



Programme Area: Buildings

Project: Building Supply Chain for Mass Refurbishment of Houses

Title: Appendix 4 - FMEA Workshop Summary Results Survey Process

Abstract:

Please note this report was produced in 2011/2012 and its contents may be out of date. This document is an appendix of Deliverable 4.2 – Draft Supply Chain Scenarios.

Context:

This project looked at designing a supply chain solution to improve the energy efficiency of the vast majority of the 26 million UK homes which will still be in use by 2050. It looked to identify ways in which the refurbishment and retrofitting of existing residential properties can be accelerated by industrialising the processes of design, supply and implementation, while stimulating demand from householders by exploiting additional opportunities that come with extensive building refurbishment. The project developed a top-to-bottom process, using a method of analysing the most cost-effective package of measures suitable for a particular property, through to how these will be installed with the minimum disruption to the householder. This includes identifying the skills required of the people on the ground as well as the optimum material distribution networks to supply them with exactly what is required and when.

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Survey Process FMEA Study

		Doors / Windows							
Ticket No	Process Output	S	f		d	RPN	Difficulty	Impact	Ext.
6	Design style / condition		9	5	8	360	I	h	Y
2	Dimensional accuracy		9	5	7	315	I	h	R
11	Door furniture		7	5	5	175	I	h	Y
4	Trickle vent		5	4	5	160	I	I	R
13	Door type / access needs		8	3	3	72			R
8	Int/ext acces reqd		6	4	2	48			Y
3	Window type	1	0	2	2	40			Y/R
7	' Front door locn. Lobby		5	3	2	30			Y
1	. Window / door count	:	8	1	1	8	I	h	Y
10	French / patio doors		4	2	1	8			Y
5	Wall finish / décor								Y
9	Wall moisture								R
12	Aspect		6	6	8		I	I	Y
14	No lintel above window								R
15	Frameless windows								

Internal	Walls

Ticket No	Process Output	s	f		d	RPN	Difficulty	Impact	Ext.
5.1	Accessible IWI room by room Estimate	5		8	8	320	L	Н	R
2	Asbestos	10		4	8	320	I	h	R
13	Penetrations / pipes / electrical	8		4	8	256	L	Н	R
5	Accessible IWI room by room	3		8	8	192	L	н	R
7	Wall construction U value	8		3	2	144	Н	Н	R
9	Electrical wiring condition	9		2	5	90			R
14	Double / secondary glazing	6		2	2	24			Υ
12	Door interference						L	Н	
11	Stud wall / floor cold bridge						Н	Н	R
10	Future risk caused by peoposals								
8	Radiator pipework								R
6	bay window structural stability						L	Н	R
4	Floor areas								R
3	Wall construction								R/Y
1	Floor plan								R

		Roofs							
Ticket No	Process Output		s	f	d	RPN	Difficulty	Impact	Ext.
11	Ventilation		8	7	8	448	h	h	r
7	Access / CDM		10	6	7	420	h	h	r
10	Services, electrics, walter tank, ariel		10	4	8	320	h	1	r
16	Verge, eaves, overhang		6	6	8	288	I	1	r
6	Dimensions		8	3	7	168	h	h	у
8	Growth / dry rot		9	2	9	162	h	h	r
12	Chimney condition and use		7	2	7	98	h	h	r
1	Strength /structural integrity , bracing		10	1	8	80	h	h	Y
13	Dormers, velux, room in roof		5	2	6	60	I	1	у
14	Existing insulation		3	3	8	48	I	1	r
4	Possessions		5	1	8	40			r
9	Infestations, bats etc		2	2	9	36	h	I	r
17	Gutters, drainage		3	2	7	35	I	1	G
3	Type of roof covering		2	2	8	32	h	1	r
15	Roof type, flat / gable, warm, cold		9	2	1	18	h	h	G
2	Condition / age of roof		4	4	3	16	h	I	r
5	Orientation / pitch		8	1	1	8	h	h	G

	E	xtensions							
Ticket No	Process Output	s	f	d	F	RPN	Difficulty	Impact	Ext.
6	Connectionn to orig. building / thermal brid	dge 8	31	0	8	640	h	h	r
7	DPC	8	31	0	8	640	h	I	r
8	Doors to conservatory	I.	5	84	0	480	h	I	r
9	Current cavity fill	6	5	8 1	0	480	h	I	r
1	Structure, wall type; solid, cavity.	8	3	6	8	384	h	I	r
2	Cladding, wall material	8	3	6	8	384	h	I	r
5	Services current	10)	4	8	320	h	I	r
3	all material condition	8	3	4	7	224	h	h	r
4	Dimensions int and ext	8	3	3	7	168	h	I	у
10	External drainage	-	7	3	7	147	I	I	r
	Ext	ernal walls							
Ticket No	Process Output	S	f	d	F	RPN	Difficulty	Impact	Ext.
4	Damp testing	10)	51	.0	500	I	h	
6	Current insulation		3	32	27	243	h	I	
3	Condition suitable for fixing EWI	10)	3	8	240	h	h	
9	Flood risk	12	2	2 1	.0	200			G
5	Wall tie integrity	10)	8	2	160	h	h	
14	Thermal bridging to glazing	6	5	2	7	84	h	h	
11	Supervisor skills	10)	2	3	60	I	I	G
2	Wall dimensions	2	2	3	2	12	h	I	
1	Construction method	-	1	8	1	8	I	I	G
7	External survices, electric, satellite TV	2	2	2	2	8	I	Ι	
8	Air tightness	2	2	2	2	8	h	Ι	
10	Scale and exception survey	3	3	2	1	6	I	I	
12	Ext wall imaging	2	2	2	1	4	h	I	
15	Asbestos / hazardous matrials	-	1	1	1	1			G
13	Cavity inspection								
		Floors		-					
Ticket No	Process Output	Floors s	f	d	F	RPN	Difficulty	Impact	Ext.
Ticket No	Process Output Construction type	Floors s	f 3	d 3	8 8	RPN 244	Difficulty h	Impact	Ext.
Ticket No 1 2	Process Output Construction type Damp test	Floors s	f 3	d 3 5	8 3	RPN 244 150	Difficulty h h	Impact 	Ext.
Ticket No 1 2 4	Process Output Construction type Damp test Structural test	Floors 5 10 10	f 3)	d 3 5 3	F 8 3 1	RPN 244 150 30	Difficulty h h	Impact 	Ext.
Ticket No 1 2 4 3	Process Output Construction type Damp test Structural test Measure floor area	Floors s 10 10	f 3) 2	d 3 5 3 2	8 3 1 3	RPN 244 150 30 12	Difficulty h h	Impact 	Ext.
Ticket No 1 2 4 3	Process Output Construction type Damp test Structural test Measure floor area	Floors \$ 10 10 2	f 3 0 2 2	d 3 5 3 2	8 3 1 3	RPN 244 150 30 12	Difficulty h h	Impact 	Ext.
Ticket No 1 2 4 3	Process Output Construction type Damp test Structural test Measure floor area Site	Floors s 10 10 2 e and access	f 3 0 2	d 3 5 3 2	F 8 3 1 3	RPN 244 150 30 12	Difficulty h h	Impact 	Ext.
Ticket No 1 2 4 3 Ticket No	Process Output Construction type Damp test Structural test Measure floor area Site Process Output	Floors s 1(1(2 e and access s	f 3 2 2 f	d 3 5 3 2 d	F 8 3 1 3	RPN 244 150 30 12 RPN	Difficulty h h Difficulty	Impact	Ext.
Ticket No 1 2 4 3 Ticket No 4	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings	Floors s 10 10 2 e and access s	f 3)) 2 f	d 3 5 3 2 d 5	F 8 3 1 3 F 7	RPN 244 150 30 12 RPN 105	Difficulty h h Difficulty h	Impact Impact	Ext. y
Ticket No 1 2 4 3 Ticket No 4 3	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel	Floors s 10 10 2 e and access s 3	f 3) 2 2 f 3 ∂	d 3 5 3 2 d 5 2	F 8 3 1 3 F 7 2	RPN 244 150 30 12 RPN 105 36	Difficulty h h Difficulty h h	Impact Impact 	Ext. Y G
Ticket No 1 2 4 3 Ticket No 4 3 1	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel Orientation	Floors s 10 10 2 e and access s 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f 3 2 2 f 3 3 3	d 3 5 3 2 d 5 2 2	F 8 3 1 3 F 7 2 2	RPN 244 150 30 12 RPN 105 36 32	Difficulty h h Difficulty h h h	Impact Impact 	Ext. Y G G
Ticket No 1 2 4 3 Ticket No 4 3 1 2	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel Orientation Extensions and offshoots	Floors s 10 10 10 2 2 2 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f 3 2 2 f 3 3 3 2	d 3 5 3 2 d 5 2 2 2 2	F 8 3 1 3 F 7 2 2 2	RPN 244 150 30 12 RPN 105 36 32 8	Difficulty h h Difficulty h h h h	Impact I Impact I I I h	Ехт. У G G G
Ticket No 1 2 4 3 Ticket No 4 3 1 2 6	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel Orientation Extensions and offshoots Construction type and age	Floors s 10 10 2 2 and access s 5 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	f 3 2 2 f 3 3 2 2 2	d 3 5 3 2 d 5 2 2 2 2 2 2	F 8 3 1 3 F 7 2 2 2 2	RPN 244 150 30 12 RPN 105 36 32 8 8 8	Difficulty h h Difficulty h h h h	Impact I I Impact I I I h I	Ехт. У G G G У
Ticket No 1 2 4 3 Ticket No 4 3 1 2 6 5	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel Orientation Extensions and offshoots Construction type and age Access	Floors S 10 10 2 2 2 and access S 2 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	f 3)) 2 f 3 3 2 2 2	d 3 5 3 2 d 5 2 2 2 2 2	F 8 3 1 3 F 7 2 2 2 2	RPN 244 150 30 12 RPN 105 36 32 8 8 8	Difficulty h h Difficulty h h h h h h	Impact I Impact I I I h I	Ехт. У G G G У У
Ticket No 1 2 4 3 Ticket No 4 3 1 2 6 5	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel Orientation Extensions and offshoots Construction type and age Access	Floors s 10 10 10 2 2 and access s 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	f 3 2 5 7 7 8 3 2 2	d 3 5 3 2 d 5 2 2 2 2 2	F 8 3 1 3 F 7 2 2 2 2	RPN 244 150 30 12 RPN 105 36 32 8 8 8	Difficulty h h Difficulty h h h h h	Impact I Impact I I I I I I	Ext. Y G G G Y Y
Ticket No 1 2 4 3 Ticket No 4 3 1 2 6 5	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel Orientation Extensions and offshoots Construction type and age Access	Floors s 10 10 10 2 2 and access s 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	f 3 2 2 f 3 3 2 2	d 3532 d 5222 222	F 8 3 1 3 F 7 2 2 2 2	RPN 244 150 30 12 RPN 105 36 32 8 8 8	Difficulty h h Difficulty h h h h h	Impact I Impact I I I h I I	Ехт. У G G G У У
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Ticket No 1 2 4 3 Ticket No 4 3 1 2 6 5 Ticket No 6 7	Process Output Construction type Damp test Structural test Measure floor area Site Process Output Surroundings Supply of energy (gas) oil? Solid fuel Orientation Extensions and offshoots Construction type and age Access Ho Process Output Customer expectations	Floors s 10 10 10 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	f 3 2 f 3 3 2 2 f f 3 7	d 3 5 3 2 4 5 2 2 2 2 4 5 4	F 8 3 1 3 F 7 2 2 2 2 2 F 8 0	RPN 244 150 30 12 RPN 105 36 32 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Difficulty h h Difficulty h h h h h h h	Impact I I I I I I I I I I I I I I I I I I I	Ext. γ G G G y y y
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