

Tackling fuel poverty through renewable heat

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Presentation objectives

- **The issue:**
 - Increasing cost of home heating, especially in rural and off-gas grid areas
 - Lack of thermal comfort, under heating, health issues
 - Excess winter deaths
 - Rent arrears
- **The solution** – ground source heat pumps
- **The opportunity:**
 - The Renewable Heat Incentive
 - Energy Company Obligation (ECO)
- Experiences from a social landlord – Trent and Dove Housing

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Introduction

- Trent & Dove Housing (TDH): LSVT in 2001 from ESBC
- 5,700 units in Burton and Uttoxeter
- £25 million turnover
- Looking at expanding into surrounding areas
- Celebrated building our 1,000th property in early 2015
- Short, medium and long-term strategy to deal with all of our dwellings

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Ground source heat pumps in action

Hear how Trent & Dove Housing's pioneering project reduces tenant fuel bills & generates a long term income to cover its costs

£1.8m
INVESTMENT
COST

£350 - £500
(PER ANNUM)
TENANT FUEL
SAVINGS

£2.3m
ECO & RHI
INCOME

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Ground Source Benefits

Landlord Benefits

- Minimal service & maintenance costs
 - No mandatory annual safety inspection
 - Minimal preventative maintenance
- Extremely low lifetime ownership costs
 - 20 – 25 year heat pump unit life expectancy
 - >100 year borehole life expectancy
- Planning exempt (no noise issues)
- Lower CO₂ emissions, improved SAP ratings
- Other building maintenance costs reduced
 - E.g. less damp due to under heating

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Non Domestic RHI

- Opportunity for social housing (both new build and retrofit) to benefit from adopting district systems supported by the Non Domestic RHI and ECO

	Domestic	Non Domestic
Coverage	Individual domestic properties	Residential district, commercial
Includes retro fit	Yes	Yes
Includes new build	No	Yes
Tariff payment	7 years	20 years
Measurement	Deemed	Metered
Paid on	“Renewable” heat only	All heat
Tariff rates	Modest – requires fuel cost saving to produce payback	Attractive – GSHP rates recently doubled
Can be used in conjunction with ECO*	No	Yes

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“Micro District” ground source heating

- Individual Kensa Shoebox heat pump in each home
- Shared ground array, serving 2 or more properties
- Designed, delivered and installed by Kensa
- Eligible as “district heating” for ECO and RHI purposes
- Scalable and versatile



- Each home has own radiators, hot water cylinder and controls
- No heat loss through district pipework
- No need to apportion energy bills
- New build or retrofit
- No need for a plant room

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New build

- Non Domestic RHI model also applies in new build
- Not possible with Domestic RHI
- Ofgem has confirmed RHI payments are allowable even if in receipt of an HCA grant (although some conditions apply)
- Allows social housing new build to benefit from:
 - 20 year RHI income stream
 - Cost effective
 - Lowest possible tenant running costs
 - Lowest lifetime ownership costs – long service lifetime and no mandatory annual servicing requirement

Example: New Linx Housing

- 53 unit development
- Micro district ground source heat pump system
- Accesses funding through HCA and RHI



Renewable Project of the Year

Kensa & New Linx Winners at H&V News Awards 2013

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Project Summary

- 133 properties
- 1 & 2 bed bungalows
- 2 x semi-detached houses
- Start: 2nd February 2015
- Complete: 1st May 2015
- 4 drilling rigs
- 2 trenching teams
- 8 heating teams
- 2 project managers
- 10km of drilling
- 32km of pipe work
- 20 installation per week at peak
- Heat pump installed every 4 hours
- Over 600 storage heaters removed
- Potential tenants running cost reduction: £62,000 per year

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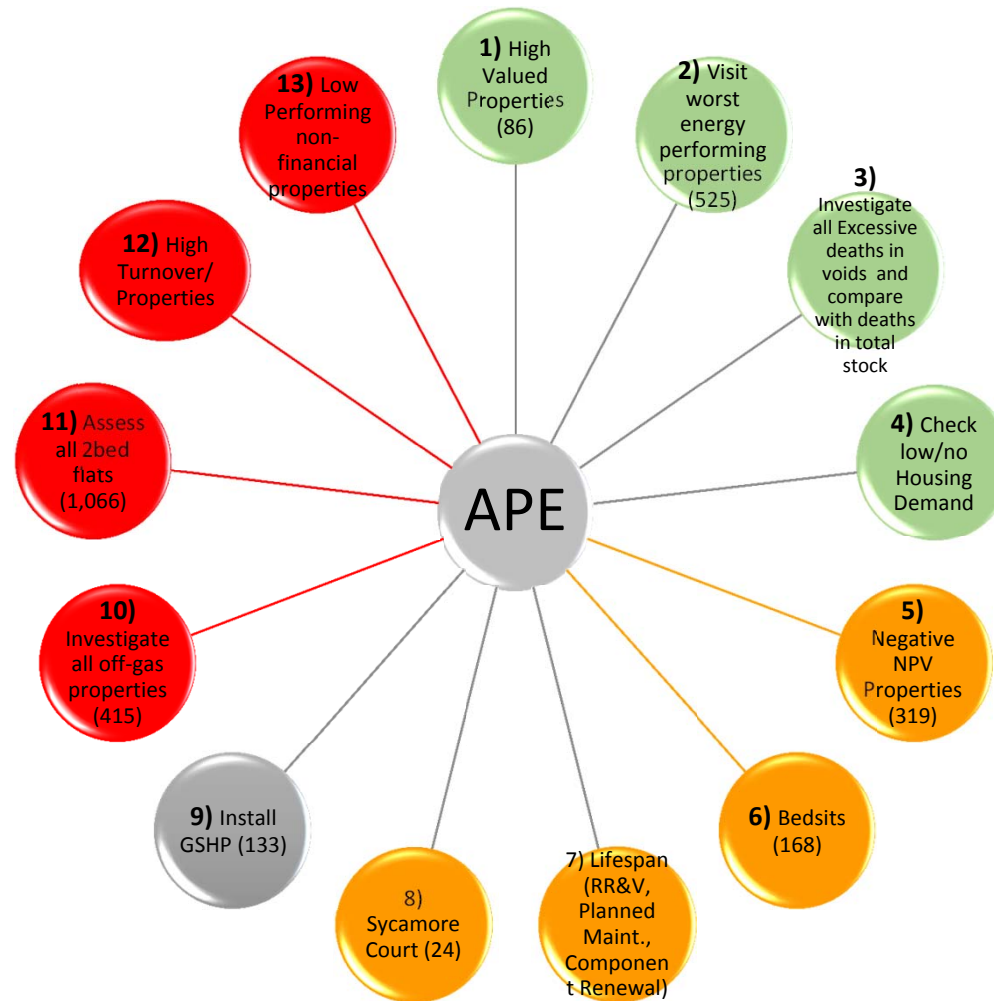
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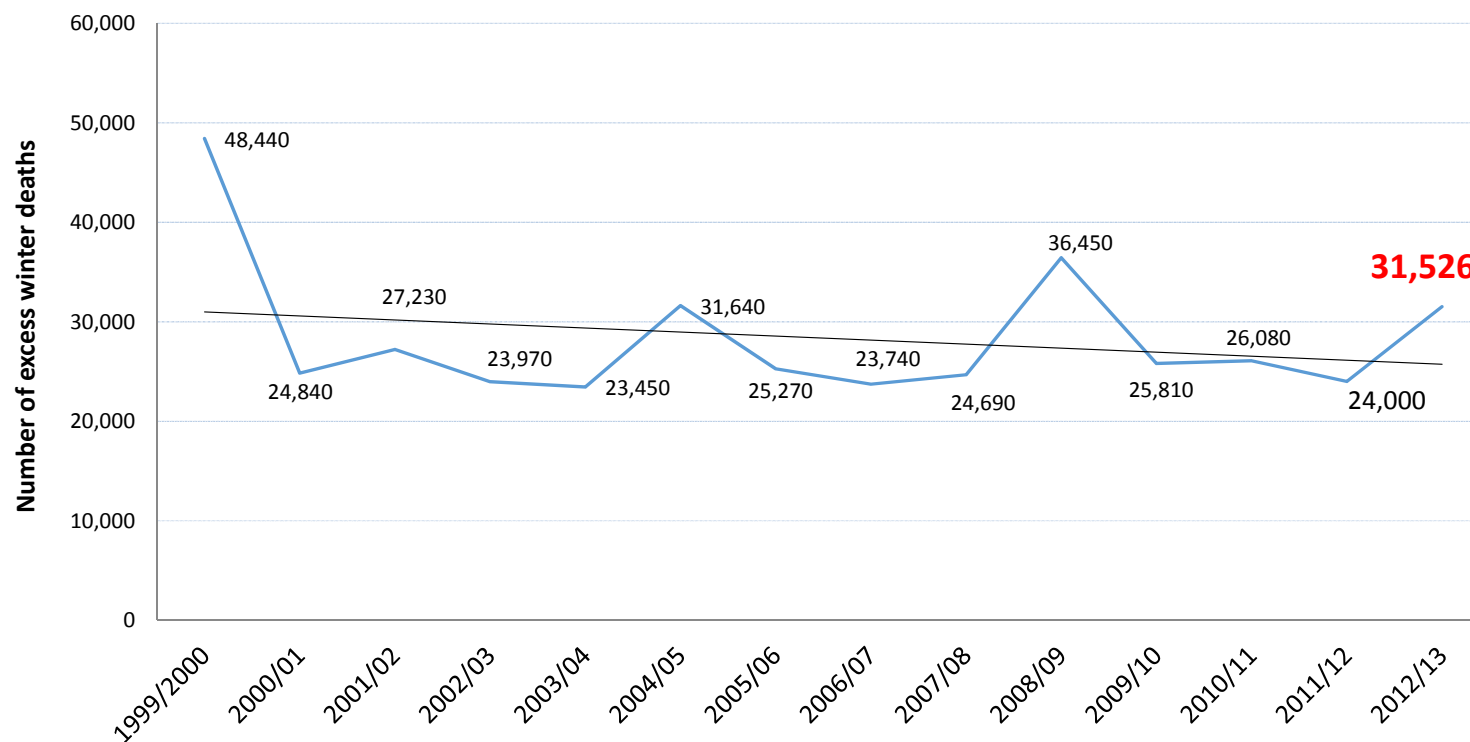


Asset Performance Evaluation Modelling

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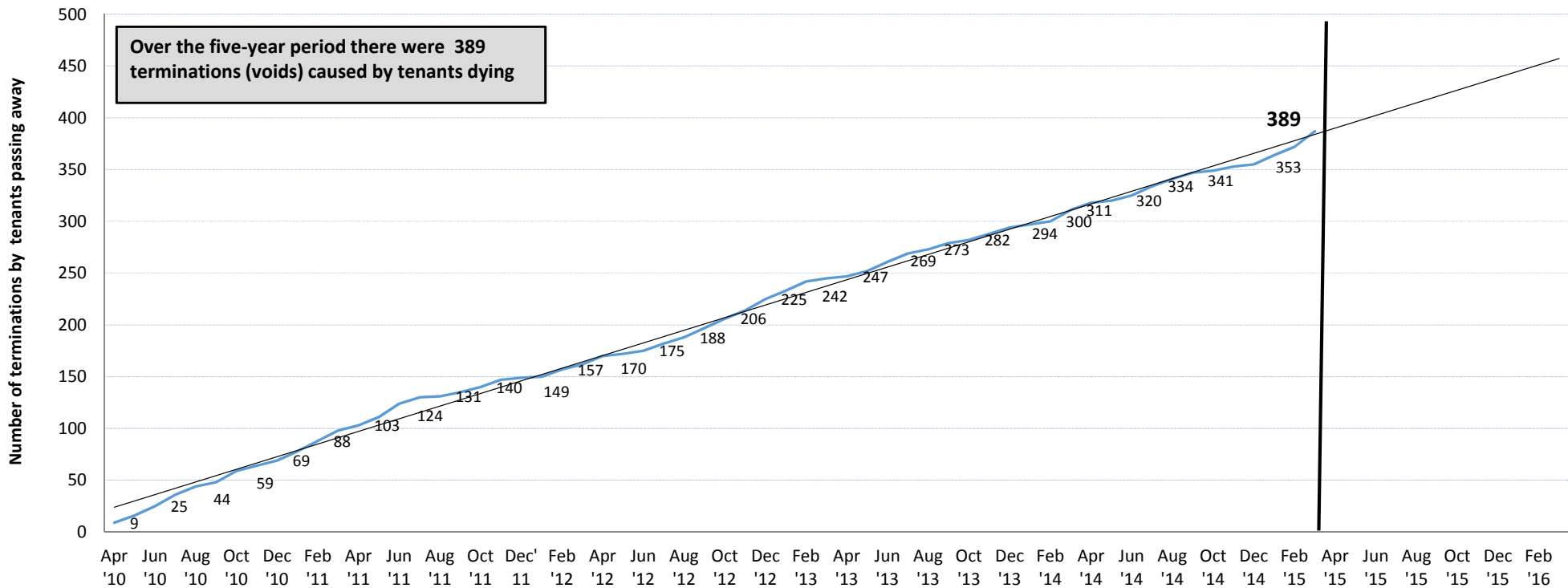
Excess Winter Deaths and Average Winter Temperature England and Wales, 1999/2000 – 2012/2013



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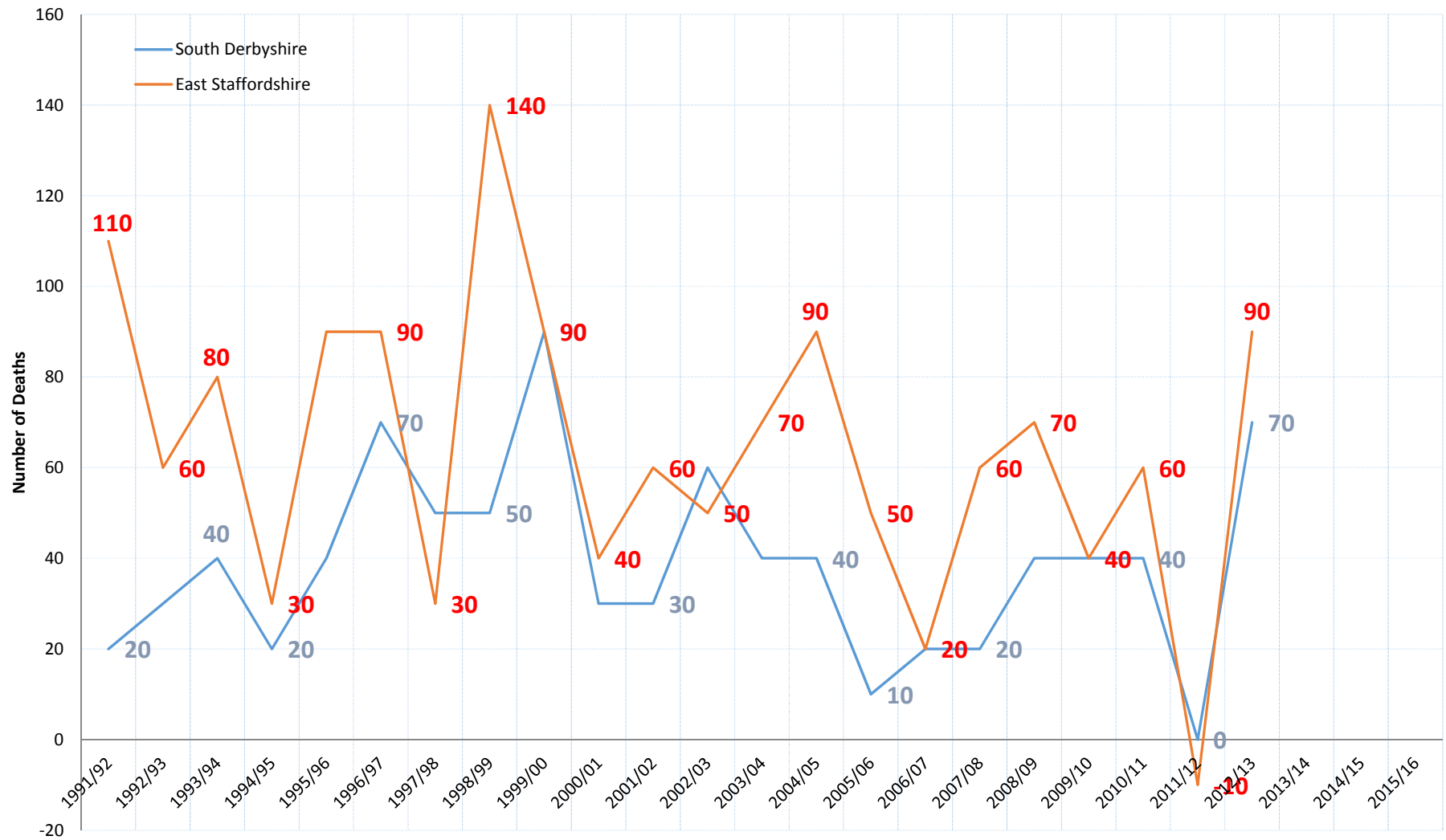
Tenancy Deaths Over a Five Year Period, 2010/11 - 2014/15



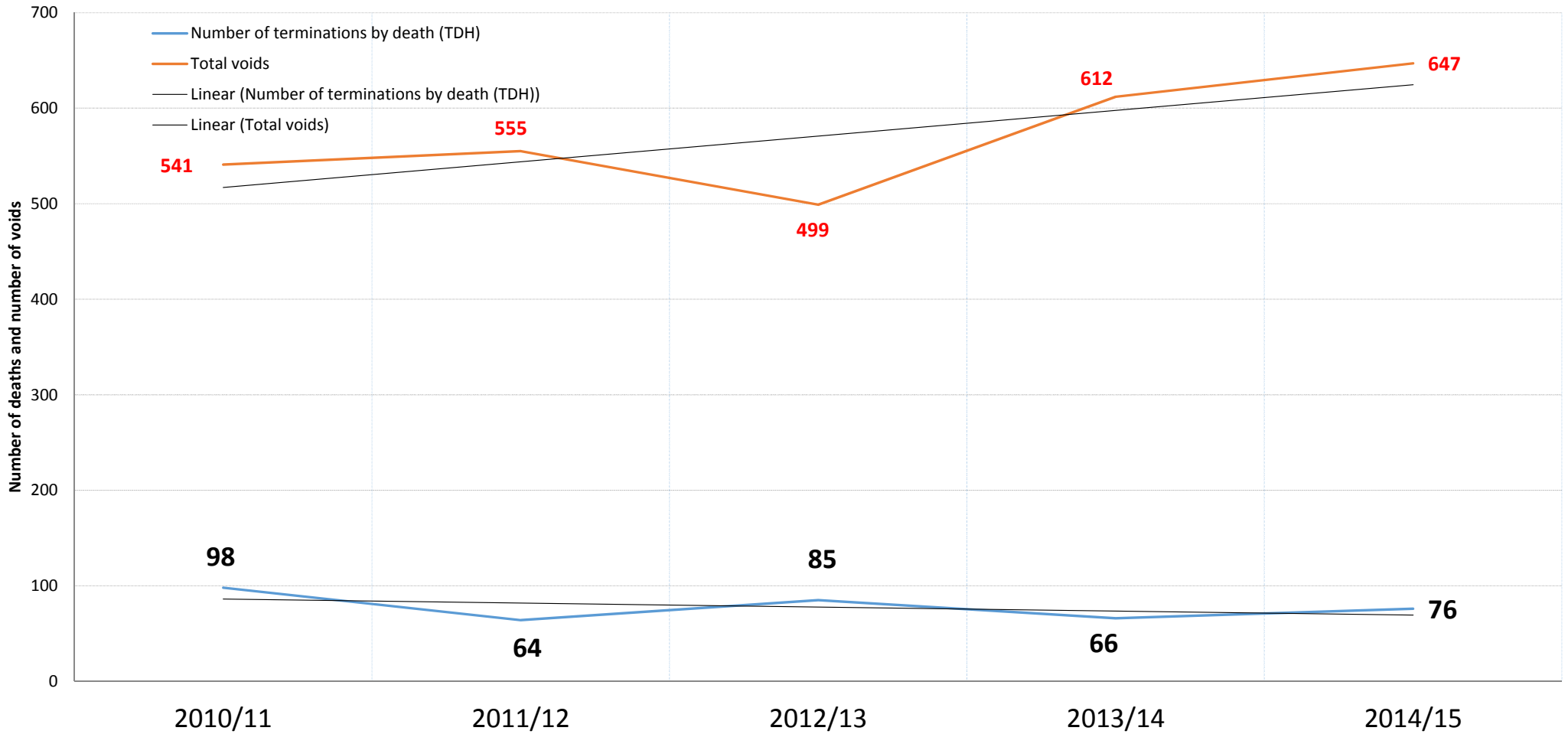
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Excess Winter Deaths in East Staffordshire and South Derbyshire



Total voids and voids created by tenants passing away



Considerations for the GSHP project

- Cost £1.8m (mid-year)
 - Benchmarked against 7 other HP's
- Income estimated at £2.25m (index-linked)
 - ECO: £350k RHI: £1.9m over 20 years TDH will make £450k profit
- VAT
 - 5% **Saving of £270k in VAT costs**
- Construction design & management

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Procurement

- Could have tendered this, but would not have got this deal
- T&D financial regulations allows '*special circumstances*' clause to be used
- Fast track programme – start mid-January 2015, completed mid-May 2015 (4 months)
- Use Partnering Gas/CH Contractor (based at T&D's Offices)
- OJEU rates – they will maintain the system for the foreseeable future

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Specialist Assistance

- Kensa calculates and designs each wet system and borehole
- Encraft checks all calculations and signs off each dwelling/bore hole
- Encraft ensures the system is installed to each specification
- Each system signed off by Encraft after it has been fitted

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Design

Kensa undertook detailed site surveys and geological research to establish property heat loads and design the heat network borehole arrays.

1-2 weeks per site



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Tenant liaison

Trent & Dove Housing and Kensa conducted face to face tenant liaison to introduce the benefits of ground source heat pump technology and answer questions about the installation process.

1 day per site



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Borehole drilling

Vertical boreholes between 90-130m deep are drilled to create each micro ground source heat network, serving between five and ten properties. Each borehole will last 100 years.

1-2 days per property



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Headering and trenching

Trenches are dug from the boreholes and pipework is laid to connect the boreholes to individual heat pumps in each property. The turf is then carefully re-laid to ensure minimal disruption.

1 day per borehole

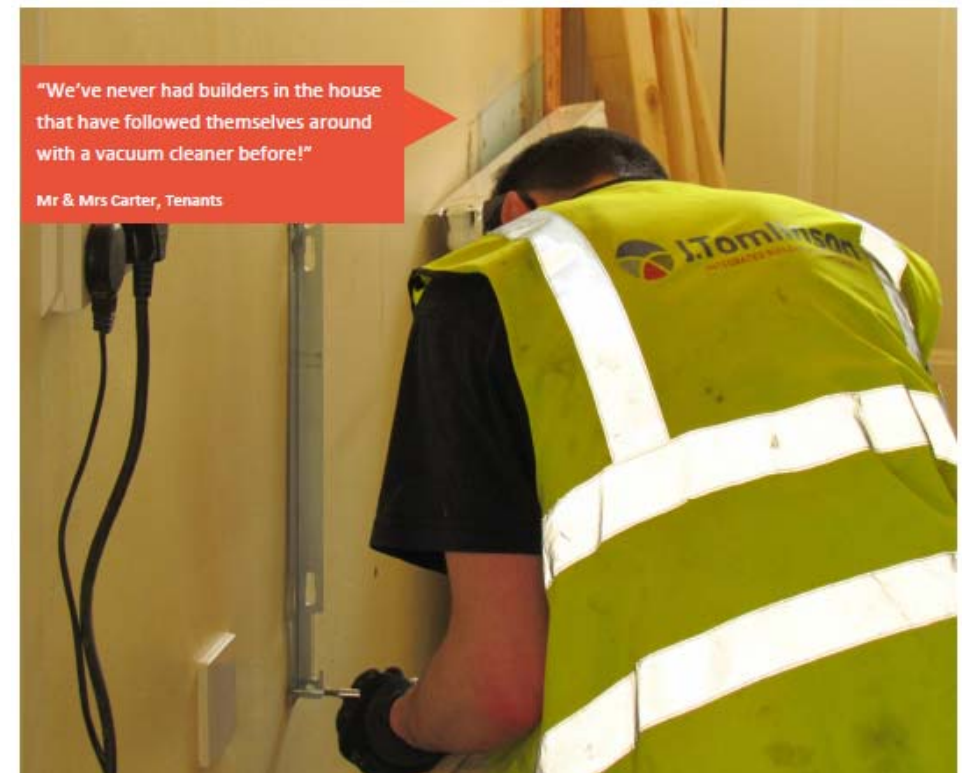


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Internal plumbing and heat pump installation

Storage heaters were removed, new pipework, radiators, hot water cylinders and the Kensa ground source heat pump were installed, along with the easy to use heating controls.

2-3 days per property



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Commissioning and hand over

The heat pumps are commissioned with the support of a Kensa engineer to achieve MCS certification.

Each heat pump is quality checked and handed over with easy-to-use instructions and technical support.

3-4 hours per property



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Tenant Benefit

- Control
- Whole house heating
- Reduced condensation and mould issues
- Health benefits
- Running cost reduction – ability to afford comfortable heat



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Running costs

- Trent and Dove resident, Hollow Lane
- Previously spending £20 - £30 per week on electricity
- Has been monitoring electricity usage since the GSHP was installed
- Now spending less than £10 per week (with the heating on), including use of a tumble drier
- “Over the moon” with this and glad Trent & Dove installed the ground source heating system for her.

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Tenant Referrals

Mr and Mrs Carter

Lived in their home for 11 years

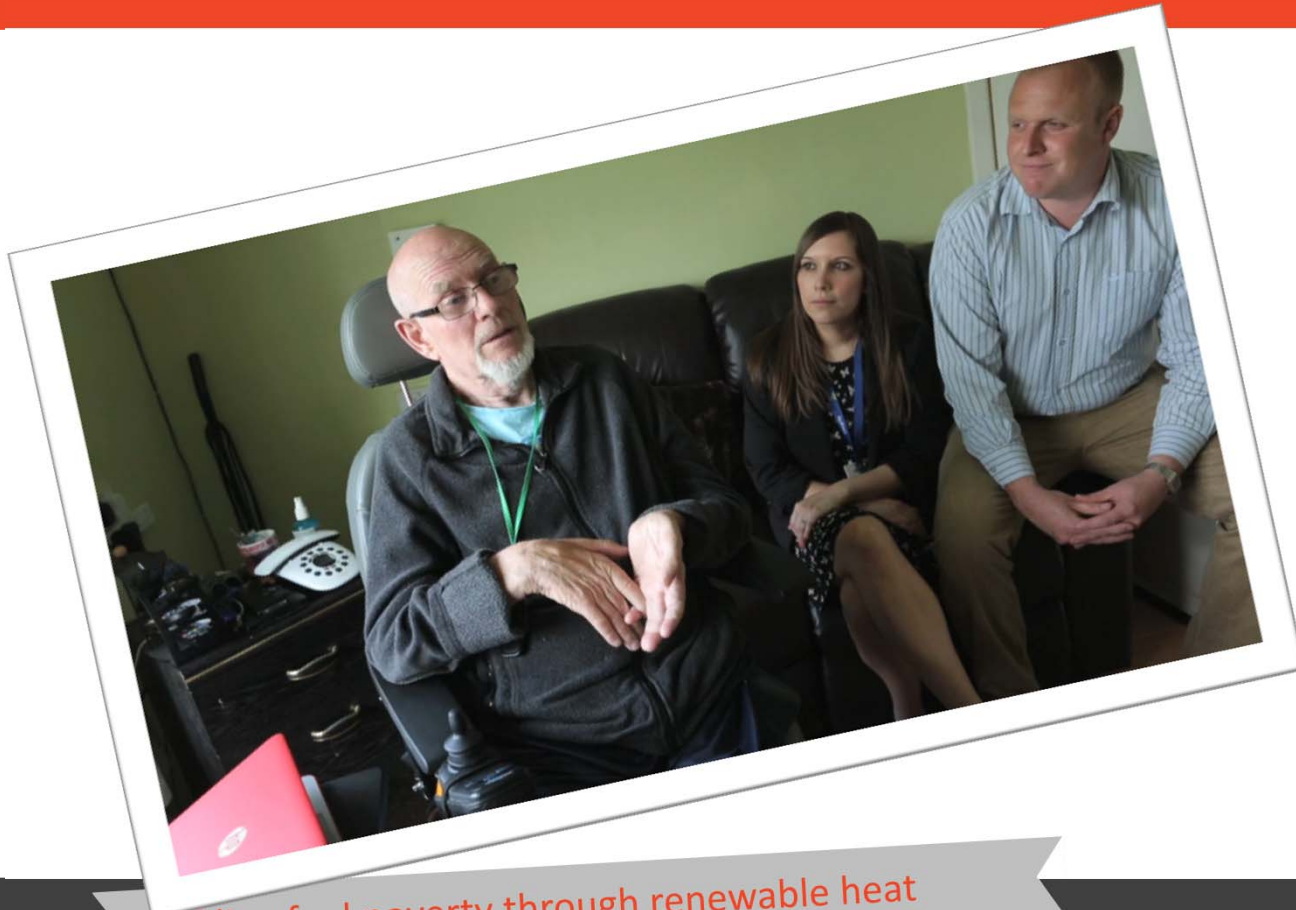
“There is no comparison to this system and the night storage heaters – this is 1,000 times better. It is absolutely wonderful. The house actually feels cleaner. The temperature is terrific. You can control it. It’s brilliant, absolutely brilliant!”



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Tenant Referrals



Mr Rowe

Lived in his home for four years.

He suffers from motor neurone disease, and as a consequence struggles with controls and mobility.

“I didn’t think it would be as good as it is, but it’s absolutely amazing. I’d recommend it to anybody.”

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Conclusion

- Fantastic contractor
- First rate sub-contractor (drillers, trencher, wet system installer)
- On budget
- On time
- Outstanding tenant feedback
- £750 p.a. on average saving per household (reduced from £1,500 per annum)
- We aren't too bad either!

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Advice

What are you waiting for...?

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