KELVIN COURT, GREAT WESTERN ROAD, GLASGOW
CONSERVATION NARRATIVE

ACKNOWLEDGEMENTS

This work relies in large part on information gathered by a group of Kelvin Court residents, in particular Charles Duncan, Robert Love and Christine Martin. The remaining members of the Co-Proprietors' Committee were also involved in the initiative, supplying information, insight and shared experiences of living at Kelvin Court. At the time of writing they were Sir Kenneth Calman, Iain Bradley, James Gleave, Tom Millar, Karen Rowe and Ottilia Stevenson. Thanks are also due to Gordon Urquhart, author of *Along Great Western Road*; John Fergusson of Mabbetts, responsible for the report on the building services; Scott Cochrane of LPM, who provided access (as did George, the caretaker); the staff of the Mitchell Library and Glasgow City Archives (especially Dr Irene O'Brien); Tyne and Wear Archives; Jim McGuire of Caledonian Lifts; Bill Neill (architect for the re-roofing); Willie Murdoch of Alba Engineering; Len Stroyan Kerr; and Mark Smith (Features Desk, The Herald).

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CONTENTS

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Left: the original central entrances once had neon-lit signage above the canopies - there are warning signs still in place that bear the name of the manufacturer (© RIAS Collection).

01

BACKGROUND AND EXECUTIVE SUMMARY

There are few residential developments in Glasgow quite so distinctive as Kelvin Court. When completed in 1939, it was the largest private flatted complex in Scotland, and the scale of the enterprise (not to mention the developer's ambition) was remarkable considering the social and economic decline evident in Scotland at the time. Having said that, nothing less audacious would have been worthy of Kelvinside (once the largest of the city's suburban estates) and in many respects the construction of Kelvin Court can be seen as part of a natural century-long progression that began with Charles Wilson's Kirklee Terrace of 1845 and saw Great Western Road lined with buildings of stylistic sophistication as far as Anniesland Cross until war intervened and fundamentally changed the nature of house building.

Category 'B' listed by Historic Environment Scotland since 1989, Kelvin Court was built as managed apartments, with successive owners (first, the original developer, and then an investment and then property company) responsible for maintenance and general care and repair. Since 1972, when the apartments were sold to individual owners, the challenges of collectively managing two large apartment blocks and various communal buildings have become apparent, and to a degree this highlights the effectiveness of the original "mode of living" that was promoted by the developer, where a long lease relieved the residents of appointing factors, organising meetings, and commissioning reports, and instead saw coal delivered daily, laundry dealt with off-site (or by domestic staff), and lifts, roofs and gardens maintained as part of the service. The current collective owners of Kelvin Court share a responsibility few other householders would contemplate, and yet have managed to deliver re-roofing projects, lift replacement and re-decoration at the same time as maintaining communal grounds and services.

Despite this hard work, and while the development superficially appears to be in good condition, the buildings have for some time now exhibited a range of defects. This report aims to summarise these, but at the same time remind owners of the importance and unique nature of Kelvin Court, and to provide them with some background to the design, the development and subsequent and ongoing changes. It also sets out to identify the repairs required and provide general recommendations for their implementation that could be taken on board and organised by the current or future property factors.

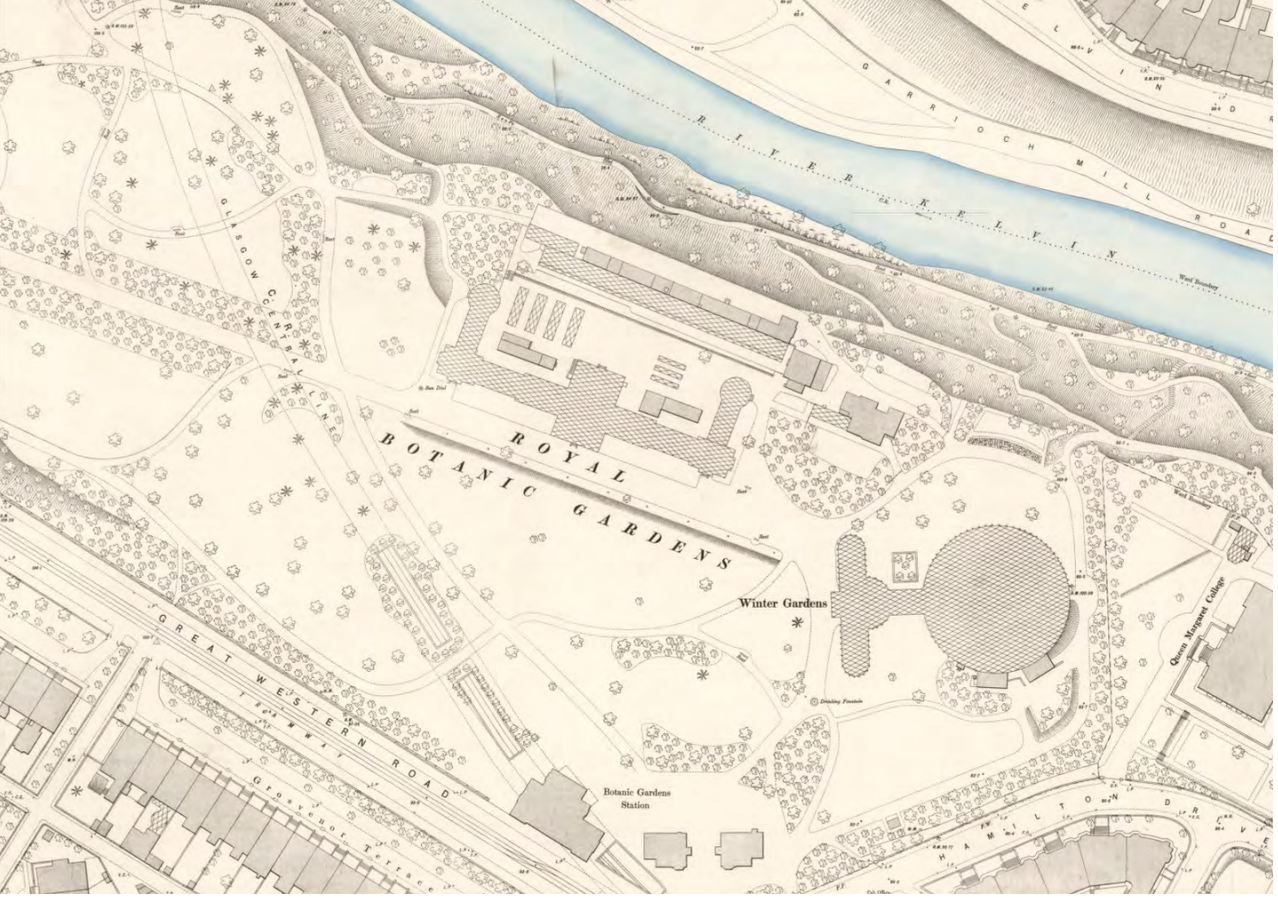
In broad terms, both roofs – but also the bay window roofs, balconies, canopies and stairwell roofs – exhibit a range of defects that require a re-assessment of coverings and detailing. Added to this, the reliance on water tanks at roof level and surface-run distribution pipework exacerbates the problem (creating multiple points of potential water ingress). The facing brick cavity wall construction employed at Kelvin Court and the high number of parapet walls (combined with a reinforced concrete frame) also create problems of detailing that require careful consideration, and inevitable wear and tear on services and the garden grounds

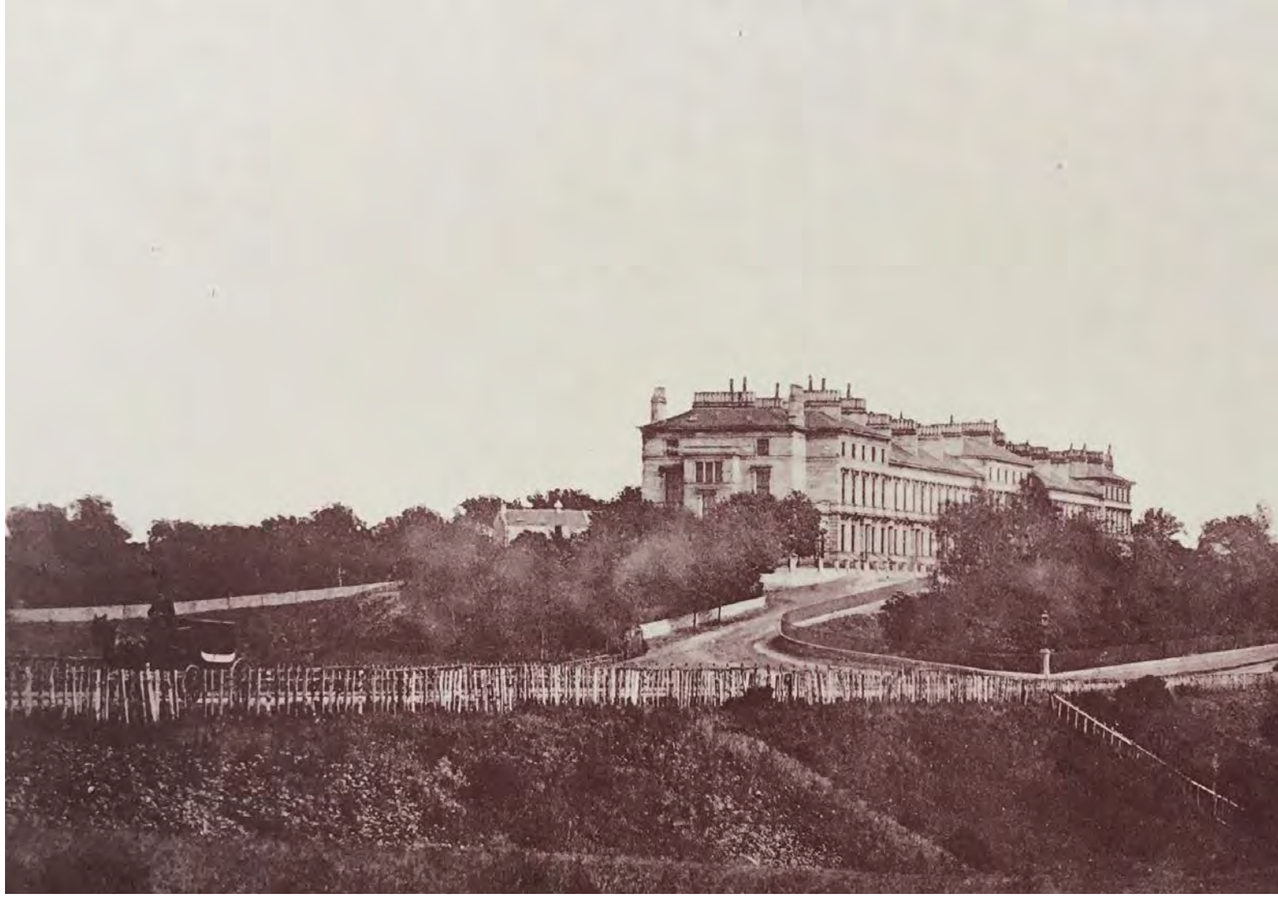
Left: the curved balconies on the south-facing elevations are typical of the period, both in terms of aesthetic and materials, although facing brick was not commonly used in Glasgow at the time (© author).

require effective planned maintenance, expert advice, and the collation of a comprehensive set of operating manuals and layout plans. There are manageable issues with rising damp in service stairwells, penetrating ground water in cellars, and concrete deterioration in the original heating chamber.

Finally, an over-arching fire strategy is recommended for Kelvin Court to address deficiencies that have arisen through the original design of the buildings and subsequent change in ownership status.

Clockwise from top: the west block seen from Hatfield Drive, which was extended during the development to meet Fifth Avenue (© author); soft landscaping plays a large part in providing a barrier to Great Western Road, far busier now than when Kelvin Court was first built (© author); the cascade lighting appears in the central stairwells only - the stair and landing finish was probably rubber tile or sheet (© author).


R I V E R K E L V I N
G A R R I O C H M I L L R O A D
G L A S G O W C E N T R A L L I N E
R O Y A L
B O T A N I C G A R D E N S
Winter Gardens
Queen Margaret College
G R E A T W E S T E R N R O A D
Botanic Gardens
Station
H A M I L T O N D R I V E




PLAN
OF THE LANDS AND ESTATES OF
KELVINSIDE
AND
CARTNAVEL.
1867.
Macfarlane & Macdonald, Glasgow
Sir Archibald Campbell's Lands of Temple
Halgray Steading
Bellshaden Bleachfield
North Woodside
Woodside
Botanic Gardens
Northpark
Lands of Cartnavel
North Halgray
South Halgray
Hyndland
Dowanhill
Marlee Park
Hillhead
Woodside
Gilmorehill
New University Buildings
NOTE.
The measured distance from Royal Exchange Glasgow to the Botanic Gardens is 2½ Miles.

02

AREA HISTORY IN BRIEF

Kelvinside was known first as Bankhead, so named for a farm located on the banks of the River Kelvin and sold on in 1749 along with part of the lands of Garrioch (near Maryhill). The purchaser was Thomas Dunsmore, a first generation Tobacco Lord, who re-titled his estate Kelvinside and built for himself a mansion on the river's edge. Passed from father to son, and then sold, the estate was owned for over twenty years by Thomas Lithan, a doctor, who died in 1807, leaving his widow Elizabeth Mowbray custodian of land that by then included Kirklee and North Woodside. Having unsuccessfully attempted to sell various parts of the estate, her brothers subsequently leased the land through the Glasgow law firm of Montgomerie and Fleming in 1830, ultimately selling the 462-acre estate to Montgomerie and Fleming's new Kelvinside Estate Company nine years later for the sum of £53,354.

In the interim, James Gibson of Hillhead, frustrated by the slow development of his land, had petitioned heavily for a turnpike road from St. George's Cross to Anniesland Toll. Amongst his principal backers in this venture were the Mowbrays, who neatly avoided making good on their financial pledge of £1,000 by divesting themselves of Kelvinside before paying.

Montgomerie and Fleming, although greatly assisted in their development plans by the New Anniesland Turnpike Act of 1836 (effectively Great Western Road), had to meet the costs instead. Nevertheless, they were sufficiently encouraged by the opportunities offered by a three-mile long road that they appointed Decimus Burton of London to prepare an early feuing plan in 1840.

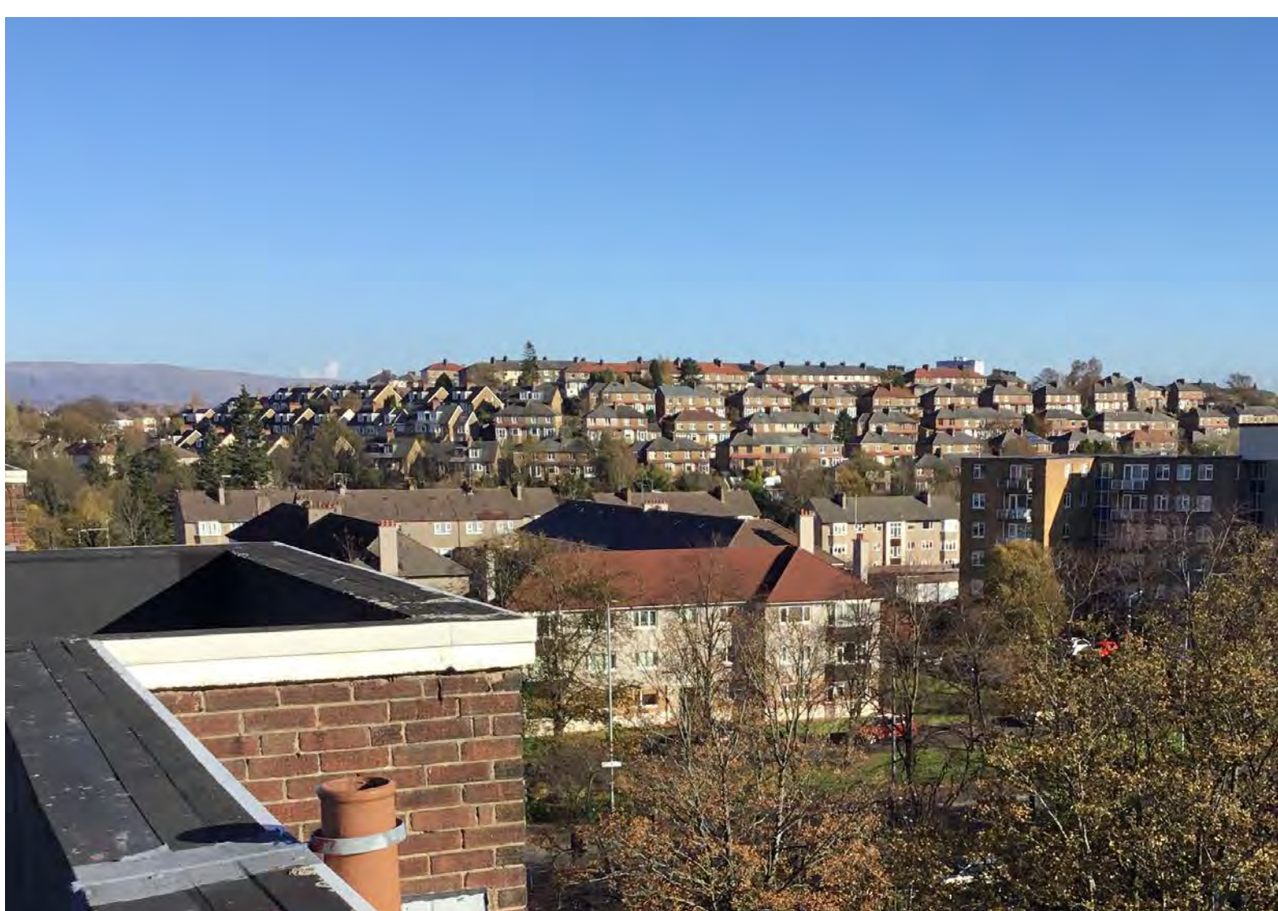
Mathew Montgomerie and John Park Fleming, both solicitors, initially had a third partner, Montgomerie's brother-in-law James Beaumont Neilson (inventor of the hot-blast smelting process). He sold his interest in 1851, yet lived for a period in Kirklee Terrace, earliest of the terraces built speculatively by the company high above Great Western Road. Begun in 1845, the terrace remained incomplete until 1864, so sluggish was the interest in the houses: remarkable to contemplate nowadays, given its choice location adjacent to the 21-acre Botanic Garden (one of the first feus sold by the company in 1841).

Not only had the new turnpike road opened up land for house building, it made land more accessible for other purposes: in 1840, anticipating completion of the road, design work had begun on the Glasgow Asylum for Lunatics at Gartnavel, essentially open countryside and thus an ideal restful environment for treatment of the mentally unwell. So, when the Kelvinside Estate Company purchased the remaining land (almost up to Crow Road, and including Flemington Farm), a handsome Tudor Revival hospital enlivened the skyline.

By 1867, the company owned around 576 acres, but development was slow and unrewarding. Montgomerie died in 1868, and Fleming the following year, leaving

Clockwise from top left: 1894 Ordnance Survey map showing the Botanic Garden, which was Feu No. 3 when sold by the Kelvinside Estate Company (© National Library of Scotland); Kirklee Terrace, designed by Charles Wilson in around 1845, the only speculative venture by the Kelvinside Estate Company (© Sinclair Collection); 1867 Map showing extent of Kelvinside Estate (© Sinclair Collection); Royal Asylum for Lunatics, designed by a young Charles Wilson - the chapel in the centre was never built (© Canmore HES).


ANNIESLAND
Laundry
Printing Works
Western Hockey Club Ground
Barnaild
Kelvindale
Great Western Road Station
Glasgow University Club Ground
Glasgow Academical Club Ground
Skatering
Balgray Ho
Beaconsfield Road
Tennis Courts
Kelvinside Academical Club Ground
WHITTINGEHAME DRIVE
Bowling Green & Tennis Courts
Asylum
GLASGOW, YOKER & CLYDEBANK RAILWAY
Jordanhill Sta.
BLENHEIM
BEECHWOOD AVENUE
Bowling Green
Hyndland Station
R T L E H
H I L L H



Fleming's son - James Brown – principal successor to the law firm and estate. Since Montgomerie and Fleming had been related by marriage, young James was son of one partner and nephew of the other. Described by Gordon Urquhart in *Along Great Western Road* as "the dominant figure in the late Victorian development of the West End", Fleming began to sell large parcels of land, including parts of Montgomerie (now Cleveden) Drive to William Young, and Crossloan (Cleveden) Road, Montgomerie (Cleveden) Drive and North Balgray (Beaconsfield) Road to iron merchant Thomas Russell. With grand terraces lining Great Western Road and villas rising up on the hilly ground to the north, Glasgow's merchants, magnates and manufacturers relocated to the area to enjoy the open space, convenience of subsidised horse-drawn trams, and the unmistakable aura of wealth.

From 1868 (and despite the collapse of the City of Glasgow Bank in 1878), James B Fleming was able to sell sizeable pieces of land, investing the proceeds in the formation of new roads that allowed further feus to be advertised for development. In 1869, the Standard Life Assurance Company had advanced Fleming the substantial sum of £109,000 (the ultimate repayment of which may have prompted the sale of the land on which Kelvin Court was built), and by his death in 1899, borrowing had become extensive. Two years before he died, Fleming bought out his cousin John King Fleming (who lived in New South Wales), becoming the sole owner of the Kelvinside Estate Company. He also adopted the surname Montgomerie Fleming in memory of his late cousins Eleanor and Elizabeth, both of whom had been stakeholders. On his death, the estate was worth around £224,459, but burdened with bonds and securities of £178,370.

Fleming's son, also James Brown Montgomerie, inherited the estate at the age of fourteen. A student of law, he died during WW1, but not before development of Kelvinside had inched closer to Anniesland with the feuing of Whittinghame Drive, and the construction of ten detached villas on Great Western Road. Known as Whittinghame Gardens, and erected in around 1903 by George Hamilton, the houses (of which there were two versions) were designed by architects Fryers and Penman, and while sumptuous in the best Kelvinside tradition were nevertheless duplicates of mass-produced villas Hamilton was also building in Pollokshields West. In 1906, a small development began east of where the North British Railway (Stobcross Line) bridged Great Western Road with the formation of Fifth Avenue (apparently one of five parallel roads). Only a handful of houses were built where once there had been an ironstone pit.

Following Montgomerie Fleming Junior's death and the end of the Great War, the asset (and outstanding debt) continued to be managed by the remaining Trustees: despite controlling 245 acres of unfeued land, development on the scale seen in the late C19 was unlikely to be repeated. Instead, many of the terraced houses and villas of Kelvinside were being sold for conversion to flats or institutional use. Materials were in short supply (as was skilled labour) and such housebuilding as did take place was modest. In 1923, the Kelvinside Estate Company sold 114 acres west of Cleveden Road to builders Mactaggart and Mickel, where 346 houses were erected for sale (their serried ranks clearly visible now from Kelvin Court). With the land sold for £33,000, barely a dent was made in the size of the bond, and so it is likely that thoughts turned to where else building land might be released, and in what form it could be developed.

Since the 1840s, the Kelvinside Estate Company had progressively moved west from the first tentative terraces close to Byres Road and the Botanic Garden. The company had itself built little, but instead enabled some of the finest residential architecture in Scotland, and granted land to three separate railway companies, as well as to the Royal Asylum for Lunatics; the Partick, Hillhead and Maryhill Gas Company; and Robert Bingham (for the creation of a boating and skating pond). Great Western Road had been widened in 1929, and provided excellent links to and from the city by car, bus, tram and train. One last push to capitalise on this might just reduce the sum owed to the Standard Life Assurance Company.

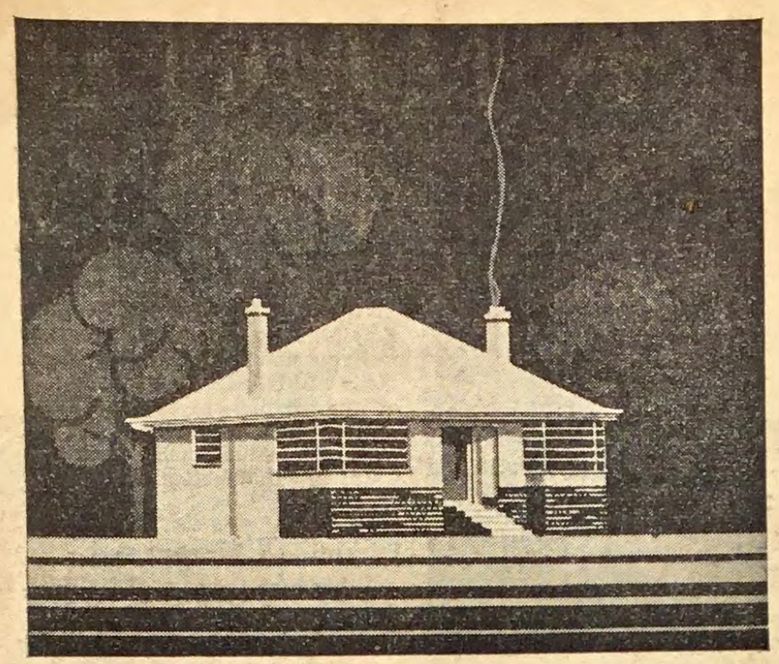
Clockwise from top left: Red Hall, at the foot of Beaconsfield Road, built during the heyday of the Kelvinside Estate Company, but abandoned in 1964 and eventually demolished (© Sinclair Collection); 1918 Map showing Whittinghame Gardens and Fifth Avenue, but otherwise undeveloped land where Kelvin Court now stands (© Sinclair Collection); the 'new' Kelvinside as built by Mactaggart and Mickel after 1923 (© author); Fifth Avenue initially comprised of only a few villas (© author).

Kelvinside Estate still included undeveloped land around Flemington Farm, one small corner of which had been given over to the start of Fifth Avenue, but which was conveniently close to the widened boulevard and with an uninterrupted view north. Fenced by iron railings, it was ripe for development (despite a dramatic slope on the diagonal), and so it is likely that enquiries were made of housebuilders active in the city at the time. In the event, neither Glasgow builders nor local architects were attracted to the prospect (or, more likely, could afford it), and so London came calling at Kelvinside by way of Newcastle-on-Tyne.

Currently, it is not known if Alec Woolf from Newcastle was actively pursuing construction opportunities north of the border, or if the estate company had a notion that modern luxury flats in the best London tradition might be a good fit for Kelvinside, and thus sought out an experienced partner. Either way, the concept of Kelvin Court was probably developed jointly, with the estate company prepared to release the northern half of the Flemington farmland in return for an extension to Hatfield Drive (enabling the later development of the southern half), a veto on street names, and swift delivery of the project.

Woolf lived up to his end of the bargain, and undoubtedly eased the financial pressures on the Kelvinside Estate Company. He may have intended to build further luxury flats on the land south of the newly extended Hatfield Drive but once again war intervened. The fields were instead used for many years as a car park by Anniesland College, which finally developed the site in 2006 (and is now part of Glasgow Clyde College). Kelvin Court retained its uniqueness, being the first and last of its kind in the city, towering over the area until the arrival of Jack Holmes' Anniesland Court tower in 1966, now a Category 'A' listed building and a "landmark for the area", but built to a dramatically different brief from its 1938 predecessor.

Left: aerial view of Kelvinside from the south with Kelvin Court at top left, while undeveloped land to the south of Hatfield Drive was in use as a car park (© Crown Copyright Historic Environment Scotland).



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03

BUILDING HISTORY IN BRIEF

Until the close of the C19, the building type with which Glasgow was best acquainted was the tenement, more specifically the working class tenement, erected in huge numbers across the city to meet the demand for housing wherever there was a major centre of employment such as a shipyard, foundry, railway works, mill or factory. Typically, tenements were constructed speculatively for rental by developers, others by Glasgow Town Council (under the guise of the City Improvement Trust), but some – built at the beginning of the Edwardian era – were intended for sale to wealthy families moving south and west out of the city centre. One of the most striking of these developments was created in Dowanhill, where builders Lindsay and Miller constructed some twenty tenements and forty terraced houses north of Highburgh Road between 1898 and 1904. Their clientele were solicitors, merchants, doctors and ship owners, with the tenements effectively "mansions up a close", so grand that the addresses were given twice, once as a number on Dowanhill Street, and as another on Queen's Gate. A single apartment occupied each floor of these three-storey red sandstone tenements, typically comprising of a drawing room, dining room, parlour, cloakroom, three bedrooms, kitchen, maids' room, pantry and bathroom. Bow windows were filled with leaded, coloured glass; red tile trimmed the slated roofs; and the stairwells were finished in terrazzo, faux marble and timber.

The Finance Act of 1909 made it uneconomic to build tenements speculatively (introducing capital gains tax), and even before WW1, municipal garden city suburbs and cottage flats had begun to sound the death knell for the tenement as a model for urban occupation. But there had clearly lingered an appetite for houses at one level (not necessarily the ground) with a shared point of entry and all the sense of community that brought with it: the success of the Queen's Gate development had underlined this, although the flats had been luxurious, and the location extremely desirable. Twenty-five years on, it was therefore bold to conceive of six grand tenements rising to seven storeys in height at a time when the concept was unfashionable, and bolder still to finance such an enterprise.

The difference was that in the 1930s there was still a market in Glasgow for luxury, only on a reduced scale. Many Kelvinside villas and terraced houses were being subdivided to cope with the decline in domestic staff, and for many members of the middle class the choice was between downsizing and purchasing on the outskirts of the city (where MacTaggart and Mickel beckoned), or abandoning home ownership altogether while retaining all the benefits of comfortable accommodation, good transport links and hired help. Kelvin Court offered the answer, but in gritty, grimy Glasgow it represented a risky venture for the developer.

Whatever attracted Alec Woolf to Glasgow - a city he described as "up-to-date and flourishing" but also "a city of many moods" - he must have identified an opportunity to generate a profit, and it is entirely possible that the Trustees of the Kelvinside Estate Company had identified a sufficiently large number of

Clockwise from top left: after 1909, tenement construction slowed and was largely overtaken by cottage flat and garden city development, much by Glasgow Corporation (© Sinclair Collection); Mactaggart and Mickel were one of the main housebuilders of the period, having built more than their fair share of tenements before turning to bungalows (© Sinclair Collection); streamlined cars, housing, and appliances were in vogue in the 1930s (© Sinclair Collection).

ACCOMMODATION

Three-room apartments with similar conveniences from **£165** per ann.

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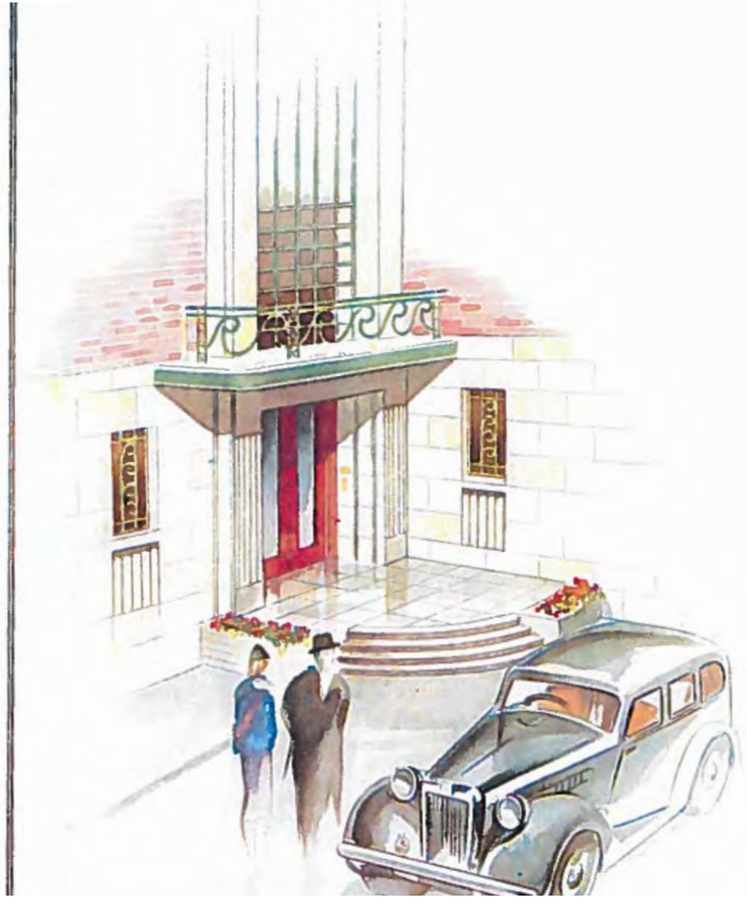
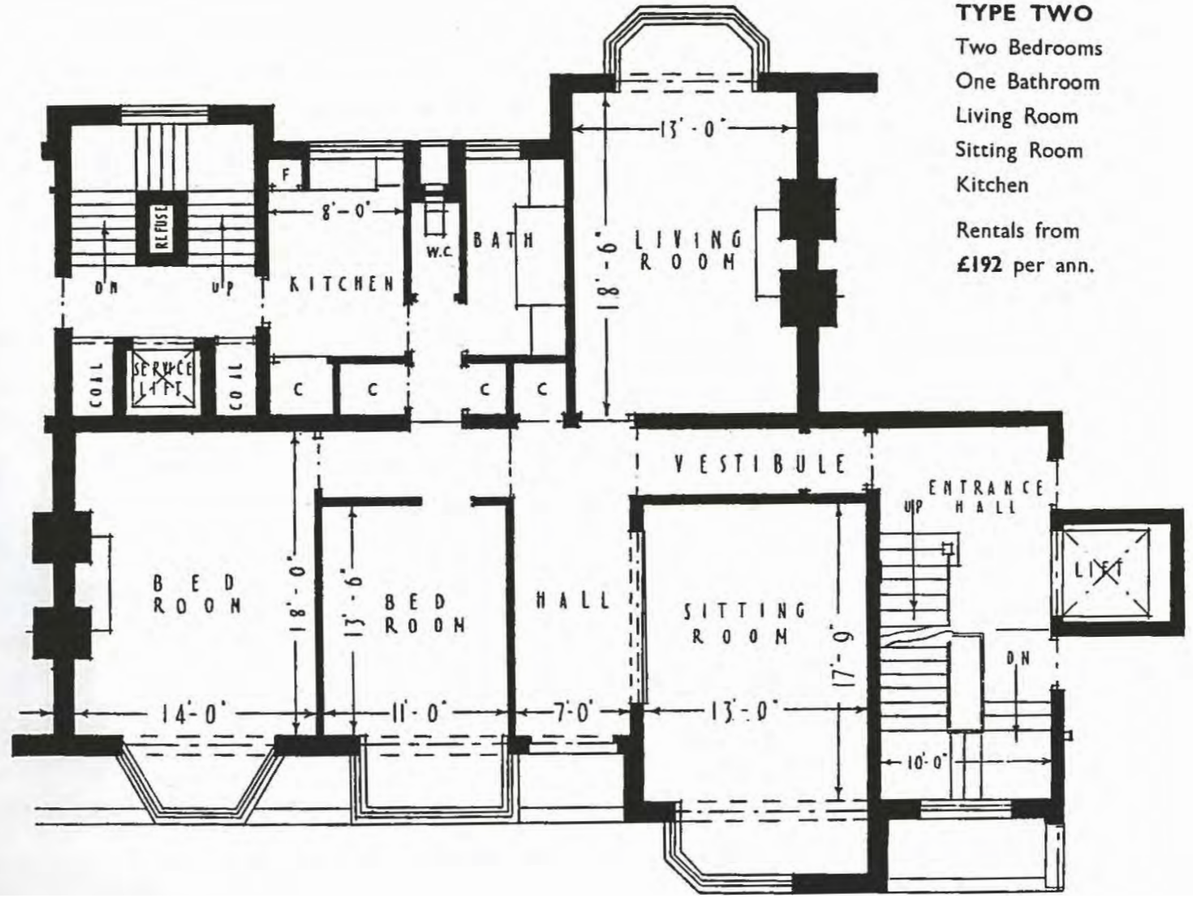
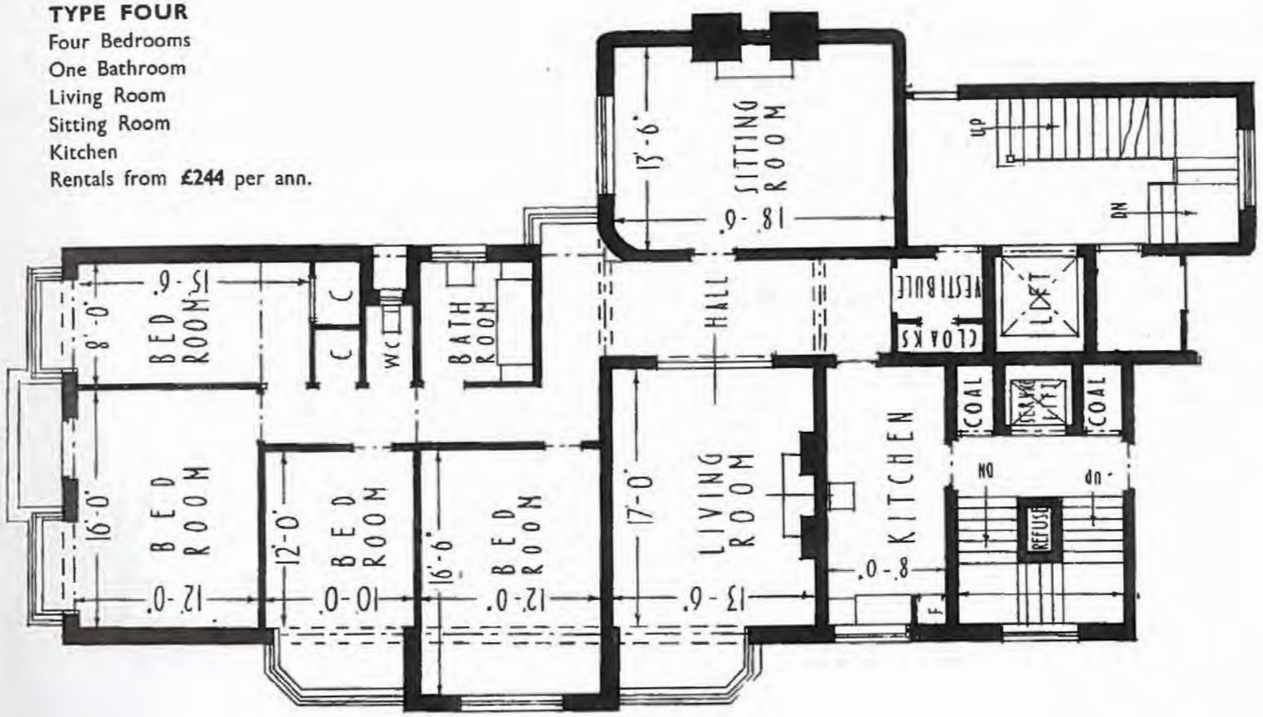


TYPE TWO
Two Bedrooms
One Bathroom
Living Room
Sitting Room
Kitchen

Rentals from **£192** per ann.



TYPE FOUR
Four Bedrooms
One Bathroom
Living Room
Sitting Room
Kitchen
Rentals from **£244** per ann.



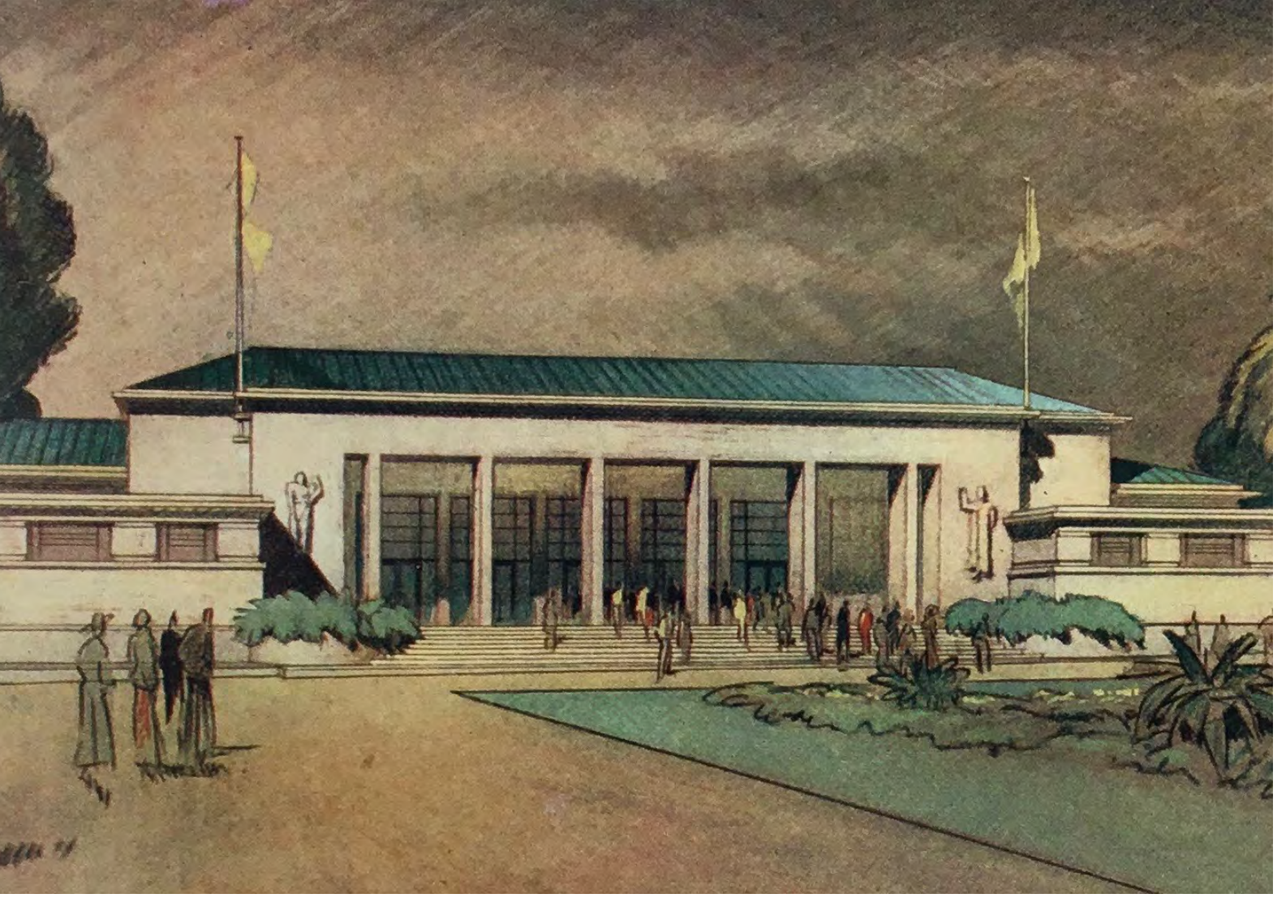
prospective tenants that Woolf felt the risk manageable. The first hurdle to be overcome was whether Dean of Guild Court permission would be granted for a development on the scale of Kelvin Court. Woolf, with experience of development in London and in Newcastle-on-Tyne (where he was based), was no novice, nor was he troubled by the perception that in Glasgow flatted housing was for the working class (after all, Anniesland Mansions, completed in around 1913, was no architectural slouch). By 16 February 1938, therefore, Woolf's architect, James Newton Fatkin of 17 Bigg Market in Newcastle, had completed proposals that were sufficiently developed for submission to Glasgow Town Council. The original drawings as presented to the Kelvinside Estate Company are dated 1937, indicating that the landowners had reserved the right of first comment (these drawings were deposited with Glasgow City Archives, but mislaid in late 2017 and are yet to be recovered).

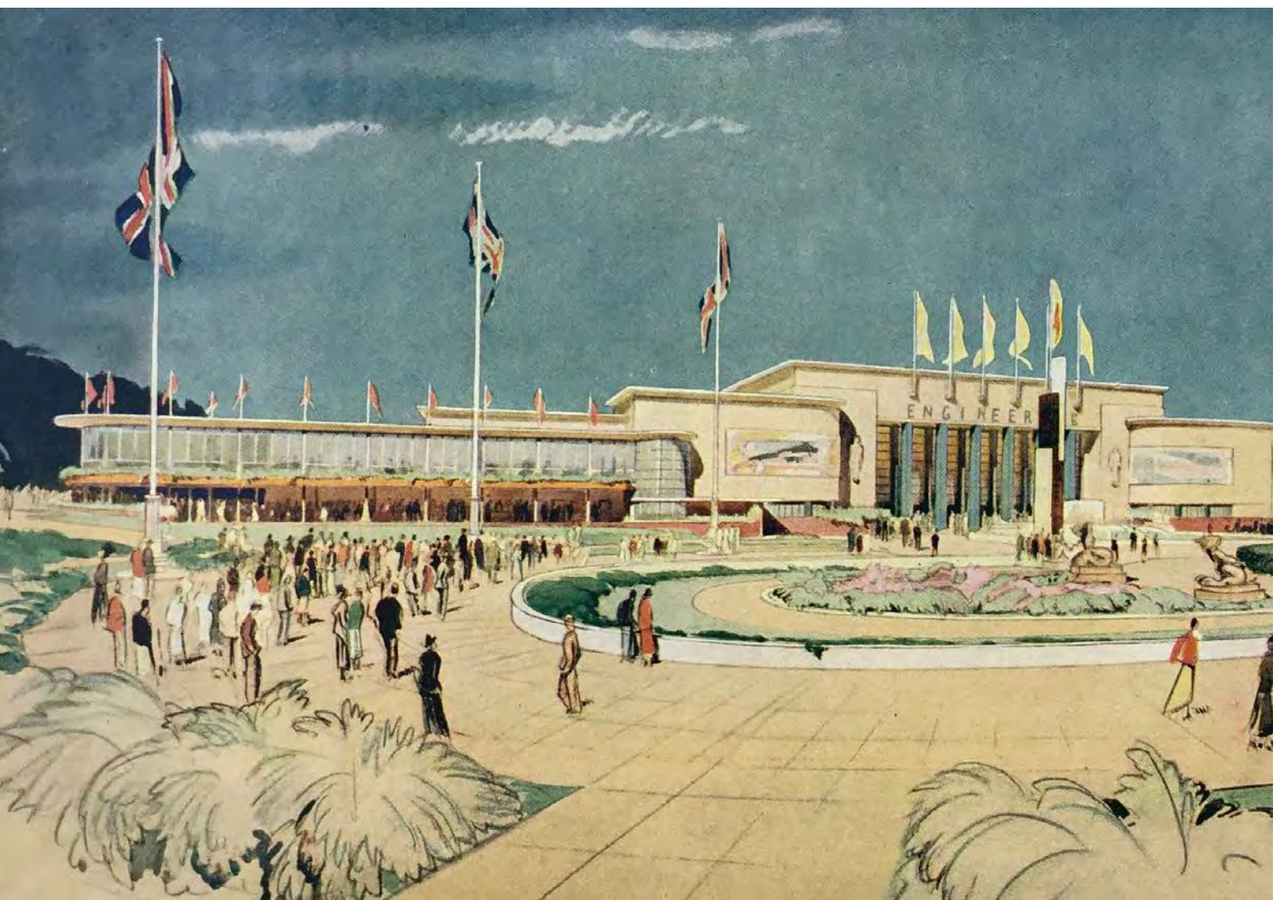
Fatkin did not act as petitioner's agent; after all, Woolf did not technically own the site at the time, and may have indicated that he would withdraw from the development if permission was not forthcoming. The package of drawings was submitted instead by A J Barber Fleming, a solicitor with family links to the Kelvinside Estate. The scheme was not approved immediately: the number of flats was altered in March 1938 (with the proposed bachelor apartments in the east block reduced), the drainage was amended, and sketches indicating how the refuse and ash chute in the rear stairwells would work had to be added to the drawings. Elevations were re-designed in May, and structural drawings by W V Zinn, civil engineers from Westminster in London, had to be submitted before the Depute Clerk of Court authorised construction on 08 July 1938. In the interim, Fatkin had prepared a deed plan for Woolf for the development of a large area of ground known as The Drive Estate in Gosforth – thirty-five plots on which mostly red-roofed semi-detached houses to a standard design would be built (presumably by Fatkin and Woolf) demonstrating that both parties had the resources to tackle large projects. This was just as well since the Trustees of the Kelvinside Estate Company had insisted that the development be completed by Whitsunday 1939.

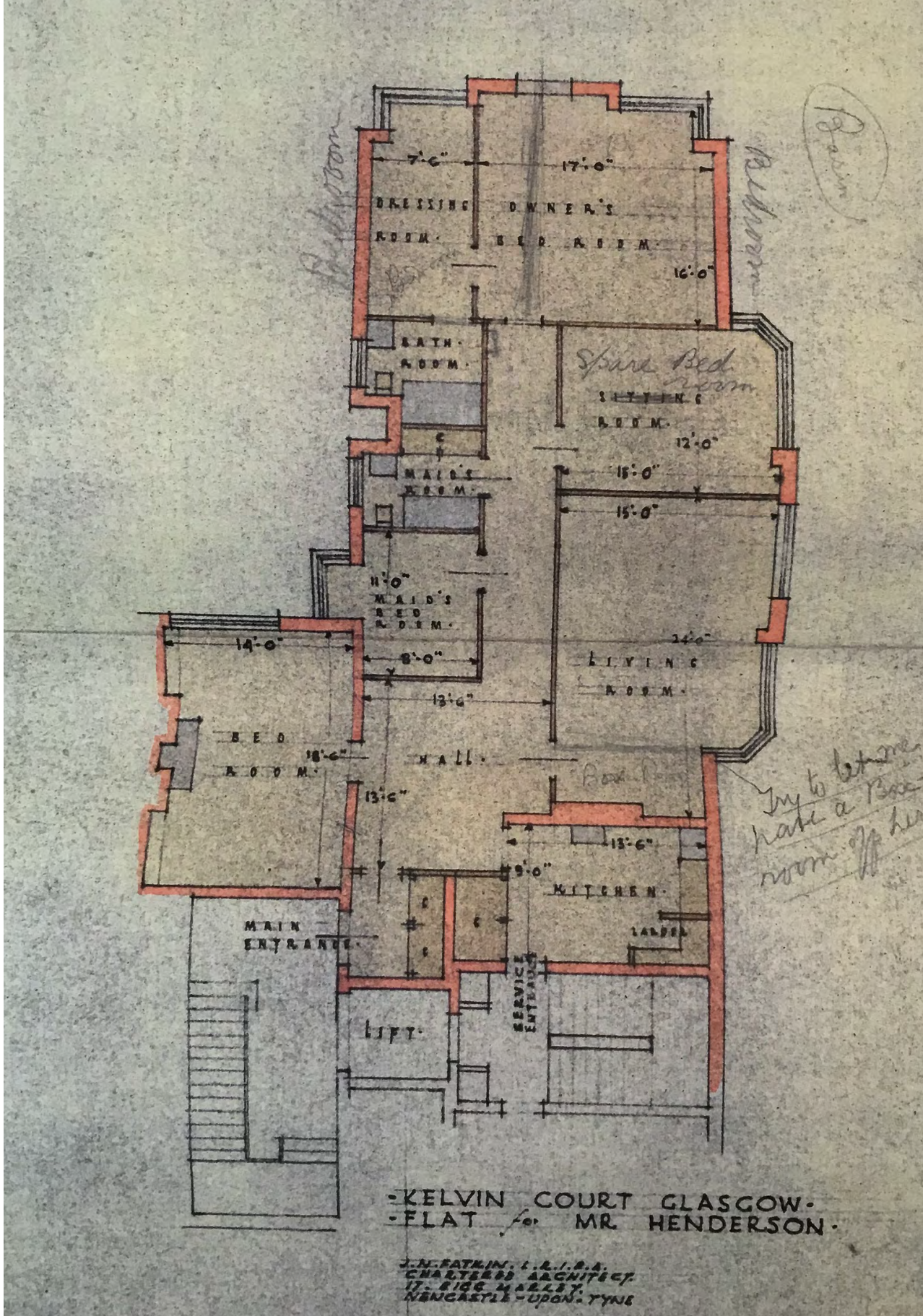
Following approval for Kelvin Court (and confirmation that the Trustees owned the land), the transfer of title was recorded on 15 September 1938, indicating that the Trustees of the late James Brown Montgomerie Fleming (with the consent of the Standard Life Assurance Company) had sold the 5-acre feu (No. 355) to Alec Woolf (Builders and Contractors) Ltd of The Drive, Gosforth, Newcastle-upon-Tyne for the purpose of "two blocks containing only high-class or luxury residential flats being dwelling-houses only commonly called the London type of flat". The value of the sale was not recorded, but what was stipulated was that on completion no single apartment was to be worth less than £1,600, that access to the development directly off Great Western Road was to be prohibited, that the buildings were to be adequately insured, and that no part of the ground was to be used for clothes drying.

On 03 October 1938, it was recorded that a bond of cash credit for £81,740 had been raised using the feu as security from the Northern and London Investment Trust Ltd in Newcastle by Alec Woolf (Builders and Contractors) Ltd of The Drive in Gosforth, and Alexander Susman Woolf and his wife Leah Cussins Woolf, of Lea Holme, Fernville Road in Gosforth, suggesting that Woolf and his wife were personally liable as the only Directors of the company. Woolf seems to have been born in Newcastle-on-Tyne on 12 July 1897 to parents Harry Woolf, a Polish immigrant, and Rachel Susman from Hull. He seems to have served in France during WW1. He married Leah (Lee) Cummins in July 1926, and by the time of the Kelvin Court development they had at least three children of school age, so the success of the apartments was vital. Construction is likely to have begun swiftly after Dean of Guild permission was granted, and a prospectus was issued promoting the benefits of the "first block of luxury residential flats in Glasgow, and, in fact, in Scotland" for "the best class of Glasgow's citizens". Woolf even designed a little logo that combined the letters 'A' and 'W' with the bird, bell, tree and fish of Glasgow's coat-of-arms.

Clockwise from top left: page from Alec Woolf's prospectus supplying information on rental (copy courtesy of LPM); typical 4-apartment flat as designed by J N Fatkin (copy courtesy of LPM); logo used by Woolf in advertising (© Newsquest - Herald and Times); advertisement placed by Woolf in *Kelly's Directory* until 1949 (© Mitchell Library); typical 6-apartment flat as designed by J N Fatkin (copy courtesy of LPM).




ENGINEER


7'-6"
17'-0"
DRESSING ROOM.
OWNER'S BED ROOM.
16'-0"
BATH. ROOM.
Spare Bed Room
SITTING ROOM.
12'-0"
15'-0"
15'-0"
MAID'S ROOM.
11'-0"
MAID'S BED ROOM.
14'-0"
8'-0"
13'-6"
LIVING ROOM.
BED ROOM.
18'-6"
HALL.
13'-6"
13'-6"
9'-0"
KITCHEN.
LARDER.
MAIN ENTRANCE.
SERVICE ENTRANCE
LIFT.
-KELVIN COURT GLASGOW.
-FLAT for MR. HENDERSON.
J.N. FAULKIN. L.R.I.B.A.
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17. RYE HILL PARK
NEWCASTLE-UPON-TYNE

Annual rents were set between £165 for a three-room apartment, and £244 for a six-room apartment (less than charged for smaller flats at Chelsea's Nell Gwynn House of the same period): the flats with the finest views were the most expensive. Woolf offered prospective clients the opportunity to customise the layouts, a gesture which must have created huge amounts of abortive work for his architect Fatkin (or someone assisting him), who re-drew variations time and time again for interested parties such as Lady Huddlestone (who in April 1939 wanted an entire fifth floor in one of the central blocks), a client who wanted night and day nurseries (but also a cocktail bar), and Mr Henderson, for whom at least eight separate layouts were drawn. Typically, the revisions created additional bathrooms, maid's rooms, boxrooms and dressing rooms. In one instance, an additional fireplace resulted in the construction of a single chimney on the east block. Not every scheme was entrusted to Fatkin: there is evidence of at least one client bringing on board a Glasgow architect to prepare alternative layouts.

Construction would have begun first with the excavation of the site to create level ground for the buildings; even with the site a sea of mud, there would almost certainly have been advertising hoardings promoting the project (although it was a condition of the sale that a fence be erected all around the site). One of the attractions of the site for Woolf must have been the proximity to Great Western Road – a direct route to the countryside and beyond, but also to areas undergoing development for housing at Anniesland and Knightswood. Tram, train and bus activity was frequent, and the sight of Kelvin Court rising from former farmland would have been impossible to miss. Last to create would have been the lengthening of Hatfield Drive, funds for which would have been allocated only after most of the flats had been reserved.

With Fatkin based in Newcastle, local assistance was required to supervise building operations. It is thought that this was supplied by Launcelot Ross, an Aberdonian who had studied at Glasgow School of Architecture while working with Sir John James Burnet, and whose close friendship with Thomas Tait had earned him a place in the architectural team responsible for the design and execution of the Glasgow Empire Exhibition. Executive architect for the Palace of Art and Palace of Engineering, and with experience of working in London, Ross would have been ideally placed to understand the nuances of Fatkin's English-inspired design. Nevertheless, Fatkin (a cinema designer) continued to generate revised drawings for the project until summer of 1939 (even producing designs for a villa in Kelvinside, which might have been intended for the corner of Fifth Avenue and Hatfield Drive) as well as a scheme for the Roseworth Estate in Newcastle, dying one year later at the relatively young age of 58.

Although it is generally thought that construction began with the east block, the evidence suggests otherwise: the west block was designated Block No. 1 on site layouts; the Estate Office (not needed until the temporary site office was removed on completion) was located in the east, not west block; the scaffolding was dropped first on the west block; and a curious indent on the inner-facing elevations shown on all the architect's drawings appears only at ground level on the west block, implying that the work involved was so laborious that it was simplified after building only one example. Having said that, period illustrations show both blocks rising together, and since no self-respecting Kelvinside resident would want to live on a building site, the likelihood is that they were finished within weeks of one another (although later than Whitsunday). Apparently, as the project neared completion, University students playing tennis nearby were given guided tours for the price of one penny apiece.

On 15 June 1939, Woolf took out a full-page advertisement in the *Glasgow Herald* under the heading of "Kelvin Court Luxury Flats". Supported by advertising from sub-contractors and product manufacturers, the article highlighted that "in spite of rumours to the contrary" there were still a number of flats available, and that two show flats would be available to view from the following Monday. Fatkin's original perspective of the development (showing a tennis match in progress on the roof of the communal garage) was used by way of an illustration, and Woolf seems to

Clockwise from top left: Palace of Art at the Empire Exhibition for which Launcelot Ross was executive architect (© Sinclair Collection); one of many options sketched by J N Fatkin for Mr Henderson (held in box in Estate Office); Palace of Engineering at the Empire Exhibition for which Launcelot Ross was executive architect (© Sinclair Collection).

KELVIN COURT LUXURY FLATS

LONDON has nothing—or will have nothing—to excel the imposing blocks of luxury flats now approaching completion near Anniesland Cross on Great Western Road, Glasgow. Some of the tenants will be in occupation this month.

The firm responsible for the construction of Kelvin Court—that is the title of the two blocks of 50 flats each—has had wide experience of similar work in the Metropolis and in Newcastle, and England's best, it is claimed, has been surpassed.

Over 80 per cent. of the flats have already been let, a factor which would seem to make the opening of show flats on June 19 unnecessary. But these show flats will serve a dual purpose—permit the public to see the accommodation that has been provided, and excite interest in the second edition of the luxury flats to be erected on an adjoining site.

Outside the ranks of tenants and prospective tenants, several people have been privileged by Messrs Alex. Woolf, the contractors, to view some of the completed flats. It can be said at once that they are the last word in flat construction. Superlatives could be exhausted in describing them. Perhaps the best testimony is the demand already indicated and the decision of the firm to proceed as soon as possible with the building of a second Kelvin Court.

Even a cursory examination of the flats shows that the architect and builders have studied Scottish requirements. There is nothing of the "doll's house" about them. Rooms are considerably larger than in comparable flats in England, and the ceilings are of the height demanded by the Scottish housewife. There is an air of spaciousness about every apartment, and plenty of daylight. Such is the window allocation that the hall of each flat needs no artificial lighting in the daytime. This is a decided improvement on the older type of flatted building in Glasgow, where the lay-out of the house makes it impossible for more than the light of the sun to filter through from the rooms opening on to the hall. Most people will classify the hall with a window as a major improvement; it is only one of a score incorporated in these luxury flats.

Amongst those whose home ties or business take them out Great Western Road there has been considerable speculation about the size and general planning of Kelvin Court. The massiveness of the structure—it is unique in Glasgow—attracts attention. Curious but not disinterested people have satisfied and gratified their curiosity. From all parts of the city and its environs prospective tenants came to inspect and ended up by selecting their flat. The "Let" notices posted on the windows bear mute testimony to the signing of the necessary missive.

Four sizes of flats have been made available at Kelvin Court—three-room, four-room, five-room, and six-room apartments. The lowest annual charge is £165, a figure which includes rent and rates and central heating and constant hot water services. As one ascends—the building is of seven storeys—the higher the rental. Floor position and aspect are naturally taken into account. As far as is humanly possible, noise has been eliminated. Every development of scientific investigation along these lines has been tested, and, if found suitable, adopted. Walls and floors are sound-proof.

The smallest flats—their number is limited in proportion to the larger ones—comprise a reception-room with dining recess, two bedrooms, kitchen, hall, and bathroom. Particularly attractive is the combination of drawing and dining-room. The spacious rooms provides ample accommodation for dining necessities, and such is the arrangement that this provision does not in the slightest detract from the beauty and spaciousness of what is now usually described as the "lounge." In the six-room flats are lounge and dining-room, four bedrooms, kitchen, hall, two bathrooms, and two toilets. And each flat, from the smallest to the largest, has a store-room in the basement for trunks, luggage, and other articles not in everyday use. In the event of an emergency, which everyone hopes will never arise, these store-rooms can be turned into bomb-proof shelters at very short notice.

No difficulties will arise in the moving of articles from flat to basement storeroom. Service as well as passenger lifts are part of the installation, with a permanent staff on duty. There are three public entrances to each block of flats, and four entrances at the back for tradesmen. The tradesmen's staircase and lifts adjoin the kitchen of each flat.

It can be said with truth that these Kelvin Court luxury flats have been designed to make life as easy as possible for mistress and maid. Every labour-saving device has been incorporated. The kitchens are a revelation, with specially constructed dressers, tiled walls, and refrigerators. The cutting-down of work makes domestic assistance in the smaller flats almost unnecessary, and practically solves a problem which is becoming more acute. Some indication has already been given of the apartments comprising the three-room and six-room flats, and emphasis has been laid on the commodious rooms. One feature—its significance will be apparent even to the mere male—is the rounded corners in every apartment. There are no crevices, no awkward places for dust to gather. Here, again, is evidence of the abolition of inconvenience and the introduction of any improvement which reduces and simplifies work. Cupboard accommodation is on a lavish scale, including well-fitted heated linen cupboards.

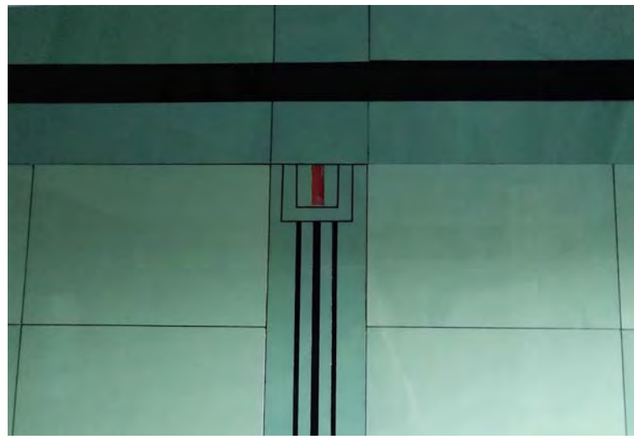
All the flats have built-in wardrobes of mahogany or walnut in the bedrooms. They save space and in no way detract from the appearance of the apartments. Concealed lighting in reception rooms is another pleasing innovation, and tenants can exercise their own taste in decoration. Pelmets, like the wardrobes in the bedrooms, are a permanent fixture, and can be treated artistically to tone in with general decoration. Fireplaces of beautiful designs and colourings can be selected for the apartments, most of them being of delicate mottles and pastel shades.

The same care has been exercised in the choice of materials for the bathrooms. Coloured glass has been used to great effect, and all the fittings conform to the latest and highest-class standards of bathroom furnishing. Each flat has a veranda reached either by french or oriel windows, and the adjoining halls are panelled. Kelvin Court has been built to give the maximum of comfort and convenience. Window space is lavish and gives an uninterrupted view over a wide area. From the flat roof, on which residents can recline in deck chairs during fine weather, can be seen Highland mountains and a wide expanse of countryside. In front of Kelvin Court spacious lawns and gardens are being laid down as soon as the building is completed. The amenities also include a first-class tennis court.

Behind the blocks of flats are a central garage and look-ups, and provision is also made for the parking of cars. With a new road cut in the rear of the buildings, Kelvin Court occupies an island site, with all the attendant advantages.

A list of contractors will be found on Page 9.

Artist's impression of Kelvin Court Luxury Flats when completed.



have felt compelled to explain the “massiveness of the structure” which had been attracting much attention.

In July 1939, Woolf required to raise a further £13,260 against the land. By this stage he appears to have been based temporarily in the Kirklee Hotel at 17-19 Belhaven Terrace, from where it is assumed that he was supervising last-minute operations. He then seems to have moved to Lea Holme, Pendicle Road in Bearsden (bringing the Newcastle house name with him), where he remained until around 1943. Further research may pinpoint whether he constructed the house for himself: there is certainly one flat-roofed Moderne house on the street, although no evidence (yet) that he was the client for this.

By the time of the publication of *Kelly's Directory* for 1939, twenty-two flats in the east block seem to have been occupied, and twelve in the west block. Disappointingly for Woolf, Lady Huddlestone seems to have decided against a move, but Fatkin's perseverance had paid off and Mr Henderson had moved in to Flat 507 (now No. 99) on the top floor of the west block. Occupations ranged from merchants, surgeons, (lady) milliners, and wine and spirit agents. It is probably no coincidence that a number of early residents were Jewish, possibly with connections to Woolf, who may have joined a synagogue once he was based in Glasgow.

Woolf continued to advertise lavishly in the Trades section of *Kelly's Directory*, probably less as a builder and contractor than as a property agent. It is possible that he hoped war would end, the climate would change, and his plans to create a second development would be viable – perhaps he had his eye on the land behind Kelvin Court, still owned by the Trustees of the Kelvinside Estate Company at the time (and alongside which he had built a road), or on the opposite side of Great Western Road, next to the Ascot Cinema, which was architecturally complementary. Perhaps he even envisaged a gateway to the city from the west! By 1942, the apartments were all occupied and management of the asset was probably all that Woolf required to do. Albert Sharman, one of the first tenants, still lived opposite the Estate Office at No. 19 (the numbering system had at last been rationalised); while Sir Steven Bilsland of Bilsland Brothers Ltd (Bakers) had moved into No. 69, after it had been vacated by Sir Cecil M Weir (both men having been instrumental in the Empire Exhibition organisations). In 1940, tenants included the Bolivian Consul, the American Consul, and the Argentinian Consul, luckily not all using the same elevator! Tenancy did not suit everybody, however, and there are records of apartments being vacated swiftly by families who bought properties close by, and who may simply have been using Kelvin Court as a stop-gap measure.

Woolf may have moved to No. 33 Kelvin Court from Bearsden in around 1943 – this was one of two larger apartments (or in any event became so). His last advertisement in *Kelly's Directory* under the heading of Property Agents appeared in 1949, promoting “Kelvin Court Residential Flats - three to six apartments with two bathrooms, electric lifts, refrigerators, central heating”. He no longer referred to the scheme as “luxury”. By 1950, the proprietors were the Legal and General Assurance Society of 129 St. Vincent Street, suggesting that Alec Woolf simply transferred his interests in the development and moved to either Newcastle or London, where he died at the grand old age of 91. The Society continued to manage the development – advertisements would appear in the press whenever a flat was available for rental, usually employing the phrases “exclusive”, “modern” and “self-contained”. Celebrated residents would include the singer Kathie Kay, impressario Archie McCulloch, entertainer Harry Gordon, singer Kenneth McKellar, and comedians Jack Milroy and Tommy Morgan.

Eventually, however, Legal and General decided to sell Kelvin Court – or transfer the Standard Security – and in anticipation of this invested heavily in replacement lifts, conversion of the heating to oil-fired operation (and re-routing of some pipework), some kitchen improvements, and possible re-roofing. By June 1971, the site had been transferred to Davidson Properties (Cricklewood) Ltd of London who thereafter set out to “sell or otherwise deal with the said dwellinghouses separately”, laying out the burdens and individual shares, the need for a uniform colour to “outside paintwork” and the requirement that a Factor be appointed. Excluded from the areas deemed common were the meadow, the lock-ups, and the area on which further garages would later be built (to the west). Davidson Properties were not local, but simply used to acquiring vested interests and

Clockwise from top left: full page advertisement taken out by Alec Woolf as the project was nearing completion (© Newsquest - Herald and Times/Mitchell Library); some of the products advertised are still in evidence, including the bricks, windows, vitrolite and garage door handles (© author); the development as it nears completion with the estate office out front (© Newsquest - Herald and Times).

KELVIN COURT
CENTRAL HEATING
CONSTANT HOT WATER
ELECTRIC LIFTS
BUILT IN FURNITURE
Labour Saving Devices.
REFRIGERATORS
TILED KITCHENS
GLASS BATHROOMS
LIVERIED PORTERS
Enquire of the Office
LUXURY FLATS.
ESTATE OFFICE
KEEP LEFT

freeholds, and in the event the company was no more than a vehicle for finally seeing the transfer of Kelvin Court into multiple ownership. No doubt many of the sitting tenants chose to buy and remain at the same address, and telephone directories show few changes in name. One of the larger flats at No. 100 was sub-divided, and in time the meadow was bought by a purchaser who also secured at least seven of the flats.

Once the final property was sold, Davidson Properties surrendered their vested interest. From that time on, the property has been managed by the collective owners with the assistance of a succession of property factors (including Murphy Scoular, Alexander Property Management, Bell Ingram, Ross and Liddell, Spiers Gumley, Life Property Management and now Newton Property Management). Re-roofing was undertaken roughly twenty-seven years ago, the heating boilers converted to gas, the glass block infills to the stairwells replaced, the principal lift motors replaced (and elevator cars upgraded), and a substantial number of windows replaced. The ground floor entrance areas were refurbished in around 2000, and over eleven of the flats have been internally altered since 1973. The Proprietors' Committee, consisting of a maximum of ten owners, and including at least one from every stairwell, meet regularly, and serve for a maximum of four years. The Chair is elected by the Committee. Most positively, the residents collectively purchased the meadow on the steep south-east corner some ten years ago and hold a Garden Party annually.

Since 2015, three separate phases of renovation have been carried out to Kelvin Court, reportedly including the replacement of all rainwater outlets from the main roofs (although some of these are better replaced than others); inspections of the concrete bands to some areas of the buildings; some repairs to brickwork and bay window roofs and fascia boards; and some re-sealing of windows. Decoration of external pipework is currently ongoing and more decoration is planned.

Left: the project nearing completion, with the timber roof on the east block being built, and hoardings promoting the benefits of living at Kelvin Court (© Newsquest - Herald and Times).


EMPIRE
EXHIBITION
SCOTLAND 1938


BELLGROVE HOTEL
LY'S
BEER
WINE

04

BUILDING DESCRIPTION

Victorian Glasgow flirted with but did not fully commit to the Thirties Moderne style, despite the unprecedented popularity of the Empire Exhibition staged in Bellahouston Park over the summer of 1938. Thomas Tait's extraordinary Tower of the Empire, built of asbestos sheet and steel, and picked out in red, yellow and green light, may have captured the public imagination and been visible from far beyond the city, but the average visitor probably preferred to return home to a cottage flat or tenement, and would have viewed sleek and shiny interiors as beyond their means. It was one thing to enjoy the ambience of a Thirties-styled pub or café – even a restaurant such as the Rogano Seafood Bar – but another to embrace flat roofs, dazzling-white tile and render, and chrome and concrete. Not that house builders didn't promote the perceived benefits of modern materials, standardisation, and up-to-date finishes: MacTaggart and Mickel, in particular, planned entire estates at Whitecraigs (Broom Estate), Clarkston (Carolside Park) and Giffnock (Orchard Park Estate), advertising all three in a *Glasgow Herald* supplement promoting the Empire Exhibition. In fact, the company even built two blocks of serviced apartments at Whitecraigs on Duart Street, targeting mobile professional people who wanted serviced accommodation without the responsibility of home ownership, and who could expect vitrolite-tiled bathrooms and kitchens, electric refrigerators, lock-ups, cleaning, and a uniformed porter as part of the package.

For the most part, however, the residential buildings of Glasgow in the Thirties, while often smart and fashionable, and no doubt fitted with the latest labour-saving devices, tended to be conservative. Flat roofs were not as commonplace as European and American-influenced architects would have liked, and curved corners were frequently squared off. Only steel windows, with their promise of precision manufacture and increased daylight, properly took off. Notwithstanding, a number of exceptional flat-roofed detached villas were built on Kilmardinny Avenue and Carse View Drive in Bearsden, and also at Whitecraigs. Thus, there were few precedents for Alec Woolf and his architect to follow, only a range of "super cinemas", department stores, banks (amongst which the best were designed for the Glasgow Savings Bank), and a working-men's hostel (the Bellgrove Hotel) on Gallowgate built in 1935. Finished in the summer of 1938, the Beresford Hotel on Sauchiehall Street may also have been of interest, but in reality, Kelvin Court was – quite literally – breaking new ground.

Although MacTaggart and Mickel had tested the water some years earlier by securing permission to build serviced blocks near Kelvindale (which remained unbuilt), Woolf was in uncharted territory. As the outgoing land owner, the Trustees of the Kelvinside Estate Company would have reserved the right to approve the proposals, and Glasgow Corporation were crucial to the success of the scheme: the scale of the development may have come as an initial shock to both. But Glasgow was promoting itself as a progressive and confident city by hosting the Empire Exhibition, and the climate was right for a bold gesture.

Clockwise from left: celebrated front cover of the Glasgow Herald supplement issued to co-incide with the Empire Exhibition - this would be used as the cover of McKean's *The Scottish Thirties* (© Sinclair Collection); the Bellgrove Hotel of 1935-7, built as a working men's hostel (© Lorna Houlihan); the Beresford Hotel, opened in time for the Empire Exhibition (© Newsquest - Herald and Times); Thomas Tait's Tower of the Empire (© Sinclair Collection).

And bold Kelvin Court certainly was. The site was large, but had it been developed for villas in the manner of Whittinghame Gardens, fewer than a dozen could have been accommodated, and not only would the profits have been marginal, but the appetite for large houses staffed by domestic servants had shrunk. Instead, by fitting the buildings with elevators, apartments could be stacked one above the other, higher than the average tenement but not so high as to create over-development. Some parameters were probably established by studying large serviced blocks in London (communal heating, garages, good amenity grounds, and leisure facilities) and then an indicative footprint created on a site plan that offered all of these attractions.

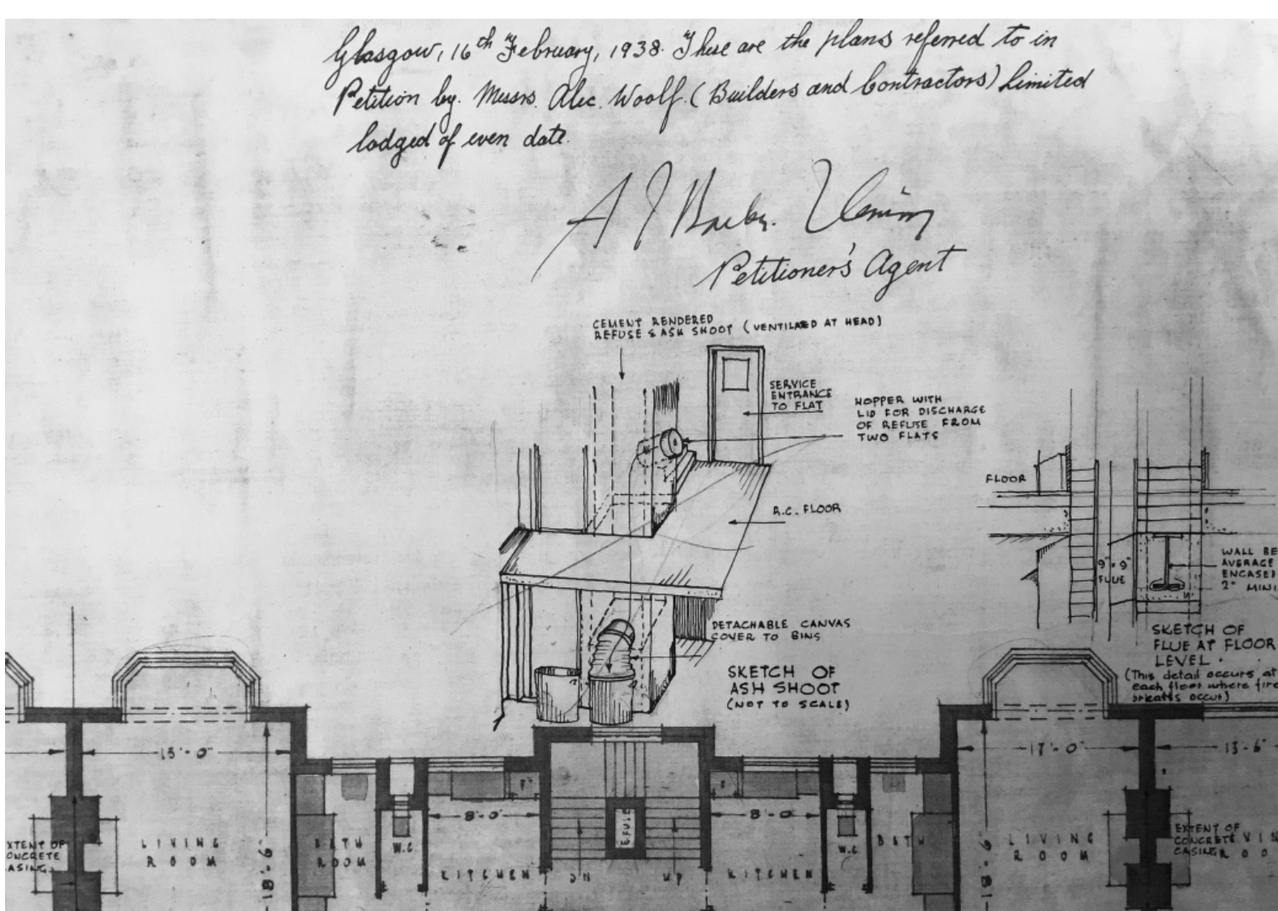
Deep buildings typically reduce levels of light to centrally-located rooms, and so it is likely that J N Fatkin experimented with a courtyard layout (in the manner of a traditional tenement block), a splayed plan, and possibly even 'U' shapes, 'T' shapes, 'E' shapes, 'W' shapes, and cruciform plans, all of which increase the length of external walls on which windows can be placed. In the event, the 'H' shape was adopted, allowing the overall length of the blocks to be disguised and the frontage onto Great Western Road to be mostly set back from traffic. Complicating the layout was the steep slope across the site from the south-east corner to the north-west, and so having decided on two blocks separated by a large communal garage, the buildings would have been positioned to reduce the amount of excavation and thereby save costs. Where the buildings currently sit was probably the optimum position taking into account contours and boundaries and the need for an acceptable distance between the two blocks to avoid over-looking from one to the other. The Kelvinside Estate Company also dictated the minimum distances to the roads and other houses around the site.

While the elevations were significantly altered from the original proposals, the apartment layouts were fairly fixed from the outset. A degree of market research (and experience of working in London) would have shown that a range of apartment sizes would appeal to working professionals and singletons as well as the wealthy middle class and retired. Using a reinforced concrete beam and column system (and concrete separating floors) would allow the core arrangement of every apartment to be fixed by loadbearing walls, but the bedrooms and bathrooms to vary in size and number by shifting non-loadbearing partitions. 'T'-shaped wings at either end of both blocks could support three apartments on every floor (all of them at least double-aspect), with the central section laid out as two apartments per floor. In addition, the slope across the site was such that a sub-ground floor initially containing seven "flatlets" or bachelor apartments could be fitted in at the west end of the east block: even these were generous in size (although later reduced in number).

Given that the apartments were to be heated, cleaned and maintained as part of the lease, there would have been an assessment of running costs and construction costs versus likely rental. Too many apartments and construction and management would be expensive, elevators bigger, and adequate car parking difficult to accommodate. The demands on the caretakers would be high, and the development would lose its cachet. Too few dwellings, and the rental would make recovery of investment costs slow, if not impossible. One hundred and three houses must have balanced the equation, since this is how the buildings were marketed (although originally designed as ninety-six), but despite the inclusion of the flatlets, once an office was allocated for management purposes only fifty-two apartments were possible in the east block (Block No. 2), leaving forty-eight in the west block (Block No. 1). These ranged from two-bedroomed main door flats (which were largely omitted) to three and four-bedroomed apartments. The "basic" layout offered a kitchen with built-in cupboards, a living room with fireplace and dining recess, two bedrooms (one with a fireplace), a large bathroom and separate toilet. In the wings, however, the apartments were able to provide two further bedrooms (sharing a veranda), a sitting room with fire, and in response to client demand, two bathrooms and toilets.

Left: the distinctive 'H' shape of the two Kelvin Court blocks seen before the land to the rear and on the opposite side of Great Western Road was developed: close inspection reveals landscape features and water tanks that have since been removed (© Crown Copyright Historic Environment Scotland).


(FIFTH AVENUE)


Glasgow, 16th February, 1938. This are the plans referred to in Petition by Messrs Alec Woolf (Builders and Contractors) Limited lodged of even date.
A J Hurley. Vicary
Petitioner's Agent
CEMENT RENDERED REFUSE & ASH SHOOT (VENTILATED AT HEAD)
SERVICE ENTRANCE TO FLAT
HOPPER WITH LID FOR DISCHARGE OF REFUSE FROM TWO FLATS
R.C. FLOOR
DETACHABLE CANVAS COVER TO BINS
SKETCH OF ASH SHOOT (NOT TO SCALE)
FLOOR
9" x 9" FLUE
SKETCH OF FLUE AT FLOOR LEVEL. (This detail occurs at each floor where fire breaks occur)
15'-0"
LIVING ROOM
BATH ROOM
W.C
KITCHEN
8'-0"
17'-0"
15'-6"

The nature of the development, where (uniformed) day and night porters would be on hand to deliver coal and mail, and also remove ash and refuse, required that every apartment had access to two staircases (and, in the event, two elevators), one for day-to-day use and guests, the other for tradesmen. In the wings, this was easily accomplished by siting the two stairwells back-to-back, but the centrally-located flats had to share their service stair with some of the apartments in the wings, despite having separate entrance stairs. Fatkin used these vertical circulation routes to add interest to the façades, creating a series of towers to break up the repetitiveness of what were essentially stacks of bay windows.

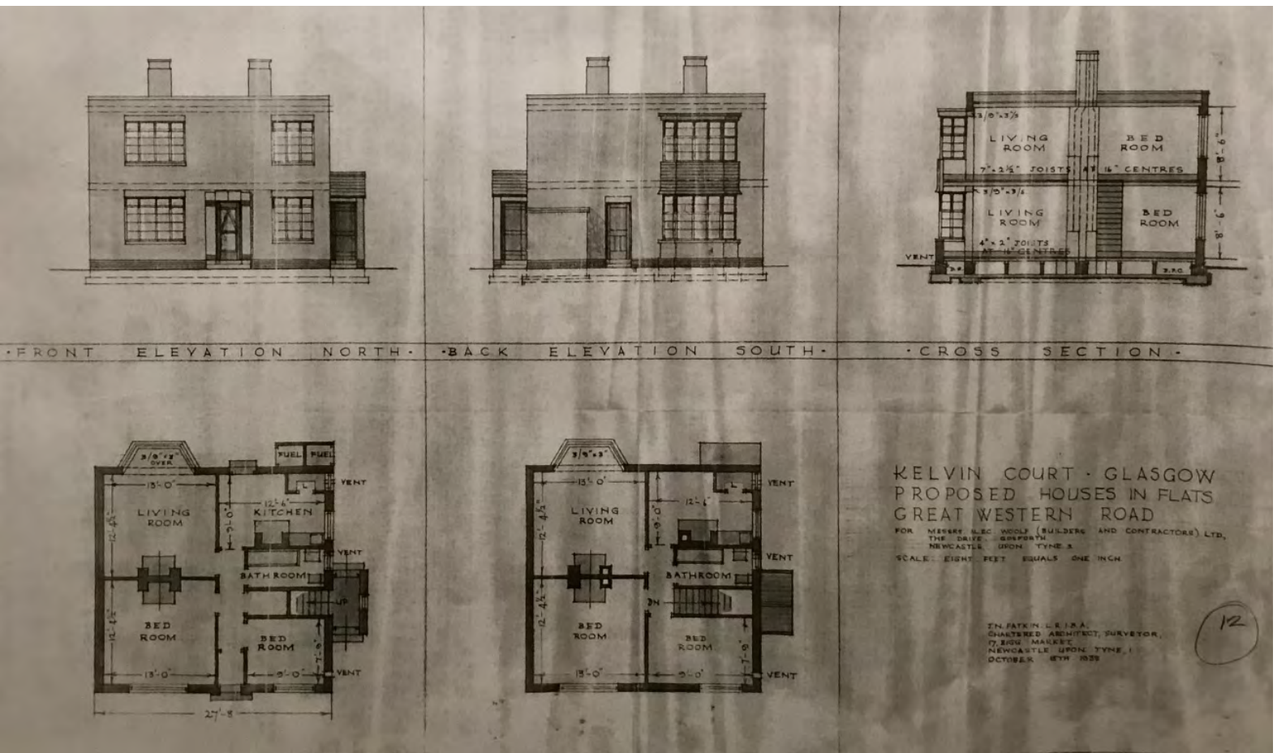
Early illustrations by Fatkin do the finished product a disservice. There was a real danger that the two blocks – the higher of which reached seven storeys – would be lumpen and monotonous; after all, they were not designed to be especially decorative other than around the main entrances, and they lacked the convention of a pitched roof. As built, however, the combination of ribbons of exposed concrete and panels of handsome brown brick, in tandem with minimalist steel windows (probably painted dark green) produced elevations that the *Buildings of Scotland* guide to Glasgow considered "would be quite at home on one of London's arterial roads." Christine Martin, one of Kelvin Court's residents, has identified at least one apartment block in London - Du Cane Court in Balham, designed by the Edinburgh architect George Kay Green - which is similar in appearance to the Great Western Road apartments, and undoubtedly there are others. Indeed, the observation made most often about Kelvin Court is its Englishness, since while the architectural profession in Glasgow was alive to developing trends, facing brick was not an indigenous material, and brick was much more likely to be found hidden under harl or render.

The pronounced horizontal lines of Kelvin Court are reinforced by the contrast between the brick and concrete, but the brickwork may have been intended to be lighter (archive drawings show a pinkish wash on the elevations, possibly in a nod to the red sandstone of Whittinghame Gardens). Irrespective, the light lime-based mortar contrasts nicely with the tan colour of the bricks, which are made more interesting by a wavy-line texture that is itself redolent of the Thirties. The brickwork was also arranged parquet-style on the face of the first floor balconies (and on those closest to the boulevard) and used for projecting surrounds to porthole windows on the outer elevations. Despite the use of facing brick on such a large scale being described by one writer as "outrageous", it paved the way for acceptance of the material in later years.

The use of poured concrete allowed for undulating floor plates, and this enabled large numbers of bay windows and cantilevered balconies, cleverly used to allow light into every room even including halls: Crittall, one of a handful of major manufacturers of steel windows at the time, supplied the elegant framed units which were then glazed on site. Only the ground floor apartments had no verandas, but some of the larger flats had two. Window lintels and cills (including parapet tops to balconies) were cast in concrete, and while it was intended that the concrete bands be faced in stone, it is likely that the quality of the shuttered material was sufficiently good that it could be left unfinished. Of course, by the time of the construction of Kelvin Court artificial stone (concrete with a modified face) was readily available, and concrete itself a material that spoke of modernity and the machine age (and could also be sculptural). So, artificial stone by Donald Livingstone and Son of Glasgow was used around the main entrances, and to a lesser degree around the rear doors, pre-cast in ashlar-sized blocks, and profiled to create a framework around tall panels of glass blocks.

It was the main entrances (and the streamlined curved balconies on the rear elevations) that best advertised the development's Thirties credentials. The central entrances, in particular, were textbook examples of the aesthetic. All the materials in vogue at the time were present – cream-coloured terrazzo on the steps, chrome ironmongery on dark-painted doors, a sea-scroll balustrade in steel

Clockwise from top left: Du Cane Court in London, image sourced from the internet; Fatkin's original perspective from the prospectus - note the tennis court on the roof of the communal garage (copy courtesy of LPM); details of the proposed ash "shoot" (© Glasgow City Archives); Fatkin's early proposals for the outer-facing elevations (© Glasgow City Archives).


·FRONT ELEVATION NORTH·
·BACK ELEVATION SOUTH·
·CROSS SECTION·
LIVING ROOM
BED ROOM
KITCHEN
BATH ROOM
VENT
FUEL
KELVIN COURT · GLASGOW
PROPOSED HOUSES IN FLATS
GREAT WESTERN ROAD
SCALE. EIGHT FEET EQUALS ONE INCH.
T.N. FAT KIN, L.R.I.B.A.
CHARTERED ARCHITECT, SURVEYOR,
17, BIGG MARKET,
NEWCASTLE UPON TYNE, 1.
OCTOBER 6TH 1939.
12

on top of a thin curving canopy, glass blocks, steel windows and best of all, the words “Kelvin Court” in neon lettering.

If Alec Woolf’s prospectus is to be believed, the entrance vestibules were also to be tiled in terrazzo and brightly lit, although no real indication of the colour palette was given. By the late 1930s, monochrome interiors had given way to pastel shades, and in all likelihood the stairwells were far more colourful than is now the case. The frameless mirrors were typical of the period, as were the cascade lights in the central stairwells. In the apartments, the latest in electric fires in tiled surrounds, heated towel rails and linen cupboards, and labour and space-saving kitchen equipment were made available (including an electric refrigerator as well as gas). There was concealed lighting in living rooms hidden behind Ziggurat-stepped pelmets, vitrolite-tiled bathroom walls in a range of spectacular colours, built-in wardrobes in walnut and mahogany, and a telephone and wireless. The “latest type of press button cisternless WC” was promised (fed, it is assumed by the rooftop tanks), and Fatkin’s services were made available for the design of bespoke cabinetry and fireplaces (faience being supplied by the Shaws Glazed Brick Company from Lancashire, and tiles by Thomas B Campbell and Sons from Glasgow). The floors would have been timber boards on a soundproof rubber cushion. Most interestingly, a number of the internal walls were curved in the more luxurious of the apartments, echoing the south-facing balconies that were added to the design after construction began. There were two show flats, furnished by D MacDonald and Brothers of North Hanover Street.

Facilities offered to prospective tenants included a tennis court, communal garage (and filling station), manicured amenity grounds, lock-ups at a reasonable rental, and storage for trunks in the basement of the west block. Additionally, the cellars were designed to act as bomb-proof shelters “at very short notice”. A new road (now Hatfield Drive) was created to the rear of the site in order that coal and other goods could be delivered efficiently, and the small sub-station accessed. Since there was no communal laundry, it is likely that this service was also provided (at least for large items such as bed linen): after all, the Castlebank Laundry was only a little further west on Great Western Road. Lastly, there were lock-ups and a caretaker’s house – really two flats – a perfect little cube clad in white render which was quite possibly the only flat-roofed house built within the city boundaries during the period.

Functional yet beautiful, Kelvin Court was completed on the eve of WW2, and despite Woolf’s determination to erect a second development, it was not duplicated, instead remaining un-matched in Glasgow (even Scotland) for scale of development, standards of accommodation, convenience of location, and boldness of ambition.

Clockwise from top left: J N Fatkin’s indication of the glamour intended for the entrance stairwells as shown in the prospectus (copy courtesy of LPM); 1939 image of the development from the north-west with garage being completed (sourced from the internet); beautiful Vitrolite in a range of colours was used in bathrooms (© Christine Martin - with thanks to the owner); Fatkin’s Dean of Guild proposals for the caretaker’s flats (© Glasgow City Archives).

05

INSPECTIONS

The building condition surveys were not disruptive, so, for instance, there has been no attempt to identify where there might be rot in timbers (albeit these are restricted in extent due to the mostly concrete construction). There were a series of inspections carried out between late October 2018 and mid April 2019, conducted in a range of differing weather conditions, including heavy rain but not including very hot temperatures. Thus, it has not been possible to observe the performance of the flat roofs during the summer months. An extensive set of archive drawings was sourced from Glasgow City Archives, five useful photographs purchased from Historic Environment Scotland, and two construction images generously supplied by the *Glasgow Herald*. Most usefully, there is a box of assorted information held in the Estate Office, albeit the incompleteness of records has been a source of frustration, and only a few reports from recent years were made available to view. It is clear that the handover process from one factor to the next has seldom been all-encompassing.

None of the apartments were inspected for the purposes of this report, although some residents generously permitted access. As a result, while the flat roofs (and bay window roofs) were inspected from above, the balconies were not. Elevations were inspected from ground level (and roof level) using binoculars, the stairwells and cellars viewed (including the large trunk room under the west block), and the garage and boiler room visited once along with the services engineer. Crawl spaces were not inspected due to the presence of asbestos (on which there is a report). Specific defects were observed to a number of building elements, but for the purposes of this report are dealt with in general terms: more detailed notes (and photographs) are available on request.

CONDITION SURVEY – MAIN ROOFS

Despite the luxurious appointment of Kelvin Court, the two main roofs were never anything other than utilitarian, and while the promotional article published in the *Glasgow Herald* of 15 June 1939 noted “from the flat roof, on which residents can recline in deck chairs during fine weather, can be seen Highland mountains and a wide expanse of countryside”, it seems unlikely that access was encouraged once the apartments were occupied. In the first instance, the roofs were constructed of timber rather than concrete, and so insufficiently robust for assembled residents taking the air. They were finished in asphalt, which is easily damaged by point loadings from deckchairs and fashionable footwear, and difficult to beautify in appearance. Environmental pollution would have been such that views may not have been quite so distant as suggested by the *Herald* article (albeit they are today), and chimney smoke would have hung around at head height. Furthermore, the majority of apartments had their own private balconies on which seating could be located more conveniently. Finally, the lifts and principal staircases did not extend

Left: the roof of the west block pictured from the east block showing water tanks, lift rooms, chimneys, stairwells and distribution pipework (© author).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as far as roof level, and it is clear from the design of the central service stairs, from which the roofs are reached, that resident access to the flat-roofed areas was actively discouraged. There is no evidence that the roofs were intended to act as drying greens, as was the case at Anniesland Mansions a little further west on Great Western Road, and instead they provided access to water tanks and lift motor enclosures, and would have allowed for regular sweeping of chimney flues.

Fatkin's working drawings indicate that the roofs were to be built of 8 inch timber joists spanning (mostly) from front to rear, and this is borne out by photographs taken of the east block during construction before the parapet walls were completed. Given the width of the building, intermediate steel beams appear to have been installed to reduce the depth of the joists (in theory, an 8 inch or 200mm joist will span 4 metres, but no more), and firring (tapered) timbers were secured on top of the joists to ensure that the roof drained at a pitch of around 5 degrees to the outer walls, where the outlets and rainwater pipes were located. The roof substrate was formed out of 1 inch (25mm) boarding, and coated in 3/4 inch (20mm) "rock asphalte", more commonly referred to nowadays as mastic asphalt. This would have been heated in a large tar boiler, probably at ground level, hoisted in pails to the roof, and poured over the boarding and distributed evenly using a mop. Upstands against the parapet walls would have been trowelled up to a height of 150mm and worked into a joint in the brickwork. The *Herald* article records that the bitumen-based products used on Kelvin Court were supplied by the Victoria Chemical Works in Paisley, owned and operated by Stirling's Bitumen Products Ltd, who promoted their materials under the brand name of "Stirloid", and boasted of twenty-five years research and technical experience.

Core samples taken in 2019 of the roof of the west block seem to suggest that instead of timber, concrete was used, but photographs of repairs above No. 69 confirm that timber was used principally throughout, finished in asphalt. Patented in 1837 (although in use long before then), asphalt had enjoyed a revival during the 1930s due to the popularity of flat roofs, and at the time there would have been few other materials as suitable for roofs as large as those at Kelvin Court. As a flexible material that responds to changes in temperature, however, mastic asphalt cannot be expected to last indefinitely, and at some stage (probably in advance of the apartments being sold), the roofs were re-covered in layers of felt. Subsequently, in around 1992, a comprehensive re-roofing exercise was undertaken by an Edinburgh-based firm of architects who nominally insulated both buildings (leaving areas of asphalt below the 40mm PIR insulation boards), and installed an EPDM (ethylene propylene diene terpolymer) rubber membrane throughout. Since the roof is not loaded with ballast, the insulation must have been secured using plastic or metal fixings (the pattern of which is discernible through the membrane) and the rubber sheets glued and bonded in position. The sheets have been carried up and over the parapets (which are 760mm high and 430mm broad) and finished on the outer face of the building with a plastic-coated metal trim (which may just be glued in position). Since that time – over twenty-five years ago – there has been no comprehensive overhaul of the roof finish, only a degree of replacement of rainwater outlets, and patch repairs where there has been either damage or persistent leaks.

Both roofs are similar in layout, being 'H'-shaped on plan, with a series of protruding bays to the front, rear and sides which are effectively level with and part of the main roofs. Those to the front appear only above the entrances; there are two on the outer-facing side elevations; and three wide bays on the rear of both blocks. The roofed areas over the bays slope back onto the main roof, from where rainwater discharges, first in chases, then through outlets at the base of the parapet walls into (mostly) cast iron hoppers. There are sixteen outlets on both blocks, most discharging into cast iron rainwater pipes that also carry drainage from balconies down to ground level. On the rear, some of the rainwater outlets discharge onto flat roofs above the upper floor apartment bay windows.

There are four main lift motor rooms on each roof, two of which are brick-built and

Clockwise from left: Google Maps image of roof showing, in particular, the wayward nature of the cold water pipework (© Google); rubberised membrane, undersized outlet and open pipe left following partial tank removal (© author); most of the component parts on the roof are built of brick - the boxy structure is the lift pulley to the central stair (the TV aerial is especially high) (© author); repairs to the rubberised membrane are typically carried out using liquid waterproofing (© author).

with metal-framed windows, and two of which are constructed of steel framing and clad in plastic-coated (plastisol) corrugated metal. A smaller brick-built pulley enclosure corresponds on both roofs to the central principal lift (where the lift motors are at ground, rather than roof level). There are an assortment of water tank enclosures, the two largest of which sit above the rear service stairwells. On the east block, there are a further four tanks, one of which sits above the westerly side service stairwell (and may be linked to the boilers or needed because the building is seven storeys high here), and on the west block there are a further two flanking the most westerly rear service stair and another on its own. At least four additional tanks have been removed from both blocks, leaving open supply pipes above the rubberised membrane. It is not clear at what stage the surface-run cold water distribution pipes were installed at roof level (possibly in 1969, when much alteration work was carried out to the services), but currently there are insulated pipes on plastic spacers meandering across the roofs of both blocks, supplying the apartments below with stored and (apparently) drinking water. The pipes are prevented from freezing by trace heating elements, the controls for which are mounted on the rear service stairwells. There are ten brick chimneys emerging from both roofs, ranging from single stacks to those with fourteen flues. In addition, there is the occasional polycarbonate rooflight to top floor apartments, and the east block includes the boiler flue at the north-west corner.

The extent of roof penetrations in the form of lift shafts, chimneys, and tank enclosures, creates a large number of upstands, arguably easier to address using mastic asphalt than a sheet membrane, where the joints, angles and corners require careful detailing and reinforcement. Furthermore, while asphalt can be dressed into brickwork joints and then pointed in place, membranes require capping pieces, and these typically rely on mastic for watertightness. Beginning at around 2003, there have been a number of reports prepared on the condition of the roof, and while these have been generally encouraging in respect of the projected lifespan of the roof, the reality is that the material (manufactured by Bridgestone Firestone Inc., and which has a US Patent 4810565) has probably reached the end of its lifetime guarantee (the patent has also expired, being taken out in 1989). The patent description suggests that the EPDM material comprises of an upper layer of fire-retardant material, backed by a lower layer that is not fire-retardant, but gives no details on projected life expectancy. Current Firestone EPDM rubberised roof coverings are promoted as having a 50 year life expectancy, but the material warranties are only ten and twenty years (depending on the product), suggesting that the 50 year timeframe for replacement is optimistically based on a few roofs having survived intact since the 1980s, and not on any scientific evidence. Added to this, there is no information on the type of insulation used below the roof membrane, and the degree to which it is non-combustible. Realistically, then, neither roof is likely to perform satisfactorily for a further prolonged period of time: technology has moved on, and while current rubberised roof membranes are thicker, more puncture and pull-resistant, more efficiently seamed, and carry longer guarantees, the product used twenty-five years ago has had to be improved by manufacturers to meet current performance standards. The insulation fixings are clearly visible, suggesting that the roof membrane is thinning in areas, and the insulation feels soft in a number of areas on both blocks (and badly deflecting in one location on the east block), which may mean that the bonding material has failed. A number of seams have had to be re-covered.

Both main roofs are now exhibiting a range of defects, not least of which is that they do not appear to be regularly maintained. Not unexpectedly, the roofs pond, and rainwater does not discharge cleanly and swiftly through the rainwater outlets (of which, arguably, there are too few). Water is therefore left lying on the roofs where it encourages algae growth (and sometimes grass) in the puddles and at the base of upstands. This typically means that the roofs are slippy, even when dry, and made more dangerous by the number of trailing leads from TV aerials and satellite dishes. At the time of the survey, a number of the outlets were at risk of blocking from an accumulation of leaves, gravel and fragments of the pipe insulation. There are very few non-slip pathways on the roofs, and on the west block these have been disturbed and are now lying loose. Some of the smaller cold

Clockwise from top left: the water distribution pipework is especially contorted and the insulation attractive to seagulls (© author); free-standing lift motor rooms are in fair condition - which is more than can be said for the roof (© author); some water tanks are awkwardly close to the parapet, making waterproofing difficult - one hatch has lain open for months (© author); generally the roofs are a patchwork of repairs and algae (© author).

water tanks are sited so close to the parapet upstands that effective waterproofing is a challenge and debris tends to gather in the gap. Similarly, where there are plywood-capped upstands on the roofs extending from the two rear lift motor rooms (these cannot be firebreaks, since there are no supporting walls beneath, and may be resting beams installed when the lifts were last upgraded), a large catchpit has been formed that does not drain well.

It has been established that much of the original asphalt was left on the roofs, preventing a thorough examination of the timber boarding beneath. There have been relatively recent instances of isolated repairs that have exposed areas of rotted timbers (both boarding and joists) but understandably no overview of whether there are similar deficiencies elsewhere. What has been observed, is that leaking water through the EPDM roofing moves along the original asphalt to points some distance from the defect causing the actual leak. Where the original 150 gallon storage tanks have been removed, the supply and distribution pipes have not been capped below the roof, but left protruding, with ad-hoc waterproofing seals dressed around the pipework. Similarly, where the metal restraint bands securing the soil pipes in place against the parapet wall are fixed to the parapet tops, these are over-coated with liquid waterproofing. The plastic-coated capping pieces at the parapet edges are now rusting where the decorative covering has broken off.

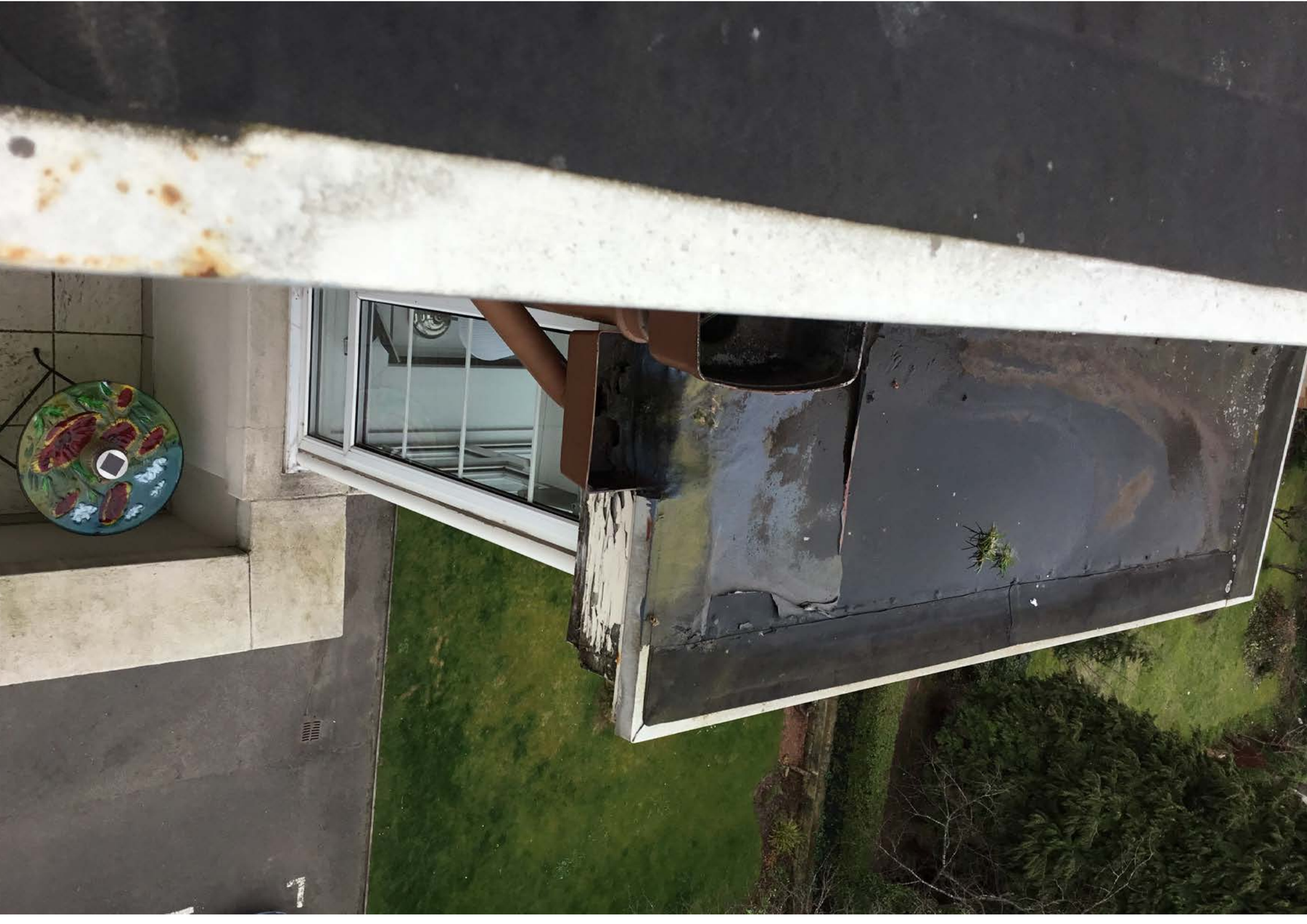
One of the principal defects in evidence is the extent to which the rainwater outlets have been reduced in size due to the installation of insulation on the roof. The original outlets were wide and deep, created at the base of the brick parapet walls (probably by omitting two bricks) and possibly formed in lead around which the mastic asphalt would have been dressed. The lead may have been formed into a spout, or more likely formed into a pipe that fitted snugly into the cast iron rainwater pipe on the outer wall. With the introduction of insulation, the depth of the outlets has been reduced (the roof has been raised in height), and plastic spouts have been inserted discharging into cast iron hoppers that do not even fit properly into the rainwater pipes (and are probably not original). Recently, there has been an attempt to improve a number of the outlets, since they clearly do not discharge swiftly enough (and some have been the cause of water ingress), but the difficulties of working at height have affected the consistency of repairs, and there is an overdependence on liquid waterproofing, mastic, and other non-traditional products. It is doubtful that the outlets properly cope with the volume of melting snow that must occur from time to time. The upstand details at chimneys, tank enclosures and lift motor rooms have clearly created problems, and it is likely that the membrane at the corners has begun to deteriorate since there are a number of repairs on both blocks at inner and outer corners. Additionally on the east block, there has been a degree of re-covering of parapet wall upstands. The junctions between the walls of the rear service stairs and the parapets are poorly finished; the junction with the boiler chimney is known to be problematic; and the proximity of the brick-built lift motor rooms and the chimneys alongside makes effective waterproofing extremely tricky. On the east block, there is a clumsy relationship between the west water tank, the lift enclosure, a chimney, and a smaller water tank, where the cold water pipework is so convoluted that rainwater on the roof cannot easily find its way to a drain and grass is now growing.

The roofing membrane appears to have been more consistently problematic on the west block than its eastern counterpart, since there are large areas of liquid waterproofing in evidence, and some of the outlet repairs are already de-bonding. Upstands have been less well repaired around the rear service stairwells on the west block, and the extent of algae on this roof suggests that ponding – when it occurs – is widespread. Of the two roofs, this is also the least well maintained, with debris, loose wires, loose pipe insulation and tired outlet flashings.

CONDITION SURVEY – BAY WINDOW ROOFS

Kelvin Court derives much of its character from its undulating façade, created through extensive use of bay windows on most of the elevations. These are

Clockwise from top left: water tank with open hatch, creating possibility of contamination: note algae build-up on roof and patching (© author); under-sized outlet untidily discharging into non-original hopper, also ponding on bay window roof and deteriorating fascia (© author); typical roof arrangement, which becomes especially cluttered in areas of stairwell roofs and lift motor rooms - maintenance of the elevations requires a ballasted hoist system (in blue) (© author); widespread ponding occurs at outlets after rainfall (© author).



typically either square-sided or canted in shape (much like a traditional tenement bay window) and linked at first and top floor level by continuous balconies. Some of the bays are tucked into corners, while others – on the rear – are twinned on either side of a panel of separating brickwork, or linked by a small balcony. Varying in shape and size, the bay windows are individually roofed, constructed out of timber and finished in boarding and (originally) bitumen sheet. The original fascia boards – of which some still remain – were timber with a typically Art Deco profile that matched the concrete bands that wrap around the building. Most of the bay windows drain back towards the building face and into hoppers that share a rainwater pipe with the main roof (this is not original). The larger rear bay windows appear to have internal pipes.

It is likely that the roofs were comprehensively re-covered at the same time as the main roof, and since there is evidence of insulation fixings, it is probable that there is a thin layer of insulation on the boarding, possibly even over the original bitumen sheet. The EPDM membrane survives on some of the roofs, and has the same upstand detail as used on the main roofs, capped in a plastic-coated trim held in place by mastic. The hoppers are uniformly plastic, and were installed during the last major re-roofing: prior to this, the bay window roofs drained through neat outlets into pipes that simply discharged onto the nearest balcony.

There are a total of twenty-seven bay window roofs on both blocks, and the standards of finish, workmanship and effectiveness are extremely variable. Some of the roofs retain the rubberised membrane fitted at the time of the last re-roofing, while others appear to retain the membrane but with a liquid-applied waterproofing on top. Some have been designed to omit the hopper, some have neat black upstands along the edge, and some have been completely re-covered using liquid waterproofing after removal of the old membrane. Typically, hoppers are blocked (some with standing water) or with weeds or fern growth in evidence. Very few of the roofs drain properly, and most retain ponding following a fall of rain. For the most part, fascia boards are rotting, splitting, have rusty nail heads and are devoid of paint, with the exception of some on the east block that have been re-decorated recently. The larger bay window roof tops (all on the rear) collect rainwater from the main roof, and are expected to drain through a single, tiny outlet. A number of paint brushes have been abandoned on roofs, clear evidence of ongoing repairs. Upstands are uniformly ugly (although a few have been covered in lead) and there is much evidence of patching. Generally, the bay window roofs appear to be in worse condition on the west block, with two – both at the north-west corner – long overdue some attention, and another to the rear with a badly rucked upstand. It is not entirely clear how the roofs are supported, and it is likely that some rigidity will have been provided by the steel casement windows. This would explain why some of the roofs over replacement uPVC windows appear to have slightly slumped.

CONDITION SURVEY – STAIRWELL ROOFS

The curious stepped nature of the stairwells, which on the side and rear elevations reduce in depth after several flights of stairs, makes for a striking architectural feature but results in a number of inaccessible flat-roofed areas. The principal stairwells are a little less complicated: there are canopies over the main entrance doors, and shallow balconies above four of these. The balconies appear to drain (or overflow) onto the canopy roofs, and while it is difficult to inspect these, it would seem that liquid waterproofing has been applied to the balconies (or at least to the upstands), but that the canopies retain a rubberised membrane (or felt) finish which is de-bonding in places (and under which is some form of lighting conduit). There are ferns and weeds growing out of the balcony on the west stairwell on the east block, and the west canopy of the west block is covered in debris.

The side service stairwells, from which there is no access to the main roofs, have single balconies above either first or second floor level that serve no obvious

Clockwise from left: bay window roof showing typical deterioration - poor membrane finish and defective fascia, as well as non-original plastic hoppers (© author); ponding on bay window roofs is common (© author); the entrance canopy roofs do not drain well and seem to have old lighting conduit under the roof membrane (© author).

purpose: they cannot be reached from the staircases because the glass block windows are unopenable and they simply act as catchpits for water and are difficult to maintain. They appear to have been lined with a rubberised membrane (which ponds), and it is evident from the staining at parapet level that the brick upstands are absorbing water that then soaks downwards.

The rear service stairwells also have two flat roofs apiece, but the detailing is simpler (or has been simplified) on the west block. On the east block, approximately halfway up the height of the staircases, the depth of the stairwell reduces, creating the need for a balcony roof behind a parapet. The extent of staining and efflorescence on the brickwork to these parapets is probably caused by the extent to which the wall is wetted on both sides, and it is possible that the concrete cope on the parapet lacks a damp proof course. Whatever the cause, there has been an attempt to alleviate the ingress of water into one of the stairwells (east) through the application of liquid waterproofing, but this has not extended as far as the top floor levels, where the roofs over the stairwells (where not beneath the water tanks) are covered in clumsily-applied roofing felt. Where these roofs abut the water tank enclosures, there are untidy cover flashings in lead, and the drain pipes (which enter then exit the stairwell) are ad-hoc and undersized: in the case of both rear stairwells on the east block, the roof drain pipes barely protrude past the rubber membrane, and it is only a matter of time before water seeps into the apartments below.

It appears that during construction (or possibly in the late 1960s), the double balcony arrangement on the rear stairwells may have been altered on the west block, since the lower of the two roofs have no parapets and are covered in roofing felt draining to a conventional half round gutter. At roof level, however, the same clumsy felt overcladding has been applied, albeit the drain pipes are marginally better installed.

CONDITION SURVEY – PLANT ROOMS AND ROOFS

A concerted effort was made during the design of the scheme to rationalise services, and concentrate lift motor rooms and water tanks around (and on top of) the secondary stairwells**.** This allowed the stores flanking the secondary lifts to be used for pipework, but also positioned the heavy load of lift motors and stored water on top of a series of structural cores. This was impractical only in the case of the principal central staircases, where the lift motors had to be accommodated at ground/basement level, one next to the Estate Office, and the other adjacent to the cleaners' store.

Given the extent to which the apartments were marketed by Woolf as having in many instances two bathrooms (on request), cold water storage was clearly important, and Fatkin's initial rooftop proposals included a large double tank room above the west gable of the east block (where the building was highest), as well as a further eight tanks on the same roof. During the construction process, however, the volume of water required (and its weight) must have been calculated more accurately, and if the archive drawings are to be believed, reinforced concrete tanks holding 2075 gallons each were built on top of the rear stairwells, with a further, larger tank built over the west stairwell on the east block. The weight of these tanks was to be carried by the brick walls enclosing the stairwells, with a skin of brickwork built around the concrete as a cladding. Today, the tanks are insulated and clad in plastic-coated corrugated metal, and since it is unlikely that reinforced concrete tanks would have been removed, it is probable that the original tanks were steel or zinc instead. The four tanks removed from above the bathrooms in the wings of both blocks were most probably built of timber and lined in lead.

With the main tanks sited above the rear stairwells, and smaller individual tanks feeding water to the apartments in the end wings, there was room to house the lift

Clockwise from top left: on the east block, the lower rear stairwell roofs have parapets (© author); the parapets may be admitting water - note efflorescence and corroding concrete window lintel (© author); the upper rear stairwell roofs are clumsily covered in felt (and drain badly) (© author); the west block lower rear stairwell roofs have been simplified (although not the side stair roofs) (© author).


DANGER
LIFT MACHINERY
UNAUTHORISED ACCESS
PROHIBITED
DOOR TO BE KEPT
LOCKED.

motors immediately above the elevator shafts. On the wings, where the service lifts and principal lifts sit back-to-back in a shared shaft, larger enclosures were required, and these were built of steel framing with a lightweight boarded cladding now covered externally in corrugated metal. The rear stairwells, containing only single lifts, had smaller enclosures at roof level, and these were built of brick with a single window and access door. They were also linked to the staircase enclosures (again with a single door and window), and had flat roofs at two levels. Lastly, small brick pulley wheel chambers were built above the main central elevators.

With the removal of the small tanks that sat above the bathrooms in the end wings, additional water tanks were required: it is not clear why the old tanks were removed, but if they were indeed lined in lead, this will have necessitated their replacement. There are therefore now a series of additional tanks of varying sizes on both roofs, one of which is reported to supply drinking water, and two of which supply toilets. They are uniformly clad in corrugated metal on plywood bases up which the rubberised roofing has been dressed. Every tank has a felt-covered roof with a slight slope and a hatch: these have been designed to be padlocked, but rarely are. The free-standing tanks are invariably poorly positioned, sitting either too close to the parapet wall at the edge of the roof, or too close to one another. Most of the metal hatches are dented, suggesting that they have blown open, and one hatch (on the west block) had been lying open for five months at the time of the survey. It is questionable whether it is safe to access the hatches on the tanks next to the parapets (or even on top of the main tanks). There are two additional tanks on the east block, both next to the west stairwell, the purpose of which is unknown (they are not duplicated on the west block). Both are clad in rubberised membrane and roofed in felt: the larger of the two, directly above the west stairs, may supply the heating chamber. It has a timber fascia that has rotted, and an overflow cut so short that if it becomes operational will spill water downwards, possibly into the staircase. The remaining tanks – sited above the rear staircases – were not inspected closely, although it was noted that the ballcock on one malfunctioned in 2018, causing water ingress that affected the stair below.

The free-standing lift motor rooms are in reasonable condition. The floors are constructed of steel “Durbar” plate and the motors sit on brick supports. They are dry on account of sitting higher than the main roof, allowing for an upstand at the doors (which are made of timber, appear to be original, but are beginning to deteriorate). The roofs are covered in felt, bonded to the original lightweight boarding.

The remaining motor rooms form part of the four rear stairwell enclosures that allow access to the main roofs. It is clear from the mismatched brick (a different colour, and different manufacturer) that the original lift motor rooms were dismantled, possibly in 1968, which is when the lifts seem to have been upgraded. Schematics dated 1969 by the Otis Elevator Company Ltd remain in one plant room for reference purposes, while one of the data plates bears the date 1968. The enclosures are probably a match for the originals (and the metal windows were almost certainly re-used), but there are cracks where the new brick meets the old, and the bond between the stairwells and lift rooms is not good. There may be a degree of vibration whenever the rear lifts are used, and this is exacerbating an already poor junction. Add to this the weight of the water tanks over the stairs, and these structures are overdue some remedial work.

The boarded timber doors to the lift motor rooms are in variable condition (one has lost its handle, and another is rotting), although the windows seem fair, albeit in need of re-decoration. The in-situ concrete roofs over the motor rooms are covered in felt dressed over timber fascia boards, but gutters and rainwater pipes are missing in places, and rainwater is staining the brick walls. The lower of the paired roofs, on which water pipework is mounted, tend to pond, and are not kept clear of debris: the wall-mounted metal ladders that provide access to the

Clockwise from top left: the principal water tanks sit above the rear stairwells (© author); typical rooftop defects include rotting door timbers, cracks in mismatched brick, missing rainwater pipes, rusting satellite dish bolts, untidy pipework and patches to membrane (© author); the tank above the west stair on the east block may feed the boilers - it has a rotting fascia, untidy pipework and an overflow cut too short (© author).

gate valves on these roofs are in some cases loose and rusting (and causing cracking).

Of the two free-standing brick pulley enclosures, that on the west block is in the worst condition with slight evidence of movement in the top course of brickwork: the other has been partially rebuilt. Both have felt dressed over the concrete roofs.

CONDITION SURVEY – CHIMNEYS

With the provision of central heating to the apartments, the need for coal fires in every room was reduced, and typically living rooms and only occasionally dining rooms and principal bedrooms were fitted with a fireplace. It is likely that of the flues emerging above roof level, relatively few are now in regular use. Flues were grouped together and encased in brick stacks above roof level, 1140mm in height to the underside of the brick cope, and 1430mm in height to the underside of the pots. The bricks used, the same as those on the walls of the apartments, had a distinctive “frog” (an indentation in the top of the brick to reduce the amount of clay and its weight), and these gaps were filled with cement to prevent water pooling in the dip. Fireclay pots were simply bedded in cement “haunching” to secure them in place. Originally, the asphalt from the roofs would have been dressed up the chimney stacks: now, the rubber membrane has been extended up the brickwork on a backing of timber and capped with a metal trim.

All the same height, the chimneys range in length (and width) depending on their location, and there are two single stacks (being a special request from a valued resident at the time), and others with six, seven, twelve and fourteen flues. On the whole, the brickwork is in reasonable condition, with only a few bricks that have spalled and broken (although the satellite dish brackets are causing damage) and limited areas that have required re-pointing. The haunching to the pots (and the pots themselves) are in variable condition: some of the haunching is excessive, some of the pots cracked, a large number un-capped (thereby encouraging water ingress), some galvanized pots are rusting badly, and one exceptionally tall pot on the east block is barely held in place by the haunching (and some mastic). None of the pots are terribly sooty, suggesting a degree of replacement in the past, and so they are a combination of buff and terracotta (the latter more likely to be original). There are, however, two very blackened pots on separate chimneys on the west block where it would seem that flue gases may have escaped around the bases of the pots.

The single stacks – one above No. 51, the other above No. 99 – are in poorer condition, with moss growing on the haunching and an awkward junction at the parapet wall in the first case, and a defective cope and cracked haunching in the second.

There is a single large brick-built boiler flue on the north-west corner of the east block, partially rebuilt at some point at head and base, and awkwardly jointed to the parapet wall alongside. It has a concrete cope that was capped with a metal cover in around 2016, which has already failed dramatically and is rusting badly and staining the cope and brickwork. It is reported to have a hole in the inner lining of brickwork around first floor level.

CONDITION SURVEY – BALCONIES

The provision of a range of private balconies across the development was fundamental to the design: what Charles McKean, author of *The Scottish Thirties* called the “fresh air fad” was much in evidence during the period, and with the main roofs inaccessible by lift and the proposed tennis court on the roof of the garage block abandoned, small individual balconies at least permitted residents to sit outside when weather permitted. Balconies also provided the opportunity

Clockwise from left: the boiler chimney on the north-west corner of the east block has been rebuilt at the top and partially at the base; the new cap is rusting badly (© author); typical rooftop chimney with unusual brick cope and pots held in place only by haunching (© author); one or two balconies exhibit extensive efflorescence suggesting water lying in the brick cavity - in this instance a fern is growing at the base of the brick (© author).

for strong architectural lines and nicely occupied the spaces between pairs of bay windows.

The balconies vary in shape, size and accessibility: some can be reached by way of doors, being useable verandas as a result, while others cannot be accessed without clambering through a window (which clearly was not intended). Some are relatively long, others are small, and some (on the rear) are handsomely curved – a late addition to the design. They are used for plants, occasional seating, and sometimes clothes drying.

The promotional article published in the *Glasgow Herald* of June 1939 suggests that the balconies were lined with bitumen sheeting, applied by the same company responsible for the flat roofing. Asphalt would have been too difficult to work in the confined spaces of the balconies, and bitumen sheet would have been swifter to install, but it would not have created a surface suitable for foot traffic, so the sheet may have been installed under a cement screed finish where pedestrian access was expected. Subsequently, balconies have been re-covered in a variety of materials, including quarry tiles, rubberised membrane, what may be new asphalt, and even artificial turf. Others appear to retain the original screed, although not unexpectedly this has cracked in places.

The walls around the balconies have also been treated in a series of different ways. Built of brick, the parapet walls were intended to be capped in stone, but in the event concrete copes were used instead. It is not known whether there is a damp proof course beneath the copes and since parapet walls always retain more moisture than ordinary external walls (being wetted on both sides during rainfall and also from above), they can be problematic. At Kelvin Court some of these inner-facing walls have been painted, some coated in cement render, some tiled, and others waterproofed with a membrane. There are some instances where staining and efflorescence on the outer faces of the balconies (particularly on the rear elevations, but also at the front) is indicative of a build up of water within the cavity. Where evident on curved corners, this is probably due to an excess of mortar in the cavity left as the bricklayers struggled with the curvature.

Repairs to smaller balconies (particularly those difficult to reach) have been variable (sometimes very poor), and attempts to use replacement bitumen sheet have been largely unsuccessful, particularly where a rainwater pipe penetrates the balcony floor. In a number of instances, ferns were seen growing from beneath parapet wall copes and it is not clear if all balconies drain efficiently since the outlets are so small. At veranda doors, the upstands are sometimes minimal, creating potential for water ingress in heavy rain (or snow). Debris was seen on one balcony to which there is no door access, suggesting that it has dropped off the main roof. Two first floor balconies, on either side of the principal central entrance to the east block, are very badly stained, as is another at top floor level west of the same stair. The same pattern of staining through excessive wetting can be seen on the west block, particularly east of the central staircase on the front, at top floor.

Studying the underside of the balconies confirms that they are constructed of in-situ concrete (now painted); that the longer balconies have stiffening beams; and that the original drains were probably much larger than at present.

CONDITION SURVEY – ELEVATIONS

Kelvin Court was designed as a framed building, a skeleton constructed of reinforced concrete that allowed for a degree of flexibility in the internal layout (where a limited number of the partition walls are loadbearing), but more importantly allowed the (originally) steel windows to be frameless. There are no chunky mullions so typical of Glasgow's bay windows at Kelvin Court: instead, the bays are streamlined and elegant. Courtesy of complex steel reinforcing, the concrete floors separating different apartment levels were supported by structural columns (placed at relatively close centres), and formed into downstands where

Clockwise from left: there are a number of instances of cavity tray installation that have required the removal of areas of brick - the replacement brick is not quite colour-matched (© author); underside of a balcony showing paint peeling from the concrete (© author); a poorly repaired balcony (or void) lined with a membrane simply turned up at the edges (© author).

they reached the outer walls. The downstands were in many instances expressed as window lintels, and in other cases hidden behind a skin of brickwork. Where exposed, it was intended that the bands be clad in stone, but this was omitted during construction, undoubtedly for reasons of economy. The band corresponding to roof level was profiled and protruded significantly, whereas those at lower levels (including cills) were designed to be plainer and less prominent. At balcony edges and projections, the concrete downstands were clearly visible from the underside, but it is unlikely that these areas were even painted since the fresh concrete would have been light in colour and smooth. Concrete blocks were used around entrances (also instead of Portland stone), and these, too, have now been painted.

Fatkin, who was working at around the same time with Alec Woolf on a development of detached villas in Newcastle-on-Tyne, initially worked up a set of proposals where the bay windows would be hung with tiles (probably clay) in a nod to English detailing. While this would have imparted a degree of colour to the elevations, it was abandoned in favour of using a warm reddish brown brick instead, ordered in massive quantities from the London Brick Company Ltd, manufacturers of the Phorpres brick, a unit pressed four times and with a distinctive wavy-band finish. The outer walls were thus constructed as 11 inch cavities, with a single skin of brickwork on either side of an air gap intended to prevent water reaching the interior. Engineering drawings indicate that there were wall ties built across the cavities to restrain the outer leaf. Where columns on the outer walls interrupted the construction (which was often), iron ties were also cast in to create a connection between concrete and brick.

Typical of the period, the nature of this type of construction is that rigorous standards of workmanship are required in order to prevent failure of the brickwork and ingress of water. In the first instance, if cavity wall ties are omitted accidentally, panels of brick can be sucked free in a high wind. Secondly, if damp proof courses are not installed to discharge water at the base of every cavity (in other words, at every concrete downstand), then water will drive into the cavity and eventually work its way into apartments. Lastly, if sufficient measures are not taken to accommodate differential movement between the brick and concrete (brick expands, and concrete shrinks), then cracking will occur. Furthermore, exposing the edges of a floor on the outer face of a building creates a “cold bridge” where temperature drops are transmitted through the concrete to the interior, and the steel reinforcement, if not properly protected, can also rust and expand, causing the concrete to crack and loosen.

It is clear that all these potential problems have been identified at Kelvin Court. Such damp proof courses as were fitted at the time of construction were probably liquid bitumen or reinforced bitumen sheet (as seen in some of the cellars) since this would have prevented a “slip plane” occurring at the junction of the brick and concrete. There are, however, no weepholes, or open perpends (vertical joints) in the brick walls through which water could escape from the cavities, so there was clearly no expectation that water would drive through the outer skin. In all likelihood it does from time to time, probably most noticeably on the south-west facing elevations, which are exposed to the prevailing wind. Furthermore, wind driven rain will inevitably penetrate the exposed concrete bands/lintels causing damp and possibly condensation.

Prior to 2015, cavity trays were retro-fitted to over thirty-three apartments where water ingress had been identified, and in early 2016 further extensive surveys were carried out which recommended that a protective coating be applied to the exposed concrete bands and lintels (which work is ongoing). The 2016 survey work cast some doubt over the effectiveness of the cavity tray installation. Today, it is clear that there has been assorted remedial work, and that further work may be necessary: there are even some open perpends created in an attempt to drain water from cavities so severe has been the problem.

The brickwork, despite instances of water ingress, has served the building well.

Left: the east block photographed in 1987 by Historic Environment Scotland/RCAHMS: since then the glass block infills have been renewed and most of the metal windows replaced (© Crown Copyright Historic Environment Scotland).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Angles at bay windows and the curvatures on the rear balconies were formed using “specials” to avoid cutting and glueing bricks. There is some darkening of the finish through environmental pollution, and other areas where the face of the brick has spalled, but for the most part these are limited in number. Damage has been caused to the face of the brickwork by water ingress, however, and this is most noticeable on the curved balconies and the rear service stairwells, two of which exhibit high levels of efflorescence. There are some ugly patches where waste pipes have been replaced, and one sizeable panel of brickwork on the west block has been rebuilt after falling free. Areas of cavity tray installation are very noticeable.

Concrete cills and lintel bands that effectively act as ledges are eroding on the upper faces (strange patterns of mastic on the tops of the principal stairwell surrounds suggest that pigeon deterrents may once have existed). Although the decorative lintel band at top floor level will have been a clean, crisp line when first built, it is now capped with a cement fillet in an attempt to throw off rainfall, and this is cracking, encouraging moss growth, and possibly loosening in places. In one instance, it has been covered in “flashband” in an attempt to waterproof it, and in another, the paint is peeling badly.

There are major raking cracks at a number of external corners, particularly on the rear and in the area of the stairwells, although there are other full height cracks in a range of locations. This may be due to corrosion in steel beams behind the brickwork, or a disconnect between the brick face and reinforced concrete columns in the corners. There are some particularly wide cracks in the roof level brickwork to the east of the east rear stairwell in the east block (No. 18), and an almost full height crack on both sides of the same stairwell (there is cracking too on the stair walls below the water tank). Although the cracks have been re-pointed (in non-matching cement) it is not clear that there has been an attempt to identify the cause. Further cracks appear on the east facing elevation of No. 69, and the rear corners of Nos. 70 and 79, and rear and side corners of No. 99.

Aside from cracks and concrete band deterioration (including on the undersides of some of the balconies), the principal defect in evidence is the tendency for the balcony parapets to stain, and there is a fixed scaffolding pole above No. 82 (on the front façade) that ought to be removed. Where the balconies are staining, there are in some instances spalled bricks, and this is most noticeable to the rear veranda of No. 82. At ground level, a number of solum air bricks have become blocked with earth.

The entrance towers to the front, and the lower levels of the side and rear entrances, were intended to be framed in Portland stone. Fatkin’s drawings imply this, but closer inspection of the key on one of his elevational proposals shows that in fact his definition of “stonework” was in reality “synthetic stone with a smooth Portland finish”. Put simply, no stone was used, simply concrete, albeit the concrete may have had a veneer of crushed Portland stone (limestone) bonded to it which would have been light grey in colour. Subsequently, possibly when the original signage was removed, the surrounds were painted, and remain so today. That there was neon lettering above the two principal entrances is borne out by a handful of photographs, and by small labels that warn of the dangers of an electrical charge (these are just visible above the canopies).

The thickness of the cream-coloured paint makes it impossible to inspect the condition of the concrete on the staircase towers, although there is evidence of deterioration to some lintels and the tops of cills. The paint is peeling from the undersides of canopies at the front (revealing a completely different colour), some of the concrete is spalling, paint is peeling and bubbling to flat areas at the sides of the entrances, and to the front and side entrances there is general evidence of wide joints in the artificial stone and some cracking (at Nos. 19-82). There is a general untidiness to the wires and cables and lights in the areas of the

Left: the side facades feature porthole windows but no balconies - note ugly brick infills to garage door openings and deteriorating concrete cope on curving wall next garage (© author).


CRITTALL
WINDOWS
THE SIGN OF A WELL-BUILT HOUSE

side and rear entrances (added to which the floodlighting is industrial-looking). Some scaffolding fixings may have been left in-situ, since there are runs of rust in places.

The elegant sea scroll balustrades above the main entrances are all in need of attention with some corrosion of the steel, and old conduit to redundant lighting left hanging. On the rear façade of the east block, the estate office entrance has an ugly felt-covered roof and the slit windows have been installed without lintels. There is a single main door flat, although more were intended.

CONDITION SURVEY – WINDOWS

Since few windows are in common ownership (only those to stairwells), this element did not form part of the inspections. It is regrettable that so few of the original steel Crittall windows remain (their advertisement in the *Glasgow Herald* article stated simply that their windows were "the sign of a well-built house"), but understandable given the tendency of metal windows to attract condensation (and rust). Nevertheless, more thought could have been given to the replacement windows in the stairwells since Crittall make steel windows with double glazing. Additionally, it is probable that the original windows were dark in colour, not white.

Most of the apartment veranda doors and windows are now uPVC, but the surviving steel windows (Nos. 9, 20 and 26 and the occasional toilet window and porthole) demonstrate how minimally elegant the original section sizes were, and how thought had been given to providing a variety of opening casements for ventilation. All windows, as specified by Fatkin, were a fraction over 5 feet high, and divided horizontally, the motif by which "moderne" buildings could be identified. The construction drawings indicate that the windows were to be installed from the outside (the opposite of traditional Scottish detailing, where windows are held behind a reveal, and are fitted from the inside), and there were seventeen different versions. Not shown on the drawings until December 1938, however, were the very fine porthole windows that were fitted on the side elevations, suggesting that these were added just as work was beginning and intended to add interest to the less decorative facades. Those that remain intact have beautiful stained glass bluebirds and floral scenes.

Some of the uPVC windows have been identified as being poorly fitted, causing water ingress at the sides and head, where a mastic seal is typically the only barrier to wind and rain. A programme of repair work carried out in 2016 saw protective angles installed at the heads of some windows to resolve this. One balcony has been enclosed using uPVC.

Finally, it seems likely that the glass infill blocks to the stairwells are not original, but replaced post-1987, when a series of photographs taken of the building show a dark grout to the glass blocks, and no strip of air bricks at the heads. This is borne out by an illustration sourced by the *Glasgow Herald* which shows the glass blocks with a reeded instead of dimpled pattern.

CONDITION SURVEY – RAINWATER AND SOIL PIPES

Somewhat unusually, the property was not designed with internal soil and rainwater pipes on the front facades - most architects deplored the extent to which they disrupted the purity of an elevation. Instead, while Fatkin had designed recesses on the inner-facing walls in which pipes were to be housed, these were omitted and the pipes mounted externally. The most likely reason for this is that it allowed the concrete floor slabs to be cast without "cut-outs" for the pipes, and since there is one recess on the ground floor of the west wing of the west block (Block No. 1), where construction probably started, there is a good chance that the decision to simplify the elevations was made after one floor level had been completed (and the time spent on building a recess calculated). Since internal pipes can corrode and fail, it has worked to the advantage of Kelvin Court that the plumbing is external. The paint colour (albeit now badly faded in places) is an excellent match for the brick (other than where coated in anti-climb paint), and most of the pipes are still made from cast iron.

Clockwise from top left: there is a good deal of cracking that has been pointed but possibly without any analysis of cause (© author); cracking occurs in a range of locations: the pointing here is poorly applied (© author); cracking typically occurs at high corners (© author); beautiful porthole windows survive to a handful of apartments (© author); Crittall advertising sign as displayed in Historic Environment Scotland's Engine Shed (© author).

The street-facing frontages have a limited number of rainwater pipes, positioned to collect water from outlets on balconies as well as from the main roofs. The hoppers are a poor fit for the pipes, and unlikely to be original, while the bay window roofs were not designed to have hoppers at all. The bay window roofs originally discharged through outlets into small diameter cast iron pipes that drained onto the first available balcony. The efficiency of the system would have been dependent on good-sized drain outlets, and many now are far too small (in addition to which there are no safety overflows).

Soil and waste pipes were concentrated on the inner-facing facades of the wings to both front and rear, with bath, basin, sink and toilet pipes all visible: an unusual decision given the degree of luxuriousness of the development, but a pragmatic one. There are no rainwater pipes on the inner-facing elevations, and the soil system is vented through two pipes rather than simply one, which speaks of a plumbing contractor with an understanding of siphonage. The work was most likely carried out (or at any rate designed) by the Selborne Domestic Engineering Company, a heating contractor based in Newcastle-on-Tyne, who probably separated out the waste and rainwater routes as far as possible because combined systems were (are) uncommon in England. On the outer elevations of the wings, rainwater and waste pipes do appear side by side, but here the pipes are mostly serving kitchens.

Sadly, the orderly nature of the pipes on the front and side elevations is not duplicated on the rear walls: here, pipes have been extended, altered and increased. On the whole, however, despite a propensity for introducing plastic pipes where cast iron should be the material of choice (plastic does not accept paint well), the rainwater and waste goods appear to be in reasonable order, albeit they are invariably unpainted on the back face (next the walls); are patched in some areas (where they may have blocked); are over-long and badly supported (where recently installed); and very untidy at roof level, where they have been modified to drain bay windows. One or two toilet waste pipes may still be made of lead since some appear to have become compressed. In addition, where pipes have been disturbed to permit cavity tray installation, the brackets have not been returned to the original location and flimsy pipe bands used instead. The plastic rainwater pipes and gutters to the machine rooms on the roofs are uniformly poor.

CONDITION SURVEY – STAIRWELLS

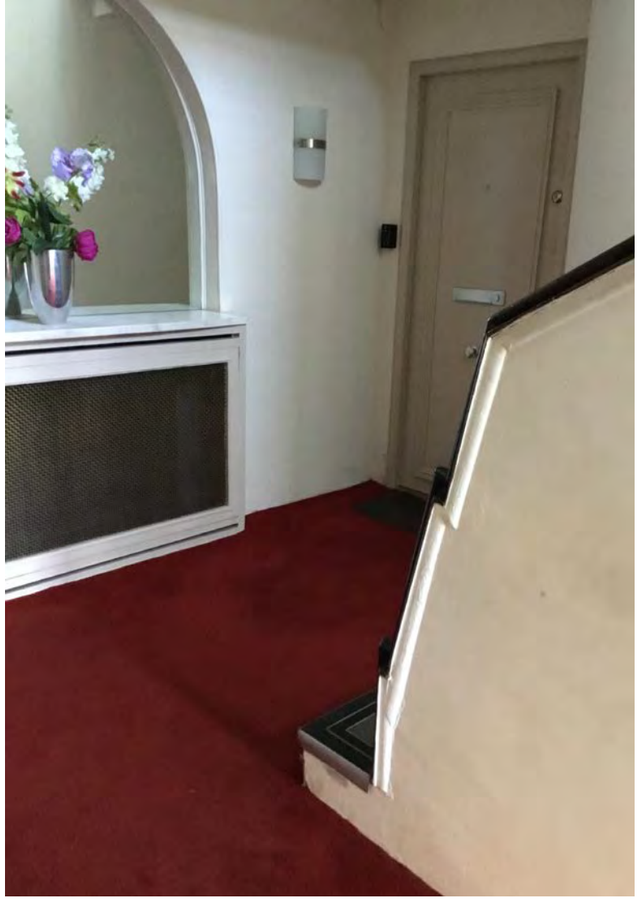
It is a measure of the quality of the development that every apartment is served by two stairwells - both of which contain elevators, have generously proportioned stairs, and are well lit courtesy of tall panels of glass blocks. While the principal entrance stairs are neither as wide nor as colourful as depicted in the prospectus issued by Alec Woolf at the outset of the project, they are nonetheless extremely attractive spaces with arched-head and circular mirrors, radiators, a simple yet effective Art Deco balustrade, and – in the central stairwells – striking cascade lights suspended from the ceiling. With the exception of the arched-head mirrors, most of the fittings and fixtures such as radiator boxes and shelves, circular mirrors, flat entrance doors, ironmongery, floor and stair finishes, and even the cascade lights are not the originals.

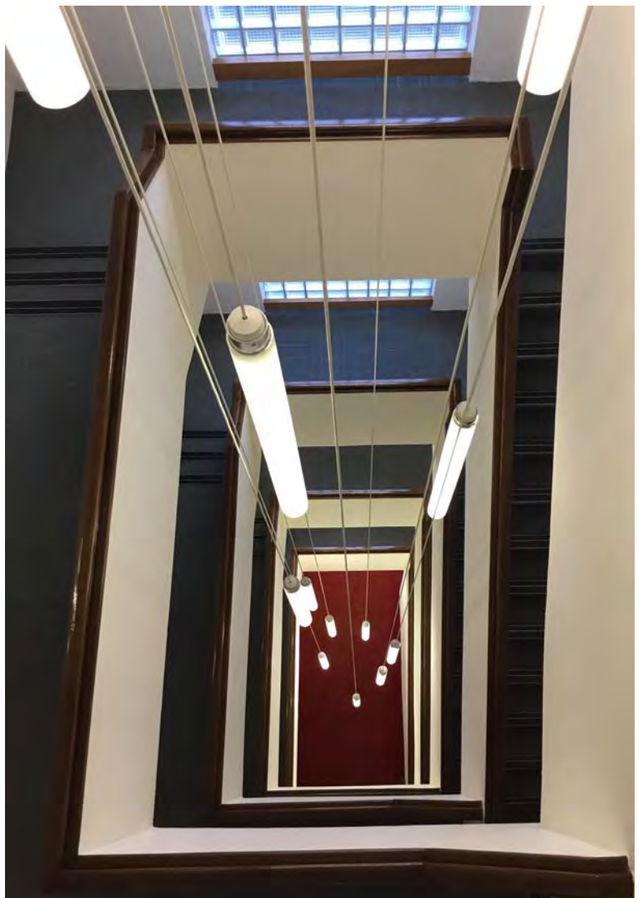
The challenging topography of the site, where the east block had a sub-ground floor (in which the “bachelor flats” were to be located), was addressed at entrance level by way of stylish sweeping steps flanked by integral planters. At Nos. 19-31 the garden ground had to be retained on one side by a stone wall to accommodate the change in level, since it was clearly felt that a single step made life easier for the residents. Access to Nos. 1-18, however, requires a significant climb before the entrance door is reached, and as a result a handrail has had to be retro-fitted.

The planters were built of the same synthetic stone as the towers, and the stairs

From left: a single recessed toilet window was built on the west block (the architect intended that all of them be recessed): note brick repair at soil pipe (© author); the rainwater and soil pipes are external, but the paint colour is a good match for the brick (© author).


1-18





and landings finished in terrazzo by Toffolo Jackson and Co of Glasgow (there are major issues with the repair of this material given that it is a dying art). Extruded columns were built to support canopies that sheltered guests from the city's gusty weather, and panels of curved glass blocks marked the entrance proper. The semi-glazed oak doors fitted within the last twenty years are a good aesthetic match for the originals, albeit these would have been dark in colour. Lights on the underside of the canopies have all been removed, and the black bands now painted around the canopy edges are not original. Luckily, the exceptional handrails to Nos. 71-82 survive.

For the most part, the entrances and main staircases are in reasonable order. With the main doors located beneath the half landings, the ceilings initially seem low, and are in some instances finished in acoustic tiles around recessed fluorescent lights that are unattractive: the fluorescent ceiling lights in the central stairs are very poor with evidence of over-heating. The oak door frames do not exactly fit the old openings, and the doors leading to the cellars have ironmongery in variable condition and no self-closers (the handle at Nos. 53-70 may be original). An engineering brick threshold, black coir matting and a plush red carpet greet residents, giving way to blue/grey carpet tiles, probably glued onto the original rubber on the reinforced concrete stairs. The tread nosings are breaking apart in some locations, and the carpet tiles are also now quite worn and loose in places.

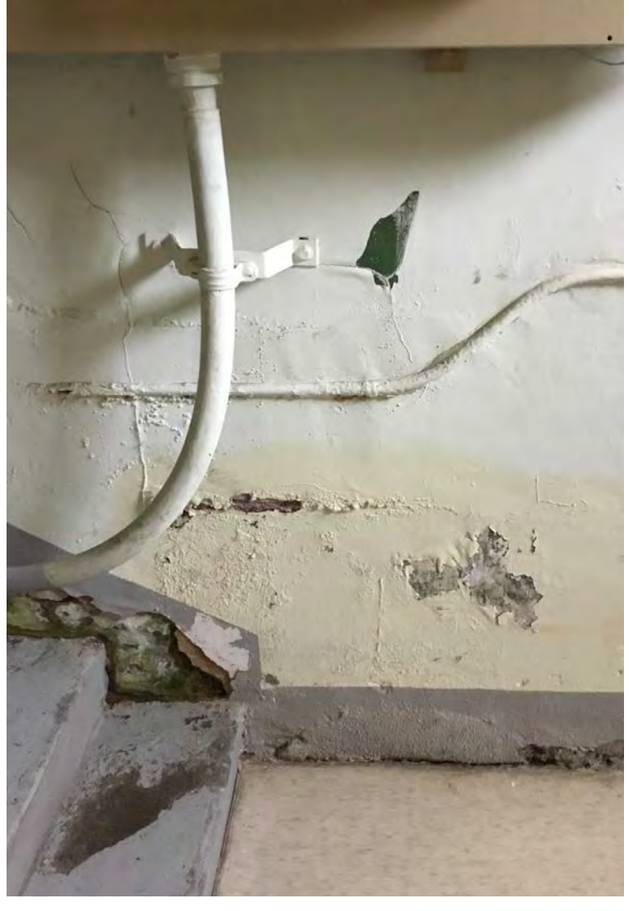
The staircases become progressively less decorative as they rise upwards (which is at odds with the rental having been higher at these levels), but the handsome balustrade, built of timber stud and plasterboard, is topped with a nicely moulded capping rail, stained to resemble mahogany in some instances, and left as oak in others. The brass studs that were intended for fitting on top were omitted, and parts of the rail are now missing in some of the stairwells. There are protective barriers across the glass block infills at half landing level, and an ugly row of air bricks at the head. There are service ducts, plywood backing plates for fire extinguishers (now removed), and an assortments of sockets for carpet cleaning, and light switches that may be redundant. There is some evidence of mastic failure at the bases of the glass block infills (noticeably at Nos. 32-52, where there is a curious internal balcony created by the added height of the stair tower, and also at Nos. 19-31), and some of the radiator grilles are not well fitted. At least one arched-head mirror has been replaced, and not properly recessed into its surround (Nos. 83-100), and the top landing circular mirror is missing at Nos. 53-70 (it seems to be in the cellar).

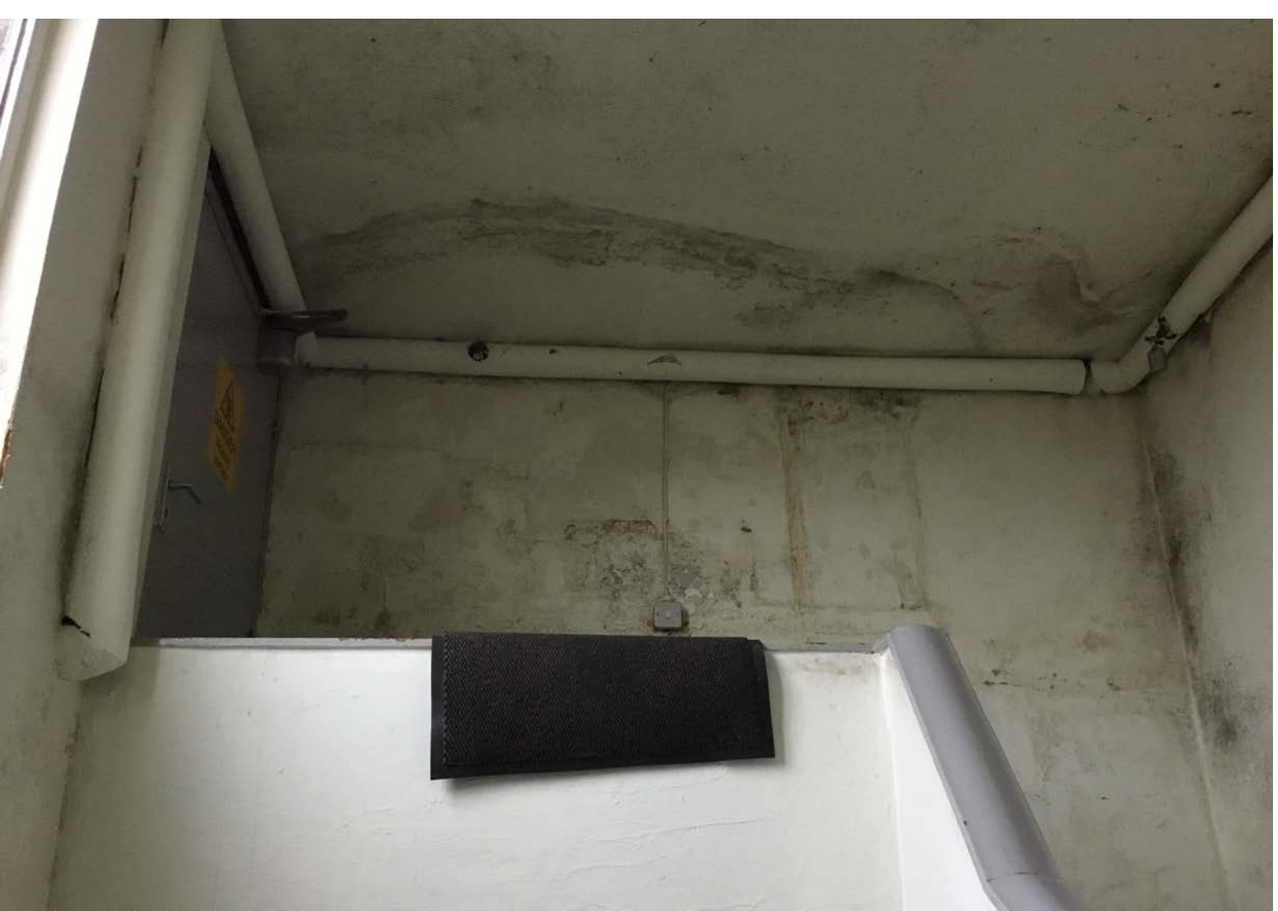
The real drama is saved for the central staircases, where the cascade lights, despite having been replaced in plastic, are spectacular. They are hung from tiny pulleys (although there is no evidence that they are ever lowered) and reflected in the mirrors mounted on side walls. These stairwells are wider (requiring that the balustrade was built solid at the lower levels) but are otherwise similar in finish. The colour scheme, with the exception of the red carpet, is uniformly drab and not even remotely based on a Thirties palette.

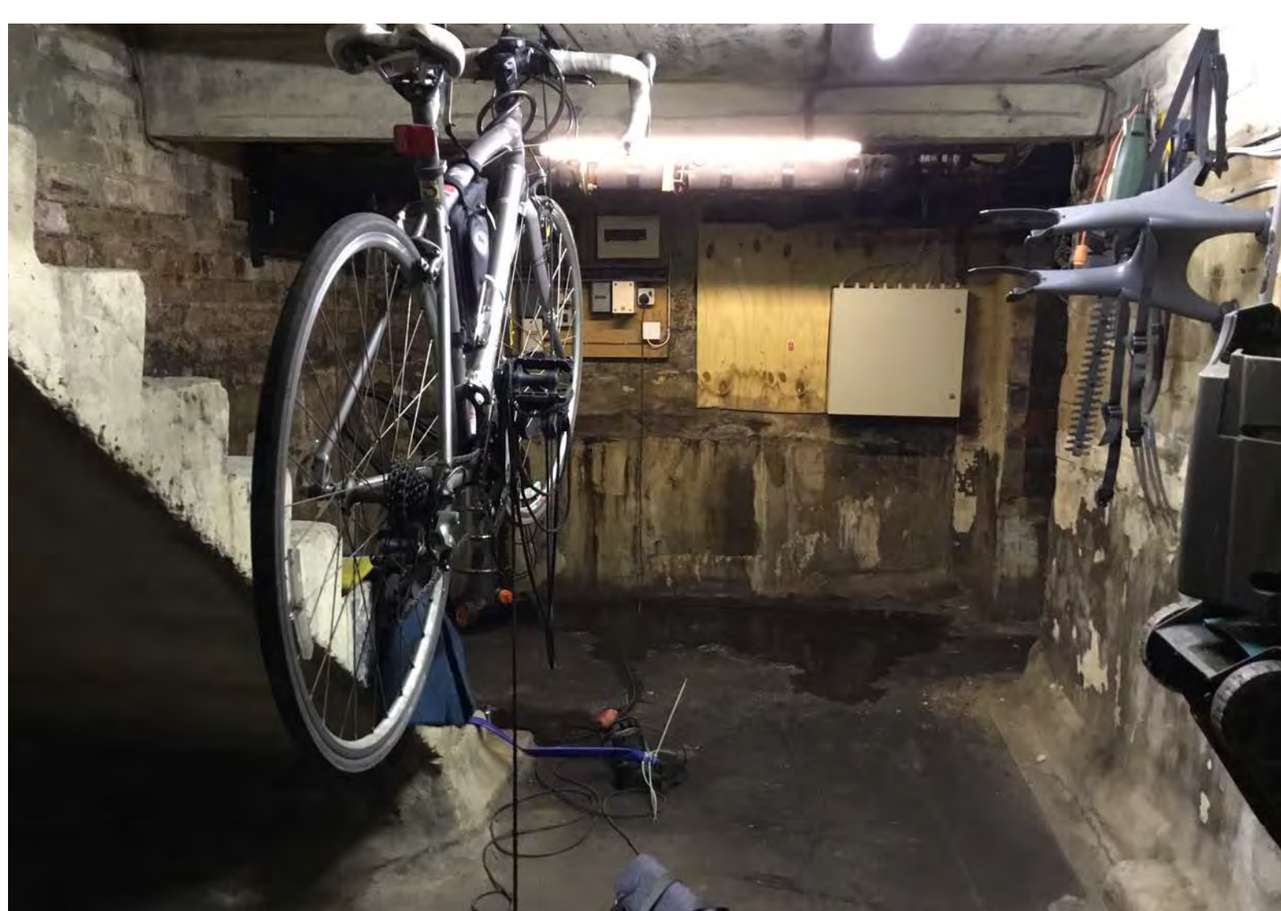
The service stairs, handily located off the apartment kitchens, were of course designed to allow coal to be delivered and tradesmen to call: some original doorbells survive, along with some ironmongery and door facings. Designs to incorporate a refuse chute and ash bin in the gap between the flights of stairs were abandoned during construction, and so rubbish bins are typically left on the landings for collection by the caretaker. Once again, the topography of the site resulted in a range of different solutions to the heights of staircases, and coal stores, cleaner's stores (with Belfast sinks), private stores, and heating pipe ducts have been accommodated where space permitted (even on half landings). None of these have self-closing doors, but they are generally kept locked.

At lower levels on the side facades, the lift door tends to be flush between pipe ducts/stores (many of which are very narrow), while higher up it is recessed (with the order reversed on the south facades). This points towards the challenge

Clockwise from left: the slope across the site proved challenging at the east end, creating the need for a long flight of steps: the artificial stonework around the entrances was not painted originally, nor were there black bands around the canopies (© author); the Art Deco detailing at the foot of the principal stairs is as designed by architect Fatkin (© author); tired lighting in the staircases (© author); pulley wheels to the cascade lights (© author); the cascade lights are perspex, probably not original (and one is cracked) (© author).







of allowing electrical supplies to rise up the service stairs at the same time as providing coal bunkers.

Typically, the timber double entrance doors are framed, braced, ledged and boarded (and fitted with stiff overhead closers). It is possible that these doors (some of which have fanlights) had hatches by which tradesmen could be identified before entry. The ground floor landings act as large access ducts below which are pipes and electrical supplies; there are uPVC windows at lower half landing levels (and some at top floor); glass block infills at the higher levels; and a range of service boxes, alarms, time-clocks, conduit and distribution boards. Stair treads are left as exposed painted concrete, and landings finished in vinyl with rubber nosings: the original finish was probably rubber sheet (or tiles) supplied by the Glasgow Rubber Works at Maryhill. Steel barriers have been fitted (post-2003) where window cills were low.

The side service stairs do not extend as far as the roof, nor do they contain as much in the way of heavy duty electrical equipment. Consequently they are in reasonable condition, albeit there are some cracked stair treads, parts of the balustrade tops missing, some plasterboard damage, and mastic failure around the glass block infills. There are signs of water ingress (and cracking) around one of the uPVC windows to Nos. 32-52, and the same at Nos. 53-70, and 83-100. The balcony roof seems to be leaking at Nos. 53-70. There is a neat stair lift in the stairwell to Nos. 83-100.

The south service stairwells – since they reach the roof - experience far greater foot traffic, and are in much poorer condition. Cleaning does not extend above the top apartment level, and the last flights are used for storage. At ground level in the east stair of the east block, there are significant issues with rising damp (next to the electrics), and the flat roof above the highest uPVC window is clearly leaking, causing mould and damp: furthermore, there is a crack above the window. Damp is penetrating the walls around the glass block infills, causing rusting of the metal plaster beads and cracking in the plaster. At main roof level, there are signs of damp beneath the (non-original) timber window, none of the pipe valves are labelled, and there are cracks opening up at the door out onto the roof, but on the plus side there is a fabulous Art Deco door handle to No. 30. The westerly rear stairwell on the east block is similar, also with rising damp; clear water ingress from the roof at the head of the stair; excessive damp and mould below the highest window and under the storage tanks throughout; and much plaster deterioration adjacent to the door onto the roof. There is a single pane of failed double glazing to one of the uPVC windows, the vinyl-covered floor hatches are loose, and a number of plaster beads are rusting. In common with the east rear stairwell, there are cracks in the brickwork walls above roof level.

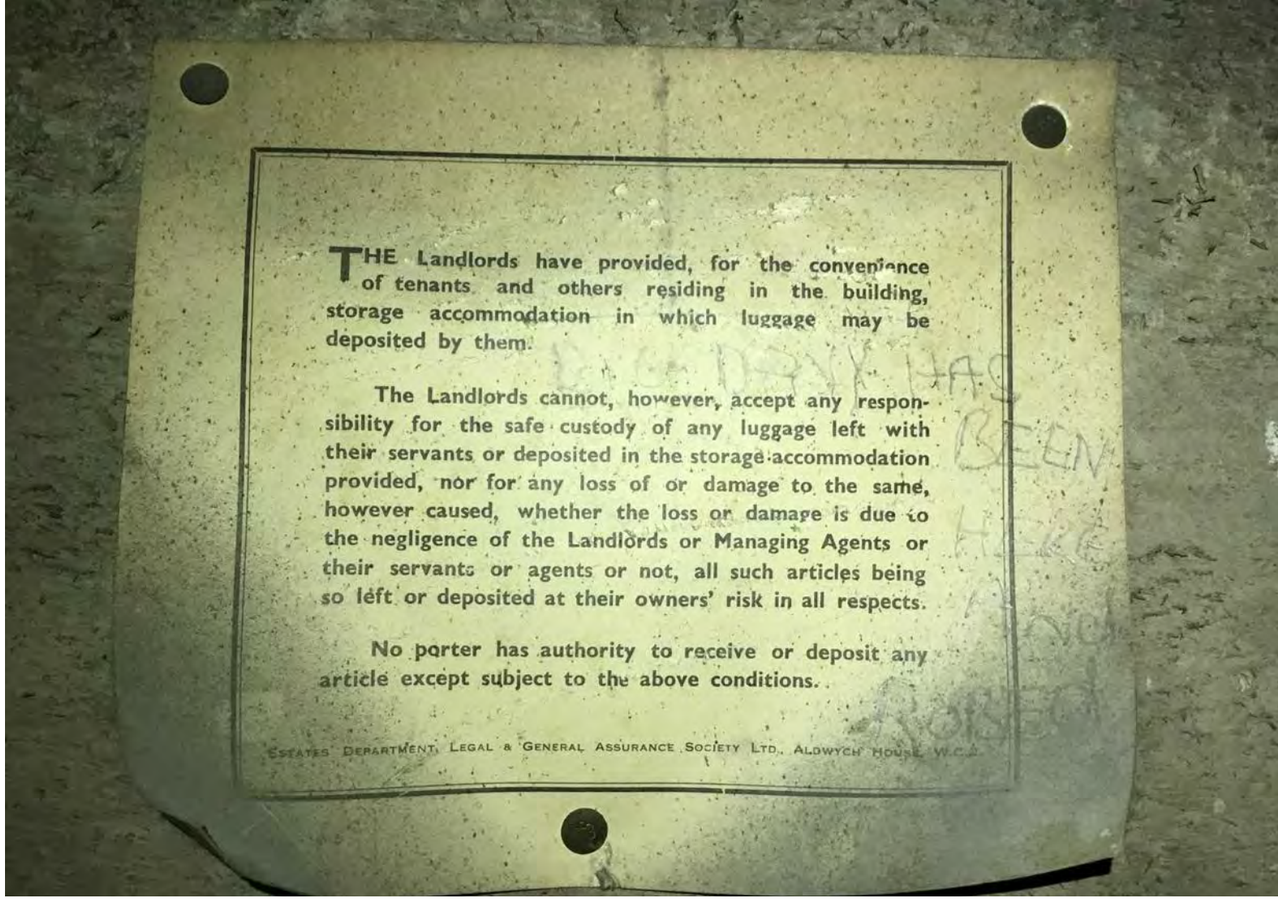
On the west block, the electrical supplies at ground level in the easterly stairwell do not seem to be protected from impact damage below the plaster, the top ceiling is missing thanks to serious water ingress, there is a large crack in the step at the door onto the main roof, and cracking in the corners. The lowest uPVC window is not well fitted. The westerly stairwell is no cleaner at high level, and there has been much damage to the balustrade by constant traffic out onto the main roof. The glass in the roof window is cracked, and one or two treads badly worn. There is less water damage from the lowest roofs to these two staircases since the roof finish is far simpler and has no parapet.

It would appear that the stair walls were once green: certainly they would have been darker to disguise scuffs from coal bags and ash buckets.

CONDITION SURVEY – CELLARS AND BASEMENTS

Clever use of the sloping site allowed the creation of cellars below five of the six entrance stairwells: it was probably an expense too far to excavate beneath Nos. 19-31, so the lift motor room here is located at ground floor, alongside the Estate Office. Initially it was intended that the lifts descended to cellar level where the lift motors were housed alongside a designated pram store. Whether the lifts ever actually dropped lower than ground floor level is not clear: there are staircases into the cellars, and prams could have been bounced down these by the caretakers or domestic staff. Having said that, since the concrete stairs have

Clockwise from top left: the rear service stairs are understandably plainer - each includes a lift, but only four rise to the roof (© author); rising damp close to the electrical supplies in the east block may be ground water from the “meadow” (© author); the service stairs are not heated and suffer from condensation and mould (© author); the cellars were designed to allow the heating to be drained down, but a number have penetrating water from failed tanking: there are no handrails to the concrete stairs (© author); the stairwells that rise to the roof suffer from impact damage, damp, cracking and water ingress (© author).


THE Landlords have provided, for the convenience of tenants and others residing in the building, storage accommodation in which luggage may be deposited by them.
The Landlords cannot, however, accept any responsibility for the safe custody of any luggage left with their servants or deposited in the storage accommodation provided, nor for any loss of or damage to the same, however caused, whether the loss or damage is due to the negligence of the Landlords or Managing Agents or their servants or agents or not, all such articles being so left or deposited at their owners' risk in all respects.
No porter has authority to receive or deposit any article except subject to the above conditions.
States Department, Legal & General Assurance Society Ltd., Aldwych House, W.C.2

no balustrades, they were certainly never safe, and there are signs of brick infills that suggest the lifts may have dropped at least halfway (or that there was access to the counterweights). Alec Woolf promoted the store rooms as being useful for "trunks, luggage, and other articles not in everyday use" but in reality they were scarcely large enough for this, and certainly not commodious enough to turn into bomb-proof shelters "at very short notice" for "safety if disaster should come to this unfortunate world".

The electric lifts fitted in 1939 are long gone, albeit the bases for the original motors remain in-situ, housed in brick-built machine rooms protected by simple timber boarded doors, one of which records the dates on which the lift was serviced (and should never be lost). The cellars are mostly brick-built, basic in the extreme, with reinforced concrete ceilings, stairs and concrete floors. They all have problems with water ingress (since they are dependent on effective tanking), and are now used to drain down sections of the communal heating system. They are also particularly useful for cycle storage. Heating pipework, BT cables, old electrical conduit and various antiquated distribution boards can all be found in the cellars (as can asbestos). Some of the labelling is excellent, but the pipe valves are rarely identified. None of the doors down from the ground floor entrance halls have self-closers, so can sometimes be found standing open.

Various attempts to prevent ground water from seeping through the tanked walls are apparent: bitumen paint and cement render are in evidence, and there are sumps and manholes in most of the cellars: two were particularly wet at the time of the survey, and one door frame is beginning to rot. There are also some random stored items (a toilet, a new circular mirror, and six small seats that were removed from the existing lifts). There are traces of an original paint scheme in the cellar below Nos. 53-70 that is attractive, but much efflorescence underlining that a proper tanking strategy is required. Holes have been created in the walls to access heating pipework, and a number of these are extremely untidy. The ceiling of the cellar of Nos. 32-52 is spalling in areas, exposing the reinforcement. The spaces are all, without exception, extremely warm, and a number of lights are inoperational. A large un-insulated heating pipe rises up through the old machine room under Nos. 83-100.

The store below Nos. 71-82 is significantly larger than the others, and used by cleaning staff. The lift motor and emergency release station are located in one corner and there is a sump used to drain down the heating and carry sink waste. The space is brighter and tidier than the smaller cellars, but there is penetrating damp in one back corner, adjacent to electrical supplies to the lift, and the plaster/render is spalling from the walls.

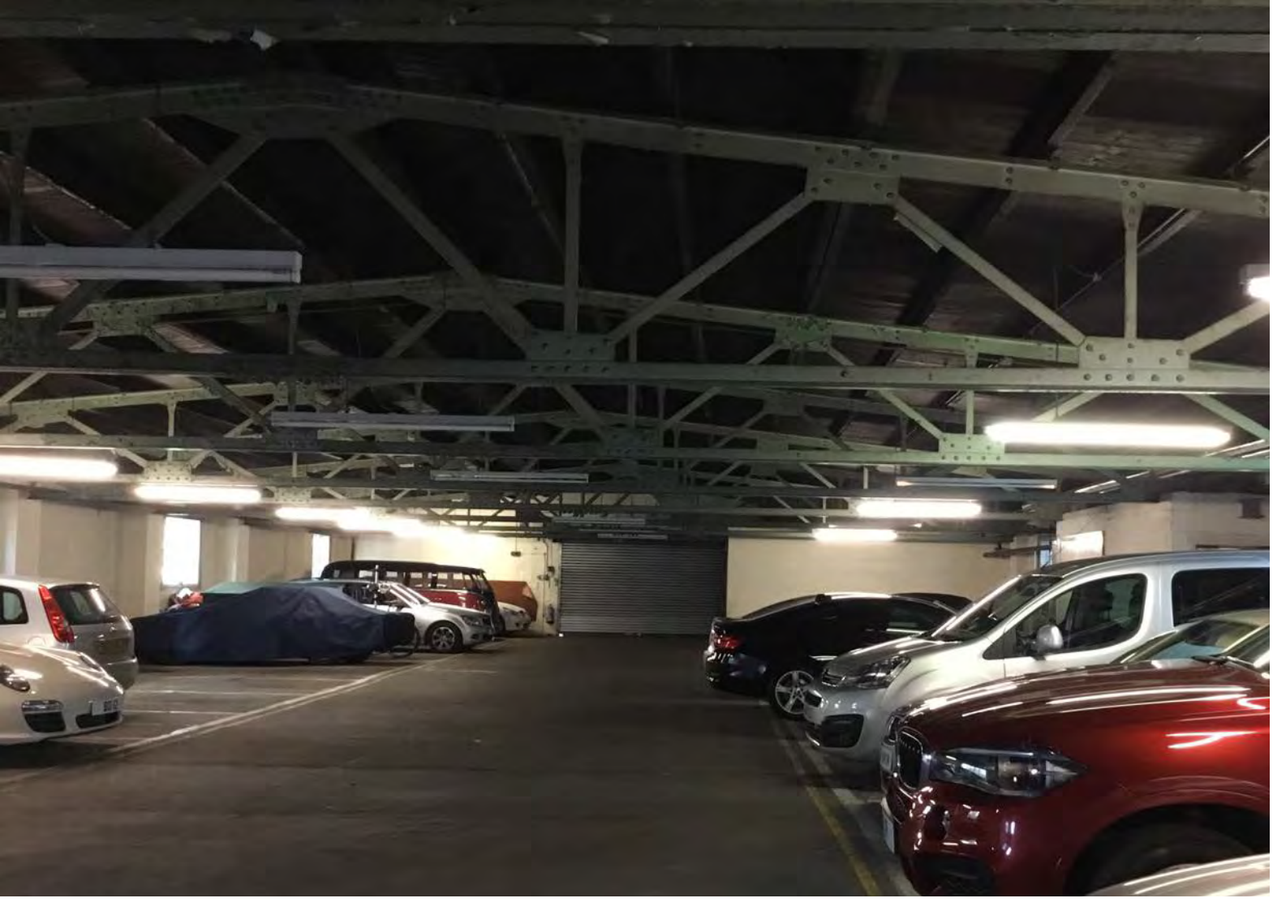
By far the most interesting (and under-used) of the basement spaces can be found beneath Nos. 83-100, where a huge trunk room was created, and which has been abandoned because the ground floor rooms above are without fire protection on the underside of the timber floor. It is said that the timber enclosures (individually numbered, so potentially one per apartment) were partly dismantled to build a garden fence: of those that are left, some still have a notice left by the Legal and General Assurance Society cautioning that they could not be responsible for the loss or damage of luggage. The space is clearly useful for access to heating pipework, but just as importantly as a reminder of days gone by when trunks were in vogue.

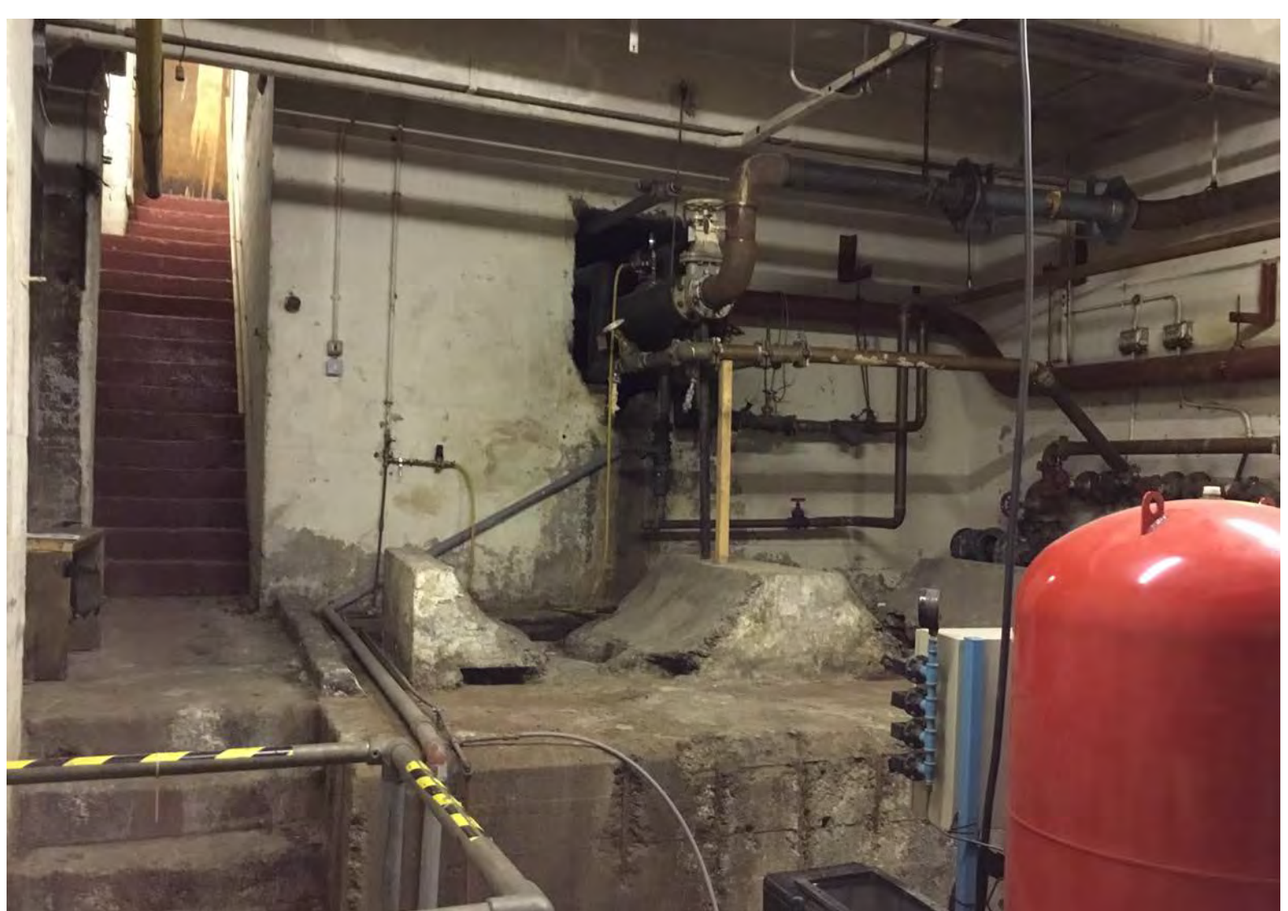
Although the separating floors are typically made of reinforced concrete, the ground floors are constructed of timber joists with floorboards but no deafening (insulation). A number of the solum spaces have been sealed up since the presence of asbestos has been detected, but where they can be inspected, it is clear that they are littered with debris abandoned by builders over a long period of time. Ideally, these should be cleared out: after all, the solums are common.

CONDITION SURVEY – GARAGE & HEATING CHAMBER

Fatkin's initial drawings, and the pre-construction prospectus issued by Alec Woolf, envisaged a tennis court on the roof of the communal garage, but by the summer of 1939, while a "first-class tennis court" was being promised, it was no longer intended for roof level. Girders carrying a timber joisted roof had been

Clockwise from left: the foundation pads and columns are clearly visible in the large trunk room: this space cannot be used because the ground floors above are made of timber and not fire-protected (© author); a cautionary note pinned to a door in the trunk room (and over-marked by a burglar) (© author); the communal garage requires a degree of re-pointing and the brick infills would have been better clad in timber to resemble doors (© author).





proposed, and it is likely that the perfect flatness of this could not be guaranteed. Plans to have stairs leading up to the roof were abandoned, and a shallow pitched roof was installed instead (supported on handsome riveted steel trusses), with the slope hidden at the front behind a stepped concrete parapet with an Art Deco profile and copper trim. The finish would have been asphalt, and is now roofing felt (possibly over the asphalt).

The wisdom of Fatkin's plans to house the transformer room and heating chamber next to one another below the garage was probably questioned by the electricity supply company, and the small sub-station was subsequently located outside well away from the houses. The heating chamber, dug down beneath the north-east corner was designed to be accessed from the east elevation, where a hatch allowed coal to be delivered to a large reinforced concrete bunker.

Originally, there were three large overhead garage doors, front and rear, and steel windows each with an opening casement for ventilation. The cavity brick walls were buttressed internally to carry the load of the trusses, but were otherwise a match for the apartment blocks. In order to increase parking spaces, a number of the door openings have been (unattractively) infilled with brick, and a small boiler room formed at ground floor level, above the original chamber. There is also a dedicated space for the gas meter. The garage, which even has radiators, is relatively clean and tidy, and the roof looks to be in reasonable order (albeit mossy and with a suspect upstand at the parapet), but the old heating chamber is full of redundant pipes, hangers and trip hazards, and the concrete retaining wall to the north is noticeably deteriorating. An old hoist located above the stairs that descend into the chamber is probably no longer fit for purpose.

There are no gutters around the garage roof, simply two large diameter rainwater pipes on either side elevation: the roof is designed to channel water to these, and seems to mostly work although it is clear that the hoppers at the tops of the pipes do not catch all the rainwater. An old concertina door on the south elevation remains, but cannot be used due to a brick upstand; there are two large ventilation ducts; and the original steel windows have been re-glazed and fitted with security panels on the inside. The timber louvred doors to the boiler house have twisted, but the gas governor door is better (although there is a gap at the base of the door frame). The roller shutter door on the north elevation provides the only form of vehicular access.

There is evidence that parts of the north-east corner of the garage were dismantled to fit the re-located boilers, and there is staining to the brickwork at both north-facing corners that may be indicative of previous water ingress. The ground falls away sharply along the west façade, and the fireclay connections at the bases of the rainwater pipes have been exposed due to over-enthusiastic removal of soil. On all four elevations there are raking cracks and missing pointing.

CONDITION SURVEY – CARETAKER'S HOUSE

Early proposals indicate that Woolf had in mind that there would be a separate caretaker allocated to both blocks, and that these caretakers would each have their own detached house, symmetrically arranged uphill of the communal garage. These two-bedroomed houses with large living room and kitchen (not to mention bathroom and separate toilet) would have been the finest caretaker's homes in the city, but in the event a single house was built comprising of two flats one above the other.

Flat-roofed and cubic, finished in white harling over a dark brick base course, the building was sleek and stylish, with metal-framed windows, tiled cills, and a full-height living room bay facing east. Charles McKean, in *The Scottish Thirties*, observed "facing brick was more expensive than white-rendered common brick: thus economics contrived to lend the caretaker's house a spurious modernism denied the flats." The ground floor house was entered through a simple porch, while the upper apartment was entered from the south. The arrangement is much the same today, although the old fuel stores have been converted, and there are various lean-tos.

The roof, from which the chimneys have been removed, is covered in elderly roofing felt and in poor condition. There is a parapet on three sides, so the roof drains only to the south into a plastic gutter. The front façade has been re-rendered

Clockwise from top left: the garage trusses are a fine example of engineering (© author); the garage roof is neatly covered in felt: there may be water ingress at the back of the north-facing parapet, which is not well finished (© author); the roof of the caretaker's house drains to the south only and is in need of repair (© author); the bases for the original coal boilers are still intact in the heating chamber (© author); the north-facing reinforced concrete wall in the underground heating chamber is in need of repair (© author).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using a modern cement-based product which is staining, while the remaining elevations exhibit a number of cracks.

CONDITION SURVEY – LOCK-UPS

A series of simple lock-up garages were designed by Fatkin behind the west block, where the slope of the site was at its least severe. Since a new road was being planned to the rear of the site (now Hatfield Drive), access to the lock-ups was arranged to be convenient, and minimise vehicular traffic in front of the apartments. By May of 1939, it had become clear that further lock-ups would be required to satisfy demand, and so an additional three garages were built east of the transformer room, and a further two (for longer cars) positioned at the foot of the slope. Taken together, this provided twenty-six lock-ups stepping regularly down the site, all with flat roofs covered in asphalt, cavity brick walls, and timber sliding doors courtesy of Overhead Doors (Gt. Brit.) Ltd of Glasgow. Three of the original doors remain at Nos. 9, 20 and 21, and appear to have been light green.

The lock-up roofs are in variable condition, with some particularly poor. They are designed to drain to the rear into a half round gutter, but it would be surprising if most were not leaking. A lean-to appears to have been removed from the back face of the two longest units. There are no windows, so the back wall is usefully used for ball games.

A further ten garages have been built more recently (presumably on the site of the tennis court) and while there is some debris lying on the roofs, and evidence that the largest garage roof does not drain properly, the condition seems reasonable.

CONDITION SURVEY – GROUNDS

There is no historic evidence of a formal planting scheme for Kelvin Court, but with the land to the south undeveloped (and no way of predicting what might be built there), a number of trees were planted to screen the “meadow” and prevent overlooking from Cranborne Road. These are now mature and create good cover, although some have clearly had to be cut down. Boundaries were defined largely by chain link fencing with concrete posts, the original walling to the Fifth Avenue villas, and a low facing brick wall along Great Western Road topped with a concrete cope, and with curved openings opposite both central staircases. It is not clear if the existing wall is original, since the brick is not a match for the main buildings, but it follows Fatkin’s design drawings. Title deeds suggest that part of the pavement near the bus stop is owned by Kelvin Court, along with half of the width of Hatfield Drive and Cranborne Road.

Most of the ground – where not given over to buildings and tarmac paths – was laid to lawn. For a period there were either shrubs or flower beds creating a demarcation at the northern ends of the central paths (these can be seen in aerial photographs, where they assume a fan-shape). There was probably also a tennis court where new garages have been built west of the west block. The sloping site was managed by way of retaining walls on the south-east corner of the land, and to a degree along the south wall of the east block. Notwithstanding, there are a number of steep slopes on the tarmac paths, and care has to be taken in a number of areas, and gritting carried out regularly in frosty weather. There are grit buckets and grass cutting bins handily arranged around the grounds.

Inevitably, much concrete was used in the form of kerbs and copes. The precast copes on the Great Western Road boundary wall are in good condition other than where the joints are wide and copes have become displaced (particularly near the bus stop). There has been some damage to the brick wall generally, particularly in the area of the curved gateways, and a degree of re-pointing is now needed. The contrariness of the sloping site can be seen at the two curved entrances, where there are steps up to the pavement at one, but steps down at the other. Behind the wall, screening the parked cars, is a mixed variety hedge (mostly forsythia) and a number of very pretty blossom trees. The hedge terminates at the western end of the car parking area, beyond which is a lovely grassed seating area for residents.

It was made clear in the agreement with the Kelvinside Estate Company that there

Clockwise from top left: the caretaker’s flat has been re-rendered on the west face only (© author); the lock-up roofs are finished in a range of different materials (© author); a few of the original lock-up doors survive (© author); the landscaping was designed to screen Kelvin Court from undeveloped land to the south (© author).


WARNING

be no vehicular access from Great Western Road, so this is from Cranborne Road instead. Plans submitted in 2009 to widen the existing entrance seem not to have been implemented, although there is evidence that some of the brick has been rebuilt. It was originally intended that there be a service entrance off Cranborne Road running along the rear of the site, but in the event this was superseded by two entrances from Hatfield Drive, both of which are kept gated and padlocked. There is hedging (and some brick walling that has a retaining purpose) along the boundary of Cranborne Road, but for the most part the barrier between public and private is effected by an ivy-clad fence. The ivy also acts as ground cover, and has a tendency to collect litter. Fallen branches from the trees on the Cranborne Road boundary seem to be left un-cleared from the pavement.

Sensibly, the vehicular areas and pedestrian routes are finished in tarmac, and this is in better condition where cars use it (probably because it is a different mix). The paths are kept clear through power washing but the condition is variable. There are a number of drain gullies, manhole covers, BT chambers, at least one hydrant, and various heating duct covers. Neither path alongside the communal garage is in particularly good condition.

Where there are gravel beds, these tend to be in red chip (although there is some good plum slate), and these are generally weed free. There are a number of flower beds with specimen trees and bulb planting, some magnolias, and very neat hedges planted along the base of the inner-facing walls to prevent passers-by walking close to windows. There are paved paths (many slabs on which are broken, and some are uneven) and a mixture of pin kerbing and larger kerbs. The larger kerbs are deteriorating in some areas simply because the aggregate used in the original mix was over-large.

While the grassed areas are smart, and there are a number of well-kept amenity areas where residents can sit (there's even a dog poo bin – albeit it is not always used), there are still some areas where repairs are required. There is an area of ground west of the east rear stairwell on the east block that is oddly untidy (as if the ground cover has been killed), and the group of small brick buildings next to the transformer house is unloved. The old ash bin shelter designed by Fatkin (which now has a roller shutter door) has been repaired using a mismatched brick, the windows infilled badly, a small retaining wall at the door is deteriorating badly, and the former oil tank bund (?) west of the skip has a rusting rainwater pipe and deteriorating common brickwork. The curved retaining wall west of the back wall of the communal garage is beginning to deteriorate (brick and concrete both). On the whole, however, the grounds are pretty and there are some areas of good planting.

CONDITION SURVEY – SERVICES

The principal services to Kelvin Court are communal heating, electricity, water and water storage, lifts, communal TV aerials, BT, drainage, and gas to some (if not all) of the apartments. There are various alarms, floodlighting and large quantities of surface-run wiring on the elevations. Mabbetts, Consulting Services Engineers, broadly assessed these services, and their report is included as Appendix One to this narrative.

One of the principal attractions of Kelvin Court as originally promoted for rental was the availability of "constant hot water" and **central heating**. The original heating and hot water system was designed and installed by a company from Newcastle-on-Tyne, suggesting that the developer had already worked successfully with the Selborne Domestic Engineering Company. The architect, J N Fatkin would not have been involved beyond ensuring that there was sufficient space for boilers, fuel and water storage, and circulation pipework. A subterranean heating chamber was created below the garage between the east and west blocks, and a reinforced concrete hopper designed to deliver coal to both boilers by way of a hatch at ground level. The boilers, cylindrical and reminiscent of ship's boilers of the period, were vented through an underground duct to a brick-built chimney attached to the north-west corner of the east block.

Since the ground floor apartments were built with suspended timber floors, there was sufficient solum space in which large diameter horizontal circulation pipes

Clockwise from left: there are some attractive planted areas in the garden grounds (© Christine Martin); the old ash bin shelter is unloved and badly repaired (© author); heating gate valves are located in cellars and solums (© author); the heating pipework enters the two blocks in chambers next to the communal garage (© author).


WESSEX 200
WESSEX 200

could be installed, with access hatches created on the rear walls at low level and within the pram stores/cellars from which valves and junctions could be inspected. Additional access points in the form of floor hatches were created on rear stair landings and within the apartments themselves. Vertical flow and return pipes appear to have been installed in some (but not all) of the rear service stairs, in cupboards also used for the storage of coal. In many instances, the risers were built into corners in the apartments. The large garage and smaller lock-ups were heated by way of sectional radiators, as were the principal stairwells.

It is likely that the apartments were not fully centrally-heated since there were also fireplaces in reception rooms and dining rooms. Kitchens and maid's rooms are unlikely to have been heated, and the bathrooms may have had only towel rails (although it is known that there were heated linen cupboards). Hot water was distributed to taps in bathrooms and kitchens, the towel rails, and the cleaners' cupboards in the service stairs. As far as is known, the Selborne Domestic Engineering Company left no "as built" drawings, and access is currently difficult to solum spaces where asbestos is assumed to exist. There are, however, a number of more recent drawings that record the original riser locations, and those added in around 1969.

Once Alec Woolf surrendered his interest in the property, the Estates Department of the Legal and General Assurance Society became involved in the management of Kelvin Court. Under their control various alterations to the central heating system were implemented, including the use of oil as the fuel source and the installation of new boilers in a purpose-built chamber created at one corner of the communal garage. Around this time the number of flow and return risers were increased through the installation of pipework in additional service stair stores.

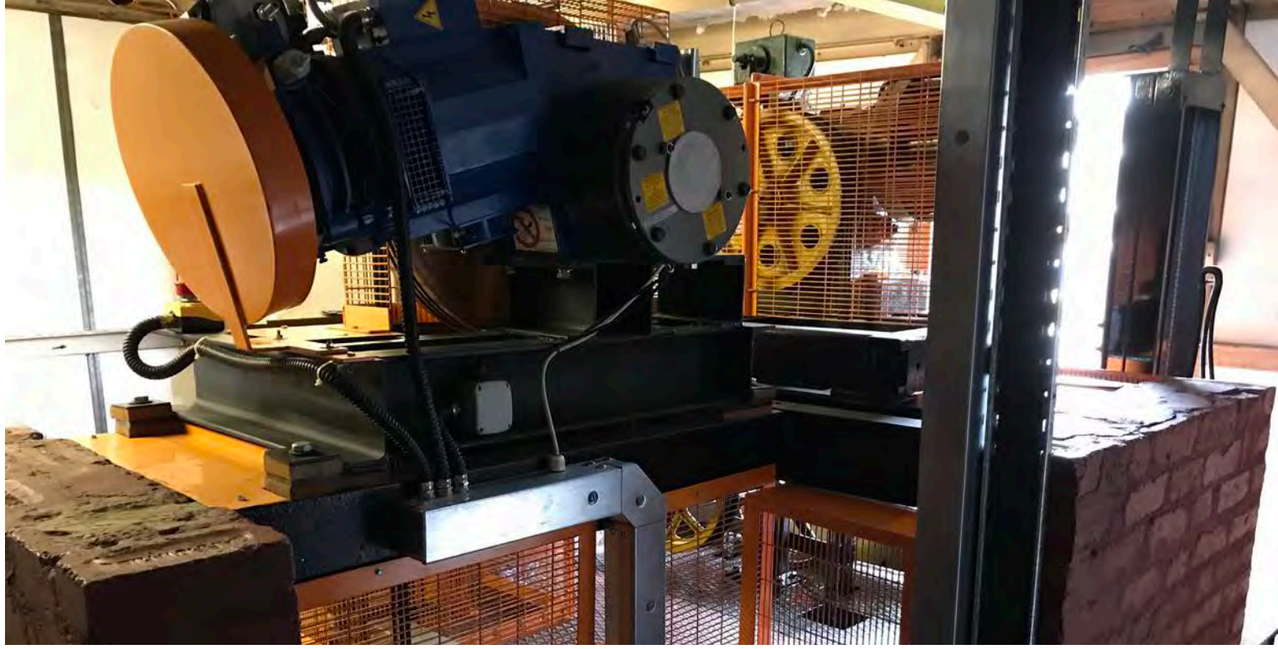
In 1971, ownership passed to Davidson Properties (Cricklewood) Ltd of London, who bought the development with a view to immediately selling the individual apartments. At some stage the fuel source for the boilers was converted to gas, with a gas meter room created alongside the boiler house (date unknown). In 1989, proposals to replace the heating and hot water pipework throughout both blocks does not appear to have progressed, possibly because of poor access to the solum spaces in a number of locations. In 2002, ownership of the heating plant seems to have passed from Dalkia (who "owned", operated and maintained the system) to the residents. Post-2011, the old coal boilers were removed from the heating chamber, leaving only the curved bases.

In 2016, decade-long concerns over the unreliability of the eight central heating boilers (and deterioration in the brick chimney, in which there is a hole) led to investigations into whether the system might be better re-configured with new boilers mounted on the stairwell roofs and cold water tanks re-located to accommodate this. It was suggested that flow and return pipework would be distributed vertically in the gap at the centre of the service stairwells. The suggestion was not pursued and the boilers remain in the heating chamber in the garage, with the heat exchangers that produce hot water for bathrooms and kitchens in the subterranean boiler house.

Currently Alba Engineering Company maintain the system, and appear to have a good working knowledge of the pipework locations and the boiler capabilities. They report that where leaks and pressure drops occur, this tends to be at joints and valves, and they do not appear to consider that the circulation pipework is uniformly defective or no longer fit for purpose. It is clear, however, that the heat loss from under-insulated pipework is excessive (the luggage room beneath the west block is unbelievably hot); that redundant pipework has not been removed (so making it difficult to understand the system); that the means of draining down the pipework is ad-hoc (involving hoses and pumped sumps); and that a comprehensive set of as-built drawings simply does not exist.

What probably began as a neatly-installed and logical system of pipes within ducts has been altered over a long period of time, and should the boilers be replaced, the opportunity should be taken to remove redundant pipes, increase levels of insulation, repair and re-line the brick chimney (replacing the rusting cowl, which is only a few years old), and produce a schematic that clearly explains where distribution pipework is located.

From left: it is becoming increasingly difficult to source replacement parts for the boilers (© author); the old heating chamber has room for additional equipment should it be needed (© author).




OTIS
DANGER
THE FOLLOWING HIGH RISKS HAVE BEEN IDENTIFIED ON THIS SITE:
WINDING SHEAVE NOT GUARDED
MAIN SWITCH NOT LOCKABLE
OTHER SOURCES OF ELECTRICITY WHEN MAIN SWITCH OFF
RESTRICTED HEADROOM IN SHAFT
FALL HAZARD ON TOP OF CAR
NO TOP OF CAR STOP SWITCH/TOP OF CAR INSPECTION CONTROLS
NO PIT STOP SWITCH
NO SAFETY GEAR OR RUPTURE VALVE
OTHER HIGH RISKS - SEE SITE RISK ASSESSMENT BEFORE PROCEEDING
THIS SIGN IS TO BE REMOVED WHEN HIGH RISK AREAS HAVE BEEN CLEARED
OTIS ELEVATOR COMPANY LIMITED.


2B
2B

So large is Kelvin Court that it required a standalone **electrical** transformer house, apparently increased in size at some stage. The supply and distribution cables, main fuses, and busbars tend to be located in the rear service stairwells, and while the equipment appears elderly it is most likely the property of Scottish Power, who will have a responsibility to ensure its adequacy. There are distribution boards for every apartment adjacent to rear (service) doors, and it is clear from the extent to which the old coal stores have been altered in size that the cabling proved more complex than Fatkin anticipated. Re-wiring in various communal areas has been undertaken over a period of time, and there has been a tendency to abandon old wiring, fuses and conduit. This, however, has an intrinsic historic value where it comprises original fuses.

Water distribution pipework may have been altered along with heating pipes and lifts in 1968: it is evident that a number of water tanks directly above toilets have been removed, but there are still a large number of tanks, apparently feeding drinking water (unusually), bathrooms and toilets. The highest level tanks, located above rear stairwells, appear to be filled by cold water rising main pipes in the apartments. Cold water is then distributed from them by gravity to bathroom locations. Other, smaller free-standing tanks are similarly fed, but it is not clear why these are located mostly on the eastern halves of the roofs. There are no distribution pipework schematics, and no single person with a good working knowledge of the water system. That said, the issues are obvious: that the upper floor flats are currently poorly fed by the water pressure into the building, that tanks are currently necessary, and that as a result, cold water pipework has to be run along the rooftop surface covered in insulation and with trace heating to prevent freezing. The trace heating controls are external (and so are affected by moisture) and the insulation around the pipes attracts seagulls and other birds who strip the covering, particularly around junctions and shut-off valves. The tanks are themselves visible from ground level (and hardly attractive), difficult (even dangerous) to clean and maintain, and the whole system much in need of rationalisation.

It was a mark of the status of Kelvin Court that every apartment was served by not just one, but two **lifts** by the Otis Elevator Company Ltd (one of the few sub-contractors not to advertise in the *Glasgow Herald* supplement). In the wings of the 'H'-shape, the principal elevators and the service lifts are housed in the same brick shaft and driven from roof level, where there are large lift motor rooms. The centrally-located apartments are served by three lifts, two of which are service lifts shared with the adjoining apartments in the wings. The central lifts are driven from below, so there is only a small lift pulley enclosure on the roof (2A and 4A). There are therefore fourteen lifts, six front and eight rear numbered 1A, 1B and so on, and these all still have their original cradles. The lift motors are colour-coded, blue for front, and green for rear.

The lift motors were replaced in late 1968 by Otis Elevators, and subsequently the six front motors were replaced in the last five years (when the lift cars were upgraded). The rear motors seem to still date to 1968. The rear elevators have period sliding concertina doors (as well as closing doors), and it is reported that there is very little wear on the motors/gears. The lifts are all well maintained with data logs (there are original 1969 wiring diagrams in one lift room), and the moving parts are protected by cages. The running beams in the motor rooms have a safe working load of 500 kg.

The lifts do not seem to be problematic at present, although one lift (east block) can clearly be heard from ground level when the pulley wheels begin turning.

There are a series of amplifiers and **communal TV** installations, largely housed in the lift motor rooms. The distribution of aerial leads to the apartments is badly organised, however, with cables laid loose across the roof, tied to soil pipes, and generally creating trip hazards. There are also a number of satellite dishes, and it is not clear whether these have been installed by individual residents. Irrespective, there is a need to modernise the system, creating a single communal aerial and dish for every staircase, and feeding the aerial leads internally to prevent them stretching across the roofs.

Clockwise from left: the electrical distribution equipment is located at the foot of the escape stairs: not every store door is kept locked, and the exit doors are stiff to open (as well as narrow) (© author); the 1968 Otis motors are still labelled (© author); some old wiring in cellars is kept in beautiful timber boxes (© author); back lift motors are green, and older than the front lift motors which are blue (© author); an old maintenance log for the lifts from the 1950s, written on the back of a door (© author).

CONDITION SURVEY – FIRE STRATEGY

It is not known whether there is an over-arching fire strategy for Kelvin Court, but given that both buildings are the equivalent of luxury hotels, it would seem appropriate that there be the same level of fire protection. While the main flat entrance doors seem to be of the solid core type, some of the rear stair doors are not. Not all (if any) of these doors have self-closers or intumescent strips. Plastic refuse bins are located in the rear stairwells, which are supposed to act as fire escape stairs, and with the design of the apartments placing the kitchens next to both front and rear entrances, self-closing fire doors are the least that residents should expect. There is a tendency to store items at the heads of the service stairs (at least those that rise as far as roof level), and it is not clear how many of the stores off these rear stairs have self-closing fire doors. At the foot of the escape stairs, there are extensive electrics, and the exit doors are extremely stiff to open (and not wide enough when only one leaf is open).

It is also clear that the service lifts and principal lifts in the “wings” share the same shaft, with no separating wall between (although the lifts are metal), and it is not known whether there is a firebreak between adjoining top floor flats (since the roofs are timber, fire might spread from one to the other along the roof). There does not seem to be emergency lighting in the common areas, and because of the age of the buildings, there are no smoke vents at the heads of the stairs (although the air bricks may be intended to help). The cellar doors do not self-close, and the trunk room below the west end of the west block has no fire protection to the underside of the ground floors above. Ideally, this space should be kept completely clear (and not used for storing paint).

A good fire detection and warning system in all stairwells would go a long way to addressing most of these issues. Furthermore, the buildings do not have lightning protection, and it may be worth establishing if this is necessary.

Left: Kelvin Court was built to the same standards as a luxury hotel but does not seem to have an appropriate fire strategy (© Crown Copyright Historic Environment Scotland).

Glasgow 16th February 1938. These are the plans referred to in Petition by Messrs Alec Woolf (Builders and Contractors) Limited lodged of even date.

A. Walker Clarke
Petitioner's Agent.

2ND 3RD & 4TH FLOOR PLANS

INDEX No. 1938/335

This and the accompanying twenty four sheets are the Plans referred to in the Decree of the Dean of Guild Court of this date in the Petition at the instance of Alec Woolf (Builders & Contractors Ltd) against Thomas Somers and others

GLASGOW 8th July, 1938 James W. Leckie
Depute Clerk of Court

SCALE: EIGHT FEET EQUALS ONE

PROPOSED LUXURY FL
GREAT WESTERN RD KELVINS
OW

06

REPAIRS AND RECOMMENDATIONS

What currently appears to be missing is a good, clear set of building plans showing layouts, services and risers. The current caretaker has a good grasp of operations, and both the heating and lift engineers appear to keep good records, but there does not seem to be a comprehensive manual for the development that any incoming factor would immediately understand. There is a single box of assorted reports in the Estate Office, but no evidence of an archive into which drawings and details are deposited. A number of residents are party to reports from previous factors (and their building surveyors) but this does not seem to be shared. It is vital that all the existing records be deposited in one archive (ideally the Estate Office), and this should include a full set of Fatkin's original proposals, which are held by Glasgow City Archives. These are by no means "as built" drawings, but they will help to dispel some of the myths that are currently circulating over construction materials and alterations.

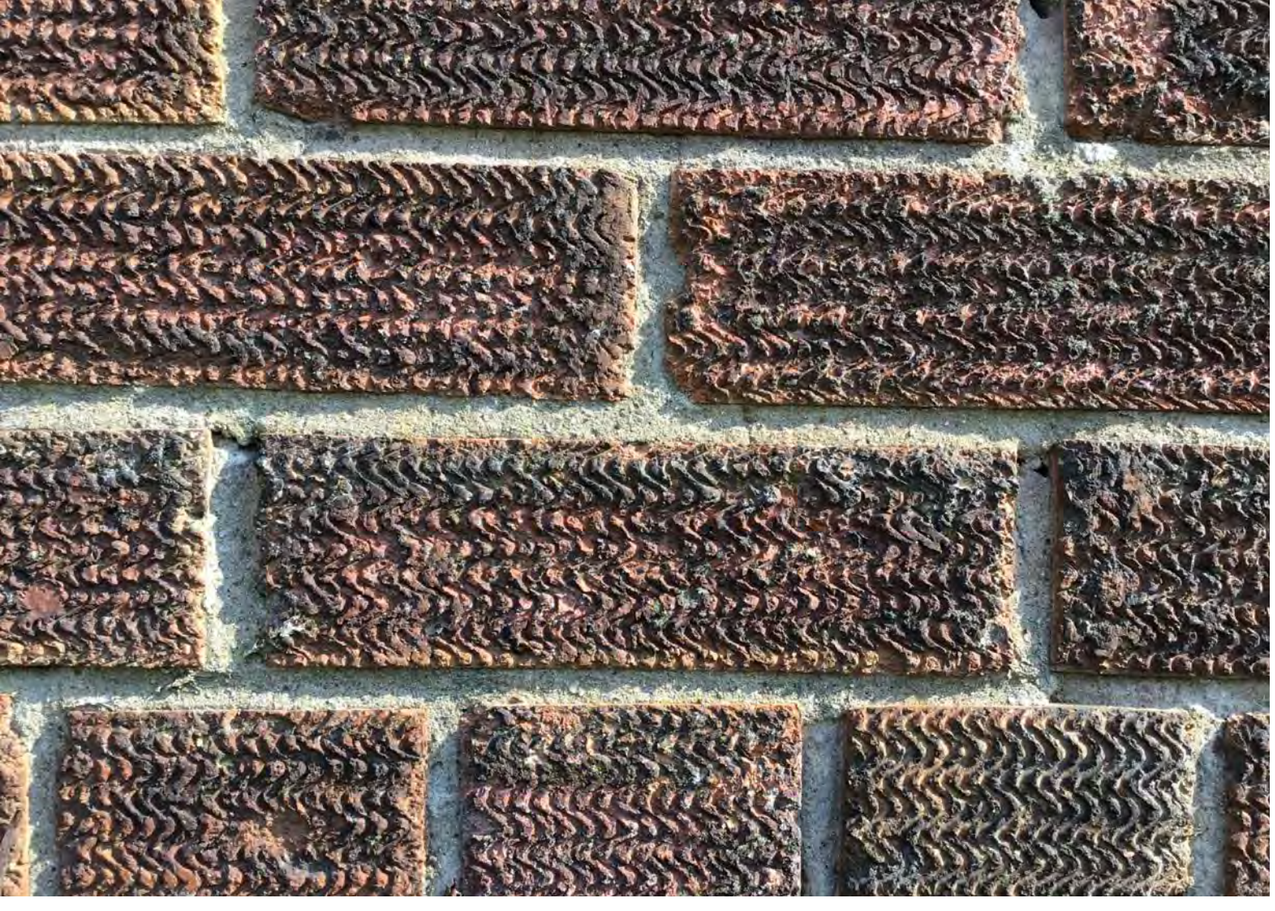
Residents should be encouraged to surrender copies of any information they have, however old, and there should be a list drawn up of original items that should be protected as part of the history of the building: far too much has been wantonly removed from the communally-owned areas (such as the timber lockers in the luggage room, used to make a fence).

Development of a fire strategy – even an evacuation plan – should be a priority for the residents of Kelvin Court. Currently the standards of fire protection are significantly lower than found in a council-operated or housing association-owned tenement flat. The presence of reinforced concrete floors between apartments is a boon, but there are too many doors that stand open, too many unsealed voids in cellars and solums, and seemingly little control over combustible items in stairwells.

The communal heating and hot water distribution system is an ongoing topic of debate at Kelvin Court: the separation of the two services and gradual replacement of boilers on a piecemeal basis (provided a solution to the boiler flue can be found) need not be complicated. There should be an attempt, however, to harness the heat being lost in solum spaces and cellars, and some thought given to heating the rear stairwells to reduce the incidence of mould growth.

The roofs will shortly require to be re-covered. The fact that they are mostly constructed of timber limits the options for replacement materials (sedum, for instance, would probably be too heavy), but a radical re-design of tanks, water pipes, piping, upstands, flashings and coverings may soon be required. A reduction in the number of water tanks, and the installation of pumps (potentially with back-up generators) to circulate mains water to apartments from street level ought to be possible. Certainly, there is enough room in the subterranean heating chamber

Left: one of Fatkin's 1938 layout drawings for Kelvin Court (© Glasgow City Archives/Mitchell Library).




LBC
PHORPRES


ON
WAY
AMP
Clock "A" Front landing lights.
Clock "B" 9 lights on side fitt. 2 outside canopy lights.
13 amp sw. socket on each main lond-
13 amp skts. at D.D. and
3-13amp sockets on canopy.

for additional equipment. The communal TV system should be modernised at the same time, and the plant room roofs re-covered and defective doors, gutters and rainwater pipes addressed.

The flat roofs over the bay windows to the upper floor apartments share the same construction (and problems) as the main roof. Furthermore, the fascias to these windows are timber, and in many instances deteriorating. Some consideration could be given to re-covering the bay window roofs in bespoke single piece cappings (such as colour-coated aluminium), and replacing fascias in an inert material profiled to match the originals.

Balconies, voids and cavity wall failures should be dealt with systematically: the treatment of rising damp, concrete deterioration and penetrating water assigned to specialists with a track record of dealing with complex issues of waterproofing (and who can provide a guarantee).

Simple (metal) balustrades should be designed and installed to the cellar stairs, perhaps incorporating cycle hangers.

Scottish Power should be requested to confirm the continuing adequacy of the electrical equipment.

Thought should be given to re-decorating the entrances properly: completely removing the paint from the artificial stone (using super-heated steam cleaning or a biodegradable paint stripper) and canopies (which will require asbestos removal), properly repairing the canopy metalwork and roof finish, re-pointing the “stonework”, and investing in a high-performance concrete paint if the artificial stone is badly stained. Reinstatement of the neon lighting should be a long-term ambition. Internally, the colour palette is not a good fit for the period architecture. Paint scrapes may reveal the original colours, but in the absence of this, an interior designer or decorator with experience of working on Thirties residential architecture could be consulted over suitable colours. If this is too controversial, a monochrome scheme of black, white and shades of grey and silver would at least create a less bland aesthetic than at present (not forgetting that the colour of choice in the 1930s was green).

Finally, Kelvin Court is fabulous, and should be widely shared, even once a year. Consideration should be given to participating in Doors Open Day (on a free ticketed basis, to control numbers), providing guided tours of the grounds, and creating an exhibition in one of the central stairwells that tells of the original developer, his architect, the period in which the development was built, and the challenges of living in multiple ownership.

Clockwise from top left: the wonderful zig-zag pattern on the facing brick used (© author); even if these door handles are not original, they are a better fit for the period than knob handles (© author); old electrical boxes refer to lighting above the canopies and entry ‘phones to the cellars (© author); there are a few doorbells left in service stairs (© author); the London Brick Company stamped its bricks (© author).


KELVIN COURT

07

APPENDICES

This narrative should be read in conjunction with the following:

1 Report on building services by Mabbett and Associates (reproduced)
2 Original architect's drawings held in Glasgow City Archives (submitted February 1938)
3 Title Deeds (as belonging to individual residents)
4 Asbestos Report (held in Estate Office)
5 All previous reports prepared by various factors and surveyors

08

BIBLIOGRAPHY

In addition to the prospectus, newspaper articles and reports mentioned in the narrative, the following were referred to:

1 *A History of Du Cane Court*, Gregory K Vincent, pub. Woodbine Press, 2008.
2 *Along Great Western Road*, Gordon R Urquhart, pub. Stenlake Publishing, 2000.
3 *Architecture of Glasgow*, Andor Gomme and David Walker, pub. Lund Humphries, 1974.
4 *Empire Exhibition 1938*, The Scottish Field, Mitchell Street, Glasgow, 1938.
5 *Empire Exhibition Glasgow May-October*, The Scotsman Trade Review, North Bridge Street, Edinburgh, 1938.
6 *Empire Exhibition Scotland 1938*, The Glasgow Herald, pub. George Outram and Co Ltd, 1938.
7 *Glasgow Art Deco*, Rudolph Kenna, pub. Richard Drew Publishing, 1985.
8 *Greater Glasgow: An Illustrated Architectural Guide*, Sam Small, pub. RIAS Publishing, 2008.
9 *Home Builders: Mactaggart and Mickel and the Scottish Housebuilding Industry*, ed. Miles Glendinning and Diane Watters, pub. RCAHMS, 1999.
10 *Listed Building Description LB32321*, Historic Environment Scotland.
11 *Living in Scotland*, Lesley Astaire, Roddy Martine, Fritz von der Schulenburg, pub.Thames and Hudson 1997.
12 *Scotland in the Thirties*, Rudolph Kenna, pub. Richard Drew Publishing, 1987.
13 *The Buildings of Scotland: Glasgow*, Elizabeth Williamson, Anne Riches and Malcolm Higgs, pub. Penguin Books,1990.
14 *The Empire Exhibition Scotland 1938,* The Illustrated London News, Bride Street, London, 1938.
15 *The Scottish Thirties: An Architectural Introduction*, Charles McKean, pub. Rutland Press, 1987.
16 *The Tenement: A Way of Life*, Frank Worsdall, pub. Chambers, 1979.

Left: Contemporary rendering of the east block (by kind permission of Charles Duncan).

Mabbett™ See a Difference.

Memorandum Report

Date: 28 February 2019

TO: **Fiona Sinclair**

FM: **John Fergusson**

CC: **Ross Ramsay, Stuart Gibb, Claire Hattie**

RE: **KELVIN COURT SERVICES REVIEW**

1.0 Introduction

1.1 Background

Mabbett undertook a high-level services review of the Kelvin Court residential facility on behalf of Fiona Sinclair Architects. The facility consists of two apartment blocks constructed in the 1930s, containing a total of 101 privately owned residential flats.

1.2 Existing Building Services

All flats are served by a centralised heating plant. The existing heating plant consists of 8 boilers (however it is reported that two have failed) providing heat to a low loss header serving both the space heating and domestic hot water (DHW) systems. Heating pipework from the header goes to multiple risers within both blocks which serve all apartments, while additional pipework from the header serves two plate heat exchangers (PHEs) providing DHW to all apartments.

A three-port mixing valve controls the heating system based on external temperature. When the external temperature is relatively high, the valve closes so that heat from the space heating return pipe is recirculated, whilst low external temperatures cause the valve to open so the heating flow consists of more water from the boilers. It is understood that when the valve opens fully there is then insufficient capacity in the boiler system to also serve the plate heat exchangers, resulting in DHW demand in the flats not being met.

It is understood that the controls have been adjusted so that the minimum heating flow temperature is 50-60°C, even during the summer months when there is no space heating demand, to mitigate against spikes in space heating, which would reduce the amount heat distributed to the PHEs and instances of DHW shortage.

Radiators are fitted within apartments to emit heat. It is understood that there are radiators in every room, however originally this may not have been the case and further radiators may have been added to the system over the years. Replacing radiators can be problematic as the system has to be drained down to the level being worked on (e.g. if a radiator on the ground floor is to be replaced, heating pipework in all levels must be drained). This is due to a lack of accessible isolating valves throughout the system. Many isolating valves are understood to be located within floor or ceiling voids which contain asbestos and therefore these cannot safety be accessed. In order to mitigate against this, whenever residents are having

work undertaken on the heating system serving their apartment, they are encouraged to fit isolation valves to make it easier to perform work on the heating system in the future.

There is no heating in the back (service) stairwells and this has led to some reports of mould developing due to condensation occurring in this area. On the other hand, the main stairwells at the front of the blocks have a small number of radiators and no such problems have been reported. Some radiators could be fitted in the back stairwells to mitigate against condensation in this area. Rather than piping in to the existing LTHW heating system, electric radiators could be installed. Unlike installing electric heating in each apartment, a small number of electric heaters in each block should not put too much additional strain on the electricity supply, however the available electrical supply capacity and condition of electrical wiring should be assessed before progressing.

Sections of heating pipework are understood to be poorly insulated which will result in distribution losses and reduce the efficiency of the heating system. Pipework passing through the cellar in particular is understood to contribute considerable heat gains to the space which itself has no heating demand. The insulation on any poorly insulated pipework passing through unheated areas could be upgraded to improve the overall efficiency of the heating system.

The existing boilers use a common flue within a brick chimney. As the property is a listed building, this flue route must continue to be used, meaning it would have to be internally lined if condensing boilers are specified due to substances within the flue gases which would corrode the brickwork.

Mains cold water serves all apartments, however there is insufficient pressure for the mains supply to serve showers on the top two floors. Instead, mains cold water is piped to storage tanks on the roof and these tanks serve apartments on the top two floors, while other apartments are served by fresh water risers.

Sections of cold water pipework on the roof distribute water from these tanks to apartments. As these are located externally, they are insulated and trace heating has been fitted to prevent the pipes from freezing during periods of cold weather. It was understood that concerns had been raised regarding the condition of the insulation and performance of the trace heating system.

As well as undertaking a heating options appraisal, the electrical services on site were also considered. The electrical supply serving each of the blocks is original and the wiring dates back to ~1938. There is an individual distribution board for each flat which is situated adjacent to the back door, with each board served by a single-phase electricity supply. The internal wiring within certain apartments has been upgraded, but the wiring to the distribution boards and in common areas is the original. It is understood that a 3-phase electricity supply serves some specialist kit in the basement while the supply to each apartment is single phase.

2.0 Findings

2.1 Cold Water Supply

2.1.1 Cold Water Pipework Insulation

A visual survey of the insulation was conducted on the cold water pipework on the roof of both blocks. On the east block, it was found that ~2% of the pipework had insulation that was either missing or damaged. On the west block however, less than 0.5% of the pipework had insulation that was either missing or damaged. Overall therefore, it was calculated that ~1% of the cold water pipework on the roof had insulation that was either missing or damaged.

Since the majority of the insulation is in good condition, it may be more appropriate to fit new insulation only on the sections which are currently missing or damaged (understood to amount to a total pipework length of ~5m) as opposed to upgrading all cold water pipework on the roof.

2.1.2 Cold Water Pipework Trace Heating

The trace heating system on each block consists of two junction boxes with wiring from these each serving pipework on approximately half the roof space on each block. The trace heating is controlled to be on

when the external temperature drops below ~5°C. A trace heating survey was conducted using a thermographic camera when the external temperature was ~2-3°C.

During this survey, it was observed that sections of trace heating were not operating. Following discussions with the caretaker it was found that moisture was present within two of the junction boxes which had subsequently failed, resulting in the trace heating serving around half of the cold water pipework on the roof not functioning. However, after these control boxes had dried out and been re-wired and re-sealed, the operation of the trace heating system was restored.

It could be discussed with contractors whether it is possible to re-seal and waterproof these control boxes to prevent the ingress of moisture. If this is deemed practical, it should offer a more cost-effective solution compared to upgrading the entire trace heating system.

2.1.3 Cold Water Storage

If the storage tanks on the roof were ever to be removed, this would require mains water booster pumps to be installed to provide sufficient pressure to apartments on the top two floors. In addition, without the presence of storage tanks which can help meet peak loads and mitigate against spikes in demand, the mains supply pipe to the blocks may have to be increased to meet the demand of each apartment simultaneously. An application would have to be made to Scottish Water to check whether obtaining a larger supply would be possible.

2.2 Electrical System

The incoming electricity supplies to each block are the original wiring and these pass through the back stairwells to serve building services and distribution boards for individual apartments. Whilst it is not uncommon for electrical wiring to pass through service stairwells, it is something that may be highlighted during a fire safety risk assessment, especially if the back stairwells are also fire escape routes.

Communal areas such as stairwells in apartment blocks are not classified as private dwellings under the Civic Government (Scotland) Act and so are subject to the Fire (Scotland) Act 2005. This act requires persons in control of communal areas to carry out fire risk assessments and it is a legal requirement to regularly review these. A fire management plan also has to be maintained.

A fire safety risk assessment of the common areas should be undertaken periodically – it is understood that this is the responsibility of the proprietors. Due to the age of the electrical infrastructure the wiring may be highlighted as a fire hazard (an overloaded circuit or faulty electrical wiring can cause a fire), in which case the likely recommendation is that the condition of the wiring should be assessed by a competent individual (e.g. an electrician who has been assessed for competence by a professional organisation).

One way to confirm an existing electrical installation is safe for continued use is to have the installation periodically inspected and tested with a report being issued on its condition. An Electrical Installation Condition Report (EICR) includes a visual inspection of fixtures and fittings and a fixed electrical equipment test. The minimum standard is that an electrical safety inspection is carried out every 5 years, but testing can be carried out more frequently.

The main consideration should be the integrity of the existing wiring. Any electrical installation or equipment which fails to pass an inspection must be replaced or repaired immediately to comply with the repairing standard. A suitably qualified electrician could assess the electrical wiring on site including that passing through the back stairwells and the distribution boards if this has not been undertaken recently.

2.3 Heating Options Appraisal

2.3.1 Discounted Options

The following options were considered initially but were deemed infeasible so were discounted:

- Individual Natural Gas Boiler Serving Each Apartment – this would involve new natural gas pipework being fitted to serve each apartment and new flue routes being fitted to transfer flue gases from each boiler to atmosphere, something that was deemed technically and financially unviable. In addition, the residents deed of conditions states that residents must be 100% in favour of switching from a common heating system to individual systems, and the sites' listed building status may also prevent this. Whilst this option should give each resident more control over their heating system and energy costs, this option was ruled out as being impractical.
- Electric Heating System – it may be the case that the existing electrical infrastructure on site would be unable to match the additional demand if space heating were to be provided electrically. In addition, based on the current unit price of electricity in comparison to natural gas, the running cost of an electric heating system would be considerably greater.

2.3.2 Shortlisted Options

The following options were shortlisted as potential options and evaluated further:

A. Install new boilers in a like-for-like replacement of the existing plant;
B. Separate the space heating and DHW systems and install new boilers serving each;
C. Install air source heat pumps (ASHPs) to replace natural gas boilers;
D. Install heat interface units (HIUs) within each apartment;

These options are discussed below:

A. Install new boilers in a like-for-like replacement of the existing plant.

Overview

The existing boiler plant consists of 8 Wessex 200 natural gas fired boilers, arranged in the boiler house in four stacks of two. These are conventional (non-condensing) boilers with a common flue via the brick chimney. These boilers serve both the space heating and DHW demand for all apartments via a common header.

A like-for-like replacement of the plant would simply involve new boilers replacing the existing boilers with the distribution system being maintained. It has been assumed that the existing heating and DHW pipework is in reasonable condition and could be reused. The pipework is understood to be constructed of steel.

It is assumed that new boilers would be condensing which would allow them to operate more efficiently, however this would involve lining the inside of the chimney so it can continue to be used as a flue route (substances within the flue gases would corrode the chimney brickwork otherwise).

It may not be possible to locate new boilers in the existing boiler house, especially if a phased approach is to be taken in switching to a new heating system. Alternatively, new boilers could be located in the underground plant room (where the DHW PHEs are currently situated) with new pipework integrating the new boilers with the existing heating and DHW pipework.

Pros

- An energy saving would be expected;
- The running cost should be lower than the existing heating system;
- Integrating new plant with the existing heating and DHW distribution systems should be relatively straightforward.

Cons

- The space heating and DHW systems would remain hydraulically linked which would limit the energy and cost saving potential;
- The chimney will have to be internally lined to continue to be used as a flue route.

B. Separate the space heating and DHW systems and install new boilers serving each.

Overview

As discussed in section 1.2, the existing space heating and DHW systems are hydraulically linked, in that boiler water from the common header serves both radiators within apartments and the PHEs providing DHW. This can result in occasions when DHW demand cannot be met if the three-port valve on the heating system maximises the proportion of water from the boilers as opposed to recirculating return water.

To mitigate this, it is understood that the minimum heating flow temperature is maintained at 50-60°C, even during the summer months when there is no or limited space heating demand, to limit the spikes in space heating demand. Whilst this may avoid instances of DHW demand shortage, it will cause the system to consume excessive energy as the building is being heated unnecessarily.

Separating the space heating and DHW circuits could considerably reduce the combined energy consumption of these systems. A bank of new boilers could be fitted and provide water to the common header but only for the purposes of space heating. Rather than hot water for the PHEs being drawn from the header also, additional new boilers could supply hot water purely for the purpose of meeting DHW demand. It may be advantageous to fit a DHW storage vessel also. Aside from new pipework to connect new plant to the existing distribution system, it is assumed that the existing pipework could be used.

The overall installed heating capacity should be similar in this arrangement, yet it would allow for the boilers providing space heating only to be switched off during the warmer summer months when there is no space heating demand (subject to residents' approval) and to ramp down if external temperatures allow, while the boilers providing DHW can operate year-round.

It is assumed that new boilers would be condensing which would allow them to operate more efficiently, however this would involve lining the inside of the chimney so it can continue to be used as a flue route (substances within the flue gases would corrode the chimney brickwork otherwise).

It may not be possible to locate new boilers in the existing boiler house, especially if a phased approach is to be taken in switching to a new heating system. Alternatively, new boilers could be located in the underground plant room (where the DHW PHEs are currently situated) with new pipework integrating the new boilers with the existing heating and DHW pipework.

It may be possible to retain the existing boilers to serve the heating system and install new boilers to provide DHW. However, the energy and cost savings would not be as great as if new boilers were installed due to the lower efficiency of the existing boilers compared to new kit. In addition, many of the current maintenance concerns would remain.

Pros

- A considerable energy saving would be expected, more so than for option A;
- The running cost should be considerably lower than the existing heating system, again more so than option A;
- Integrating new plant with the existing heating and DHW distribution systems should be relatively straightforward, however more alterations would be required than for option A.

Cons

- The chimney will have to be internally lined to continue to be used as a flue route.

C. Install air source heat pumps (ASHPs) to replace natural gas boilers.

Overview

Air Source Heat Pumps consume electricity to generate hot water by transferring heat from air (via a refrigeration compressor circuit) to water which can then be circulated through radiators. In this case, there may be the option to provide space heating and DHW using ASHPs as opposed to natural gas boilers. As was discussed for option B, the space heating and DHW systems could be separated with several heat pumps purely providing space heating and others producing DHW.

Since they transfer heat from one source to another as opposed to burning a fuel to generate heat, heat pumps can operate at a much higher efficiency than natural gas boilers (up to 2-3 times more efficiently depending on air temperature). This solution therefore should result in considerable energy savings. It would also future-proof the site in terms of negating the requirement of fossil fuel for the heating system.

The energy saving may not correlate to a cost saving however, as the unit cost of electricity is currently substantially greater than the unit cost of natural gas. The electricity and natural gas tariffs paid by residents is not known, though it is possible that the running cost of this system may be greater than a natural gas powered system. If in the future the unit costs of natural gas and electricity were to become comparable, this solution would become much more financially attractive.

It must be noted however that any ASHP scheme could qualify for OFGEM's renewable heat incentive (RHI) scheme, where payments are made based on the amount of heat generated. Tariffs follow a trend of digression over time as the uptake of renewable technologies increases, though a successful RHI application could lower the effective running cost of this system. How the running cost of this system would compare to the running cost of the existing system would depend on the unit costs of electricity and natural gas and the RHI revenue received.

Heat pumps typically generate water at a lower temperature than boilers (e.g. ~60°C as opposed to ~70-80°C). As the existing heating system was designed using boilers as the heating plant, the radiators will likely have been designed to heat spaces using water at ~70-80°C. If these radiators were instead to receive water at ~60°C, the peak heating demands may not be met. To mitigate against this, new radiators with a larger surface area could be installed throughout the apartments, however the cost of this upgrade would likely make the project unviable. In order to provide water at a high enough temperature to the PHEs to produce DHW, the water from the heat pump might have to pass through a second heat transfer stage to further increase the temperature, however this would decrease the efficiency of the system.

As heat pumps use compressors to generate heat they require a considerable electrical supply, particularly at this scale of heat generation. Assuming cascaded heat pumps were to be installed on a landlord supply, this would very likely require an upgrade, requiring an application to the district network operator (DNO) who would quote for the associated costs.

The capital cost associated with installing heat pumps is typically greater than that of boilers. As no fuel would be burned in the generation of hot water, a new flue route would not be required and so the existing chimney may not have to be lined. However, if ASHPs were to be installed as the primary heating plant, the existing natural gas boilers could remain as a backup in case the ASHPs were to fail. An alternative option would be to install new condensing natural gas boilers as backup which would require the chimney to be internally lined.

Since the site is a listed building, it is likely that the evaporator (a component of the heat pump which would be located externally) would have to be hidden from view from the street. This could make the installation problematic, yet there may be ample space to locate these units to the rear of the building.

Pros

- A significant energy saving would be expected;
- RHI income should be payable for 20 years and lower the running cost;
- The space heating and DHW systems could be separated;
- There would no longer be a demand for fossil fuel on site;
- The chimney would not have to be lined (assuming new natural gas boilers are not also installed as backup).

Cons

- The running cost of the system could be greater than the existing system;
- The installation cost would likely be greater than that for options A or B;
- Integrating new plant with the existing heating and DHW distribution systems would require more work than it would for options A or B;
- New radiators may be required to meet the peak space heating demand;
- Locating evaporators externally may be problematic due to the sites' listed building status, it should be established whether this is possible before progressing.

D. Install heat interface units (HIUs) within each apartment.

Overview

These units provide similar advantages to having an individual boiler within each apartment, however rather than requiring a natural gas supply and a flue route to atmosphere, they are fed by hot water from a central heating system and supply on-demand space heating and DHW individually to each apartment.

A unit would have to be installed within each apartment – these are relatively small in size and could perhaps be installed within a cupboard for example. It is understood that risers within blocks serve radiators in apartments, and therefore to integrate a HIU the heating pipework from the riser to the apartment would have to be diverted to serve the HIU only before re-joining the return pipe to the central boiler house. The flow from the HIU would then have to be connected to the internal space heating and DHW pipework in the apartments. If several risers serve a single apartment it may be possible during the reconfiguration of pipework to alter this so only a single riser serves each apartment.

It may be the case that some towel rails are plumbed to receive water from the DHW as opposed to the space heating circuit (this may have been advantageous if the space heating and DHW circuits were to be separated as the towel rails could continue to be heated during the summer if there was no space heating demand, however this would not apply if the apartment was heated via a HIU). This would have to be evaluated during the HIU installation, and pipework could be reconfigured so that the towel rail is included as part of the space heating circuit.

As the HIU would provide space heating and DHW to the apartments, the central heating plant would operate year-round to provide hot water to the HIUs. The energy savings achievable may not be as great therefore as if the space heating and DHW systems were separated and heating plant was switched off for a portion of the year.

This solution would offer flexibility in the central heating plant which could be used – the only requirement of the HIUs is to receive hot water, however this could be generated via natural gas boilers or any other method. Due to the age and condition of the existing boilers, it may be beneficial to fit new boiler plant in addition to HIUs. An additional benefit to installing new, condensing boilers would be reduced energy consumption and running costs, however this would require the brick chimney to be lined.

The capital cost associated with installing a HIU in each apartment (along with the associated pipework alterations) would likely make this project financially unfeasible. Though it should result in a heating system with a lower running cost, the installation cost would likely be greater than that of options A or B. In addition, the disruption to residents caused by works being undertaken within each apartment may be considerable. If such an apartment block was being built from scratch this option may be preferred, however the cost of installing a unit in each apartment would likely make the project unviable as a retrofit.

Pros

- Affords residents more control of the heating system within their apartment;
- An energy and cost saving would be expected in comparison to the existing heating system;
- Heating pipework already serves each apartment – pipework would have to be reconfigured to integrate the HIUs;
- These units do not require flues to be fitted in each apartment;
- Offers flexibility in the central heating plant which can be used on site.

Cons

- A greater installation cost than options A or B;
- Integration with existing radiators and pipework within apartments would require considerable pipework alterations;
- Disruption to residents due to work being undertaken within apartments;
- Space heating and DHW systems would not be separated, meaning that central heating plant would have to run year-round to serve HIUs;

- The chimney would have to be lined (assuming new natural gas boilers are also installed).

3.0 Conclusions and Recommendations

The following table gives an overview of how the options considered compare:

Comparison of Options					
Consideration	**Existing System**	**Option A: Replacement of Heating Plant**	**Option B: Separate Space Heating and DHW & Install New Boilers**	**Option C: ASHPs**	**Option D: HIUs**
Energy Consumption	Excessive Energy Consumption	Reduced Energy Consumption	Considerably Reduced Energy Consumption	Considerably Reduced Energy Consumption	Reduced Energy Consumption
Energy Cost	Excessive Energy Cost	Reduced Energy Cost	Considerably Reduced Energy Cost	Potential Increase in Energy Cost	Reduced Energy Cost
Maintenance Cost	Costly to Maintain	Reduced Maintenance Cost	Reduced Maintenance Cost	Costly to Maintain	Reduced Maintenance Cost
Capital Cost	System Already in Place	Lower Cost than Alternatives	Lower Cost than Alternatives	High Capital Cost	High Capital Cost
Disruption	System Already in Place	Limited Disruption	Limited Disruption	Limited Disruption	Considerable Disruption

If measures discussed in the report are to be progressed, the next steps could involve engaging with contractors and obtaining costs for undertaking the work.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