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Solving retrofit's data challenge with thermal drones and AI

CEO, Lucy Lyons

January 2025

1.8 homes per min.

will need retrofitting for net zero targets to be reached by 2050 in the UK alone*

* McKinsey

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But no system exists to measure real heat loss at scale

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Which means a slow pace of delivery of retrofits today...

"EPCs are not reliable enough to plan or validate retrofits for our portfolio – we need to do manual surveys, which are slow, and cost tons."

Director of Sustainability Peabody

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What if there were a way to measure heat loss from a home, without an in-person survey?

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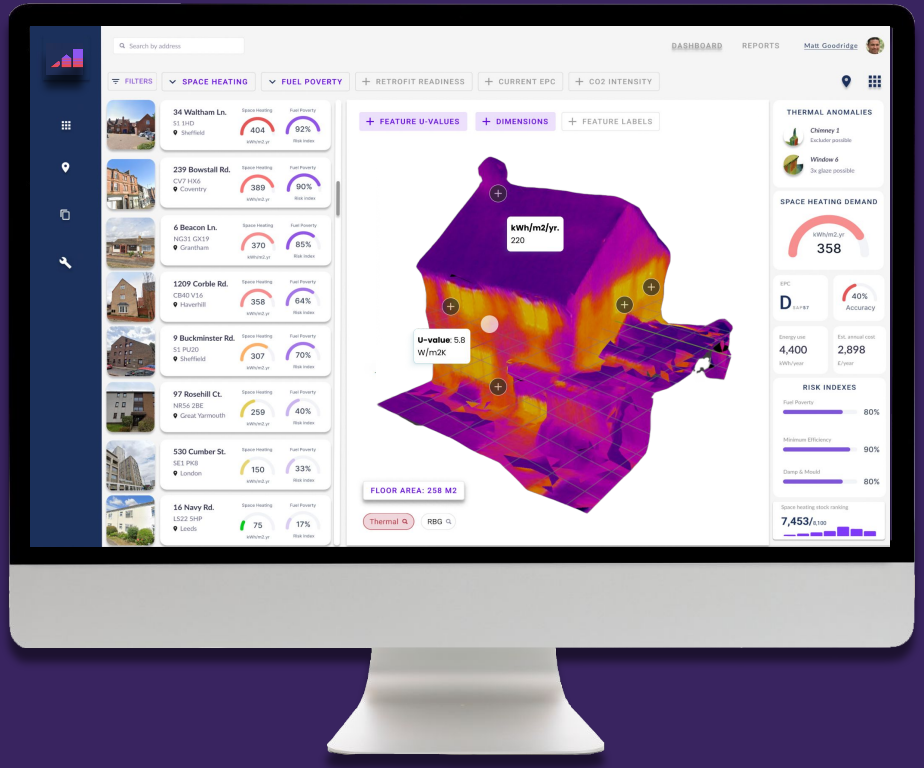

Kestrix quantifies heat loss from buildings from thermal images, and uses AI to generate energy efficiency plans – **at area scale.**

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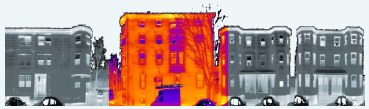
1



Thermal drones scan for heat loss data at scale

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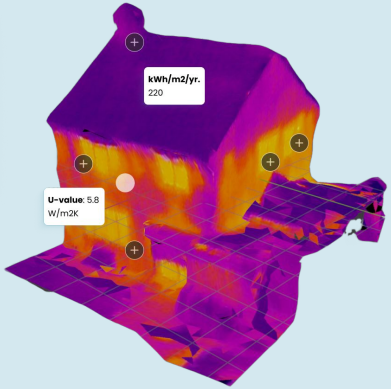
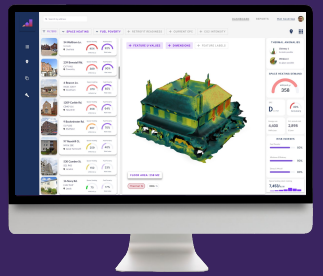


AI quantifies heat loss and suggests retrofit actions

3



Software automates city-wide retrofit planning and verification

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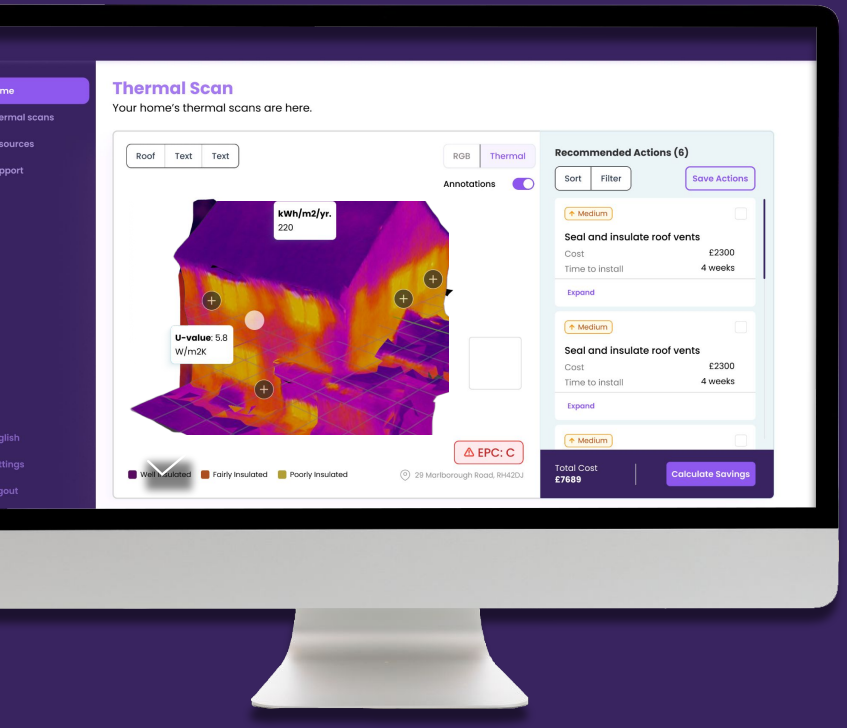
Kestrix's use of AI to interpret drone images of buildings is **non-invasive** – and aims to reduce energy surveying & analysis time from **2-3 hours** to **<1 minute.**



Benefits of Kestrix at portfolio scale include...

- **Prioritise** buildings for retrofit with quantitative heat loss insights (e.g. U-values, kWh/m^2.yr)
- **Plan** retrofit projects at scale through recommendations and budgeting tools
- **Verify** retrofit outcomes to unlock financing and demonstrate CO^2 reductions from insulation
- **Engage** residents with heat loss visualisations, democratising energy advice

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Thousands of homes already mapped for leading UK providers

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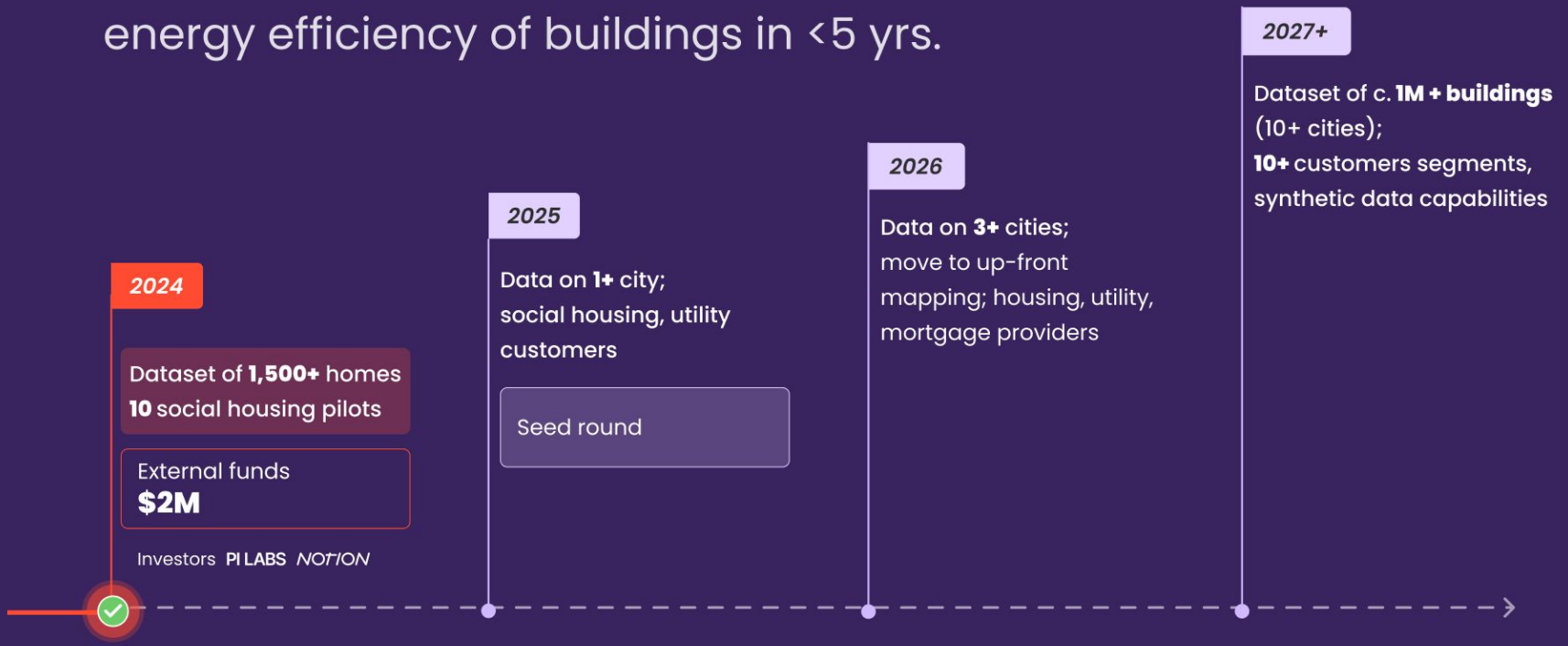
Kestrix becomes ***the data layer*** for energy efficiency of buildings in <5 yrs.



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Data security and privacy are priorities for Kestrix

How does **Kestrix** keep data **safe?**

Work with the regulator. Kestrix is in the ICO sandbox to stress-test privacy approaches.

Keep a distance. We fly at 30-50 m altitude; it is not possible to recognise people from here.

Avoid personal data. We associate images with locations; never with names or personal info.

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The pathway to retrofit planning and verification you can trust with Kestrix

Step 1

Capture drone imagery
Winter 2024-25

Select an estate (500+ homes) and we capture thermal images with drones of homes at night, when it's cold. Without going inside.

Step 2

Access real-world, quant. 3D models
Spring 2024-2025

Images are converted into 3D heat loss models, labelled with dimensions, **kWh/m2/yr., U-values,** thermal anomalies, and PV.

Step 3

Gain portfolio-wide insights
Summer 2024-2025

Rank properties analysed by retrofit readiness, based on EPC, overall heat demand, and other metrics Kestrix is able to present.

Step 4

Scale up across your whole stock
2026+

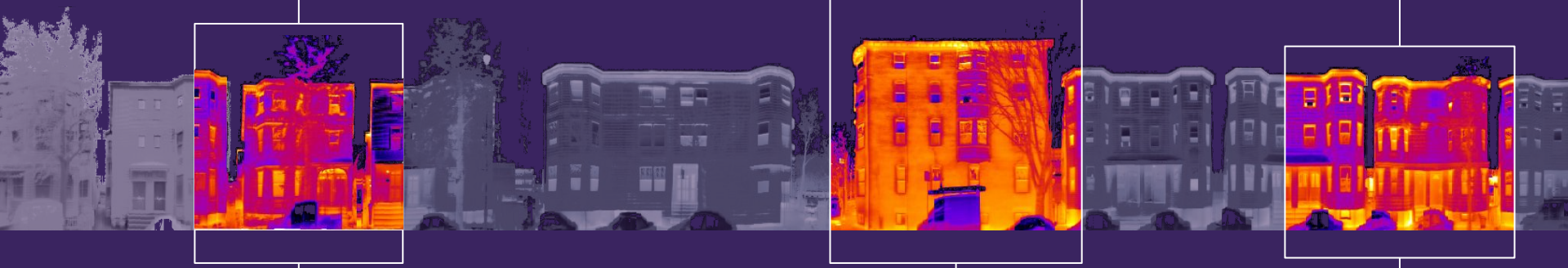
Scan more estates to move closer to a whole-portfolio view, and take advantage of future pricing/scenario planning features.

Without understanding heat loss at city-scale, how can we...

Figure out which buildings to fix first?

Visualise heat loss in a way residents understand?

Validate insulation jobs have been done right?



Prove energy savings, so green financing is possible?

Perform a heat pump assessment non-invasively?

Plan a heat network with data we can trust?

Image credit: Long Phan & Sanjay Sharma (MIT)

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Thank you

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