it on exactly the same basis as you designed it...

I: hmm

R: so that, you know when it is tested, there are no fan heaters, if it was tested on the basis of fixed windows then the windows have to be shut for a while and then see how it works but you will never get it like that because the results you are going to get, you can't do it over a few hours or something like that, it is a building that is built to serve a function so it has to be done, you know over a reasonable period of time.

I: hmm. There is...

R: two months or something. Like that you know

I: there is a test that they do on houses; it is called a co-heating test...

R: uh huh

I: but I mean the reason it is not done very often is because it require the building to be unoccupied for two weeks while they do it and they can take into account various things...they seal the building up and put er a number ...turn all of the systems off, so it just to test the thermal performance of the building, they do an air tightness test so they know what the infiltration rate is...

R: yeah yeah

I: and then they put in like a one thousand kilowatt, er a 1 kilowatt fan heater in and they know the efficiency of the fan, of the heater so they know exactly how much energy they are putting in to it and they get it up to 21 degrees...

R: yeah.

I: and then they keep it at 21 degrees for two weeks and then they know exactly how much power has gone into the fan, the fan heater so they can work out exactly how much, what the heat losses are and how much energy it is using and when they do that generally buildings are performing you know, one third, the fabric is one third what it should, what it is designed to be. You know this isn't to establish blame or anything; this is just pure research to work out what is happening in buildings and where the leaks are and stuff.

R: yeah

I: by what they time and time again...I mean one was done on, at the [organisation]'s exhibition parks, they have got a number of demonstration houses, innovative houses built, one was built by [organisation name] it was a code for sustainable homes level six house which is supposed to be very low energy.

R: Hmm mm

I: they did a coheating test on it and even that, demonstration project that they spent a million quid on it, the thermal performance of the fabric was less than half as good as it should have been and that's with guys crawling all over it on an exhibition site, a demonstration site, like, the expertise isn't there, whether it is the design or the building or what, I don't know but, I don't know, I think the liability, I don't know. As you say, you have got to have a testable standard but even when people are trying very hard to get it right and they still don't get it right I wonder how you change that.

R: well I think some of it, not all of it, but not all, it depends on what type of building it is but until we get into sort of far more factory produced, mass produced if you like type of construction where quality of, you know, of, of of the structure or a lot of the structure anyway, and probably the most important parts of the structure; maybe the external walls and the floors erm where these parts, the quality control can be far better checked under factory conditions than it can out in the howling gale and water getting in etc etc but you've still got the same problem in as much as you don't know from what you say and the test sometimes that is done that even that factory produced item is going to meet that particular standard.

I: well I suppose you could test it before you take it to site though couldn't you.

R: well you test it before you go to site or you have like the [organisation] thing, you should have, I mean [inaudible] I can't believe that they haven't got an ideal home – or an ideal building set up.

I: well that's what these things were, they were a number of, they have got six houses on site at any one time and rebuild them every so often with a new idea idea of how to do it.

R: yeah

I: so it was that, it was one of those houses.

R: I mean that is incredible that it is so far adrift.

I: yeah it is incredible.

R: of the standards, you know and obviously the standard is wrong or their building has been produced just totally badly or it's a combination of the standards are exceptionally optimistic, you know at the high end of optimism of the range that they can be and the building is at the low end of the scale...

I: I don't think they were particularly, you know, it's just an insulated box, essentially, a house, it wasn't particularly, you know, they weren't asking for zero heat loss across the wall or anything. It was quite a high standard but not impossible.

R: I know, I know, and that's the thing, you can't have, in the mass building, in the majority of buildings, you can't have erm what you would call the best conditions applying because it is just too expensive...

I: Yeah

R: so you have to have, and that doesn't mean to say your defective or or or poorer quality or anything like that. That's what I just find hard to understand erm the likes of what you describe at the [organisation] and how they can get it so wrong.

I: well it was [organisation] that built the house – I will remove this name from the transcription...hahaha

R: hahaha. You know the, I mean [organisation] themselves expect to build something in these circumstances that worked.

I: yea yeah completely. And particularly when they are then going on to a site and churning out a thousand of them at a go or however many of them they are building in one place so you would expect them to iron out these problems pretty quickly.

R: yeah

I: yes. So as a, as a, I suppose, not in the building industry, I may be wrong but I understand that you put together claims, you try and pin something on a designer, if a designer has done something wrong you would put a claim in against them.

R: hey, hey...

I: I say try and 'pin something on them' I am being erm...

R: yeah I know what you mean yeah, yeah...

I: so I am trying to think of a way that you could build in an energy standard to a contract given the complexities that we have been talking about, that would give me as an architect confidence to go and look at a.. to feel comfortable about... if I draw something and I do some calculations to think about how it will perform I am not certain, particularly under say I am doing a design and build contract and I hand my design to someone else they go off and build it, make savings, go off and do it however they are more comfortable, however they want to build it, whatever, that's fine, that's the contractual set up but then the chain of responsibility for that building is then changes so I don't necessarily want my name associated with a building that doesn't perform....

R: well I mean if you go a design and build contract and they go and change things erm in terms of changing things, if your contract is set up correctly to start with i.e. we have a set of standards, now I can't understand why, if you think the ISO standards or other standards are not adequate to achieve or are not achieving the performance outputs, why you can't put in and particularly in design and build contracts, more so than a traditional contract, into a design and build contract why you can't put in the performance standards you want.

I; well there is no reason you can't, but, it doesn't happen, it doesn't happen for whatever reason. It doesn't happen, there's...

R: well there could be a couple of reasons for it not happening one is that the building industry knows that it is not achievable erm or two to achieve it is so expensive and risky that they might not be prepared to take on these standards.

I: hmm somebody has to, that's the problem. We kind of need to reduce energy consumption of our buildings if we take

R: absolutely. What needs to be done is is, in terms of what you are talking about, they need to understand why, I mean, but they need to understand why they haven't met the standard, the targets that they thought they would meet.

I; hmmm

R: now, and until you know that, you can't really say in what direction you need to go. It could be, you know, I doubt very much that it is one thing for a start.

I: yeah

R: I think it will be a combination, nothing is black and white.

I: yeah yeah

R: in my experience any way, you occasionally get some things that are black and white but a majority are a combination of factors usually. But in that instance there is probably a combination of factors involved. A is the testing regime itself right and is it accurate how they do it, and the design calculations and the objectives that you are trying to achieve: are they achievable? And are they correct? Is that you know... and then you know obviously was it built correctly?

I: yeah

R: you know, so these are the three areas if you know, need to be looked at where the problems are likely to arise from, I mean that's just common sense.

I: yeah

R: but until you fully understand that you can't rectify or any of the , if it was the construction for example that is a dead easy one to deal with you know, in terms of how you modify that. The other two are a bit more difficult I think in as much as if the standards are, if the calculations are unachievable because of something not quite right with what they expect the heat loss to be through a particular thing or energy uses of particular things erm, you know so that is, that makes it a bit more

difficult to come to. But er, you can still get there in the end; once you know the answers to what went wrong...

I: hmm

R: you then modify whatever it is that needs to be modified to set a standard.

I: Yeah

R: and once you have done that, there is no reason that you can't say at the end of the day, you know. And the other things about it is if you are talking about properties. If you are talking about houses or commercial properties, or stuff like that, the thing is with the demand there is for housing you can't have erm massively expensive or time consuming tests.

I: yeah I know; that's it.

R: particularly time consuming tests once a house is built you know...

I: that's why coheating tests, because they take two weeks, just doesn't happen.

R: no it's not going to happen you know the most you could get away with is a couple of days I would of thought.

I: yeah

R: I mean the air tightness test on houses how long does that take?

I: it takes a few hours I think/

R: Aye, it takes....

I: it depends how many tubes of mastic the guys got to go round and squirt into the corners...

R: exactly.... Erm but you know you could probably extend that to a couple of days you know sort of type of thing er I can't see you know I can't see them doing something for two weeks. So it's very, it is going to be very difficult you know so you have work on the basis of: if you have, if the [organisation] have a sample and it does it in such a way that it knows it works and can demonstrate that it works then why not just specify that in the same way that you specify anything, you know because a copper pipe of you know a 12mm copper pipe needs... you know, now thick the wall needs to be on that or whatever and that's it, it's a done deal you know.

I: yeah

R: erm and then you could put that standard into the contracts. I mean that's....

I: So erm, in your organisation when you were commercial director or throughout your career when you were gathering information from claims and understanding where things went wrong did you compile that information somewhere? Was there like a feedback loop in your company so if you saw how things went wrong on a project you would pass that data to your procurement guys to make sure they write it in to a better contract in the future was there a, that kind of, that sort of communication?

R: yes there was a, I mean it wasn't just if, if it came down to we had messed up you know that obviously fed back down to all the people, you know particularly the people in procurement as to how

to go about procuring whatever it was they were procuring you know. Erm and also as to how we set up our contracts...

I: Hmm

R: so we continually changed our contracts and how they were set up and what information we included and what we didn't include in them on the basis of experience of erm having what I call good contracts where you didn't enter into claims if at all possible. So you know, you, everything that went wrong if it involved, if it was demonstrated to be a procurement issue in some way, rather than just an architect or an engineer or something like issuing instructions left right and centre asking you to change things, that type of scenario, if it was a technical issue that was always followed through, whether it was by us or even by the clients who would, you know, it would be put forward to them as to how we could do things in the future.

I: yeah. [short discussion on web cam] So to avoid future technical problems you built it into the new contracts, what about erm standards, regulatory standards were you – I know noting g about infrastructure standards – but were you always trying to meet the regulatory standard or were you trying to go beyond it in anyway? Like for instance in a building if someone has particular interest in a building they might try and go beyond part l of the building regulations if they want to do something low energy erm, it is a different situation with a railway tunnel I guess, you are trying to go beyond stuff or....

R: no, if you are doing things you, erm I mean as a contractor, erm you are required to meet the standard that is set.

I: yeah

R: so you pick the kit. Unless the particular kit is specified on the basis of what the manufacturers tell you it can do and if you are required to produce an output of four widgets, you don't buy a piece of kit that produces ten widgets, you know, you buy the one that produces four widgets in a particular period. Erm slight difference I would say is that if you are on a design and build contract or you are on a design, build manage and maintain type contract you may well take into account, in a maintenance contract you know if you have got 30 year maintenance, if it is a 30 year maintenance period as well.

I: yeah

R: er, you will look at the maintenance costs over the period as well

I: yeah

R: and so it may well be that it, let's say you were doing a road for example, it may well be that you know a tarmac road meets the specification on a design and build contract perfectly but over a 30 year period you know it is going to need x amount of maintenance...

I: yeah

R: and you have got to maintain it, and you've got to calculate, you may calculate, you know you have to resurface it 6 times over that 30 year period whereas if you put in a concrete road which might be slightly more expensive to start with but requires much less maintenance over the duration....

I: yeah

R: you know so there are things that you look at in terms of the different types of contract so initially a concrete road, I am talking hypothetically, but a concrete road may in many instances be a better road, a better quality road than a tarmac road erm so you may put that in purely and simply because of the long term costs which you are liable for, but if you are not liable for the long term costs, why would you put it in. So that's a situation comes up...

I: yeah. So if, then here is another hypothetical question, if everybody...so say you were doing something that you didn't have a long term interest in and you were just building you know, or I am developing a building that I am just going to sell immediately afterwards why would I ever bother to do something better than, why would I, this is a stupid question, how could I be incentivised to do the best thing in the long term when I have no long term financial interest in the project?

R: erm, I don't know how you could be incentivised, I don't think you could be incentivised but er.bBy, just by paying for what you get fundamentally. In a sense, you know it is almost like you get two options – if you were liable for the maintenance of a building for 30 years what would you build versus what would you build if you weren't...

I: yeah.

R: I mean that's the type of thing you do but I erm in terms of just pure, if the cost is x and the cost is y then...I mean in most buildings now, in most buildings, the materials erm, I mean they are not like road surfaces, external wall surface and things like that they are all designed for long term....

I: yeah, I am thinking more of the running costs of a building say, if I can design a building, in energy terms to be a low energy building that is obviously going to have long term implications for my bills, my energy bills...

R: I think you have to come back to, in that type of scenario; we were talking about the [organisation] situation and understand fully what went wrong there...

I: yeah

R: and until you have the full...accurate and then you have got accurate information to base your standard on to what you are demanding...

I: yeah. Or in building terms, again I don't know infrastructure at all and I don't know who makes infrastructure they don't tend to sell it after building it, it is not like developers.

R: no, it handed over to the government or the...

I: yeah so there is a market, or in buildings perhaps there is the creation of a market so that a low energy building is actually more valuable to sell than a non-low energy building, but that is again

reliant on knowing how much money you are save and how much better it is going to be long term I suppose. Erm. Yes.

R: unless you, you know, you have that type of information there, and you are saying what the standard is and if you are on a traditional contract you are going to have to design you know the heating system, the walls the windows, the floors and ceilings etc. if you are on a design and build contract all you need is the theoretical, because it is always going to be theoretical. Because it is always going to be theoretical the output of these buildings, because once they are occupied it is going to be totally different you know...

I: yeah

R: have you got 55 people in the building or 155? You know things change, So the the er, the conditions, the environment inside the building is always going to be, you are just taking an average sort of type scenario.

I: yeah. Hmm. I am not sure what else I have to ask. You mean I suppose what we have been talking about, or what I think we have been talking about is writing an effective brief with measurable standards in it that you can hold people to account for so certain people take responsibility for certain measurable outcomes in a building and then hold them to account.

R: yes, I mean particularly in commercial building, well it doesn't matter what type of building it is, if you set a standard for it to do something and provided the building is ultimately used for its intended purpose and in the way it was intended to be used ...

I: hmm

R: then it should achieve its targets, if it doesn't achieve its targets then somebody's got to be held, you know, there should be some sort, you could build that into it, you know with some lawering, you need some lawering work on it as well but you could build that into a contract that er, you know for the first year or two years, say it... ideally for the first two years of use you could have something like the energy consumption is monitored on a monthly basis and both the designers and the client you know say once every six months review the results...

OI: yeah

R: to see what, if they are meeting the standards you know...

I: hmm

R: and if they are not to investigate why they are not you, is there a change of use of the environment of the building has something happened that has changed it you...

I: yeah

R: it is being used 24 hours a day instead of you know our original design for you know ...

I: on a typical claim, if you were going, if you were claiming something from a designer say, what sort of compensation do you seek. Do you seek the costs attributable to whatever error was made plus some for...?

R: yeah let's say a traditional contract...

I: yeah

R: let's just say the [organisation]

I: yeah I asked the [organisation] to build me a very low energy structure and they delivered me that.

R: yeah, the [organisation] house, they did the checks and it was only a third of what what you anticipated and an investigation was carried out it was discovered [inaudible] and it was discovered that the walls weren't – or the ceilings or the floor or whatever – don't have the heat loss that they thought they would have, and you were expecting from the [organisation] and you have had to re-line the wall or something like or the ceiling or re-do it with another 100 mm of insulation or something like that or do something to it, take it out and re-do it or something that would delay the works.

I: yeah

R: so yeah it would just be your costs, in that situation it would be your delayed costs and the actual physical costs of doing the works.

I: yeah

R: and that's it. Whatever costs you actually occur.

I: so I wonder, you know if you are testing buildings once they have been built and you have got your 6 monthly review and you yearly review you realise after a year that you have used twice as much energy as you thought you would use...

R: yeah...

I: and your 2/3rds as comfortable as you should have been for the amount of money you have been spending on heating and you know you are, the atmosphere is a bit mouldy because of the cold bridging through the wall etc...

R: yeah

I: how do you, I wonder how you build in and this is just me thinking aloud, I wonder how you build in something to a contract to say how much money is attributable, is reasonable for that sort of damages you know?

R: well, it comes back to erm, in that scenario let's assume that erm that the work wasn't done correctly and can be rectified.

I: yeah

R: or and it comes done to, again it is just the exact same thing, 'what did it cost you'.

I: yeah

R: what did you as the owner of that building, what did it cost you to relocate your staff whatever, move them to another office while they do it; you know the disruption to your business.

I: yeah

R: that's the legal thing it's what it costs you. Unless you wrote in some sort of damages.

I: yeah

R: but again that gets very difficult because I don't think there is a precedent for writing damages of that sort into contracts other than, I mean liquidated damages are the only thing that are recognised as a legal concept I think at the moment, unless it has changed recently, and that is all down to delay.

I: hmm

R: and what it cost you for delay.

I: yeah.

R: so, [interruption for phone call].there is not much. I mean in that situation what would the difference be erm to that in terms of let's say putting in a faulty roofing system that leaked that you discovered a year after it was leaking.

I: yeah, I know. But I mean...

R: the concept of what damages you are due, there would be no difference.

I: but I suppose the, is there not an inference in a building contract that [interruption for delivery] so there is an inference in a building contract that if you put a roof on a building that there is a minimum standard that but for, I suppose my point is, it is probably written into the contract, if you want to sue somebody for something it's got to be in the contract, there has to be a target in the contract to measure it against.

R: yeah, I can't sue somebody for something they didn't know about!

I: but is there not an inference in a contract that if a building has got a roof on it, it's expected... a contract doesn't need to say that this shouldn't leak; the implication is if it's a roof, it doesn't leak.

R: yeah yeah that's right. But the roof is designed not to leak.

I: yes but you don't have to specify in your contract that you want a roof that doesn't let any water in, it's ...

R: no but if you refer to a particular standard, that itself...

I: yes, will specify it. True.

R: I think the [organisation] thing is the thing that needs looking at and to understand.

I: well I mean that is why they do these tests to understand what is wrong.

R: yeah I know and once they understand what has gone wrong they should either revise their standards...

I: I mean that is what a lot of the post occupancy evaluation which is sort of the blanket term for investigating how buildings work.

R: yeah

I: a lot of that stuff is exactly that to revise benchmarks and revise standards but the, the benchmarks, the energy benchmarks that exist, they exist because kind of an accident there was a load of data, office data gathered in the 90's so the based the office benchmarks on that and then they just tweaked it a bit for schools so it..

R: so much has move on since then.

I: well yes, so much has moved on and they just sort of tweaked the occupancy rates to turn office data into schools and, you know turn it into a post office depot, so you know, it is all rubbish. Now there has been a lot of post occupancy evaluation work showing that they are complete rubbish and that they are totally rubbish...

R: yeah

I: but you know there has been a lot of the energy benchmarks are correct or accurate or representative of the bigger sample of buildings just by fluke or because, say, energy consumption is 100kWhs per metre squared or whatever...

R: yea

I: and the benchmarks assume that 60 of that will be heat and 40 of that will be electricity but what has actually happened as fabric standards get better to is maybe only 20 heat and as every bodies now go computers and phones and stuff it is 80 electricity so it has just shifted the loads but the total value looks vaguely accurate so everybody thinks they know what is going on. But nobody knows what is going on.

R: yes, well that's what I was going to say, in terms of your office, I mean you need to divide your energy uses down into the various categories...

I: yeah

R: and nowadays you should be able to do that easily enough.

I: well, you should, in building regulations you have to sub-meter zones and systems within zones but, nobody does it. It is never checked, nobody is ever held to it and commercial developers say if the follow part 1 which stipulates how many sub meters you have to put in, if they follow that to the letter they end up with three times as many sub meters as they actually need. So people who are actually really interested in this and they are monitoring the energy they are actually using cause they are building lots of buildings, they see the commercial value in buildings, in keeping and getting hold of the energy consumption, they know how many sub meters they need but part 1 of the building regulations has no idea how many sub meters you need so they just say: sub meter everything. You know, nobody's going to pay for that, nobody's going to check for it, so everybody thinks it a bit of a joke and nothing happens. So what you end up with is one building with one meter and then you go and work out what is happening in a building and you can't.

R: well there should be sub metering to a sensible standard, you can look at that and I say, you could maybe write into a contract that you, if for the future you are going to monitor it for a couple of years

or something like that, you know and look at it to see the, you know get the details every month and review it with the owner...

I: yeah

R: and at the place to see if there are differences and why they are there, look at the building use for example and stuff like that, you know and that could be part of a standard...

I: yeah there is a new schools building programme that has replaced the building schools for the future BSF, it is called the priority schools building program, which is a PFI thing but that has built in energy standards and built in monitoring standards but the way they have ascribed, so the contractor is only, because of this issue of not knowing how people are going to use the building, the contractor is liable for only the fixed building services energy consumption so the stuff that is in the design calculation but they are allowed to adjust their design calculation following two years of occupation and they see how much energy is actually used. I didn't quite, the person I spoke to was, I think they were still writing it, I didn't quite understand how they were going to...it didn't seem to be an incentive to the contractor to keep it low, it just seemed to be – no, we can adjust it and any changes in the value we can pass on to someone else. I didn't see how it would work.

R: yeah that is what I am saying you need to split it down into categories so you know how much you are spending on heat, - you know how much you have spent on lighting, you know how much has been spent on you know power points around, you know going through the 13 amp circuit type of thing you know, erm and how much is used in cooking or other things like that in the at in the building and all these things, you know. And they can then be compared with the design calculations. And I think you know, you can only tie in the main structural elements...

I: yeah

R: into the contractor if you like or the person that designs the building because once the building is occupied they could have half the number of people in it, twice the number of people in it you know, doing different things, whatever, er, that's why you need to know all these usages so that you can compare it with the original design concepts so that you can understand what is happening.

I: I suppose also, so me saying as a designer, me as an architect on a design and build contract I give my design to a contractor who then changes it, me saying that, I suppose is demonstrative of the lack of joined up thinking in the construction industry because me saying that, I am saying that, my assumption is the contractor is going to change it, probably for the worst therefore why should I have anything to do with it? The contractor probably feels the same way handing the building on to an owner, why the hell should I have anything to do with it, I want to get my defect liability done and get out of here because it is the managers problem from that point on and your building manager is then stuck with a building that because of decision made by me 18 months or 3 years before are causing him a whole ball-ache when he is trying to run the building properly but I have got nothing to do with it because nobodies gone and checked and asked him how it is working at the end of it.

R: I mean that just comes down to, that is relatively simple to overcome in terms of how you write your contracts in terms of responsibility.

I: how is that simple to overcome in terms of responsibility?

R: well you, there are a set, as an architect or engineer you have certain responsibilities to an owner if you and if it is a design and build contract and if it is traditional contract you are designing something to achieve certain standards,

I: Yeah

R: You will tell the client what you thought the standards are, he won't tell you.

I: yes. so the problem is I can deliver a building via a traditional contract, I can deliver a building that meets every standard going and it is still a total nightmare to live in, work in, energy costs wise and I can be blissfully unaware of this for the entirety of my career and I can retire thinking I have delivered several excellent buildings, award winning buildings, all of which are actually rubbish for the person who is actually living in them or working in them, running them they are actually terrible buildings and I can go through my entire career not being aware of that.

R: well again that comes back to the same two year monitoring type process, it doesn't matter what kind of contract it is, you know, you can still monitor it even from just a research point of view but you know from a, I mean it's a big thing and I can imagine from traditional contract point of view that there are too many architects or engineers that would be happy to have that written into the contract.

I: well exactly. This is exactly the problem, it is not a simple thing to solve I don't think.

R: well I think [inaudible] speaking it is simple. In terms of administration and acceptance and in terms of people prepared to think about it is, is obviously more difficult because you can see a lot of problems arising from it.

I: but that's that's the crux of the matter isn't it? That...

R: but I mean the whole of industry needs to change its thinking and and get more definitive , it comes down to having the right information I mean if you have got good information you can , you know you reduce your risks dramatically.

I: Yeah

R: the more information you have got, so therefore as I say the likes of, going back to the [organisation] test house kind of thing, if you have got that information and that is defined you know, I don't think, I can't necessarily see how you can be held liable if the [organisation] have said do x, y and z in terms of types of heating, types of windows, types of doors, floors and ceiling that will give you x type of heat loss or whatever, you know and providing the building is used in the manner, you know that way, that is what you will achieve and if you go off that, that is fine,

I: yeah yeah. But then some architect comes along and tries to do something flash with those standards and some builder comes along and tries to do something more cost effective...]

R: well pass on these standards and you can't change the standards...

I: okay...

R: I mean you see sometimes, a couple of schools I have been involved with a cladding and roofing contractor they were design and build, funnily enough it was [organisation] company, sub-company that did them, the original concept and they submitted their design and then they changed it again. The thing that amazed me about it was, and it was accepted, was the walls. Not for heat but for maintenance purpose you could do that to them and they were wobbly, I mean I can honestly say there were a few holes in them anyway that kids had kicked a hole in the bloody walls, I could have punched a hole in the bloody wall, you know! Without any problem and they had been allowed to put that in and get it accepted.

I: amazing. So what will happen with that were you...?

R: I was in the building for something else and we were looking at, trying to look at some roofing issues and I was talking to one of the guys...

I: lent your ladder against the wall!

R: one of the guys down there was from the main contractor and said they changed the design and were allowed to put this in, I mean he himself was saying it was absolute rubbish but it met the standards but you would never, you should never have used that in the corridor of a school for example with high traffic content and unsupervised at that.

I: yeah. Yeah I know.

[Aside about previous work experience regarding changes to spec in a PFI contract]

I: I think the issue of the liability, I am interested to see when people start getting, when part I as built and also BREEAM, which is a broader sustainability standard that is also getting an as built portion in it to check environmental standard have been followed through in the actual building, so I think when people start getting sued and there are some serious repercussions for not doing this properly a lot of things will change.

R: Exactly, that is what I am saying, I can't imagine that big organisation like [name] or something like that haven't when they have had a new plant built or something like that, haven't monitored the...

I: oh yeah, they do.

R: and gone back to the people and said what the hell is going on here you know, but it is not standard in the contracts that I have seen.

I: yeah

R: Like, we did a power station in [location]...

I: Uh huh

R: erm, it was a real mess of a contract it was split down into 40 odd packages rather than one major contract with all these other packages as subcontractors to the main, it should have been a [inaudible] joint venture, so there is a lot of clashes and a lot of claims there and I was acting for the employer there [organisation] and there were huge numbers of claims coming in a lot of them okay but they came about just because, the clashes, just because you know [organisation] were saying you know, our

fire fighting system, for example, is designed to carry a certain amount of water around the building to this part etc but you know somebody else cant supply that amount of water and that the amount of water you need to supply this system.

I: Right.

R: to meet [organisation] requirements for their boiler if the boilers go on fire, so just a real, a real...

I: but that often happens in building, particularly design and builds I think. You can put together, you know a standard design team can put together a design intent up to stage E or whatever, stage F and then pass it on to somebody who subbies the various portions out and then all the coherent thinking that went into the original design gets atomised and then you end up with this...

R: But that's a bad design and build contractor...

I: oh yeah, totally. But it is quite common.

R: oh yeah, yeah.

I: but I suppose it comes down to, that comes down to client education to ensure that clients, well I don't know is that client education or is just builders, contractors being better, I don't know.

R: it is builders cutting their costs, I mean that is all it is, and they are just putting all of the risks down the feed chain sort of type of thing.

I: Yeah

R: you know, they are saying you are responsible for that Mr [organisation] and you are responsible for that Mr [organisation] and you are responsible for that Mr [organisation] ...

I: yeah but without actually telling them what the performance requirement is or why they are responsible for that or whatever...

R: well they do tell them to some extent but it they don't spend the amount of time or resource on the planning and the coordination etc, you know that each contractor they don't spend the time on coordination...

I: yeah

R: and even the client in this instance didn't spend, because they were all separate packages, didn't spend the right type of time managing each one and talking to all the other package managers in the right manner and planning it all properly, it was just a shambles.

I: yeah so, so I wonder if when people start getting sued, and I am thinking about energy again, so if people start getting sued on energy consumption and people will work out that you know there are all of these different issues that are causing it from a bad design, to a badly communicated design to a badly coordinated design and build to a badly run building, I wonder, the worst thing that could happen and probably will happen is that it will spawn another consultant which will be an energy manager or a building performance manager that will sit with the project team throughout and ensure that everything is, you know the stuff the architect used to do...

R: I think over the years too much risk has tried to be channelled down the ladder,

I: it is like all risk has been pushed down the ladder.

I: yeah

R: and risk should lie with the person who is best qualified to deal with it.

I: yes

R: it should **not** just be pushed down the ladder because you think you are going to get a cheaper job, you know erm. Risk costs money.

I: yeah

R: and if you take on more risks generally speaking prices go up further down the chain but then they get screwed because they invite more people into price it etc whereas clients should, clients in particular should look and decide whether or not it is better for them to hold on to some of these risks.

I: Yeah

R: rather than push them down, I am not saying in this instance that is one that they necessarily wanted to do...

I: yeah

R: maybe part of it is, is is erm what they want to do but you know, I mean the risk in the type we are talking about is if it is specified for a, if there is a standard set for this building or heat loss type or an energy usage based on x y and z...

I: yeah

R: then the client should retain the risk that that is capable of being achieved you know and then the risk moves down so that if part of the risks that goes down the way or that hasn't been achieved is you know, is you know is it because your boiler's not efficient or it hasn't been cleaned or something isn't right, I don't know wrong size of ducting used or something like that, but you just need to look at the risk and decide who is the best person [inaudible] and that is the most efficient both in a cost sense and also in a management sense of dealing with risk: who is the best person to deal with a particular risk and they are the ones that, they should carry the risks in their contracts, the risk just shouldn't just be pushed down the stairs or further away from the top of the tree just because it is a risk you know. If a client is best suited to carry a type of risk then they should carry it because it will be cheaper for them in the long term and cause less disputes.

I: yeah but similarly if, yeah, similarly if design consultants if they are best positioned to carry you know, for example, architects make major decisions about say the orientation of a building or the fabric of the building, so you know there's a a lot of implications with those large decisions so they should be held accountable for the performance impacts that they might have.

R: and a lot of contracts have that in them just now...

I: yeah yeah yeah

R: you know in as much as you are asked to do x so that if it doesn't turn out what you are asked to do then you will be liable for it you know it doesn't have to, contracts don't have to be, I mean you can never cover every option every, a contract can never cover every scenario but a contract can cover the general responsibilities and the general obligations...

I: yeah. That is really interesting.

[Anecdote from Interviewer about development and delivery of a low energy naturally ventilated building using expertise that failed due to many of the things talked about in this interview]

R; yeah, certainly in the vast majority of disputes, management and communication is one of the things that always comes up as you can see that just hasn't worked you know, people don't want to speak to other people for whatever reason you know or, or they don't want to do things, they can't accept responsibility some people so there is a, there is that part to it the wont accept responsibility or they don't have authority erm and and the people who do take authority don't take the right actions...

I: yeah. Thanks you very much for that, it was really interesting.

[ends]