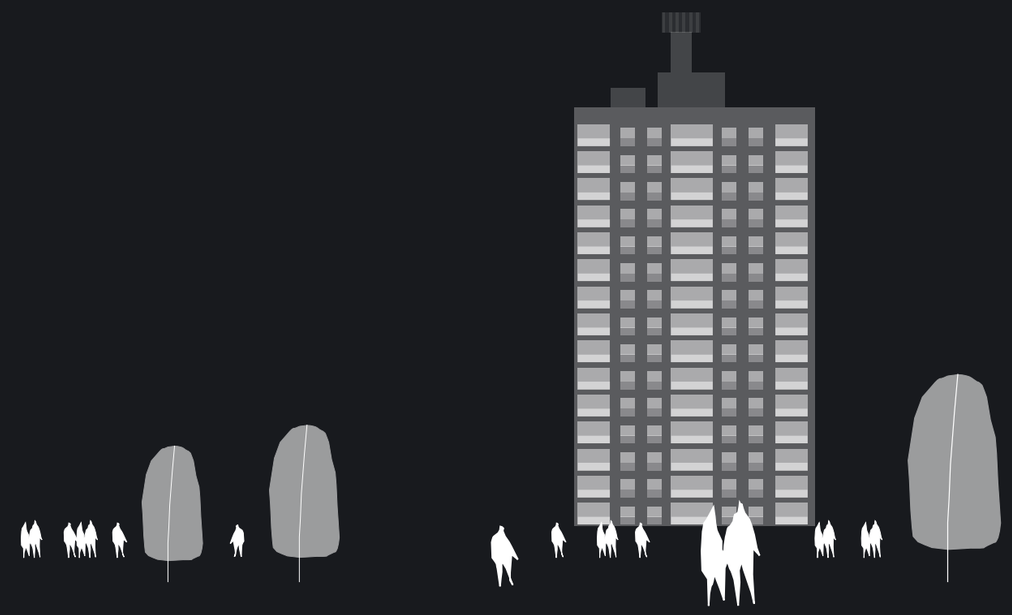
Avro Hollows, Croydon Drive, Newton Heath.
Design Statement.

MANCHESTER
CITY COUNCIL

casey PRO-ENVIRONMENT

Aew



Together we
Create
Collaborate
Contribute

By adopting this multi-layered approach, and rethinking how we live and inhabit spaces, we contribute to tackling climate change while leaving a meaningful and lasting impact.

This Design Statement has been prepared by AEW Architects and Designers Ltd on behalf of The Casey Group Ltd.

Client:

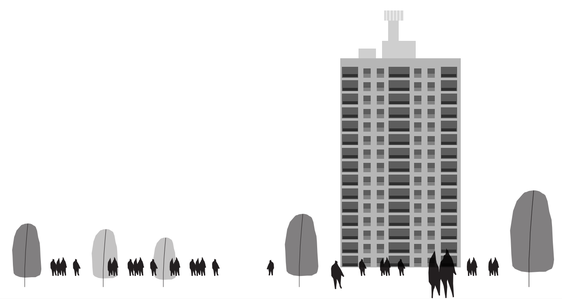
Manchester City Council Housing Services
(Formally Northwards Housing)
White Moss Road
Manchester
M9 6NZ

Submitted by:

AEW Architects and Designers Ltd.
7th Floor, Trinity Court
16 John Dalton Street
Manchester
M2 6HY

Contents.

1. Introduction
2. Existing Context
3. Concept & Design Development
4. Proposed Materials
5. Conclusions
6. Glossary



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1. Introduction.

Project Introduction

Description

Avro Hollows is the tenant management organisation (TMO) for the Croydon Drive Estate in Newton Heath, Manchester. The estate encompasses 312 properties across 4no. high rise blocks & 2no. low rise terraced blocks (1, 2 & 3 bedroom flats) along Croydon Drive.

The high rise towers are Lancaster, Lincoln, Dobson and Shackleton. These high-rise blocks appear to date back to the 1960's. They are 15 storeys high and are very similar in appearance and layout.

AEW Architects have been appointed to provide multi-disciplinary design services from RIBA Stages 0-7, to refurbish the Croydon Drive Estate high-rise and low-rise blocks, as part of an extensive programme of works.

Proposals

Through engagement between the client and the Avro Hollows TMO, the following core principles have been agreed upon to form part of the proposals:

+ The refurbishment will be undertaken in full consultation with the TMO
+ All refurbishment work will be done sensitively and in co-operation with residents.
+ No homes will be demolished
+ Enhance the aesthetic cohesion between the low-rise and high-rise blocks.
+ The refurbishment aims to improve the sustainability of the estate, which can be maintained to a high standard.
+ The refurbishment works will prioritise a fabric-first approach
+ The refurbishment aspires to achieve a 15% improvement over the current minimum U-values specified in Part L.

The improvement works propose to deliver new energy-efficient windows and entrance doors, EWI system to the external walls with the exploration of enclosed balconies incorporated into the façade, replacement roof insulation and waterproofing.

It is intended that these works will result in:

+ Warmer homes
+ Reduction in energy consumption
+ Improved living environment
+ Improved ventilation to reduce the risk of damp and mould

This process will enable the Croydon Drive Estate to move one step closer to becoming a model 21st Century social housing estate.

+ 1. Ten Acres Lane Sports Complex
2. Clayton Vale Mountain Bike Trails
3. Clayton Vale
+ 4. Church of the Holy Family
5. St Willibrords Catholic Primary School
6. National Cycling Centre
+ 7. Philips Park
8. Etihad Stadium (to the North is the Etihad campus, Manchester Tennis and football centre.
9. Clayton Hall
+ 10. Seymour Road Academy
11. Lewis Road Children's park
12. Newton Heath

N

Site Boundary Line

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2. Existing Context.

Croydon Drive Estate

Avro Hollows / Croydon Drive Estate

The Croydon Drive Estate is located in Newton Heath, in north-east Manchester. It consists of 312 residential units across 4no. high rise blocks & 2no. low rise terraced blocks (1, 2 & 3 bedroom flats).

The units are managed by the Avro Hollows Tenant Management Organisation who manage the estate in association with Northwards Housing, on behalf of Manchester City Council. The tenure is exclusively social rent, managed by the Avro Hollows TMO.

High-Rise Blocks

Lancaster, Dobson, Lincoln & Shackleton Courts are high-rise tower blocks each at 15 storeys height above external ground level. Built in the late 1960's, these four blocks are arranged at the centre, north east, south east and south west corners of the site.

The towers are constructed of reinforced concrete with concrete infill panels. The towers have previously received a treatment of External Wall Insulation (EWI) consisting of phenolic insulation with render finish, which is to be removed as part of this project.

Each tower consists of apartments spread over floors one to fourteen, with office, laundry, bin store, community room / communal lounge and two additional apartments to the ground floor.

NOTE: Only Shackleton, Lincoln and Dobson towers have basements

Low-Rise Blocks

Audax Walk (16no. units) and Underhill Walk (8no. units) are the two low-rise blocks of accommodation to the north west of the site. These are two-storey dwellings arranged in an L-shape. It is assumed that the low-rise blocks are contemporaneous with the adjacent high-rise blocks. The blocks are constructed of brick with pitched, tiled roofs.

Site and Flat Access

The current proposal has no impact on the existing access to the site and flats.

Existing Buildings

HIGH-RISE

Elevations

The existing facades are faced with a white-coloured cement render which forms part of a previous EWI scheme which was installed to each block (which is to be removed as part of this project.

The existing windows have also been replaced since the blocks were initially built, these comprise double-glazed units within white PVC frames, with coloured spandrel panels in light green, light blue, dark blue and red providing visual differentiation between each block.

Apartments with balconies feature guardrails which follow a similar colour scheme.

The roof is a flat roof, with a central plant room occupying the central portion of the top storey

Existing Buildings

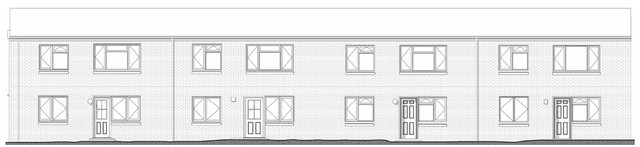
LOW-RISE | Underhill walk

Low-Rise Cottage Flats - Elevations

The existing facades are faced with brown brick. The existing windows are double-glazed units within white PVC frames, with coloured spandrel panels.

The roof is pitched and covered in concrete tile.

NORTH ELEVATION



WEST ELEVATION

SOUTH ELEVATION

EAST ELEVATION

Existing Buildings

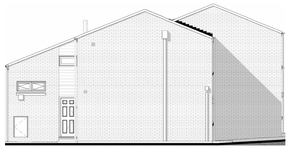
LOW-RISE | Audax walk

Low-Rise Cottage Flats - Elevations

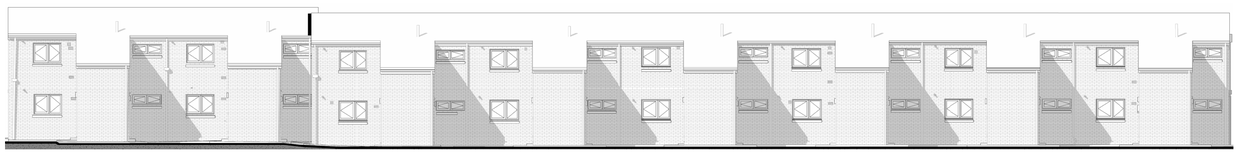
The existing facades are faced with brown brick. The existing windows are double-glazed units within white PVC frames, with coloured spandrel panels.

The roof is pitched and covered in concrete tile.

EAST ELEVATION



WEST ELEVATION



NORTH ELEVATION

SOUTH ELEVATION

Unit Mix & Usage

High-Rise Towers (4no.)

	1-Bed	2-Bed	3-Bed
Ground Floor*		1	1
Upper Floors	3	2	
TOTAL per tower (Ground + 14no. Upper Floors)	**42**	**29**	**1**

* Ground floors also contain 1no. caretaker room per block

Low-Rise Blocks (2no.)

	1-Bed
Cottage Flat	24
TOTAL across both blocks	**24**

Totals

	Total Apartments	
High-rise Towers (4no.)	288	(4 x 72)
Low-Rise Blocks (2no.)	24	(8 + 16)
TOTAL	**312**	

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3. Concept & Design Development.

Client Brief & Aspirations

Avro Hollows site (looking east).

Low-rise blocks: Audax Walk (left), Underhill Walk (Centre)

High-rise blocks (from left to right): Lancaster Court, Dobson Court, Shackleton Court, Lincoln Court

Avro Hollows aims to become a 21st Century model social housing estate. The four high-rise towers and two low-rise blocks are to be refurbished to dramatically improve their energy efficiency, as well as addressing other issues identified by the design team or residents. AEW Architects and the rest of the team have been appointed by Casey for the refurbishment works.

The approach will be to work with the client and other consultants to build on the previous engagement with the TMO, and develop the proposals along the following lines:

+ Contemporary aesthetic approach & common theme across the estate
+ 3no. different facade concept options (with an over arching design philosophy, developed with reference to the sites) which has been produced and this report is moving forward on the basis of option 2 'Bookends' being the preferred option.
+ Chosen facade concept for the high-rise towers transferred across to the low-rise blocks to create cohesion.

Proposed Scope of Works

Proposed Scope of Works

This project will prioritise a Fabric First Approach, including:

+ Installation of new External Wall Insulation (EWI). Include the removal of existing phenolic insulation, with new rendered facade.
+ Thermal upgrade of roof via replacement insulation; externally as part of the EWI system (high rise), internally within lofts (low rise). Consequential work to include new roof tiles & new roofline to the low rise to enable interface with the EWI system.
+ Upgrade of existing windows & doors with enhanced, energy efficient, well-sealed replacements which include trickle ventilation. To be fully reversible to enable cleaning
+ New main entrance doors to high rise. New flat entrance doors to low rise
+ Enclosure of external balconies to highrises with glazing to create a more usable space for residents.

The Location

Manchester M40
Avro Hollows

The Project

Refurbishment of 4 High rise and 2 Low Rise Apartments aimed at modernising their performance, aesthetics, and functionality to meet contemporary standards.

To Provide:

+ Installation of new External Wall Insulation (EWI).
+ Thermal upgrade of roof via improved insulation; externally as part of the EWI system (high rise), internally within lofts (low rise).
+ Upgrade of existing windows & doors with enhanced, energy efficient, well-sealed replacements which include trickle ventilation.
+ New main entrance doors to high rise. New flat entrance doors to low rise
+ Enclosure of external balconies to highrises with glazing to create enclosed balconies.

To Deliver:

+ Enhance thermal and energy efficiency.
+ Redesigned building elevations with a modern aesthetics.
+ Promote environmental sustainability by reducing energy consumption and environmental footprint.

Historical Context and Concept

This page illustrates the history of the site, and explains the contextual basis on which we have developed our concept design for the external elevations (for both low rise and high rise).

Significance of the Name

Avro Hollows is named in reference to the British aircraft manufacturer, Avro Aviation. The company, one of the first aircraft manufacturers in the world, produced many iconic bombers of the 2nd world war after which 3 of the 4 high rise blocks in the estate are named: -

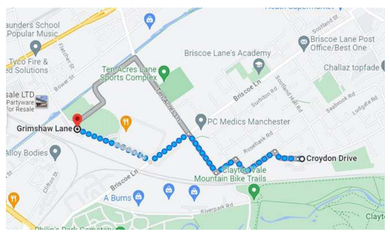
+ Shackleton
+ Lincoln
+ Lancaster
+ The row of cottage flats, Audax Walk is also named after the HG Hawker Audax biplane, a light bomber.

The other 2 buildings on the estate are named after significant figures connected with Avro.

+ Clifford Reginald Underhill, a flight sergeant on board Lancaster bombers.
+ Sir Roy Dobson, a major figure in the development of AV Roe and manufacture of Lancaster bombers.

Significance of the Location

Newton Heath works became the headquarters of Avro in 1932 where production of all aircraft types took place including Blenheim, Ansons, and Lancaster components. The Avro Hollows estate is located within a mile of the Newton Heath Avro headquarters site.



Concept Design Options

As part of our concept design at RIBA stage 2, we came up with three overall concept options for the high-rise building. It was the intention that the chosen option was to be represented in overall theme within the elevation design for the low-rise buildings.

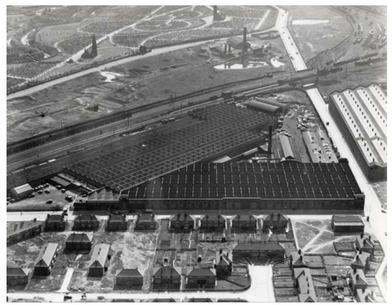
In recognition of the connection to Avro, the concepts of the 3 proposals draw reference to aviation with literal to more abstract iterations of the following:-

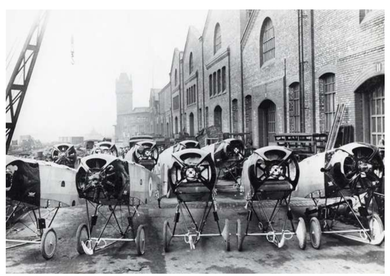
+ Take Off
+ Flight and Levitation
+ Weightlessness

We explored this within our RIBA stage 2 concept design options using the following key strategies:

+ Liberation of the building from the ground plane with darker toned materials at the base and lighter tones above.
+ Gradation of colour tones to feature spandrel panels from bottom to top.
+ Aerodynamics - Motifs of wings expressed by accent colours.

The current design option 2, and previous options, are not merely a superficial aesthetic upgrade. They are grounded in a concept which subconsciously resonates through the area and residents.





Concept Development

Description

From the historical references and resulting concepts, we developed 3 different design options.

Design Option 1 - “Vertigo” designed to express vertical elements.

Design Option 2 - “Book ends” to accentuate solidity of the flanking elements.

Design Option 3 - “Tiers”, stacked design to articulate an architectural form.

Commonalities between the options are:-

-Elements of dark grey render to provide contrast.

- Orange wing feature strips direct to the entrance and lift the main body of the building off the plinth.

- The plinth is 2 storeys in height and of dark coloured brick to provide lift off for the floors above.

- The main body of render is off white.

- Spandrel panels and frames to windows in anthracite.

- Spandrel panels to balconies / potential winter gardens to either the central element or ends in graduated tones of colour.

- There will be space allocated for a large panel on the gable to stencil the name of the building.

Planning Advice:

We made a formal pre-application submission to the planning department to obtain feedback as to their preferences to facilitate the smooth passage of the scheme through the full planning application. The 3 design options were presented and a request for advise on whether the application should be submitted as 1 site or 6 separate buildings was requested.

Feedback from Sue Wills - MCC Planning

Whilst we have not yet recieved formal pre-application feedback, we have received verbal confirmation that the council would prefer submission as one application and would be generally supportive of any of the design options that were presented.

Previous stages options:

Chosen Concept to proceed to Planning Application

Design Option 1
‘Vertigo’

Design Option 2
‘Bookends’

Design Option 3
‘Tiers’

Developed Proposal

High Rise - Proposed Option

"Bookends"

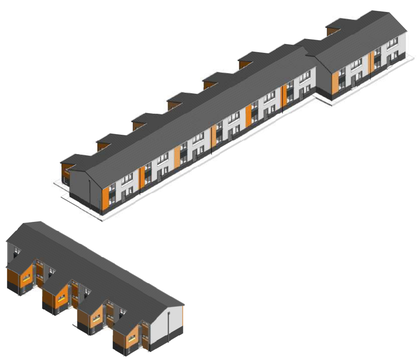
+ Main façade broken up in to 2 bookends and a central element above the dark toned plinth.
+ Orange wing feature strips direct to the entrance and lift the main body of the building off the plinth.
+ The plinth around the building is 2 storeys in height.
+ The main body of render is off white.
+ Spandrel panels and frames to windows in anthracite.
+ Spandrel panels to balconies / enclosed balconies to book end elements in graduated tones of colour.
+ There will be space allocated for a large panel on the gable to stencil the name of the building, similar to the image opposite.
+ Note - Dobson, Shackleton, Lincoln and Lancaster towers are all to follow this design.

External Wall Finishes - High-Rise - Proposed Option

Developed Proposal

Low-Rise Cottage Flats

+ For cohesion, the colour scheme and materials duplicate those on the high rise.
+ Incorporates a brick slip plinth up to ground floor cills.
+ The main body of render is off white with orange feature panels to the out rigger to highlight the flat entrances.
+ Grey spandrel panels introduced in either render or non-combustible boards, those to the flat façade provide a rhythm to the elevation.
+ The new tiled roof colour complements the brick plinth.



External Wall Finishes - Low-Rise - Proposed Option

LINCOLN
DOBSON
SHACKLETON

SHACKLETON
LINCOLN
DOBSON
LANCASTER

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4. Proposed Materials.

Proposed Materials

Overview of the Works

The 4 high rise blocks of Lancaster, Shackleton, Dobson and Lincoln are proposed to undertake a PAS2035 compliant Retrofit under the SHDF funding route for Manchester City Council Housing Services (Formally Northways Housing) alongside the 2 low rise apartment blocks of Audax and Underhill Walk.

The scope of the project is outlined to the right and through the summary diagram overleaf - which is a fabric first approach.

Full SAP modelling has been undertaken on an archetype basis to validate the design process achieves the metrics set out.

Intended outcomes of the project

- Improved building safety through the removal of the now banned phenolic insulation.
- Each apartment to achieve an EPC C as a minimum
- Remove mould and damp issues caused by current construction
- Improve the usablity of balcony spaces
- Update the aesthetics of the external facades of the building

Scope of the Works - High Rise

1. EWI (external wall insulation) – Strip off existing phenolic insulation and replace with “Weatherby Stone Wool Silicone External Wall Insulation System” and “Weatherby Stone Brick Slip System” at ground and first floors

2. New windows – Epwin Elite 70 - Fully reversible uPVC framed double glazed units. uPVC framed double glazed units, to achieve u-value of 1.3 W/m²K. Spandrel panels where required to be glazed in Metalline Ultima ULT2 panels.

3. Roof Insulation – Existing roof system and insulation to be stripped and roof deck prepared for new system. New Bauder Total roof system (BTRS) with Bauder PIR insulation to be installed including parapet upstand and kerbs

4. The balconies are to be enclosed by Sunparadise system WD100 (spec. to be confirmed) to provide more shelter and consequently usability to the balconies and limit opportunities for vermin. The enclosed balconies are uninsulated and single glazed.

1. EWI (external wall insulation)
2. New double glazed windows
3. Roof Insulation - Stripped and Replaced
4. The balconies are to be enclosed by Sunparadise system WD100 (spec. to be confirmed)

Scope of the Works - Low RIse

1. Cavity fill (spec tbc upon cavity thickness clarification) and EWI “Wetherby Stone Wool Silicone External Wall Insulation System - WBS HECK Silicone ‘K’ 1.5mm Textured Finish” and Wetherby stone brick slip system up to ground floor window cill level.

2. New windows – Epwin Elite 70 - Fully reversible uPVC framed double glazed units. uPVC framed double glazed units, to achieve u-value of 1.3 W/m²K. Spandrel panels where required to be glazed in Metalline Ultima ULT2 panels.

3. Ensure loft insulation sufficient and continuous with cavity wall fill. Include for 400mm thk Rockwool Roll to roof voids and extending the eaves and verge overhang to extend 200mm beyond render line to incorporate new EWI details.

Wall Insulation Specification

High-Rise

Strip off of existing phenolic insulation - assumed to be 50mm thick and replaced with “Wetherby Stone Wool Silicone External Wall Insulation System - WBS HECK Silicone ‘K’ 1.5mm Textured Finish” and Wetherby stone brick slip system at ground / first floor level.

Thicknesses to be as follows:

+ Insulation to Fluted Areas: 150mm Stone Wool Insulation
+ Insulation to Non-Fluted Areas (exposed slab edges): 200mm Stone Wool Insulation
+ Insulation to Balcony Returns:Stone Wool Insulation(Thickness to be confirmed)
+ Flutes to parged out / filled to create flush surface free of cavities where fire could migrate.

Low-Rise

Cavity fill (spec tbc upon cavity thickness clarification) and EWI “Wetherby Stone Wool Silicone External Wall Insulation System - WBS HECK Silicone ‘K’ 1.5mm Textured Finish” and Wetherby stone brick slip system up to ground floor window cill level.

Thicknesses to be as follows on the assumption that cavities are 50mm wide:-

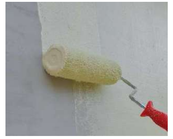
+ Insulation to general wall: 90mm Stone Wool Insulation

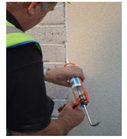
Insulation / build up to recessed panels adjacent to flat entrances:

+ 5mm adhesive
+ 30mm stone wool insulation
+ 6mm for basecoat
+ 5mm brickslip adhesive
+ 9mm slip
+ Total 55mm

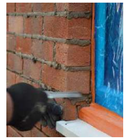
Preparation of wall & Installation of insulation

Installation of substrate





Application of render



Appication of brick slips

External Wall Insulation (EWI)

EWI forms the key part of the Fabric First Approach we are proposing for this project. This option allows for a layer of non-combustible (A1/ A2 rated) insulation to cover the external face of the façade with a finishing layer - brick slips, render or a combination. New windows and doors will be installed in the new outer layer.

This system offers a quick installation process, which provides high levels of insulation, fire protection and acoustic attenuation. External Wall Insulation (EWI) can be fixed from the outside, with minimal disruption to the residents, nor internal area losses. EWI allows for the whole building to be “wrapped” in insulation, thus eliminating most thermal bridges and avoiding heat and air leakage.

Roof Insulation Strategy

Roof Insulation Strategy & Existing Plant Considerations

High-Rise

Bauder report states all flat roofs insulation saturated. Existing roof system and insulation to be stripped and roof deck prepared for new system. New Bauder Total roof system (BTRS) with Bauder PIR insulation to be installed including parapet upstand and kerbs.

Low-Rise

Ensure loft insulation sufficient and continuous with cavity wall fill. Include for 400mm thk Rockwool Roll to roof voids and extending the eaves and verge overhang to extend 200mm beyond render line to incorporate new EWI details.

Pros

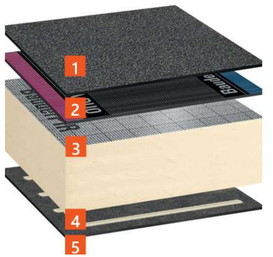
+ Improved thermal comfort, reduce heat loss through roof
+ No internal disruption, no decant required

Cons

+ Roof structure investigation required
+ All facade attachments (lights etc) will need relocating

	Function	Product name	Weight (kg/m²)
1	Cap sheet	Bauder K5K (Charcoal Grey)	6.5
2	Underlayer	BauderTEC KSA DUO	3.5
3	Insulation (0.15)	BauderPIR FA-TE	4.2
4	Insulation attachment method	Bauder PU Tin Adhesive	0.16
5	Air and vapour control layer (AVCL)	BauderTEC KSD FBS	2.5
	Primer	Varies depending upon substrate type – please refer to specification	nominal
System Build-up			**16.86**

Warm roof indicative build-up



ROCKWOOL Roll/TwinRoll. Rollbatt over the joist, cross laid over the joists.

ROCKWOOL Roll/TwinRoll. Rollbatt laid between the joists.

Window Strategy

Windows

To achieve U-value of 1.3 (15% improvement on Building regulations)
Existing windows to be stripped out and removed from site and replaced with z

Spandrels

Spandrel panels where required to be glazed in Metalline Ultima ULT2 panels with 3mm ppc aluminium outer skin, ppc galv. steel inner skin and Fabrock insulated core.

To the windows of the top floor of the high rise, the existing spandrel panel is to be framed out in metal SFS, lined with plasterboard internally and 12mm thk RCM Ywall to the outer face, SFS infilled with Rockwool FLEXI insulation and the new EWI render system installed to the Y-wall external face. This is to improve the thermal performance of the floor fabric.

Closed **Partially Open** **Fully open for cleaning**

Image source, www.ttfacades.co.uk

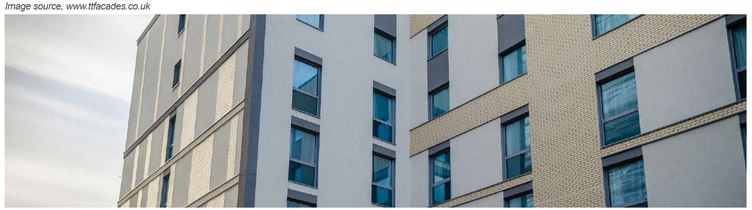


Image source, www.ttfacades.co.uk

Uninsulated Enclosed Balconies

Product Features

+ Flameless or frame option choices.
+ Panels open inwards for practicality and safety.
+ Large range of balustrade materials including laminated, coloured safety glass, clear or opaque.
+ Glazing options include Float Safety Glass and Energy saving glass.
+ Choose your own combination of fixed or opening panels & fanlights.
+ Fixings and sealing as standard.
+ Powder coated aluminium profiles (RAL colour chart).

Key Features

+ Home Comfort

The enjoyment of your home will increase with a glazed balcony that will protect against adverse weather and reduce noise pollution entering your home.

+ Secure Investment

The addition of our market leading balconies to your home are not only an investment in your quality of life but are proven to add value to your home.

+ Amenity Space

Classed as outside space, a balcony enclosure contributes towards the overall outside amenity space of a development.

+ 100 More Days

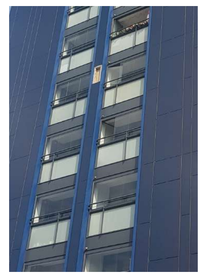
The balcony space is usable for up to 100 more days per year than an open only balcony with increased usage during the seasons of spring and autumn.

+ Safe & Secure

The internal locking block and use of restrictors means our balconies are safe amenity spaces for vulnerable people, including the elderly or very young.

+ Pest Control / Barrier to Dust

The screens also reduce the chance of vermin and pests residing on residents balcony spaces. With the added benefit of a buffer to airbourne dust particulates.



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5. Conclusions.

Conclusions

In summary, the client aspired for Avro Hollows aims to become a 21st Century model social housing estate

with the four high-rise towers and two low-rise blocks refurbished to dramatically improve their energy efficiency,

as well as addressing other issues identified by the design team or residents. Initial consultations with the

contractor and design team produced: -

+ A well-defined scope of works predicated by a scientific methodology, the PAS2035 retrofit standards.

+ A sound and relevant design concept which resonates with the residents.

+ Specification of building materials and systems which enable the goals of the scope and concept.

The scope and concept have been developed in a linear process: -

+ 3 different facade concept options were envisaged in tune with the overarching design philosophy.

+ The favoured option, option 2 'Bookends' developed to a level to submit for planning / Gateway 1.

+ The chosen facade concept for the high-rise towers transferred across to the low rise blocks to create cohesion across the estate.

The continuation of the process, moving onto Gateway 2 and Construction will enable the Croydon Drive Estate to meet the client aspirations.

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6. Glossary.

Glossary of Retrofit terms

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 vapour 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

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

Are 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 nonrenewable 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.

RdSAP

Reduced Data System Assessment Procedure. It provides a calculating framework that is required to demonstrate if the building complies with Approved Document Part L within existing homes.

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 landlords 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.

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