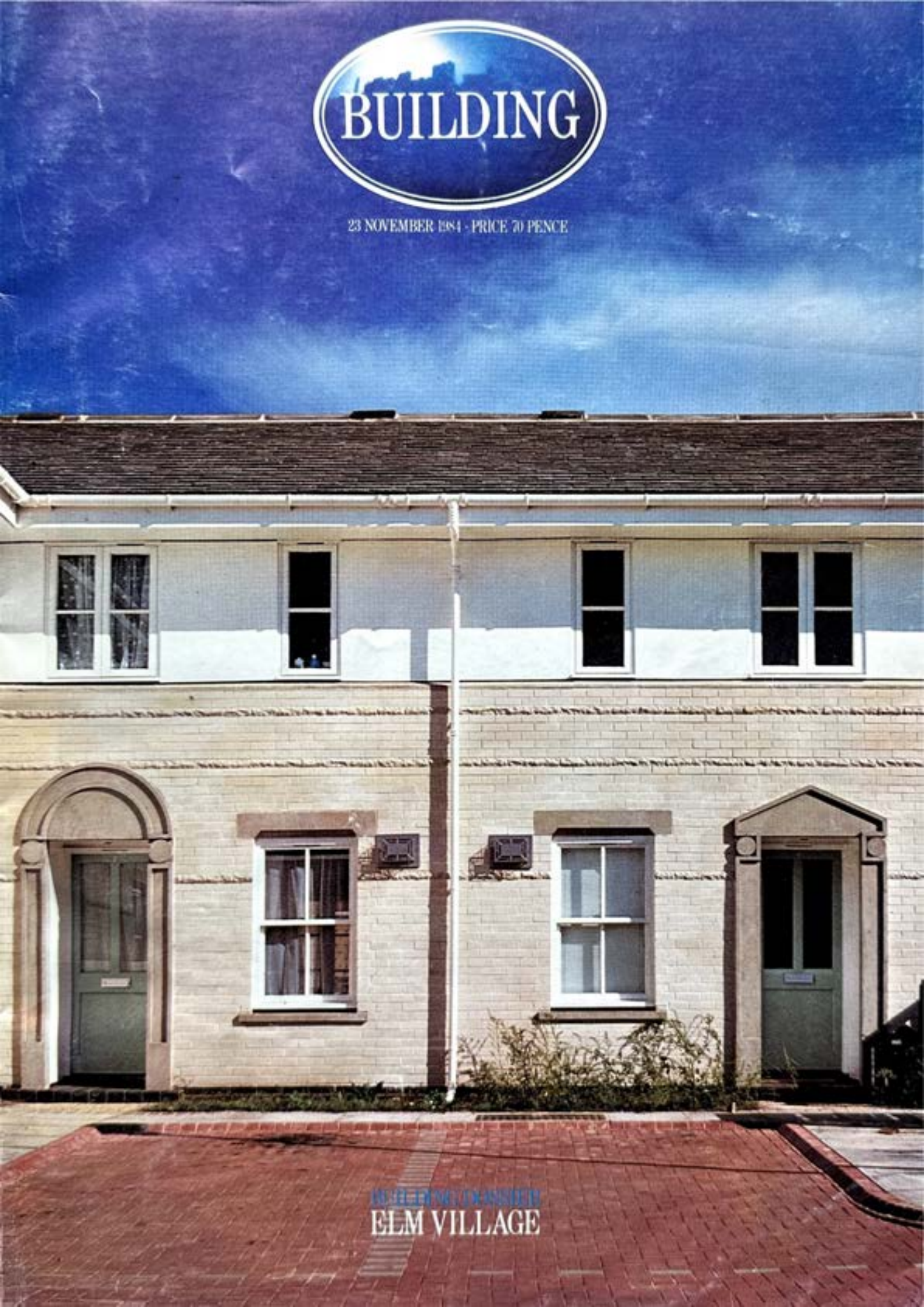
BUILDING

23 NOVEMBER 1984 · PRICE 70 PENCE

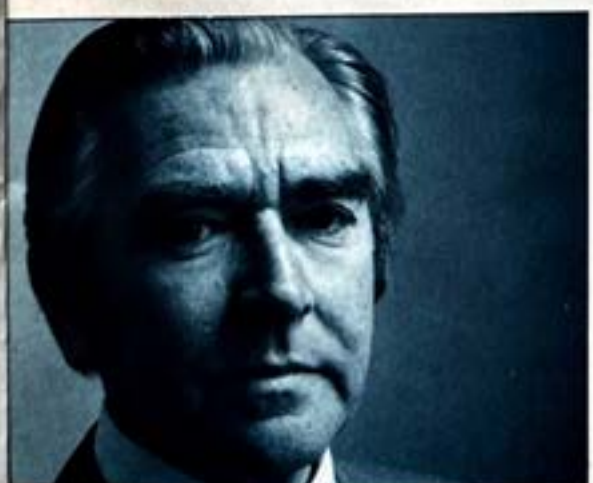


BUILDING TOGETHER

ELM VILLAGE

BUILDING

The world's largest building contract has been completed in the desert outside Riyadh – the King Saud University.
Feature, pages 32-36.



FMB director Bill Hilton puts the cat among the pigeons at his first attendance at a CITB board meeting (page 7).

COVER

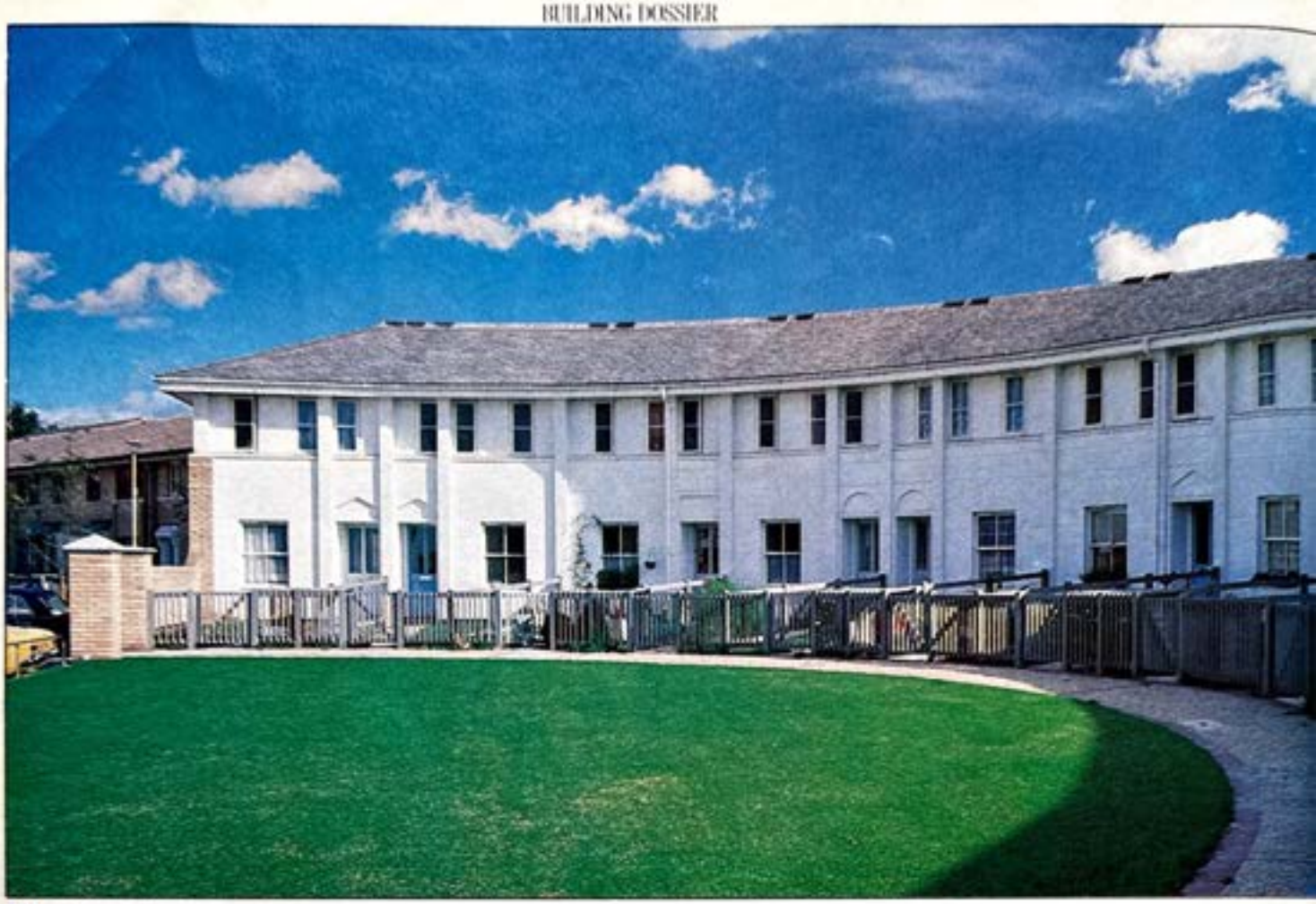
Cover photograph by Tony Weller.
The United Kingdom Housing Trust has developed a mixed tenure residential area on old marshalling yards north of St Pancras Station.
Building Dossier, pages 39-46.

NEXT WEEK

Special feature on urban redevelopment, covering a recent international conference in Rotterdam comparing new strategies.

ELM VILLAGE

A mixed timber-frame housing project has just been completed on old marshalling yards close to St Pancras Station in Camden, north London.



The United Kingdom Housing Trust's latest project at Camden is a commitment to mixed tenure: fair rent, shared ownership and cost sale. Elm Village, to the north of St Pancras Station, has been built on the old marshalling yards between British Rail's North London Line and the Grand Union Canal. Constraints of interest on capital employed encouraged UKHT to use timber-framing techniques.

architects
Peter Mishcon and Associates
contractor
Walter Llewellyn and Sons

photographer
Tony Weller, *Building*

Timber-frame engineer's report, page 42.
Summary, contract information, materials and cost analysis, page 46.

The next Building Dossier will feature the first of several on caring for the elderly. Housing at Clowne and Worksop will be published on 14 December.

Design commentary
Anthony Williams

The vast derelict area behind St Pancras Station is gradually being put to new uses. Two adjoining sites within this area are currently being developed for housing, one by a private developer the other by a housing trust. The latter is the United Kingdom Housing Trust and the site is Elm Village.

The architects' approach to the design has been to use a very simple basic construction, which because of their clients' concern for speed, happens to be timber-frame. They were anxious to create a community that was unlike a housing estate, whether private or public, and they set about this in two ways.

First, they created an urban setting using traditional town planning elements, such as a square, a crescent, terraces and passages. Then, by embellishing the basic construction of the houses in many different ways, they created diversity within the urban setting.

The embellishment is pure theatre, like Nash's terrace in Regent's Park, although Nash used classic orders to create consistency. The two schemes have one other factor in common in that the embellishments seem to have created problems of workmanship.

Almost hidden from the streets is the canal, which is reached down one of three narrow passages. There is a footpath along the canal and a new walkway has been built at a higher level, complete with a belvedere and viewing platform; it is unfortunate that two industrial units have been allowed to be built, on the opposite bank, apparently painted in fluorescent colours. The townscape would have been greatly enhanced if another feature, a piazza, could have been introduced to open up one part of the canal to the street pattern.

But it is already clear that a very particular atmosphere has been created which is lacking in so many residential areas.

Cost commentary
Building Cost Information Service

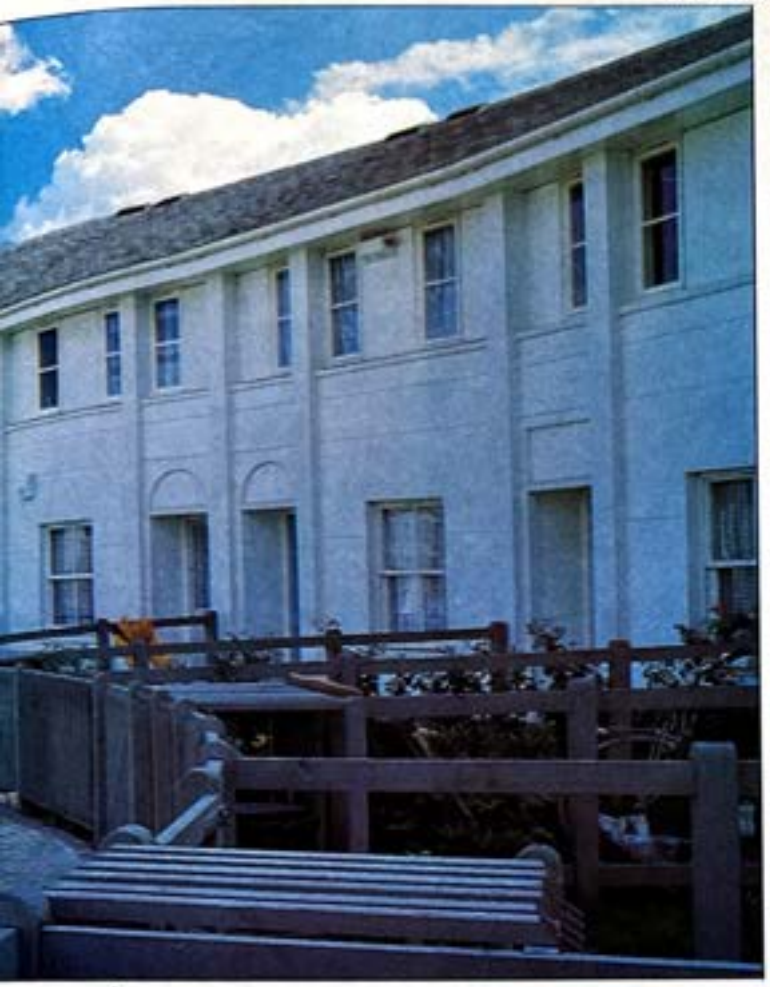
At a cost of £291.62 per m^2 gross floor area, the mixed development of houses and flats is more expensive than either the two-storey housing projects (£201/m^2) or flats projects (£247/m^2) in the BCIS Survey. It is unfortunate that the costs are not broken down to give separate rates for the houses and flats in the scheme, but this is perhaps inevitable, given the way the timber-frame design evolved.

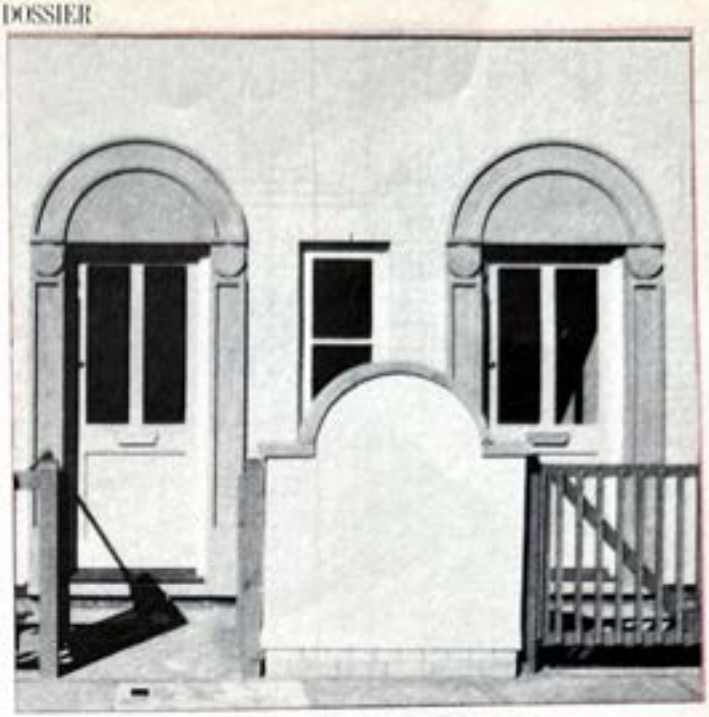
Timber-frame design was introduced to reduce the period between site purchase and sales on the units, and the contract period of 78 weeks is remarkably quick for a project of this size. Any extra expense involved in the design solution chosen must, therefore, be balanced against the interest charges on the cost of the land.

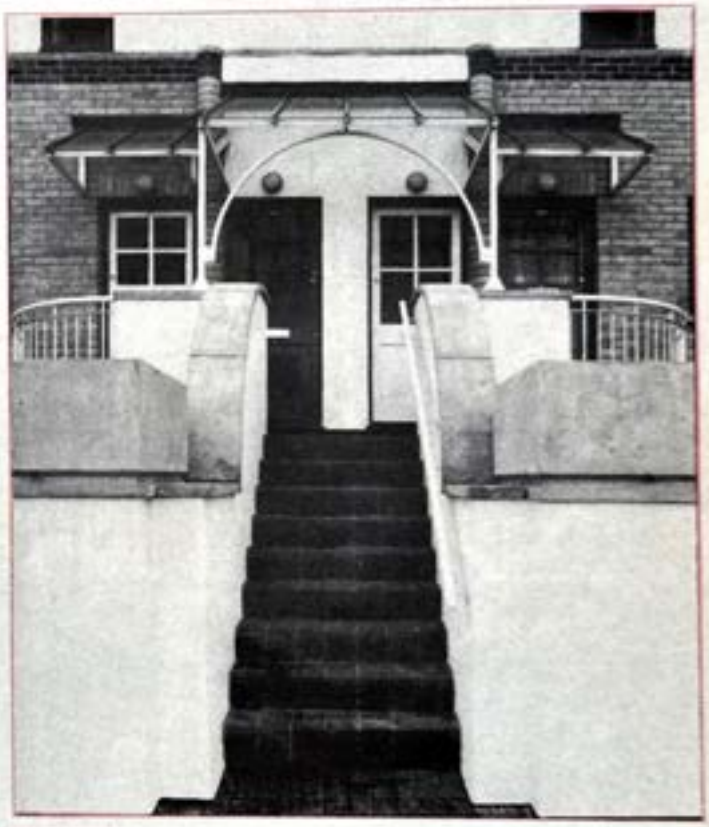
It is interesting that cost constraints dictated that the dwellings should be on average 10% smaller than Parker Morris standards. While this reduction in size reduces the actual cost of the dwellings, it will almost certainly increase the cost per m^2 gross floor area of the dwellings, since some items (eg services provisions) are irreducible and thus come to be a higher percentage of the total cost as the floor area is reduced.

The breakdown of costs for the project gives a fairly conventional breakdown of costs, with a couple of exceptions. The poor nature of the ground which necessitated piled foundations has resulted in substructures costing £48.33 per m^2 floor area, amounting to almost 10% of the contract sum. The other cost which is outstanding is the cost of preliminaries. At £706 176, preliminaries are over 20% of the contract sum, well above the average of around 7% which one might expect on this size of job.

There is no contractor's account, but one is tempted to assume that he was envisaging problems with the timber-frame design and put an addition in the preliminaries accordingly.







Frontispiece and top right: contrasting doors on Elm Village estate. *Top left:* the crescent, one of the earliest buildings, lacks the punctuation found in the square. *Middle right:* on the access side steps lead up to the centre floor while an internal stair goes to the top. *Bottom right:* a light steel structure suspends this timber platform and seat, from which there is a fine view of the canal.

ARCHITECTS' REPORT

Peter Mishcon and Associates

Two distinct but inseparable aims underlie the design of the housing on this site. One is the United Kingdom Housing Trust's commitment to a mix of tenure which should not be identifiable from the dwelling or site plan arrangement; the other is our concern that the housing should avoid associations with conventional private and public sector "estate" housing and that its form should acknowledge the value of familiarity and identification.

These aims had to be realised in the context of a site which was previously used as railway marshalling yards and separated from the rest of Camden by the Grand Union Canal and the embankment for British Rail's North London Line. Association with adjacent buildings and the extensions of existing street patterns were not available, yet it was clear to us that the housing should nonetheless be linked visually to the more enduring elements of Camden's housing stock. In addition, the Housing Trust's brief was for a high density at low cost.

Through-streets, pedestrian alleys, a crescent, a mews and a square reflect, though on a smaller scale, some of the traditional form of Camden's street pattern. Identification of dwellings within the scheme is thereby made much stronger. At the level of the external treatment of the dwelling, the cost effective terrace form is broken down by the introduction of variety in the materials, components and detailing. Some house types have recessed porches, some have applied porches. Some of the applied porches are patent glazed, others are a combination of precast concrete and glass reinforced concrete. Some units have brick arches, others profiled precast concrete. The external walls to some terraces are rendered, some yellow stock brick while others are flintlime white bricks.

Similar variety is introduced into the colour mixes for the Hardrow concrete roof tiling, window types and external works detailing.

The mix required by UKHT ranged from one-bedroom, two-person flats to six-bedroom, eight-person houses. These specifically cater for fostering families who otherwise have difficulty in buying homes of sufficient size in Camden due to the property values. They are designed to wheelchair standards with a ground floor bedroom and specially equipped shower room. ►

►Cost constraints dictated that on average the dwelling sizes are approximately 10% below Parker Morris recommendations. With this in mind, circulation space is kept to a minimum and a dining kitchen or a dining area is provided so that additional flexibility is introduced into the living accommodation of the unit.

All of the housing is of two storeys and all houses have gardens. To fall in with Camden's planning policies, a high ratio of on-street parking is provided. In an attempt to reduce the impact of vehicles, we have introduced fairly marked level changes into an otherwise flat site and a high planting specification (over £8000 per acre).

In the early design stages of the project, the constraints of interest on capital employed encouraged UKHT to investigate the use of timber-frame techniques in order to reduce the period between site purchase and sales of completed units. The decision to embark upon a large project in the London Building Act area (a more profound problem than originally anticipated as the GLC had only one officer responsible for the detailed scrutiny and approval of timber-frame designs) with three-storey flats and a semi-circular terrace, was discussed with a number of timber-frame designers, and HSD Building Consultants was appointed as consultant designer and engineer of the timber-frame as the design was being formulated.

While the HSD timber-frame design was able to incorporate all of the requirements of the phase I detailing and building form, phase II of the rented housing provision, due for completion in 1985, does not have similar time constraints and is designed using traditional forms of construction.

TIMBER-FRAME ENGINEER'S REPORT

HSD Building Consultants

HSD's function was to provide working drawings of the superstructures, including all construction details for billing and construction which interpreted the architect's design requirements, to carry out the structural design of dwellings above damp-proof course level, to obtain GLC Special Structures Division approval of the scheme, to provide NHBC timber-frame certification as required for those dwellings to be sold with the NHBC ten-year warranty, and in addition to provide ongoing

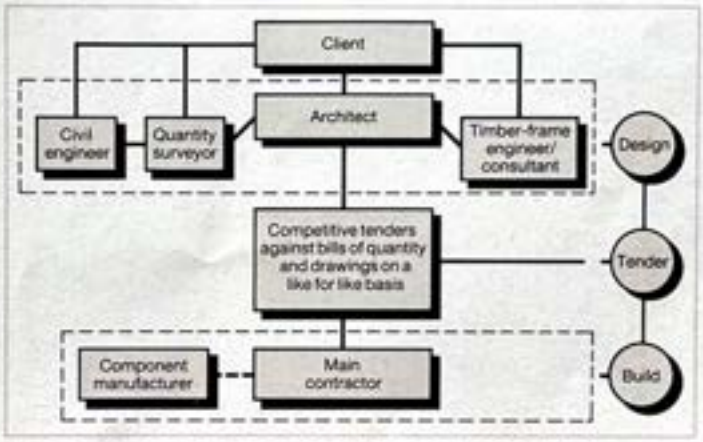
specialist site supervision during the contract period. The design team's relationship can best be expressed graphically as shown in the figure on this page.

The basic principle of the project was to produce a simple building form which would be economic to produce and to construct, could be easily and rapidly erected, and, in addition, allow standardisation of components with long production runs. Furthermore, the individual shell types built from these components had to be capable of accepting a variety of cladding treatments and fenestrations in order to allow the architects sufficient freedom to develop the project aesthetically as required. A good example of this is the 3P type, which appears on the site in a number of guises, all apparently different but in fact using identical structures.

The choice of panel system, ie whether small manhandlable or large crane lift, is always debatable. In this case a small panel approach was deemed on balance to offer the best solution because of the constraints extant, in particular limited site access for cranes and the cross-fertilisation of standard components from unit type to unit type described below.

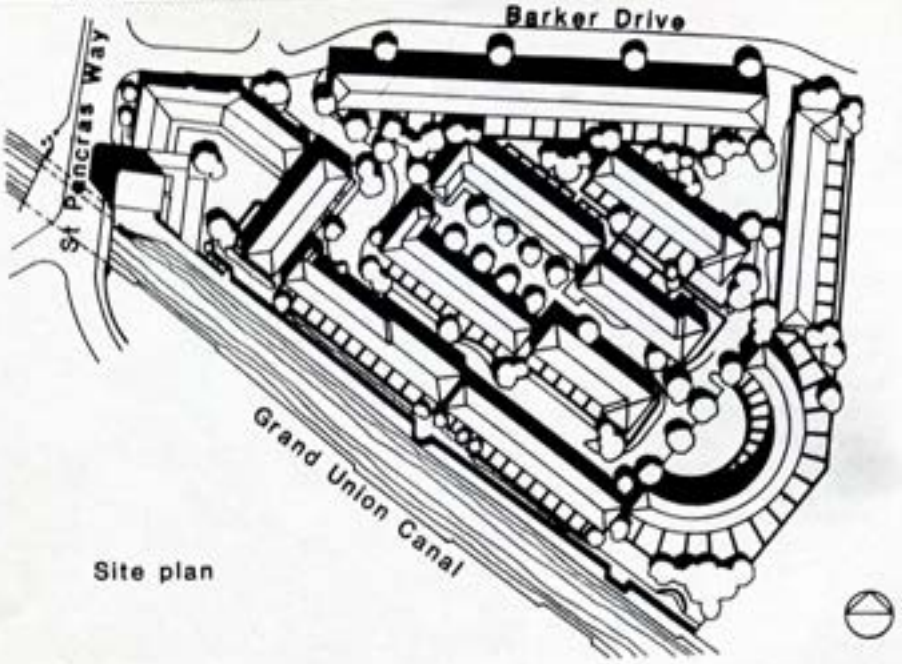
The timber-frame elements were drawn out as panel, joist and roof truss layouts on plan, with each component referenced by number, this same identification appearing on the component when delivered, thus simplifying construction. All fenestration panels were drawn out individually, but non-window panels, whether ply-sheathed or not, were selected from a standard modular range made possible because of the 300 mm planning grid adopted by the architect for the overall shell sizes, which also allowed optimum use of standard sheet material sizes, namely plasterboard and plywood, thus minimising waste. Internal partition panels were again selected from a standard range of heights, but manufactured to specific lengths from standard variable jigs by the panel maker.

The external wall U-value achieved of 0.35 W/m^2 K helped to produce heat losses so low that no manufacturer actually made an acceptable boiler to match. Typical consumption is in the region of 5-6 kW, including domestic hot water, while actual boiler capacities had a minimum of 8.8 kW output. This factor will, of course, lead in the future to very low energy consumption and running costs for the occupants. ►



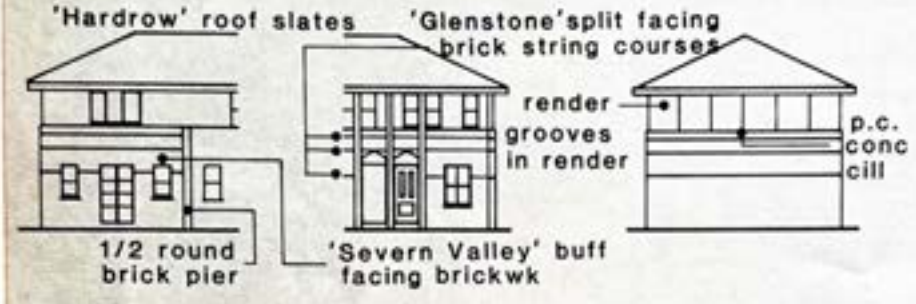
Opposite: the apparent height of the three-storey flats is reduced by the raised ground level on this side. *Above:* the square with its muted whites and greys, and pinkish paviors, but with large trees still to come. *Left:* graph illustrating the design team's relationship. *Below left:* railway sleepers, spaced to allow planting, support the gardens of terraced houses facing on to the upper canal walk. *Below right:* the mews, with traditional brick entrance, seen from the crescent.

Location plan

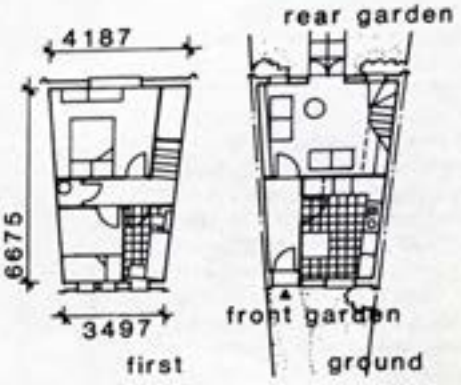


Site plan

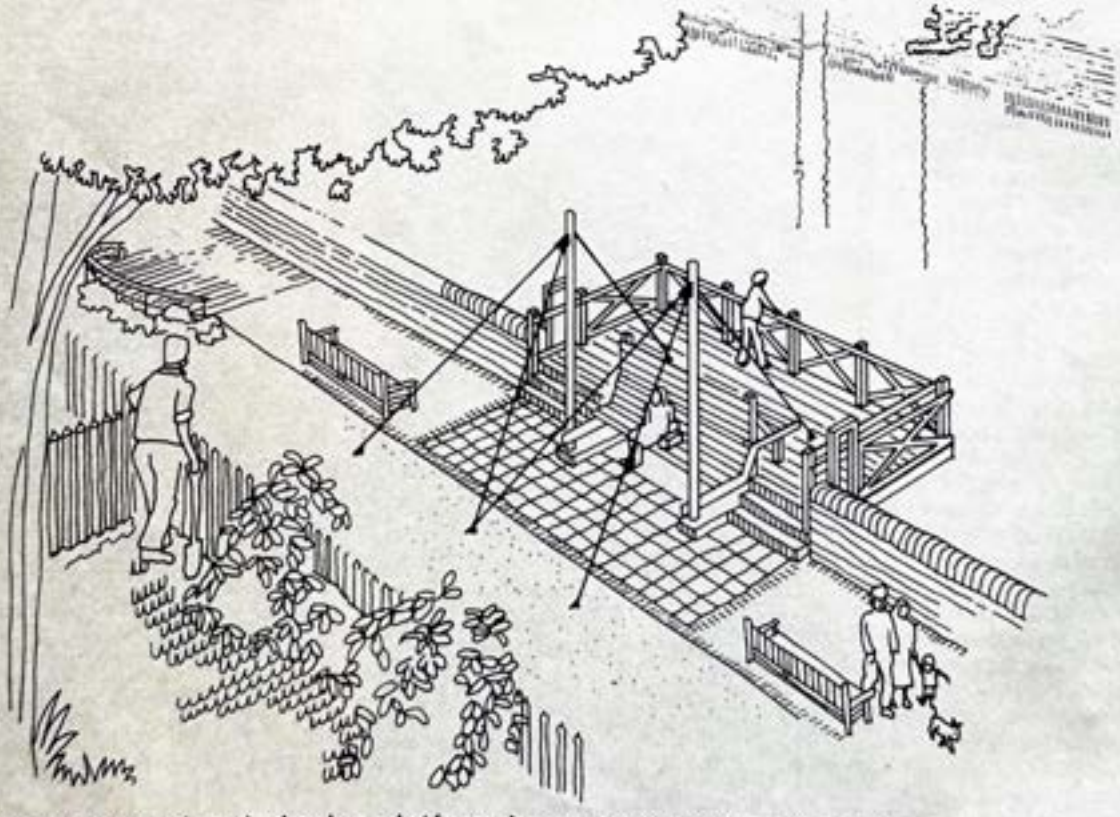
3 Bed 3 person crescent houses



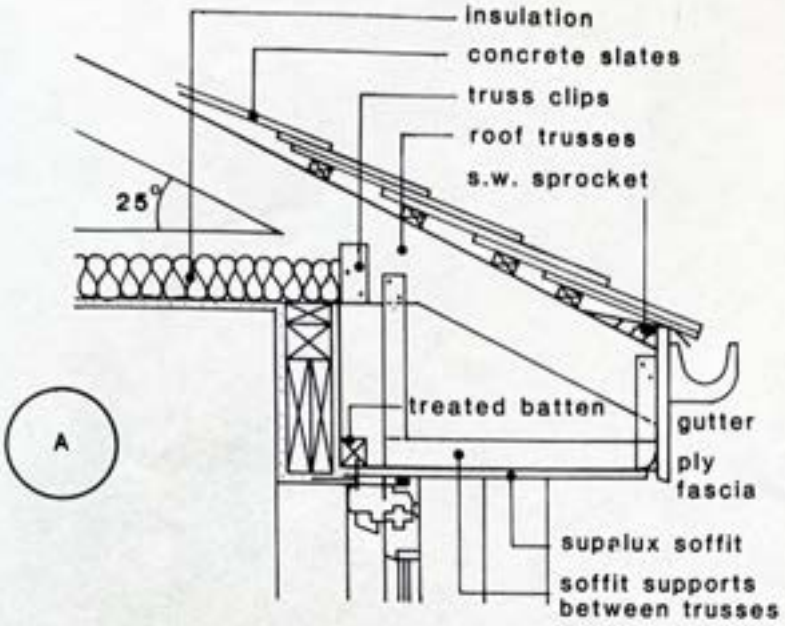
Elevations

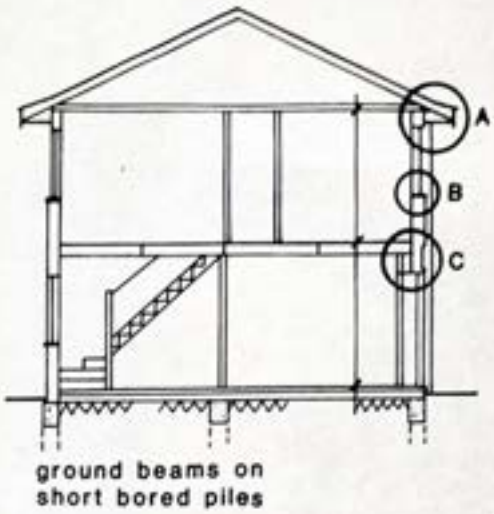


Plans

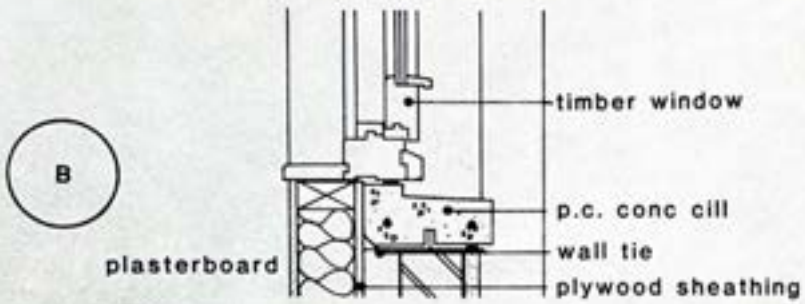


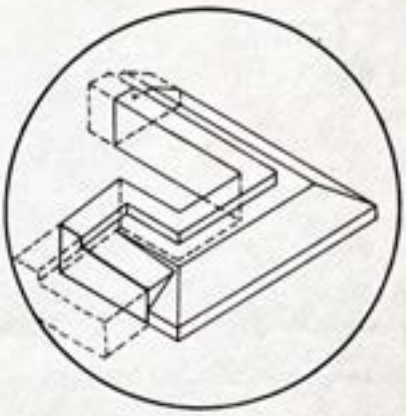
View of canal and viewing platform from end of crescent gardens



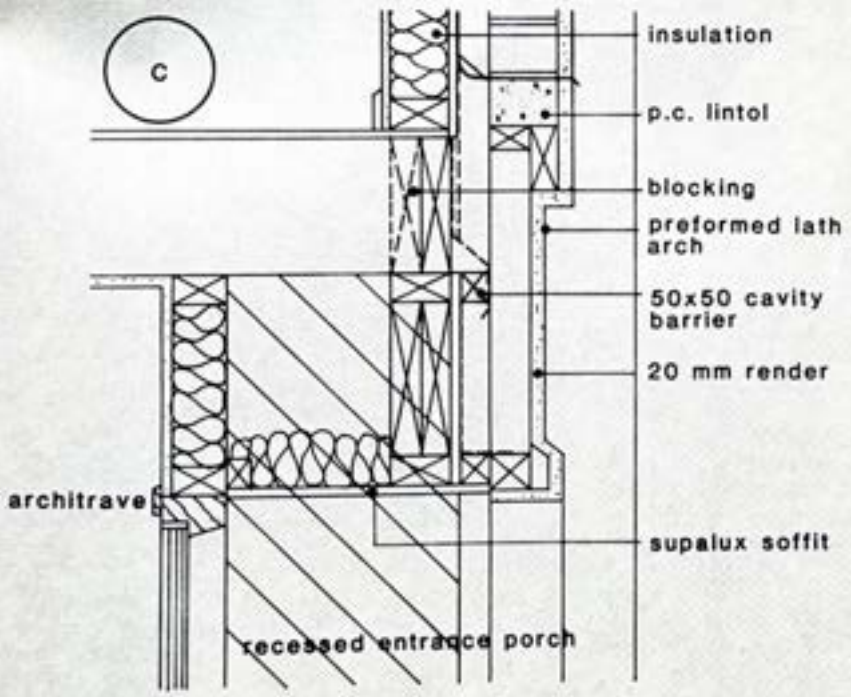


Section

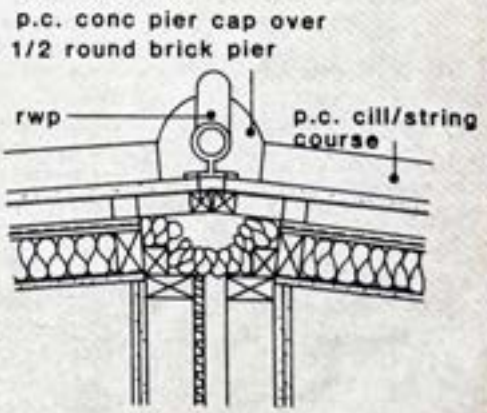




Isometric of p.c. conc cill at junction of gable with front elevation of crescent



Details



Plan detail : junction of rear external wall of crescent with separating/party wall

ELM VILLAGE, CAMDEN

CI/Sfb 810 Housing

Client
United Kingdom Housing Trust Ltd

Architects
Peter Mishcon and Associates
Principal architect: Peter Mishcon
Project architects: Jill Facer, Michael Brookes, Henry Moss, Colin Kerr, Rob Wilson, Christopher Phillips, Michele Santarsieri, Pam Jenkins, Christopher McLelland

Clerk of works
Richard Gull

Consulting engineers
Michael Barclay Partnership (substructures)
HSD Building Consultants Ltd (timber-frame)

Quantity surveyors
Seadens

Landscape architects
Technical Landscapes Ltd

Specialist consultants
Heating: Jeffrey Gosnell & Associates

Main contractor
Walter Llewellyn & Sons Ltd

CONTRACT INFORMATION

Tender
Firm and fluctuating price tenders asked for and received – firm price accepted. Selected tendering. Six tenders issued, six tenders received.

Notes on tender
Normal bills of quantities. Lowest tender accepted.

Accepted tender
Walter Llewellyn & Sons Ltd

Actual tender price accepted
£3 474 673

Contract
JCT Standard Form of Contract, Private Edition

Contract period
87 weeks stipulated
78 weeks offered and accepted

Actual programme
Inception: January 1981
Tender date: August 1982
Tender accepted: August 1982
Commencement on site: October 1982
Practical completion: September 1984

Breakdown of contract sum

	£	%
Measured work	2 348 227	67.58
Prime cost sums	177 100	5.10
Provisional sums	243 170	7.00
Preliminaries	706 176	20.32
Total contract sum	3 474 673	100.00

Gross floor area
8845 m²

Site area
1.7 hectares

Cost comparison
Costs in this section exclude contingencies and external works and include a percentage addition for preliminaries, allocated by cost.

Cost per m² of gross floor area
£291.62

ELEMENTAL COST ANALYSIS

Analysis of contract sum	Costs at tender date Preliminaries separate Cost/element £	%	Preliminaries apportioned Cost/element £	Cost/gross floor area £/m²	Costs at 4th qtr 1984 Cost/gross floor area £/m²
Substructure	339 839	**9.87**	427 473	48.33	53.90
Superstructure					
Frame					
Upper floors	96 235	**2.79**	121 051	13.69	15.27
Roof	204 148	**5.93**	256 791	29.03	32.38
Stairs	32 655	**0.95**	41 076	4.64	5.18
External walls	217 802	**6.32**	273 967	30.98	34.55
Windows and external doors	243 732	**7.08**	306 583	34.66	38.66
Internal walls and partitions	110 704	**3.21**	139 251	15.74	17.56
Internal doors	66 571	**1.93**	83 738	9.47	10.56
Group element total	971 847	**28.21**	1 222 457	138.21	154.16
Internal finishes					
Wall finishes	155 048	**4.50**	195 030	22.05	24.59
Floor finishes	99 313	**2.88**	124 923	14.12	15.75
Ceiling finishes	50 994	**1.48**	64 144	7.25	8.09
Group element total	305 355	**8.86**	384 097	43.42	48.43
Fittings and furnishings	85 268	**2.48**	107 256	12.13	13.53
Services					
Sanitary appliances	49 536	**1.44**	62 310	7.05	7.86
Services equipment					
Disposal installations	21 514	**0.62**	27 062	3.06	3.42
Water installations					
Heat source	156 390	**4.54**	196 718	22.24	24.81
Space heating and air treatment					
Ventilating system					
Electrical installations					
Gas installations					
Lift and conveyor installations					
Protective installations					
Communication installations	73 365	**2.13**	92 284	10.43	11.63
Special installations					
Builder's work in connection with services	47 494	**1.38**	59 741	6.75	7.53
Builder's profit and attendance on services					
Group element total	348 299	**10.11**	438 115	49.53	55.25
Sub-total excluding external works and contingencies	2 050 608	**59.53**	2 579 398	291.62	325.27
External works					
Site works	436 193	**12.66**	548 674	62.03	69.19
Drainage	118 543	**3.44**	149 111	16.86	18.81
External services	106 168	**3.08**	133 546	15.10	16.84
Minor building work	26 985	**0.79**	33 944	3.84	4.28
Group element total	687 889	**19.97**	865 275	97.83	109.12
Preliminaries	706 176	**20.50**	Preliminaries apportioned among elements		
Totals excluding contingencies	3 444 673	**100.00**	3 444 673	389.45	434.39

Number, type and cost of functional units
61 flats and 89 houses

BCIS comparison with similar projects
(costs updated to 3rd quarter 1982 price levels)
BCIS survey of 208 two-storey housing projects.
Mean price: £201/m²
70% range of costs: £140 – £261/m²
BCIS survey of 376 flats projects.
Mean price: £247/m²
70% range of costs: £188 – £306/m²

Note
This analysis has been prepared in accordance with the standard form of cost analysis, principles, instructions and definitions published by the Building Cost Information Service of the RICS.

MATERIALS

(sc) subcontractor
(s) supplier

Substructure
Piling – Simplex Piling Ltd (sc).
Concrete foundations – Walsh Construction (London) Ltd (sc).

Superstructure
Frame: timber-frame panels, etc – Llewellyn Homes Ltd (s), Stephen Hayward Ltd.
Upper floors: all timber – Llewellyn Homes Ltd (s), Stephen Hayward Ltd.
Roof structure: timber Hydro-Air trussed rafters – Crundall-Payne (Jewsons) Ltd (s), Stephen Hayward Ltd (sc). Roof coverings: concrete slates – Hardrow by Robert Abraham Ltd (s), Furlongs Bros (Roofing) Ltd (sc). Roof drainage: pvc – Marley (s), How Engineering Services (Northern) Ltd (sc).
Stair structure: timber – Walter Llewellyn & Sons Ltd, concrete – Walsh Construction Ltd. Stair finishes: red floor tiles and ribbed nosings – G Woolliscroft Ltd (s), Parkinsons (Wall Tiling) Ltd (sc). Stair balustrades and handrails: painted metalwork – Hubbard Bros (sc).
External walls: bricks, buffs and reds – Severn Valley Brick Co Ltd (s). Grey split facings, Glenstone White – S Marshall & Sons Ltd (s), Ryarsh Brick Co Ltd (s). Precast concrete mouldings – Benton Concrete Ltd (s). All work by Trident Brickwork Ltd (sc).
Windows: high performance timber vertically sliding sashes and sidehung casements – John Carr Ltd (s).
External doors: glazed timber front and french doors – John Carr Ltd (s).
Internal walls and partitions: plasterboard – British Gypsum Ltd (s), taped jointing – Stephen Hayward Ltd (sc).
Internal doors – Bowater Hills Ltd.

Internal finishes
Wall finishes: emulsion paint – Beric Decorators Ltd (sc).
Floor finishes: vinyl tiles to bathrooms and kitchens – Gerland Ltd (s), Trim Flooring Ltd (sc).
Applied finishes to ceilings: Artex – Artex Ltd (s), Stephen Hayward Ltd (sc).

Fittings and furnishings
Ironmongery – Comyn Ching Ltd (s). Metalwork – Hubbard Bros Ltd (sc). Patent glazing – Pillar PG Ltd (sc). GRC porches – GRC Ltd (s).

External works
Site clearance – Walsh Construction Ltd.
Landscape planting – Hillers Landscapes (sc).