

When retrofit goes wrong – lessons from Preston

Kate de Selincourt, freelance writer,
researcher and editor

What I'm going to talk about

A particular retrofit scheme in Preston where the EWI installation went badly wrong

- Technical issues
- “Structural” ie deeper rooted causes

Changes that have been made and are in the pipeline, and some less-disastrous installations

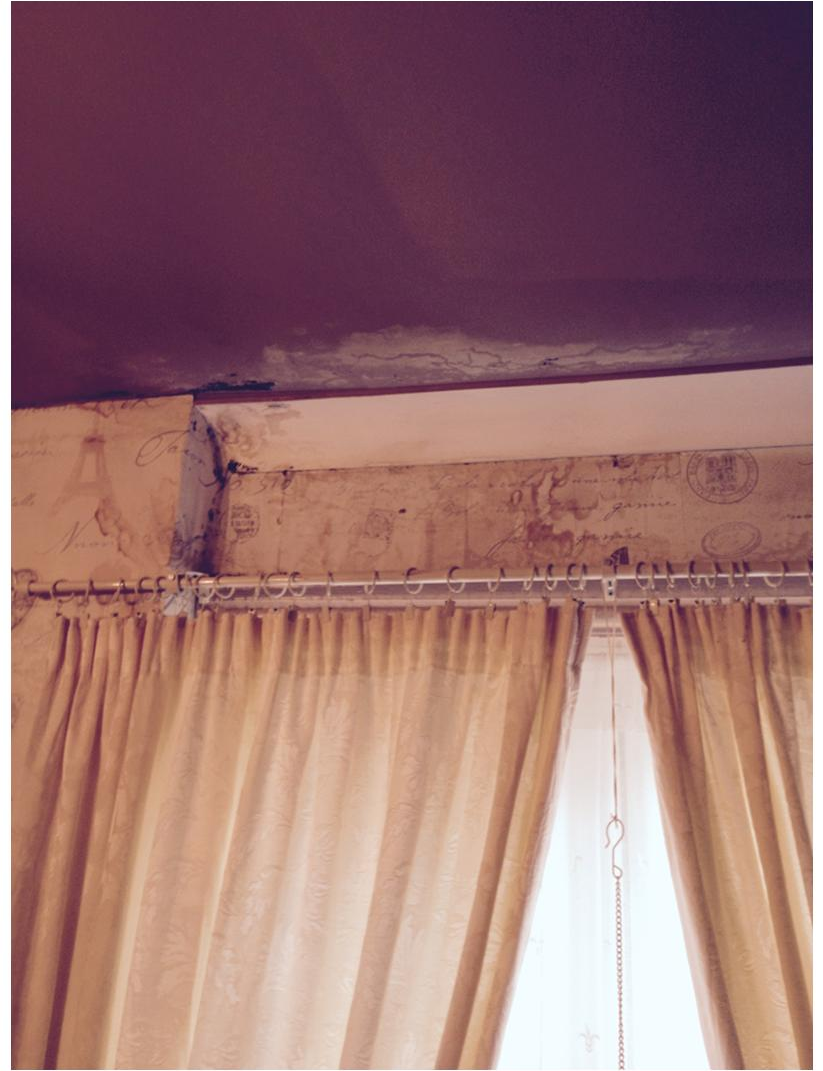
Give some pointers to how to avoid at least these particular issues

Fishwick, Preston



Types/Numbers of measures installed	
Loft Insulation	109
Cavity Wall Insulation	3
External Wall Insulation	387
Draught Proofing	85
Window replacements	166
Boiler replacements	70
Fuel Switch (electric to gas)	74
Number of properties in LSOA District	624
Total Measure count	882
Number of properties having measures installed	466
Penetration	74%
Lifetime carbon reduction (tco2) incl, area bonus, penetration factor = 82,331.556 tco2	

CARBON BANKED 82,331.556 @ £55.00 per tco2 = £4,528,235.58







September 2013



Why is this happening?















General shoddy workmanship



Detailing issues causing
water ingress







Around £20k is being spent on some of these remediations – perhaps 4-5 times what was originally spent.

But of course it is the human cost that is heaviest:

Impact on residents – info collated by Preston Council when they were seeking redress

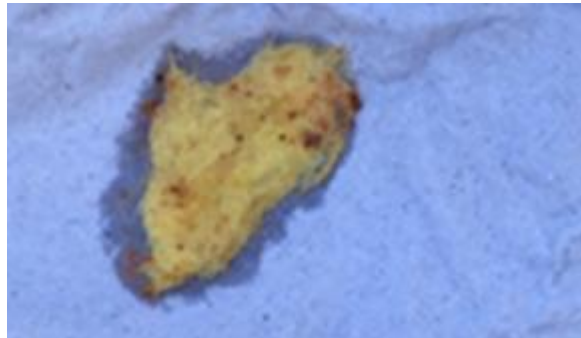
- Collapsed ceilings
- Health problems
- Financial penalties on already vulnerable householders having to rectify problems themselves
- One resident with severe asthma has been **hospitalised** by these problems, with **mushrooms and black mould covering walls, sofas, stereos** etc. The hospital has recommended she **doesn't go back to the house** until the problems are fixed, and she is currently believed to be living with a relative.
- A lady in her 70s has had to rent a **dehumidifier costing her c.£200/month** to try and combat the moisture. Wallpaper and plaster are damaged, **water runs out of her electrical sockets, and she has had periods with no electricity**. She has tried to claim on her insurance, but has been told they will only pay if the EWI is removed and re-fitted. Her husband is trying to find the money to have this done, but it is unclear if they can afford this.

Also - cavities

A bit about CWI failure



Cavity Wall Doctor
and K&A property solutions





Should we give up?

(CWI)

“my considered opinion based on hundreds of detailed surveys are that this is extremely rare and the vast majority of well installed CWI installations are doing what they were intended to do”

<http://buildingdefectanalysis.co.uk>

And EWI..

EWI is not always done badly by any means!

Homes insulated under Welsh
Arbed scheme



Mr Durran

Mr Durran is an owner occupier who received EWI under the Arbed 1 Scheme.

Quote: “Even though fuel prices have risen our fuel bills are now a lot cheaper than they were in 2009. I notice that the house is a lot warmer and I am not so reliant on my heating being on all the time.”



Mrs Williams

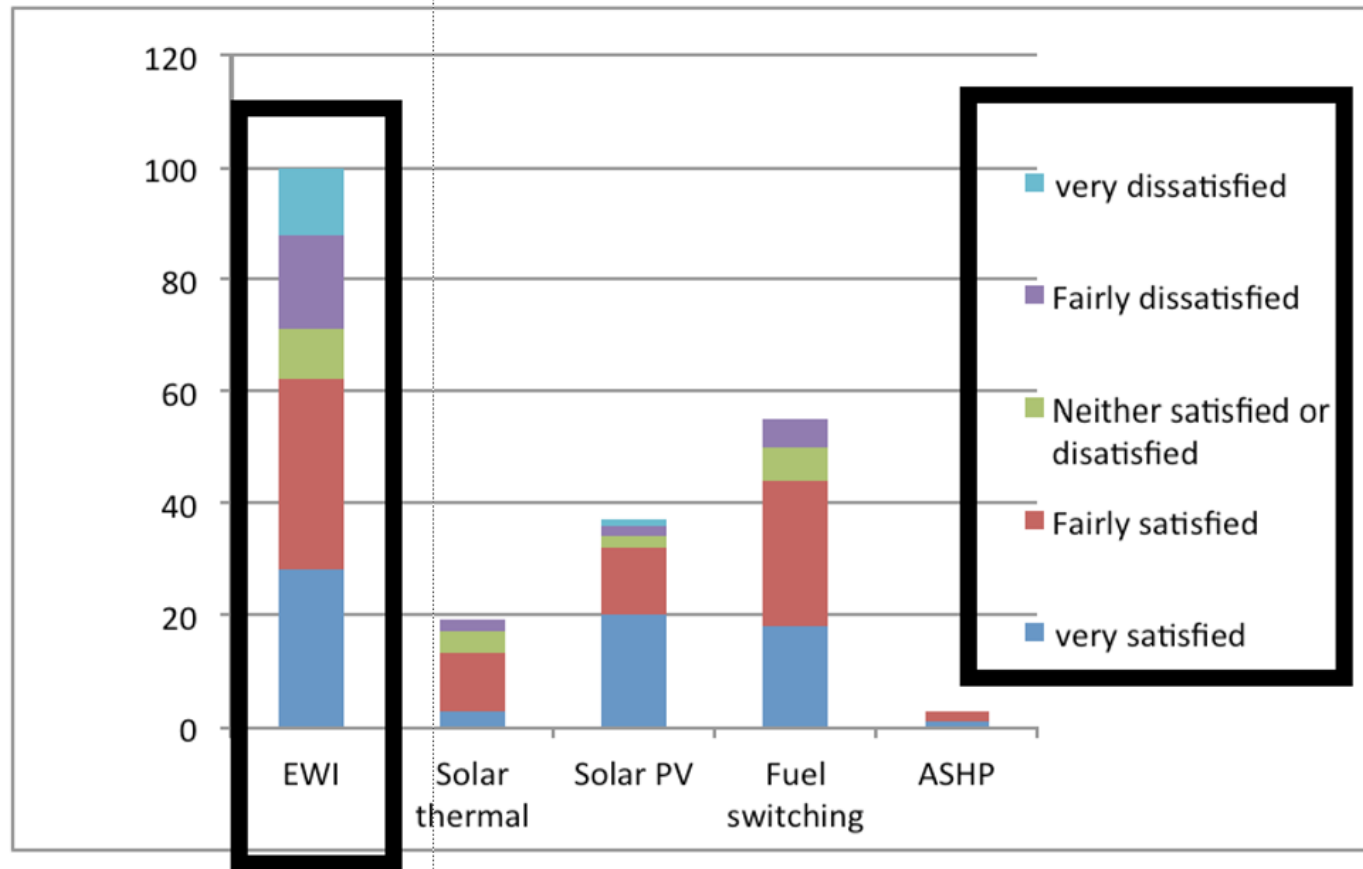
Mrs Williams is an owner occupier in Swansea who received EWI under the Arbed 1 Scheme.

Quote: "I'm very pleased with the appearance of my home, it looks much more attractive. My bills are now less than half of what I was previously paying and my house is a lot warmer. The house seems to retain the heat for longer periods of time also meaning that I haven't the need for my heating to be on for as long as before. Previously, I was in arrears with my gas provider and now I am actually in credit."



Even so, not necessarily an overwhelming vote
of confidence

Overall satisfaction with quality of work - Arbed scheme



What can we learn from Preston?

What were the underlying issues?

Lack of thorough surveys – cavities missed completely

Condition of the homes

- Low income householders
- Houses may not have been very well-built to begin with – this is spec building, 100 years old and counting
- Works done when the weather was cold and wet – ie, running up to the end of the financial year.



Design of the funding programme

Emphasis on lowest cost, highest numbers
Scored on measures installed, not homes
improved – or performance!

Deadlines!

Set by Ofgem's admin, not the needs of the buildings (this has now relaxed a little, thank goodness)

“frantic last minute dash to try to claim the carbon” – no skilled crews available

Intergen was racing to make up three years' shortfall in just a few months, and this pressure was passed on to the contractors.

Stop/start rushes of funding have continued – eg
ECO, the Green Deal Home Improvement Fund

This and the emphasis on measures leads to risk
of work being done by fly-by-night companies

Who was to blame?

Supplier?

Installer?

Managing Agent?

Energy company?

Government?

Ofgem?

yes

What has been / is being done about it?

PAS 2030 – standard for retrofit firms, brought in with Green Deal

Several revisions: the first version doesn't seem to have done a lot of good

Also a requirement for measures to carry guarantees – but still...

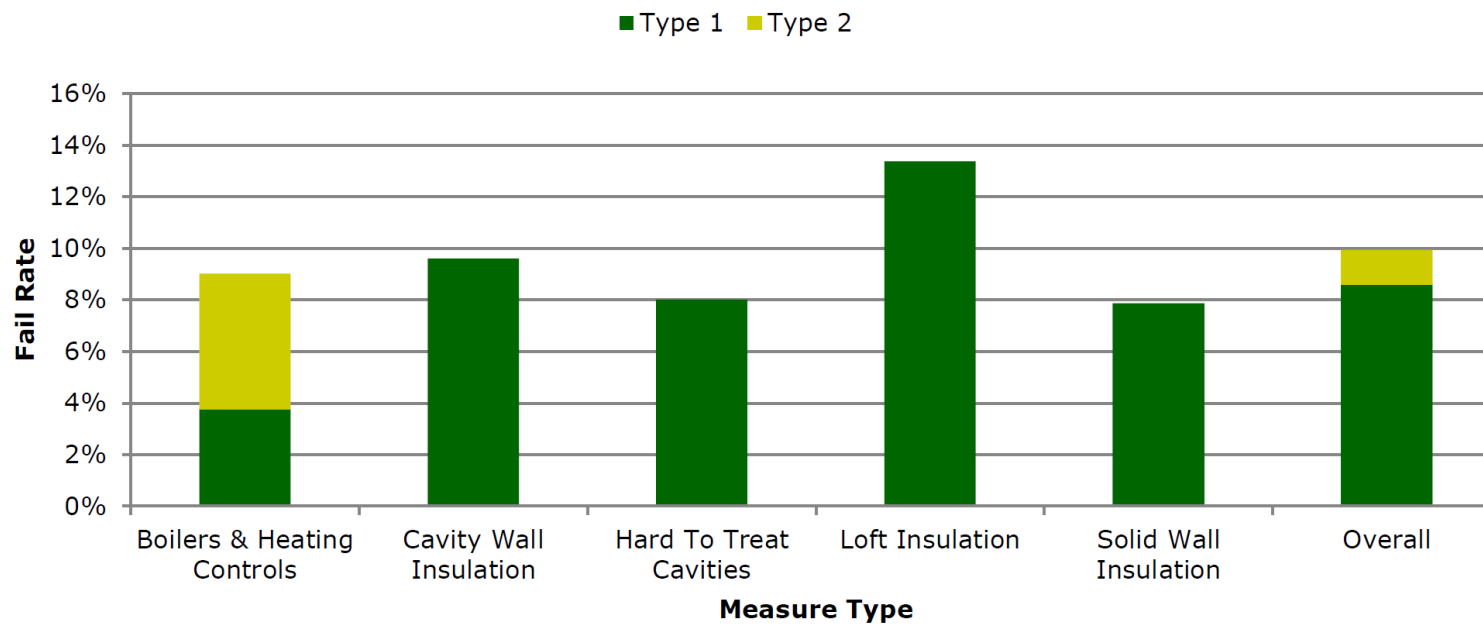
Energy Companies Obligation (ECO)

Technical Monitoring Report

www.ofgem.gov.uk

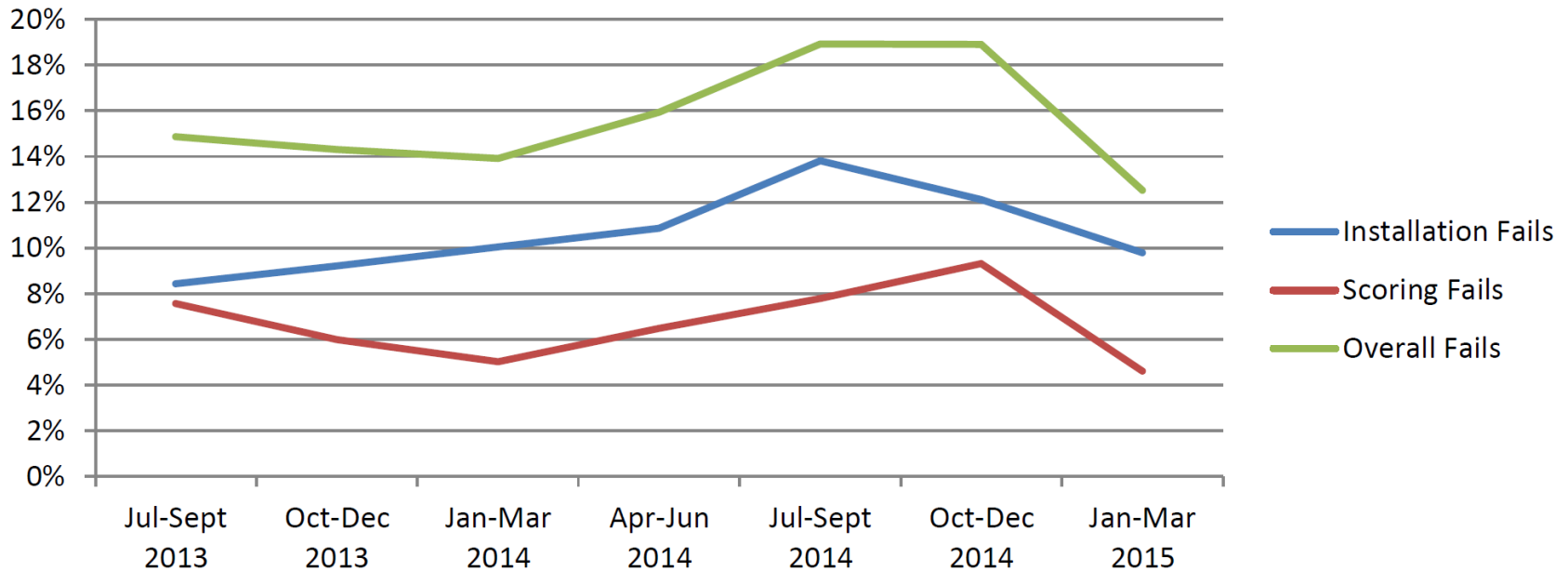
December 2015

Figure 1: Installation failure rates by measure type



No real suggestion of sustained improvement...

Figure 3: Changes in failure rates over time



PAS 2030: 2017 update

- requirement for a retrofit **design** so that it is no longer possible to install measures simply on the basis of an assessment by someone with two days training (as it was at the start of Green Deal & ECO);
- a requirement for the **interactions** between measures to be taken into account, eg junctions and edges and interactions between building fabric and building services;
- a requirement for existing ventilation to be **assessed and if necessary upgraded** when any insulation or air-tightness measures are installed.

Solid wall insulation guarantee agency has recently brought in/updated a pre-installation checklist. Again, we don't know if/how this is working yet.

EXTERNAL WALL INSULATION PRE-INSTALLATION BUILDING INSPECTION CHECK LIST V.1.0 31st March 2017

PRESENCE OF DAMP (RISING, PENETRATING OR CONDENSING)

Agrees with Building Survey

YES ☐

NO ☐

Comments:

EEM Design:

Design eliminates cold bridging (full continuity between wall and roof insulation)

YES ☐

NO ☐

Design minimises cold bridging (partial continuity between wall and roof insulation)

YES ☐

NO ☐

Interface design details (weather seals etc.) comply with requirements of PAS 2030 2017

YES ☐

NO ☐

FROST DAMAGE:

Agrees with Building Survey

YES ☐

Comments:

HEATING SYSTEM - EXTERNAL PIPEWORK/FLUES/METER BOXES etc.:

Agrees with Building Survey

YES ☐

NO ☐

Detail type(s) and location(s) of heating system(s) in comments below

Comments:

STRUCTURAL DEFECTS (E.g. Cracking, subsidence, weak or corroded components):

Now: the *Each
Home Counts*
("Bonfield") report
proposed 'Quality
Mark'
& PAS 2035

Quality Mark Framework Operating
Requirements (Draft - V0.15)



Still a bit of a way to go, as industry is not thrilled to have another set of criteria to meet

‘The vision of EHC is “for a future where ‘rogue’ traders are effectively eliminated from the Energy Efficiency, Retrofit and RMI sectors because of the widespread recognition of the Framework as the quality mark to look out for.” Does this mean that without the quality mark you are a rogue trader?!’

<http://phpionline.co.uk/news/home-counts-installer-doesnt/> spoke to *Installers First* to get the organisation’s view

BEIS urged to halt Each Home Counts review

The Each Home Counts (EHC) Review was published in December 2016, setting out recommendations for improving energy efficiency in the UK and encouraging the uptake of renewable technologies (read our round up of the review [here](#)).

But just over a year later, leading organisations representing the plumbing and heating industry have urged the government to halt the review.

Industry bodies including the Heating & Hotwater Industry Council (HHIC) and the Association of Plumbing & Heating Contractors (APHC) have set out some fundamental concerns with the EHC review in a letter to Clair Perry, Minister of State at the Department for Business, Energy and Industrial Strategy (BEIS).

Of particular concern is the direction of the proposed Quality Mark, against which all those engaged in design and installation of energy efficiency and renewable energy measures will be assessed and certified. Equally, industry partners are concerned over the lack of transparency and accountability associated with the scheme.

Or is what we really need, better
scheme design?

*“My view is that most of those problems are
consequences of perverse incentives and
under-funding in ECO”* – member of Each
Home Counts team

Key lesson IMO

You are not looking at 'uninsulated walls' or 'underperforming windows' , you're looking at someone's home.

Whatever is done needs to be built round the occupants *and the building*.

What still needs fixing?

Whole house scoring – not just lip service, but reward (or even require!) an integrated approach

Equal “billing” – ie funding - for repairs and ventilation – they are the *sine qua non*

What about our project? We want to include EWI!

Include EWI by all means. But **only if it's right for the properties**. And only if the project can afford to do it **properly**.

If someone wants an “EWI project”, beware.

Remember – you are improving homes, not installing measures!

It can be done!





Good details – extended roof, new rainwater goods



Vs:



Benefits of retrofit

Table 1 Number of GP Respiratory Events

GP Events	Recipient group			Control group		
	People *	Events **	Average events per person †	People *	Events **	Average events per person †
Winter Before	499	1,601	3.21	652	1,889	2.90
Winter After	477	1,470	3.08	723	2,301	3.18

* Number of people with at least one GP Event recorded

** The total number of GP Event recorded

† Average number of GP Event recorded per person



Via William Baker, Citizen's advice

Check:

Condition condition condition – if in doubt, don't!

Proper design, proper supervision – redoing stuff is very costly, disputes even more so.

Common sense – if it looks like water can get in to the walls, expect trouble!

Further reading

Article about Preston in Passive House Plus

<https://passivehouseplus.ie/news/health/disastrous-preston-retrofit-scheme-remains-unresolved>

Leeds Beckett paper investigating 51 homes retrofitted with solid wall insulation under CESP/ECO, pre-and post-retrofit. Some of the detail is a bit hard to follow but the general impression given is that the issues at Preston were not unique, though nothing here that was as severe. <http://eprints.leedsbeckett.ac.uk/4170/>

Appraisal of the first phase of Arbed in Wales (2011 – 2013), including a chapter on EWI. Despite the title, this was mainly looking at detailing and workmanship, not long-term performance of the systems. Nonetheless many potential issues were identified, though here it isn't clear how much impact these might be having. There were some indications that inadequate ventilation was leading to condensation issues post-retrofit in a few cases.

[http://www.cewales.org.uk/files/3014/7671/0110/Post Installation Performance of Cavity Wall External Wall Insulation.pdf](http://www.cewales.org.uk/files/3014/7671/0110/Post%20Installation%20Performance%20of%20Cavity%20Wall%20External%20Wall%20Insulation.pdf)

Nyth data linking study mentioned above, suggesting measurable health benefits from a home retrofit programme (many measures included, incl. some SWI) <http://gov.wales/statistics-and-research/fuel-poverty-data-linking-project/?lang=en>

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Any comments, or experiences to share? Contact me via
www.katedeselincourt.co.uk or tweet me! @kate_de