Improving Resident Satisfaction with Retrofit

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Co-funded by the Horizon 2020 programme of the European Union and with support from InnovateUK, DECC and the Royal Commission for the Exhibition of 1851.

1. Introduction – Choosing the best way to upgrade homes

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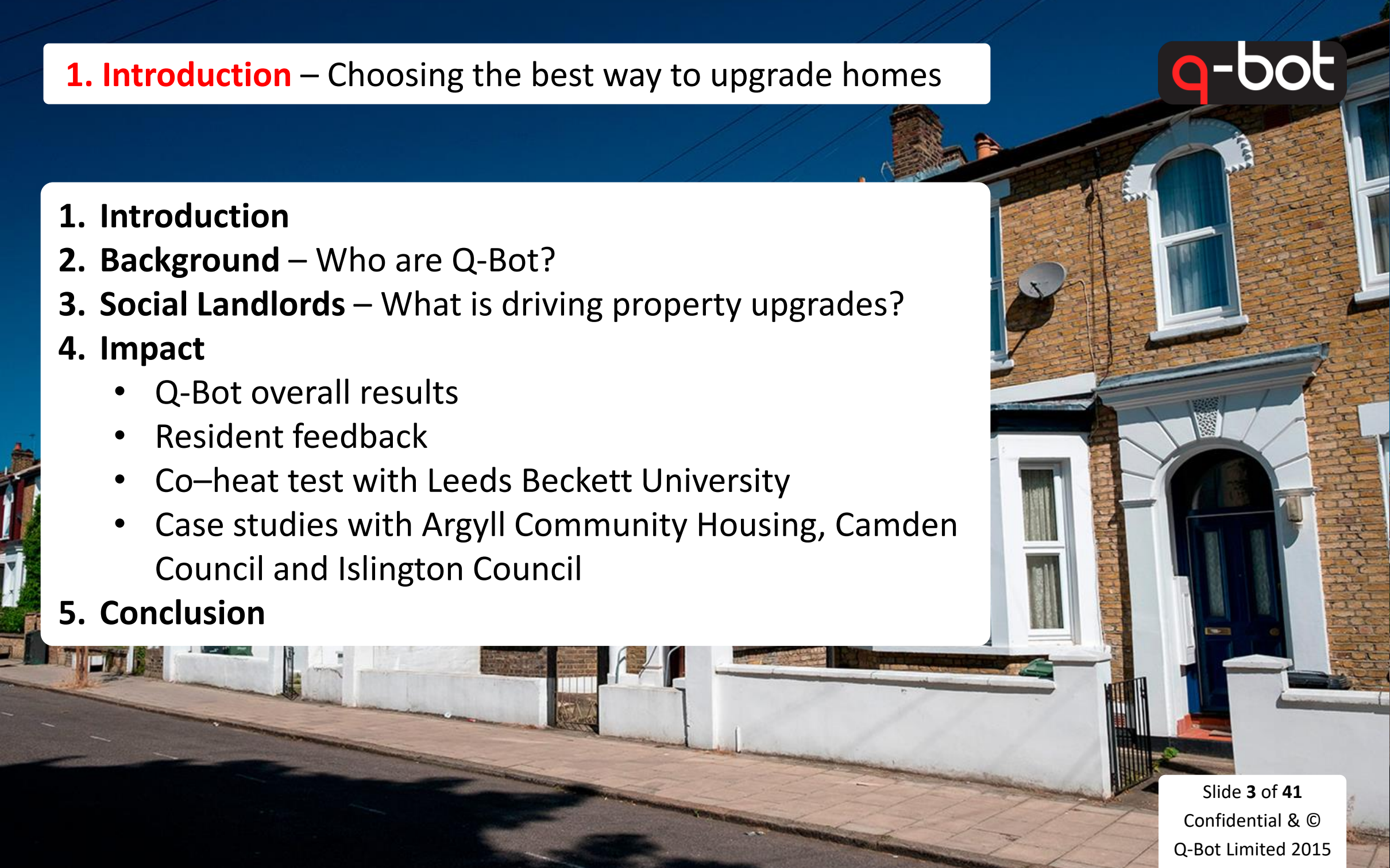

1. **Introduction**
2. **Background** – Who are Q-Bot?
3. **Social Landlords** – What is driving property upgrades?
4. **Impact**
    - Q-Bot overall results
    - Resident feedback
    - Co–heat test with Leeds Beckett University
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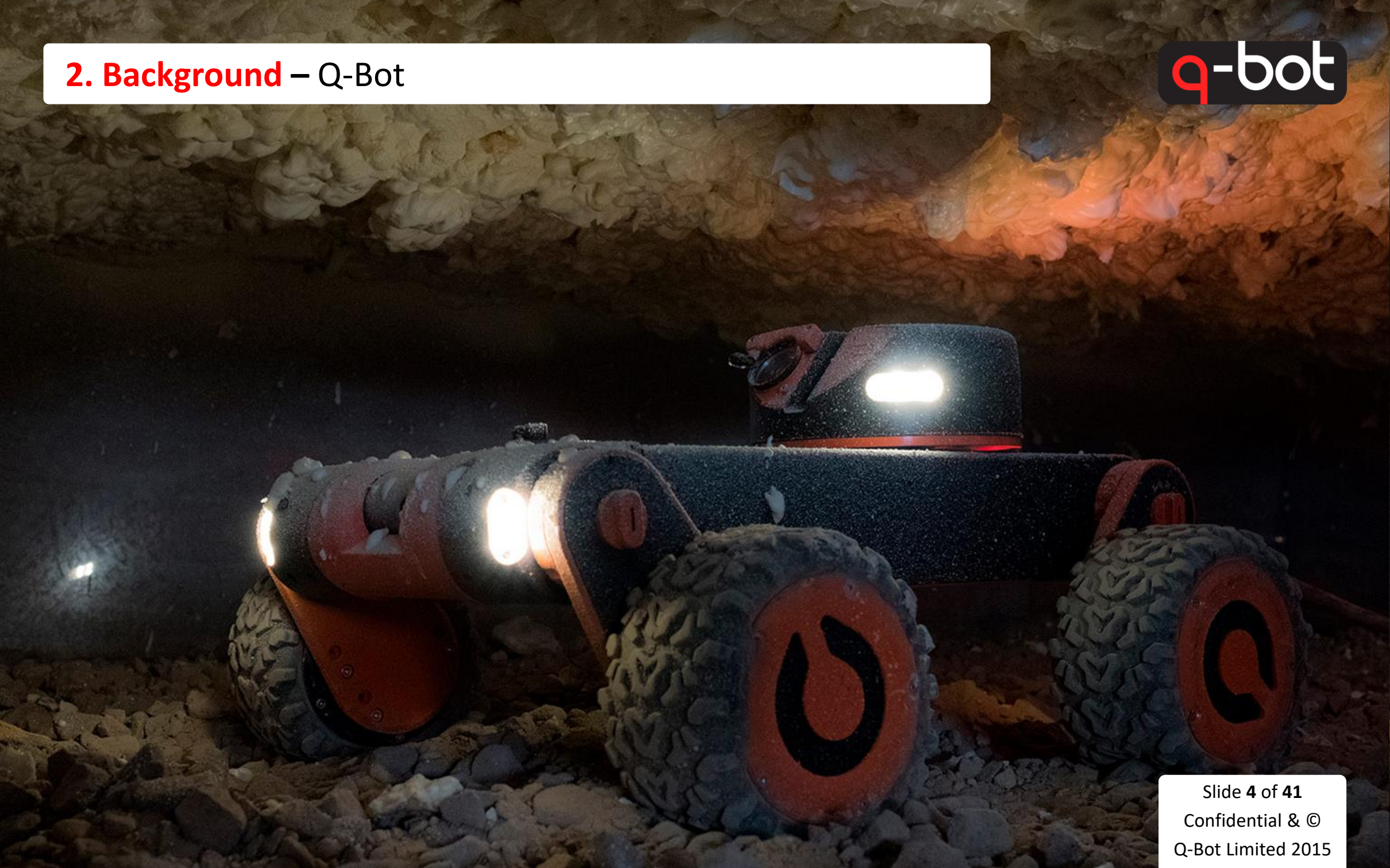
5. **Conclusion**

2. Background – Q-Bot



2. Background – Many of our homes are > 100 years old

1/4

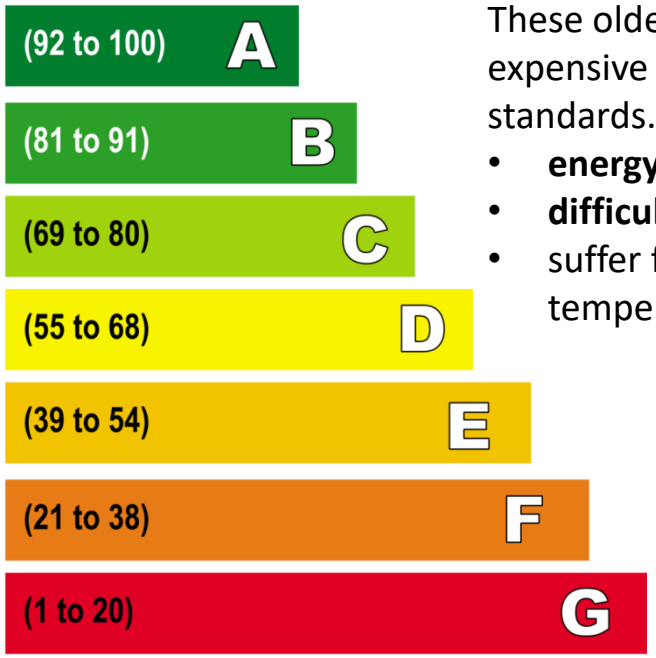
OF N. EUROPE'S HOMES ARE 'HARD TO TREAT'

THE UK HAS

6.5m

'HARD TO TREAT' HOMES

1. Opportunity – These older homes are energy inefficient



These older properties are difficult and expensive to bring up to modern standards. This means they are often:

- **energy inefficient**;
- **difficult to heat**; and
- suffer from **cold draughts** and uneven temperatures.

They therefore have some of the worse EPC ratings, typically E-G.

THE UK HAS

6.5m

'HARD TO TREAT' HOMES

1. DECC, Digest of UK Energy Statistics, 2012
2. I. A.Rock, I.R.Macmillan, The Victorian House manual. Care and repair for all popular house types, Somerset, Haynes Publishing, 2005.

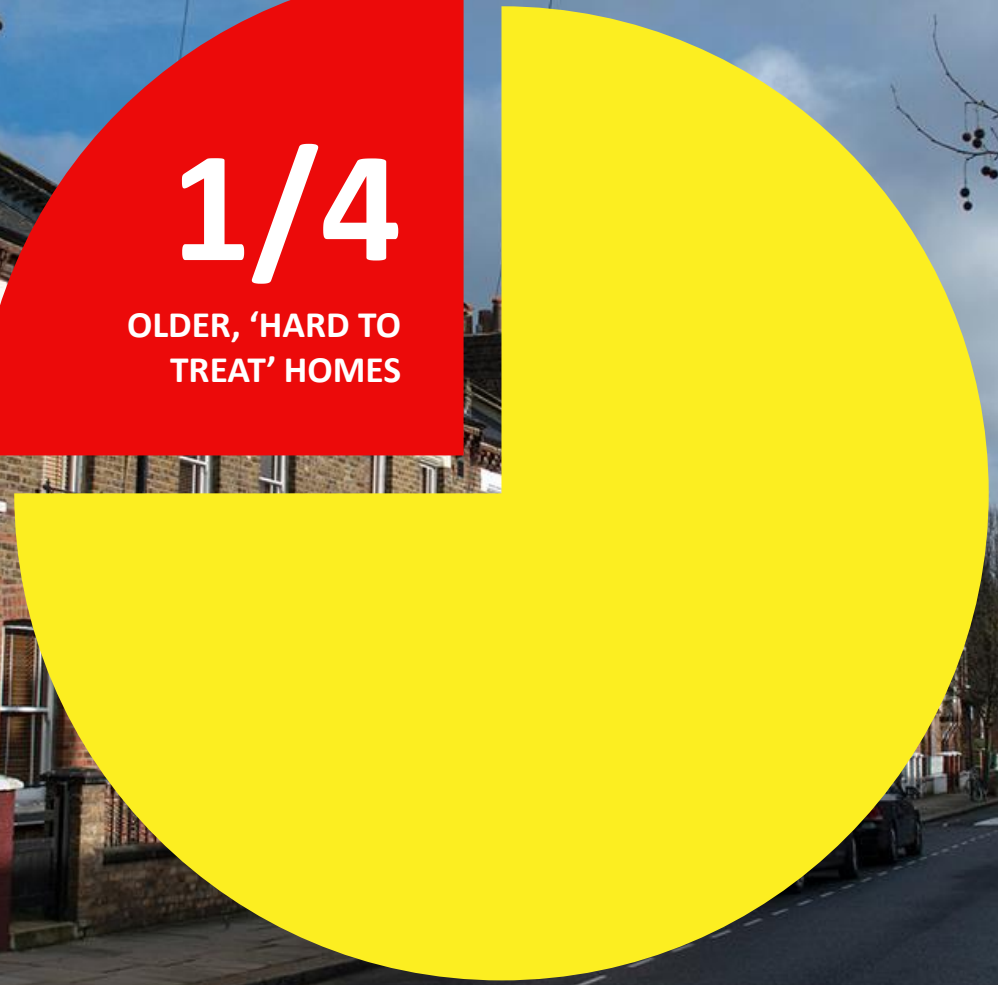
2. Background – Not many have been insulated

3%

SOLID WALLS & FLOORS

1/4

OLDER, 'HARD TO TREAT' HOMES



70%

OF CAVITY WALLS

2. Background – Heat loss from suspended timber floors

1/4

OF THE TOTAL HEAT LOSS CAN BE ATTRIBUTED TO SUSPENDED FLOORS

2. Background – Heat loss from suspended timber floors

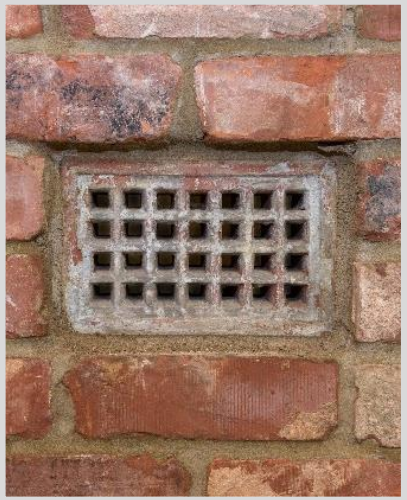
The heat loss from suspended timber ground floors includes not just **conductive heat loss** to the ground and surroundings, but also the **infiltration of cold air** through the void and floorboards, driving heat loss through the rest of the property.

The Air Changes per Hour (ACH) can be as high as **0.5** to **1** for a property with a suspended timber floor. This means that the air in a room is completely replaced every **1-2 hours**, therefore the air in the room also has to be reheated every 1-2 hours or temperatures will quickly fall when the heating is turned off.

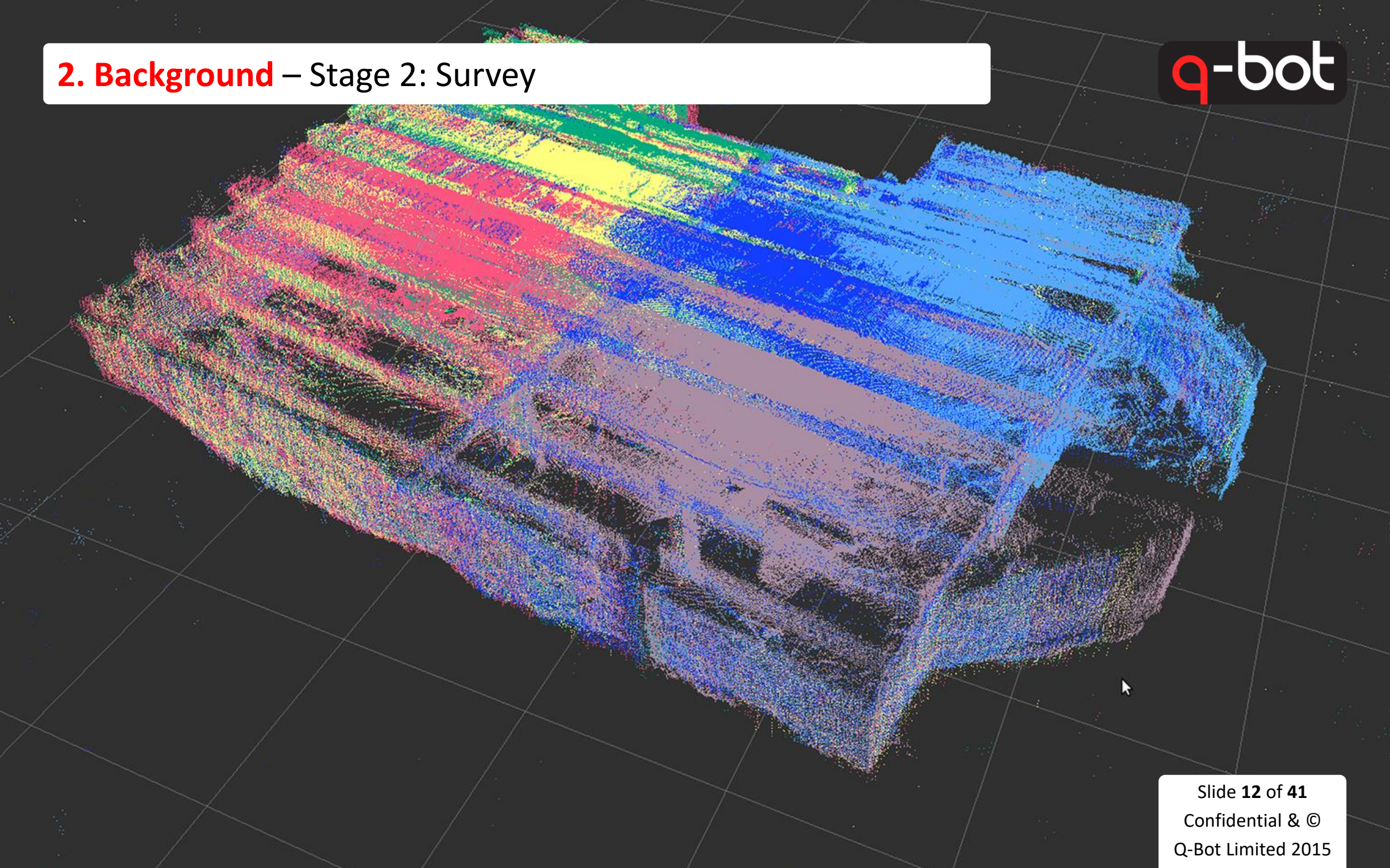
1. DECC, Digest of UK Energy Statistics, 2012
2. I. A.Rock, I.R.Macmillan, The Victorian House manual. Care and repair for all popular house types, Somerset, Haynes Publishing, 2005.

2. Background – SprayBot

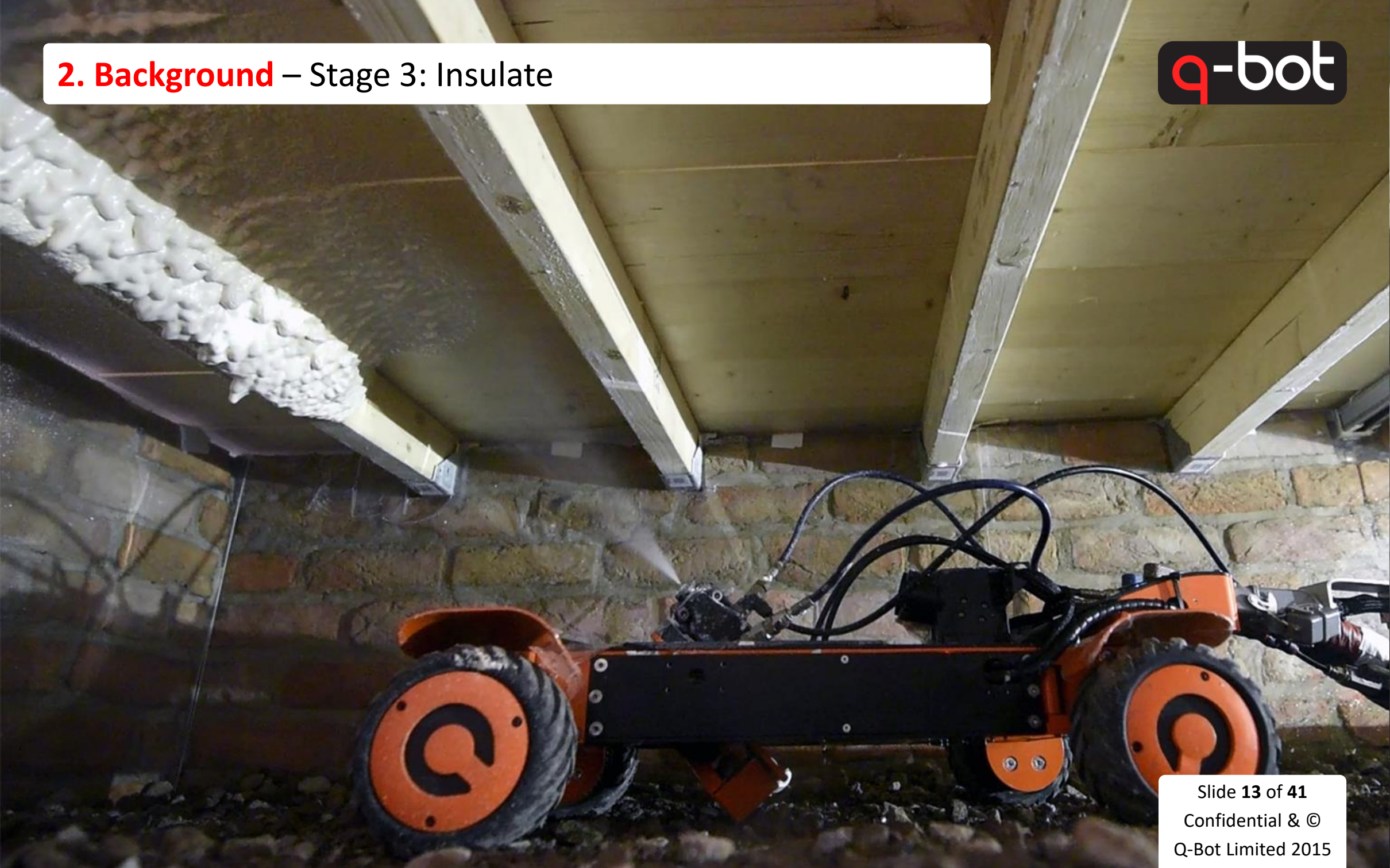
2. Background – Stage 1: Access



2. Background – Stage 2: Survey



2. Background – Stage 3: Insulate



2. Background – Stage 4: Validation of area and depth

2. Background – Customers

Camden Council

Argyll Community Housing

Metropolitan Housing Trust

Islington Council

Your Homes Newcastle

Peabody

The Guinness Partnership

3. Social Landlords

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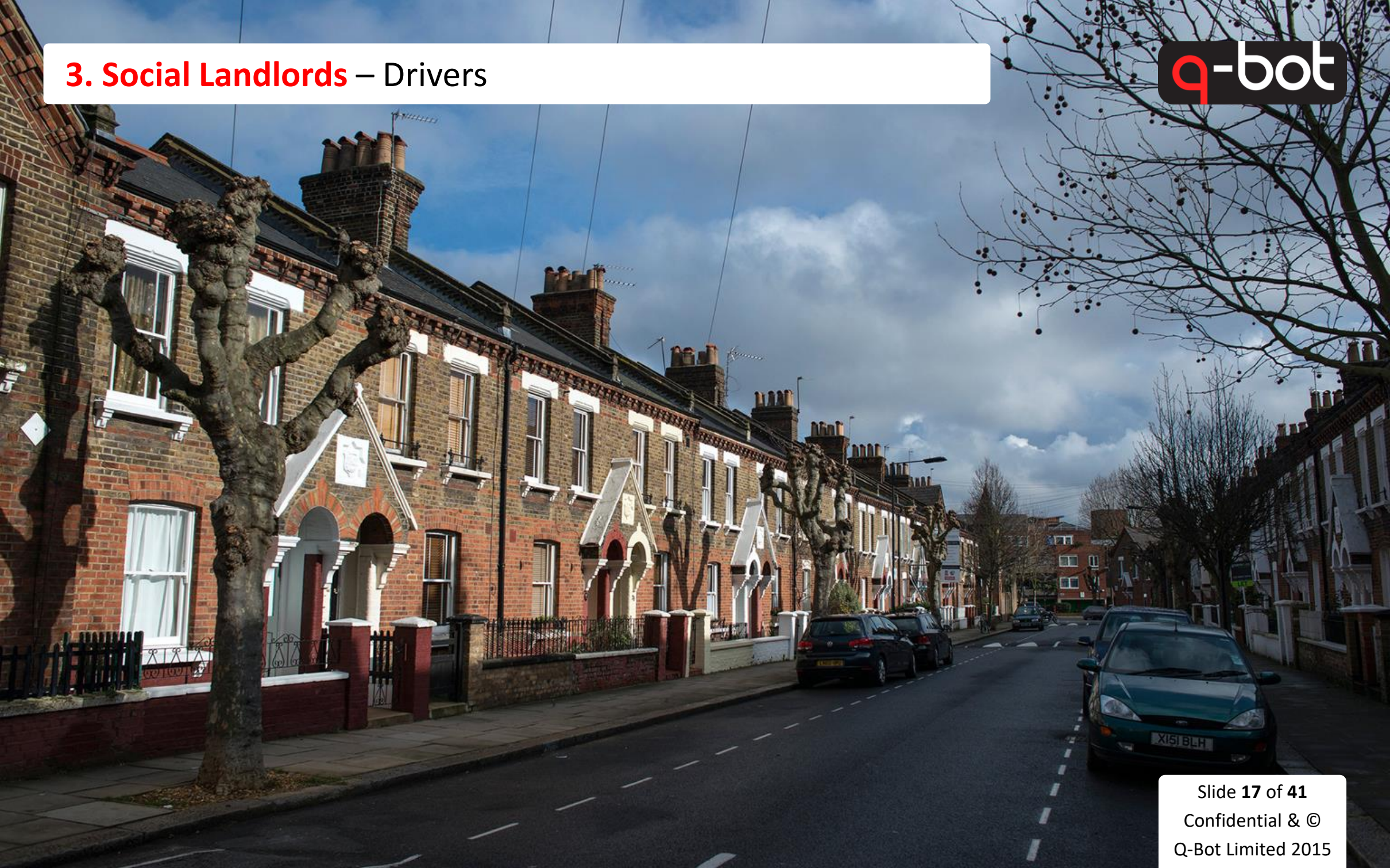
5. **Conclusion**

3. Social Landlords – Drivers



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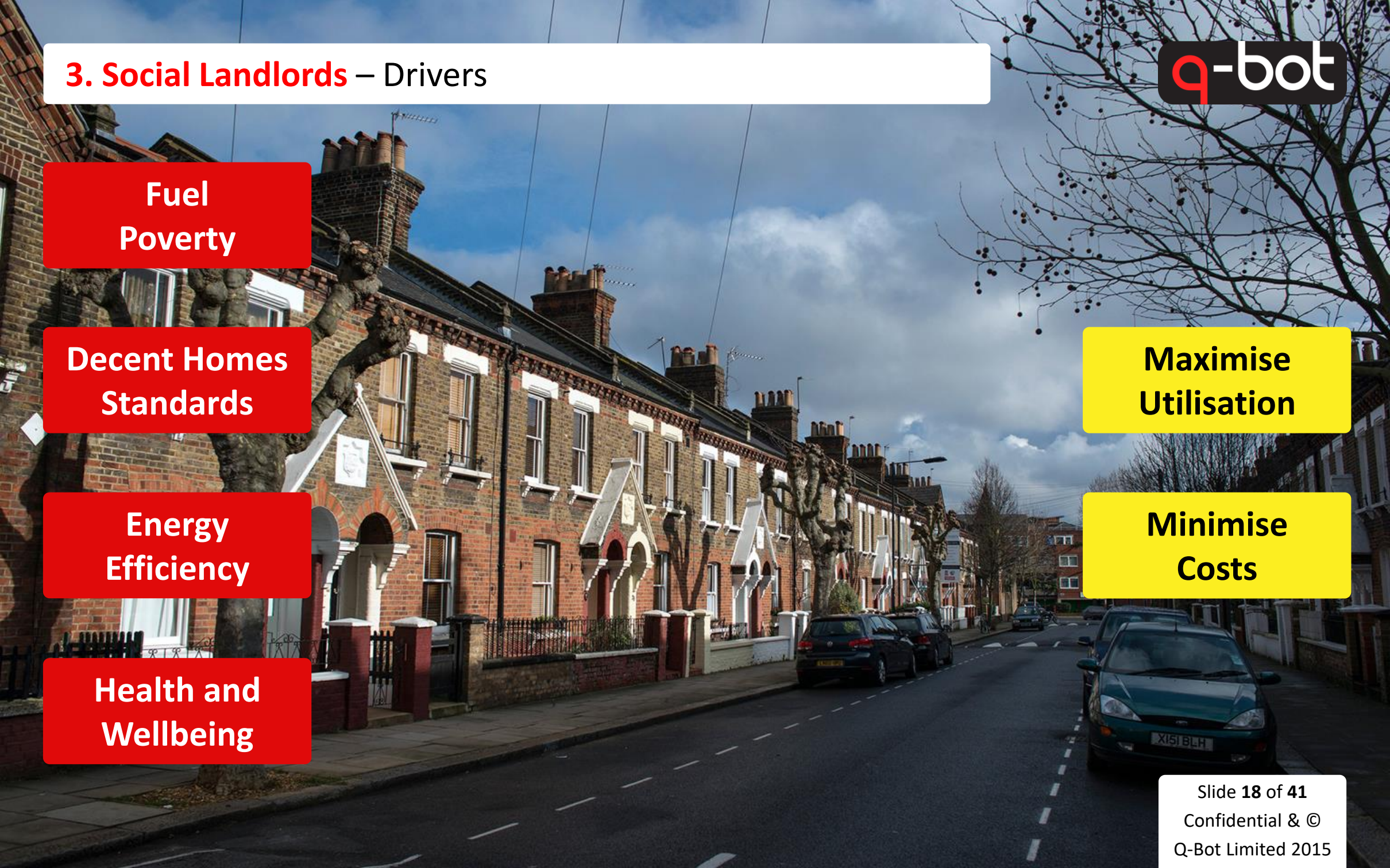

Fuel Poverty

Decent Homes Standards

Energy Efficiency

Health and Wellbeing

Maximise Utilisation

Minimise Costs

4. Impact

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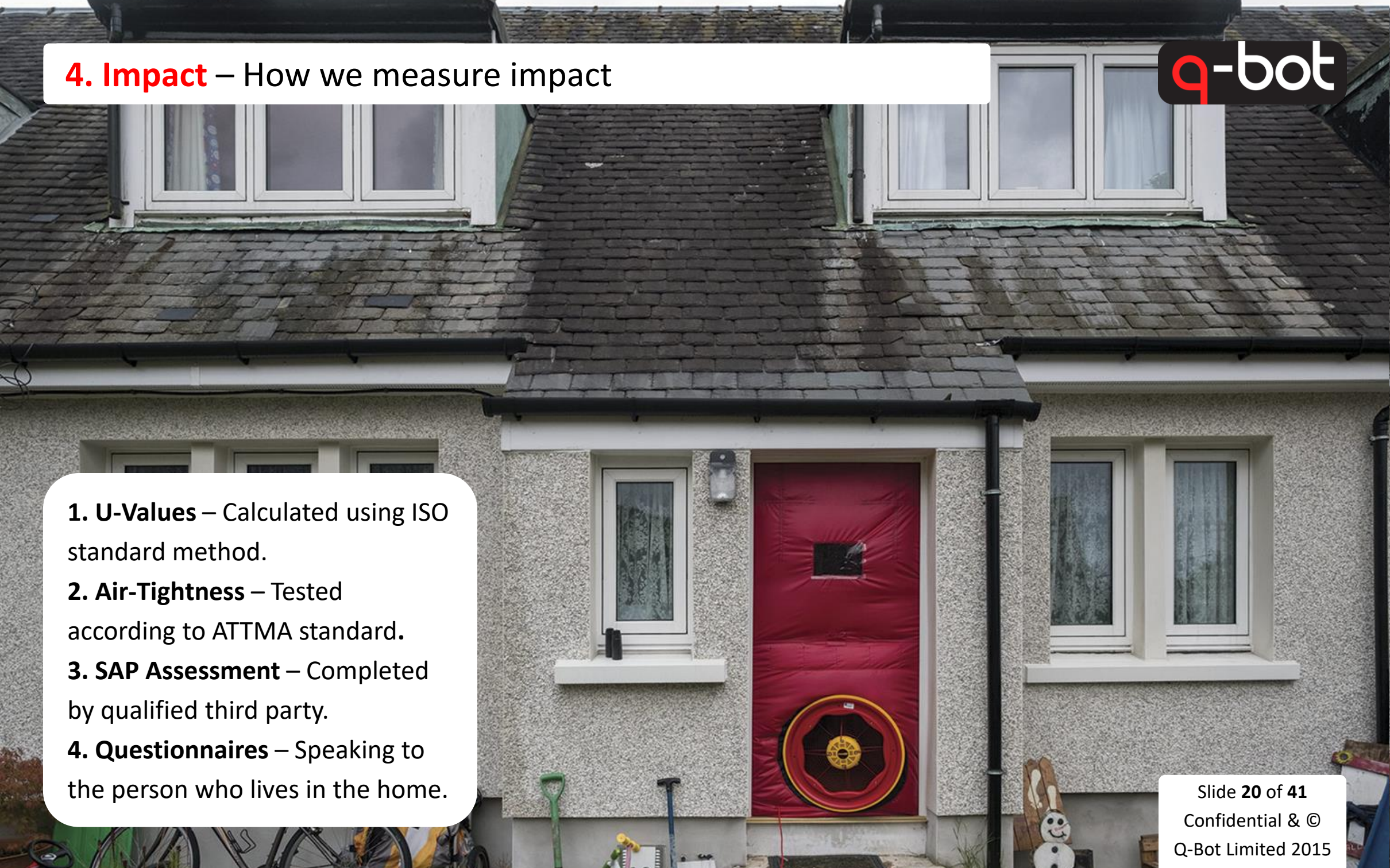
4. Impact – How we measure impact



1. U-Values – Calculated using ISO standard method.

2. Air-Tightness – Tested according to ATTMA standard**.**

3. SAP Assessment – Completed by qualified third party.

4. Questionnaires – Speaking to the person who lives in the home.

4. Impact – Cost effective energy saving solution

Measurement	Before	After
U-Value:	**0.7** to **1.3** W/m^{2}K	**0.2** W/m^{2}K
Air Permeability:	**8.4** to **20.7** m^3/m^2.h	**4.4** to **16.5** m^3/m^2.h

80%
IMPROVEMENT IN U-VALUE

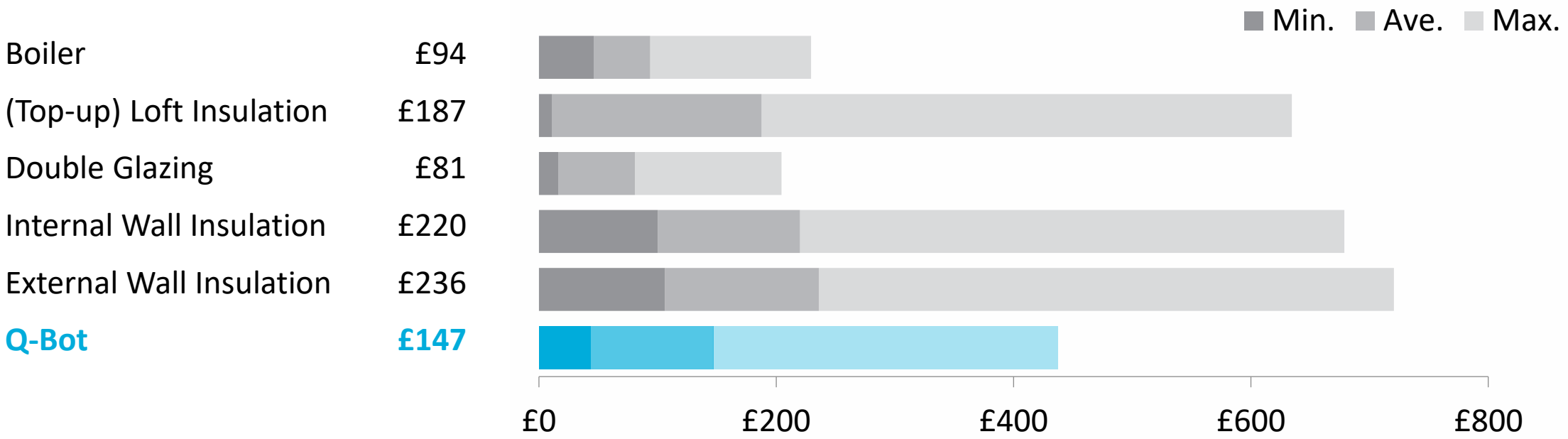
27%
IMPROVEMENT IN AIR PERM.

5.7pts
IMPROVEMENT EPC SCORE

24%
REDUCTION IN ENERGY USE CO-HEAT TEST

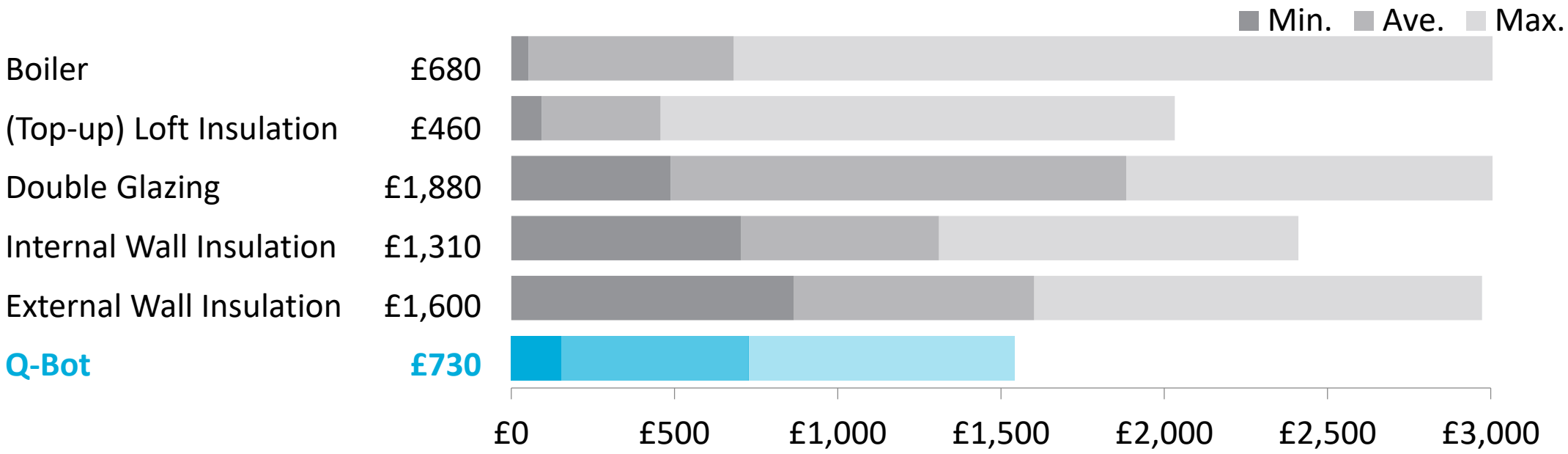
4. Impact – Cost effective energy saving solution

Average Energy Savings (£ saved per year)



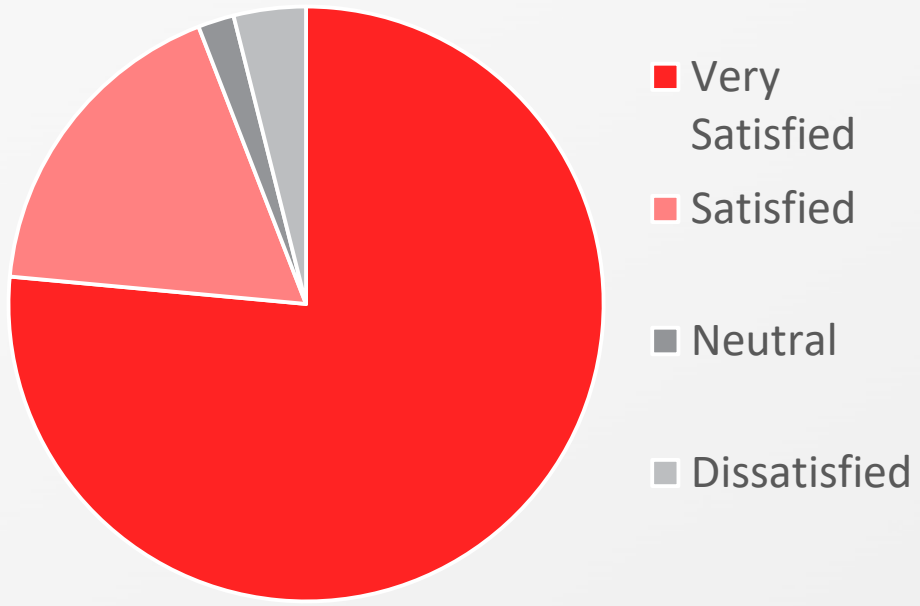
4. Impact – Cost effective energy saving solution

Average Cost Effectiveness (£ per EPC Point)

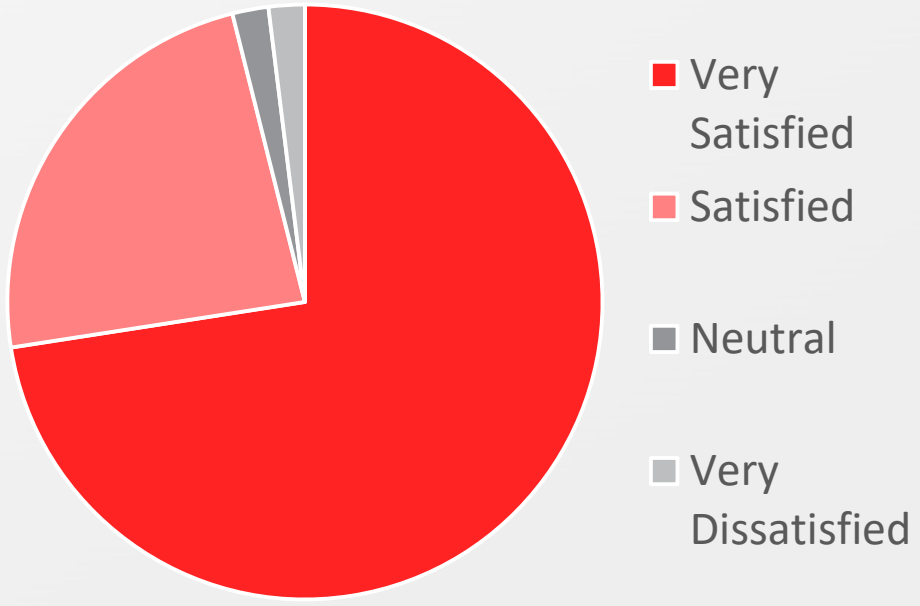


4. Impact – Feedback from residents

How satisfied were you with the installation process, in terms of disruption?



How satisfied were you with the installation process, in terms of communication?



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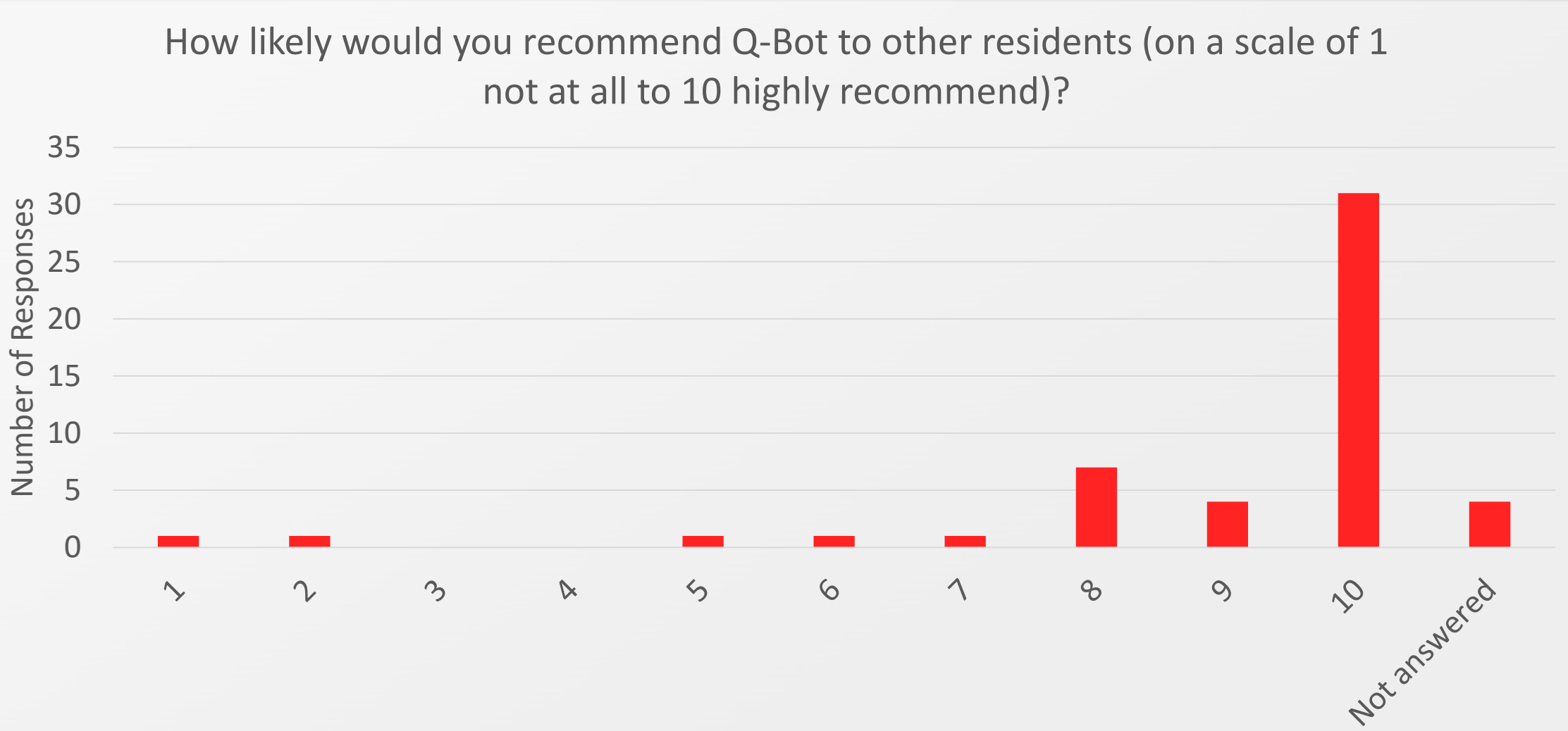
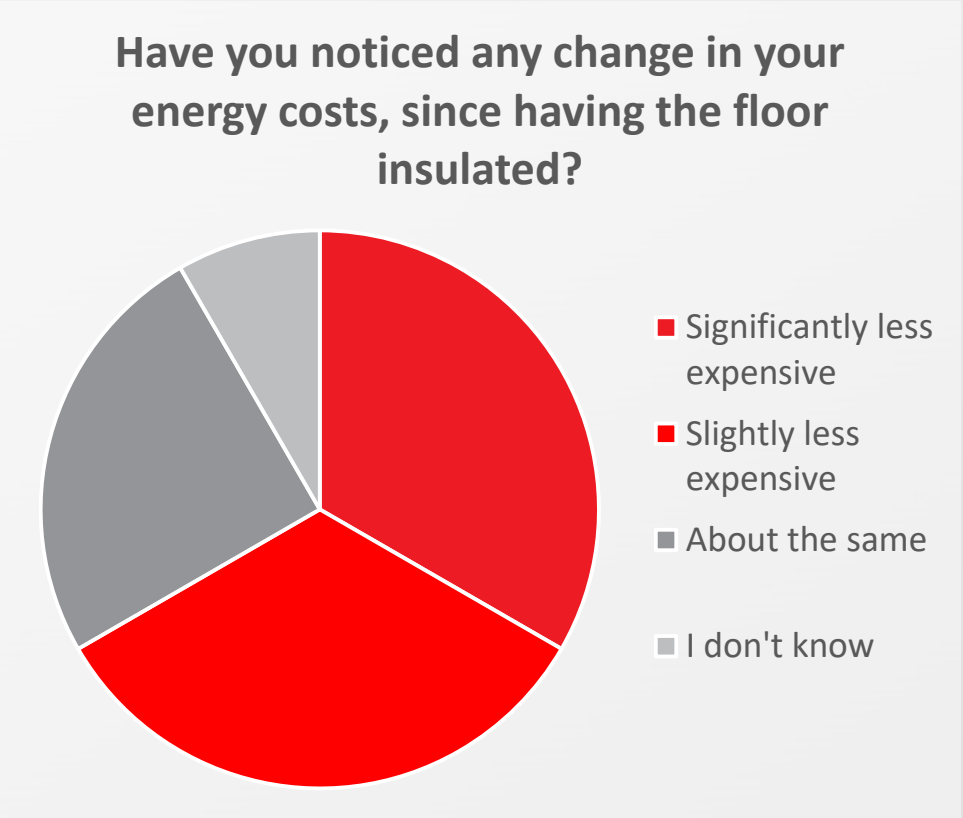
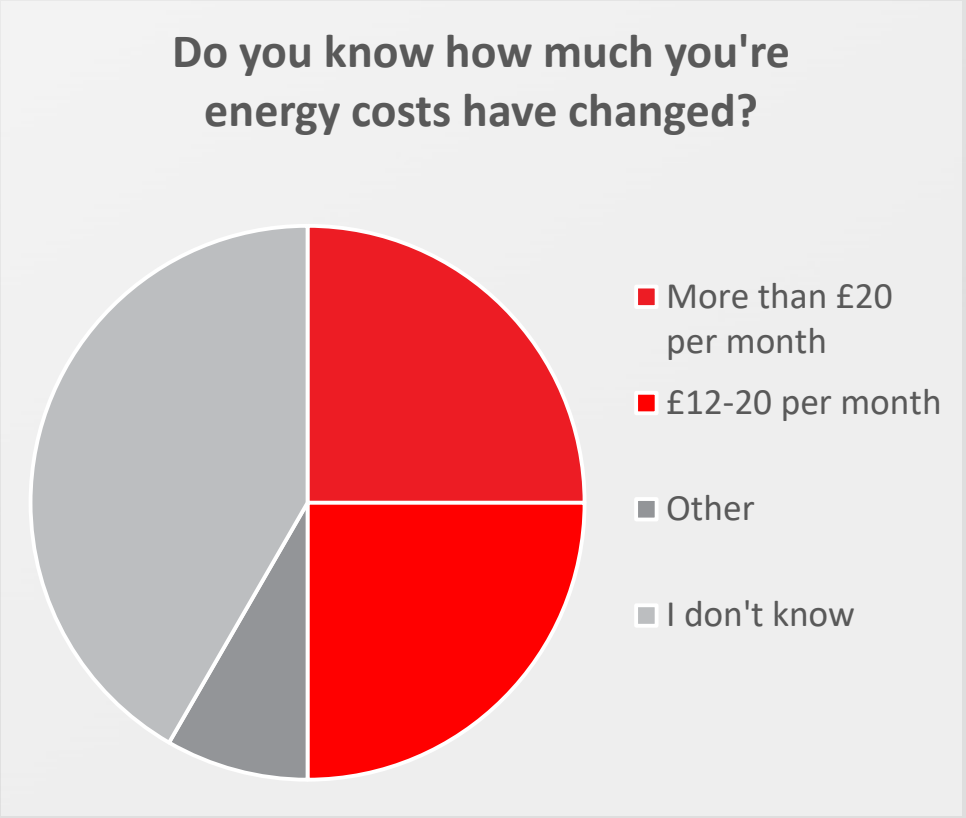


4. Impact – Feedback from residents

Residents of properties where Q-Bot installed floor insulation more than 6 months ago had more time to assess the difference to energy bills during the colder months.





4. Impact – Feedback from the residents

"I am absolutely delighted. My flat has never been described as cosy before. It is warm, quieter and there are less cold draughts."

"I have definitely noticed a difference. The property keeps the heat better, stays warm and is a lot less draughty now."

"The work was done efficiently and at all times politely."

"Much warmer – I now make more use of the ground floor, before the heating just couldn't make it warm."

"It has been great over this cold snap, it's been much warmer and I'm spending less on heating."

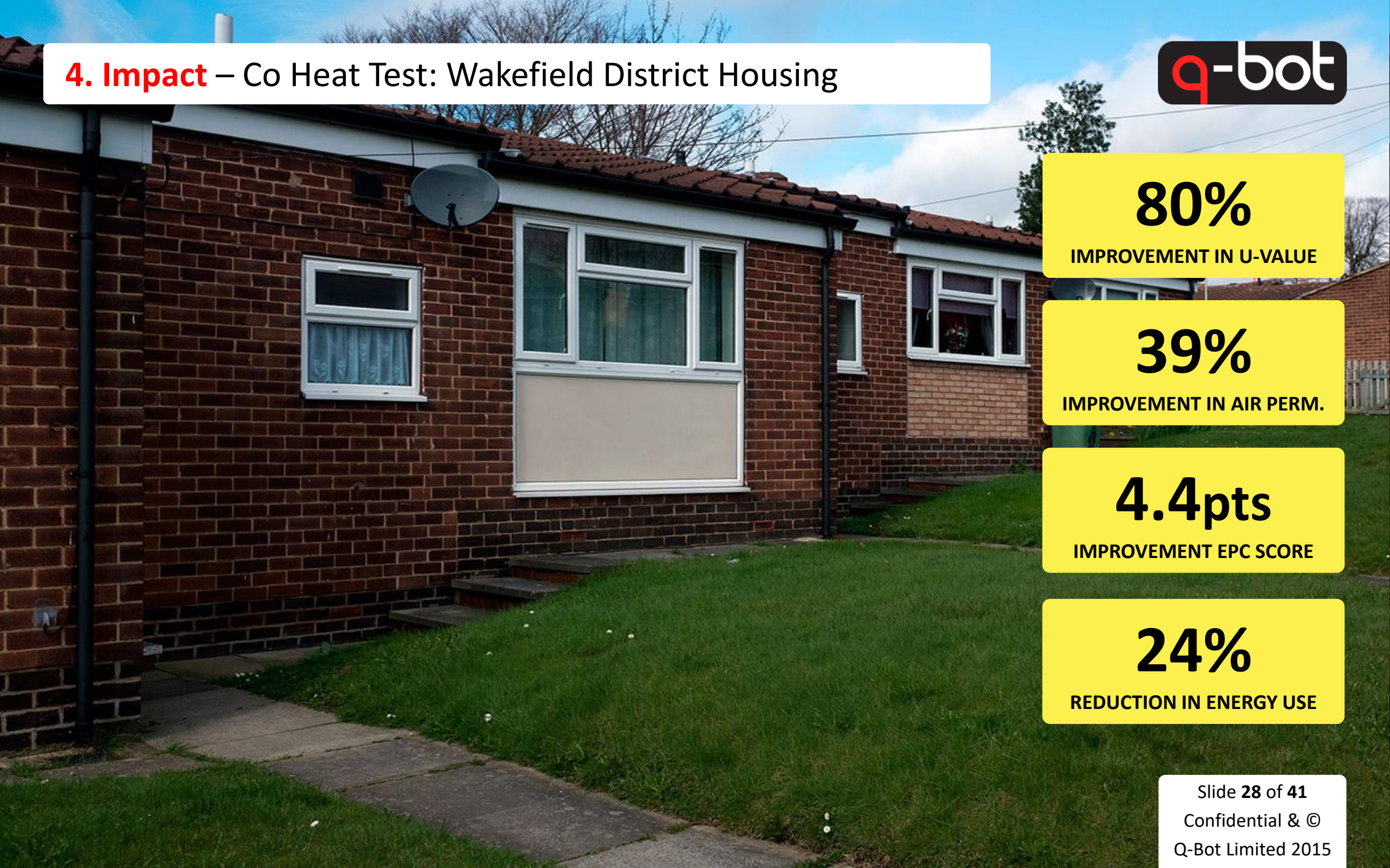
"I'm not using the heating as much as before as the flat holds the heat much better."

"Friends no longer comment on my flat being freezing."

"It does feel warmer in here, it did immediately."

"No draughts up the floorboards, which is great."

4. Impact – Co Heat Test: Wakefield District Housing



80%
IMPROVEMENT IN U-VALUE

39%
IMPROVEMENT IN AIR PERM.

4.4pts
IMPROVEMENT EPC SCORE

24%
REDUCTION IN ENERGY USE

4. Impact – Case Study: Argyll Community Housing

Measurement	Before	After
U-Value:	1.2 W/m^2K	0.2 W/m^2K
Air Permeability:	14.6 $m^3/m^2.h$	10.7 $m^3/m^2.h$

83%

IMPROVEMENT IN U-VALUE

27%

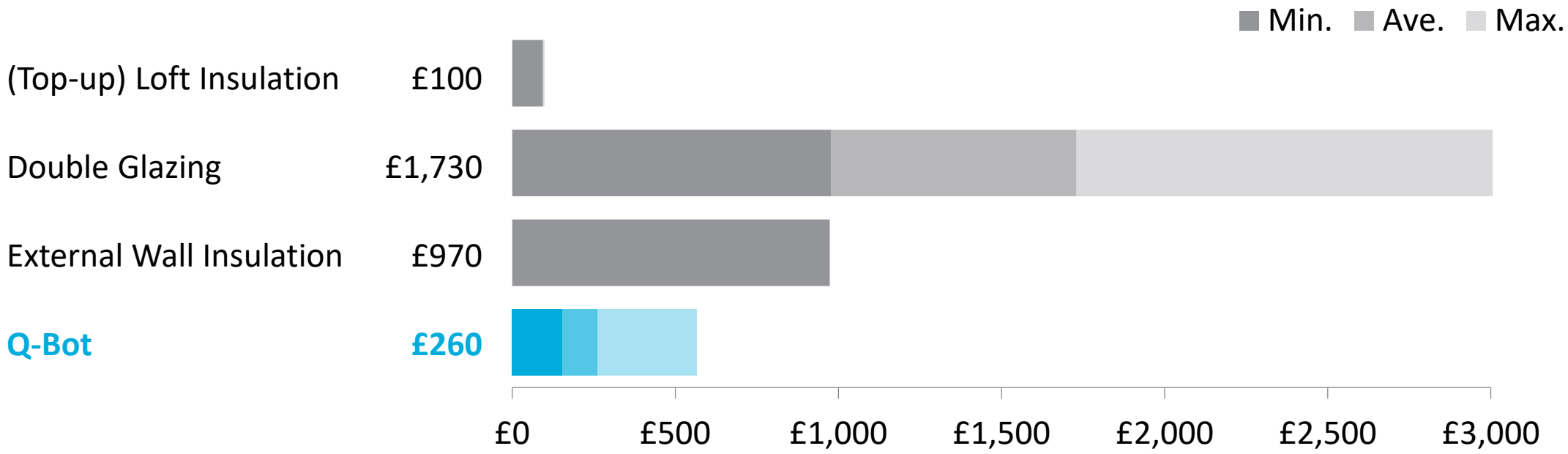
IMPROVEMENT IN AIR PERM.

14 pts

IMPROVEMENT EPC SCORE

4. Impact – Cost effective energy saving solution

Average Cost Effectiveness (£ per EPC Point)



4. Impact – Example: Two Storey End Terrace House

82%

IMPROVEMENT IN U-VALUE

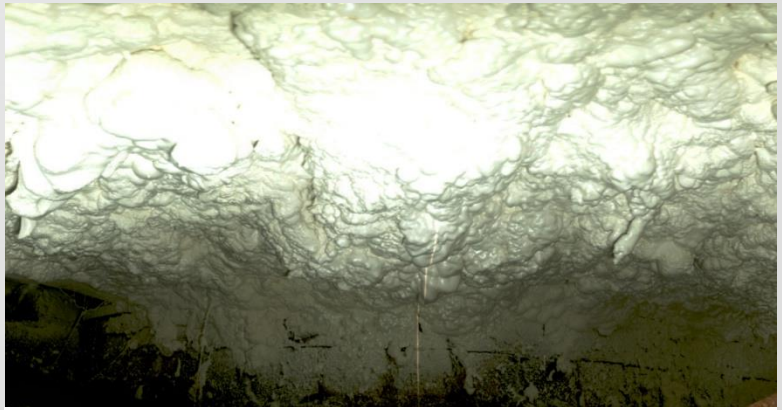
32%

IMPROVEMENT IN AIR PERM.

17 pts

IMPROVEMENT EPC SCORE

Before the installation



After the installation

4. Impact – Example: Two Storey End Terrace House

"When it comes to Q-Bot 'Let them in'. I am so impressed. Better than a great job, thanks very much."

- Comments on a post-installation survey.

4. Impact – Case Study: Camden Council

Measurement	Before	After
U-Value:	0.84 W/m^{2}K	0.18 W/m^{2}K
Air Permeability:	15.8 m^3/m^2.h	10.8 m^3/m^2.h

78%

IMPROVEMENT IN U-VALUE

32%

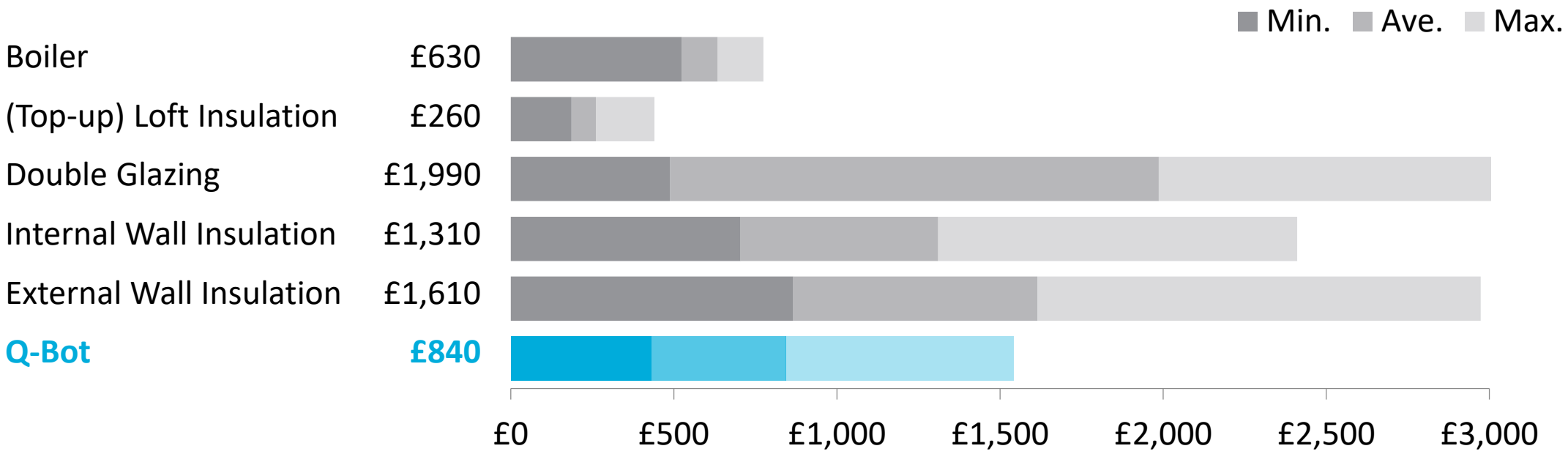
IMPROVEMENT IN AIR PERM.

3.7pts

IMPROVEMENT EPC SCORE

4. Impact – Cost effective energy saving solution

Average Cost Effectiveness (£ per EPC Point)



4. Impact – Example: Ground Floor Flat

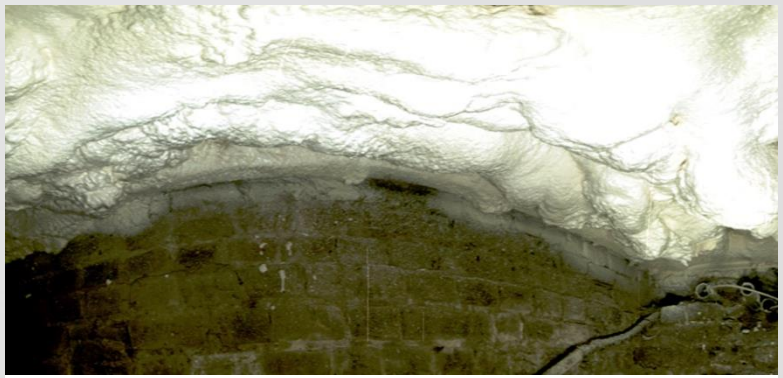
74%

IMPROVEMENT IN U-VALUE

39%

IMPROVEMENT IN AIR PERM.

Before the installation



After the installation

6.1 pts

IMPROVEMENT EPC SCORE

4. Impact – Example: Ground Floor Flat

"I am much warmer, and I'm saving £20 per month on bills. I love Q-Bot. It has made a massive difference. Plus no more draughts."

- Comments on a post-installation survey.

4. Impact – Case Study: Islington

Measurement	Before	After
U-Value:	1.34 W/m^{2}K	0.21 W/m^{2}K
Air Permeability:	11.2 m^3/m^2.h	7.4 m^3/m^2.h

84%

IMPROVEMENT IN U-VALUE

31%

IMPROVEMENT IN AIR PERM.

4pts

IMPROVEMENT EPC SCORE

5. Conclusion

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5. Conclusion - Choosing the best way to upgrade homes

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