Supplementary Material 2

Pepys Power & Hypergreening

Supplementary Material 2

Home Consultation Reports

Seven home visits were undertaken by WonKy comprised of visual survey and in-depth, semi-structured, qualitative conversations with residents. The reports cover the primary flat types in the block including roof, ground and ‘scissor’ flats. The opportunity to take part in the study was widely publicised through the Bence House TRA and public notices. Data from each home consultation report was coordinated with typological research and analysis undertaken by WonKy. The data in the dwelling schedule at the back of this supplement has been provided by Lewisham Council (August 2024).

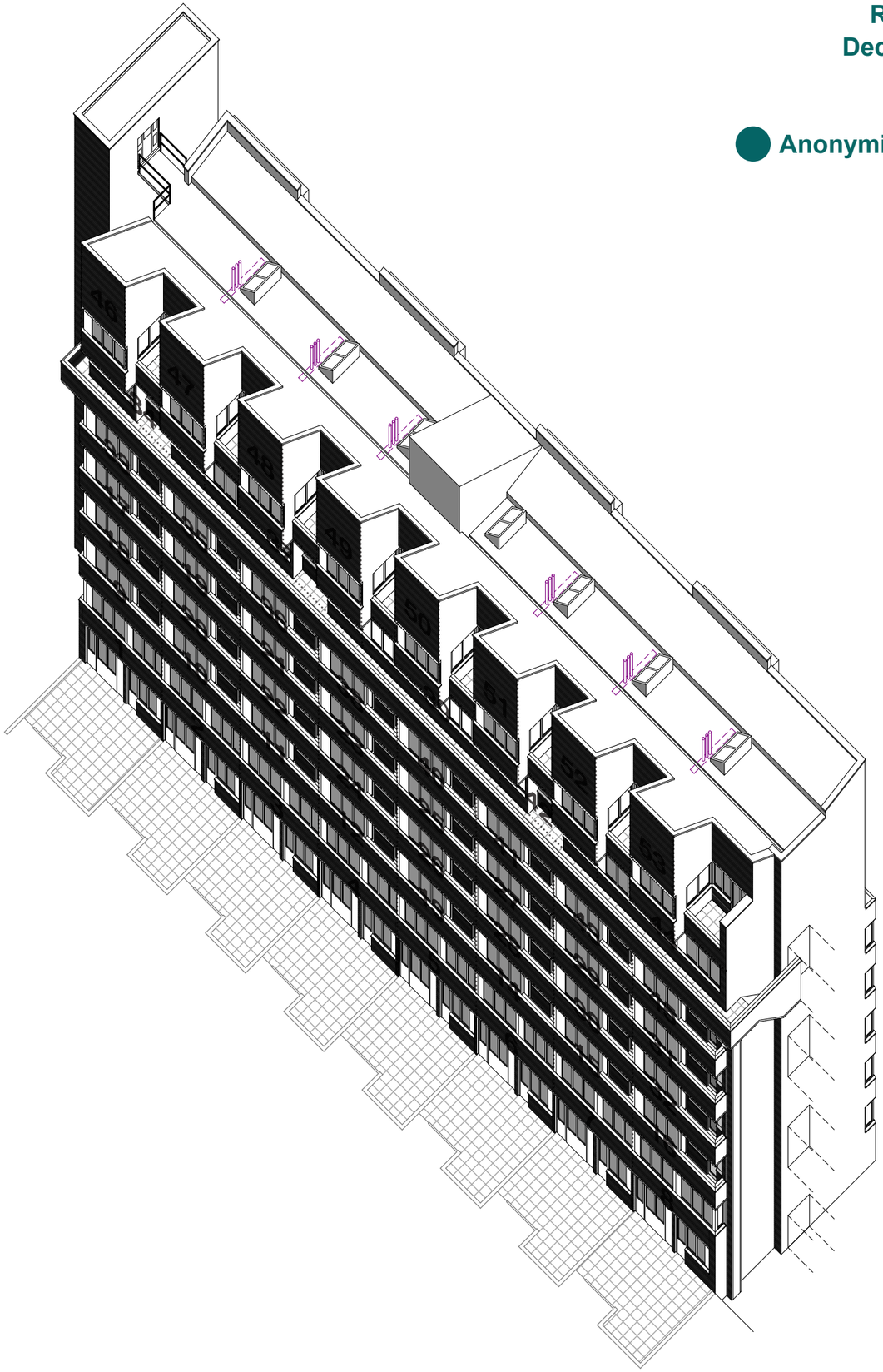
This document is intended for double-sided A3 printing /
‘two-page-up’ viewing with ‘show cover page in two page view’ selected.

Bence House
Tenants Residents Association **bencehousetra@gmail.com**

WonKy

email: info@wonky.space
URL: wonky.space
Instagram: wonky.space
Linkedin: company/wonky-space

RIBA Chartered Architect
Architects Registration Board
DESIGNER CERTIFIED PASSIVE HOUSE DESIGNER
TRUSTMARK Government Endorsed Quality



RIBA Stage 1
December 2024

Anonymized Version

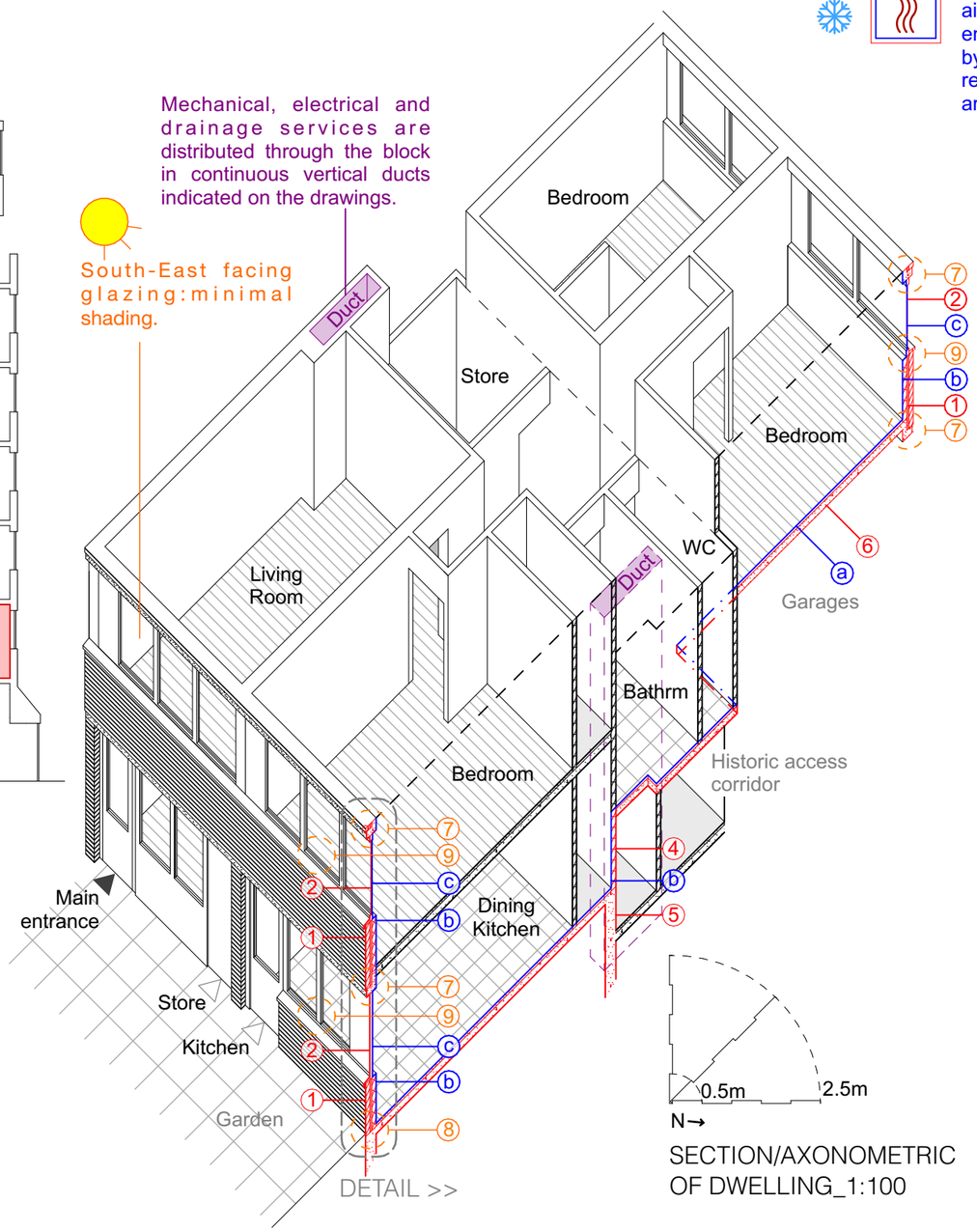
[redacted]'S HOME
[redacted]BENCE HOUSE

DWELLING TYPE	**A2**
PLAN REFERENCE	**A101 (Ground & First Floor)**
TYPE SHEET	**A110 (Type A)**

3-bedroom, 2-level maisonette, ground and first floor, over garages (NW Bedroom Elevation) with private garden (SE Living Room Elevation). 112sqm gross internal floor area, excluding externally accessed store. Access is from the private garden, ground floor (SE Living Room Elevation). A historic access corridor with tenant stores, at garage level, is no longer accessible externally.

CROSS SECTION_1:200

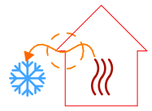
A = Access Corridor



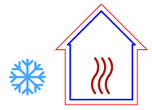
SECTION/AXONOMETRIC OF DWELLING_1:100

EXPLAINER

The **building envelope** consists of all components that separate the interior from the exterior. The interior of the building provides a comfortable climate, whereas the outside is determined by the weather. In order to maintain comfortable indoor conditions, the building envelope is insulated and prevented from air leakages.



Heat makes its way from the heated space towards the outside. In doing so, it follows the path of least resistance. A **thermal bridge** is a localised area of the building envelope where the heat flow is increased in comparison with adjacent areas. The effects of thermal bridges are heat loss, cold internal surfaces and in the worst case moisture penetration, condensation and mould growth.



In addition to insulating the building envelope there should also be an **airtight layer**. There are many disadvantages of air flowing in through joints and gaps in the building envelope. A large percentage of building damage is caused by leaks in the building envelope. Sound insulation is reduced, drafts cause discomfort for occupants and there are high heat losses.

KEY

BUILDING ENVELOPE

1 Cavity wall with facing brick outer leaf, 2" cavity, masonry inner leaf. Long-term residents recollect injected cavity insulation has been installed.

2 Non-original double-glazed PVCu windows, spandrel panels and doors. Site observation and resident comments, suggests some glazing units may be degraded.

3 Uninsulated ground-bearing solid floor, 5" concrete slab with 2" screed over.

4 Uninsulated 9" masonry wall to unheated spaces.

5 Uninsulated solid retaining wall.

6 Uninsulated solid floor over unheated spaces, 5" concrete slab with 2" screed over.

THERMAL BRIDGES

7 Concrete structure exposed externally at floor levels resulting in a thermal bridge.

8 Junction of solid floor slab and cavity wall with injected insulation resulting in a thermal bridge.

9 Window installation detail is unknown but may be a poor performing thermal bridge.

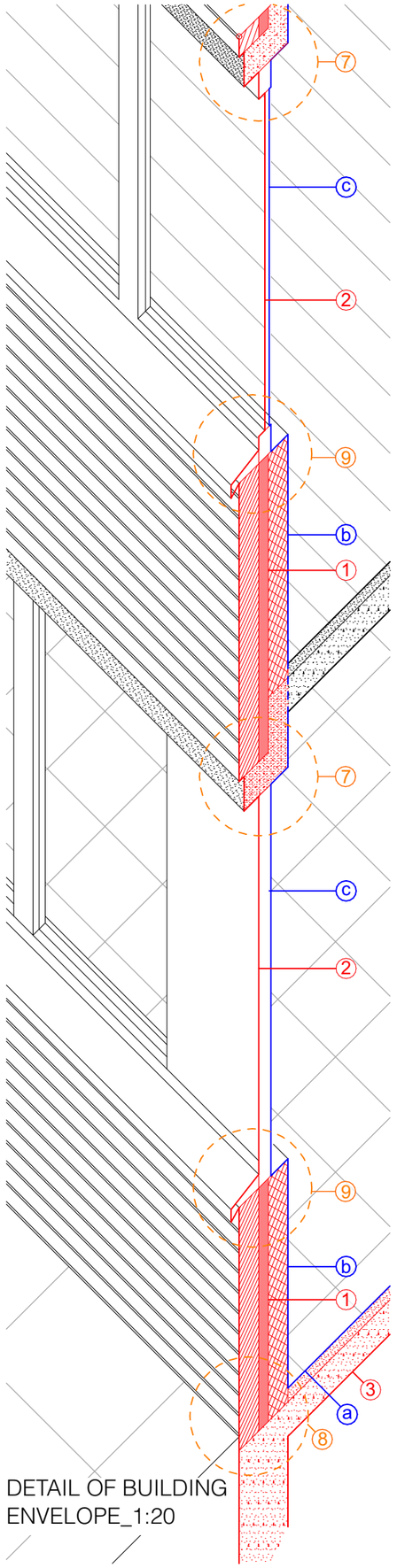
AIRTIGHTNESS

a 7" screed/concrete solid floor construction is likely to be intrinsically airtight.

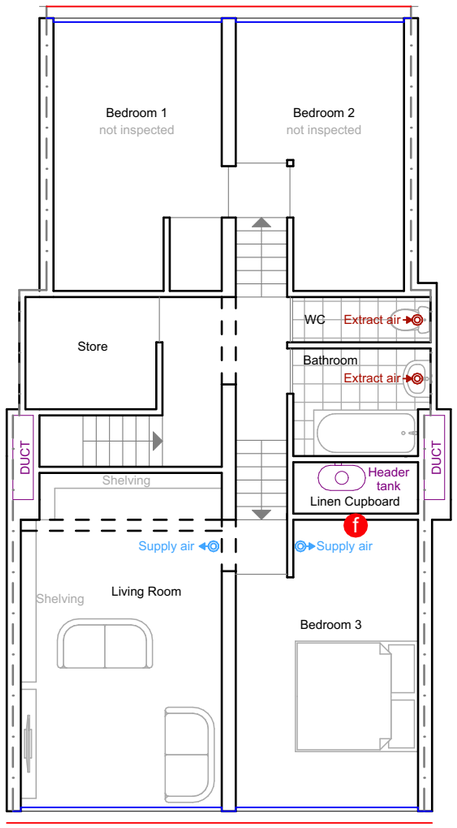
b Airtightness of wall will depend on type, quality and continuity of masonry, injected cavity insulation (if present), internal plaster.

c Airtightness of window unit and installation within cavity wall is unknown.

Construction composition and sizes are assumptions based on visual checks and archival research

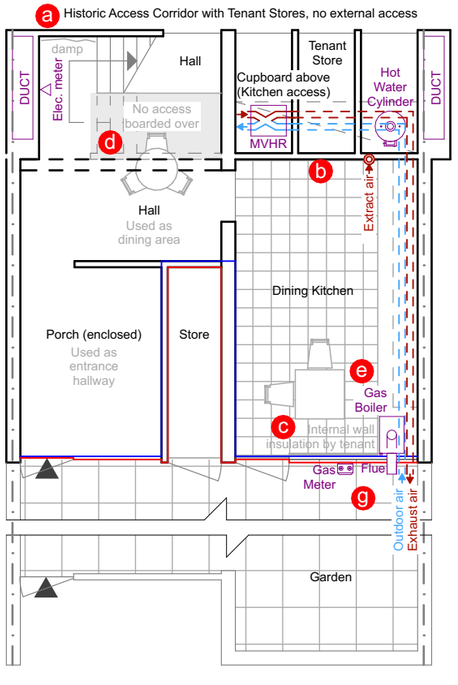


DETAIL OF BUILDING ENVELOPE_1:20



FIRST FLOOR PLAN_1:100

N 0.5m 2.5m



GROUND FLOOR PLAN_1:100

[redacted]'S HOME, [redacted]BENCE HOUSE

Home visit notes, photographs & annotated plans

Date of visit: 21.06.2024
Location: 5 Bence House

Occupancy
Council tenancy; lived in the flat for 27 years and on the estate for around 40 years; 3 adults.

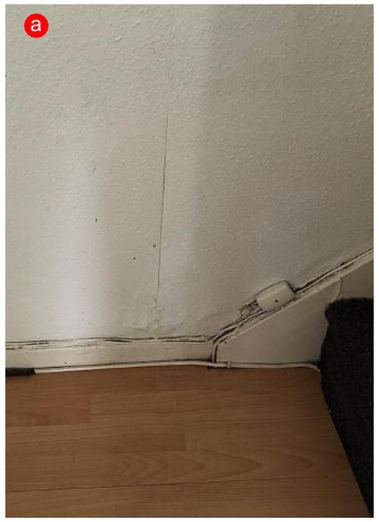
Utilities and Services
The electricity meter is on the ground floor at high level opposite the stair, mounted to the service duct, as with other flats, the new mains has been installed but not connected to the service head/meter.
The gas meter is external under the SE kitchen window.

Heating & Hot Water
(e) Gas boiler in kitchen with flue to SE garden through spandrel panel. Hot water cylinder in kitchen cupboard in centre of plan and (f) a header tank in master bedroom above. Radiator heating.

Ventilation
(b) A mechanical ventilation unit with heat recovery (MVHR) was installed by Lewisham in kitchen cupboard next to the hot water cylinder. The unit is a small Kair MVHR and seems to be a more recent installation than flat 15 (see home visit notes, 21.06.24). The ducting is a mix of rigid plastic and flexible foil and also a mix of circular and flat section ducts. (g) The external supply/ extract ducts run behind the kitchen counters at low level and the external registers are below the SE window, ~150mm apart from each. A former register above the window is now defunct, presumably not used due to proximity to boiler flue. There are supply and extract registers in each room. The system has not been maintained and occupant said that he 'does not have it on much'. The system did not appear to be on when we were visiting. Windows have trickle vents as with the block generally.

Building envelope
(d) The access to the original entrance and stair from the ground floor corridor has been blocked off (that corridor is inaccessible). (a) There is evidence of damp ingress and damage from this space through the ground floor wall. Occupant has advised that the injected cavity wall insulation undertaken a few years ago is not effective. (c) They have applied a layer of rigid insulation (polystyrene?) to the inside face of the kitchen wall. It seems this is primarily an effort to address a radiant cold surface in winter.
Some evidence of paint peeling at corner of ceiling to external wall in master bedroom but occupant has not noticed condensation.
Occupant reports cold floor to kitchen/living lower level, assumed to be uninsulated solid construction.
Occupant reports issues with double glazing units blown/condensation between glass, but hard to see on a warm day.

Overheating
Not raised

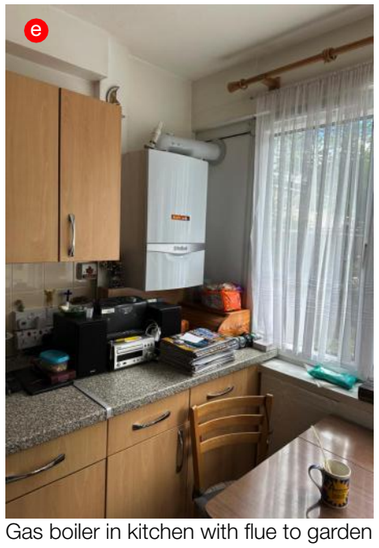


Damp ingress along partition with access corridor

Kitchen utility cupboard with MVHR ventilation unit and ductwork, and hot water cylinder

DIY internal insulation to address thermal discomfort in winter

Access to original entrance and stair blocked off and built over



Gas boiler in kitchen with flue to garden

Bedroom utility cupboard with header tank and MVHR ductwork

Garden elevation with boiler flue, MVHR intake/extract and gas meter

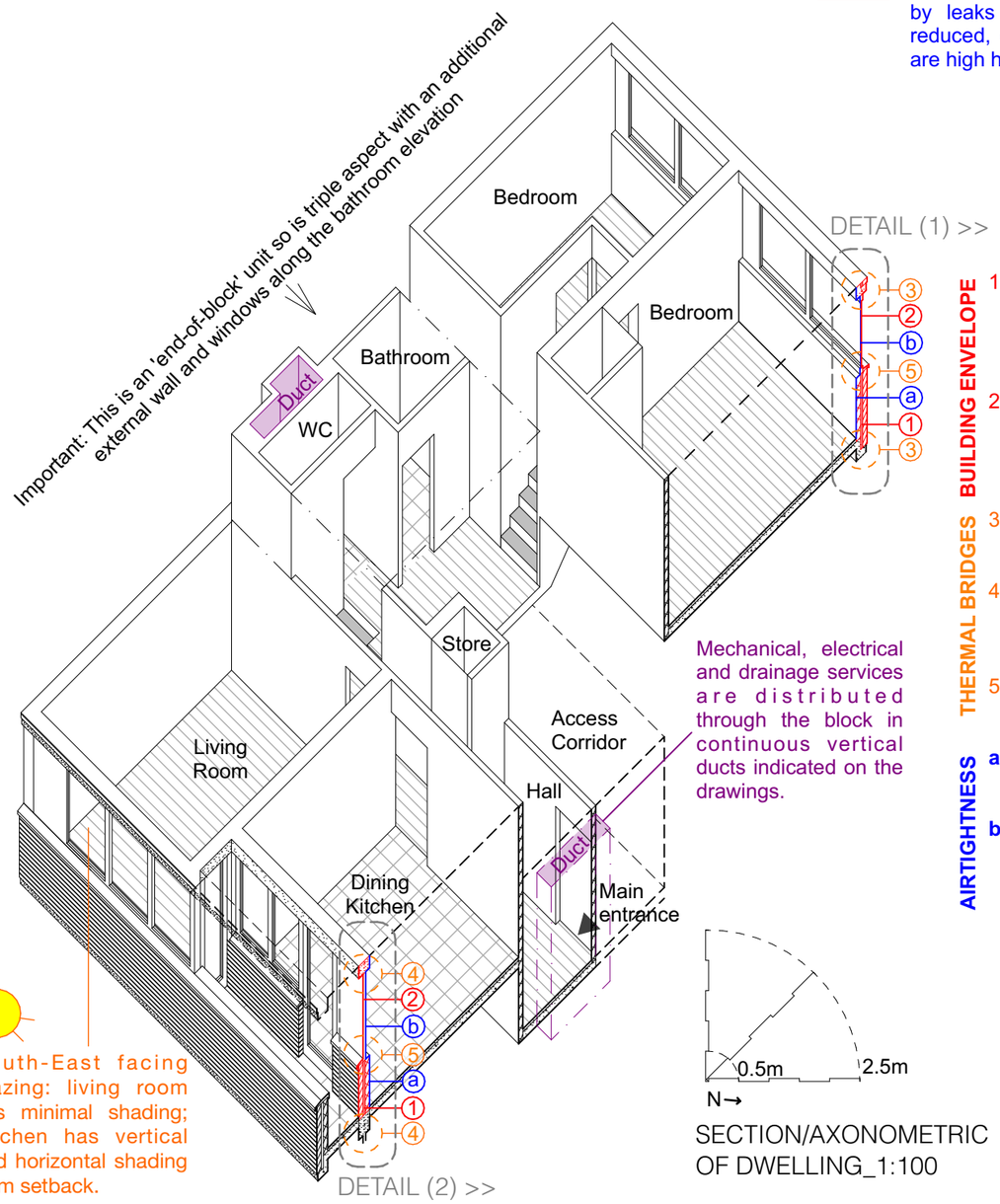
[redacted]'S HOME
[redacted]BENCE HOUSE

DWELLING TYPE	**B2**
PLAN REFERENCE	**A102 (Second & Third Floor)**
TYPE SHEET	**A111 (Type B)**

2-bedroom, 2-level 'up' scissor flat , second and third floor, with private terrace (SE Living Room Elevation). 69sqm gross internal floor area, excluding externally accessed store. Access is from the second floor access corridor and hall. This is an 'end-of-block' unit so is triple aspect with an additional external wall and windows along the bathroom elevation.

CROSS SECTION_1:200

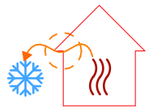
A = Access Corridor



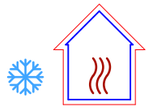
SECTION/AXONOMETRIC OF DWELLING_1:100

EXPLAINER

The **building envelope** consists of all components that separate the interior from the exterior. The interior of the building provides a comfortable climate, whereas the outside is determined by the weather. In order to maintain comfortable indoor conditions, the building envelope is insulated and prevented from air leakages.



Heat makes its way from the heated space towards the outside. In doing so, it follows the path of least resistance. A **thermal bridge** is a localised area of the building envelope where the heat flow is increased in comparison with adjacent areas. The effects of thermal bridges are heat loss, cold internal surfaces and in the worst case moisture penetration, condensation and mould growth.



In addition to insulating the building envelope there should also be an **airtight layer**. There are many disadvantages of air flowing in through joints and gaps in the building envelope. A large percentage of building damage is caused by leaks in the building envelope. Sound insulation is reduced, drafts cause discomfort for occupants and there are high heat losses.

KEY

BUILDING ENVELOPE

1 Cavity wall with facing brick outer leaf, 2" cavity, masonry inner leaf. Long-term residents recollect injected cavity insulation has been installed.

2 Non-original double-glazed PVCu windows, spandrel panels and doors. Site observation and resident comments, suggests some glazing units may be degraded.

THERMAL BRIDGES

3 Concrete structure exposed externally at floor levels resulting in a thermal bridge.

4 Junction of solid balcony floor and cavity wall with injected insulation resulting in a thermal bridge.

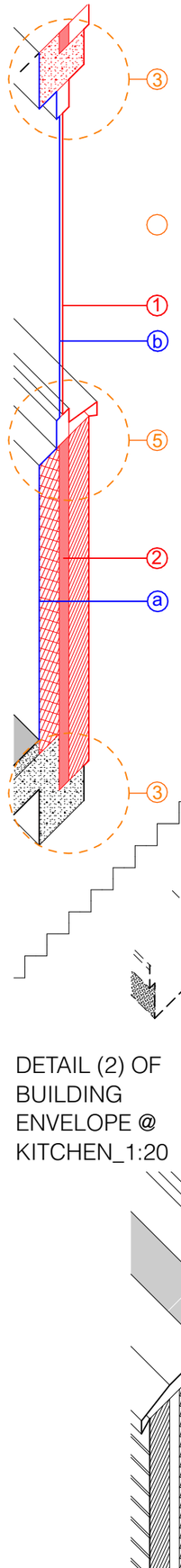
5 Window installation detail is unknown but may be a poor performing thermal bridge.

AIRTIGHTNESS

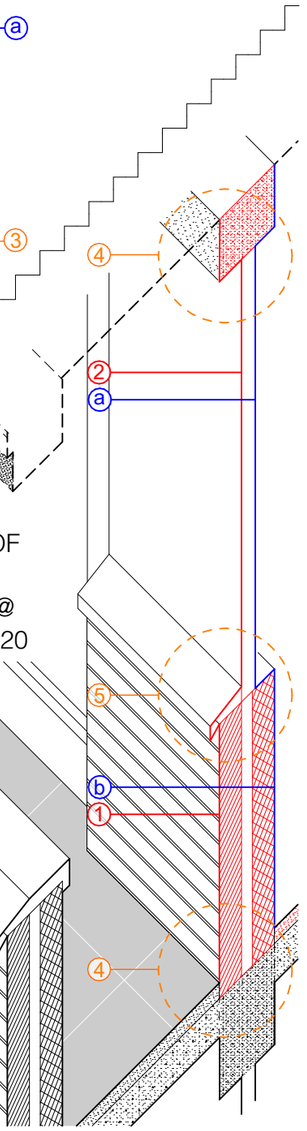
a Airtightness of cavity wall will depend on type, quality and continuity of masonry, injected cavity insulation and internal plaster.

b Airtightness of window unit and installation within cavity wall is unknown.

Construction composition and sizes are assumptions based on visual checks and archival research



DETAIL (1) OF BUILDING ENVELOPE @ BEDROOM_1:20

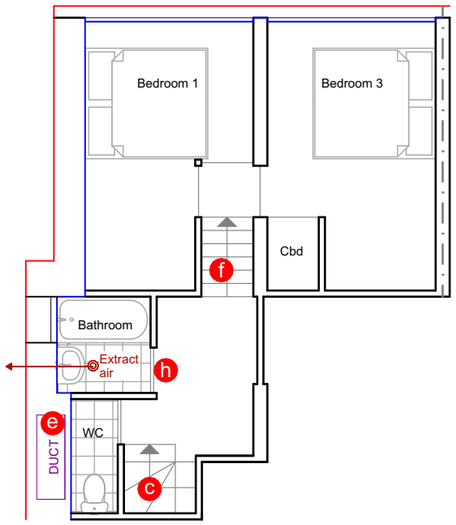


DETAIL (2) OF BUILDING ENVELOPE @ KITCHEN_1:20

[redacted]'S HOME, [redacted] BENCE HOUSE

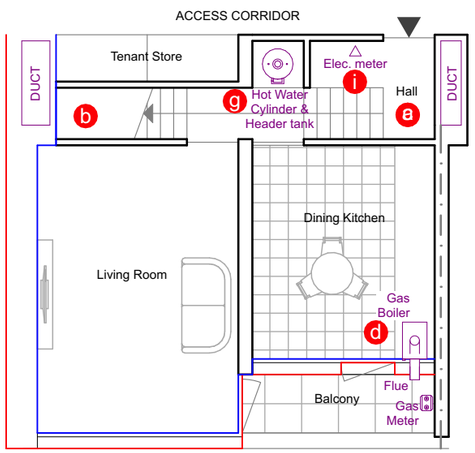
Home visit notes, photographs & annotated plans

Date of visit: 21.06.2024
Location: 9 Bence House



THIRD FLOOR PLAN_1:100

N 0.5m 2.5m



SECOND FLOOR PLAN_1:100

Occupancy
Leasehold; lived in flat for 2 years; 1 adult.

Utilities & Services
(i) The electricity meter is at the entrance by the front door, as with other flats, the new mains has been installed but not connected to the service head/meter.
The gas meter is on the external terrance off the kitchen.
(a) As with other similar flats, there is a service riser in the entrance lobby hallway at the party wall with the neighbouring flat. This has been a source of leaks and issues but not currently any live problems to report.
(b) There is a small storage unit below the WC accessed from the living room with soil pipe bend to riser.

Heating & Hot Water
(d) Gas boiler in kitchen with flue to terrace. (g) Hot water cylinder in hallway airing cupboard. There is a header tank in the WC. Water pressure is not great according to occupant. (f) There is a power shower pump.
Occupant generally reports the flat to be comfortable, and doesn't need a lot of heating in winter. Radiator heating.

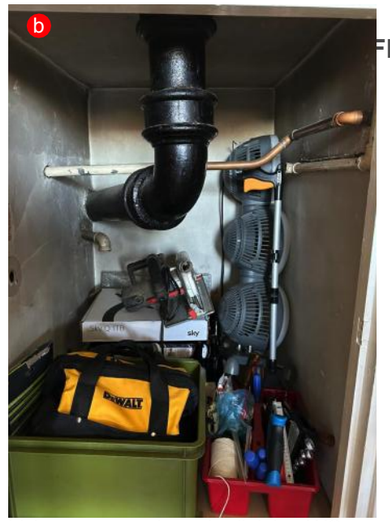
Ventilation
(h) There is a functioning extract fan in the bathroom to the external flank wall of the block. Note that both WC and bathroom have opening windows unlike most flats in the block.
(e) There is evidence of an MVHR installation in the WC with flexible foil extract/supply ducts to the flank wall but no MVHR unit. The ducts appear to be connected internally to a register in the hallway (c) and WC - but neither are connected to fans or the like.
Occupant does not typically need windows open for ventilation.

Overheating
In hot weather, the cross ventilation through the scissor section, front to back, is excellent.

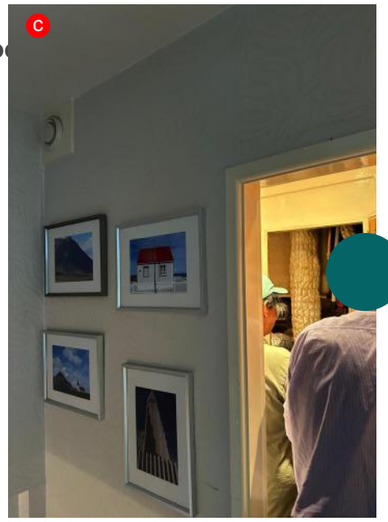
Building envelope
Occupant has not observed any issues with degraded glazing.

Note: this is an end-of-block unit where there is an additional external wall and windows along the bathroom elevation. Energy modelling of the dwelling should ensure that the larger building envelope area is taken into account.

Service riser and access panel in entrance lobby



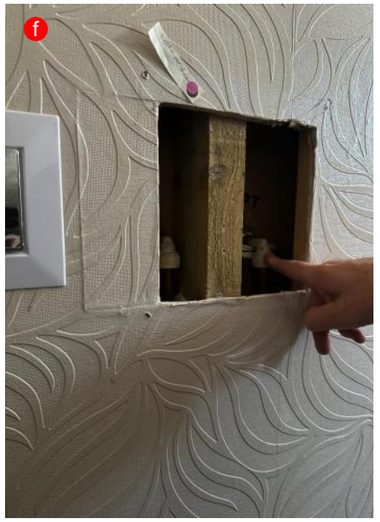
Living room cupboard adjoining WC with soil pipe bend and other services



Ventilation register in hallway, unclear function and connection

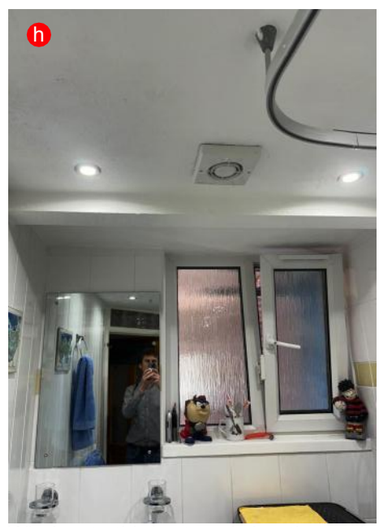
Gas boiler in kitchen with flue to external terrace

Service duct (WC) ventilation ductwork with unclear function and connection



Power shower control panel in hallway

Hot water tank in hallway cupboard



Window to third external elevation and extract fan to exterior in bathroom

Electrical service head, meter and distribution board

PORTRAIT HERE

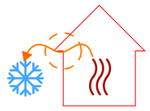
'S HOME
BENCE HOUSE

DWELLING TYPE	**B2**
PLAN REFERENCE	**A102 (Second & Third Floor)**
TYPE SHEET	**A111 (Type B)**

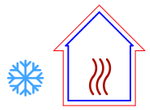
2-bedroom, 2-level 'up' scissor flat , second and third floor, with private terrace (SE Living Room Elevation). 69sqm gross internal floor area, excluding externally accessed store. Access is from the second floor access corridor and hall.

EXPLAINER

The **building envelope** consists of all components that separate the interior from the exterior. The interior of the building provides a comfortable climate, whereas the outside is determined by the weather. In order to maintain comfortable indoor conditions, the building envelope is insulated and prevented from air leakages.



Heat makes its way from the heated space towards the outside. In doing so, it follows the path of least resistance. A **thermal bridge** is a localised area of the building envelope where the heat flow is increased in comparison with adjacent areas. The effects of thermal bridges are heat loss, cold internal surfaces and in the worst case moisture penetration, condensation and mould growth.



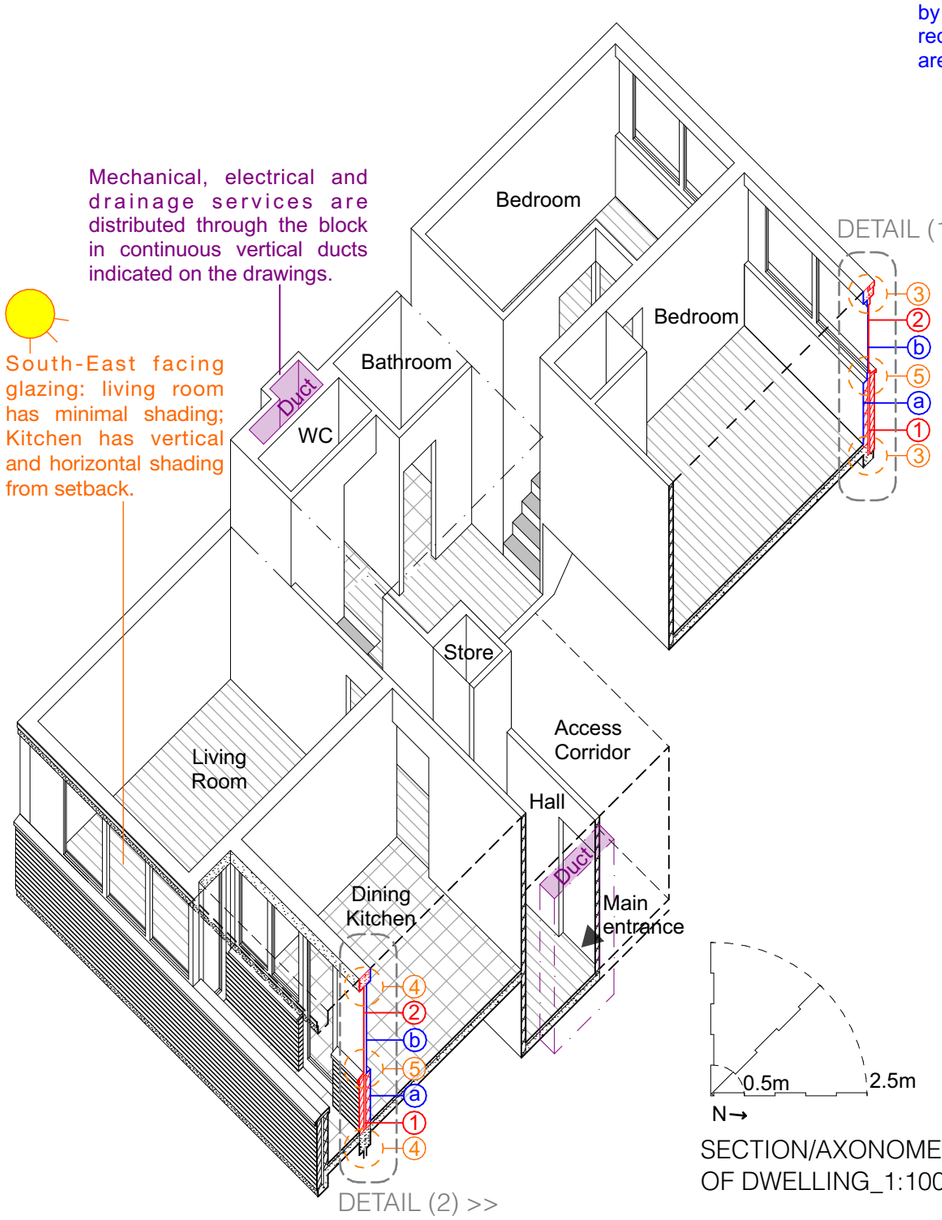
In addition to insulating the building envelope there should also be an **airtight layer**. There are many disadvantages of air flowing in through joints and gaps in the building envelope. A large percentage of building damage is caused by leaks in the building envelope. Sound insulation is reduced, drafts cause discomfort for occupants and there are high heat losses.

CROSS SECTION_1:200

A = Access Corridor

Mechanical, electrical and drainage services are distributed through the block in continuous vertical ducts indicated on the drawings.

South-East facing glazing: living room has minimal shading; Kitchen has vertical and horizontal shading from setback.



SECTION/AXONOMETRIC OF DWELLING_1:100

KEY

BUILDING ENVELOPE

1 Cavity wall with facing brick outer leaf, 2" cavity, masonry inner leaf. Long-term residents recollect injected cavity insulation has been installed.

2 Non-original double-glazed PVCu windows, spandrel panels and doors. Site observation and resident comments, suggests some glazing units may be degraded.

THERMAL BRIDGES

3 Concrete structure exposed externally at floor levels resulting in a thermal bridge.

4 Junction of solid balcony floor and cavity wall with injected insulation resulting in a thermal bridge.

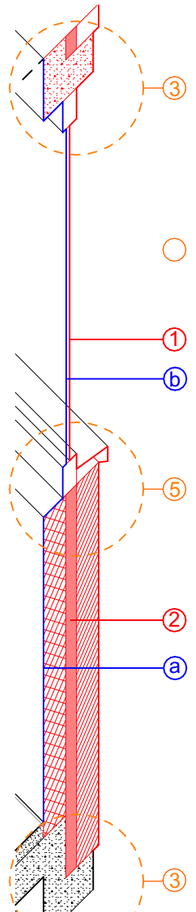
5 Window installation detail is unknown but may be a poor performing thermal bridge.

AIRTIGHTNESS

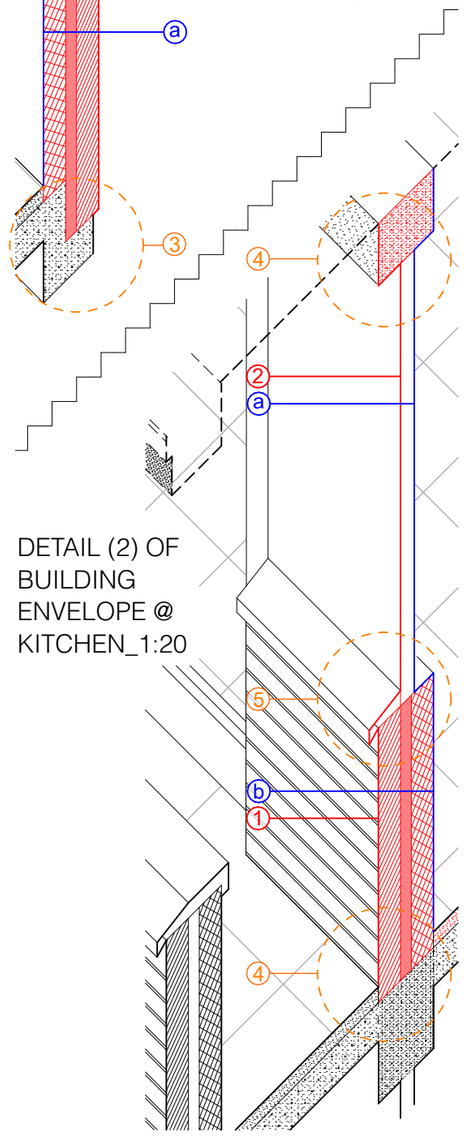
a Airtightness of cavity wall will depend on type, quality and continuity of masonry, injected cavity insulation and internal plaster.

b Airtightness of window unit and installation within cavity wall is unknown.

Construction composition and sizes are assumptions based on visual checks and archival research



DETAIL (1) OF BUILDING ENVELOPE @ BEDROOM_1:20



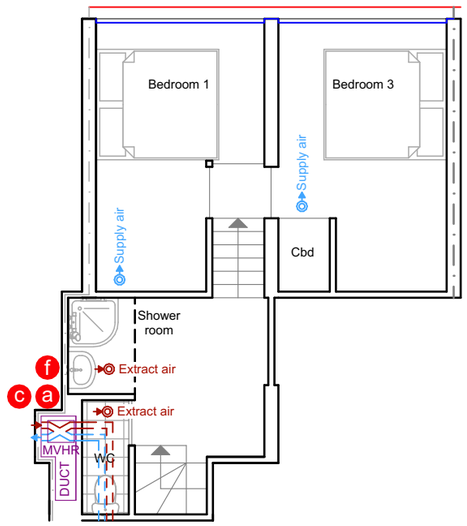
DETAIL (2) OF BUILDING ENVELOPE @ KITCHEN_1:20

TRA/Housing comment
05.08.24

[redacted]'S HOME, [redacted] BENCE HOUSE

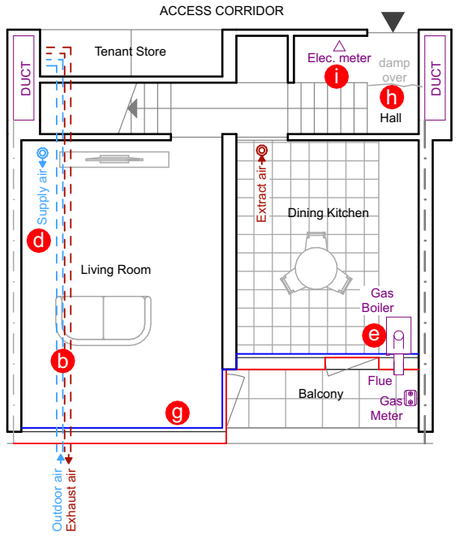
Home visit notes, photographs & annotated plans

Date of visit: 07.06.2024
Location: 15 Bence House



THIRD FLOOR PLAN_1:100

N ↗ 0.5m 2.5m



SECOND FLOOR PLAN_1:100

Occupancy
Leasehold; longterm residents; 2 adults and child; whilst capital works have happened in flat, they have exercised some control over as leaseholders.

Utilities & Services
(i) The electricity meter is at the entrance by the front door, as with other flats, the new mains has been installed but not connected to the service head/meter.
The gas meter is on the external terrance off the kitchen.
As with other similar flats, there is a service riser in the entrance lobby hallway at the party wall with the neighbouring flat.
(h) Leaks above entrance are likely from copper pipes that have failed at bends, connecting into cast iron soil pipe, such connections visible in bathroom panel (c) including repairs with plastic pipework.
(f) Historic district heating system now defunct but copper pipes in situ, anecdotally (from several sources) this was a hot air system to living room only

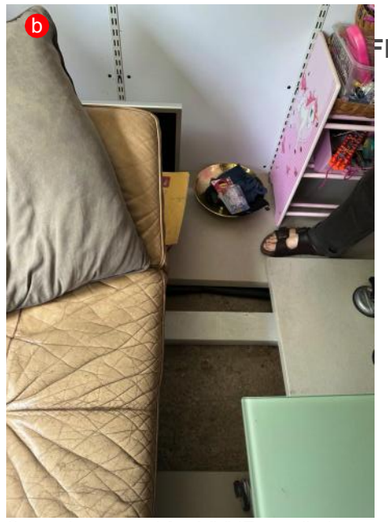
Heating & Hot Water
(e) Gas combi boiler in kitchen with flue to terrace. Resistant to installation of a hot water cylinder. Low energy bills, with minimal heating in winter. Radiator heating.

Ventilation
(a, d) MVHR installed in 1997 by local authority with leaseholder oversight, ducting is discreet, filters and unit maintained by occupant, supply and extract to outside in living room floor; poorly installed flexible ducting with lots of kinks, foil has delaminated; filters 'hoovered out' by occupant every few years, not replaced; no summer bypass.
(b) Floor had a layer of screed, removed by occupant and replaced with tiles on pedestal to original FFL with service run under tile.
Windows typically closed and opening not required for ventilation. There are trickle vents on windows but these seem to be closed.
We observed good air quality and acoustics observed compared to visits to other similar property.

Overheating
No overheating reported (bar small number of days with extreme heat)

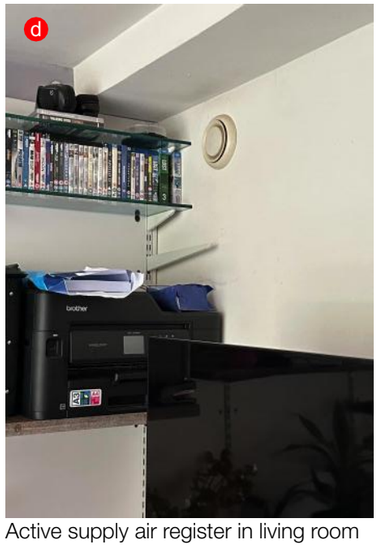
Building envelope
(g) The panelling under the ground window in the living room can be removed for future inspection of wall buildup. Occupant says it is poor quality block work with injected cavity wall insulation

MVHR unit and ventilation ducts in WC service duct



Screed removed for MVHR ventilation ducts to outside to run under floor tiles

Failed copper pipework repaired with plastic in WC service duct

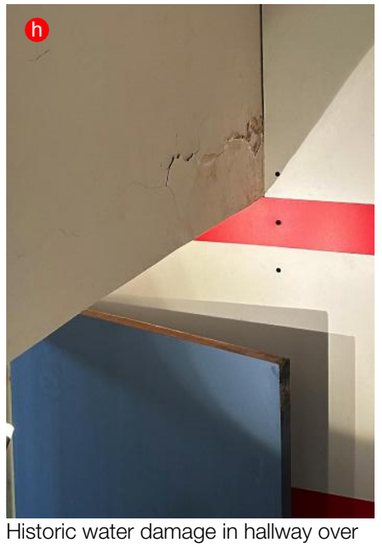


Active supply air register in living room

Gas combi boiler with flue to external terrace

Historic district heating system pipework, now defunct

Panelling in living room is easily removable for future inspection



Historic water damage in hallway over entry from burst pipe, similar to (c)

Electrical service head, meter and distribution board

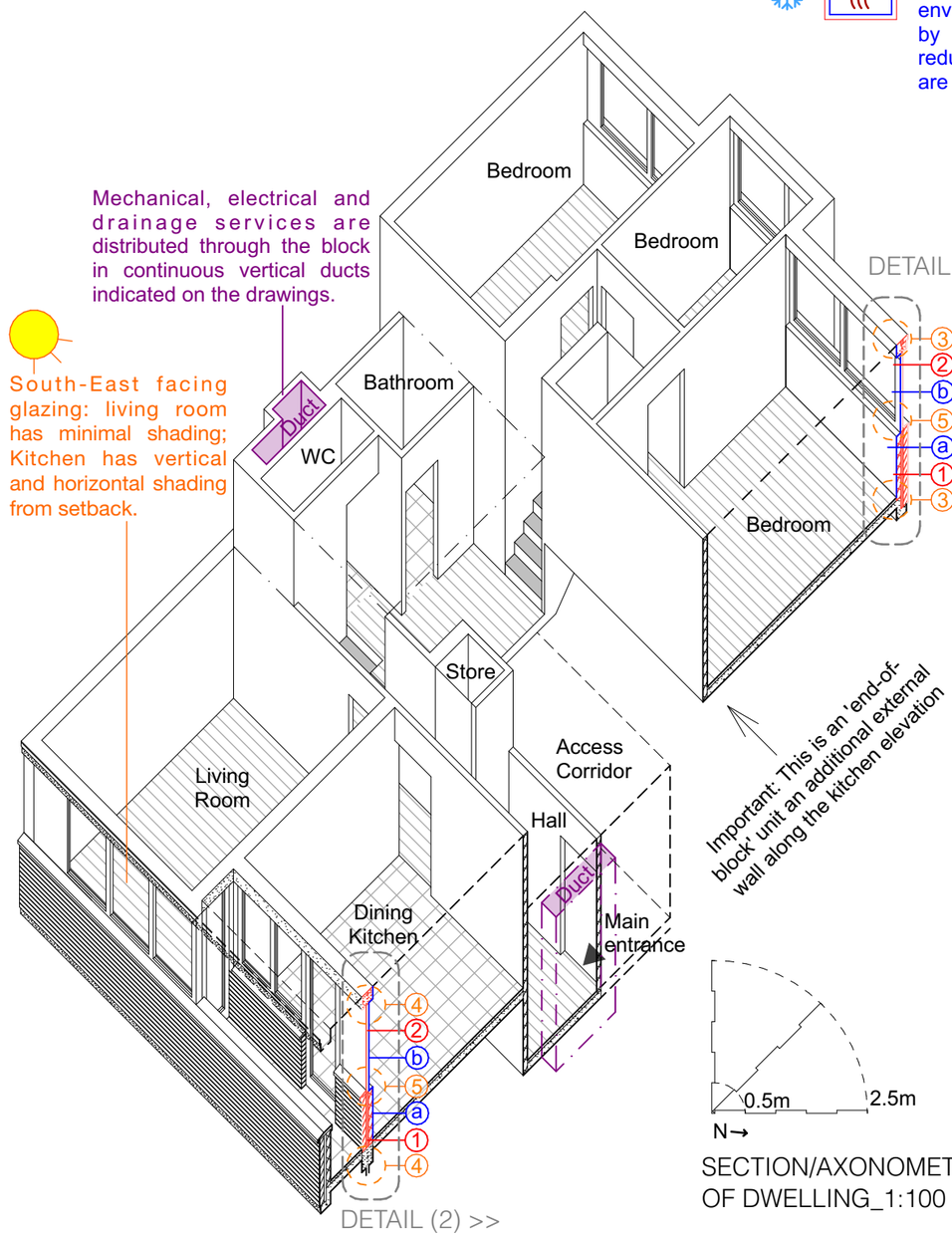
'S HOME
BENCE HOUSE

DWELLING TYPE	**B1**
PLAN REFERENCE	**A102 (Second & Third Floor)**
TYPE SHEET	**A111 (Type B)**

3-bedroom, 2-level 'up' scissor flat , second and third floor, with private terrace (SE Living Room Elevation). 77sqm gross internal floor area, excluding externally accessed store. Access is from the second floor access corridor and hall.

CROSS SECTION_1:200

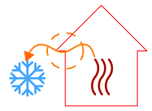
A = Access Corridor



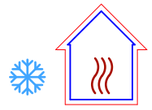
SECTION/AXONOMETRIC OF DWELLING_1:100

EXPLAINER

The **building envelope** consists of all components that separate the interior from the exterior. The interior of the building provides a comfortable climate, whereas the outside is determined by the weather. In order to maintain comfortable indoor conditions, the building envelope is insulated and prevented from air leakages.



Heat makes its way from the heated space towards the outside. In doing so, it follows the path of least resistance. A **thermal bridge** is a localised area of the building envelope where the heat flow is increased in comparison with adjacent areas. The effects of thermal bridges are heat loss, cold internal surfaces and in the worst case moisture penetration, condensation and mould growth.



In addition to insulating the building envelope there should also be an **airtight layer**. There are many disadvantages of air flowing in through joints and gaps in the building envelope. A large percentage of building damage is caused by leaks in the building envelope. Sound insulation is reduced, drafts cause discomfort for occupants and there are high heat losses.

KEY

BUILDING ENVELOPE

1 Cavity wall with facing brick outer leaf, 2" cavity, masonry inner leaf. Long-term residents recollect injected cavity insulation has been installed.

2 Non-original double-glazed PVCu windows, spandrel panels and doors. Site observation and resident comments, suggests some glazing units may be degraded.

THERMAL BRIDGES

3 Concrete structure exposed externally at floor levels resulting in a thermal bridge.

4 Junction of solid balcony floor and cavity wall with injected insulation resulting in a thermal bridge.

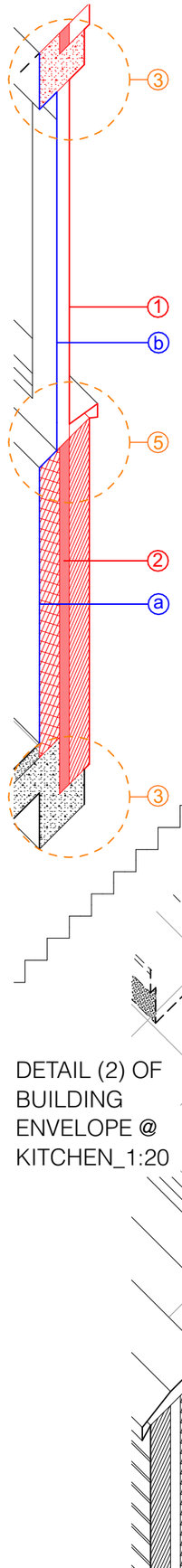
5 Window installation detail is unknown but may be a poor performing thermal bridge.

AIRTIGHTNESS

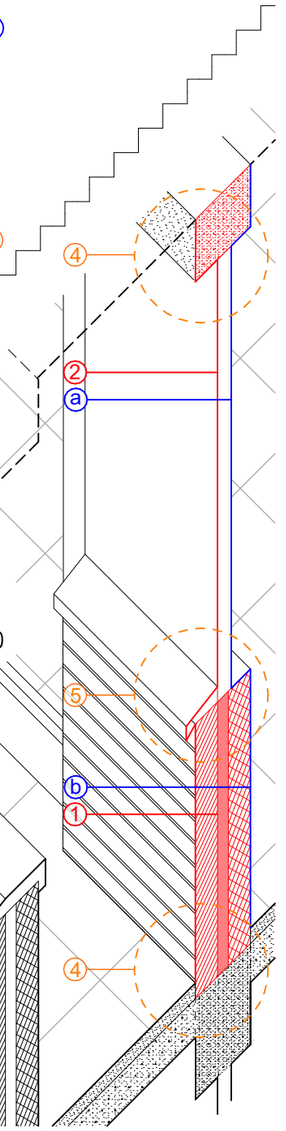
a Airtightness of cavity wall will depend on type, quality and continuity of masonry, injected cavity insulation and internal plaster.

b Airtightness of window unit and installation within cavity wall is unknown.

Construction composition and sizes are assumptions based on visual checks and archival research



DETAIL (1) OF BUILDING ENVELOPE @ BEDROOM_1:20

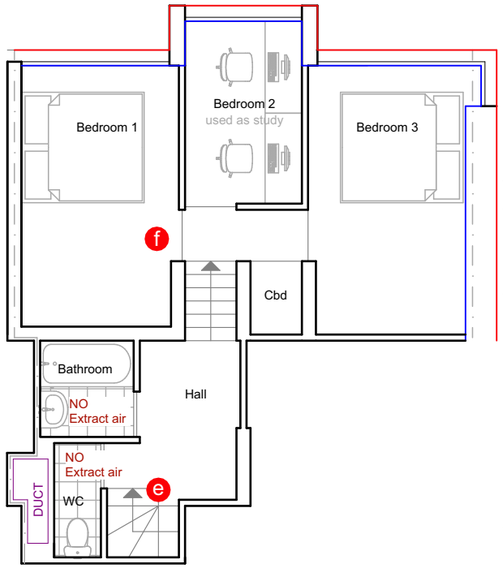


DETAIL (2) OF BUILDING ENVELOPE @ KITCHEN_1:20

[redacted]'S HOME, [redacted] BENCE HOUSE

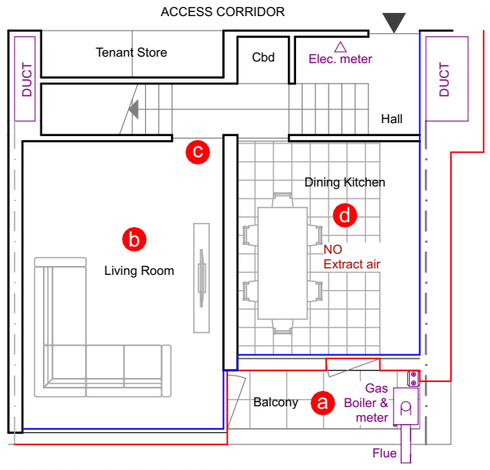
Home visit notes, photographs & annotated plans

Date of visit: 07.06.2024
Location: 16 Bence House



THIRD FLOOR PLAN_1:100

N 0.5m 2.5m



SECOND FLOOR PLAN_1:100

Occupancy
Leasehold; long-term residents; 2 adults.

Utilities & Services
The electricity meter is at the entrance by the front door, as with other flats, the new mains has been installed but not connected to the service head/ meter.
(a) The gas meter is on the external terrance off the kitchen.
As with other similar flats, there is a service riser in the entrance lobby hallway at the party wall with the neighbouring flat.
Historic leaks above entrance are likely from copper pipes that burst at bends near cast iron soil pipe.

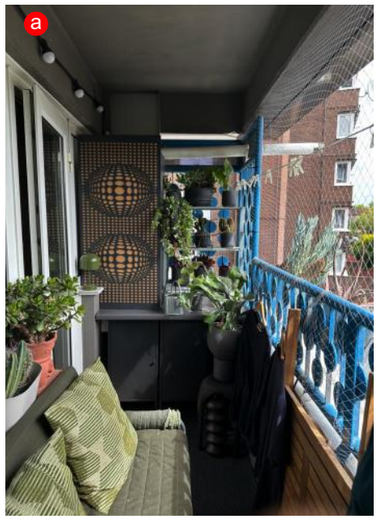
Heating & Hot Water
Gas combi boiler located externally on terrace. Hot water cylinder removed in renovation. Radiator heating. Heating is off 'more than typical' and happy with a cooler internal temperature

Ventilation
Historic ventilation ducts and registers stripped out. (b, c, f) Evidence of old system, e.g. in living room, but essentially it is defunct. (d) No extract ventilation from bathroom, WC or kitchen. Windows and terrace doors typically left wide open for ventilation. PVCu windows and doors with trickle vents
No evidence of mould or condensation

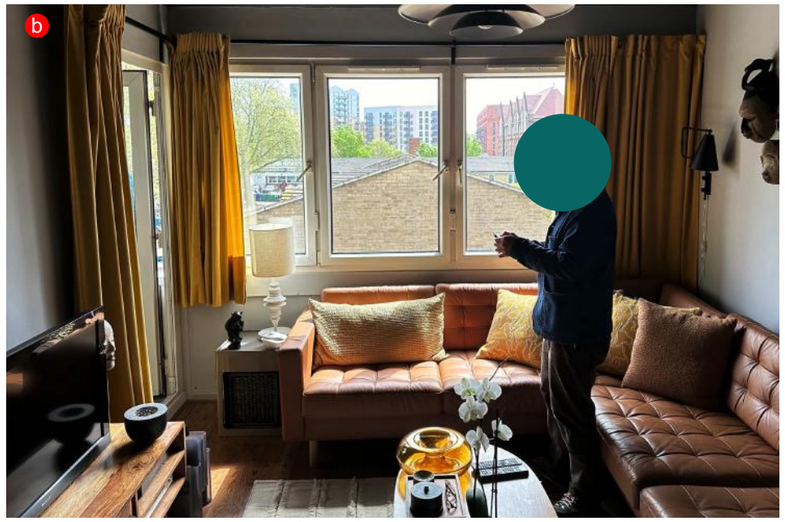
Overheating
Significant overheating in the summer, considering installation of AC unit.

Building envelope
One double glazing needs replacing as condensation between glazing layers

Note: this is an end-of-block unit where there is an additional external wall along the kitchen elevation. Energy modelling of the dwelling should ensure that the larger building envelope area is taken into account.



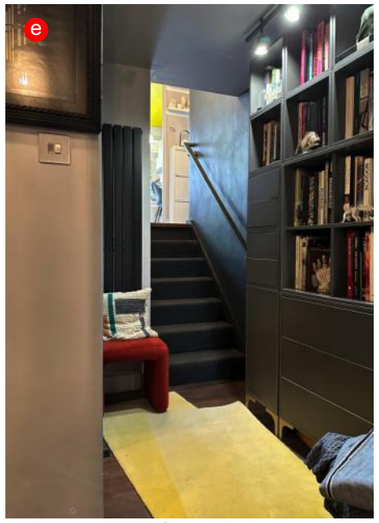
External cabinet on terrace housing gas Combi boiler



Living room with unshaded south-east glazing

Ventilation grille, defunct (no mechanical ventilation in property)

Kitchen with external terrace



Half level with WC and Bathroom, and stairs to bedrooms

Remnant of historic service distribution, stripped out during renovation

'S HOME
BENCE HOUSE

DWELLING TYPE	**C2**
PLAN REFERENCE	**A102 (Second & Third Floor)**
TYPE SHEET	**A112 (Type C)**

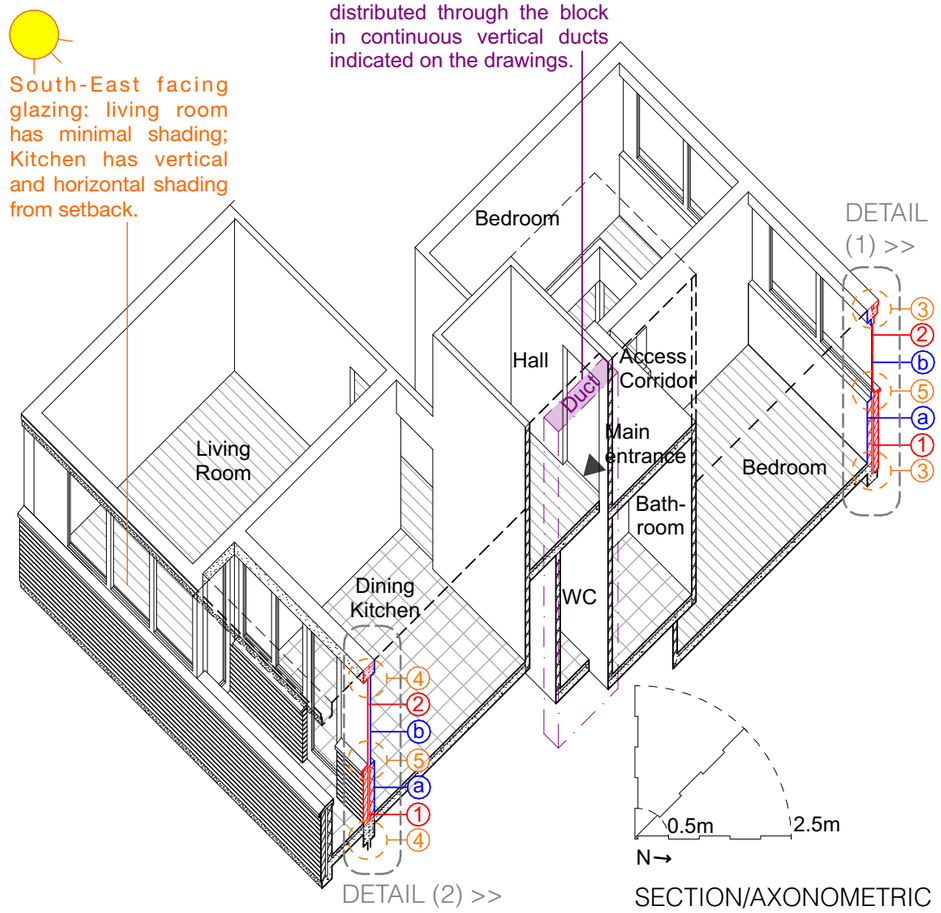
2-bedroom, 2-level 'down' scissor flat, second and third floor, with private terrace (SE Living Room Elevation). 69sqm gross internal floor area, excluding externally accessed store. Access is from the fourth floor access corridor and hall.

CROSS SECTION_1:200

A = Access Corridor

South-East facing glazing: living room has minimal shading; Kitchen has vertical and horizontal shading from setback.

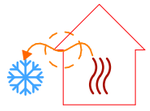
Mechanical, electrical and drainage services are distributed through the block in continuous vertical ducts indicated on the drawings.



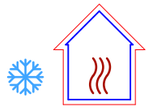
SECTION/AXONOMETRIC OF DWELLING_1:100

EXPLAINER

The **building envelope** consists of all components that separate the interior from the exterior. The interior of the building provides a comfortable climate, whereas the outside is determined by the weather. In order to maintain comfortable indoor conditions, the building envelope is insulated and prevented from air leakages.



Heat makes its way from the heated space towards the outside. In doing so, it follows the path of least resistance. A **thermal bridge** is a localised area of the building envelope where the heat flow is increased in comparison with adjacent areas. The effects of thermal bridges are heat loss, cold internal surfaces and in the worst case moisture penetration, condensation and mould growth.



In addition to insulating the building envelope there should also be an **airtight layer**. There are many disadvantages of air flowing in through joints and gaps in the building envelope. A large percentage of building damage is caused by leaks in the building envelope. Sound insulation is reduced, drafts cause discomfort for occupants and there are high heat losses.

KEY

BUILDING ENVELOPE

1 Cavity wall with facing brick outer leaf, 2" cavity, masonry inner leaf. Long-term residents recollect injected cavity insulation has been installed.

2 Non-original double-glazed PVCu windows, spandrel panels and doors. Site observation and resident comments, suggests some glazing units may be degraded.

THERMAL BRIDGES

3 Concrete structure exposed externally at floor levels resulting in a thermal bridge.

4 Junction of solid balcony floor and cavity wall with injected insulation resulting in a thermal bridge.

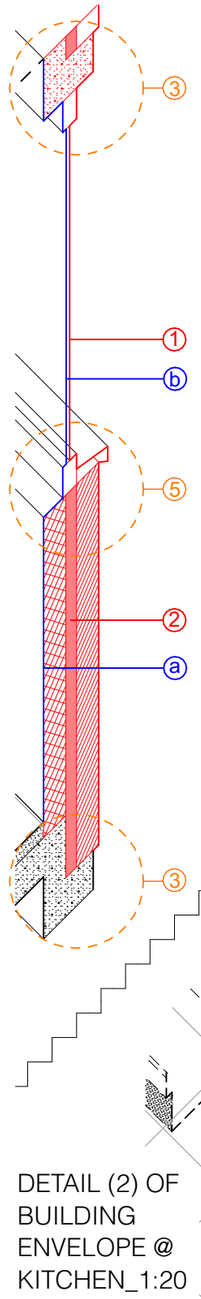
5 Window installation detail is unknown but may be a poor performing thermal bridge.

AIRTIGHTNESS

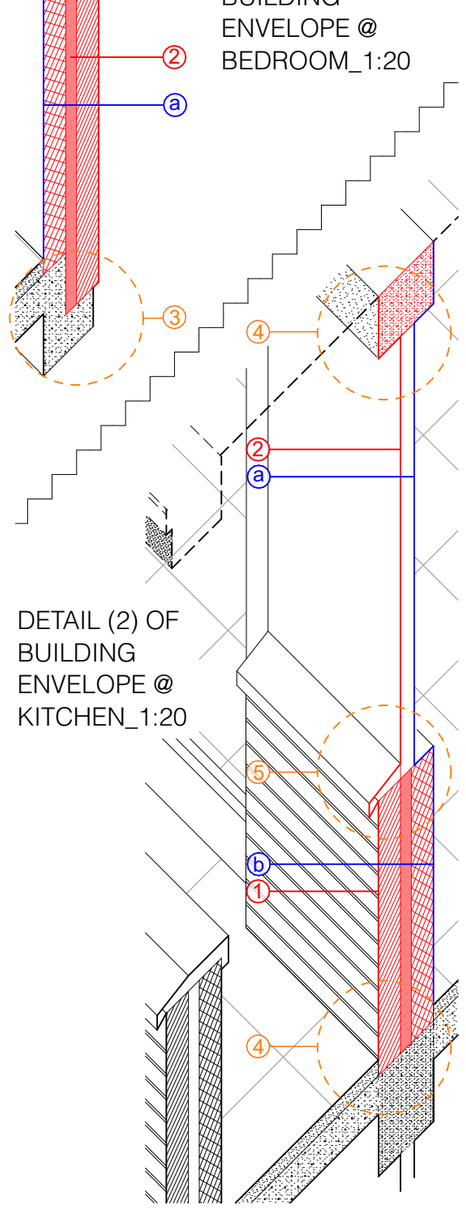
a Airtightness of cavity wall will depend on type, quality and continuity of masonry, injected cavity insulation and internal plaster.

b Airtightness of window unit and installation within cavity wall is unknown.

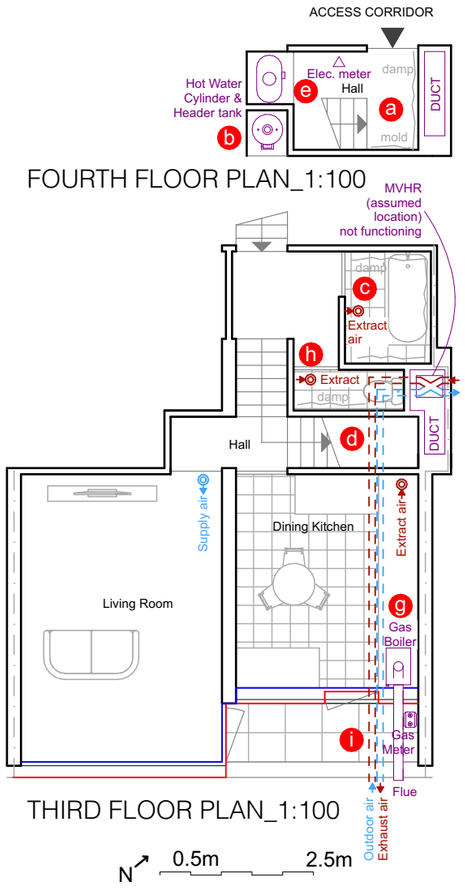
Construction composition and sizes are assumptions based on visual checks and archival research



DETAIL (1) OF BUILDING ENVELOPE @ BEDROOM_1:20



DETAIL (2) OF BUILDING ENVELOPE @ KITCHEN_1:20



'S HOME, BENCE HOUSE

Home visit notes, photographs & annotated plans

Date of visit: 21.06.2024
Additional resident comments 07.08.24
Location: 18 Bence House

Occupancy
Council tenancy; lived in the flat for over 30 years; 2 adults.

Utilities & Services
The electricity meter is at the entrance by the front door, as with other flats, the new mains has been installed but not connected to the service head/ meter.
The gas meter is on the external terrance off the kitchen.
As with other similar flats, there is a service riser in the entrance lobby hallway at the party wall with the neighbouring flat. (a) Service Riser in hallway has been cause of leaks, the plasterboard cover panel is warped from previous water damage and the integrity of the fire-rated board compromised. The panel is loose and not fitted. Occupant has seen mice in the riser. The damaged copper waste pipe bend, similar to other flats, has been replaced with a plastic elbow is visible. Other pipework, some obviously defunct is evident. Mould is coming through the wallpaper on the wall facing the front door. This has appeared since remedial work to address water damage from last year: the occupant scraped the wallpaper off, washed it all down, repapered and repainted - only for mould to resurface.

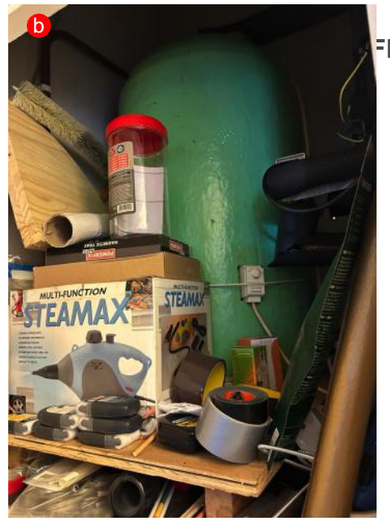
Heating & Hot Water
(g) There is a gas boiler in the kitchen and (b) a hot water cylinder in the upper hallway cupboard. (e) There is a header tank in the entrance hall cupboard.
Occupant struggles with fuel costs and used minimal heat in the flat during winter.

Ventilation
Poor air quality in the flat, needs to leave windows open and also uses a portable dehumidifier to manage the humidity in the flat (d).
There is evidence of an MVHR installation but the unit itself was not visible, possibly concealed behind panelling in the WC if present. There are supply and extract registers in all the rooms and there is flexible foil external ducting (seems to be one supply and one extract) to the terrace 'service cage' that also contains the boiler flue (i). However the occupant does not believe the unit is on or working. There is evidence that the ducting and registers were recently installed and there are QR stickers that seem to link to info on the installation.
(h) There does not appear to be working extract in the bathroom or WC. (c) There is serious condensation damage to the finishes in the bathroom with flaking paint scrubbed off.

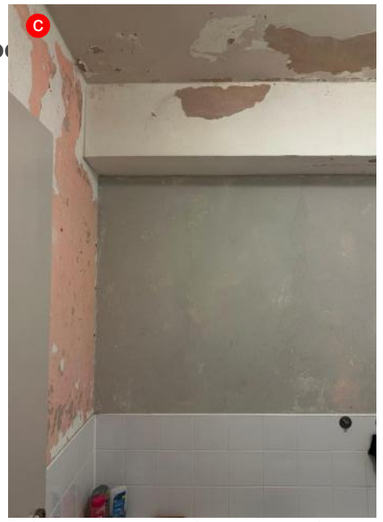
Overheating
Not raised.

Building envelope
Occupant reports issues with double glazing units blown/condensation between glass, but hard to see on a warm day.
(f) Evidence of water ingress or condensation to a section of wall in the master bedroom which is a separating wall to the adjoining flat.

Service riser in entrance lobby with repair copper waste pipe



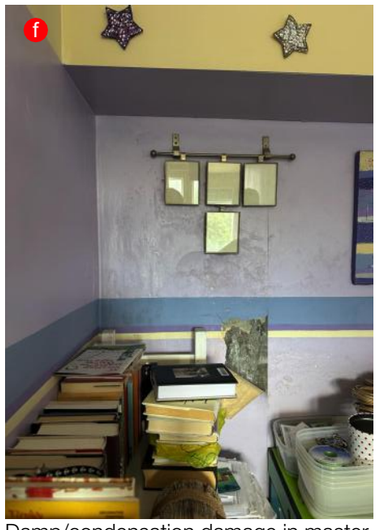
Hot water tank in hallway cupboard



Extensive condensation damage to finishes in bathroom

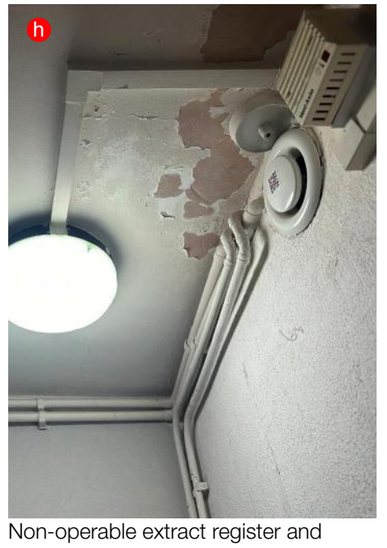
Portable dehumidifier used by resident to manage humidity in home

Header tank in hallway cupboard



Damp/condensation damage in master bedroom at separating wall

Gas boiler with flue to external terrace



Non-operable extract register and condensation damage in WC

MVHR external air register in service cage at external terrace

PORTRAIT HERE

[redacted]'S HOME
[redacted]BENCE HOUSE

DWELLING TYPE	**C2**
PLAN REFERENCE	**A103 (Fourth & Fifth Floor)**
TYPE SHEET	**A112 (Type C)**

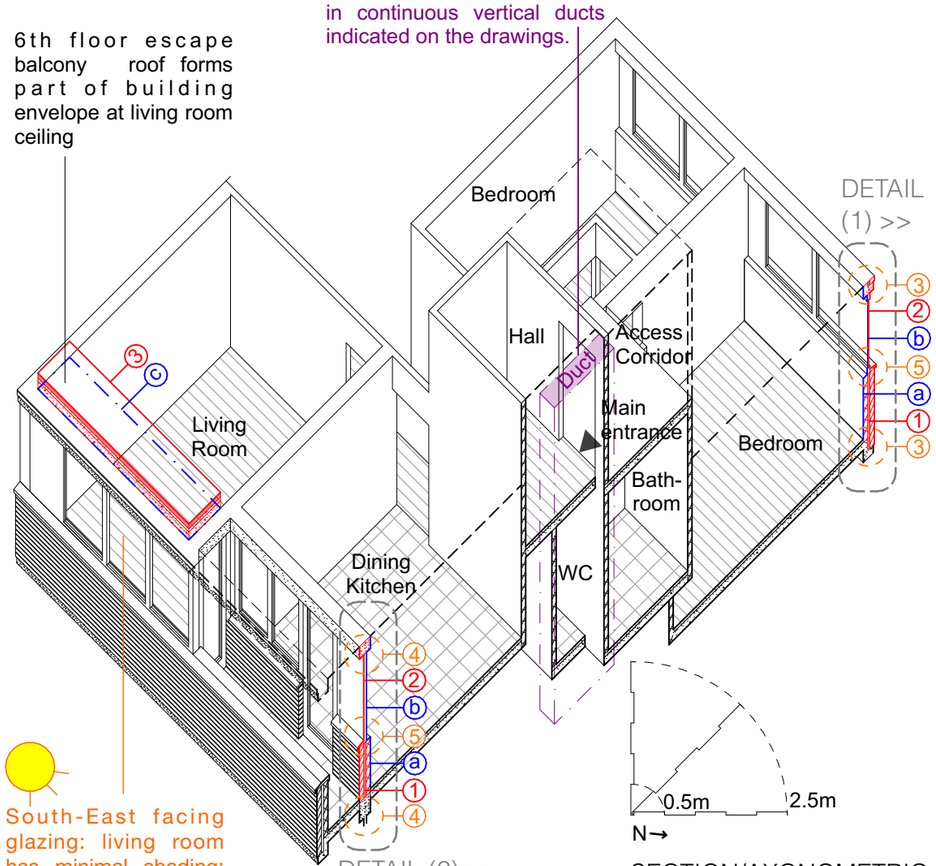
2-bedroom, 2-level 'down' scissor flat, fourth and fifth floor, with private terrace (SE Living Room Elevation). 69sqm gross internal floor area, excluding externally accessed store. Access is from the sixth floor access corridor and hall.

CROSS SECTION_1:200

A = Access Corridor

6th floor escape balcony roof forms part of building envelope at living room ceiling

Mechanical, electrical and drainage services are distributed through the block in continuous vertical ducts indicated on the drawings.

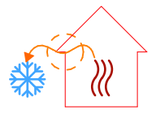


South-East facing glazing: living room has minimal shading; Kitchen has vertical and horizontal shading from setback.

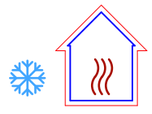
SECTION/AXONOMETRIC OF DWELLING_1:100

EXPLAINER

The **building envelope** consists of all components that separate the interior from the exterior. The interior of the building provides a comfortable climate, whereas the outside is determined by the weather. In order to maintain comfortable indoor conditions, the building envelope is insulated and prevented from air leakages.



Heat makes its way from the heated space towards the outside. In doing so, it follows the path of least resistance. A **thermal bridge** is a localised area of the building envelope where the heat flow is increased in comparison with adjacent areas. The effects of thermal bridges are heat loss, cold internal surfaces and in the worst case moisture penetration, condensation and mould growth.



In addition to insulating the building envelope there should also be an **airtight layer**. There are many disadvantages of air flowing in through joints and gaps in the building envelope. A large percentage of building damage is caused by leaks in the building envelope. Sound insulation is reduced, drafts cause discomfort for occupants and there are high heat losses.

KEY

BUILDING ENVELOPE

1 Cavity wall with facing brick outer leaf, 2" cavity, masonry inner leaf. Long-term residents recollect injected cavity insulation has been installed.

2 Non-original double-glazed PVCu windows, spandrel panels and doors. Site observation and resident comments, suggests some glazing units may be degraded.

3 Roof over (6th floor escape balcony deck), 5" concrete slab with 2" screed, unknown insulation type/thickness and mastic asphalt waterproofing over.

THERMAL BRIDGES

4 Concrete structure exposed externally at floor levels resulting in a thermal bridge.

5 Junction of solid balcony floor and cavity wall with injected insulation resulting in a thermal bridge.

6 Window installation detail is unknown but may be a poor performing thermal bridge.

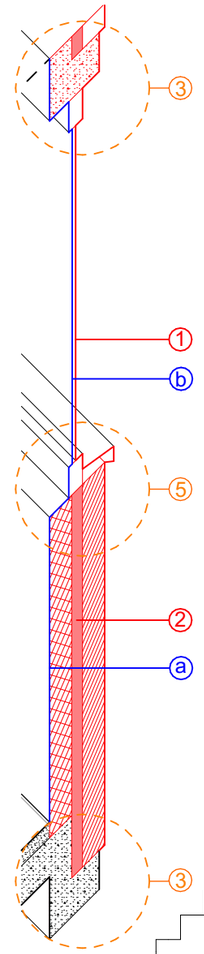
AIRTIGHTNESS

a Airtightness of cavity wall will depend on type, quality and continuity of masonry, injected cavity insulation and internal plaster.

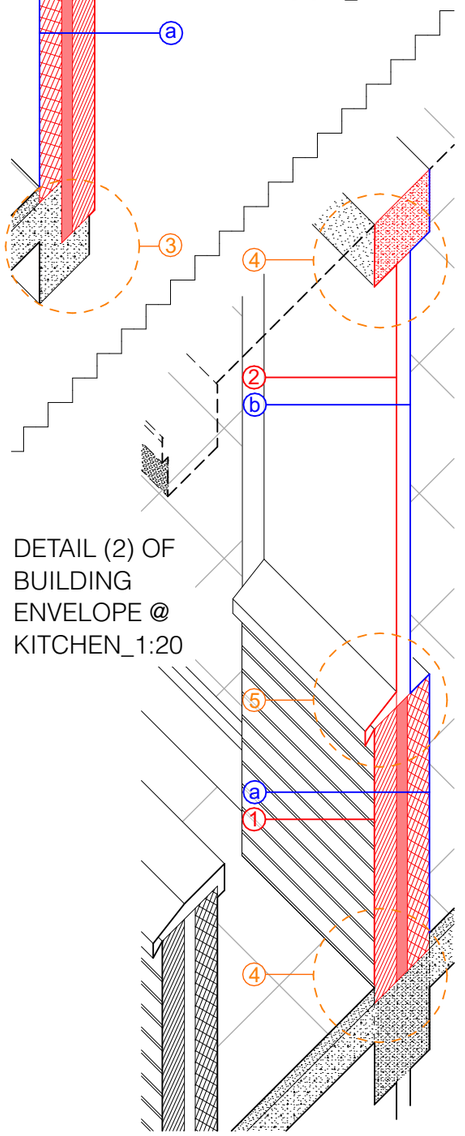
b Airtightness of window unit and installation within cavity wall is unknown.

c 7" screed/concrete solid roof construction is likely to be intrinsically airtight.

Construction composition and sizes are assumptions based on visual checks and archival research



DETAIL (1) OF BUILDING ENVELOPE @ BEDROOM_1:20



DETAIL (2) OF BUILDING ENVELOPE @ KITCHEN_1:20

[redacted]'S HOME, [redacted] BENCE HOUSE

Home visit notes, photographs & annotated plans

Date of visit: 07.06.2024
Location: 43 Bence House

Occupancy
Leasehold; just moved in; 2 adults.

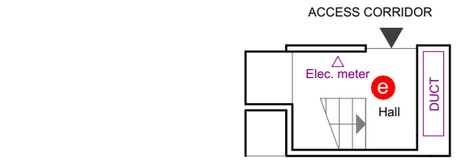
Utilities & Services
(e) The electricity meter is at the entrance by the front door, as with other flats, the new mains has been installed but not connected to the service head/meter.
The gas meter is on the external terrance off the kitchen.
As with other similar flats, there is a service riser in the entrance lobby hallway at the party wall with the neighbouring flat. There is evidence of water damage, in both the entrance area and living room (d), likely from pipe leaks from vertical and horizontal service runs.

Heating & Hot Water
(a) Gas combi boiler located externally on terrace. DHW cylinder removed in renovation. Radiator heating.

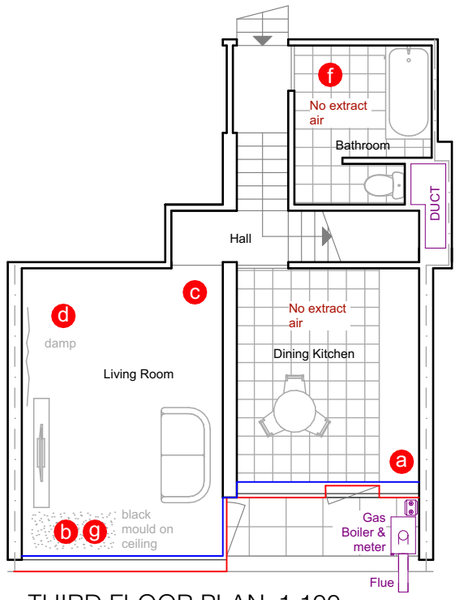
Ventilation
(c, f) Ventilation stripped out entirely, no extract in bathroom. Just moved in so no real comment on environment of flat although it has felt a little stuffy and needed to have windows open for ventilation.

Overheating
Just moved in so no comment.

Building envelope
(b, g) Black mould is evident in an area of ceiling in the living room under the communal roof deck of the 6th floor escape balcony.

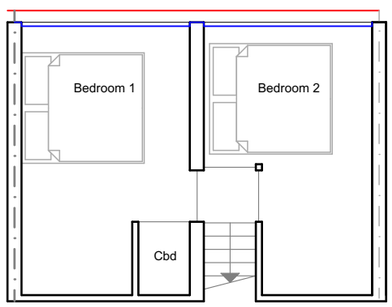


FOURTH FLOOR PLAN_1:100



THIRD FLOOR PLAN_1:100

N 0.5m 2.5m



SECOND FLOOR PLAN_1:100

Gas combi boiler in external terrace

Black mould on living room ceiling under area of communal roof of 6th floor escape balcony

Defunct ventilation grille, ventilation installation has been stripped out

Water damage in living room under upper floor service duct

Electrical service head, meter and distribution board

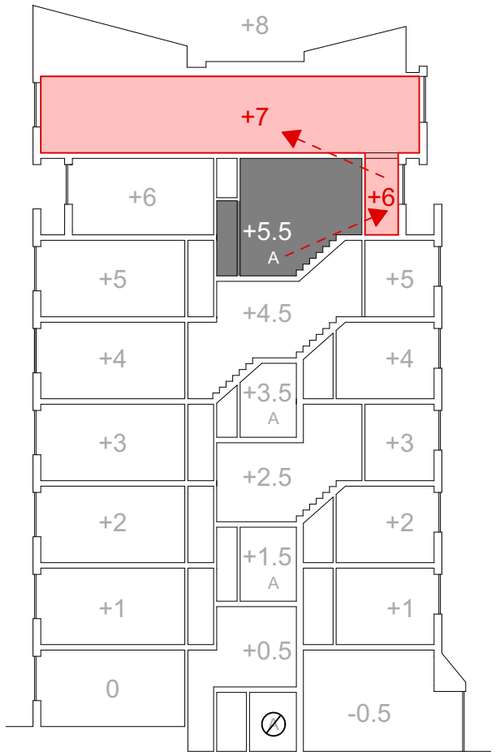
WC with no extract ventilation

6th floor escape balcony running over living room

[redacted]'S HOME
[redacted]BENCE HOUSE

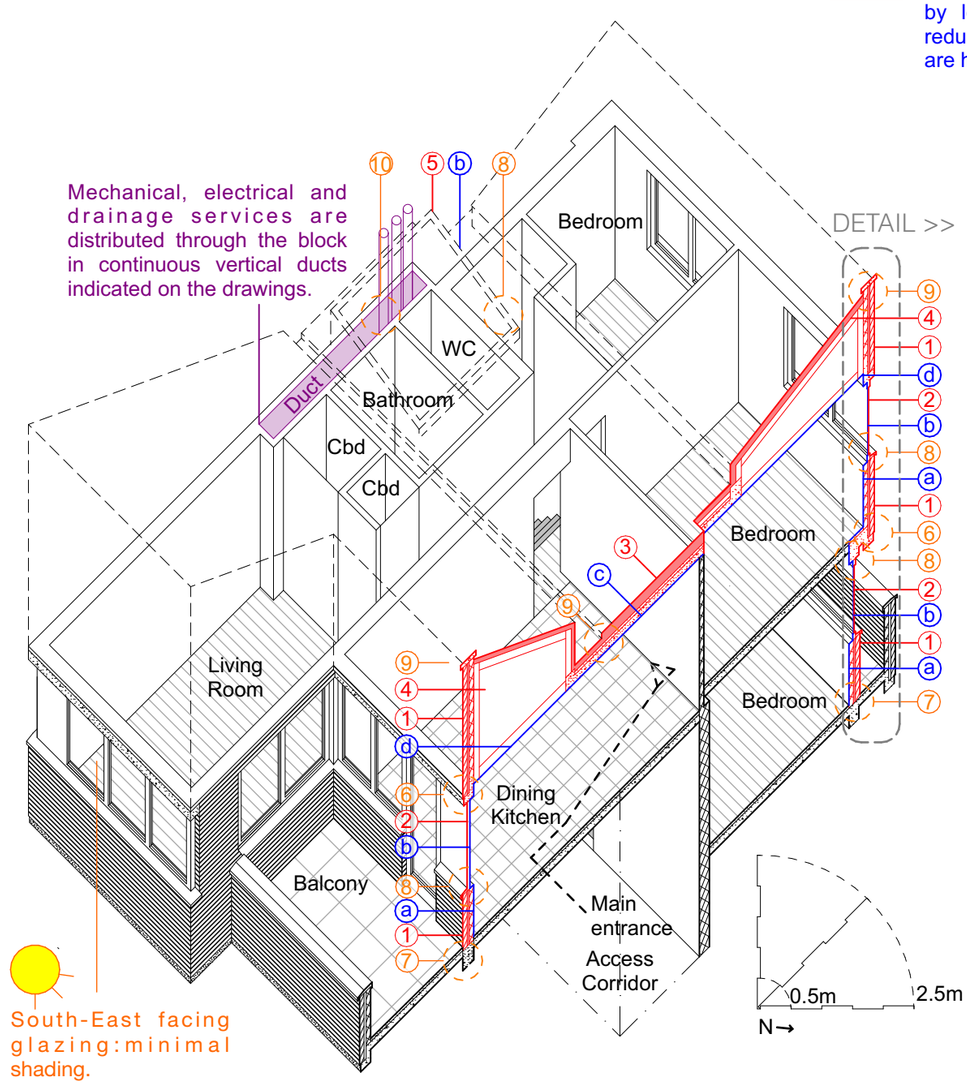
DWELLING TYPE	**E2**
PLAN REFERENCE	**A104 (Sixth & Seventh Floor)**
TYPE SHEET	**A114 (Type E)**

3-bedroom, 2-level flat, sixth and seventh floor, with private terrace (SE Living Room Elevation). 83sqm gross internal floor area, excluding externally accessed store. Access is via steps from the sixth floor access corridor and hall.



CROSS SECTION_1:200

A = Access Corridor

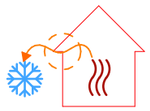


SECTION/AXONOMETRIC OF DWELLING_1:100

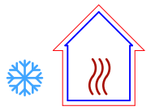
Construction composition and sizes are assumptions based on visual checks, archival research & Bauder roof survey (2024).

EXPLAINER

The **building envelope** consists of all components that separate the interior from the exterior. The interior of the building provides a comfortable climate, whereas the outside is determined by the weather. In order to maintain comfortable indoor conditions, the building envelope is insulated and prevented from air leakages.



Heat makes its way from the heated space towards the outside. In doing so, it follows the path of least resistance. A **thermal bridge** is a localised area of the building envelope where the heat flow is increased in comparison with adjacent areas. The effects of thermal bridges are heat loss, cold internal surfaces and in the worst case moisture penetration, condensation and mould growth.



In addition to insulating the building envelope there should also be an **airtight layer**. There are many disadvantages of air flowing in through joints and gaps in the building envelope. A large percentage of building damage is caused by leaks in the building envelope. Sound insulation is reduced, drafts cause discomfort for occupants and there are high heat losses.

KEY

BUILDING ENVELOPE

1 Cavity wall with facing brick and 2" cavity. with historic injected cavity insulation.

2 Double-glazed PVCu windows and doors; some glazing units may be degraded.

3 Warm deck flat roof, 5" concrete slab with 2" screed, degraded 80mm PIR/Cork insulation with mastic asphalt waterproofing over.

4 Pitched roof, unknown substructure/roof truss. Warm roof mastic asphalt build-up similar to flat roof (3).

5 Single glazed rooflights over bathroom/WC.

THERMAL BRIDGES

6 Concrete structure exposed externally at floor levels resulting in a thermal bridge.

7 Junction of solid balcony floor and cavity wall with resulting in a thermal bridge.

8 Window and rooflight installation may be a poor performing thermal bridge.

9 Changes or interruptions in roof build-up and insulation thickness will result in thermal bridges, e.g. at valley gutter and upstands.

10 Soil vent and rainwater pipe penetrations through roof level resulting in thermal bridges.

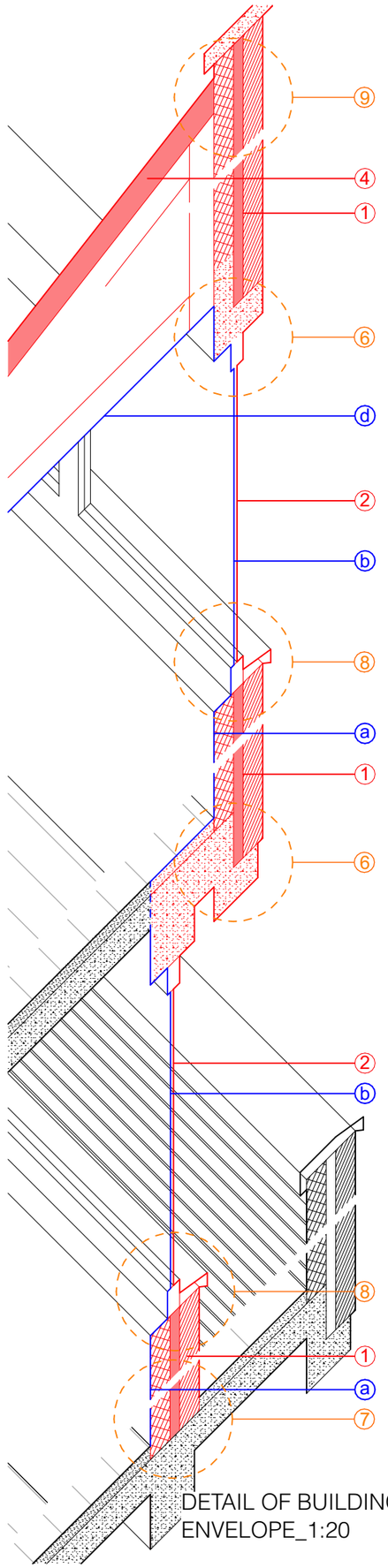
AIRTIGHTNESS

a Airtightness of wall will depend on type, quality and continuity of masonry, injected cavity insulation (if present), internal plaster.

b Window/rooflight and installation within building envelope is unknown.

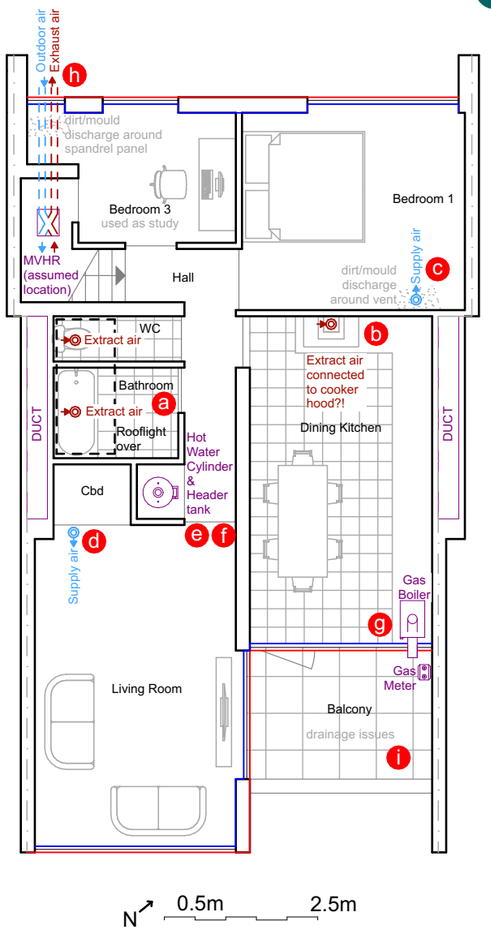
c 7" screed/concrete solid roof construction is likely to be intrinsically airtight.

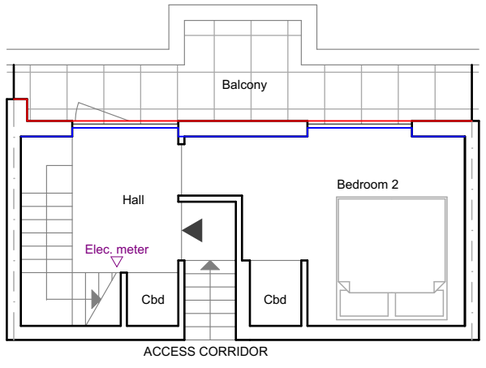
d Pitched roof and roof void composition is unknown



DETAIL OF BUILDING ENVELOPE_1:20

[redacted]'S HOME, [redacted] BENCE HOUSE





Home visit notes, photographs & annotated plans

Date of visit: 21.06.2024
Location: 47 Bence House

Occupancy
Council tenancy; 2 Adults; long-term residents.

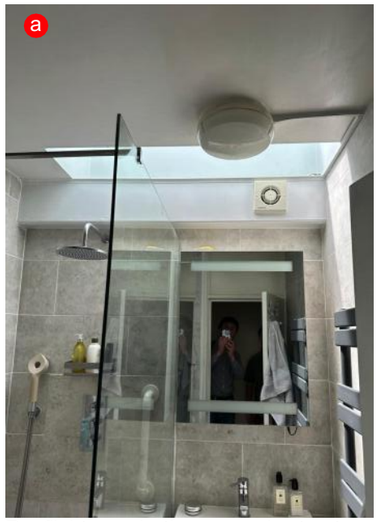
Utilities & Services
The electricity meter is at the entrance by the front door, as with other flats, the new mains has been installed but not connected to the service head/meter.
The gas meter is on the external terrance off the kitchen.

Heating & Hot Water
(g) Gas boiler flue in kitchen with flue to upper terrace (e, f) with a hot water tank in the upper level hallway cupboard and header tank over.

Ventilation
There is evidence of an MVHR installation but the unit itself was not visible, possibly concealed behind panelling in the bedroom/study on the upper level. There are supply and extract registers in all the rooms (d) and there are external registers on the NW elevation over the terrace (h). However there appear to be issues with the installation: there has been no maintenance, the occupant is not clear how it works, (c) there is evidence of dirt being discharged around the supply register in two bedrooms; (b) there is a kitchen hob extract that appears to have been connected into the ducting with a flexible foil duct. There is evidence that the ducting and registers were recently installed. (a) Bathroom and WC fans appear to turn on when the lights are switched on.

Overheating
Not raised.

Building envelope
The upper level rooms are cold in winter and difficult to heat, lots of building envelope surface area (external walls and roof) compared to lower level units which should be taken into account in energy modelling.
Occupant reports issues with double glazing units blown/condensation between glass, but hard to see on a warm day.
The external terrace on the upper level is not draining adequately (i).



Rooflight over bathroom and extract fan (light switch activated)

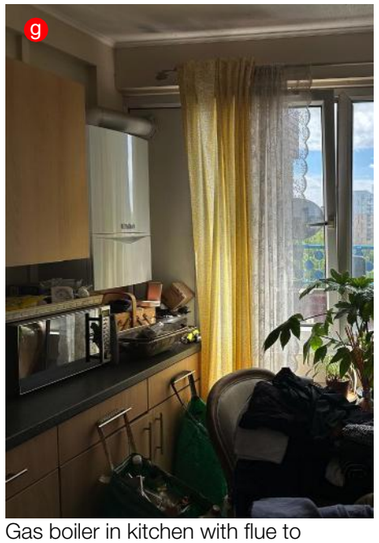
Kitchen extract potentially running into MVHR unit

Supply air register with evidence or dirt/ mould discharge

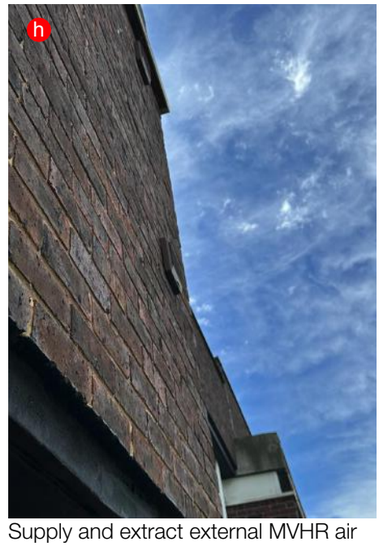
Living room supply air register over store

Hot water tank in hallway cupboard

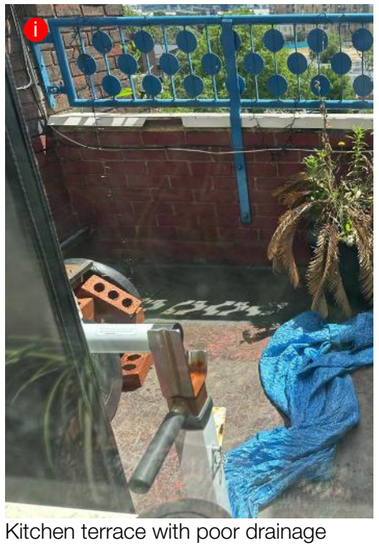
Header tank in hallway cupboard



Gas boiler in kitchen with flue to external terrace



Supply and extract external MVHR air vents to bedroom elevation



Kitchen terrace with poor drainage issues

Address	TYPOLOGY	ACCESS FLOOR	Leaseholder	Accurate SAP	Accurate EPC	Est SAP	Est EPC	Lodged SAP	Lodged EPC	Lodgement Date	Heating	Main Fuel
1 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A2	G	NO	69.00	C	69.00	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
2 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A1	G	NO	74.00	C	75.74	C	74.00	C	22/12/2021	Boiler: A rated Regular Boiler	Gas: Mains Gas
3 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A2	G	NO	72.00	C	72.34	C	72.00	C	01/06/2021	Boiler: A rated Regular Boiler	Gas: Mains Gas
4 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A1	G	YES	74.00	C	72.26	C	74.00	C	03/08/2020	Boiler: C rated Combi	Gas: Mains Gas
5 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A2	G	NO	68.80	C	68.80	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
6 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A1	G	NO	73.34	C	73.34	C				Boiler: A rated Combi	Gas: Mains Gas
7 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A2	G	NO	69.89	C	69.89	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
8 BENCE HOUSE, RAINSBOROUGH AVENUE, London	A1	G	YES	71.00	C	60.94	D	71.00	C	03/08/2016	Boiler: G rated Combi	Gas: Mains Gas
9 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B2	2	YES	60.00	D	72.35	C	60.00	D	25/10/2021	Boiler: F rated Combi	Gas: Mains Gas
10 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B1	2	NO	64.02	D	64.02	D	69.00	C	12/09/2012	Boiler: A rated Regular Boiler	Gas: Mains Gas
11 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B2	2	NO	74.00	C	70.11	C	74.00	C	12/01/2015	Boiler: A rated Regular Boiler	Gas: Mains Gas
12 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B1	2	YES	75.00	C	78.86	C	75.00	C	27/02/2023	Boiler: C rated Combi	Gas: Mains Gas
13 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B2	2	NO	73.00	C	69.99	C	73.00	C	30/01/2015	Boiler: A rated Regular Boiler	Gas: Mains Gas
14 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B1	2	YES	81.00	B	74.55	C	81.00	B	28/01/2015	Boiler: C rated Combi	Gas: Mains Gas
15 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B2	2	YES	75.13	C	75.13	C				Boiler: C rated Combi	Gas: Mains Gas
16 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B1	2	YES	63.84	D	63.84	D	70.00	C	29/01/2013	Boiler: A rated Regular Boiler	Gas: Mains Gas
17 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B4	4	YES	62.69	D	62.69	D	64.00	D	17/12/2012	Boiler: C rated Combi	Gas: Mains Gas
18 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	4	NO	72.26	C	72.26	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
19 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B3	4	YES	74.00	C	71.30	C	74.00	C	11/07/2019	Boiler: F rated Combi	Gas: Mains Gas
20 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	4	YES	54.35	E	54.35	E	73.00	C	13/01/2012	Boiler: E rated Combi	Gas: Mains Gas
21 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B4	4	NO	68.00	D	66.88	D	68.00	D	05/08/2014	Boiler: A rated Regular Boiler	Gas: Mains Gas
22 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	4	YES	69.00	C	70.32	C	69.00	C	26/08/2020	Boiler: F rated Combi	Gas: Mains Gas
23 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B3	4	NO	71.61	C	71.61	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
24 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	4	NO	70.85	C	70.85	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
25 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B4	4	NO	75.00	C	73.80	C	75.00	C	02/07/2023	Boiler: A rated Regular Boiler	Gas: Mains Gas
26 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	4	YES	71.17	C	71.17	C	70.00	C	21/02/2013	Boiler: A rated Combi	Gas: Mains Gas
27 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B3	4	YES	80.00	C	74.02	C	80.00	C	10/06/2023	Boiler: F rated Combi	Gas: Mains Gas
28 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	4	YES	68.00	D	73.04	C	68.00	D	23/05/2017	Boiler: F rated Combi	Gas: Mains Gas
29 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B4	4	NO	70.15	C	70.15	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
30 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	4	NO	72.19	C	72.19	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
31 BENCE HOUSE, RAINSBOROUGH AVENUE, London	B3	4	YES	75.00	C	71.33	C	75.00	C	16/02/2017	Boiler: E rated Combi	Gas: Mains Gas
32 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	4	YES	68.51	C	68.51	C	63.00	D	10/08/2009	Boiler: F rated Combi	Gas: Mains Gas
33 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	6	NO	77.12	C	77.12	C				Boiler: A rated Combi	Gas: Mains Gas
34 BENCE HOUSE, RAINSBOROUGH AVENUE, London	D2	6	YES	73.00	C	71.40	C	73.00	C	15/02/2020	Boiler: E rated Combi	Gas: Mains Gas
35 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	6	YES	71.00	C	73.95	C	71.00	C	12/11/2023	Boiler: F rated Combi	Gas: Mains Gas
36 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	6	NO	72.43	C	72.43	C	78.00	C	13/07/2010	Boiler: A rated Regular Boiler	Gas: Mains Gas
37 BENCE HOUSE, RAINSBOROUGH AVENUE, London	D1	6	YES	54.00	E	76.22	C	54.00	E	25/08/2020	Boiler: F rated Combi	Gas: Mains Gas
38 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	6	YES	68.00	D	68.52	C	68.00	D	28/02/2015	Boiler: F rated Combi	Gas: Mains Gas
39 BENCE HOUSE, RAINSBOROUGH AVENUE, London	D2	6	NO	79.12	C	79.12	C				Boiler: A rated Combi	Gas: Mains Gas
40 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	6	NO	60.98	D	60.98	D	68.00	D	23/09/2012	Boiler: A rated Regular Boiler	Gas: Mains Gas
41 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	6	NO	77.00	C	74.62	C	77.00	C	24/09/2019	Boiler: A rated Combi	Gas: Mains Gas
42 BENCE HOUSE, RAINSBOROUGH AVENUE, London	D2	6	NO	76.58	C	76.58	C				Boiler: E rated Combi	Gas: Mains Gas
43 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C2	6	YES	73.24	C	73.24	C	68.00	D	12/11/2013	Boiler: C rated Combi	Gas: Mains Gas
44 BENCE HOUSE, RAINSBOROUGH AVENUE, London	D2	6	NO	72.70	C	72.70	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
45 BENCE HOUSE, RAINSBOROUGH AVENUE, London	C1	6	NO	72.10	C	72.10	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
46 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E2	6	NO	75.43	C	75.43	C				Boiler: A rated Combi	Gas: Mains Gas
47 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E1	6	NO	59.00	D	71.98	C	59.00	D	10/05/2019	Boiler: A rated Regular Boiler	Gas: Mains Gas
48 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E2	6	NO	75.82	C	75.82	C				Boiler: A rated Combi	Gas: Mains Gas
49 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E1	6	NO	57.00	D	71.59	C	57.00	D	07/04/2016	Boiler: A rated Regular Boiler	Gas: Mains Gas
50 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E2	6	NO	72.23	C	72.23	C				Boiler: A rated Regular Boiler	Gas: Mains Gas
51 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E1	6	YES	71.00	C	75.04	C	71.00	C	11/11/2018	Boiler: C rated Combi	Gas: Mains Gas
52 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E2	6	YES	66.00	D	75.13	C	66.00	D	26/05/2022	Boiler: C rated Combi	Gas: Mains Gas
53 BENCE HOUSE, RAINSBOROUGH AVENUE, London	E1	6	YES	71.00	C	75.90	C	71.00	C	20/03/2023	Boiler: C rated Combi	Gas: Mains Gas