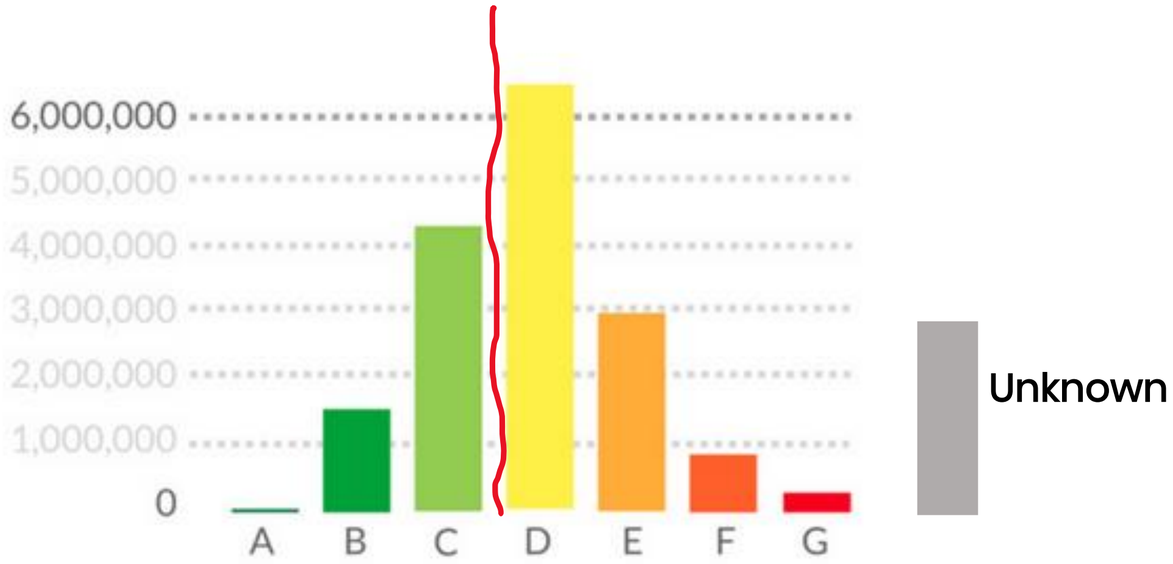
energy saving trust

How to decarbonise your housing

Planning for EPC C and the net zero carbon transition

Energy Saving Trust | 27.02.24

What's your average SAP rating?



OpenRent.co.uk 2022

All social homes to achieve:

- minimum EPC C by 2030
- NZC Performance by 2050

Developing a retrofit campaign – technical planning

What do we need to know about our stock?

What are the sweet spot opportunities?

Which homes do we tackle first?

How do we get the biggest bang for our buck?

What retrofit do we need to do?

What technical solution do we back?

Piecemeal or area based?

Stepwise or whole house?

Developing a retrofit campaign – people & resource

Will energy bills be affordable for our customers?

Do our customers understand and want this?

How will we pay for this?

How do we take customers on the journey?

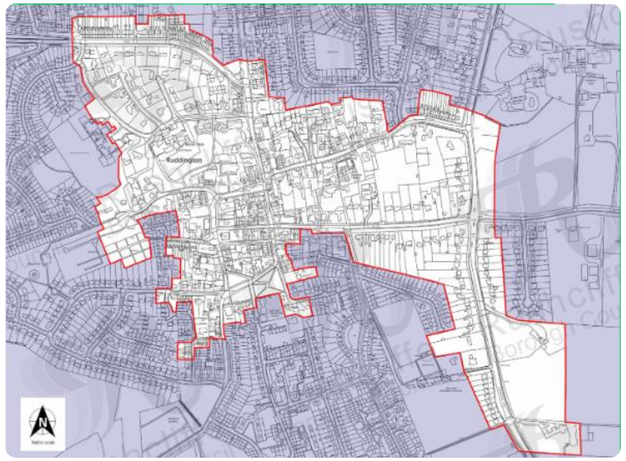
Who will do the work?

Who/which team is responsible?

How will we maintain this?

GOOD DATA & INSIGHT!

Data integration



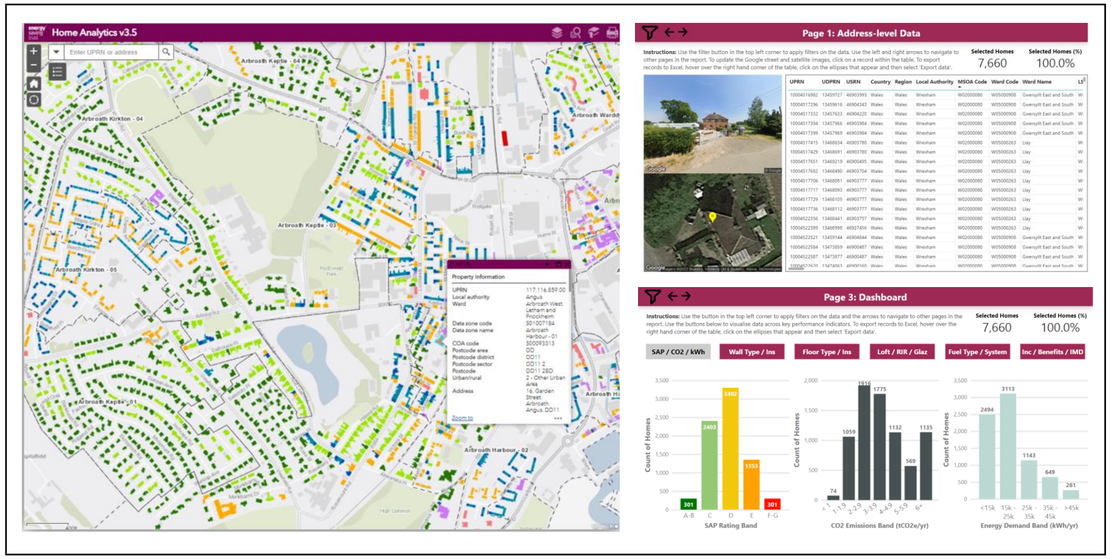
Overcoming the data challenge

Our solutions

Build an evidence base

Home Analytics

- Address-level housing stock database that covers all homes in Great Britain



Explore scenarios

Portfolio Energy Assessment Tool (PEAT)

- Energy modelling tool that simulates retrofit scenarios for portfolios/areas of properties

Retrofit Modelling

Retrofit Cost	Retrofit Cost / Home	Measures / Home	Avg Current SAP	Avg Potential SAP	Selected Homes	Selected Homes (%)
£13.7bn	£34.3K	7.1	64	86	400.1K	100.0%
Current CO2 (t/yr)	**2030 CO2 (t/yr)**	**2050 CO2 (t/yr)**	**Annual kWh Savings**	**Annual Bill Savings**	**Avg kWh Savings**	**Avg Bill Savings**
2.2M	277.3K	204.5K	5.8bn	£226.2M	14.4K	£565.3

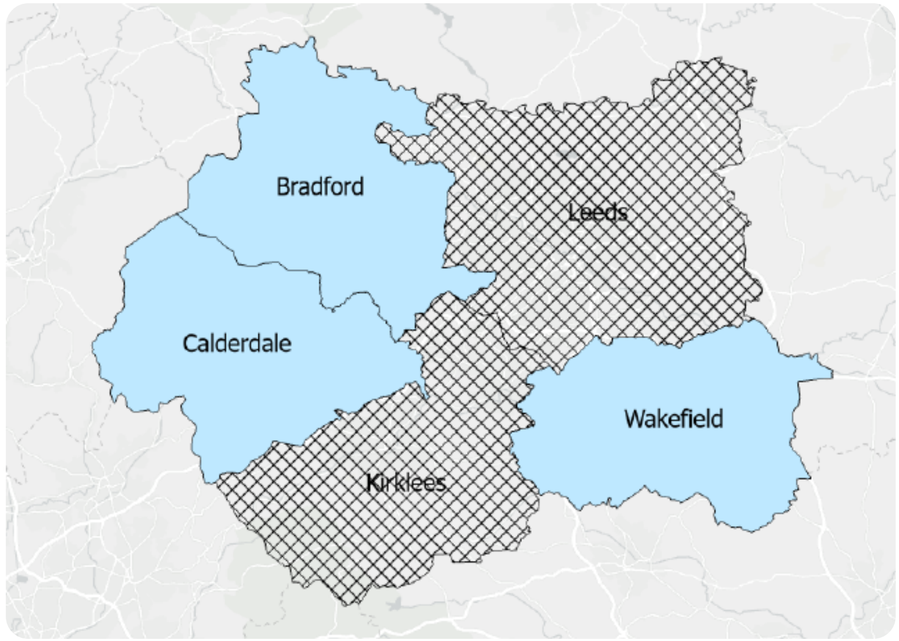
Street Name	Cost Archetype	Cavity Wall Insulation	Hard to Treat Cavity Wall Insulation	Internal Wall Insulation	External Wall Insulation	Loft Insulation	Flat Roof
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	1	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	0	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	0	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	0	
ABBEY CLOSE	Semi-detached house.Large	1	0	0	0	0	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	0	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	0	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	1	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	0	
ABBEY CLOSE	Detached house.Large	0	0	0	0	0	
ABBEY CLOSE	Semi-detached house.Large	0	0	0	0	0	
ABBEY DRIVE	Semi-detached house.Large	0	0	0	0	0	
ABBEY DRIVE	Semi-detached house.Large	0	0	0	0	1	
ABBEY DRIVE	Mid-terraced house.Large	0	0	0	0	1	
ABBEY DRIVE	Mid-terraced house.Large	0	0	0	0	1	
ABBEY DRIVE	Mid-terraced house.Large	0	0	0	0	0	

Case study

Case study

West Yorkshire Combined Authority

- Declared climate emergency in June 2019
- Net zero target: 2038
- Looking for:
  - Better housing stock data.
  - Pathways for achieving EPC C/net zero.
  - Estimated costs and savings.
  - Alternative funding models to finance decarbonisation.
  - A list of project areas that local councils could focus on in the next five years.

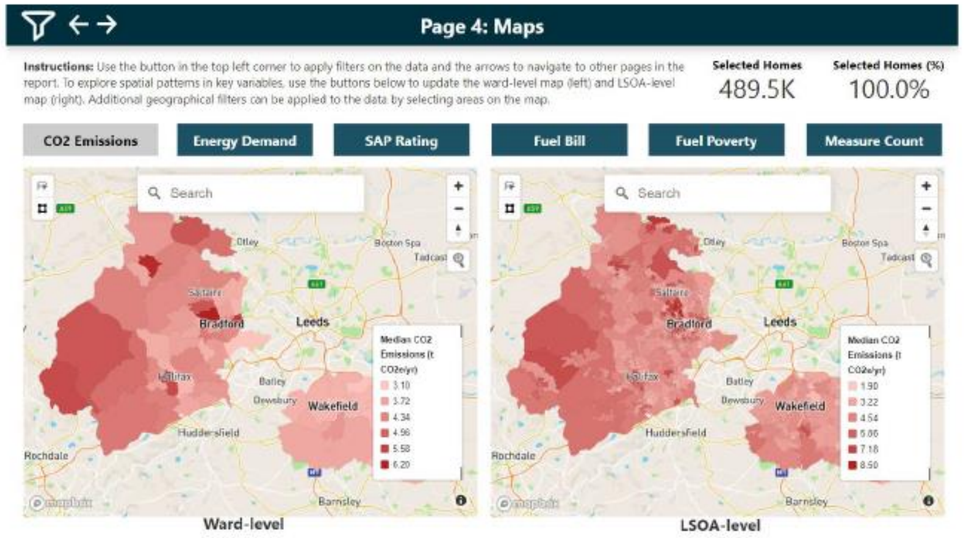


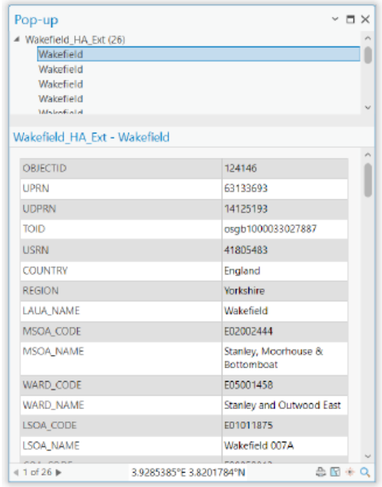
Stage 1

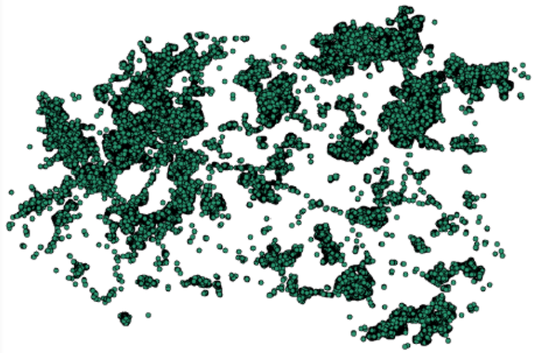
Build an evidence base

Data license

- 5-year data license for Home Analytics property database.
- Periodic updates to reflect new data.
- Provided in several formats:
  - CSV extracts
  - Geodatabases
  - Power BI dashboards





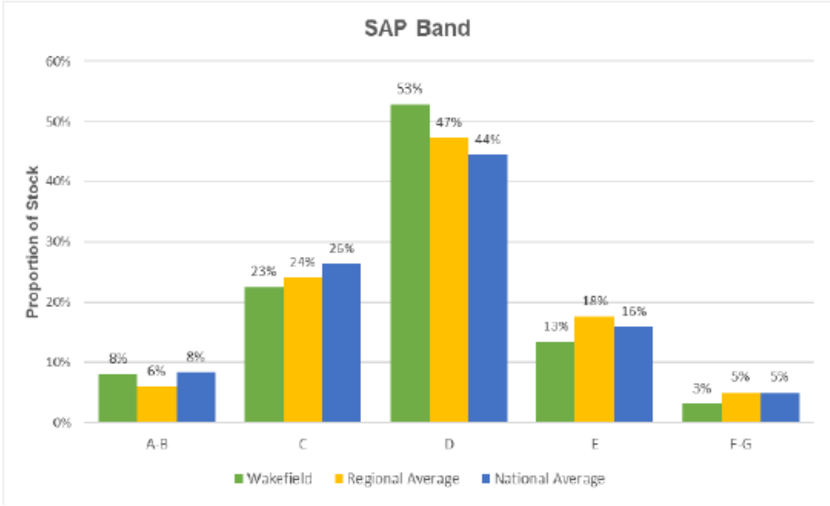


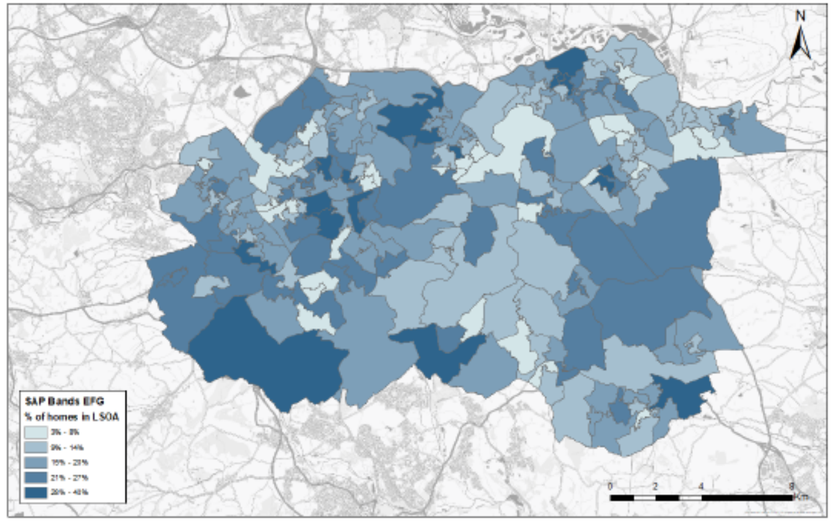
Stage 1

Build an evidence base

Stock overview report

- Analysis of housing stock data, including hot spot mapping.
- Regional and national benchmarking.
- Identification of retrofit challenges and opportunities.
- Delivered as slide deck for councils to disseminate with internal stakeholders.



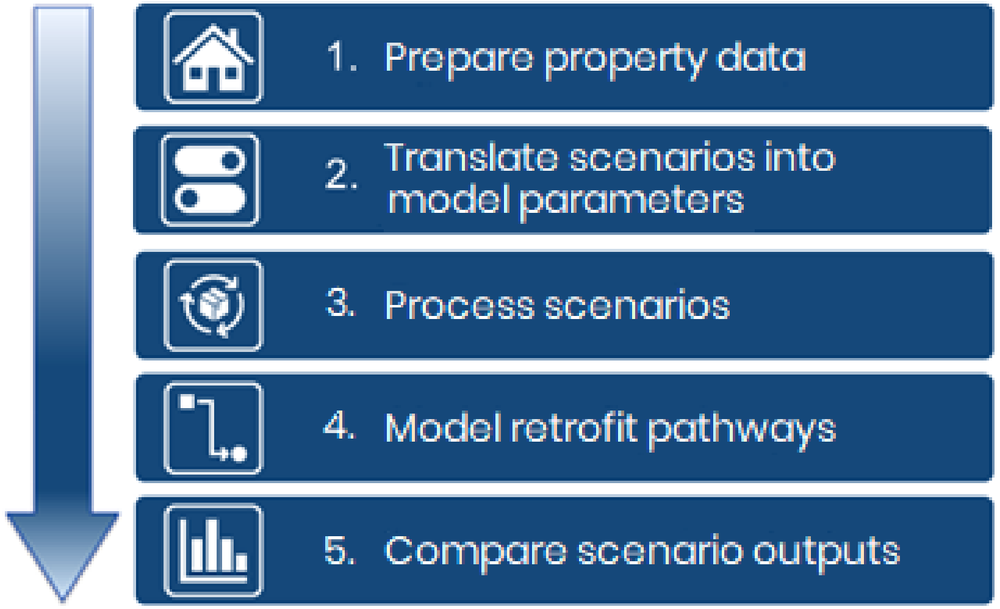


Stage 2

Explore scenarios

Scenario scoping

- Scoped out relevant retrofit scenarios with WYCA steering group:
  1. EPC band C
  2. net zero
- Translated council objectives into scenario parameters.
- Used PEAT software to model scenarios for all 500k homes in West Yorkshire.

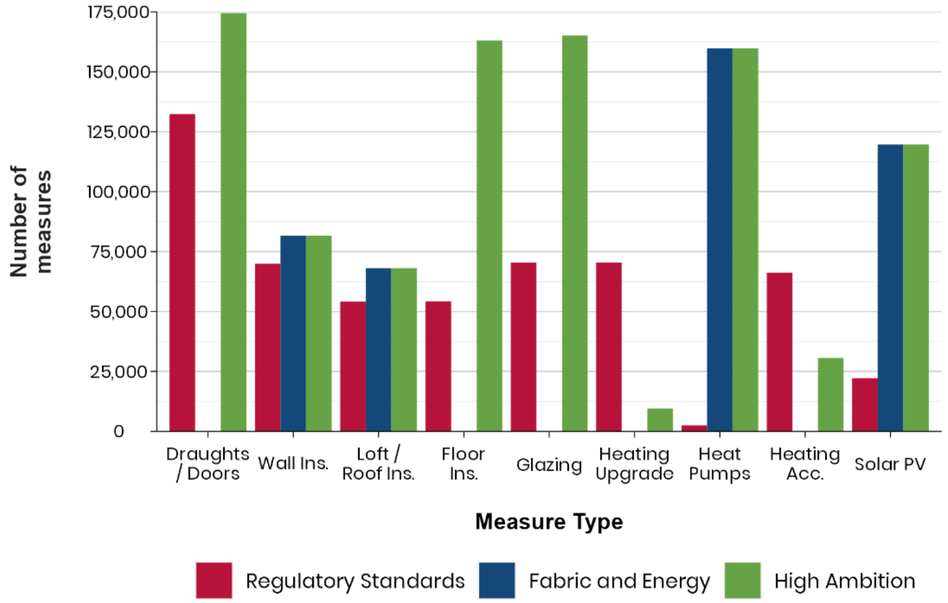


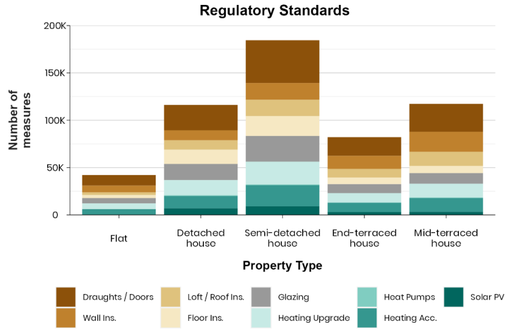
Stage 2

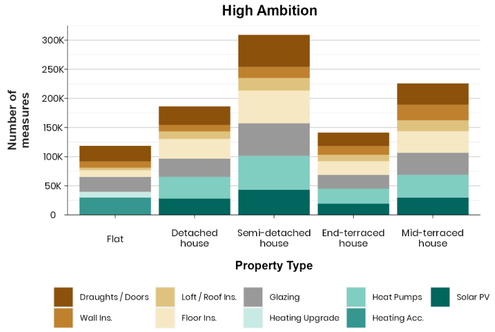
Explore scenarios

Scenario modelling

- Measure-level outputs:
  - costs and savings (kWh, £) per measure recommended
- Property-level outputs:
  - total costs and savings per package of measures
  - energy efficiency impact (EPC score)
- Integrated with housing stock data in Power BI dashboards for cross-referencing.





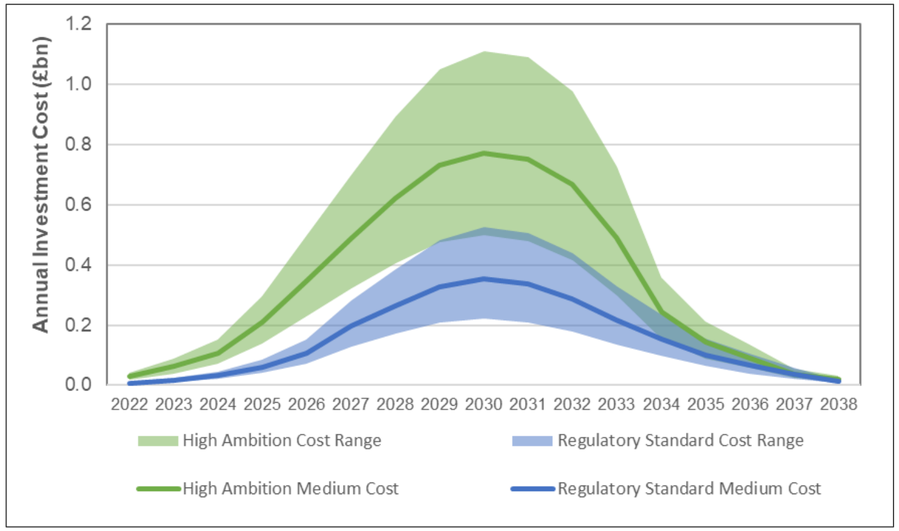


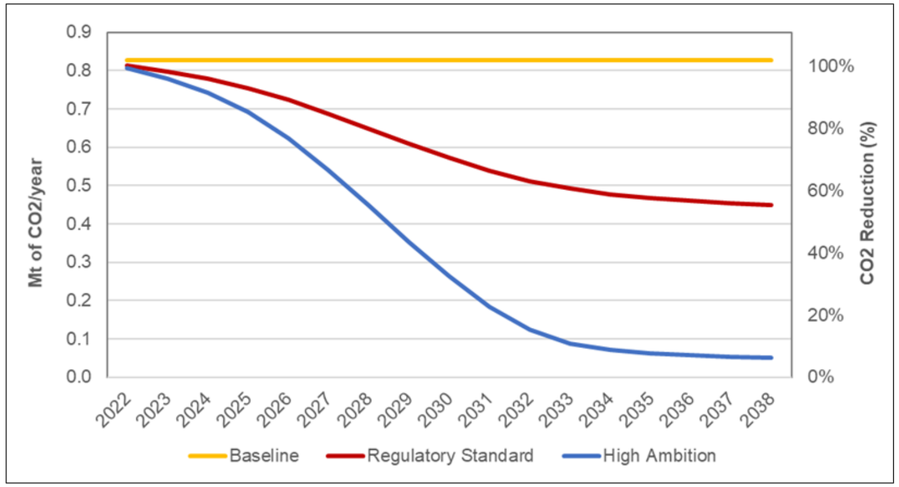
Stage 2

Explore scenarios

Retrofit report

- Mapped pathways to timeframes using retrofit adoption curve and prioritisation logic.
- Phase retrofit works over the time required to achieve targets (eg 2022 to 2038).
- Estimate annual cost and savings to visualise scale of challenge.
- Summarised findings in a report to each council.





Stage 3

Create a plan

Retrofit pipeline scoping

- Develop ‘hitlist’ of relevant project areas that align with council priorities:
  - energy efficiency targets
  - decarbonisation
  - fuel poverty
- Signpost to public and private funding.
- Provide short-term steer for funding and demonstrators.

Stage 3

Create a plan

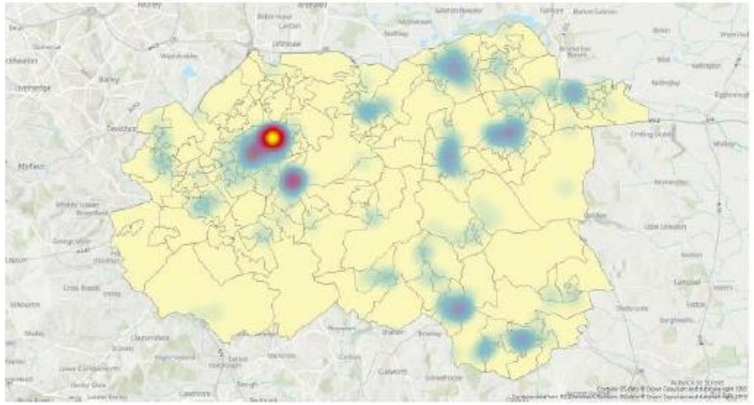
Interventions

1. Area based scheme anchored around social housing
2. No/low regret heat pump installation
3. Private rented sector compliance (MEES)
4. Large inefficient owner-occupied homes
5. Off-gas homes in fuel poverty
6. Quick wins/low hanging fruit
7. Worst-first homes

Stage 3

Create a plan

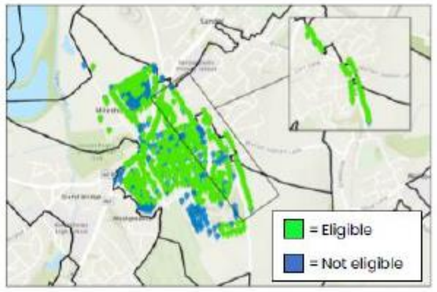
1. Identify hotspots by intervention



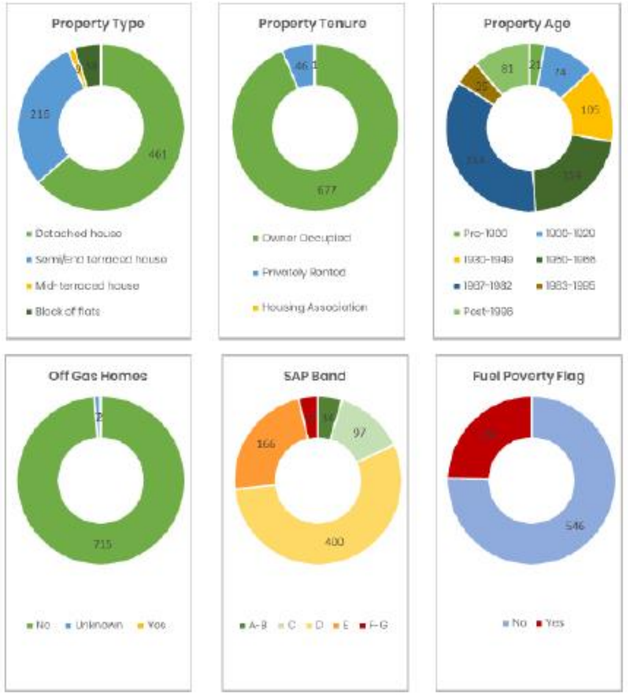
2. Identify priority areas (LSOAs)

Geography

LSOA:	Wakefield 033D
Streets:	Chevet Lane
	Woodthorpe Park Drive
	Barnsley Road
	Woodthorpe Lane
Postcodes:	WF2 8BE
	WF2 7HU
Total homes:	724
Eligible homes:	443



3. Review key attributes of stock



4. Summarise costs/savings

Retrofit Information	High Ambition	Regulatory Standards
1. Total retrofit cost	£23,584,702	£15,445,684
2. Average cost per home	£53,239	£34,886
3. Average measures per home	8.2	4.7
4. Fuel bill reduction (%)	56.40%	36.92%
5. Carbon omissions reduction (%)	99.80%	43.40%
6. Average SAP improvement	24.3	16.3
7. Average SAP Score Potential	80.0	72.0
8. Homes alleviated out of fuel poverty	105	104

5. Review public/private funding

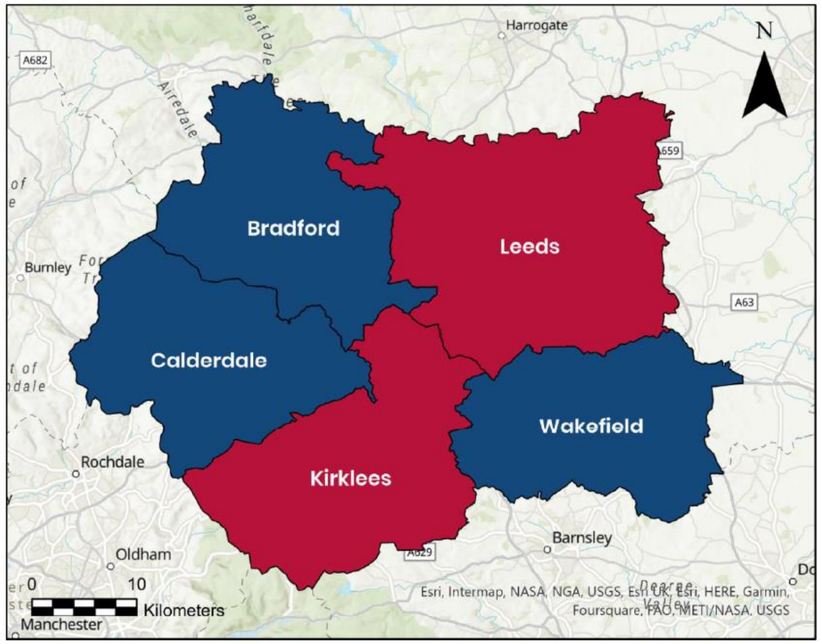
Funding Scheme	Eligibility check
LAD	✓
HUG	✓
SHDF	✗
BUS	✓

Impact

Timeline

- 2022 – initial modelling work completed
- 2023 – exercise replicated in Leeds and Kirklees to complete dataset for WYCA
- 2024 – development of WYCA's regional retrofit programme - Better Homes Hub
  - strategic advisory role
  - develop 10-year delivery plan
  - design One Stop Shop for retrofit

West Yorkshire Combined Authority



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Thank you