LANCASTER WEST ESTATE
LOT 5 - CAMBORNE MEWS

LANCASTER WEST NEIGHBOURHOOD TEAM

RIBA STAGE 1

INITIAL DESIGN IDEAS

FEASIBILITY REPORT

NOTTING DALE, W11 1QB, LONDON

JULY 2021 - 0004-ECD-XX-XX-RP-A-03001-P03

ECD Architects
ENERGY CONSCIOUS DESIGN

keegans

Wilde

LANCASTER WEST
NEIGHBOURHOOD TEAM
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This RIBA Stage 1 Feasibility Report has been prepared by ECD Architects on behalf of Lancaster West Neighbourhood Team

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RIBA Stage 1 Feasibility Report

Client: Lancaster West Neighbourhood Team (LWNT)

Signed by: Loreana Padron

Date: 30th April 2021

Comments:

Author	Reviewer	Date	Rev.	Notes
LO	LP	30.04.21	P01	First Issue
LT	LO	30.06.21	P02	Revised to Client Comments
LT	LP	15.07.21	P03	Revised to Client Comments

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0.0 GLOSSARY

- **AECB** - Association for Environment Conscious Building is the leading network for sustainable building professionals such as local authorities, housing associations, architects etc. The AECB Retrofit Standard promotes the delivery of Net Zero carbon retrofits, combining a whole house 'fabric first approach' with ambitious energy efficiency measures.
- **Airtightness** - is the control of air leakage, or the elimination of unwanted draughts through the external fabric of the building envelope. This may be achieved by the correct and proper installation of a vapour check or vapour barrier. See Infiltration.
- **Annual Heat Demand** - This is the quantity of heat required by a building during the course of a year. Can refer either to space heating demand or water heating demand, or both. It is often divided by the building's square meterage to be able to compare it with buildings of different sizes.
- **ASHP** - Air Source Heat Pump is a type of heat pump that absorbs heat from a colder place and release it into a warmer place using the same process as an air conditioner. Unlike an air conditioning unit, however, it is able to both warm and cool a building and in some cases also provide domestic hot water. The system can often be connected to the existing heating pipes and radiator system.
- **BIM** - Building Information Modeling is an intelligent 3D model-based process that gives architecture, engineering, and construction professionals the insight and tools to more efficiently plan, design, construct and manage buildings.
- **BIM Level 2** - is a collaborative working process which requires an exchange in the information process which is specific to the project and coordinated between various systems and participants.
- **BRE** - Building Research Establishment is a centre of building science which aims to improve buildings and infrastructure through research and knowledge.
- **EnerPHit** - This is the Passivhaus-equivalent standard for energy efficiency when refurbishing existing buildings. It follows a fabric first approach, and requires additional insulation, triple-glazed windows and mechanical ventilation with heat recovery.
- **EPC** - Energy Performance Certificate is a document which sets out the energy efficiency of the property within a lettering system A to G (Letter 'A' being the most efficient).
- **Heat Losses** - is a measure of negative heat transfer through a building's fabric from the inside to the outside. The colder the outside temperature, the warmer the inside, and the worse the thermal insulation of the building fabric, the greater the heat loss will be. Windows, doors, walls, ground floors and roofs all quickly lose heat unless they are well insulated. See U-values.
- **HTC** - Heat Transfer Coefficient or Smart HTC, is a thermal performance rating that is used to measure the whole building thermal performance and Pulse air tightness testing. It enables whole building heat loss to be determined with just 21 days of internal temperature and energy consumption monitoring using 4-5 temporary sensors.
- **HWC** - Hot Water Cylinder, to heat and store domestic hot water.
- **Infiltration** - is the unintentional or accidental introduction of outside air into a building, typically through cracks in the building envelope and through old or poorly fitted windows and doors. Infiltration is sometimes called air leakage. See Airtightness.
- **IRS** - Integrated Reception System: provides broadcast signals from multiple sources (typically terrestrial television, FM radio, DAB digital radio and tatellite TV) to multiple outlets, via a single aerial cluster and signal booster-distributor.
- **MEV** - Mechanical Extract Ventilation is a system which extract polluted air from wet rooms; without any heat recovery.
- **MEP** - Mechanical, electrical and plumbing engineering systems of a building
- **MVHR** - Mechanical Ventilation with Heat Recovery is a unit that brings in fresh air and pre-warms this with the heat from outgoing air. This fresh, warmed air is then distributed to living areas, while stale air is extracted from kitchen and bathrooms. Windows can still be opened, but the building will still work even if windows are kept shut.
- **PART L (Approved Document)** - It is the official guidance of the Building Regulation which containts requirements relating to the standards for the energy performance and carbon emissions of new and existing buildings.
- **PAS2035** - PAS 2035 is the new over-arching document in the retrofit standards framework introduced following the recommendations of the Each Home Counts review. PAS 2035 essentially provides a specification for the energy retrofit of domestic buildings, and details best practice guidance for domestic retrofit projects.
- **Passivhaus** - Passivhaus is a standard for energy efficiency construction in new buildings. It results in ultra-low energy buildings that require little energy for heating and cooling spaces.
- **PE** - Primary Energy is the total primary energy demand from non-renewable energy sources that is supplied to the building.
- **PER** - Renewable Primary Energy is the unit of energy generated from renewable resources.
- **PHPP** - The Passive House Planning Package. This is a modelling tool used to help design a properly functioning Passivhaus/EnerPHit project. It requires information about the building size, shape, orientation as well as the proposed insulation to the walls, floors and roof. Detailed information on windows and doors are also required. The PHPP prepares an energy balance and calculates the annual energy demand of the building.
- **SAP** - System Assessment Procedure is a method which rates and certifies buildings performances for Energy of dwellings. It provides a calculating framework that is required to demonstrate if the building complies with Approved Document Part L.
- **SHDF** - Social Housing Decarbonisation Fund Demonstrator is a government programme which supports social landlors to demonstrate innovative approaches to retrofitting social housing at scale. It will mean warmer and more energy efficient homes, a reduction in households' energy bills, and lower carbon emissions.
- **Solar Gain** - Also known as 'solar heat gain' or 'passive solar gain', solar gain is the increase in thermal energy of a space as it absorbs solar radiation (heat from the sun).
- **Thermal Bridging** - also called a cold bridge, heat bridge or thermal bypass is an area of a buildings construction that has a significantly higher heat transfer than its surrounding materials. Thermal bridging can be responsible for up to 30% of a dwelling's heat loss (BRE).
- **U-Value** - A U-Value is the measure of heat transfer through an object or structure. U-Values are generally used to define thermal performance (heat loss) and assess the performance of a building. The lower the U-value the better insulated an element is.

1.0 EXECUTIVE SUMMARY

1.0 EXECUTIVE SUMMARY

ECD Architects and their multi-disciplinary design team have been appointed from RIBA stages 1-5 to design the retrofit of the 36 flats that form Camborne Mews. The work is part of a Co-Design programme across the Lancaster West Estate which encourages residents to work with the Lancaster West Neighbourhood Team and design professionals to create a modern 21st century Estate.

There have been several key consultations that have already been carried out across the estate and the outcomes of these in addition to LWNT ambition to create a zero-carbon estate has been used to form the brief for our design work. The funding for Camborne Mews will be Housing Revenue Account (HRA) funded.

ECD Architects and their design team are appointed to review the existing building in more detail and provide further design options and ideas. This will allow the residents and LWNT to confirm any extra factors of the design that will be included and form part of the contracts for the work. Additional works required to the building that do not affect the energy performance have also been identified and ECD will be developing the design for these areas alongside the residents. There will be a planning process and then ECD architects and their multi-disciplinary design team will produce the tender documentation. A procurement route has not yet been established.

This report reviews the existing building context, construction and current energy used as well as the output and findings from the resident engagement events already undertaken. It then gives a breakdown of the works required to the existing building fabric and services to aspire to various different energy efficiency targets. Two alternative insulation solutions (Internal or External Wall Insulation) for improving the buildings thermal performance have been provided and the report looks at the pros and cons of these options. These designs will need to be reviewed further by LWNT and the residents. In addition to insulating and making the existing walls perform better, increasing the loft insulation and providing ventilation and new triple glazed windows will be required.

Following further investigation improvement/ repairs and strengthening to the existing roof may be needed to ensure that it can support photovoltaic panels if required. Proposals for these options are set out in this report along with suggested external finishes. A new external finish will have significant impact on the buildings appearance and therefore require extensive resident discussion to reach agreement on what is acceptable.

With regards to services our strategy has been to ensure that the heating demand is minimised through improved fabric and reduced ventilation losses. ECD Architects will work with MVHR and MEP designers to implement the best heating and ventilation system for the flats in Camborne Mews.

The work described in this report alone does not meet all of the resident's aspirations, additional work particularly around landscape, internal refurbishment work on kitchens and bathrooms, etc. currently being carried out by the LWNT wider team.

Finally, it is very important to note that this project is part of a wider co-design process with ongoing consultation therefore any proposals in this report will be refined in discussion with residents over the coming months. From the energy modelling and condition of the existing building it is clear that Camborne Mews can greatly improve its energy efficiency and reduce carbon emissions creating more comfortable homes for residents.

2.0 INTRODUCTION

2.1 Brief

2.2 Previous Residents consultations/ Co-design & Decisions Thus Far

2.3 Maximising Fire Safety & Asbestos Removal

2.0 INTRODUCTION

The Lancaster West Estate is situated in Notting Dale in north Kensington, London. There are 795 homes across the estate, the majority of which are flats. The homes are managed by the Lancaster West Neighbourhood Team, a Council team developed in partnership with residents.

LWNT have committed to ten core principles for the refurbishment programme and these have been agreed with residents:

1. The refurbishment will be resident led.
2. All refurbishment work will be done sensitively and in co-operation with residents.
3. There will be no demolishing of people's homes on the Lancaster West Estate.
4. We will create a model estate where the community can be proud to live and that the council can be proud to own.
5. We will make sure residents can make real choices on the refurbishment.
6. We will listen to all age groups and communities on what improvements they want to see.
7. The refurbishment will aim to provide local jobs and skills training for local people
8. The refurbishment will improve local services, so they are of a high quality.
9. The refurbishment will create a sustainable estate that can be maintained to a high standard.
10. There will be transparent decision-making and feedback provided by the council at each step.

Lancaster West Neighbourhood Team have appointed ECD Architects to provide multi-disciplinary design services from RIBA Stages 0-7, to refurbish Camborne Mews, as part of an extensive programme of works within the Lancaster West Estate.

ECD Architects appointment includes the following disciplines:

- Architecture – ECD Architects
- Structural Engineering – Wilde Engineering
- Cost Consultancy – Keegans

ECD Architects will also work collaboratively with other consultants as required by the client and the brief, such as:

- Fire Consultancy – IFC
- Monitoring and POE – BuildTest Services
- Principal Designers – Derisk
- Fire Risk Assessments – Frankhams
- Mechanical, Electrical and Plumbing – TACE
- CCTV, door entry, digital TV – TGA Consultancy

To produce this Feasibility Report, ECD Architects and the rest of the design team, referenced several previously appointed surveys and reports provided by LWNT.

This document provides a RIBA Stage 1 Feasibility Study of different design options that could be implemented on Camborne Mews.

The Lancaster West Estate is to become a 21st Century Model social housing estate. As part of the estate Camborne Mews is to be refurbished to dramatically improve its energy efficiency, as well as addressing other issues raised by residents.

The top priority in this work is the residents of Camborne Mews and their lives and needs. LWNT have already done a lot of work to understand the residents' needs through the extensive consultation held over the last couple of years.

LWNT are also about to start a separate Internal Refurbishment Programme (outside ECD's scope), that aims to start providing new kitchens, bathrooms and other improvements to people's homes within Camborne Mews.

LWNT has held extensive consultation over the last couple of years, with the residents of the overall Estate, in order to formulate the vision and goals of the refurbishment scheme. LWNT's vision for the Lancaster West Estate includes:

- To help the Estate to become a model 21st century social housing estate
- To be zero carbon by 2030, meaning that no carbon is produced through utilities, including heating and hot water to the homes residents live in.

LWNT has asked ECD Architects to provide in this Feasibility Study options to implement a Net-Zero building, in terms of heating and hot water, and the most practical way to achieve this is by reducing the building's energy demand so that any remaining energy can be provided by renewable sources. In order to do this, there are different ways and standards that could be implemented, for example, the Passivhaus/EnerPHit Standard or the AECB Standard. We recommend that by using EnerPHit, which is the current gold standard for refurbishments in the industry, LWNT and the residents will have the best chance of achieving the Estate-wide zero-carbon goals.

A whole-house retrofit approach that is compliant with PAS 2035, will provide the residents with a warm and comfortable home as well as reduced energy bills, thanks to an improved thermal performance of the fabric, triple glazed windows, whole house ventilation and energy efficient appliances.

LWNT's Package of Option, across the Estate includes 3 tiers of measures, as shown in the table below. These options, namely bronze, silver and gold are being used throughout this Feasibility Report to illustrate the different options presented by our multi-disciplinary team.

The use of BIM Level 2 is now required on all lots across the Estate. A BIM based methodology will ensure a golden thread of information via building passports based on structured robust datasets on all components, systems and materials used in the built asset leading to cost effective management

ECD's task is to work with LWNT, the residents and other consultants to develop proposals that builds on this previous work. The client has also included the following Key User Requirements, in terms of aesthetics:

1. Contemporary Approach – less "institutionalised"
2. Common Theme across the Estate
3. As per ideas days – but within current budget – "which should provide opportunities to be creative with fabric improvements"

	Passivhaus (PH) standard	EnerPHit standard	PH low-energy standard	AECB standard	UK Part L1A 2013 (newbuild) approximately
Space heating/cooling demand	15 kWh/m²/a	20-25 kWh/m²/a	30 kWh/m²/a	50 kWh/m²/a	54 kWh/m²/a
PE/PER demand	120 kWh/m²/a	120 kWh/m²/a	120 kWh/m²/a	N/A	190 kWh/m²/a
Airtightness (n50)	0.6 n50 1/h	1.0 n50 1/h	1.0 n50 1/h	2 n50 1/h	5.0 n50 1/h
Thermal bridges	0.01 W/MK	as PH standard	as PH standard	as PH standard	0.05 or 0.15 W/MK
Overheating frequency (>25C) %	10%	10%	10%	10%	not measured

Figure 1 - ENERGY STANDARDS - J. Traynor: EnerPHit: A Step by Step Guide to Low Energy Retrofit (2019)

2.2 PREVIOUS RESIDENTS CONSULTATIONS/ CO-DESIGN & DECISIONS THUS FAR

Lancaster West Resident Association held a series of co-design events for Camborne Mews between January and March 2018. The diagram on the right illustrates the timeline.

An extensive engagement programme was carried out during this period, including ideas day events, leafleting and door-knocking across the estate, block and cluster meetings, attendance at Residents' Association General Meetings, home visits when requested, and telephone and email correspondence.

After various discussions with residence the following concerns were made about Camborne Mews and the wider Lancaster West estate;

- There is no level access into the homes from the street and the steps into the circulation spaces are too high
- The steps into the private outdoor space on the ground floor is too high
- Exposed pipework outside the gas and electrical rooms
- Poor ventilation has led to recurring mould in both their kitchens and bathrooms
- Exposed boilers are located in the living room and are loud and unsightly
- The ramp at the end of the parking lot serves no purpose
- The bin stores, located next to the common entrances to the building, needs to be accessed externally - need to further explore resident's concerns at the next Resident Engagement Event
- There is no private outdoor space for residents on the first and second floors
- Windows are of poor quality difficult to open and close, and are draughty
- No lift access to the upper floors
- There is a rodent infestation issue

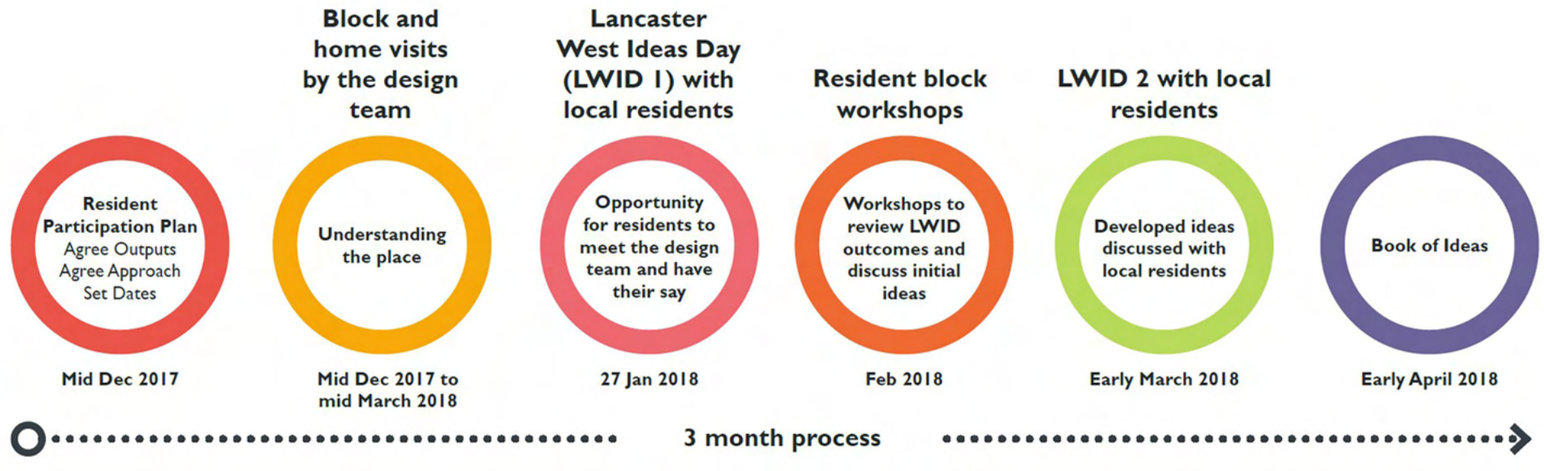


Figure 2 - Timeline of previous consultations

CAMBORNE MEWS

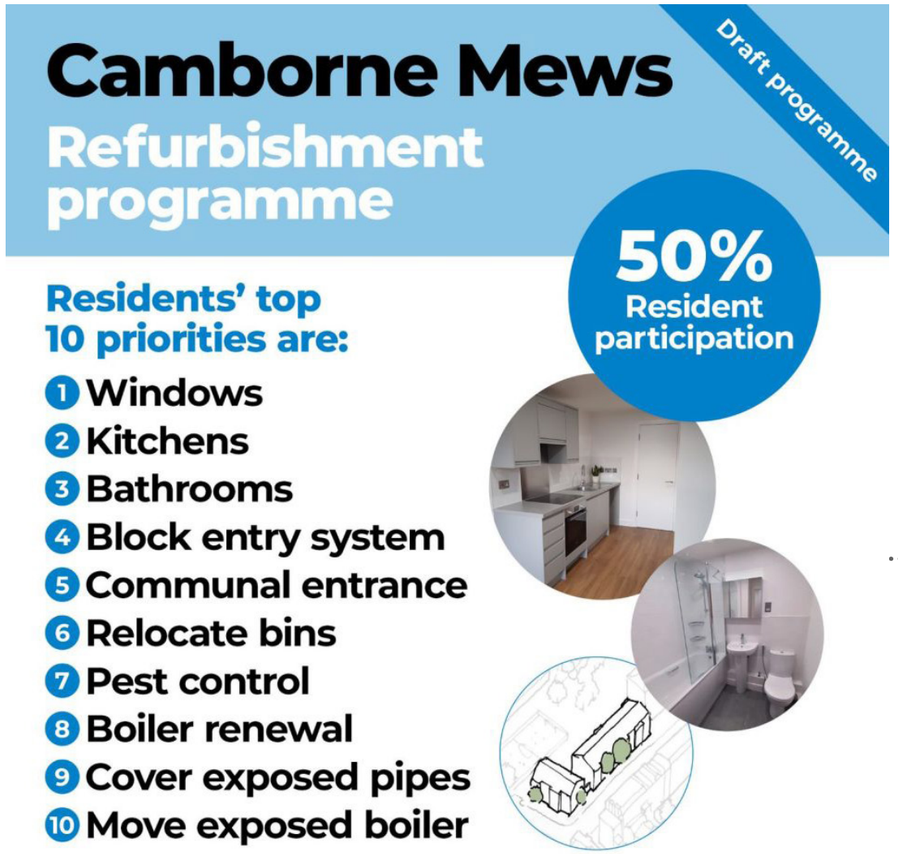
Landscape ideas were identified to benefit both local residents and the wider neighbourhood. These ideas included reducing dominance of cars and parking to the rear of the building whilst ensuring improved access for all residents.

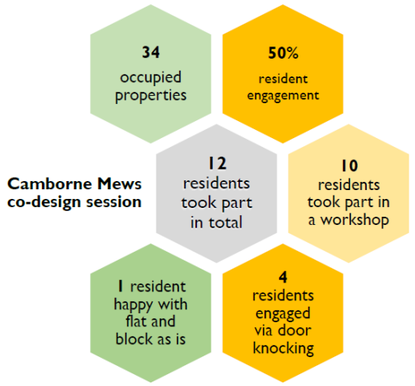
'Greening' opportunities for new planting and trees were suggested to create the feel of a more domestic courtyard space within the existing gate line.

RESIDENTS' TOP 10 PRIORITIES

On 3rd of December 2019 the Lancaster West Neighbourhood Team organised a Co-Design session with Camborne Mews. This was a dual event to firstly give residents the opportunity to view, experience and give feedback on the quality of the refurbishment and repairs that were to be implemented across the Lancaster West Estate and secondly to allow residents to provide a list of top 10 refurb works they would like to see in their homes and blocks as part of the estate wide refurbishment.

The residents were contacted via paper invitation, Instagram post, posters on noticeboard, emails and door knocks on the day. At the time of the event 34 of the 36 properties were occupied and in total 11 residents took part in Co-design session. The data was collected and calculated with the outcome used to write out the “Camborne Mews Top 10 Priorities”.





NOTE: Items in darker green are those within ECD Scope of Works - items in light grey are by others, but to be coordinated

2.3 MAXIMISING FIRE SAFETY & ASBESTOS REMOVAL

MAXIMISING FIRE SAFETY

In the light of the Grenfell tragedy and the ongoing inquiry plus the findings of the Building Safer Future report and draft Building Safety Bill; any proposals for changes to the existing buildings will, quite rightly, be required to demonstrate the most rigorous approach to maximise the Fire Safety of residents and the wider community. ECD company policy is to recommend A1 materials on external walls wherever possible and not less than A2 in accordance with Building Regulations Part B.

A bespoke non-combustibility tracker will be prepared as the design develops to record all external wall materials and their combustibility classification. The detailed design information will be reviewed by our independent Fire Consultant and submitted to Building Control for approval prior to the commencement of the works.

During construction the contractor will be required to demonstrate to the Clerk of Works (with photographic evidence) the installation of all materials. This evidence will be tagged to the BIM (Building information Modelling) model and will be handed over to LWNT on completion of the works thereby ensuring a 'Golden Thread' of information is maintained from design to completion.

IFC (International Fire Consultants) have reviewed ECD's initial proposals on a high-level basis in terms of maximising fire safety and aim to bring fire safety provisions as far as reasonably practicable up to current standards;

OVERVIEW OF EXISTING CONDITION

A Type 2 fire risk assessment of the existing building has been carried out for LWNT by Frankhams in May 2020. The Fire risk assessment should have been a Type 4 however due to Covid-19 and restricted access, and no dwellings within this block were void the FRA looked at communal areas, fire precautions, such as means of escape and fire detection. A 'stay put' evacuation policy is in place.

ASBESTOS REMOVAL

Frankhams RMS carried out asbestos refurbishment surveys in June 2020, these covered the communal areas. Asbestos containing material was confirmed in both blocks in the entrance porches, ground floor electrical cupboards and second floor landings. Some areas, such as third floor loft areas were not able to be accessed so presence or absence of asbestos could not be established.

The report assumes that asbestos will be removed during the refurbishment works, noting that safe working procedures will be required to be put into place in-line with the Control of Asbestos Regulations 2012. For this, further Asbestos Surveys need to be carried out in a proportion of occupied flats.

3.0 EXISTING CONTEXT

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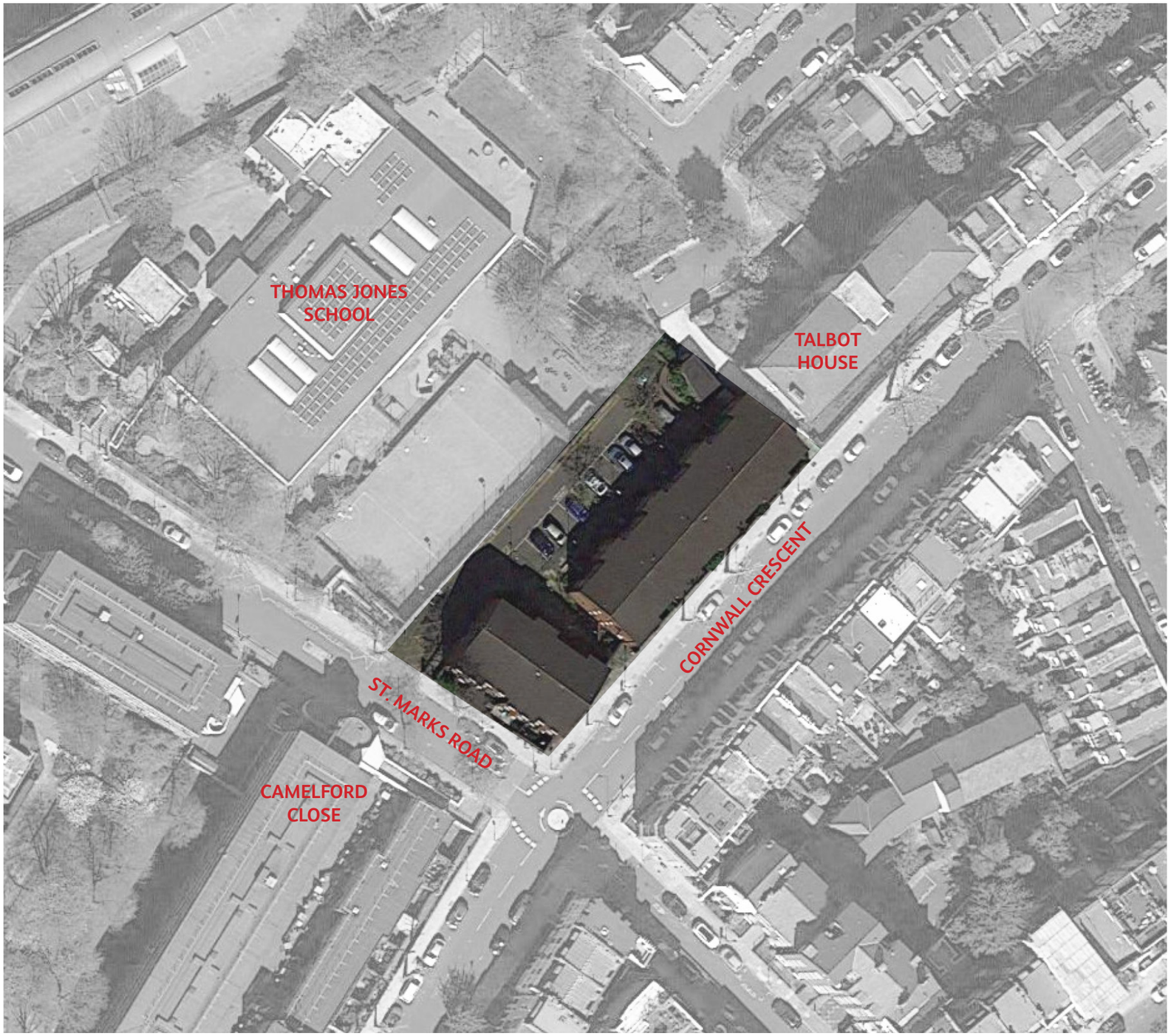
LANCASTER WEST ESTATE

The Lancaster West Estate is located in north west Kensington, just south of the A40 (Westway). It is owned by the Royal Borough of Kensington and Chelsea and consists of 795 homes, most of which are flats. The buildings that form the estate have been built at different times over the last century and have very different appearance, construction and layouts.

Figure 3 - Aerial view of Lancaster West Estate



CAMBORNE MEWS - IMMEDIATE SURROUNDINGS

Camborne Mews is located in the corner of St Mark's Road and Cornwall Crescent, to the north of the Lancaster West Estate.

Along the north west boundary the site is adjacent to Thomas Jones Primary School, towards the northeast is Portobello road with many shops and amenities. Ladbroke Grove underground station is also within walking distance. Camelford Court and Upper and Lower Camelford Walk are along the south boundary. Most surrounding roads have on-street car parks and street trees.

Figure 4 - Location Plan

3.0 EXISTING CONTEXT

SURROUNDING AREA

The Camborne Mews blocks are one of the smaller height properties within the area and the surrounding buildings are generally characterised as 4 storey terraced houses. To the north of Camborne Mews there is Talbot House, a 5 Storey residential block. The smaller block of Camborne Mews overlooks the Thomas Jones Primary School's outdoor leisure area from its south west facade.

Figure 6 - Camelford Court from Cornwall Crescent

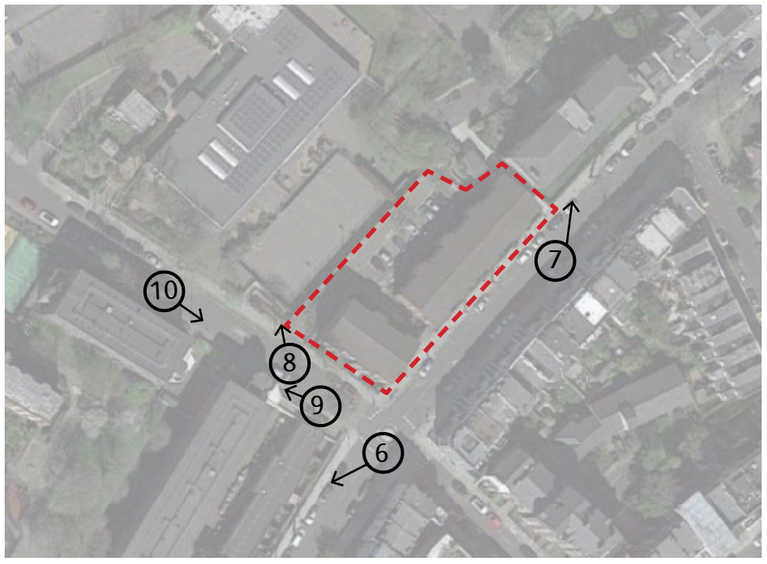


Figure 5 - Site Plan Location (refer to Figure numbers in photos)

Figure 7 - Talbot House from Cornwall Crescent

Figure 8 - Thomas Jones Primary School from St Marks Road

Figure 9 - Talbot Walk from St Marks Road

Figure 10 - Thomas Jones School view from St Marks Road

3.1 SITE

Figure 11 - Site Plan

SITE

There are 36 flats across 2 rectangular 3 storey buildings. The blocks are on the perimeter of the site, which is secured by with low-level masonry walls and metal fencing providing a boundary treatment. These are created from the ground floor rear gardens.

There are two main pedestrian routes onto the site, one from Cornwall Crescent, for pedestrians only, and one from St. Marks Road, with an additional vehicle route via Camborne Mews road, into the communal car park. All routes are secured with gates and have steps or ramps to meet the lower level. There is a passage way between Talbot House and Camborne Mews into Ladbroke Crescent, where there was a third ramp entrance which is no longer in use and it is blocked.

KEY

- Metal fence
- Brick wall with fence
- Gate
- Bollards and railings
- Pedestrian route
- Green areas
- Lower ground
- Resident Parking
- Communal entrance
- Private entrance
- Blocked entrance

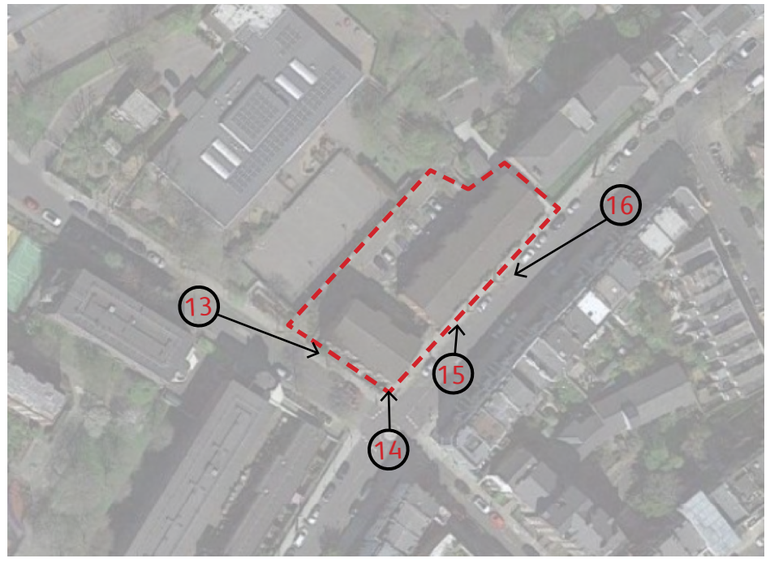


Figure 12 - Site Plan Key (refer to Figure numbers in photos)

Figure 13 - Camborne Mews view from St Marks Road

Figure 14 - Camborne Mews view from Cornwall Crescent

Figure 15 - Camborne Mews view from Cornwall Crescent

Figure 16 - Camborne Mews view from Cornwall Crescent

3.2 EXISTING BUILDINGS

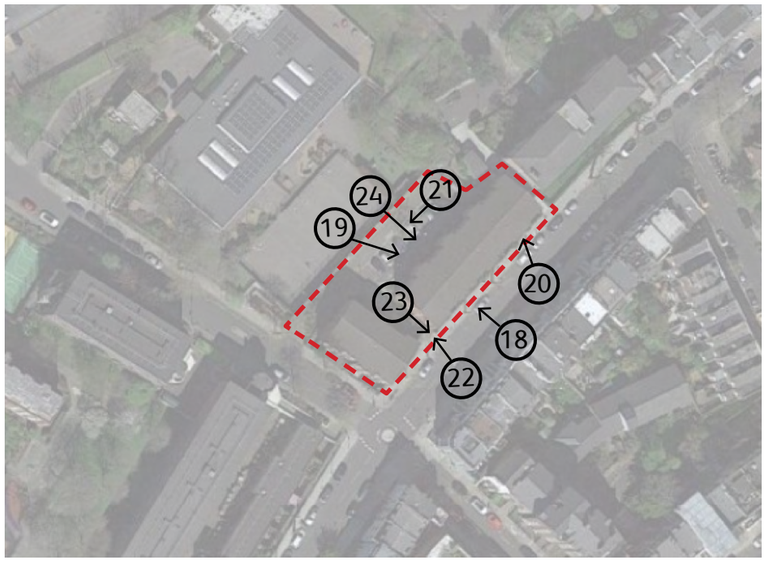


Figure 17 - Site Plan Location (refer to Figure numbers in photos)

Figure 18 - External facades and fenestration of Cornwall Crescent

CAMBORNE MEWS

At Camborne Mews, the two blocks are organised in a L-shape setting along the site. The blocks were originally built in the 1970/80s. The western block being the smallest with 4 flats per floor and the eastern one the largest with 8 flats per floor. The flat sizes are approximately the same between both blocks. The ground floor flats contain one front facing and one back facing outdoor garden enclosed by fence and often decorated with planters by the residents. The front gardens gates are often open and accessible from the communal area.

All the facades are composed of red bricks with white double-glazed sash windows with PVC frame. Most of the windows have a brick lintel detail above however the first floor windows on the southwest of the smaller block and the southeast of the larger block are inset and decorated with an arch brick lintel detail instead. The facades have recessed planes between flats, with setbacks from both entrance side and street side for alternate units. This keeps the overall area of the units approximately the same, with the variations in the back/front garden areas.

Figure 19 - Private garden to the ground floor flats

Figure 20 - Rear facade of Cornwall Crescent - balconies and railing detail

At ground level, every two flats share a common entrance core to the properties from the communal area, these are divided into clusters of 6 with staircase access to upper level flats. The entrances are sided by an enclosed bin store and electrical cupboard, with a separate roof from the main façade.

The communal parking area is fenced and privately accessed from the street. It includes 12 parking spaces and few bike racks. The green areas are mostly inside the private patios, with minimal landscaping around the buildings and along the ramp, although additional planters are distributed around the parking spots and access.

Figure 21 - Existing Bin Stores to the internal parking for Camborne Mews Residents only

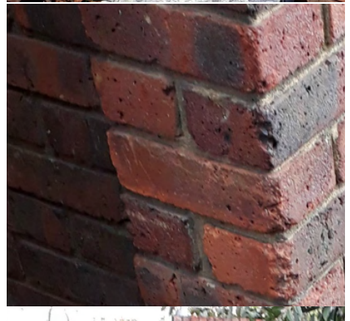
Figure 22 - Existing Pedestrian access from Cornwall Crescent

Figure 23 - Pedestrian Gate from the internal courtyard to Cornwall Crescent

Figure 24 - Existing Control Entry System to access to the Flats

3.2 EXISTING BUILDINGS

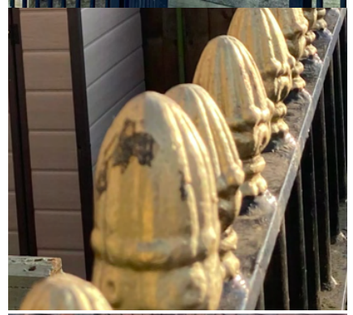


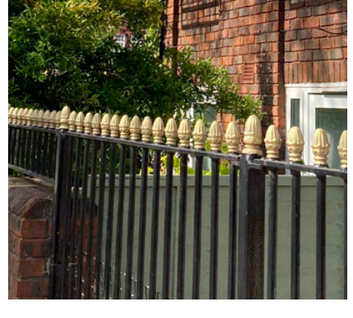



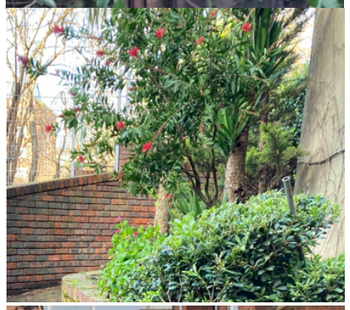










MATERIAL AND COLOUR SURVEY

Camborne Mews architecture is enhanced by a rich variety of materials, textures and colours.

The building itself is covered with a mixure of red bricks and black features (such as rainwater pipes and railing).

A visual study of the site and its surroundings enabled us to identify a clear existing colour palette that will inform future design aspirations.

Green, grey and gold has been singled out as a strong element that should be integrated to our proposals in agreement with the local community.

3.2 EXISTING BUILDINGS

Information shown in this section has been produced from visual inspection and a measured survey of the blocks only includes the external facade and communal areas.

The internal configuration of individual flats is indicative taken from online external sources of leaseholder properties, therefore the floorplans may not be accurate in certain areas, particularly the subdivision of rooms.

The 2 blocks have 3 storeys and in total there are 12 flats per level. These are divided into 6 cores, serving 6 flats each. The ground floor is not levelled to the street, there are 2 external stairs and ramp into the site. Parts of the building including the private gardens are significantly below the street level.

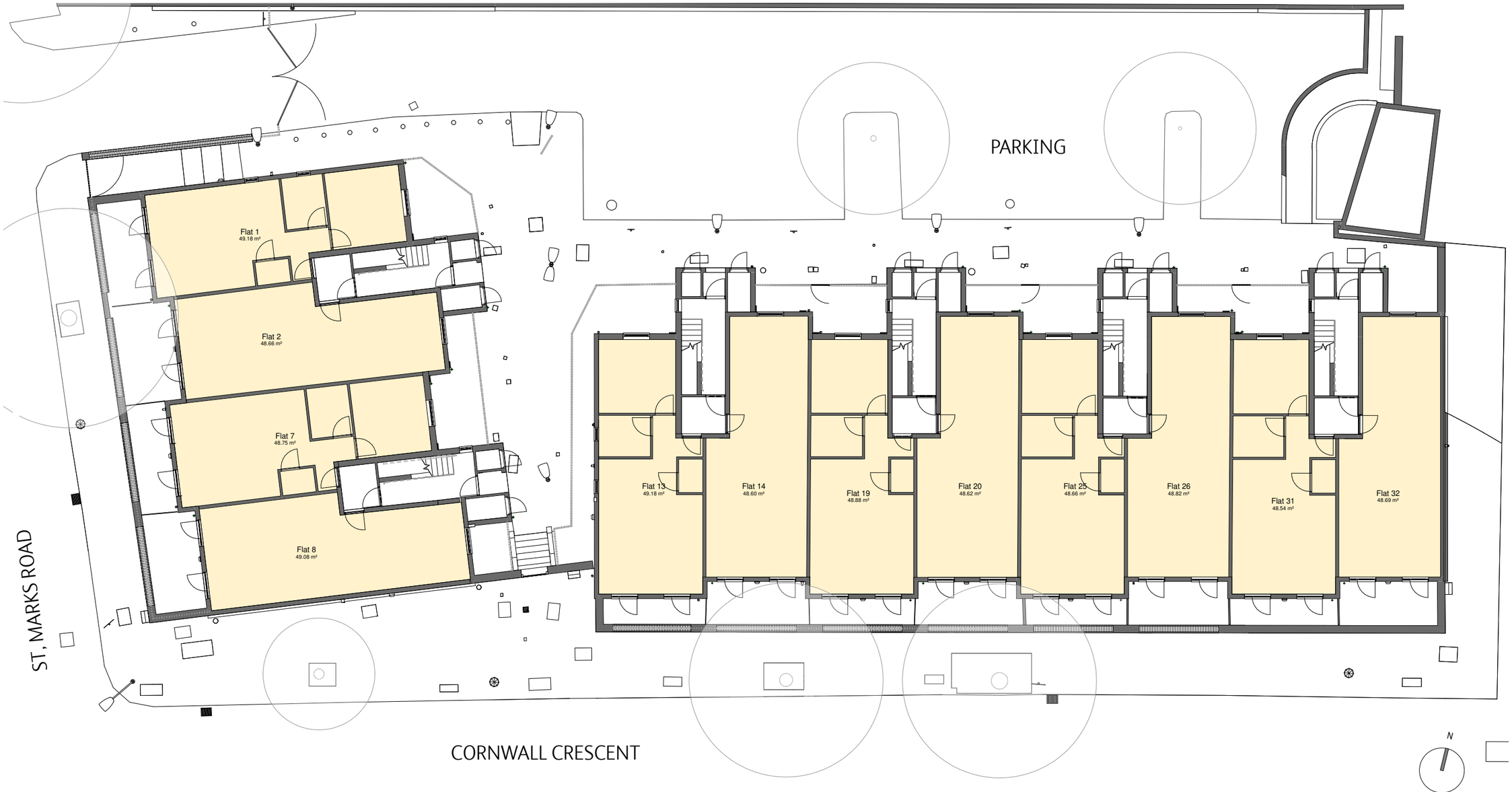


Figure 25 - Existing Ground Floor Plan

Block	Entrance Level	Communal stair core zone	Flat No	Flat Type
1	0	1	1	1 bed
			2	1 bed
		2	7	1 bed
			8	1 bed
	1	1	3	1 bed
			4	1 bed
		2	9	1 bed
			10	1 bed
	2	1	5	1 bed
			6	1 bed
		2	11	1 bed
			12	1 bed
2	0	3	13	1 bed
			14	1 bed
		4	19	1 bed
			20	1 bed
		5	25	1 bed
			26	1 bed
		6	31	1 bed
			32	1 bed
	1	3	15	1 bed
			16	1 bed
		4	21	1 bed
			22	1 bed
		5	27	1 bed
			28	1 bed
		6	33	1 bed
			34	1 bed
	2	3	17	1 bed
			18	1 bed
		4	23	1 bed
			24	1 bed
		5	29	1 bed
			30	1 bed
		6	35	1 bed
			36	1 bed

Figure 26 - Accommodation Schedule for Camborne Mews (The flat numbers and levels are to be confirmed/verified)

The accommodation schedule list the flat types, leaseholder and voids within the two blocks. Block 1 has 12 flats and Block 2 has 24. In total of the 36 flats 34 have residents and there are 7 leaseholders. All the properties are 1 bed and have a GIA between 47-49 m2.

Camborne Mews	Block 1 (1-12)	Block 2 (13-37)
Tenants	11	23
Leaseholders	1	6
Properties	12	24

Figure 27 - Tenure

Camborne Mews	Addresses	Flats
Block 1	1-12	12
Block 2	13-36	24
Total:		36

Figure 28 - Number of Properties per block

Figure 29 - Block 1 - Existing North Elevation

Figure 30 - Block 1 - Existing East Elevation

Figure 31 - Block 1 - Existing South Elevation

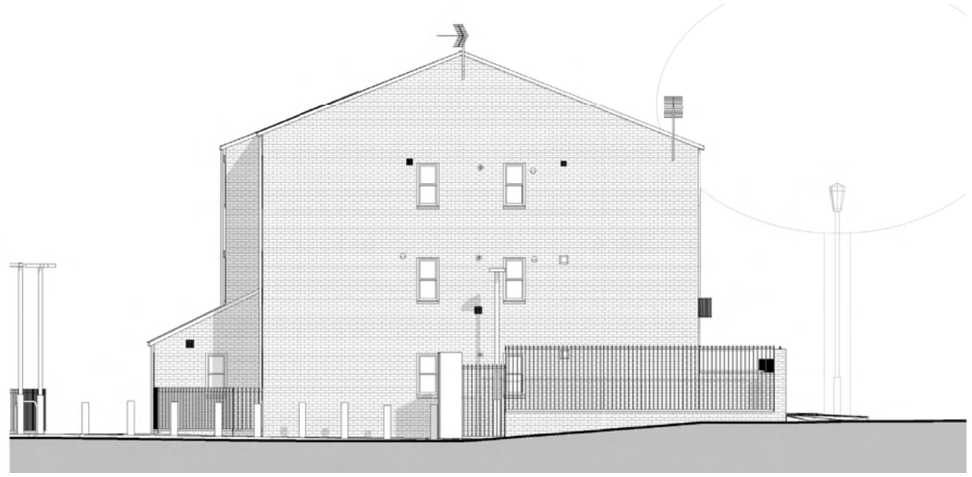


Figure 32 - Block 1 - Existing West Elevation

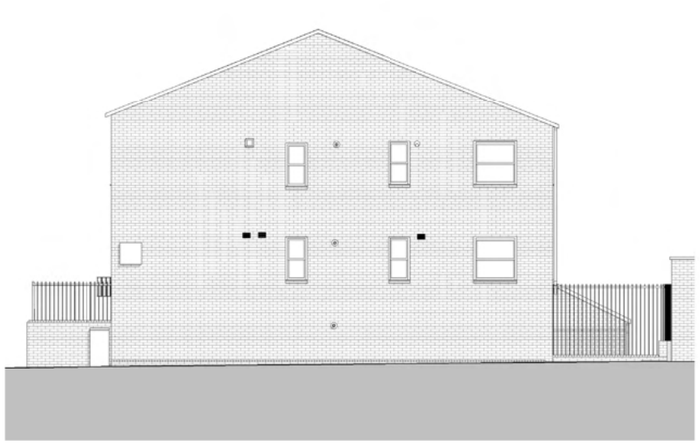


Figure 33 - Block 2 - Existing North Elevation

Figure 34 - Block 2 - Existing East Elevation

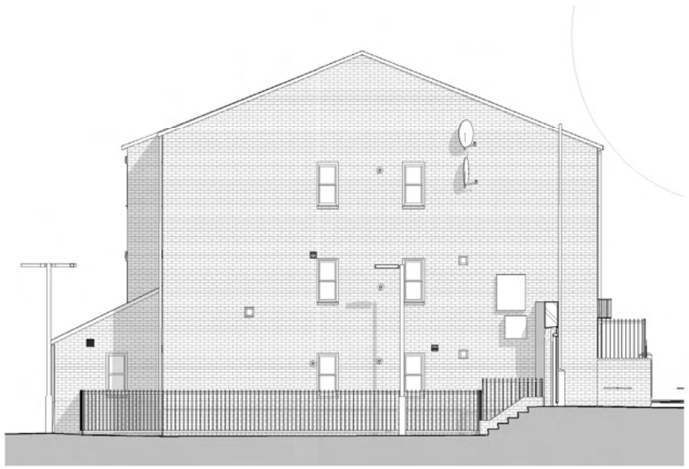


Figure 35 - Block 2 - Existing South Elevation

Figure 36 - Block 2 - Existing West Elevation

Figure 37 - 19 Camborne Mews- open plan Kitchen/Dining/Living

Figure 38 - 19 Camborne Mews - open plan Kitchen/Dining/Living

Figure 39 - 19 Camborne Mews- Bedroom

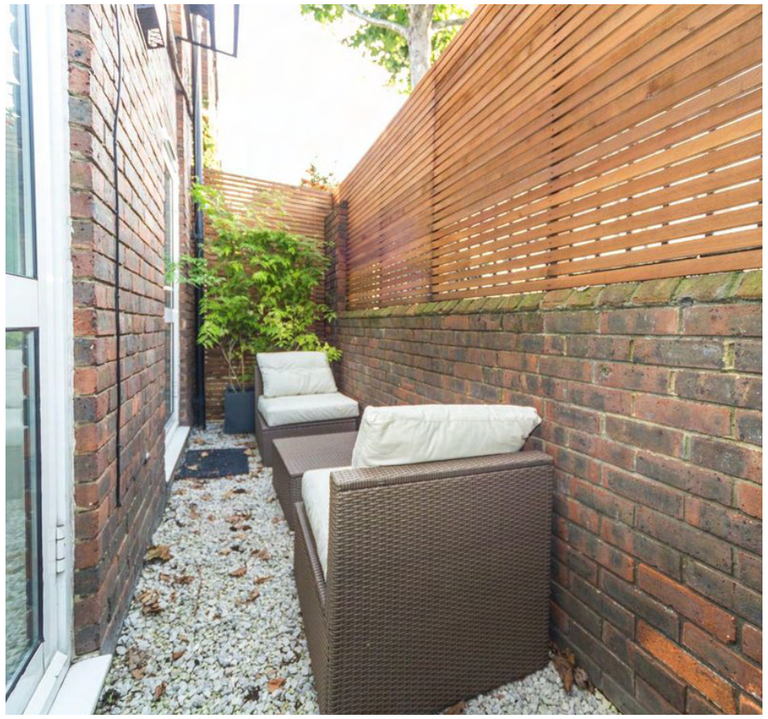


Figure 40 - 19 Camborne Mews- Private garden

INTERNAL LAYOUT

Flat 19 is located on the ground floor in block 2, stair core 4. Typical with the ground floor flats the bedroom is facing the car park with the living/ dining room area facing the streets.

All the ground floor flats have private rear gardens. There are front gardens but these seemed to be communal between properties

Photos and layout found online in a Property Selling website.

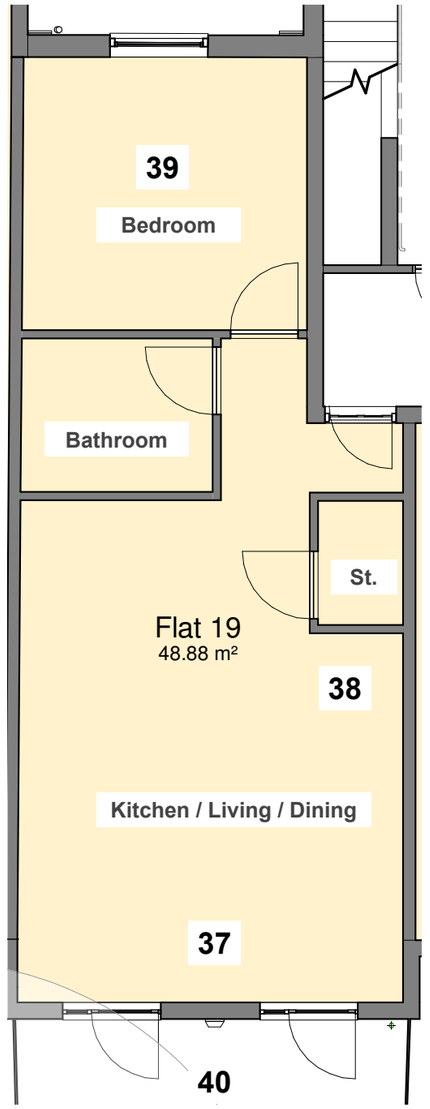


Figure 41 - 19 Camborne Mews- Indicative Ground Floor Plan

INTERNAL LAYOUT

Flat 16 is located on the first floor in block 2, stair core 3. All the flats follow the same typical orientation throughout the floors with the bedrooms facing the car park and the living/ dining room areas facing St Mark's Road and Cornwall Crescent.

This floor has window guarding/railings to the large living room windows.

Photos and layout found online in a Property Selling website.

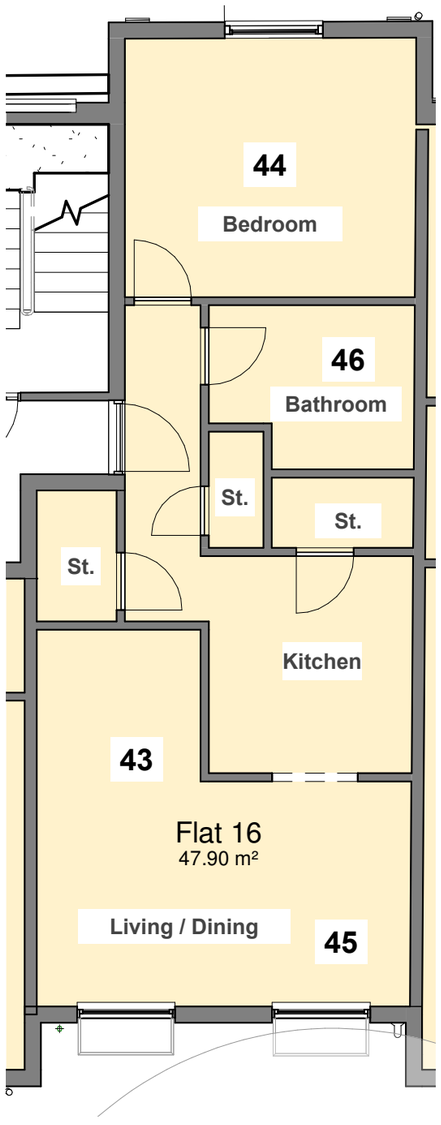


Figure 42 - 16 Camborne Mews- Indicative First Floor Plan

Figure 43 - 16 Camborne Mews- open plan Kitchen/Living/Dining

Figure 44 - 16 Camborne Mews- Bedroom

Figure 45 - 16 Camborne Mews- open plan Kitchen/Living/Dining

Figure 46 - 16 Camborne Mews- Bathroom

3.3 ENERGY ASSESSMENTS

Prior to the appointment of ECD and other MDC teams, the LWNT obtained input from the Retrofit Accelerator on an estate-wide basis. This high-level study (see report dated 21st May 2020) identifies a series of retrofit packages that could be applied to each of the building typologies as part of a route to achieve net zero Carbon. These interventions are identified as Option 1 (Essentials); Option 2 (High performance envelope) and Option 3 (High performance envelope plus renewables and storage). These options were subsequently categorized by LWNT as Bronze (option 1), Silver (option 2) and Gold (option 3), and are the basis of the same categories within our report, as requested by the LWNT team.

Based upon the limited information available at that time this high-level report made several important assumptions about the build-up and condition of each block and therefore the authors advise that the results should be treated with caution. Nevertheless, this study offered indicative energy performance results which are set out below:

Package	Annual CO_2 emissions (tonnes)	Heat demand (kWh/m²) Ground – Mid – Top Floor			Annual tenant cost (heating and electricity)
0 Current situation	2.0*	112	69	81	£785
1 Essentials	1.4	86	51	60	£725
2 High performance envelope	1.2	31	18	28	£660
3 High performance + solar PV & storage	0.6	31	18	28	£460

Figure 47 - Retrofit Accellerator Report suggested heat demands - assumes all retrofit options include individual ASHPs.

For Camborne Mews, the proposed interventions are set out in the table below:

Package	Walls	Thermal bridging	Air-tightness	Glazing	Roof	Ventilation	Heating	Solar
0 Current situation	Insulated cavity	None obvious	Reasonable for the building age	Double glazed	Pitched, insulated	Trickle vents, possibly blocked. Could be damp and mould issues in bathroom	Gas boilers	None
1 Essentials			Basic draught proofing in addition to improved glazing.	High performance double / triple + new external doors	Increase loft insulation	Additional MEV	Individual heat pumps	
2 High performance envelope	High performance External insulation	New external envelope	Best practice	High performance double / triple + new external doors	Super-insulated	Additional MEV/MVHR	Individual heat pumps	
3 High performance + solar PV & storage	High performance External insulation	New external envelope	Best practice	High performance double / triple + new external doors	Super-insulated	Additional MEV/MVHR	Individual heat pumps	Solar PV + Communal storage

Figure 49 - Retrofit Accellerator Report extract, showing suggested interventions

The EPC data provided by LWNT suggest that the majority of the properties in Camborne Mews have an Energy Performance Rating of C, which is one of the best within the Lancaster West Estate. It is important to note that only 15 flats have had their EPCs done and that, as previously explained, EPCs cannot accurately describe a properties energy performance as they are based on SAP data.

	CAMBORNE MEWS
A	0
B	0
C	12%
D	2%
E	1%
F	0
G	0

Figure 48 - EPC data for 14 out of 36 flats in Camborne Mews (No EPC available for 21 flats)

From the resident's consultation undertaken to date, residents have complained about their windows as well as ventilation issues, which have translated into mould and condensation issues in bathrooms and kitchens.

At this early Feasibility Stage, ECD has undertaken a preliminary PHPP energy model of the smaller block in Camborne Mews, for which results can also be extrapolated to the larger of the two blocks. PHPP models are more accurate than SAP models at providing a picture of the energy efficiency of buildings.

ECD's preliminary PHPP model calculated that the smaller block has a heating demand of around 103 kWh/m2a, and a heating load of 48W/m2, which is commensurate with the age and type of building. For the baseline model, we have assumed that there is limited amount of insulation on the cavity walls and roof space, as well as double glazed windows and a airtighness of 10 ach/hr. These assumptions will need to be verified during Stage 2.

The results above are similar to the results from the Retrofit Accelerator Report, which quotes average heat demand of around 96 kWh/m2 (range between 81-112 kWh/m2/yr).

The baseline model pie-chart in the next page shows how the walls (22%), infiltration (22%), ventilation (18%), windows (15%), ground floor (12%) and roof (9%) account for the majority of the heat losses in this building.

Therefore, ECD will focus the retrofit options to improve the performance of the main following elements:

- Wall Insulation
- Roof Insulation
- Windows
- Airtightness (infiltration) and Ventilation

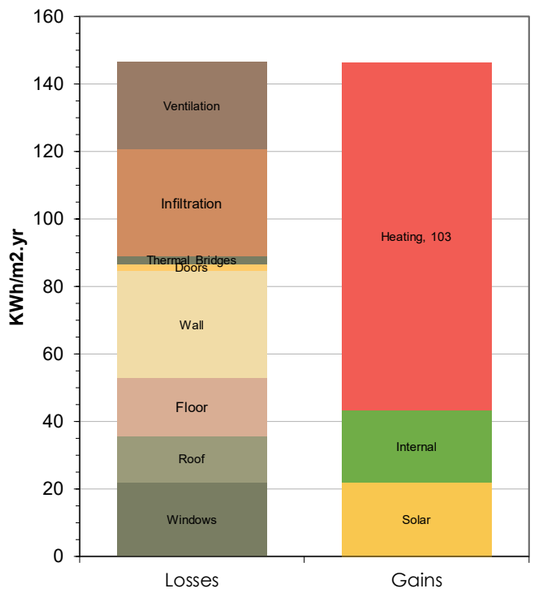
The limitations to insulate the Ground Floor (GF) slab in an occupied building are acknowledged, particularly in the setting of these blocks, where there are existing leaseholders; therefore, in our initial Retrofit Scenarios, we have not allowed for GF insulation to account for a worst case scenario. Not insulating the GF may result in comfort issues, and possible humidity/mould problems if not detailed correctly.

Over the next page we provide Retrofit Scenarios to the AECB and EnerPHit standards, both compared against the minimum required Building Regulations refurbishment requirements (Part L).

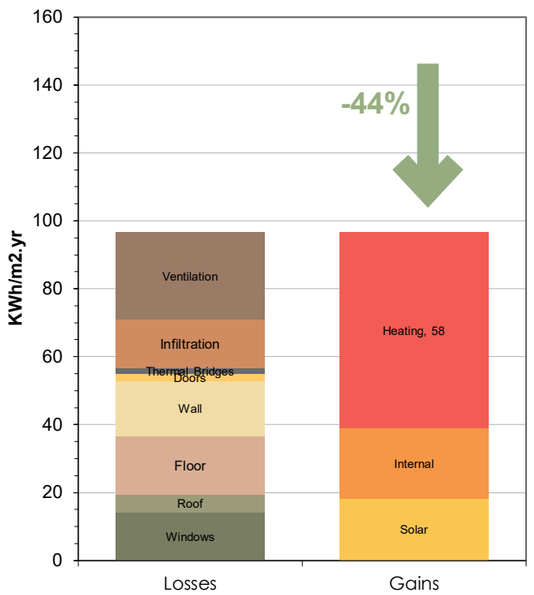
The EnerPHit standard is the Passivhaus equivalent for retrofits, and it has two methodologies for certification, by Component or by Heat Demand. By Heat Demand it requires a Space Heating of maximum 20kWh/m2/a in London, and by Component, which needs to comply with a set of specific maximum u-values per building component. The AECB Standard target is max 50 kWh/m2/a.

ECD is yet to fully assess the implications of the Heat Network into the Primary Energy implications required under the EnerPHit Standard. The AECB Standard does not have such P.E. requirements. In such case, that the P.E. cannot be achieve, we suggest that a suitable target for these blocks would be to target, and improve upon, the AECB Standard. This will be reviewed in more detail during RIBA Stage 2.

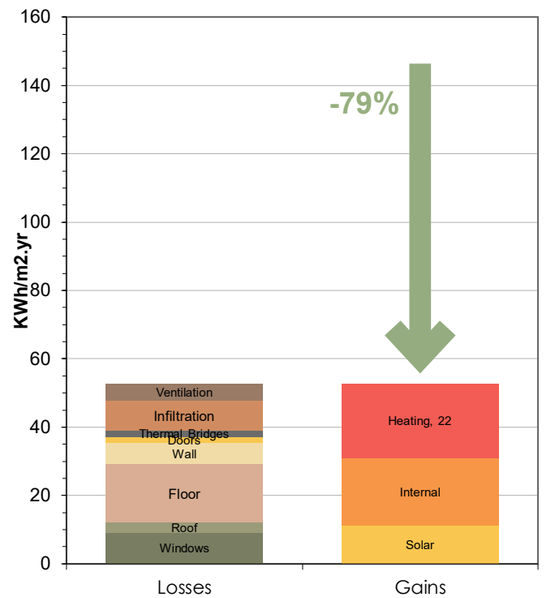
ENERGY BALANCE (HEAT LOSSES VS HEAT GAINS)



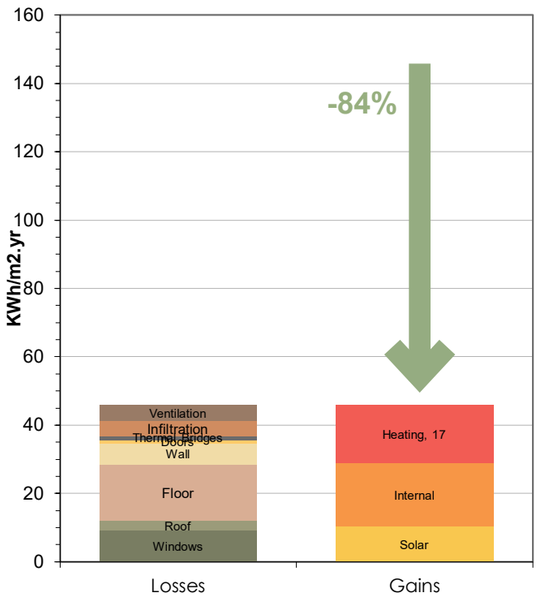
Baseline Model - current situation



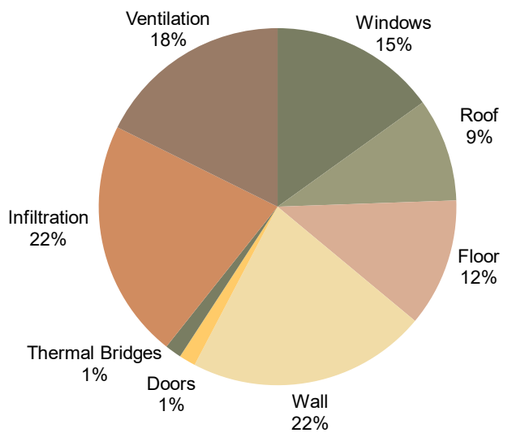
Retrofit Scenario 1 - Building Regulations



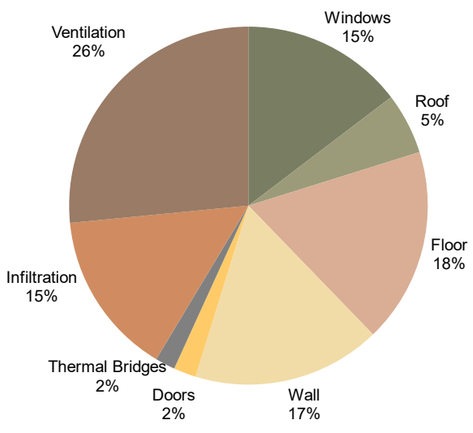
Retrofit Scenario 2 - AECB Standard



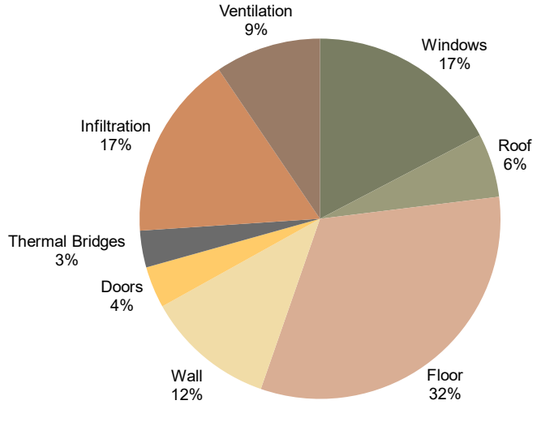
Retrofit Scenario 3 - EnerPHit



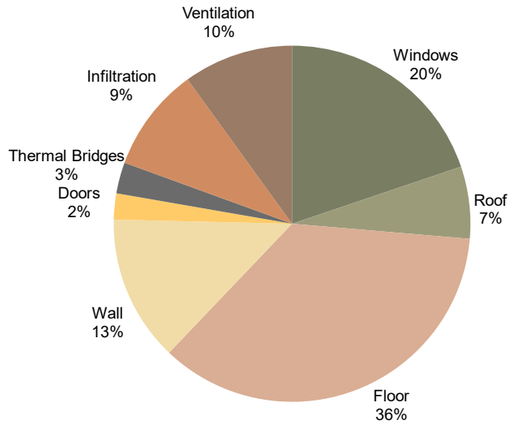
Baseline Model - current situation
Heat losses by component type



Retrofit Scenario 1 - Building Regulations
Heat losses by component type



Retrofit Scenario 2 - AECB Standard
Heat losses by component type



Retrofit Scenario 3 - EnerPHit -
Heat losses by component type

Figure 50 - PHPP results analysis of different Retrofit Scenarios

Space Heating	Heating Demand (kWh/m2/yr)	Heating Load (W/m2)	Percentage Improvement	Airtighness (ach/hr)
Base Case	103	48	0	10
Building Regulations	58	29	-44%	6.4
AECB Standard	22	12	-79%	2
EnerPHit	17	9	-84%	1

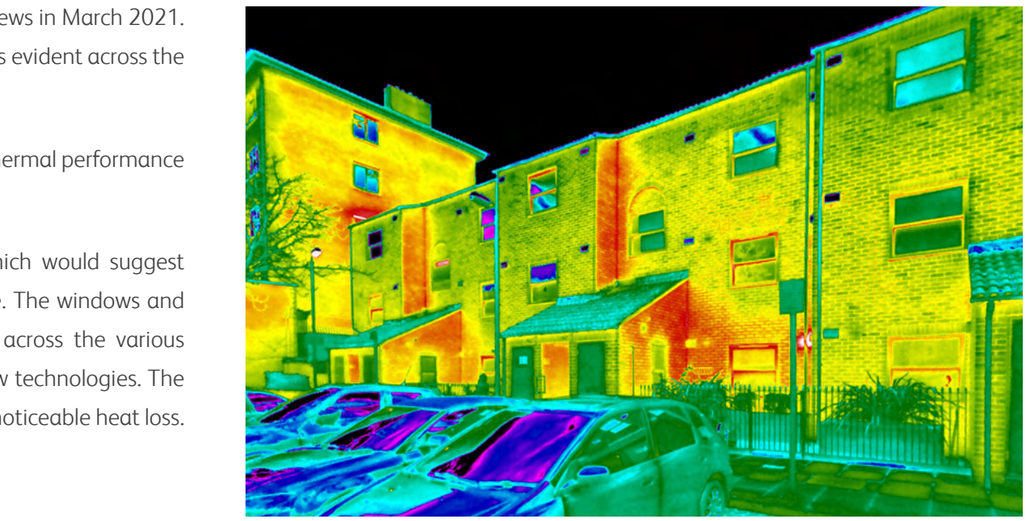
Figure 51 - Comparative table showing Heating Demand, Percentage of Improvement and Airtighness for each Retrofit Scenario

3.3 ENERGY ASSESSMENTS

A Thermal Imaging Report was carried out on Camborne Mews in March 2021. The images illustrate that there are several areas of heat loss evident across the elevations of both buildings.

The latest thermographic report states that, generally, the thermal performance of Camborne Mews is quite poor.

The elevations are showing variations in temperature which would suggest continuation of insulation is quite poor through the façade. The windows and frames also showed poor levels of thermal performance across the various elevations, due to their age and the use of obsolete window technologies. The roof appeared to be performing better with no evidence of noticeable heat loss.



Thermal imaging helps to understand where there is energy loss from a building. Building should maintain at least a 10 C temperature split between the interior and exterior. The scale to the left will help to understand the temperatures shown in the images.

Figure 52 - Thermal Imagery of Camborne Mews showing heat loss through facade (red/orange area)

Figure 54 - Sloped ground level from St Marks Road

Figure 53 - Ground floor flats below Cornwall Crescent street level

Figure 55 - Communal roof space over Flats 1-6.

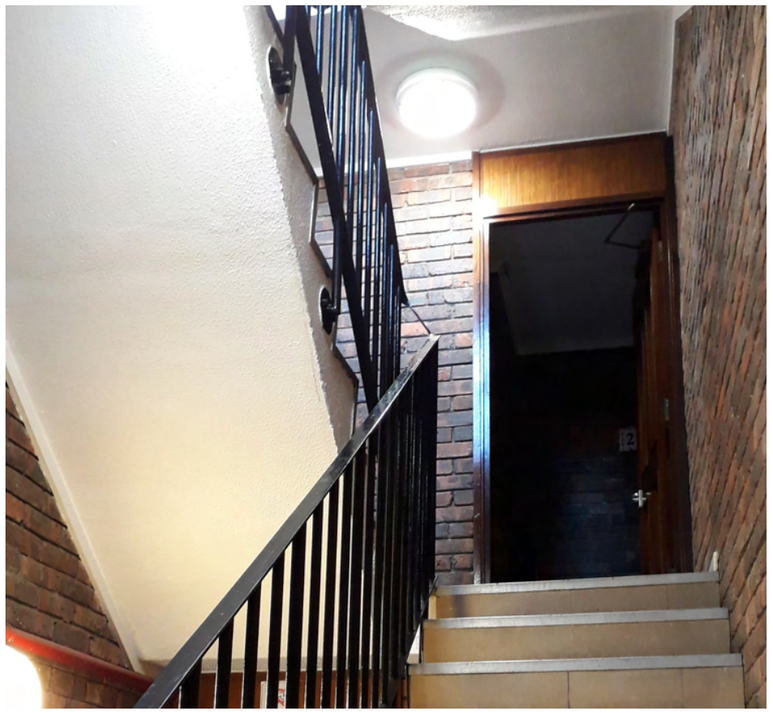


Figure 56 - Reinforced concrete communal stairs

PREPARED BY WILDE CONSULTING ENGINEERING

The buildings are three storeys high with a pitched roof that slopes from front to back.

The ground slopes across the site such that the lowest level at the back of the longer block is set down from street level by approximately half a level. The front of the block is at notional ground level. The shorter block has a retaining structure in the end wall which faces the higher level and the back of these blocks faces the slope such that the far end is also at ground level.

The construction is traditional load bearing masonry supporting concrete upper floors and a timber roof structure. The external walls are cavity wall construction with a brickwork outer leaf and blockwork inner leaf. The party walls are solid brickwork with blockwork in the roof space.

The upper level concrete floors span from side wall to side wall. The roof structure comprises timber rafters that span onto timber purlins which in turn span onto the side walls via joist hangers. The roof level ceilings are also timber with timber joists spanning between the side walls.

Details of the retaining structure at the end of the shorter block are unknown but it is envisaged that there will be a reinforced concrete wall in the overall wall construction.

There are communal staircases which serve a pair of flats at each level. The staircases are reinforced concrete supported on the adjacent cavity walls which wraps around the stair cores.

The entrances to each block project at the front and are single storey also formed with cavity wall construction. They have a mono-pitched roof sloping back to the main front wall.

Details of the foundations are unknown but it's considered likely for a development of this scale that mass concrete strip foundations will have been used under the load bearing walls with a concrete ground slab which is either suspended or ground bearing.

3.5 PRINCIPAL DESIGNER'S REPORT

Section prepared by Mark Allen - DERISK

Much of the design work at this stage comprises the gathering of existing information and arranging surveys to identify gaps in information and provide clarity on the current status of the buildings. At this stage in the design process construction materials and processes are yet to be firmed up, though discussions are taking place with all consultants and tentative proposals are being reviewed from a health and safety perspective.

Currently there are minimal health and safety hazards impacting upon residents that need to be controlled. These are limited to the surveyors undertaking investigation works, with the potential for the transmission of coronavirus during this pandemic a concern. Prior to their appointment all surveying companies confirm that their operatives are 'Covid Secure' and this extends to site works for the protection of residents, visitors, and staff working on the estate. The number of persons attending Camborne Mews is kept strictly to a minimum, with the mandatory wearing of face coverings and ID badges enforced alongside other construction industry control measures.

There may be noise and vibration transmitted to residents during intrusive investigation works. Tasks which generate these are tightly controlled with employers providing risk assessments and method statements to ECDA and the Lancaster West Team where required. Residents will be informed well in advance of such works taking place to ensure disruption is kept to a minimum. There are anticipated to be temporary restrictions placed within the close with work areas barriered off to ensure the investigation works can be undertaken safely, however again residents will be consulted during the planning stages of this to reduce any impact.

CDM 2015 requirements (the Construction Design & Management Regulations) are being monitored by the Principal Designer (Derisk) and the Lot 5 works are considered by Derisk to be in full compliance with the Regulations at present. ECDA are legally required to communicate design risk information to the Project Team and all persons affected by the refurbishment works, this is being demonstrated partly in the form of written CDM Risk Registers. These are developed with Derisk and are reviewed frequently, with revised versions issued at a minimum of each RIBA work stage. The risk register is retained within the Site-Wide Refurbishment Risk Register and is in the process of being revised for Lot 5 specific works.

All construction works will present health and safety hazards to the residents of Camborne Mews.

It is the utmost priority of the Project Team to identify what these hazards are at the earliest possible stage and work with the team, the contractors, and of course the residents to reduce the associated risks to as low as reasonably possible to ensure the safety of all persons within Camborne Mews and adjacent properties. As stated, the design proposals and construction methodology are still at a very early stage, however Derisk and ECDA anticipate the following hazards to be addressed as a minimum.

- Interface with local residents, business, schools, and members of the public. Camborne Mews is immediately adjacent to Thomas Jones Primary School and their outdoor sports area – there are significant numbers of children and passers-by periodically throughout the day. Although the works compound is expected to be located within the private building's car park, a comprehensive traffic management and logistics plan will need to be developed that considers the volume of foot traffic passing by the works area, protections from falling materials and contact with construction machinery.

- Interface with other projects (particularly the Internal refurbishment and void works) – all planned works that may impact upon these works (such as the refurbishment of voids within the close) are closely managed to prevent any clashes or interference. Derisk are involved with the separate Internal refurbishment programme and will assist the LWE Team to develop programmes and specifications that cause minimum disruption to the Lot 5 works and ultimately to the residents. Due to the location of Camborne Mews on the outer edge of the Estate this interface is likely to be less of a factor than a number of the more centrally located Lots but still requires significant planning.

- Fire Safety – is at the foremost of all works on the Estate. IFC Group (Fire Engineers) have been procured by ECDA to review the existing buildings and will be imbedded within the design team. Of significant risk is the need for a collaborative approach between respective organisations and Lots, as several separate packages of work are being planned that must all tie in together to ensure fire safety not only meets but exceeds current standards. Regular fire safety meetings will be diarized within the design team meetings, and this will be agenda item on all team meetings. Fire Safety during construction is also a priority and the Fire Engineers will support the contractors to develop fire plans that keep all persons within the close safe during the refurbishment works. It is of note that discussions are taking place between the lead consultants for all of the Lots, the LWE team, and internal RBKC Fire Team to review and prepare a standard 'estate-wide' approach to fire design safety.

- Asbestos containing materials are noted to be present within the buildings. Though currently being managed by the Estate team these are proposed to be removed during the refurbishment works unless it is deemed acceptable to retain (encapsulate) it through the process of risk assessment. Asbestos is an extremely hazardous material and for the safety of all persons on the estate all works will be carried out in strict accordance with the Control of Asbestos Regulations 2012. Historical asbestos information is available to the team has been subject to a review by the team and Derisk. A number of more detailed asbestos refurbishment surveys have been undertaken to the communal areas of the small blocks which have identified the presence of asbestos containing materials. Further surveys will be required to identify gaps in asbestos information over the coming weeks. The appointment of a specialist Asbestos Consultant has been recommended by the Principal Designer and Manestream (Asbestos Consultant already utilised by RBKC) has been made and they are currently providing consultancy services to the Team. To ensure that the management of asbestos is kept consistent across the Lots, Derisk have issued an Asbestos Communications Procedure to the Project Teams.

- There are expected to be several contractors undertaking works concurrently once refurbishment works begin. ECDA will work closely with the LWE Team to ensure that they (a) cooperate with one another; (b) coordinate their work; and (c) take account of any shared interfaces between the activities of each project (e.g. shared traffic routes along Cornwall Crescent or St Marks Road). It is of key importance that where there are shared interfaces (as there will be within the close) that one contractor is responsible for retaining control over these areas.

- Residents remaining in their homes during the works. All works where possible will be carried out without requiring residents to leave their homes. These will be planned so that hazardous works are undertaken at a time during the day when fewer residents are in the buildings. If Internal Wall Insulation is not to be installed then this will greatly reduce this risk for this aspect of the works. There are expected to be isolated communal areas that may be temporarily closed or restricted to residents but this will kept to as short a period as possible. Works to the services systems will include localised isolations so that residents retain power, water, lighting etc. as much as possible. Inevitably though there will be some aspects of the works carried out that are simply not safe enough to be undertaken with residents remaining in their homes, such as asbestos removals for example.

  The temporary relocation of residents is being discussed with the Estate team, with proposals developed over the coming weeks in full consultation with residents.

- All works where possible will be undertaken without the need for site operatives to work at height to reduce the risk of falling materials and tools around residents. However there are many elements of the works that cannot be undertaken from ground level and so suitable access platforms will be used. These are likely to include scaffold and tower scaffold systems, and traditional ladders and step ladders. All present different risks to residents and site staff, however construction methodologies will be considered during the design phases to ensure that the hazards and risks are outlined and controlled. Derisk have proposed the undertaking of Construction Hazard workshops with ECDA over the coming weeks to review work at height and general construction requirements for all proposed designs.

- RBKC as the Client (for the purposes of CDM 2015) are required to ensure that the contractors put in place suitable welfare (toilets, hand washing facilities, changing areas, water supply, etc.) during their works. Due to the numbers of persons proposed to be undertaking these works it is unlikely that use of void properties will be suitable, and defined welfare areas or cabins will be required. These will need to be sited close to the close and so parking spaces or small areas of the landscape may need to be temporarily closed to accommodate these. All proposals will be considered by the Project Team and developed in consultation with residents.

- Larger construction works will require an area or compound to house offices, cabins, material storage, tools and plant etc. Due to the limited space available around the estate this may impact upon existing parking areas or the landscaping as discussed above.

- Security – contractors are required to ensure that their sites are kept separated and secure from persons other than their own staff. This will require physical and electrical security measures to be installed around the close which may impact upon residents free movement around the estate. All proposals for alarm systems, herras fencing, hoarding, etc. will be reviewed by Derisk and the wider Project Team.

- Logistics and waste removal. The works will increase vehicle traffic around the estate and the carrying of waste and other materials to the work areas will present a hazard to residents. Derisk and the Project Team will support contractors to develop their waste management and logistics plans to ensure that they impact upon residents as little as possible.

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4.0 PROPOSED ENERGY EFFICIENCY WORKS

4.0 PROPOSED ENERGY EFFICIENCY WORKS

The most significant refurbishment works to be carried out at Camborne Mews in order to meet the residents top ten priorities, will be to improve the building envelope u-value and reduce heat demand and carbon emissions along with maximise fire safety. The following Scope of works is the same regardless of the Envelope options presented in this section, when there are options, these are clearly indicated. The information is preliminary and relates to a RIBA Stage 1 design. After further site investigations, detailed design, and resident engagement, confirmation on preferred options will be made.

PROPOSED ENERGY EFFICIENCY WORKS

- Installation of new internal insulation (IWI) OR external insulation (EWI), as per the options provided in this document. Please refer to them for further details. Include the sealing of any existing openings, holes and vents in the brickwork to the outside. Facing materials (only if external wall insulation is selected): we propose the use of brick slips fixed to the insulation.
- Upgrade of existing double-glazed windows to new triple glazed windows
- Installation of insulation to improve the existing roof thermally, internally or externally as part of the EWI system.
- Install mechanical ventilation with heath recovery (MVHR) system to each property, including internal ductwork and acoustic attenuators to all bedrooms, living rooms, kitchen and bathrooms. New suspended ceiling required on internal hallways, and perhaps localised bulkheads as well.
- Photovoltaic Panels, also known as solar panels and PV panels, these collect energy from the sun and turn it into electrical energy to power your home.

OTHER WORKS

Other issues raised by residents will be addressed alongside these works. Some form part of this feasibility study, and are presented in more detail here. Others are outside ECD's scope of this study but need to be integrated into the same programme, and this is expanded upon further at the end of this section.

Within this study:

- Communal area redecoration
- Refuse storage improvements
- Review and upgrade fire stopping between flats and within risers

By others, but integrated:

- Door entry systems
- Lighting
- CCTV
- Landscaping works
- Plumbing and Heating
- Below ground drainage
- New kitchens & bathrooms

	Proposed measures	Impact of proposed works: Intrusiveness	Impact of proposed works: Energy saving
Bronze	Upgrade double-glazed windows Repair and redecoration of communal area No insulation to existing walls Upgrade Mechanical Extract Ventilation (MEV)		
Silver	Upgrade double-glazed to triple-glazed windows New wall insulation (Internal or External) New insulation installed in roof (under or over) New Mechanical Ventilation with Heat Recovery		
Gold	Upgrade double-glazed to triple-glazed windows New wall insulation (Internal or External) New insulation installed in roof (under or over) New Mechanical Ventilation with Heat Recovery PVs on roof & battery storage		

Figure 57 - Matrix of possible interventions

PASSIVHAUS

Passivhaus is a standard for energy efficiency construction in new buildings. It results in ultra-low energy buildings that require little energy for heating and cooling spaces.

ENERPHIT

This is the Passivhaus-equivalent standard for energy efficiency when refurbishing existing buildings. It follows a fabric first approach, and requires additional insulation, triple-glazed windows and ventilation.

PASSIVHAUS PLANNING PACKAGE

This is a modelling tool used to help design a properly functioning Passive House. It requires information about the building size, shape, orientation as well as the proposed insulation to the walls, floors and roof. Detailed information on windows and doors are also required.

The PHPP prepares an energy balance and calculates the annual energy demand of the building.

U VALUES

Thermal transmittance is also known or expressed as U-values. They tell us how quickly heat energy is lost through a part of a building elements, i.e. window or wall.

The lower the number the less heat that is lost. The better insulated a structure is the lower the number will be.

4.1 ENVELOPE INTERVENTION OPTIONS

MATRIX OF POSSIBLE INTERVENTIONS

Measure	Image	Reason	Proposal	Combustibility	Spatial Implications	Intrusiveness	Pros	Cons
External wall insulation Add insulation to outside of external walls		Heat is lost through existing walls as there is no insulation in them.	Mineral wool insulation to outside of existing external walls with brick slip system to outer face	Mineral wool insulation = A1 Other elements depending on construction type	No implications to internal space Assume around 300mm (TBC) extra thickness to walls externally		- Excellent reduction in heat loss through walls - Effective way to limit thermal bridges - Really warm comfortable home - Combine with parge coat below to improve airtightness	- Planning permission likely required - Careful consideration of ground & eaves - Provision of new rainwater pipes & adjustments to gulleys
Internal wall insulation Add insulation to inside face of external walls	 	Heat is lost through existing walls as there is no insulation in them.	Aerogel + magnesium oxide board (ie. Spacetherm Slentex A2) Refer to Table on p.51 for further details on options	Aerogel + magnesium oxide board (ie. Spacetherm Slentex A2)	Loss of space to all rooms along their external walls. Assume around 100mm (TBC) extra build up internally		- Reduce heat loss through walls - No change to external appearance - Warmer more comfortable home than at present	- Care needed at internal wall/ externall wall junctions - Loss of internal space - Smaller reduction in heat loss overall - Care needed where joists penetrate new insulation - Moisture risk - Thermal bridge

MATRIX OF POSSIBLE INTERVENTIONS

Measure	Image	Reason	Proposal	Combustibility	Spatial Implications	Intrusiveness	Pros	Cons
Insulate Roof Add insulation between & over rafters		Heat is lost through roof	Mineral wool insulation between & over existing rafters. New tiling battens & roof finish required over	Mineral wool insulation = A1 Airtightness membrane - Procheck A2 = A2-s1,d0	None internally Roof height raised (externally)		- Reduce heat loss through roof - Include carefully installed airtightness layer - Opportunity to strengthen existing roof structure?	- Planning permission required - Roof structure investigation required
Insulate Roof Add insulation above ceiling (ie. cold roof space, horizontal insulation)		Heat is lost through roof	Extensive amount of mineral wool insulation added horizontally above the existing ceiling.	Mineral wool insulation = A1 Airtightness membrane - Procheck A2 = A2-s1,d0	None internally to flats Reduced loft space height		- Reduce heat loss through roof - Include carefully installed airtightness layer - Opportunity to strengthen existing roof structure, if needed for PVs	- Ensure new build up is appropriately ventilated - Roof structure investigation required, if needed for PVs - Hard to ensure airtightness continuity with walls

4.1 ENVELOPE INTERVENTION OPTIONS

MATRIX OF POSSIBLE INTERVENTIONS

Measure	Image	Reason	Proposal	Combustibility	Spatial Implications	Intrusiveness	Pros	Cons
New windows Replace all windows with airtight triple glazed windows		Heat is lost through existing windows - through uninsulated frames, glazing and at gaps around frames & opening window panes	New triple glazed windows, sealed to new airtightness layer on external wall / to existing wall	Glass is non-combustible. Choose frames for non-combustibility & thermal properties	None Avoidance of cold draughts near windows means that residents can enjoy full space within house		- Reduce heat loss through windows - No draughts near windows - more comfortable - Quieter internal environment	- Need to re-do plastering around windows - If done without other insulation works, expensive for limited gain
New doors Replace all external doors with insulated doors		Heat is lost through and around existing doors	New insulated doors, with triple glazing if glazing still required. Sealed to airtightness layer on existing wall	Choose doors for non-combustibility & thermal properties Glass is non-combustible.	No implications for existing useable space		- Reduce heat loss through doors - No draughts near doors	- Need to re-do plastering around doors - Add new external wall mounted letterbox (to avoid opening in airtight door) - If done without other insulation works, expensive for limited gain

MATRIX OF POSSIBLE INTERVENTIONS

Measure	Image	Reason	Proposal	Combustibility	Spatial Implications	Intrusiveness	Pros	Cons
Full building airtightness Design & install airtight layer around inside of house's insulation. Aiming for less than 1 air change per hour		Warmed air is lost through gaps in existing building fabric, especially at window/ door junctions & services penetrations	Dependent on insulation strategies adopted, but likely include use of parge coat, airtightness membrane, airtightness tapes, airtightness paint	parge coat - A1 airtightness membrane - A2 airtightness tapes - B (TBC) airtightness paint - D (TBC)	None		- Excellent reduction in heat loss - Excellent improvement in resident comfort - No draughts so more comfortable even at lower temperatures	- Must be combined with MVHR) or MEV to avoid mould risk - Must be completely & carefully implemented to be effective
Mechanical ventilation with heat recovery (MVHR) Install MVHR unit to each home with supply / extract to all rooms		Pre-heat incoming fresh air with warmth from outgoing stale air. Fresh air is supplied, but the heat in it is not lost	Install MVHR units with insulated intake & exhaust ducts to outside. Supply / extract ducts around house to serve all rooms	Use fire rated metal ductwork around homes	MVHR unit around 978mm high x 792mm wide x 601mm deep. (TBC) Access space additional. Insulated ductwork diameter around 200mm (TBC) Uninsulated ductwork at least 75mm diameter (TBC)		- Little maintenance required (similar to a gas boiler) to be carried out once a year, filters to be changed a couple of times a year. - Reduce heat loss through air while ensuring fresh air supply - Filters allow improved internal air quality - Opportunity for teaching residents about use of units	- Ensure new build up is appropriately ventilated - Roof structure investigation required, if needed for PVs - Hard to ensure airtightness continuity with walls

4.1 ENVELOPE INTERVENTION OPTIONS

MATRIX OF POSSIBLE INTERVENTIONS

Measure	Image	Reason	Proposal	Combustibility	Spatial Implications	Intrusiveness	Pros	Cons
Notting Dale Heat Network The buildings are currently not connected to Notting Dale heat network, but LWNT is looking at options to connect them to it.	 	Estate-wide heat production may be more efficient than localised	New centralised district heating system supplies low temperature hot water to each home. HIU in each home uses this to provide hot water	-	Varies with unit size		- Low carbon heat source, supporting zero carbon aspiration - Supplies all heating & hot water requirements	- Ensure controls are easy for residents to understand - Longer timeline for implementation than local heating systems
Photovoltaic Panels (PVs) Install panels on roof to turn sun's energy into electricity to add into building's power supply		Reduce amount of electricity needed from grid, reducing energy bills	Install PV panels Install inverter internally (turns DC current from panels into AC current for use in the building)	Design team (including Fire Consultants) to design PVs carefully to eliminate any fire risk to roof	Inverter required internally		- Reduce electricity bills - Export electricity to grid at some times & make money - Low carbon energy source	- Occasional cleaning & maintenance required - Confirm possible output, considering surrounding trees etc - Review options to split electricity generated amongst flats - Ensure roofs can support panels

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4.2 INSULATION STRATEGY OPTIONS

INTERNAL WALL INSULATION (IWI)

If internal wall insulation is preferred, the proposal is to remove internal wall finishes to install a layer of non-combustible (A1/A2 rated) insulation to the internal face of the facade + new internal finishes.

There are several Internal Wall Insulations options, as detailed in table Figure 64, out of which we would recommend to use Slentex, which is a thin high-performance, silica aerogel-based insulation material of limited combustibility, A2 classification used internally interior applications to improve the u-value of the façade. It is a permeable and flexible system.

Key performance considerations: fire safety (non-combustible), low thermal conductivity (thermally efficient), vapour permeable to minimise internal condensation risk, easy and quick installation to minimise disruption to the residents, easy to line internally.

Proposed Internal Insulation System U-value: 0.30w/m2k

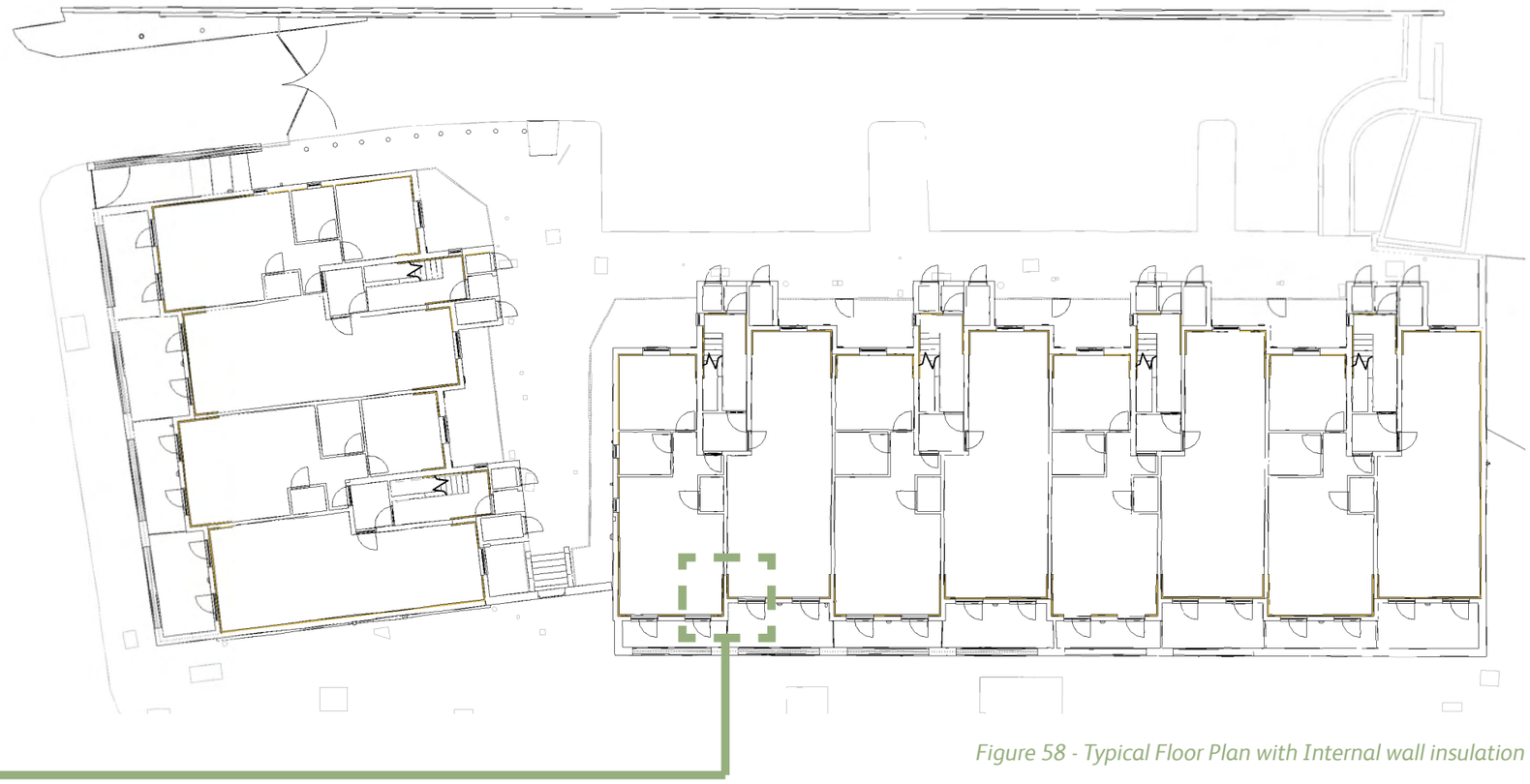

Figure 58 - Typical Floor Plan with Internal wall insulation

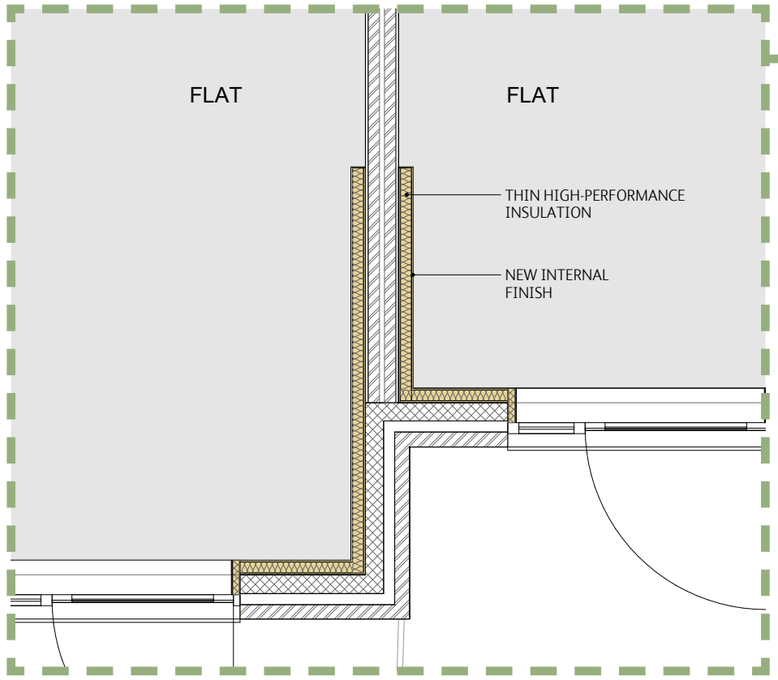

Figure 59 - Call-out section showing the IWI with a minimum 1 metre return within each flat.

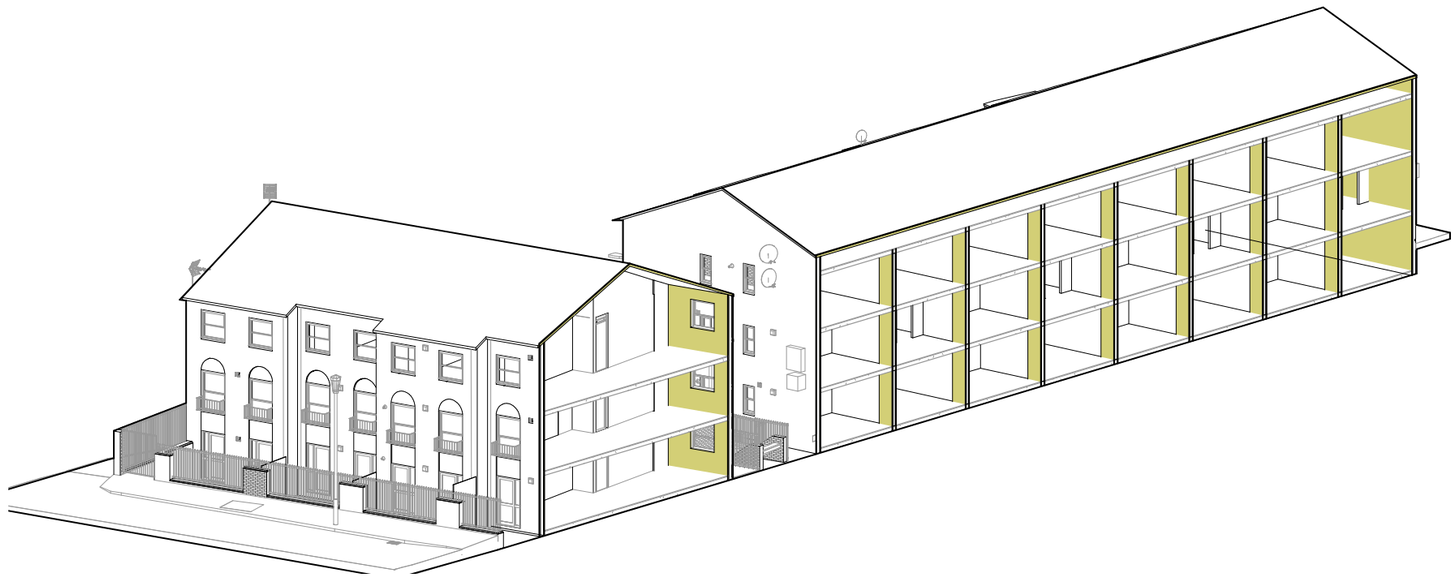

Figure 60 - Axonometric section showing internal wall insulation (IWI)

Figure 61 - Woodfibre Insulation added to inside face of external wall.

Figure 62 - Mineral glass wool insulation on studs + Plasterboard to wall

Figure 63 - Aerogel Insulation added to inside face of external wall.

Insulation Type	Fire Classification	Thermal Efficiency	Vapour Open	Installation
Aerogel + magnesium oxide board (ie. Spacetherm Slentex A2)	System is A2	Excellent 0.019 W/mK	Yes	Easy and dry installation.
Mineral glass wool insulation on studs + Plasterboard	A1 (timber studs are combustible)	Good 0.032 W/mK	Yes	Easy and dry installation. Later on a non-combustible stud system can be investigated further.
Woodfibre dry-line (ie. Pavadry) with 12.5 plasterboard	System with plasterboard is B1. Woodfibre is class E	Good 0.043 W/mK	Yes	Easy and quick installation.
Lime, cork and clay based insulating plaster (ie. Diathonite)	A1	Good 0.045 W/mK	Yes	Takes too long to dry, complicated and disruptive application.
Calcium Silicate insulated board (ie. Casitherm) + lime plaster	A1	Low 0.059 W/mK	Yes	Lime plaster coat on brick wall then board. Medium disruption.

Figure 64 - Proposed Internal insulation systems

Pros

- Improved thermal comfort
- No change to external appearance of the buildings

Cons

- All internal finishes and decorations on external walls will need replacing
- Intrusive works, decant necessary
- Internal area loss: approximately between 1 to 3% of area loss in each flat (with the slimmest IWI system Aerogel)

4.2 INSULATION STRATEGY OPTIONS

EXTERNAL WALL INSULATION (EWI)

If external wall insulation is preferred, the proposal is to install a layer of non-combustible (A1/A2 rated) insulation to cover the external face of the facade with a finishing layer - brick slips, for a nice brick appearance.

There are several External Wall Insulations systems in the market, many of which could be suitable for Camborne Mews. In this report, we suggest the use of the Beattie T-Cosy system by Beattie Passive which provides high quality, non-disruptive, non-combustible insulation around the whole building. Unlike traditional EWI systems, the 'T-Cosy' system provides an airtight layer on the face of the existing building and brackets with a non-combustible board to form a 280mm void. This is extended to the roof to create a single continuous void subsequently pumped with non-combustible insulation (Rockwool EnergySaver or similar).

New replacement windows and doors will be installed in the new outer layer ensuring thermal continuity with suitable airtightness tapes to seal all junctions. Real clay brickslip will then be added to the robust face. This solution is a Passivhaus certified and patented system.

This system offers a quick installation process, which provides high levels of insulation, fire protection and acoustic attenuation.

Proposed External Wall Insulation System U-value: 0.12w/m2k

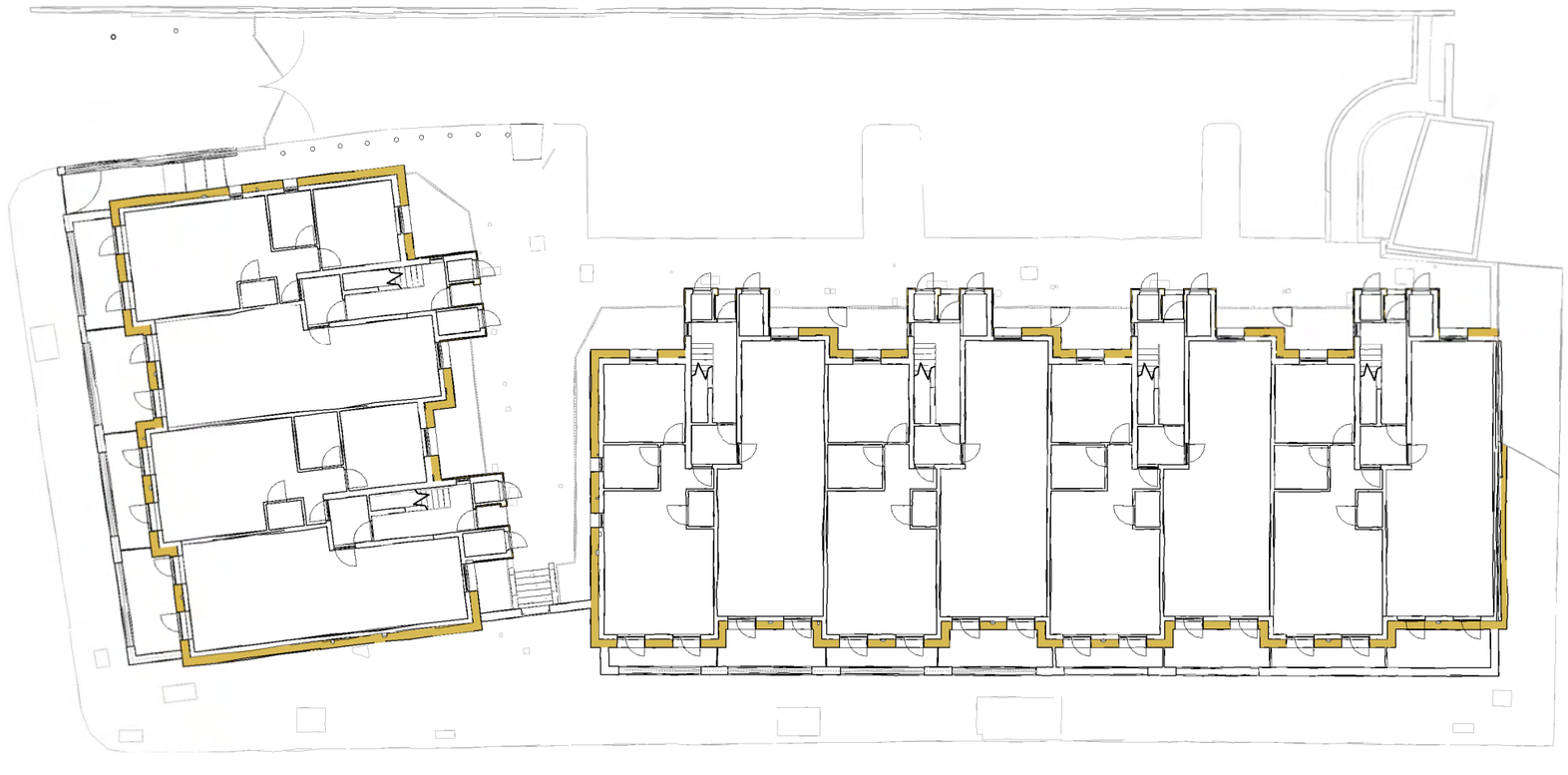

Figure 65 - Typical Floor Plan with External Wall Insulation (EWI)

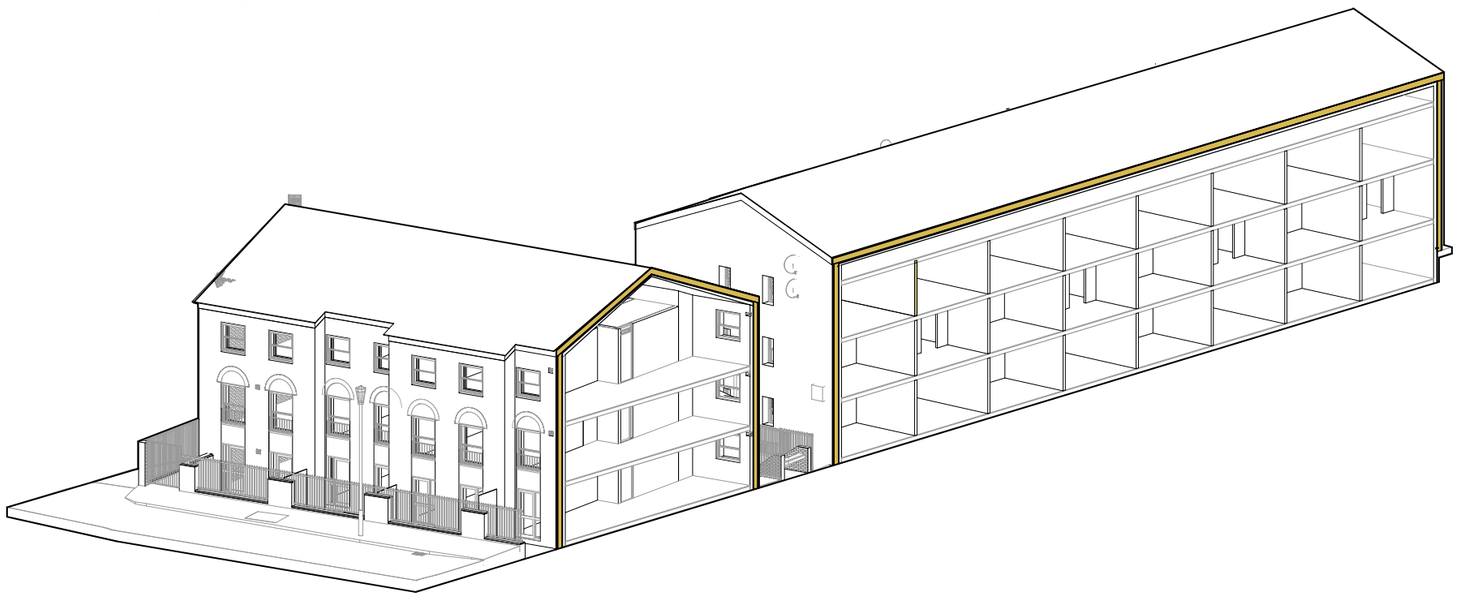

Figure 66 - Axonometric section showing External Wall Insulation (EWI)

Figure 67 - Beattie Passive system construction process

Figure 68 - Beattie Passive system completed retrofit schemes

Figure 69 - Typical EWI construction process using rigid insulation boards

Figure 70 - Airtight window installation

Figure 71 - Brick slips being installed over EWI

Pros

- Improved thermal comfort
- No internal disruption, no decant required
- No internal area loss
- Opportunity for changes to external appearance

Cons

- All facade attachments (downpipes, gutters, etc) will need relocating
- Change to the external appearance of the buildings

4.2 INSULATION STRATEGY OPTIONS

DESIGN IDEAS

The sections below illustrate the extent of the EWI system wrapped around the existing façade.

As well as improving the external envelope the EWI option allows residents to have the opportunity to introduce some colour, break up the facade or highlight special features within the existing brickwork like the arch recess windows (see figures. 73 & 74)

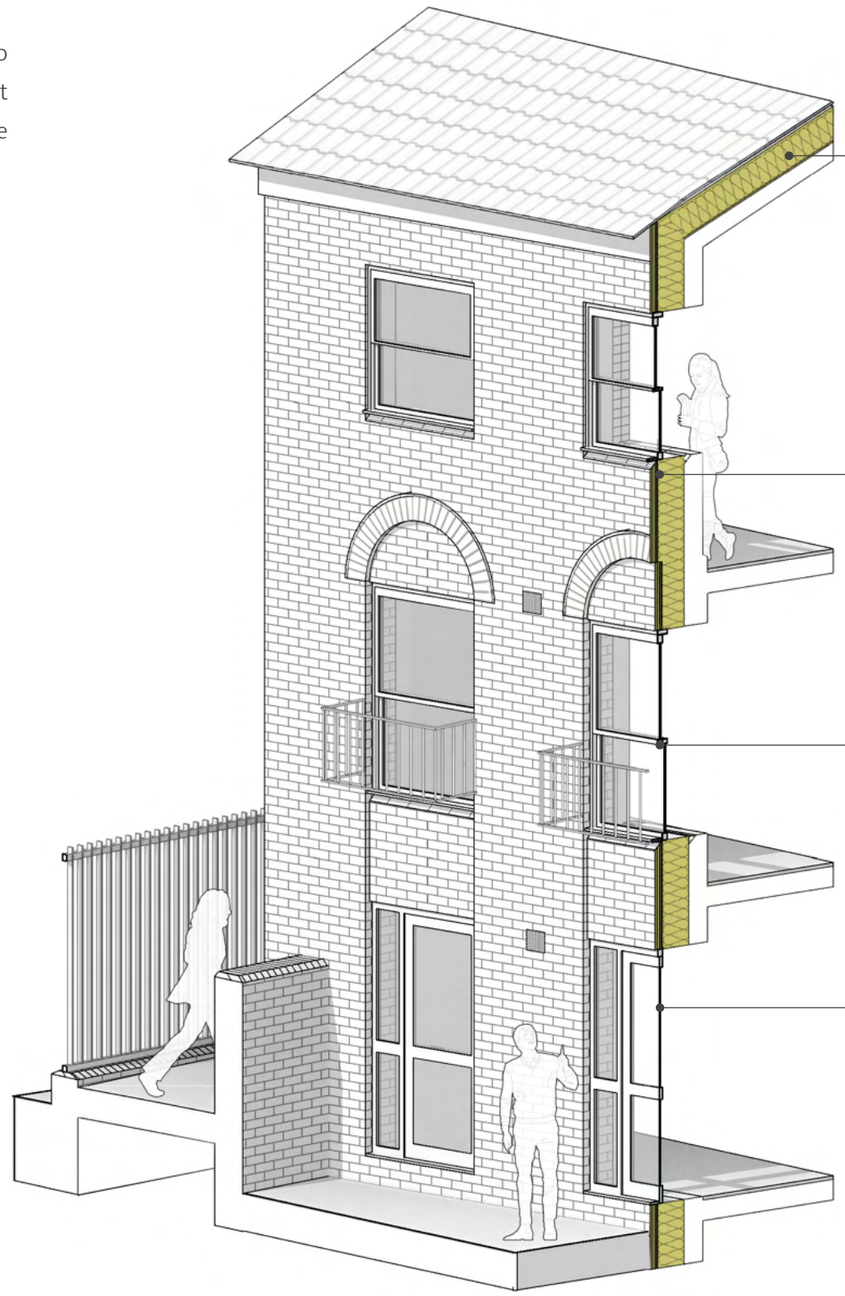

Figure 72 - Section illustrates EWI system with a brickslip finish

Figure 73 - Design ideas 01- the brickslip over the EWI system is used to match the existing façade color with a contrasting brickslip used to highlight the setback feature.

Figure 74 - Design idea 02 – the brickslip is used to emphasise the vertical formation of the existing recess arch windows details along the façade.

4.3 NEW WINDOWS

New windows and doors are proposed to reduce heat loss and allow a more airtight seal to the existing walls. At present there are double-glazed sash windows installed in Camborne Mews.

We propose to upgrade the existing windows with triple-glaze windows. We will work with residents to understand their preferred formats and aesthetics. There are mock-sash windows in the market, which provide the same external appearance but with a casement opening; however, residents will also have the opportunity to modernise the look of the blocks with other type of windows.

Proposed window and external door U value = 0.65 W/m2K

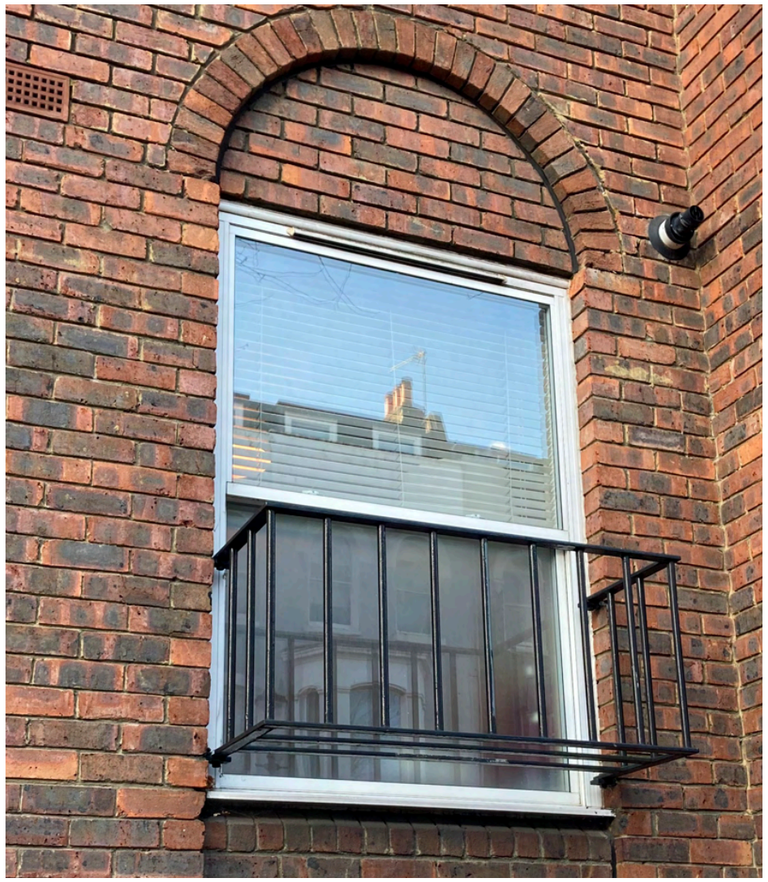

Figure 75 - Existing typical double glazed sash windows

Figure 76 - Example of Passivhaus triple glazed windows

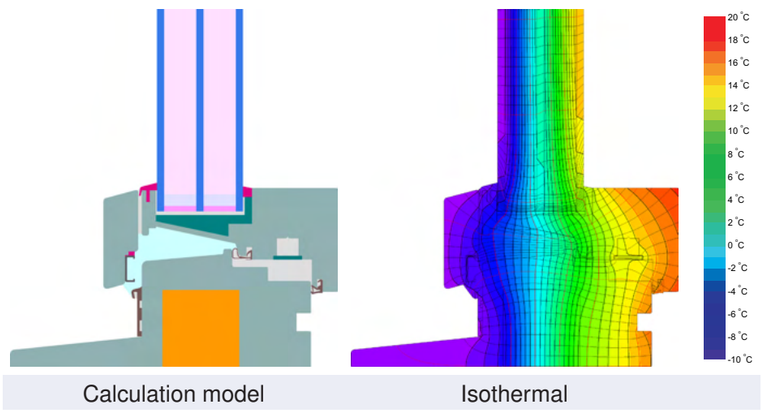

Figure 77 - Triple glazed window - shows the inside face remains warm

Figure 78 - Passivhaus triple glazed window - Section detail

OVERALL APPEARANCE

Installing new windows will affect the appearance of the homes, but can still be kept relatively similar to the existing appearance if preferred by the residents. Different materials and finishes are being presented to the residents along with information on the windows performance for each option in order to receive their feedback.

OPENING MECHANISM

New windows will most likely be side-hung or tilt and turn. However, further discussion with the residents is needed to understand whether they like the way their windows look and open at present, as it may be an oportunity to make windows easier to open, with handles at more appropriate heights.

SAFETY AND SECURITY

Along with Part Q - security tested to PAS 24 or equivalent standard - the windows proposed will reflect the input of the Design Out of Crime consultations. The resident's feedback on how the current windows affect their safety are also being considered.

FINISHES

The material and colour of the outside window frames will have an impact on the overall appearance, and this will be developed with the residents. New windows are likely to be aluminium or timber with possibility of a combination of both (composite).

OPTIONS FOR TRIPLE GLAZED WINDOWS:

Figure 79 - Mock Sliding Sash

MOCK SLIDING SASH

Triple glazed FSC certified timber in redwood & oak mock sliding sash inward opening tilt and turn window. Cost-effective option for projects requiring a traditional appearance.

TILT AND TURN AND SIDE-HUNG

Contemporary windows that combine high quality with a sleek and elegant design. Options of inward and outward opening with identical external profile available. These windows have a contemproary system with a slim aluminium profile for optimal energy performace and low u-values displayed in a variety of colors.

Figure 80 - Tilt and Turn and side-hung windows

Figure 81 - Mineral Wool Insulation above the existing ceiling joists.

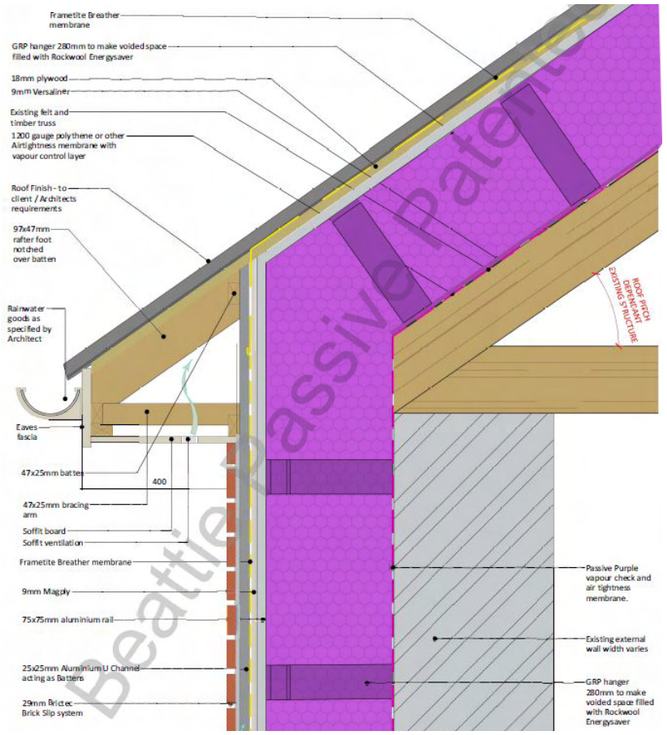

Figure 82 - Insulation added over existing roof structure as part of the EWI T-Cosy System.

Figure 83 - Insulation added between & over rafters

Figure 84 - Existing roof space

If external wall insulation is preferred (particularly a system like Beattie T-Cosy system by Beattie Passive) then the proposal is to install a layer of non-combustible (A1/A2) insulation to cover the existing roof structure.

This create a single continuous void subsequently pumped with non-combustible insulation. (Rockwool EnergySaver or similar) This will allow for us to maintain an airtight layer over the face of the existing building.

Proposed roof U value = 0.12 W/m2K

If, however internal wall insulation is preferred than the proposal is to install additional layers of insulation between and above the existing ceiling joists. Thermal bridges may not be avoidable and this could lead to condensation problems.

Proposed roof U value = 0.2 W/m2K

Pros for insulation over existing roof

- Improved thermal comfort, reduce heat loss through roof
- No internal disruption, no decant required

Cons for insulation over existing roof

- Planning permission required
- Roof structure investigation required
- All facade attachments (downpipes, gutters, etc) will need relocating

Pros for insulation between and above the existing ceiling joists.

- Reduce heat loss through roof

Cons for insulation between and above the existing ceiling joists.

- Hard to ensure airtightness continuity with walls which may result in thermal bridges and condensation risk

With regards to services our strategy has been to ensure that the heating demand is minimised through improved fabric and reduced ventilation losses. The introduction of an MVHR (Mechanical Ventilation with Heat Recovery) is an integral part of the proposed retrofit, in order to improve ventilation levels.

In a typical flat internal air is heated by radiators, keeping residents warm. However, much of this heated air then escapes through gaps in construction. Cold air gets in through the gaps and then this needs to be heated up too, wasting energy. Having a complete line of airtightness around the building means that the heat energy that is put into the building stays in the building.

Once the building is made airtight, residents still need fresh air. An MVHR unit brings in fresh air and pre-warms this with the heat from outgoing air. This fresh, warmed air is then distributed to living areas, while stale air is extracted from kitchen and sanitary spaces. Windows can still be opened, but the building will still work even if windows are kept shut. Good ventilation results in good internal humidity levels, which in turns eliminates internal condensation and mould risk and helps residents that are affected with certain illnesses, such as asthma and allergies. MVHRs also assist with keeping a good indoor air quality in terms of restricting external pollutants coming in (incoming air is filtered) and avoids indoor harmful substances levels building up (thanks to the constant extract of waste/used air).

The installation of MVHRs is assumed to be done on an individual basis, per flat. The design team will work with residents, to identify the best possible locations to install this ventilation unit inside each flat. Any individual heating or ventilation system would (like a gas boiler) require an annual maintenance check.

Camborne Mews is currently not part of the local district heating system. TACE and other consultants are investigating options in order to include Camborne Mews into the overall Lancaster West Heat Network. If the Heat Network feasibility study proves that it is technically and financially advantageous to include Camborne Mews, then that would result in the removal of the individual gas boilers from each flat, and instead each unit would be connected to the Heat Network. This bring several advantages, which are set out in detail in such report, but the main one is that it will result in fewer carbon emissions in the medium and long term (to achieve Net-Zero Carbon heating eventually) by getting rid of gas boilers (very high in carbon emissions) with renewables and Low-Carbon heating solutions (very low or zero carbon emissions). Gas boilers in new builds are to be phased out over the next few years as per the UK government plans to reduce carbon emissions. Although this is yet not required in existing dwellings, thanks to the proposed Low-Carbon Heat Network opportunity in the Lancaster West Estate, this is now an option to reduce these blocks' carbon emissions in the medium and long term.

During the following design stages, ECD Architects will work with MVHR and MEP designers to implement the best heating and ventilation system for the flats in Camborne Mews. Depending on the proposed MVHR unit, it can be located in the entrance hall within a new suspended ceiling or in an adjacent cupboard, all dependent on internal measured surveys and resident's internal layouts. All ductwork can be then routed via the hallway, and valves can be located on top of internal doors, or extended further into the rooms via bulkheads. There are two options for the ductwork: rigid metal and plastic ductwork, we would recommend the metal ones for this project, due to its robustness, efficiency and fire performance. All of these aspects will need to be determined at later stages in the design, once internal measured surveys are received and detail design and calculations are carried out.

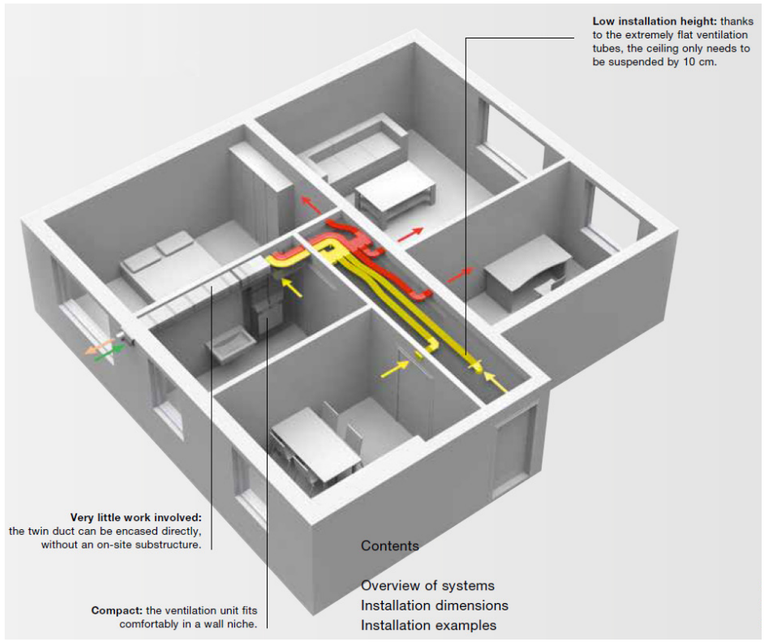

Figure 85 - Typical MVHR layout in flat

4.5 SERVICES

PV PANELS

Photovoltaic Panels, also known as solar panels and PV panels, these collect energy from the sun and turn it into electrical energy to power your home.

The MEP engineer will need to design options for PV panels, subject to Structural Capacity calculations.

Figure 86 - Pitched roof areas which may be available for the installation of PVs, subject to further surveys

OTHER IMPROVEMENTS

In addition to the envelope works suggested in the previous sections of this report, there are also other design considerations that are included as per below.

In subsequent design stages ECD Architects will work closely with LWNT and the residents to provide tailored solutions to the following other aspects, which are part of the residents' top ten priorities:

- Review options for communal entrances. We need to engage with residents to understand their concerns and needs for these areas, as well as their preference in regards to the location of the bin stores.
- Redecoration of communal areas need to be assessed with LWNT and residents with regards to scope and budget.
- Landscape works is currently outside ECD's scope of works, but we would be happy to liaise with Landscape designers to provide solutions to the external areas around the blocks.
- We would need to carefully review the implications of thermal bridges ocurring due to the large amount of steel/aluminium brackets, which will affect the overall u-values of the system.

STRUCTURAL WORKS

BY WILDE CONSULTING ENGINEERING

It is proposed to improve the thermal capacity of the buildings by applying insulation to the external faces of the building. There are currently two options; apply the insulation internally or externally. From a structural viewpoint this makes little difference unless there is a significant weight difference but clearly this may affect the detailing.

It is anticipated that the net increase in the building weight from the insulation will not generally be significant. The only area where a more detailed check is likely to be needed is the relatively lightweight roof construction. If the existing timber rafters or purlins should become over stressed it would however, be straightforward to install additional purlins to break the span of the rafters and reduce the existing purlins loads.

Although foundation details are unknown, as long as the net increase in load on the foundations is kept well below 10% this is lightly to be considered to be acceptable without further investigations. This would need to be confirmed with Building Control when the design has been further progressed.

Visual inspections of the external parts of the building and areas accessible from the communal areas showed no evident issues with the structure. It looked to be in good conditions with no defects seen.

Where there is a retaining structure at the end of the shorter block investigation may be required to establish the existing details to enable the external wall insulation details to be designed in this location.

Also, if it is proposed to add external balconies it is likely that an independent support structure would be required. It is unlikely that the existing structure could support cantilever balconies or even balconies with support at the outer face.

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5.0 BIM OPPORTUNITIES

5.0 BUILDING INFORMATION MODELLING (BIM) OPPORTUNITIES

BIM/DIGITAL DESIGN OPPORTUNITIES

In order to maintain a robust approach to data management and BIM information quality in line with industry standards, the design team and wider consultant and contractor teams will work in a collaborative BIM environment. Details of this will be developed as the Employer's Information Requirements (EIR) and Asset Information Requirements (AIR) are defined with LWNT.

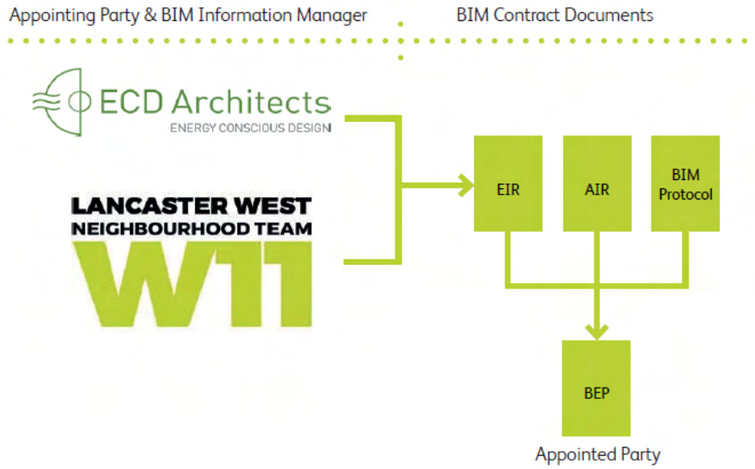

Figure 87 - BIM Strategy

Beyond the delivery of the projects through BIM the following further opportunities could come from the use of BIM:

1. Smart Asset Management
2. Iterative Whole Life Carbon Design Optimization
3. Visualisation/ Resident Engagement

1. SMART ASSET MANAGEMENT

A key opportunity arising from BIM derived datasets is the value it lends to Asset Management. When set out in a Building Execution Plan (BEP) & Asset Information Requirements (AIR) documentation a predetermined dataset can be obtained for managed and non-managed assets.

To augment this approach a Digital Twin could present an innovative approach to capturing BIM data in a 'golden thread' of information, via CoBie datasets for the lifecycle management of the estate. Coupled with live monitored environmental data (further outlined in the following section), valuable insights could be provided to contribute to the undertaking of predictive and proactive maintenance to ensure a safe and healthy built environment is provided for residents.

Furthermore, in line with the client's sustainability agenda for a zero-carbon estate this data based approach could provide the backbone for contributing to a Circular Economy. The accurate recording of assets through Building/ Material Passport could allow the facilities management to keep products, components, and materials at their highest utility and value for as long as possible so that they are repaired, reused or recycled, minimizing waste. This can be supported by active monitoring to give advanced insight for predictive maintenance.

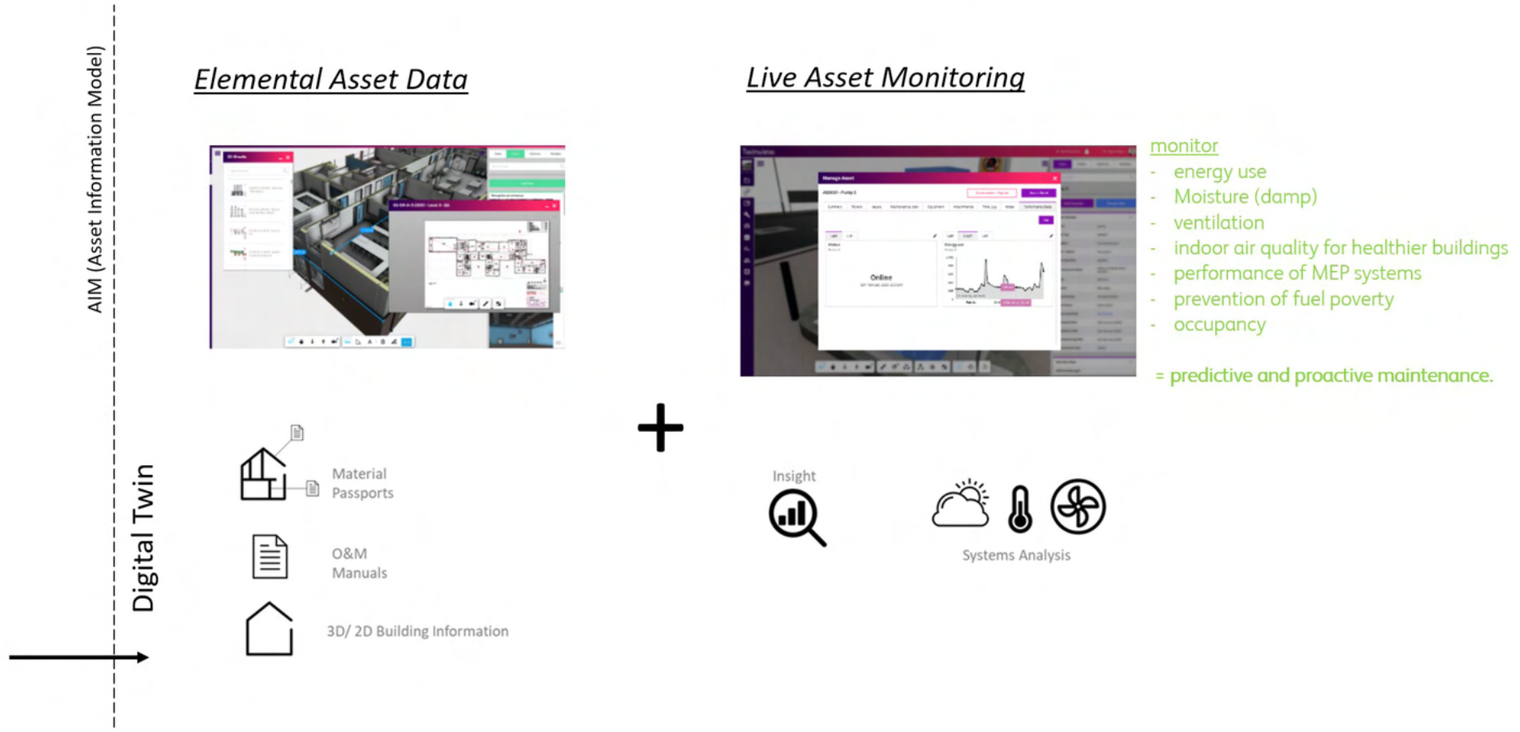

Figure 88 - Digital Twin

2. ITERATIVE WHOLE LIFE CARBON DESIGN OPTIMISATION

A robust and accurate BIM design model with both geometric information and elemental data could prove particularly useful information for developing iterative design solutions and providing data for operational and embodied carbon analysis (in-house and for sub-consultant information purposes).

From an embodied carbon perspective to appraise constructional systems to help reduce core contributers. In respect to operation carbon/energy use reduction; linked plug-ins between PHPP and BIM software could provide a more accurate volumetric and geolocation data for analysis

The diagram below illustrates the possibilities of BIM based design processes and links to external softwares

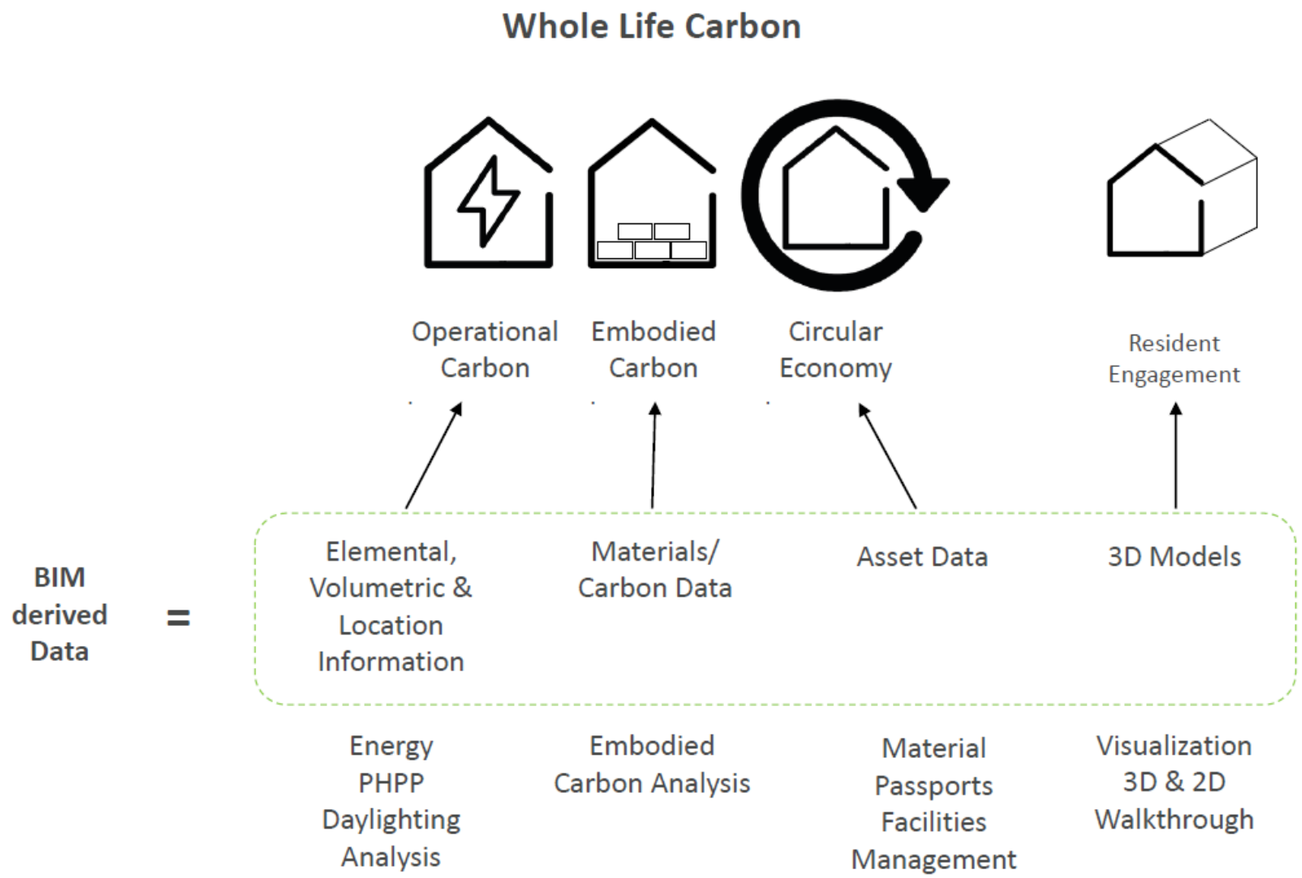

Figure 89 - The possibilities of BIM

3. VISUALISATION/ RESIDENT ENGAGEMENT

A 3D design environment could provide opportunities for a digitally inclusive approach to design communication and engagement. The potential exists alongside plug-in rendering software to utilise 3D modelling to provide immersive virtual reality walkthroughs and design visualisations to illustrate design proposals to residents as the co-design collaboration evolves.

Figure 90 - Digital Visualisation

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6.0 MONITORING & POE PROPOSALS

6.0 MONITORING & POST OCCUPANCY EVALUATIONS (POE) PROPOSALS

MONITORING & POST OCCUPANCY EVALUATIONS

Smart monitoring and reporting of energy use form a fundamental basis of the project's delivery to ensure performance is delivered 'as-designed'.

Fabric and whole building performance will be evaluated pre- and post-retrofit on 100 % of properties subject to retrofit works using non-disruptive innovative methods for the following reasons:

1. Pre-Retrofit: to test existing situation and identify core issues.
2. Post Retrofit: to test as-built situation and verify 'as-designed' performance.
3. In-Use: Long-term monitoring via consumer unit such as Switchee or Nest to feed into a remote monitoring dashboard for asset performance analysis.

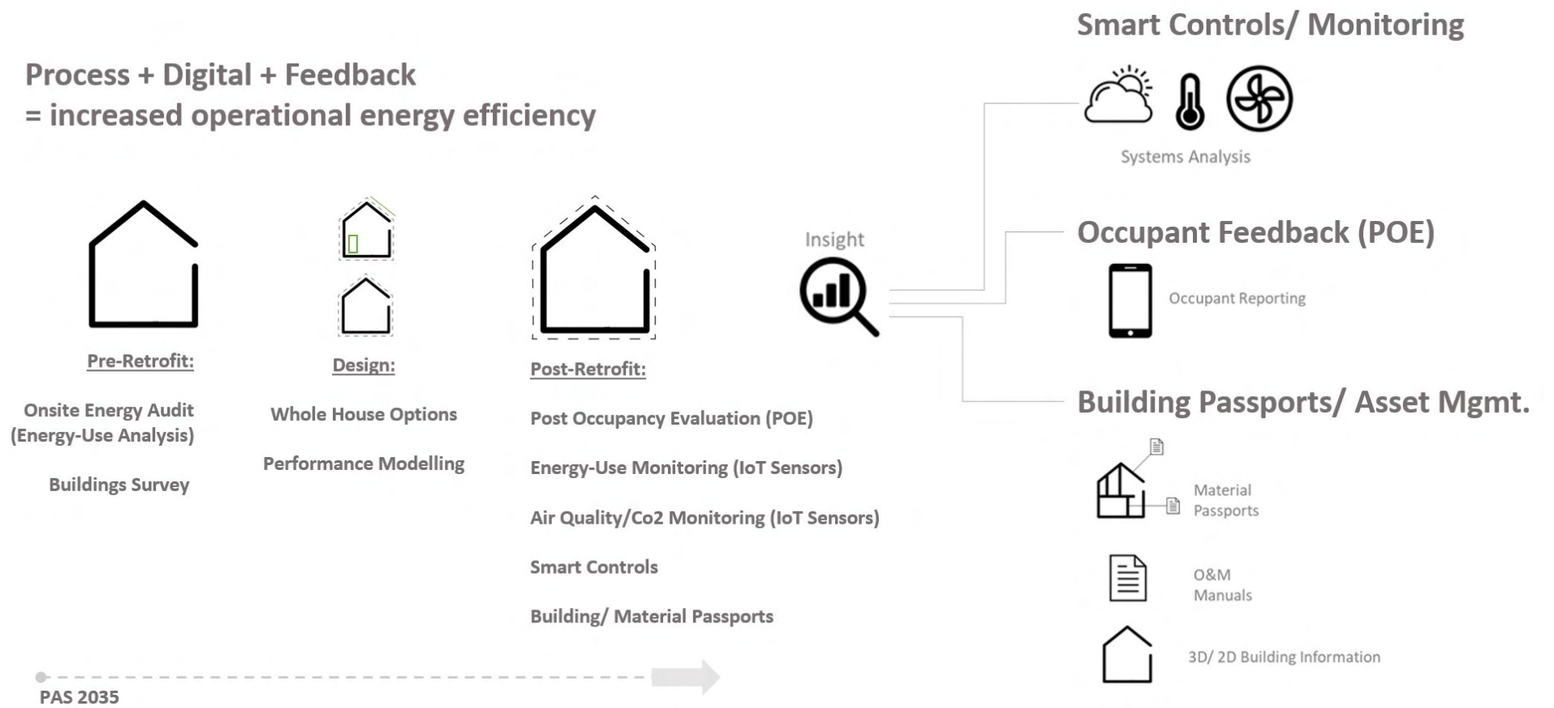
The results of each stage will as a whole contribute to optimization of operational energy use, thus reducing carbon in-use.

Pre/Post Retrofit: The methodology for pre- and post-installation is to use innovative non-invasive methods including Smart HTC to measure whole building thermal performance and Pulse air tightness testing. We will use Build Test Solutions' Smart HTC technique: which enables whole building heat loss to be determined with just 21 days of internal temperature and energy consumption monitoring using 4-5 temporary sensors.

The pre-retrofit analysis will feed into the design process to ensure an accurate reflection of existing scenario.

In Use: Over the long term this will be complemented by energy use and environmental data from smart monitoring, Both Nest and Switchee smart thermostats will be trialled to measure energy consumption and enable LWNT to measure performance, address concerns around fuel poverty, and address any potential performance gaps. In the long run, this could also allow HTCs to be calculated remotely further reducing disruption to residents.

All assessment and evaluation will be fully documented, and results will be shared broadly through LWNT's research partnership with LSE and networking with colleagues across the housing and retrofit sectors to support future projects and help meet the UK's target of going net-zero by 2050.



Furthermore, post-handover performance through smart monitoring data could be benchmarked against actual resident Post Occupancy Evaluation (POE) detailing their experience. The POE feedback could in line with LWNT & W11 Digital Innovation objectives be obtained through digital platforms to inclusively harness community feedback on satisfaction with works undertaken.

Combined, this data will build up an evidence base to inform other projects, including the actual performance data as well as an evaluation of the use of these methods to feed back into design models to formalise understanding of our assets.

The BIM process and possibility of a Digital Twin will argument smart monitoring to form a cohesive holistic approach to asset monitoring and proactive management, supported by a transparent platform for residents which could play host to all manner of their buildings actual performance and succinct records of their constituent parts.

7.0 CO-DESIGN
AND RESIDENT CONSULTATION

7.0 CO-DESIGN AND RESIDENT CONSULTATION

Co-Design with residents and engagement is an essential part of LWNT's process for the retrofit of the estate, and has been evidenced by the engagement events that have already happened. ECD fully support LWNT in their commitment to being resident-led, acting with sensitivity, having adult to adult conversations, making decisions collaboratively with residents as well as being open and transparent about everything we do.

Residents have been involved in every stage of the refurbishment process so far, through ideas days, prioritisation workshops to household interviews as well as being part of the wider LWNT team. Following initial resident consultation undertaken by Cullinan Studios from January to March 2018, ECD reviewed the outcomes and mapped the priorities of Residents and of LWNT to highlight where aspirations overlap. The conclusion to this is twofold. Firstly, a strong overlap is evident between the 'Net Zero' aspiration of LWNT and the residents. Secondly outside of the scope of 'Net Zero' energy conservation core objectives, several resident concerns regarding the communal estate facilities will be addressed and should not be lost sight of. There are however some priorities raised by residents which are outside the scope of ECD's work, and this will be made clear to residents to avoid any misunderstanding.

In the next stage of this work ECD will work with LWNT and residents to find solutions which priorities the well-being and satisfaction of residents, to create a vision for their estate retrofit. Something that they are proud of and have warm healthy homes residents desire. Residents will continuously be engaged throughout the design, delivery and during post-work evaluation using innovative inclusive methods of engagement.

To support a collaborative design process, we wish to ensure that we connect the engagement workshops with meaningful design decision making, generating real social value and impact. We hope that by undertaking the design development process in this manner that we foster in the community a greater sense of responsibility and respect for their neighbourhood.

NEXT STEPS

LWNT and ECD will be holding engagement events starting from the month of July to get feedback from the residents on the proposals and hear about their needs and wishes for Camborne Mews.

Figure 91 - 'Open House' engagement events organised by LWNT

8.0 CONCLUSIONS

8.0 CONCLUSIONS

This report highlights the findings from the existing surveys and reports carried out on Camborne Mews to give a general setting of where the current building is at.

The options put forward in this feasibility report demonstrate that considerable energy saving can be achieved in Camborne Mews, offering lower fuel bills and improve thermal comfort to all residents by addressing key elements of the building.

The options put forward follow a 'Whole House' retrofit strategy in compliance with PAS 2035, tackling the building fabric first thereby enabling improved ventilation and highly efficient heating and hot water.

NEXT STEPS

Fire Safety consultant (to Maximise Safety)

IFC have been appointed as fire consultant, to maximise safety, this report will be shared with them for comment and further meetings will be held as the project progresses, to ensure compliance in all aspects of the work, as well as to recommend best-practice solutions where these exceed statutory compliance.

Services consultant

While TACE are currently appointed to address estate-wide services, and the client has recently appointed them to also provide services on a lot/block basis, their work will commence during RIBA Stage 2.

Building Investigations

Further investigations are needed as follows:

1. Confirm structure to the roof and within flats, particularly roof structure and floor/ceiling build up. This will be carried out during Stage 2.
2. Whole building fabric heat loss measurement will give a real-world figure for heat loss from the buildings. SmartHTC is carried out by leaving temperature and relative humidity sensors in a home for several weeks, and taking meter readings at the start and end of this period, to establish how much energy has gone into the house over the period and what the temperatures this has resulted in.
3. Air permeability testing of a few homes will allow more accurate figures to be put into the PHPP models of the homes, giving a better understanding of both the current heat demand and how effective particular interventions might be at reducing this.
4. Existing service routes need to be confirmed, including soil and vent pipes, rainwater down-pipes, gas, water and electricity supplies.
5. In-situ U value measurements will also allow more accurate inputs into the existing model, again leading to more reliable outputs.
6. Compartmentation and risers surveys.
7. Additional Fire Risk Assessments
8. Further Asbestos Surveys
9. Cavity wall insulation surveys

Planning

A preliminary meeting was held with Martin Lomas and Laura Fogarty of RBKC planning department on 9th December 2020. Design teams for each area of the estate presented their initial strategies. As this was not a formal pre-application process feedback was informal, but it was noted by RBKC that many proposed elements of work would not require planning permission and that a Planning Performance Agreement would likely be the best way to address the various elements of work that will be needed

over time, and confirming which of these require planning permission. It was also suggested that if residents want refurbishment to happen, it will hold great sway and the planning department will not be minded to refuse.

ECD will work with LWNT to establish the best approach for ongoing liaison with the planning department to ensure that all works that require planning permission are granted in a smooth and timely manner.

Building Regulations

ECD will hold an initial meeting with building control at the start of Stage 2 to confirm to what extent the proposed works will required building regulations approval, and at what point proposed works trigger requirements for upgrades. Particularly attention will need to be paid to compliance with Part B (fire) and Part L (energy efficiency).

Leaseholders

There are 7 leasehold flats in Camborne Mews. The processes for getting agreement for works from these residents needs to be fed into the programme to ensure that this does not delay the start on site.

CDM

DeRisk are Principle Designers for works across the estate, with Mark Allen as the lead consultant. Derisk have worked closely with ECD Architects whilst preparing this report and their initial advice is included in Section 3.5

Retrofit Coordinator

The works are being planned and designed in line with the recommendations of PAS 2035 and ECD are carrying out the Retrofit Designer role on this project. The role of Retrofit Coordinator is being currently agreed with LWNT. This will ensure that there is an over-arching view of the retrofit strategy taken across the disciplines and in relation to the other works that hzzz intend to carry out.