6th International Conference on Smart Energy Systems
6-7 October 2020
#SESAAU2020

FairHeat

A techno-economic assessment of externally accessible HIUs on low temperature heat networks

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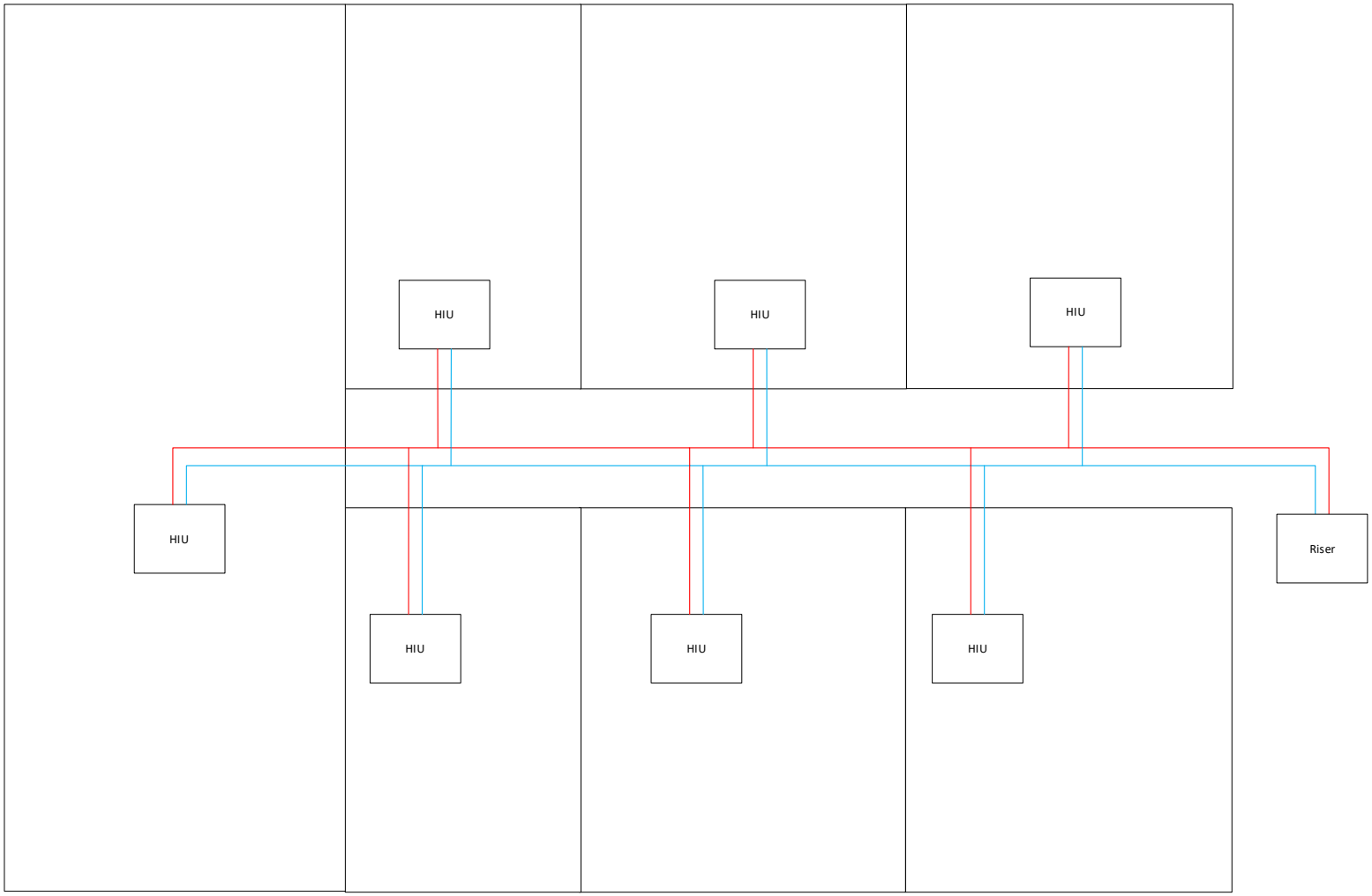
About FairHeat

- Specialist UK based energy consultancy focused exclusively on heat networks and building performance
- Significant experience, having directly worked on over >150 heat network projects in the UK
- Work with clients to: (a) improve specifications & design; and; (b) improve performance of existing heat networks

Project context

- Heat networks in the UK are typically 2 pipe systems with heating and hot water supplied to dwellings via a substation (heat interface unit - HIU)
- These HIUs are located in dwelling in utility cupboards
- Pipework distributed by one riser per block, with lateral distribution pipework on each floor
- Poor performance, with elevated return temperatures and high heat losses, is common

Project context



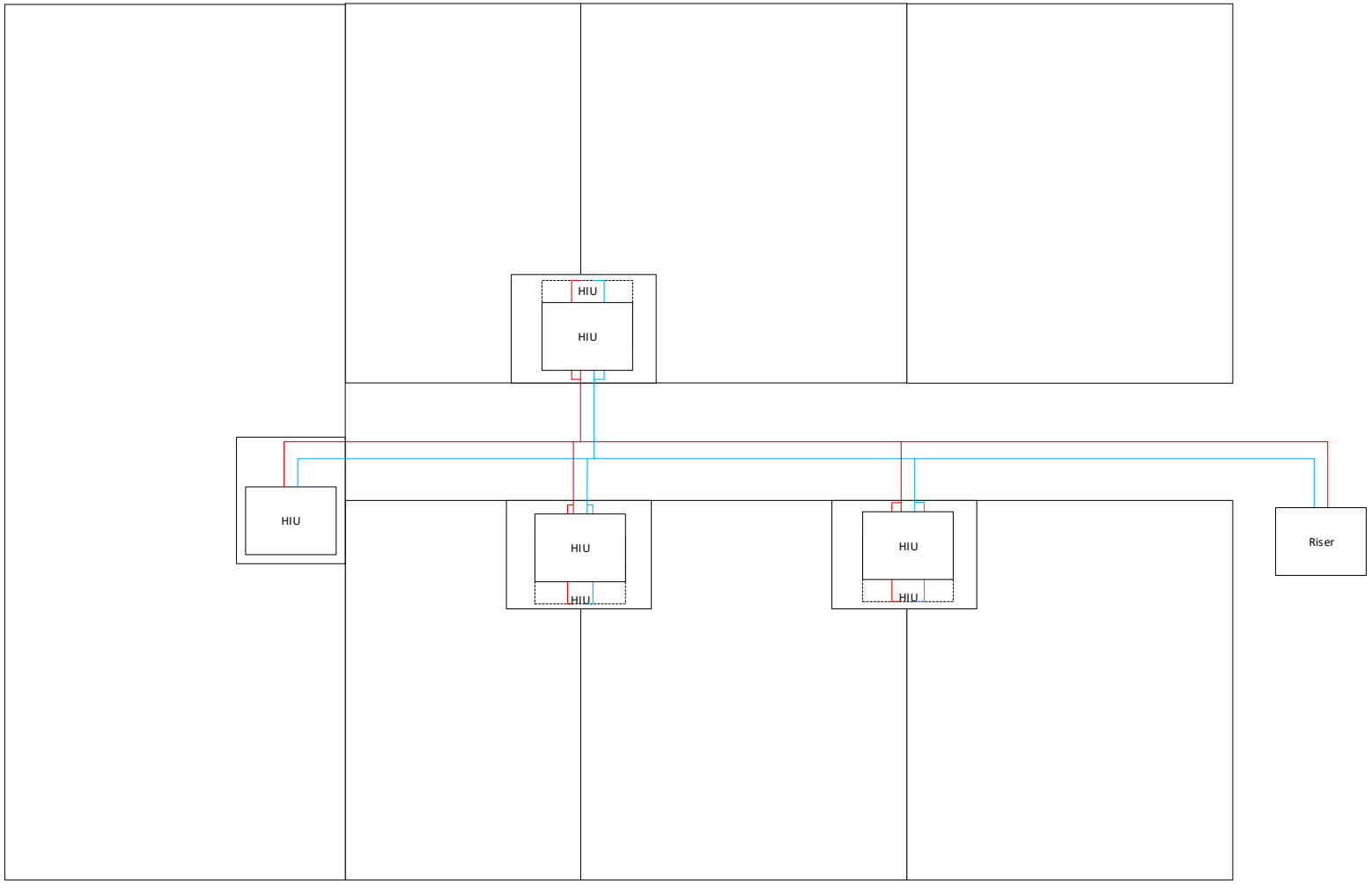
Issues with current approach

- Regular maintenance is key to efficient heat network performance, but gaining access to dwellings and HIUs is difficult
- Ownership and responsibility for maintenance typically lies with residents
- Tariff structure does not penalise poor performance, meaning that residents are not incentivised to grant access
- Relatively new technology in UK, meaning that there is a lack of awareness of the implications

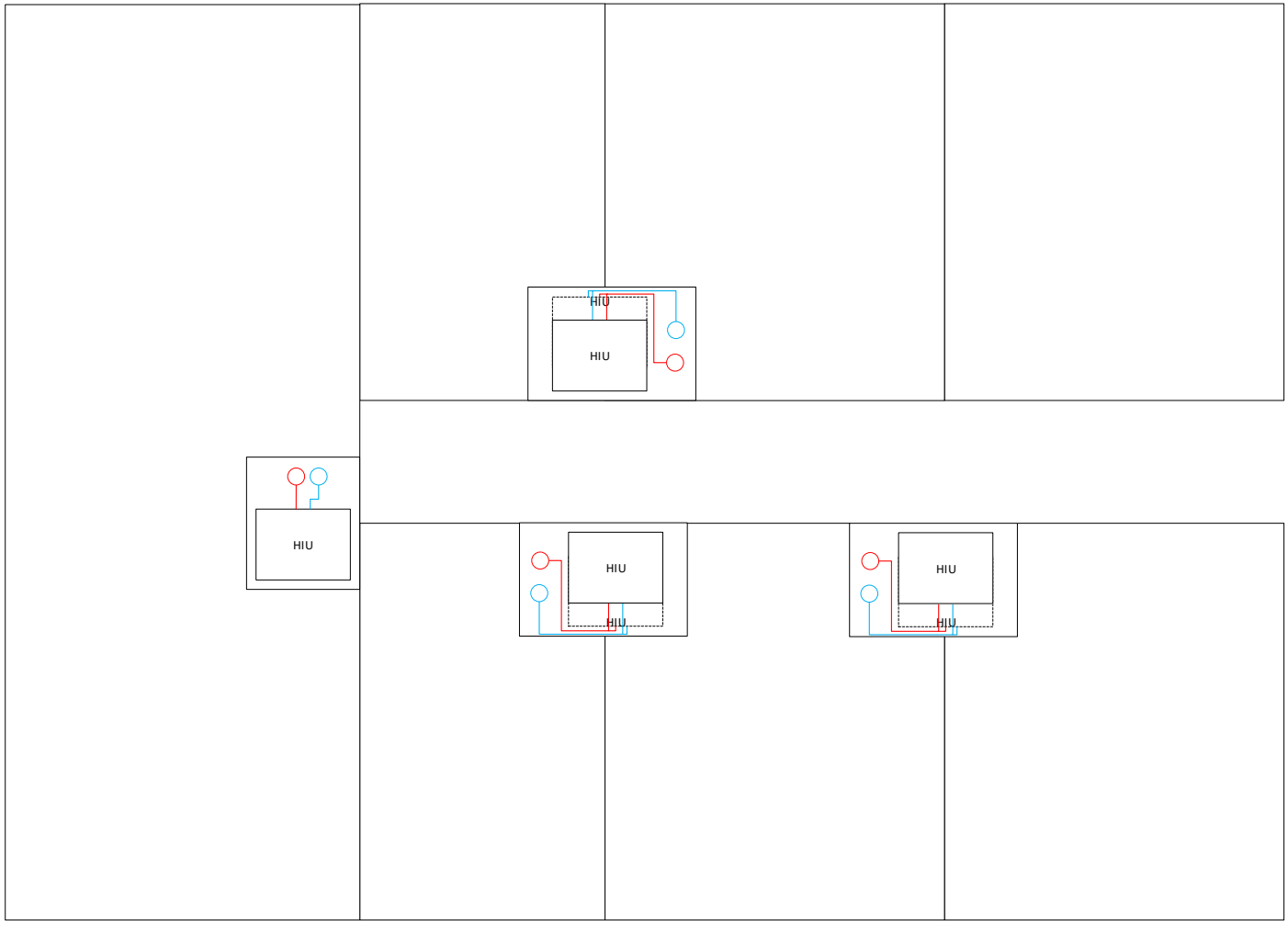
One solution – externally accessible HIUs

- Proposed solution is to remove HIUs from dwellings and locate in communally accessible areas
- Access now possible without needing to incentivise residents

One solution – externally accessible HIUs



One solution – externally accessible HIUs



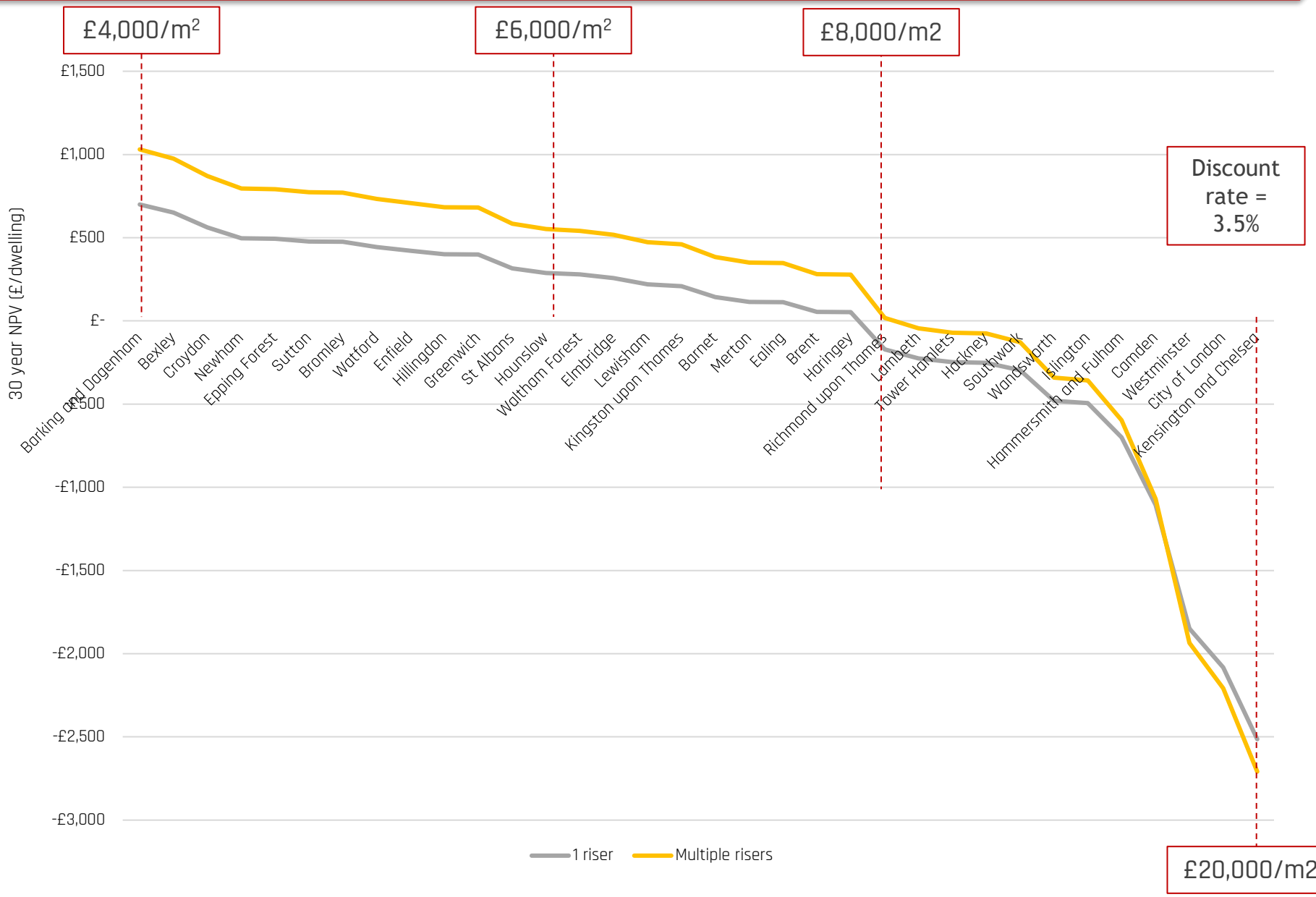
Key issues to implementation

- In the UK property sales market, the HIU area in the utility cupboard can be sold
- Removing HIUs from dwellings would reduce the dwelling area, and therefore revenue from sales
- Extra cupboards would incur a cost during construction
- Difficult to progress negotiations with developers beyond this point

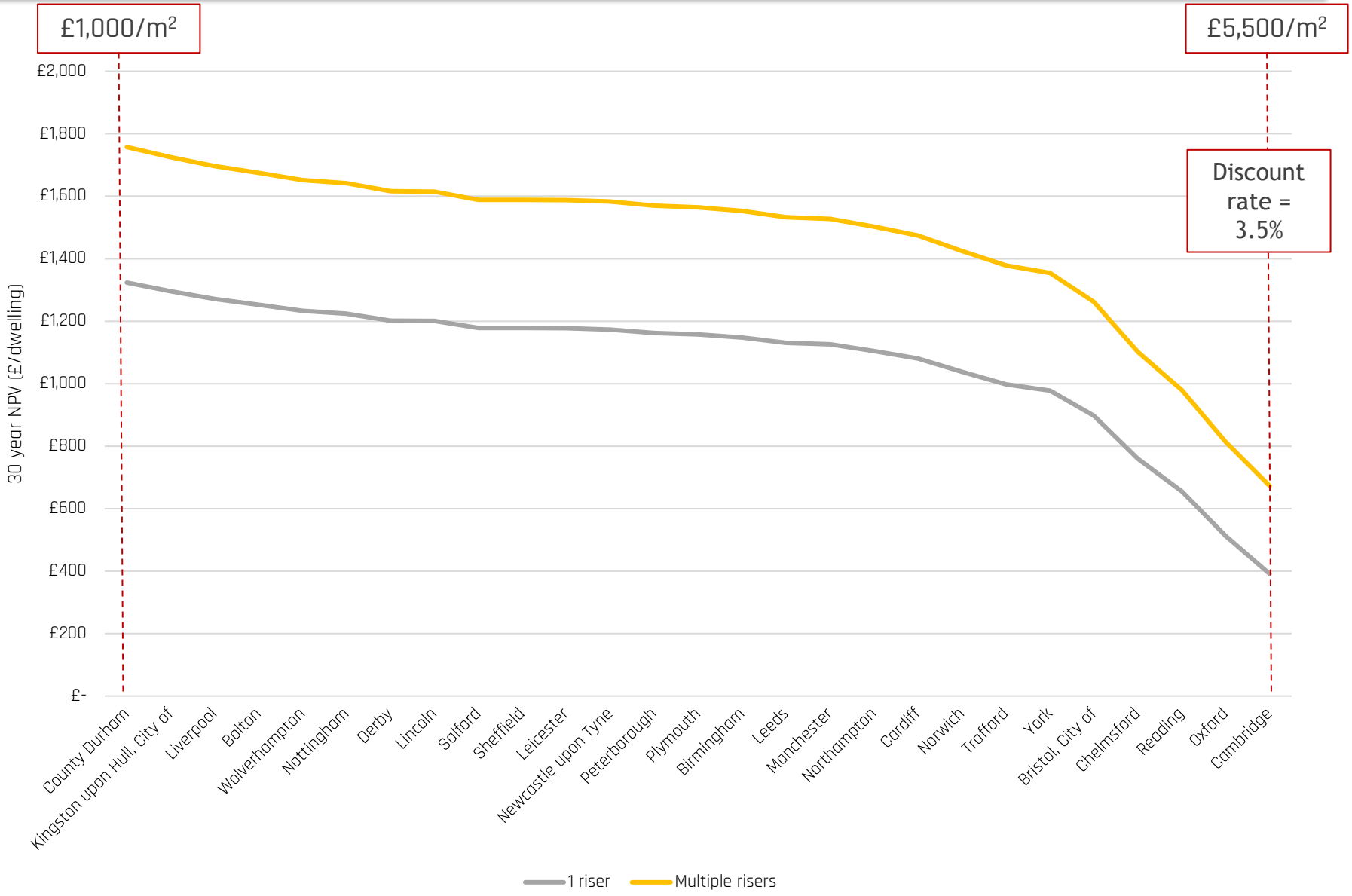
Several benefits to this strategy

- Reduced network length and therefore costs during construction (CAPEX)
- Reduced network length and reduced heat losses (and carbon costs) during operation (OPEX)
- Ease of access reduces cost of servicing - contractor costs and project management (OPEX)
- Ease of access improves maintainability and therefore network efficiency (OPEX)

Results of 30-year NPV analysis – within London



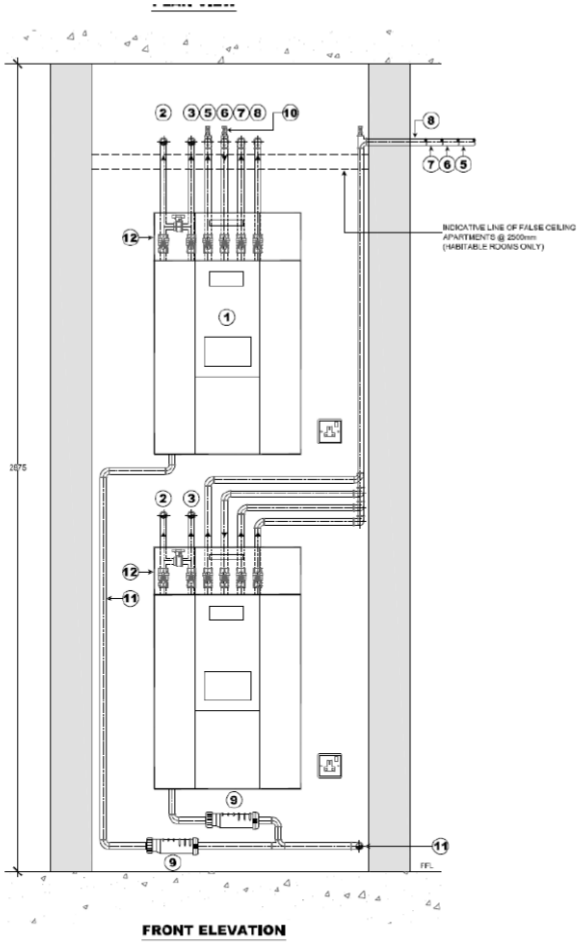
Results of 30-year NPV analysis – within London



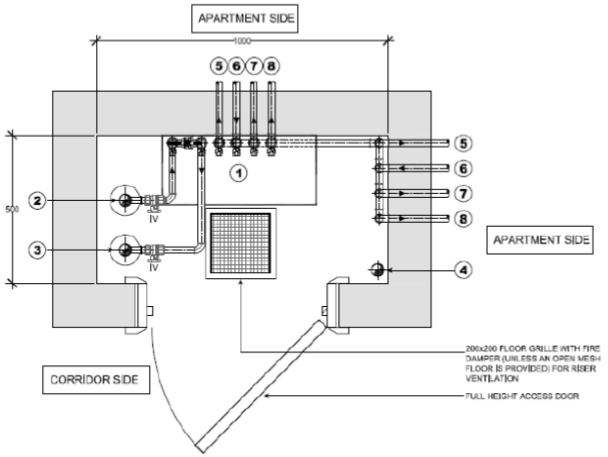
Pressure considerations

- Externally accessible HIUs remove all network pipework from dwellings
- Pressure of network no longer constrained by resident safety (c.6 bar limit in dwellings set by UK ESCOs)
- Reduced requirement for hydraulic breaks, and entire network can be run at 55 °C
- Buildings in most expensive land areas are typically tallest – additional savings offered by external HIUs

This strategy is being implemented by some UK developers



FRONT ELEVATION



PLAN VIEW

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Thank you for listening!

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