THE MONOPOLIES AND MERGERS COMMISSION

Building Bricks

A Report on the Supply of Building Bricks

Presented to Parliament in pursuance of
Section 83 of the Fair Trading Act 1973

Ordered by The House of Commons *to be printed*
16th June, 1976

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[1]These members formed the group which was responsible for this inquiry.
[2]Miss Y Lovat Williams succeeded E L Phillips Esq CMG as Secretary on 1 April 1974.

Contents

Introduction

1. On 1 October 1973 the then Department of Trade and Industry sent to the Commission the following reference:

> Whereas it appears to the Secretary of State that it is or may be the fact that conditions to which the Monopolies and Restrictive Practices (Inquiry and Control) Act 1948, as amended by the Restrictive Trade Practices Act 1956 and the Monopolies and Mergers Act 1965, applies prevail as respects the supply of building bricks:
>
> Now, therefore, the Secretary of State in exercise of his powers under Section 2(1) of the said Act of 1948, as so amended, hereby refers to the Monopolies Commission for investigation and report the supply in Great Britain of building bricks.
>
> The Commission shall investigate and report:
>
> (i) whether the conditions to which the said Act, as amended, applies in fact prevail and, if so, in what manner and to what extent; and
>
> (ii) on the things which are done by the parties concerned as a result of, or for the purpose of preserving, those conditions; and
>
> (iii) whether the said conditions or all or any of the things done as aforesaid operate or may be expected to operate against the public interest.
>
> For the purpose of this reference, 'building bricks' means:
>
> (i) fletton and non-fletton common bricks;
>
> (ii) fletton and non-fletton facing bricks; and
>
> (iii) engineering bricks.
>
> (*Signed*) C E Coffin
> *Under Secretary*
> *Department of Trade and Industry*
>
> Dated this 1st day of October 1973

2. On 9 October 1973 the Chairman of the Commission (in accordance with the provisions of section 1 of the Monopolies and Mergers Act 1965 and paragraph 9 of Schedule 1 thereto) directed that the functions of the Commission in relation to this reference should be discharged through a group consisting of eight members of the Commission. Their names are indicated in the list of members which prefaces this report.

3. We received evidence from trade associations representing manufacturers of building bricks in Great Britain and from individual manufacturers. Members of the Commission and of its staff visited brickworks operated by London Brick Company Limited (LBC) and members of the staff visited brickworks operated by other manufacturers.

4. We also received evidence from trade associations representing merchant distributors and users of building bricks; from individual distributors and users; from professional bodies; from the Trades Union Congress and certain trade unions representing workers employed by LBC; from the Institute of Geological Sciences; and from the Department of the Environment.

5. We took oral evidence from some of these witnesses after we had considered their written submissions.

6. On 21 November 1974 we informed LBC of our provisional conclusion that conditions to which the 1948 Act (as amended) applies prevailed in respect of the supply of building bricks in Great Britain. We notified the company of the respects in which it might be concluded that the conditions, or all or any of the things done as a result of, or for the purpose of preserving, the conditions, operated or might be expected to operate against the public interest. LBC made representations to us in writing and on 16 July 1975 representatives of the company attended a hearing for the purpose of discussing these matters with us.

7. We are grateful for the assistance given to us by all who provided us with the information required in our investigation. Some of the information related to confidential business matters and we have been careful not to disclose it in our report unless it is essential for a proper understanding of the issues. The main burden of our inquiry fell on LBC who were unfailingly co-operative and helpful. We were also fortunate in being able to draw upon the knowledge and experience of the Brick Development Association.

CHAPTER 1

General

1. Our terms of reference (see Introduction) direct our attention to fletton and non-fletton common and facing bricks and to engineering bricks. Fletton bricks (flettons) are bricks made from the lower Oxford clay and are so called because a process for their manufacture was developed at Fletton, near Peterborough. Non-fletton bricks (non-flettons) are bricks made from other materials. Common bricks (commons) are bricks suitable for general building work but having no special claim to an attractive appearance. Facing bricks (facings) are bricks specially made or selected to give an attractive appearance without rendering or plastering or other surface treatment of the wall. Engineering bricks are bricks having a dense and strong semi-vitreous body conforming to defined limits for absorption and strength. No fletton bricks are of 'engineering' quality.

2. Bricks can be made from a wide range of materials but are classified for general descriptive purposes into three basic material types—clay, calcium silicate and concrete. Clay bricks are composed of clay, brickearth, shale or similar material and are hardened by firing in a clamp or kiln. Calcium silicate bricks are composed of a mixture of lime and sand, or silicious gravel or rock, and are hardened in an autoclave by chemical action induced by steam under pressure. Concrete bricks are composed of natural or manufactured aggregates, bound with cement, and are usually dried in a heated chamber although this is not strictly required as such bricks can be left to dry naturally. A brief description of the different manufacturing processes is given in Appendix 1.

3. Bricks are normally shaped as rectangular prisms but special shapes, some of which are in such general use as to be known as 'standard specials', are produced as required. Bricks can be solid, perforated, hollow or cellular and are acceptable for different constructional purposes within a range of compressive strength and resistance to water and corrosive fluids. A series of British Standards, briefly summarised in Appendix 2, prescribes tests for characteristics which can be specifically established before bricks are offered for sale as of a particular quality or class. Sound and thermal insulation standards are set by Building Regulations[1] by means of 'deemed to satisfy' provisions applicable to individual building materials, including bricks, or combinations of such materials.

4. Bricks are in competition as building units with a wide range of alternative materials and forms of construction and finish. The main disadvantages of bricks as a construction material are that they are more labour intensive in erection than are larger units and provide poor thermal insulation. Their main advantages are

[1]Made, for England and Wales, by the Secretary of State for the Environment under the Public Health Acts 1936 and 1961; for Scotland, by the Secretary of State for Scotland under the Building (Scotland) Act 1959 as amended by the Building (Scotland) Act 1970.

their flexibility in use, good appearance, low maintenance costs, structural strength, combined with good sound insulation and resistance to fire, and durability.

5. There are bricks other than building bricks, (eg refractory bricks) but we use the term 'bricks' in this Report to mean building bricks within our terms of reference.

CHAPTER 2

The building brick industry

(a) Production deliveries and stocks

6. The demand for all building materials depends upon the general level of activity in the construction industry but as bricks are a 'starting' material in most of the forms of construction in which they are used they are amongst the first materials to be affected as the level of activity rises and falls. During the last twenty five years there have been frequent and severe fluctuations in the demand for bricks, reflected in the deliveries to customers shown in the following table:

Table 1: Deliveries of bricks, 1950 to 1974: millions

		% change			*% change*
1950	5,929		1964	8,098	+11·1
1951	6,058	+2·2	1965	7,424	−8·3
1952	6,655	+9·9	1966	6,729	−9·4
1953	7,235	+8·7	1967	7,701	+14·4
1954	7,113	−1·7	1968	7,221	−6·2
1955	7,204	+1·3	1969	6,481	−10·2
1956	7,065	−1·9	1970	6,356	−1·9
1957	6,779	−4·1	1971	6,825	+7·4
1958	6,467	−4·6	1972	7,023	+2·9
1959	7,191	+11·2	1973	6,998	−0·4
1960	7,232	+0·6	1974	5,011	−28·4
1961	7,356	+1·7			
1962	7,075	−3·8			
1963	7,287	+3·0			

7. It can be calculated from these figures that during the period 1950 to 1974 deliveries averaged about 6,900 million a year and that the annual averages in successive five year periods were about 6,600 million, 6,950 million, 7,400 million, 7,100 million and 6,450 million (or 6,800 million if the exceptionally low 1974 figure is excluded). It can be seen that, for the lowest and highest individual years, the range was between some 5,000 million and some 8,100 million and that the percentage variation between successive individual years, although less than 5 per cent in 13 cases, was between 5 per cent and 10 per cent in 6 cases, between 10 per cent and 15 per cent in 4 cases, and over 28 per cent in 1974. Such variations were particularly severe during the period 1965 to 1974 when, apart from 1974, the percentage variation was under 5 per cent in 3 cases, between 5 per cent and 10 per cent in 4 cases and between 10 per cent and 15 per cent in 2 cases. Deliveries were however comparatively stable during the periods 1953 to 1956 (at around 7,150 million) 1959 to 1963 (at around 7,200 million) 1971 to 1973 (at around 6,950 million).

8. It is apparent from these figures that the demand for bricks is not only unstable, and sometimes severely so, but after rising to a post-war peak during the period 1960 to 1964 (when average annual deliveries were about 7,400 million) has tended thereafter to decline. One reason for this decline is considered in paragraphs 13 and 14.

9. During the period 1965 to 1974 the relative shares of total deliveries obtained by clay bricks, calcium silicate bricks and concrete bricks, and by commons, facings and engineering bricks, together with the end-year stock figures in all cases, were as shown in the following tables:

Table 2: Deliveries of bricks by material type: 1965 to 1974: millions

Year	*Clay*	*Calcium silicate*	*Concrete*	*Total*
1965	6,799 (91·6%)	334 (4·5%)	291 (3·9%)	7,424
1966	6,184 (91·9%)	274 (4·1%)	271 (4·0%)	6,729
1967	7,015 (91·1%)	371 (4·8%)	315 (4·1%)	7,701
1968	6,572 (91·0%)	334 (4·6%)	315 (4·4%)	7,221
1969	5,868 (90·5%)	307 (4·7%)	306 (4·8%)	6,481
1970	5,784 (91·0%)	299 (4·7%)	274 (4·3%)	6,357
1971	6,143 (90·0%)	355 (5·2%)	327 (4·8%)	6,825
1972	6,209 (88·4%)	408 (5·8%)	407 (5·8%)	7,024
1973	6,138 (87·7%)	439 (6·3%)	422 (6·0%)	6,999
1974	4,432 (88·4%)	296 (5·9%)	283 (5·7%)	5,011
1975 (Jan.–Sept.)	3,626 (88·3%)	197 (4·8%)	282 (6·9%)	4,105

Table 3: Deliveries of bricks by variety: 1965 to 1974: millions

Year	*Common*	*Facing*	*Engineering*	*Total*
1965	4,258 (57·4%)	2,833 (38·1%)	332 (4·5%)	7,422
1966	3,943 (58·6%)	2,467 (36·7%)	318 (4·7%)	6,728
1967	4,259 (55·3%)	3,038 (39.4%)	404 (5·3%)	7,701
1968	3,958 (54·8%)	2,886 (40.0%)	377 (5·2%)	7,221
1969	3,545 (54·7%)	2,565 (39·6%)	372 (5·7%)	6,482
1970	3,334 (52·5%)	2,631 (41·4%)	391 (6·1%)	6,356
1971	3,339 (48·9%)	3,060 (44·8%)	426 (6·3%)	6,825
1972	3,275 (46·6%)	3,330 (47·4%)	418 (6·0%)	7,023
1973	3,191 (45·6%)	3,392 (48·5%)	415 (5·9%)	6,998
1974	2,406 (48·0%)	2,256 (45·0%)	350 (7·0%)	5,012
1975 (Jan.–Sept.)	1,832 (44·6%)	1,978 (48·2%)	295 (7·2%)	4,105

Table 4: End-year stocks by material type: 1965 to 1974: millions

Year	*Clay*	*Calcium silicate*	*Concrete*	*Total*
1965	510 (91·1%)	21 (3·7%)	29 (5·2%)	560
1966	846 (93·4%)	36 (4·0%)	24 (2·6%)	906
1967	370 (91·4%)	13 (3·2%)	22 (5·4%)	405
1968	583 (91·8%)	25 (3·9%)	27 (4·3%)	635
1969	819 (93·4%)	32 (3·6%)	26 (3·0%)	877
1970	540 (93·9%)	19 (3·3%)	16 (2·8%)	575
1971	245 (88·8%)	12 (4·3%)	19 (6·9%)	276
1972	143 (79·4%)	12 (6·7%)	25 (13·9%)	180
1973	319 (88·1%)	19 (5·2%)	24 (6·7%)	362
1974	861 (93·2%)	39 (4·2%)	24 (2·6%)	924
1975 (End Sept.)	494 (83·4%)	34 (6·1%)	31 (5·5%)	559

Table 5: End-year stocks by variety: 1965 to 1974: millions

Year	*Common*	*Facing*	*Engineering*	*Total*
1965	308 (55·5%)	226 (40·4%)	26 (4·6%)	560
1966	455 (50·2%)	407 (44·9%)	44 (4·9%)	906
1967	168 (41.4%)	206 (50·7%)	32 (7·9%)	406
1968	290 (45·6%)	310 (48·7%)	36 (5·7%)	636
1969	472 (53·8%)	370 (42·2%)	35 (4·0%)	877
1970	271 (47·1%)	279 (48·4%)	26 (4·5%)	576
1971	129 (46·9%)	136 (49·5%)	10 (3·6%)	275
1972	90 (49·7%)	84 (46·4%)	7 (3·9%)	181
1973	125 (34·5%)	225 (62·2%)	12 (3·3%)	362
1974	452 (48·8%)	423 (45·7%)	51 (5·5%)	926
1975 (End Sept.)	242 (43·2%)	280 (50·2%)	37 (6·6%)	559

Source of Tables 1–5: Department of the Environment

10. Table 2 shows that, while calcium silicate and concrete bricks increased their combined share of total brick deliveries during the period from 8·4 per cent to 11·7 per cent, they presented no serious threat to clay bricks as a whole in terms of volume and failed to maintain in 1974 the percentage of over 12 per cent which they had achieved in 1973. It can however be calculated from the figures in Table 7 that calcium silicate and concrete common bricks accounted for 16·8 per cent of the common brick market in 1973.

11. Table 4 shows that the percentage of total stocks represented by calcium silicate and concrete bricks tends to fall when total stocks deliveries are high as in 1966, 1969 and 1974. Stockholding is an investment and financial decision for each individual manufacturer (see paragraphs 57 to 61) but the manufacturing processes for calcium silicate and concrete bricks are more flexible than are those for clay bricks (Appendix 1) and facilitate a more rapid response to fluctuations in demand.

12. Tables 3 and 5 suggest that the comparative stability of demand for engineering bricks during the period 1965 to 1973 made it possible for the manufacturers of such bricks to hold comparatively low stocks. Although engineering stocks rose in 1974, the proportion of total stocks which they represented in that year was a smaller proportion of total stocks than was the proportion of engineering deliveries to total deliveries. The decline in deliveries of engineering bricks in 1974, as compared with 1973, was 15·6 per cent as compared with the decline of 28·4 per cent in total deliveries. The demand for engineering bricks is more stable than is the demand for other bricks because they are little used in housing, the most volatile sector of the construction industry.

13. The decline in deliveries of commons during the period 1965 to 1973, in terms both of volume and of percentage of total brick deliveries (Table 3) would appear to be due mainly to increasing competition from concrete blocks as

shown in the following figures supplied by the Brick Development Association, related to the masonry market in which bricks and blocks compete:

Table 6: All building bricks and concrete blocks: deliveries: 1965 to 1974: millions of brick equivalents

	Bricks				Blocks				Bricks and Blocks	
	Clay	*C.S.*	*Concrete*	*Total*	*D.A.*	*L.W.A.*	*A.C.*	*Total*	*Total*	*As % of 1965 Total*
1965	6,799	334	291	7,424	684	1,325	471	2,480	9,904	
	68·6	3·4	2·9	74·9	6·9	13·4	4·8	25·1	100	100·0
1966	6,184	274	271	6,729	632	1,092	504	2,228	8,957	
	69·0	3·1	3·0	75·1	7·1	12·2	5·6	24·9	100	90·4
1967	7,015	371	315	7,701	687	1,324	599	2,610	10,311	
	68·0	8·6	3·1	74·7	6·7	12·8	5·8	25·3	100	104·1
1968	6,572	335	315	7,222	702	1,378	639	2,719	9,941	
	66·1	3·4	3·1	72·6	7·1	13·9	6·4	27·4	100	106·4
1969	5,868	307	306	6,481	695	1,255	687	2,637	9,118	
	64·4	3·4	3·3	71·1	7·6	13·8	7·5	28·9	100	92·1
1970	5,784	299	274	6,357	803	1,337	714	2,854	9,211	
	62·8	3·2	3·0	69·0	8·7	14·5	7·8	31·0	100	92·2
1971	6,143	355	327	6,825	848	1,589	815	3,252	10,077	
	61·0	3·5	3·2	67·7	8·4	15·8	8·1	32·3	100	101·7
1972	6,209	408	407	7,024	1,097	1,784	907	3,788	10,812	
	57·4	3·7	3·7	64·8	10·2	16·6	8·4	35·2	100	109·2
1973	6,138	439	422	6,999	1,210	1,812	989	4,011	11,010	
	55·7	3·9	3·8	63·4	11·0	16·5	9·1	36·6	100	111·2
1974	4,464	284	284	5,032	1,004	1,223	864	3,091	8,123	
	55·0	3·5	3·5	62·0	12·4	15·0	10·6	38·0	100	82·0

Table 7: Common bricks and concrete blocks: deliveries: millions of brick equivalents

	Bricks				Blocks				Bricks and Blocks	
	Clay	*C.S.*	*Concrete*	*Total*	*D.A.*	*L.W.A.*	*A.C.*	*Total*	*Total*	*As % of 1965 total*
1965	4,008	134	116	4,258	616	1,299	471	2,386	6,644	
	60·3	2·0	1·8	64·1	9·3	19·5	7·1	35·9	100	100·0
1966	3,725	110	108	3,943	569	1,070	504	2,143	6,086	
	61·2	1·8	1·8	64·8	9·3	17·6	8·3	35·2	100	91·3
1967	3,985	148	126	4,259	618	1,297	599	2,514	6,773	
	58·8	2·18	1·91	62·89	9·1	19·1	8·9	37·11	100	101·5
1968	3,698	134	126	3,958	632	1,350	639	2,621	6,579	
	56·2	2·0	2·0	60·2	9·60	20·5	9·7	39·8	100	99.0
1969	3,300	123	122	3,545	625	1,230	687	2,542	6,087	
	54·2	2·0	2·0	58·2	10·3	20·2	11·3	41·8	100	91·6
1970	3,104	120	110	3,334	722	1,310	714	2,746	6,080	
	51·1	2·0	1·8	54·9	11·9	21·5	11·7	45·1	100	91·6
1971	3,066	142	131	3,339	763	1,557	815	3,135	6,874	
	47·4	2·2	2·0	51·6	11·8	24·0	12·6	48·4	100	97·4
1972	2,949	163	163	3,275	987	1,748	907	3,642	6,917	
	42·6	2.35	2·35	47·3	14·3	25·3	13·1	52·7	100	104·1
1973	2,655	198	338	3,191	1,088	1,776	989	3,853	7,044	
	37·7	2·8	4·8	45·3	15·44	25·21	14·04	54·7	100	106·0
1974	2,073	113	227	2,413	903	1,198	864	2,965	5,378	
	38·5	2·1	4·2	44·8	16·8	22·3	16·1	55·2	100	80·9

Table 8: Facing and Engineering bricks and concrete blocks: deliveries: millions of brick equivalents

	Bricks				Blocks			Bricks and Blocks	
	Clay	*C.S.*	*Concrete*	*Total*	*D.A.*	*L.W.A.*	*Total*	*Total*	*As % of 1965 total*
1965	2,790	218	157	3,165	68	26	94	3,259	
	85·6	6·7	4·8	97·1	2·1	0·8	2·9	100	100·0
1966	2,458	172	155	2,785	63	22	85	2,870	
	85·6	6·0	5·4	97·0	2·2	0·8	3·0	100	88·1
1967	3,030	197	215	3,442	69	27	96	3,538	
	85·6	5·6	6·0	97·2	2·0	0·8	2·8	100	108·6
1968	2,873	230·2	159·8	3,263	70	28	98	3,361	
	85·5	6·8	4·8	97·1	2·1	0·8	2·9	100	103·1
1969	2,569	180	188	2,937	70	25	95	3,032	
	84·7	6·0	6·2	96·9	2·3	0·8	3·1	100	86·5
1970	2,679	116	227	3,022	81	27	108	3,130	
	85·6	4·0	7·0	96·6	2·6	0·8	3·4	100	96·1
1971	3,077	179	230	3,486	85	32	117	3,603	
	85·4	5·0	6·3	96·7	2·4	0·9	3·3	100	110·6
1972	3,260	314	175	3,749	110	36	146	3,895	
	83·7	8·1	4·5	96·3	2·8	0·9	3·7	100	119·4
1973	3,482	236	89	3,809	122	36	158	3,965	
	87·8	6·0	2·2	96·0	3·1	0·9	4·0	100	121·7
1974	2,391	171	57	2,619	101	25	126	2,745	
	87·1	6·2	2·1	95·4	3·7	0·9	4·6	100	84·2

Notes to Tables 6, 7 and 8:

1. Figures for 1964 to 1972 are based on the assumption that the proportions of concrete brick deliveries were 60 per cent facings, 40 per cent commons. Figures for 1973 and 1974 are based on a percentage 20 per cent facings, 80 per cent commons. It is not known when this ratio changed but it is probable that it occurred from 1968 onwards.
2. C.S. = Calcium silicate; D.A. = Dense aggregate; L.W.A. = Light weight aggregate; A.C. = Aerated concrete.

14. Table 6 shows that the total market in which bricks compete with concrete blocks increased by 11·2 per cent in 1973 as compared with 1965. The share of bricks fell from 74·9 per cent to 63·4 per cent while the share of blocks increased from 25·1 per cent to 36·6 per cent. Table 8 shows increased deliveries of facing and engineering bricks from 3,615 million in 1965 to 3,807 million in 1973 but a reduction in market share from 97·1 per cent to 96·0 per cent. Table 7 shows reduced deliveries of commons from 4,258 million in 1965 to 3,191 million in 1973 and a reduction in market share from 64·1 per cent to 45·3 per cent. The competitive inroads made by concrete blocks have therefore been almost entirely at the expense of common bricks which suffered a further decline in market share during the 1974 recession.

15. We received no evidence that common bricks are likely to improve their competitive position. It would therefore appear that any significant increase in total brick deliveries, when the market recovers from the 1974 recession, will have to be contributed mainly by facing bricks as the market for engineering bricks, although steady, is comparatively small (Table 3). Facing bricks face competition not only from concrete blocks but also from a wide range of other materials and forms of construction. In housing construction in 1973, for example, the proportions of external walls which materials other than bricks and blocks were used were: 14·6 per cent in local authority houses and 3·9 per cent in private houses; 22·5 per cent in local authority flats and maisonettes and 5·3 per cent in

similar private dwellings. On the other hand, the market in which facing bricks compete increased by 21·7 per cent between 1965 and 1973 (Table 8) as compared with 6 per cent for common bricks (Table 7).

(b) Structure

16. The following table shows the relative contributions which were made to total brick deliveries, during the period 1950 to 1974, by fletton bricks (made from the lower Oxford clay) and by non-fletton bricks (made from other materials, whether clay, calcium silicate or concrete), together with the deliveries made by the largest single fletton manufacturer, LBC.

Table 9: Deliveries of fletton and non-fletton bricks: 1950 to 1974: millions

Year	*Total*	*Fletton*	*Fletton as % of total*	*LBC*	*LBC as % of fletton*	*LBC as % of total*	*Non-fletton*	*Non-fletton as % of Nat*
1950	5,929	2,034	34·3	1,427	70·2	24·1	3,895	65·7
1955	7,204	2,703	37·5	1,885	69·7	26·2	4,501	62·5
1960	7,232	2,919	40·4	2,012	68·9	27·8	4,313	59·6
1965	7,424	3,099	41·7	2,164	69·8	29·1	4,325	58·3
1966	6,729	2,873	42·7	2,064	71·8	30·7	3,856	57·3
1967	7,701	3,238	42·0	2,293	70·8	29·8	4,462	58·0
1968	7,221	3,094	42·8	2,245	72·6	31·1	4,127	57·2
1969	6,481	2,755	42·5	2,388	86·7	36.8	3,727	57·5
1970	6,356	2,746	43·2	2,309	84·1	36·3	3,610	56·8
1971	6,825	2,981	43·7	2,762	92·7	40·5	3,845	56·3
1972	7,023	3,020	43·0	3,880	95·4	41·0	4,003	57·0
1973	6,998	3,016	43·1	2,883	95·6	41·2	3,982	56·9
1974	5,011	2,050	40·9	2,050	100·0	40·9	2,961	59·1
1975 (Jan.–Sept.)	4,106	1,724	42·0	1,724	100·0	42·0	2,382	58·0

Sources: Department of the Environment and LBC

17. These figures show that fletton bricks have accounted for more than 42 per cent of total brick deliveries in the last ten years (within a range of 40·9 per cent to 43·7 per cent) and that LBC has become the sole producer of such bricks. The structure of the non-fletton side of the industry is shown in the following table which has been compiled from information supplied to us by non-fletton companies responsible for over 98 per cent of non-fletton deliveries in 1973 and over 97 per cent in 1974. The term, 'company' is used to include subsidiary companies, ie a company controlling a number of subsidiary brickmaking companies is counted as one company. Of the 156 companies which supplied information for 1973, 121 made clay bricks, 16 made calcium silicate bricks and 19 made concrete bricks. Three clay brick companies closed down in late 1973 or early 1974. Both for 1973 and 1974 the information supplied by clay brick companies covered over 99 per cent of non-fletton clay brick deliveries. The response from calcium silicate and concrete brick manufacturers was not less than 86 per cent in either year.

Table 10: Non-fletton deliveries by size of company: 1973 and 1974: millions

Size of company (millions)	*Number of companies*		*Deliveries (millions)*		*% of total brick deliveries*		*% of total non-fletton deliveries*	
	1973	*1974*	*1973*	*1974*	*1973*	*1974*	*1973*	*1974*
200–349	3	2	847	510	12·1	10·2	21·3	17·82
100–199	4	2	582	340	8·3	6·8	14·6	11·5
75–99	4	3	355	271	5·1	5·4	9·0	9·1
50–74	8	6	479	381	6·8	7·6	12·0	12·9
25–49	17	17	691	538	9·9	10·7	17·4	18·2
5–24	71	60	850	685	12·1	13·7	21·3	23·1
Under 5	49	63	106	150	1.5	3·0	2·6	5·1
Total	156	153	3,910	2,875	55·8	57·4	98·2	97·1

18. The figures for 1973, when demand for bricks was strong, show that seven companies, each delivering between 100 million and 349 million bricks, contributed 20·4 per cent of total brick deliveries and 35·9 per cent of non-fletton deliveries. A further 29 companies, delivering between 25 and 99 million, contributed 21·8 per cent of total, and 38·4 per cent of non-fletton, deliveries. The remaining 120 companies, each delivering less than 25 million, contributed 13·6 per cent of total, and 23·9 per cent of non-fletton, deliveries.

19. In 1974, when demand for bricks was weak, four companies contributed 17·0 per cent of total, and 28·7 per cent of non-fletton deliveries. We were informed that at least 10 companies, representing some 3 per cent of non-fletton deliveries in 1973, went out of business in the course of 1974 and that a number of works were closed by companies remaining in business.

20. The information from which Table 10 is compiled revealed no non-fletton company with more than 5 per cent of total brick deliveries, or as much as 9 per cent of non-fletton deliveries, in 1973. In 1974 the largest non-fletton company made 6 per cent of total, and rather more than 10 per cent of non-fletton, deliveries. There is therefore no single dominant company in the non-fletton sector of the brick industry although a small number of companies supply a substantial proportion of the non-fletton market.

21. The effect of the 1974 recession on the capacity and structure of non-fletton brickmaking cannot be assessed until demand substantially recovers and it is known to what extent works closed in 1974 will be re-opened.

22. In 1938, there were 1,147 brickworks in Great Britain which produced 6,939 million bricks[1]. The Department of the Environment informed us that by 1969, when 6,734 million bricks were produced, the number of works had fallen to 544 and that, in 1973, 357 works were responsible for the production of 7,183 million bricks. In 1973, therefore, rather more bricks were produced than in 1938 but the number of brickworks had fallen to less than one-third.

[1]First Report of the Committee on the Brick Industry dated 8 December 1941, S.O. Code No. 70-390.

23. We obtained information in respect of 346 of the works which were operating in 1973 (23 fletton, 323 non-fletton) and summarise this information in the following tables:

Table 11: Fletton brickworks by target capacity: 1973

Target capacity (millions)	*Number*	*% of total target capacity*
Under 100	13	19·8
100–150	3	10·3
150–250	4	23·1
400–750	3	46·8
Total	23	100·0

Note: As actual fletton production in 1973 fell little short of the total target capacity set, these figures can be regarded as comparable with the non-fletton production figures in Table 12.

Table 12: Non-fletton brickworks by bricks produced: 1973

Production (millions)	*Clay*	*Calcium silicate*	*Concrete*	*Total*	*% of non-fletton production*
Under 15	210	4	23	237	41·9
15–24	35	7	5	47	21·5
25–50	26	7	2	35	29·5
50–75	3	—	1	4	7·1
Total	274	18	31	323	100·0

24. Tables 11 and 12 show that the scale of production is much larger in the fletton than in the non-fletton sector. It can also be seen that if the four categories in Table 11, and the four categories in Table 12, are regarded as representing small, medium, large and extra-large works in each sector, the proportion of total production derived from small and medium sized works is over twice as high in the non-fletton sector as in the fletton. We examine in chapter 4 the considerations which affect the optimum size of plant in each sector.

(c) Distribution through merchants

25. The functions of the merchant in the distribution and supply of bricks were described by one witness in the following terms: 'to stock a range of common, facing and engineering bricks according to local needs for "matching-up" purposes; to supply in small quantities to the building trade and general public for small jobs where full loads direct from the manufacturer are not practical or economic; to hold brick samples, brick displays, in fact a brick library for architects, local authorities, builders, developers and the general public to select their requirements; to have qualified and experienced staff to assist in the selection; to quote and subsequently endeavour to arrange bulk deliveries to site according to the schedule of the contractor; to grant credit facilities to contractors and others: this is particularly useful to the small manufacturer where his bricks may only be required for one particular contract and the builder is unknown to him'.

26. In addition to merchants discharging all or most of the functions described above, not only in respect of bricks but also of other materials, there are other agents, known as brick factors, who do not handle bricks themselves but concentrate on the organisation of supply from manufacturers to user. One building and civil engineering company described as follows the advantages of employing a factor: 'brick factors' accounts with manufacturers are far larger than any contractor's which places them in a more powerful supply situation in times of peak demand; they have the opportunity of obtaining brick requirements, this being their sole interest, by switching their orders from manufacturer to manufacturer to coincide with delivery demands and by channelling supplies from one contractor who is not in a position to receive them to one who is; they can limit the amount of progressing required by our buyers: for example, on two large contracts we may have six types of bricks from six different manufacturers ordered from two brick factors and it is easier and more effective to make two telephone calls than six'.

27. The discount usually allowed by manufacturers to merchants and factors is 5 per cent on the ex-works price, with haulage net. LBC makes flat rate allowances which represent smaller percentages (see paragraph 181). The merchant's price to the customer depends on circumstances and the services rendered.

28. The attitude of manufacturers towards merchants varies. LBC (see paragraph 140) regards itself as primarily a direct seller but, nevertheless, nearly 40 per cent of its deliveries in 1974 were made through merchants. One large non-fletton manufacturer, although maintaining a sales force to seek specification of its bricks by architects and others, channels all its deliveries through merchants as a matter of policy. Other manufacturers sell direct, or through merchants, as occasion requires. Few, if any, manufacturers are content to rely solely on merchants to promote their product. It would appear from the information we obtained that at least 60 per cent of all bricks delivered are channelled through merchants or factors. We made no attempt to assess the efficiency with which merchants or factors discharge their functions but we received no complaints except that some witnesses thought that some merchants' mark up was sometimes too high.

29. As to the extent to which merchants, as distinct from their customers, contribute to over-ordering and double-ordering (see paragraph 63) in times of high demand, we were told that merchants' order books are discounted at such times in the light of the individual merchant's assessment of the true extent of the customer's need. It was however, clear from the evidence, that merchants come under severe pressure from their customers in times of high demand and that over-ordering, having the effect of exaggerating any apparent shortage of bricks, occurs.

(d) Representative organisations

30. As shown in paragraph 17 there are over 150 companies engaged in the manufacture of bricks. Not all these companies are members of any trade association although many are members of more than one. Trade associations for

membership of which brickmakers are eligible include the National Federation of Clay Industries, the Scottish Employers Council for the Clay Industries and the British Precast Concrete Federation which are concerned with a wide range of products including bricks. The Calcium Silicate Brick Association, the Northern, Midland and Southern Brick Federations and the East Midlands Brick Association are examples of associations whose coverage is limited by product or by geographical area. The nearest approach to a comprehensive representative organisation concerned solely with the production and use of clay and calcium silicate bricks and blocks is the Brick Development Association (BDA). No manufacturers of concrete bricks or blocks are members of BDA.

31. BDA was formed in 1954 when the balance of a wartime care and maintenance fund of public money was transferred to it with two government appointed directors. BDA was concerned solely with research and education within the industry until 1964 when this fund ran out and the government appointed directors were withdrawn. Since then, BDA has been supported entirely by subscriptions from its members, based on their turnover. In 1969 BDA expanded its functions to include the promotion of bricks as a constructional material and the interests of the industry as these are seen to be affected by the ups-and-downs of the national economy and by government policy.

32. BDA told us that the 1964 reorganisation was supported by brickmakers producing some 85 per cent of all bricks made in Great Britain. In 1973 it would appear that BDA members contributed about 74 per cent of all brick deliveries and about 80 per cent of all clay and calcium silicate deliveries. Coverage was complete in the fletton sector of the industry but BDA members contributed only about 54 per cent of non-fletton deliveries and about 60 per cent of non-fletton clay and calcium silicate deliveries. In terms of companies engaged in brickmaking, BDA represented about 48 per cent of all non-fletton clay and calcium silicate companies. With few exceptions, however, the non-member companies were small. BDA attributed the decline in its coverage since 1964 partly to the acquisition of brickworks by industrial and financial groups with wider interests and partly to a feeling amongst some small companies that the subscription required, which has risen over the years to 60p per £100 of ex-works sales values, was too high for them to bear. BDA also thought that some such companies would regard themselves as too small for membership of a trade association in any circumstances.

33. Although BDA is not a wholly comprehensive representative organisation it is recognised by the Department of the Environment as broadly representative. BDA is represented indirectly in the Department's formal consultative arrangements with the construction industry (see paragraph 36). It is regarded by the Department as a 'highly effective' spokesman.

34. In addition to its representational function, BDA engages in extensive publicity to promote the use of bricks and sponsors research. Details of the research projects sponsored in 1974 are shown in Appendix 3.

(e) Responsibilities of the Department of the Environment

35. The Department of the Environment has a number of responsibilities which affect the brick industry for which, as part of the construction industry and its suppliers, it performs a sponsorship function throughout Great Britain.

Amongst these responsibilities are housing (which in 1973 took roughly two-thirds of total brick deliveries for new housing and about another 10 per cent for home improvement and maintenance work); the technical requirements of building including building regulations; planning and pollution controls. Through the Property Services Agency the Department is also a large construction client.

36. The Department told us that sponsorship responsibility is not clearly defined but that it regards itself as the department of government primarily responsible for looking after the interests of the construction industry and its suppliers and for consulting with the industry either with respect to Government policies which affect it or with respect to matters which the industry itself believes should be brought to the Government's attention. Thus, an important part of sponsorship responsibility is communication with the industry which takes place partly on a formal basis through the National Consultative Council for the Building and Civil Engineering Industries (NCC) and partly through less formal contacts at official and, as necessary, Ministerial level. The brick industry is indirectly represented on the NCC through BDA's membership of the National Council of Building Material Producers (NCBMP). Meetings between the Department and BDA take place several times a year and from time to time the Department meets individual brickmakers. The Department has no 'organised relationship' with brickmakers who are not members of BDA.

37. The Department forecasts the output of the construction industry as a whole, and of component sectors including housing, public works, private industrial and commercial building and repairs and maintenance, up to two years ahead; revises these forecasts at least every four months; and circulates them for confidential discussion in the NCC. The Department is attempting to improve its short term forecasts, and to develop longer term forecasts.

38. The Department told us that its forecasts of construction activity as a whole had tended to be over-optimistic over the years, although not consistently so, with an error in absolute terms on average of about 3·5 per cent in forecasts made 18 months ahead. In forecasts made a year ahead, the corresponding figure was 3 per cent. The Department thought that it was in a better, but not all that much better, position to make an overall forecast than was any sector of the construction industry to make an individual forecast but such sectors nevertheless tended to prefer their own forecasts. There must, the Department thought, be doubt about the reliability of any forecast.

39. As to fluctuations in demand for materials, the Department said that, while Government accepted the general aim of a reasonably stable overall demand for construction, it was not possible to insulate any sector of the economy from the general economic situation. There were considerable difficulties in demand management in the public sector[1] and not all public sector programmes were suitable for counter cyclical action. Consideration was nevertheless being given to the possibility of planning individual public sector programmes on a more stable long term basis and of introducing greater flexibility in short term adjustments in suitable programmes.

[1]Public sector construction work normally accounts for about 40 per cent of all building, and about 90 per cent of all civil engineering, work.

40. The Department made no criticism of the overall performance of the brick industry in adjusting itself to fluctuations in demand by retaining sufficient capacity, in times of low demand, to make a reasonable response when demand recovered. The increasing concentration of the fletton sector of the industry in the hands of LBC had not appeared to the Department to have had any adverse effect in this respect. The Department had no reason to think that any such effect would necessarily result from concentration in the non-fletton sector; nor had it any reason to form a view as to whether such concentration should be encouraged or discouraged in the interests of the industry as a whole.

41. As a user of bricks through the Property Services Agency, the Department said that quality rarely gave cause for concern, and that the price of bricks still compared favourably with that of most alternatives. The Agency's use of bricks was declining, in a move towards less labour intensive forms of construction, but, despite this decline, it was likely that brickwork would continue to be extensively used by the Agency in the foreseeable future.

CHAPTER 3

Fluctuations in demand for bricks

42. The demand for bricks, as for other building materials, depends on the level of activity in the construction industry which in recent years has suffered from alternate boom and slump. The severity of the cycles in the case of bricks is illustrated by Table 1 in paragraph 6, which shows annual brick deliveries since 1950. The figures show no overall growth in the industry, even leaving aside the exceptionally low 1974 figure, and recurring cycles of varying severity and length. Between 1955 and 1974 there have been four complete cycles and the severity of the recent cycles can be seen from the fact that 1966 deliveries were 17 per cent below 1964 deliveries, 1970 deliveries were 18 per cent below 1967 deliveries and 1974 deliveries were 28 per cent below 1972 deliveries. Furthermore, annual figures are likely to understate the full extent of variations in demand, as such figures hide intermediate peaks and troughs. The fletton and non-fletton sectors of the industry have experienced the same cyclical pattern of demand.

43. The inherent problems of coping with cycles are aggravated by difficulties of forecasting and by changes of direction, not anticipated by the industry, in construction activity which is particularly vulnerable to changes in overall economic policy. Moreover, as bricks are a 'starting' material in most forms of construction in which they are used, and particularly in housing, they are affected sooner, and with less warning, than are most other materials by changes in the level of activity. From 1969 to 1974, the actual year-to-year changes in round figures, in housing starts ranged from +42,000 to −110,000 in the private sector and from +34,000 to −23,000 in the public sector. For this same period, the Department of the Environment told us that the mean absolute error of its housing forecasts made, on the basis of Government policy then current in (or about) the September of the previous year, was 26,000 in the private sector and 28,000 in the public sector.

44. When the demand for bricks and their substitutes falls, producers can either try to influence the level of demand or react to the downturn in demand. In theory, it might be possible for companies to adopt a flexible pricing policy to try to even out the 'normal' cyclical fluctuations in demand. However, we were told by both brickmakers and builders that, in practice, if the prices of bricks and their substitutes were generally reduced during a cyclical downturn, the total demand would not be expected to increase at that time. This is because the demand for bricks is a derived demand, and, with the bricks themselves constituting only about 2–3 per cent of the price of a house for example, lower prices for bricks and their substitutes would be unlikely to influence the rate of building and hence the total demand for materials.

45. If brickmakers are unable materially to influence the severity of the cycles, they must react to them. During a cyclical downturn, they can either reduce production or increase stocks. We first consider the costs and disadvantages associated with each alternative and then examine the trade-offs available bearing in mind that it is open to a producer to adopt an intermediate policy. It will be seen that the production processes for concrete bricks and calcium

silicate bricks are much more flexible to changes in capacity utilisation than are those for clay bricks.

Costs associated with reducing capacity utilisation

46. Output levels can be cut either by reducing capacity utilisation or by closing a works. We found agreement in both the fletton and the non-fletton sectors of the clay brick industry that to reduce utilisation below the maximum, or a very high level, adds considerably to unit costs, because the fixed and semi-fixed costs of production account, in the short run, for a large proportion of ex-works costs. We were given estimates of this proportion which ranged from 60 to 90 per cent, depending on different interpretations of semi-fixed costs. As the clay used is generally owned by the brick companies, it is not, for this purpose, to be regarded as a cost.

47. For the non-fletton clay sector, we were given some information as to how various items of costs are affected by low utilisation.

48. In the case of labour and management costs (which can constitute about 40 to 50 per cent of total ex-works costs), the impact of lower levels of plant utilisation depends on the degree of labour intensity at the individual works, the importance attached to retaining a good labour force, and the possibilities of negotiating short-time working at given hourly rates. Whatever the degree of utilisation, certain employees cannot be dispensed with or reduced in number; for example, the burners who must man the kilns all the time. The complex of factors is difficult to quantify, but a number of companies told us that they would not expect to make much saving, if any, in total labour costs if capacity utilisation were reduced at a works by, say, 25 to 30 per cent.

49. In the case of fuel costs (in 1974 up to about 30 per cent of total ex-works costs), there is less scope, when production is reduced, for savings in tunnel kilns than in other types of kiln. Kilns of any type must, however, be kept at prescribed temperatures irrespective of volume or speed of throughput; in closed unit continuous kilns, for example, slower fire travel results in higher exhaust temperatures and lower thermal efficiency. We were given a number of different estimates of the effect of lower kiln utilisation but all showed a serious adverse effect.

50. To shut down a complete kiln or kilns, and operate others at full capacity, is a feasible policy at works with more than one kiln, but reduction of capacity utilisation by this route still entails considerable costs and disadvantages. There will probably be some structural damage to an unused kiln and there is some possibility of collapse. The longer the period of closure, the greater is the likely damage and the higher the likely re-opening costs.

51. In the case of other costs, it was suggested by one manufacturer that the cost of stores and of most, but not all, repairs (about 8 per cent of total costs in his case in 1973) could be reduced *pro rata* to volume. However, power costs (5 per cent of total costs) could not be reduced *pro rata* because the maximum demand charge for electricity would remain the same and savings would only be available on the units consumed. Irreducible overheads, (18 per cent), mainly depreciation and interest charges, would, in the short run, increase unit costs *pro rata* to lower volume. Where bought-in materials, eg colouring matter, are added

to the clay, the costs will vary *pro rata* to volume but such costs are, generally, a very small proportion of total costs.

52. A number of multi-plant companies closed whole works in 1974 as in earlier recessions. As in the case of individual kilns, however, such works will deteriorate. As an example of possible start-up costs if a works is closed we were told by one company that a small works closed in an earlier recession had cost £110,000 to re-open even though this works had no kiln and its 'green' bricks were fired elsewhere.

53. In addition to financial costs, including redundancy payments if these are incurred, there are other disadvantages in closing non-fletton clay works. Each such works tends to produce a different facing brick, due to the wide range of clays from which non-fletton bricks are made, so works closures tend to reduce the range of a multi-plant company's products. There may also be difficulty in recruiting suitable labour for a re-opened works. One company suggested that a company with a history of works closures would be distrusted and would find it hard to recruit workers of satisfactory quality. This company told us that 'an established works usually has a high percentage of steady, reliable workers with a sense of pride and loyalty to that works. A new labour force recruited for a re-opened works would probably include a larger casual element and lack cohesion'. The new labour force would also be likely to be less experienced in brickmaking than was the old force.

54. As a result of these various problems and costs, the time lag involved in re-opening and the possibility that an up-turn in demand may be short-lived, decisions to re-open works are not hastily taken.

55. LBC described the steps which it takes to reduce output levels when this seems unavoidable[1]. It first closes any 'buffer' works from which production is needed only when demand is high. Next comes a reduction of overtime at the remaining works followed by closures of more efficient works or closures of selected kilns at such works and a reduction to single-shift working. LBC does not adopt a policy of slowing down individual kilns because fuel costs would increase and the quality of the bricks produced would suffer. Closure of works, or parts of works, curtails the rise in unit costs as overall output is reduced, but the high proportion of fixed, or near-fixed, costs to total costs results in higher overall unit costs. As in the non-fletton sector, redundancy payments arise and kilns and equipment deteriorate; the cost of re-opening two small works in 1972, after these works had been closed for nearly two years, was £80,000. LBC meets difficulties as do non-fletton brickmakers, with labour supply in re-opened works and would expect a time-lag of about four months before a works could be brought back into full production. As LBC's clay is reasonably consistent as between the range of works, however, there is no such loss of variety in product range as some non-fletton brickmakers may incur.

56. Concrete brickmakers and calcium silicate brickmakers do not face all the same difficulties as do clay brickmakers in a falling market. As they tend to buy in much of their raw materials, their ratio of variable to fixed costs is much higher than it is for clay brickmakers. A concrete brick producer estimated, for

[1]In 1973 LBC's ex-works costs consisted of manufacturing wages: 46 per cent; manufacturing materials (other than clay): 3 per cent; electricity and fuel: 9 per cent; overheads and other costs: 43 per cent.

example, that his materials constituted between 40 and 48 per cent of total ex-works costs. The labour input for both types of bricks is relatively low (wages were put at 9 per cent of total costs by the same producer) and is more closely related to output. As kilns are not used there is not the same inflexibility in fuel costs when utilisation is reduced and we were told that capacity can readily be switched on and off, according to demand, without structural damage and without serious delay in re-starting. Fixed costs, eg interest payments, depreciation and management, remain, and concrete and calcium silicate brickmakers do not welcome reductions in demand; but it is clear that their output can be reduced with smaller penalties than those incurred by clay brickmakers.

Costs and problems involved in holding stocks

57. Stockholding, as an alternative to reducing utilisation when demand falls, involves costs and problems of its own. The main cost of holding finished stocks is the financing of the working capital required. This varies in individual cases with production costs, the length of time for which the bricks remain in stock and the rate of interest for borrowing or the opportunity cost of capital. The resulting charge does not, however, reflect the true cost of holding stocks. As fixed costs form a high percentage of the total costs of clay brickmaking, the real costs of financing stocks to cover shortrun demand variations are lower than the immediate financing costs to an extent which varies with the method used to reduce production. Moreover, as stocks are held in anticipation of demand recovering at a later date, and are likely to be sold at prices higher than those ruling when the stocks were put down, stock appreciation can be set against the financing costs. The current real interest rate is possibly negative; and even in the past, when the rate of inflation was much lower than at present, interest rates were also lower. Thus, it can be seen that, in real terms, the true cost of financing stocks can be regarded as not particularly high. However, a large sum of money may be required with detrimental effects on cash flow. There is also the risk that demand will not recover within a reasonable period, or even at all.

58. Apart from financing costs, stockholding involves a once-for-all cost of providing hard-standing for the bricks and extra handling costs. The provision of hard-standing is in some cases limited by lack of space around the works. Handling costs depend partly on whether the bricks are stocked in packs ready to leave the works in due course. We were told that where this is possible, additional handling costs are not significant. If bricks are not so packed the extra handling costs are higher depending on the degree of mechanisation employed. Mechanisation is not always simply an investment decision, as certain bricks, such as Kent Stocks, are so irregular in size that they cannot easily and economically be subjected to mechanical handling. One company estimated that manual conveyance into and out of stock of such bricks cost £3·00 per 1,000 bricks in the context of an ex-works cost of about £44·00 per 1,000 at the time the estimate was made.

59. Protracted stockholding entails a risk of some deterioration which varies with the type of brick and any protection provided. The cost of protecting bricks in stock depends on how extensive the required covering is, eg whether or not straw is sufficient and whether any covering used can surround a pile of bricks or whether it has to be placed between each layer of bricks. Some companies told us that a percentage of their bricks would deteriorate if stocked for very long, whether covered or not.

60. Thus, stockholding is subject to a number of physical and financial constraints of which it would appear that the most important is the effect on internal cash flow and the availability of supplementary funds, whether at all or at a price which a company is prepared to pay. This affects all sides of the industry and appears to cause serious problems for many companies. A relatively small company told us that the cyclical pattern of demand leads to low confidence in the industry, and that banks are therefore unwilling to lend money to finance stocks. At the other end of the scale, LBC also said that finance is the major constraint on stockholding and, that, after building up stocks to about five weeks production in 1974, it felt obliged to reduce capacity utilisation as it was nearing its borrowing limit.

The choice between reduction of output and stockholding

61. Because a flexible pricing policy is not a practical solution, brick producers have to choose between two short-run responses to down-turns in demand. When considering which response to make, companies have a number of factors to consider and balance. Individual reactions will be based on an assessment of the future prospects of the industry and on forecasts of the length and severity of the particular cycle. If companies feel that, for whatever reason, they will eventually have to close a works during a particular down-turn, the earlier they do this the better. Most brickmakers told us, however, that they would prefer to increase stocks rather than reduce production, because, on the basis of experience of previous cycles, they believed this to be cheaper than reducing utilisation if demand could be expected to recover within a reasonable period. If a particular recession is long and severe, the balance of advantage between increasing stocks and reducing production could change. However, there are always risks associated with holding stocks, and in many cases there are cash flow and physical constraints on the levels of stockholding. Whatever, therefore, they would like to do, many companies are forced, in the short-run, to reduce production even though this may be more expensive in the long run. The depth and duration of the 1974 recession enforced retrenchment upon a number of companies which had continued production during previous recessions, including at least one company which, as a component of a diversified group, was, in its own view, at an advantage over independent brickmakers in having access to wider funds than would otherwise have been available. In this case, as in others, a policy acknowledged to be advantageous in the longer run was abandoned in the face of immediate financial pressures.

Shortages of bricks

62. Having reviewed the problems presented to brickmakers when demand falls and they may feel obliged to reduce production, we turn to the ability of the industry to meet demand at the peaks. We were told by a number of builders and builders' merchants that inability to obtain supplies of any particular building material results in extra costs and in organisational problems for the construction industry; it is not easy to change materials once they have been specified or to avoid waste of operatives' time and delay in the completion of contracts.

63. There is clear evidence that during past peaks of high constructional activity there have been considerable, and at times severe, shortages of bricks. This has been indicated to us by most builders and merchants consulted and it is generally

agreed in the industry that delivery times tend to lengthen with demand. It is however difficult to assess the overall extent of past shortages as the situation is confused by the evidence we received that many direct customers and merchants over-order, or double-order, when bricks are scarce or are thought likely to become scarce, and then cancel their remaining orders when their demands are satisfied. We were told that, on occasions, even established and credit-worthy customers had been told that they would have to wait up to twelve months, or even two years, for supplies of some particular bricks but we received no evidence that alternatives would not have been available within a very much shorter time.

64. We sought evidence from both builders and merchants whether bricks are more difficult to get than are other materials in times of high constructional demand. The views we received were mixed, the feeling of some witnesses being that the record of bricks has been worse than that of other materials, whilst others felt that bricks had a comparatively favourable record. However, the broad consensus was that the performance of the brick industry is about average in this matter and that producers cannot be expected to do better unless fluctuations in demand become less violent and more predictable. We received the impression that both builders and merchants are unwilling, and in many cases unable, to hold stocks of their own above a current working level. Representatives of the TUC and of certain trade unions engaged in the brick industry suggested (see paragraph 233) that continuity of production and employment in the brick industry, and a corresponding assurance of supply to the customer in all circumstances, required the creation of a substantial brick 'bank'.

CHAPTER 4

Scale economies; investment; research and development

(a) Scale economies

65. We have examined the extent to which scale economies are available in brickmaking. As the availability and extent of scale economies depend on the manufacturing processes employed, different processes require separate examination. Paragraphs 66 to 89 are based on information obtained in a series of meetings between members of the staff of the Commission and representatives of a number of brick manufacturers.

Production economies

66. Before examining specific economies of scale in production it is necessary to take account of more general factors which will influence the size of plant chosen. First, if a new works is to prove economically viable, the working material available (eg the clay) must be sufficient to allow time for the recovery of capital costs. Most companies consulted regarded 20 to 25 years as the minimum acceptable productive life of a new works. Second, the larger the works, the longer is the average distance which the bricks will have to travel to their market. Because transport costs are high relative to production costs, and suitable clay is widely available, non-fletton works may be built which are smaller than they would be if production efficiency were the sole consideration. Third, there are special risks associated with a large non-fletton 'greenfield' investment because each clay tends to produce a different brick and market acceptance of a new product cannot be guaranteed. Fourth, the risks associated with the wide variations in demand resulting from the construction cycle, and the lead time (at least eighteen months) for a new works to come into full production, may limit the commitment which a company is prepared to undertake. Finally, it may be more difficult to get planning permission for large works than for small.

67. The importance of these general factors in determining optimum plant size should not be overlooked but our examination of plant size economies showed that significant cost savings are possible in larger plants. Our examination was directed to discovering the relationships between size of plant and unit costs of production, given existing British technology, with each plant designed to produce its normal output and operated at maximum efficiency.

Fletton bricks

68. The production process for flettons (see Appendix 1) is different in many ways from that for other bricks. 'New generation' LBC works (see paragraph 117) use Hoffman transverse-arch type kilns built to LBC requirements which produce some 62·5 million bricks a year. As LBC considers that this is the optimum size of kiln, it follows that an efficient new fletton works should be conceived in multiples of 62·5 million bricks a year.

69. LBC provided us with a table showing the labour requirements, on a two shift basis, at the various stages of production at plants increasing in size by units of 62·5 million bricks a year. The broad LBC estimate is that an output of

62·5 million bricks in an efficient new works would theoretically require 80 to 85 men, while a 125 million works would require 138 men and a 250 million works 250 men. Beyond 250 million it is not thought likely that there would be any further unit labour savings. The labour savings up to 250 million are mainly derived from more productive working by men operating the pans, hoppers, pit conveyors and pit hoppers and by navvies and chargehands. Labour costs are an important element in total ex-works costs (see paragraph 55).

70. In addition to labour savings, relative capital cost savings are made possible by building larger plants. The main saving comes from linking a number of kilns to one smoke stack but there would also be savings in pit conveyors on outputs up to 250 million and in the relative costs of providing common services. LBC estimated that, in terms of 1974 prices, one 125 million works costing £1·9 million would save about £100,000 as compared with two 62·5 million works; one 250 million works would save about £150,000 as compared with two 125 million works and a 500 million works would save about £175,000 as compared with two 250 million works. The cost of a 250 million works at 1975 prices would be of the order of £5 million.

71. There are no fuel savings associated with the scale of operations.

72. All things considered, a modern 250 million a year works is probably the minimum efficient size for fletton brick-making with the possibility of small capital savings, but not labour savings, beyond this size. A 250 million a year works represents 8·3 per cent of total fletton deliveries in 1973, when demand was strong, and 12·2 per cent in 1974 when demand was weak.

Non-fletton clay bricks

73. The type of non-fletton clay available determines the forming process used and the speed with which 'green' bricks can be made. Most modern plants use the wirecut extrusion method. We therefore concentrate attention on this, and we also deal mainly with clay presenting no special difficulties and with bricks of 'ordinary' quality (see Appendix 2). Special clays and special bricks affect the speed of operation and the choice of size of plant.

74. Works have to be designed around available machinery. We found general agreement that there are significant scale economies to be gained up to an output level of at least 25 million bricks per year. On a one-shift basis, this is the output level of an extruder with a capacity of between 15,000 and 18,000 bricks an hour, which most witnesses regarded as the most efficient and reliable size[1]. This size of extruder is the largest currently produced in Great Britain. As kilns are individually built, kiln size is more easily varied than is extruder size, but a kiln with a 25 million annual capacity would be regarded as efficient in itself (see paragraph 76). Ancillary equipment of reasonably efficient size can attain the same output on one-shift working.

75. If it is possible to man two shifts and hence produce 50 million bricks a year, there are likely to be further savings in unit costs because most of the equipment for 25 million a year could double its output although a second kiln and drying

[1]1. One manufacturer we consulted, however, preferred the greater flexibility gained by using more than one smaller extruder. 2. The output of a given extruder varies with the type of clay used and the quality of bricks required.

chambers (see paragraph 76) would be needed. We were given the following examples of the capital cost of building new works at 1974 prices (a) £1·25 million for 25 million bricks a year rising to £2·0 million for 50 million (on two shifts); (b) £1·4 million rising to £2·3 million; (c) £1·9 million rising to £3·2 million. To some extent capital savings from higher output will be offset by the higher maintenance costs of more continuous working. In labour costs, while, on the one hand, there may be higher wage rates associated with shift working, there may, on the other hand, be small unit savings in various odd jobs around the works, and in management; and two-shift working can provide small savings in indirect costs and some advantages in flexibility of production.

76. It has hitherto been assumed that a 50 million plant would operate with two kilns. There would be further small savings, at least in theory, in the use of a single, large kiln, in capital, fuel and labour costs but two kilns each of 25 million capacity have other advantages over one kiln with double the capacity. Two kilns provide greater flexibility than does one, bearing in mind that different quality bricks may have different firing requirements. Moreover, to begin with one kiln, leaving room to add a second, is some insurance against the risks involved in opening new works (see paragraph 66). It reduces the initial capital cost as compared with the cost of two separate 25 million a year works (see paragraph 75) and expansion can be deferred until a satisfactory market has been found for the product. This is important because, as a kiln cannot be run at much below full capacity without adding substantially to unit fuel costs, it would be expensive to operate a large kiln at half capacity either when demand was being built up initially or if it subsequently suffered a cyclical decline. Thus, all but one of the companies we consulted have built or planned two kilns for a 50 million annual output.

77. A company unable to operate two shifts, but wishing to increase output from 25 million a year to 50 million a year would have to install a second extruder and duplicate most of the ancillary equipment. As compared with two separate 25 million a year plants, a two-line 50 million a year plant could, in theory, show minor capital, labour and management savings but it is not thought likely that these would be significant. A two-line works under a single roof could be managed more flexibly than could two separate plants.

78. New works with capacities in excess of 50 million would probably involve a mixture of duplication of lines and shift working. There might be further capital savings at the clay-getting stage and the basic structure of the factory. A 75 million plant might have two kilns instead of three and thus gain some cost advantage whilst retaining flexibility. Otherwise, cost savings and any other advantages would be related to those achieved in doubling a basic 25 million plant however this were done. Such savings would however, be of a diminishing nature. Overall, it would not appear that significant cost savings would be found in works larger than 50 million, and that any such savings might well be more than offset by non-production disadvantages (see paragraph 66) unless the works were located close to a market large enough to absorb the product without incurring high transport costs.

79. We also examined the possible unit cost savings to be derived from a 25 million a year works operating one shift as compared with smaller works. We were told by both brickmakers and manufacturers of brickmaking equipment that equipment, eg grinding mill, extruder and kiln, for the larger works would

show lower unit capital costs than would equipment for works of lower capacity. Unit labour costs would also be significantly higher in the smaller works. In many stages of the process the actual number of machines employed would be the same and the same number of men would be needed to operate them. Smaller plants may be expected to have higher unit management and indirect labour costs. Fuel and power unit costs will also be higher with smaller extruders and especially smaller kilns. One company estimated that a kiln with 15 million capacity would only save about 20 per cent of the fuel costs of a 25 million capacity kiln, and that smaller kilns tend to produce a higher percentage of damaged bricks because the surface area of the bricks exposed is proportionately greater. An additional reason for higher unit costs in smaller works is that these tend to be more labour intensive because less automation can be justified.

80. Thus, significant scale economies can be obtained from plants up to 25 million and it would appear from the evidence we received that the unit costs of an efficiently operated 15 million plant might be as much as 25 per cent higher than the unit costs of an efficiently operated 25 million plant. We think that works smaller than 15 million would be likely to have still higher unit costs but have made no specific calculations.

81. This examination of the plant level scale economies which are available in the manufacture of extruded non-fletton clay bricks in normal circumstances and with current British technology, shows that there are substantial benefits up to 25 million a year, lesser benefits up to say, 50 million a year, and thereafter little if any, benefit. As compared with the minimum efficient size of fletton works representing (see paragraph 72) 8·6 per cent of fletton deliveries in 1973 and 12·2 per cent in 1974, a 50 million a year non-fletton works represents 1·6 per cent of non-fletton clay deliveries in 1973 and 2·1 per cent in 1974.

82. We emphasise that paragraphs 73 to 81 are derived from information and opinions related to current British technology and we recognise that technological changes could raise in the future, as they have in the past, the standard commonly accepted as representing the minimum efficient size of works; we understand, for example, that extruders of much higher capacities than those made in this country are used in Germany and the United States. It is, however, likely that the non-technological constraints upon size of works (see paragraph 66) will continue to be important factors in individual investment decisions.

83. We have not made a detailed study of scale economies in non-fletton clay works using presses instead of extruders, or in calcium silicate works or concrete brickworks. However, from the limited inquiries we have made we have no reason to think that the minimum efficient sizes of works in these sectors would be very different.

Other economies

84. A number of non-production economies in scale in brickmaking were mentioned to us. These tend to be similar, though different in magnitude and scope, in the fletton and non-fletton sectors. Most such economies come from costs which are to some extent indivisible and arise where more sales enable such costs to be spread over a wider area.

85. For example, after a certain sales volume is reached a company may be able to justify central engineering facilities which reduce dependence upon external supplies. This is rare in the non-fletton sector but LBC makes virtually all its own equipment. Its case for so doing, and the economies involved, are considered in paragraph 132.

86. Similar considerations apply to marketing and to research and development. LBC's position in these respects is considered in paragraphs 136 and 137. In the non-fletton sector we were told that research and development could be undertaken on a more sophisticated scale, and with more highly qualified staff, in a large company than in a small, and that, the larger the company, the lower its unit marketing costs should be. Economies are also available if a company providing its own road transport is large enough to justify an internal maintenance organisation. LBC is well able to do this, and has established a comprehensive coverage, but policy and practice in this respect varies widely in the non-fletton sector of the industry, some companies preferring to minimise their own transport commitments and to rely wholly or mainly on outside hauliers and maintenance services.

87. In both sectors of the industry it was claimed that size facilitates quantity discounts in purchasing to which LBC, at least, (see paragraph 135) attached importance. LBC said that negotiating efficiency played its part in the terms it obtained but felt that it was the size of the LBC orders which was of critical importance.

88. In the non-fletton sector our attention was drawn to the advantages enjoyed by the multi-works company which could produce, in efficient long runs, a range of different facings which could be marketed centrally as an attractive package. It was also suggested that the training of employees could be more complete if they were able to obtain experience at different works, and that a multi-works company was in a better position to reduce distribution costs by central control over empty running of road vehicles. A more general, but no less significant, advantage conferred by multi-plant organisation is that a multi-works company may be able to shut down high cost plants in slack periods and keep low cost plants fully operational.

89. The fact that, at least up to a certain point, both production and non-production scale economies are available in brickmaking may help to explain the growing concentration of the industry in recent years. In paragraphs 16 to 24 we show the structure of the industry in 1973, by size of company and works, and note the drastic reduction in the number of works since the second world war which is still continuing. Table 12 in paragraph 23 shows that, in 1973, nearly two-thirds of non-fletton bricks came from works producing less than 25 million. This percentage may be expected to fall as old works are replaced by new, although it should be noted that some existing works above 25 million use old techniques, are not designed on modern lines and are therefore not necessarily low cost producers. On the other hand, the size of some non-fletton works will continue to be constrained for such general reasons as are mentioned in paragraph 66, and it is likely that some small non-fletton brick-works, producing special quality bricks for limited markets, will continue to be highly profitable. There may always be a place for other small works serving routine local needs in areas unattractive to larger, more distant producers on account of transport costs.

(b) Investment

90. As shown in paragraphs 6 to 8 there has been no overall growth in the output of bricks during the last twenty years and demand has been subject to severe fluctuations. Nevertheless, a considerable quantum of investment has been undertaken in recent years by large brickmakers and by small. Investment in fletton brickmaking is considered in paragraphs 209 to 221. In the non-fletton sector, we summarise as follows the information supplied to us by manufacturers.

91. Investment policy tends to vary with the size of the company concerned and ranges from the minimum required to stay in business to articulated programmes related to defined profit objectives and envisaged for completion over a period of years. Brickmakers who do no more than keep kilns and machinery in good order seldom produce more than 5 million bricks a year, sometimes high class facings of which some are hand-made. Small brickmakers producing bricks of no special quality or appearance typically have a market radius of up to 30 miles and in some cases produce only as orders require. Over 30 per cent of the non-fletton brickmakers from whom we obtained information in respect of 1973 delivered fewer than 5 million bricks in that year. In some such cases investment extended to the provision of additional machinery such as forklift trucks because of difficulties in obtaining suitable labour and with a view to reducing its cost.

92. Many brickmakers, large and small, changed their fuel from coal to liquid petroleum gas (LPG) and natural gas in the early 1970s. Those who entered into long-term contracts for natural gas are still operating advantageously as prices have since then increased very steeply, especially since 1973. One brickmaker told us that he might revert to coal firing if he could be assured of supplies but others regarded the changeover from coal as having been essential to maintain their profitability. Amongst the advantages claimed for LPG and natural gas are superior fire control leading to increased output, higher thermal efficiency, lower wastage and easier compliance with pollution controls.

93. A variety of reasons was given for investment in new plant and machinery short of complete modernisation, or replacement, of a works.

94. We found that calcium silicate and concrete brickmakers were concerned to increase capacity, improve the quality of the product, reduce labour costs and improve the recruitment and retention of labour by the provision of easier working conditions. Machinery for calcium silicate and concrete brickmaking has improved in capacity and reliability in recent years. One concrete brickmaker told us that installation of such machinery had enabled him to double his capacity and more than halve his labour force. This increased capacity, he said, was 'well in excess' of historical demand in his market area but he was prepared, until additional sales could be promoted, to base his prices and profits policy on a minimum 66 per cent utilisation.

95. Clay brickmakers have been concerned, over the years, to reduce the cost of clay winning and preparation by the provision of improved quarry machinery and material reception and grinding installations in the plant. There has been some substitution of tunnel kilns for other types but, because of the comparative inflexibility of tunnel kilns (see paragraph 49) this has usually been done by the larger companies the demand for whose products is sufficiently substantial and stable to justify the cost and provide reasonable insurance against the risk of

under-utilisation. For smaller companies, the durability of existing kilns of other types, especially if converted to firing by LPG or natural gas, is a factor in the investment decision. Some clay brick manufacturers have replaced presses by extruders, where the nature of their clay made it possible to do this, as extrusion is, mechanically, the more straightforward process and would be more flexible in the event of any change in the size of standard bricks. There has also been widespread investment in wrapping and banding machinery for the protection of facing bricks liable to damage in transit and for greater convenience of mechanical handling to, and on, the building site.

96. Major modernisation of existing works, amounting in some cases to replacement, or the construction of new works on greenfield sites, is normally undertaken only by existing companies with a large and established demand or by companies mainly engaged in other activities but wishing to diversify into a new field. In both cases, a strong financial base is required, as a non-fletton clay works of 50 million capacity could cost over £3 million at 1974 prices (see paragraph 75) and take at least 18 months to come into full production.

97. The main advantages of a new works are the scale economies available (see paragraph 81) and the opportunity to minimise unit labour costs as compared with such costs at many old works. One brickmaker told us that he had budgeted for 2·48 man hours per thousand bricks at a new 25 million works as compared with 7·46 and 6·31 man hours per thousand at two of his older works. One company intends to have major works sited to serve the principal markets in England, Wales and Scotland and has provided several such works in recent years. Other companies have built, or are planning to build, similar works. A large non-fletton producer, however, told us that he preferred to acquire an existing works, for expansion and modernisation, rather than to invest in greenfield construction. These various companies have different profits and return-on-investment targets but all are concerned at least to maintain the margins recently achieved when demand for bricks was strong and would defer or abandon further investment unless this were reasonably assured. Much recent new investment in major modernisation or new works has been undertaken when demand was strong and in some cases it has come into production when demand had fallen. For a multi-plant company with older works which can be closed in a recession, whether temporarily or permanently, this is not necessarily disastrous but one company expressed as follows the difficulties in timing new investment to the best advantage. 'Given that the industry's cycle has historically proved to be about four years, the ideal time for the start of such a project would be the bottom of the cycle. This capacity will then come on stream in time to help augment supplies during the upturn. However, it is just at the bottom of the cycle that profit levels are reduced and stock build up drains cash with the result that this ideal start-time for new plant investment tends to be unused because of an adverse cash flow situation. Thus the decision to invest only follows once there is very clear indication of an upturn in the cycle. The risk then is that the new capacity may come on stream after demand has already peaked out or as the next recession develops.'

98. As the circumstances surrounding investment decisions in individual companies vary so widely we do not venture an opinion as to whether investment in non-fletton brickmaking in recent years has been adequate, in individual cases or in the sector as a whole, to enable non-fletton bricks to hold their place as a competitive building material. There is clear evidence, however, that the need for

modernisation is appreciated at all levels of the non-fletton sector where it is likely to yield a reasonable return and evidence, also, of a belief, as one manufacturer put it 'that brick is a great construction material with an excellent future'.

99. In addition to being open to the normal risk of market acceptance of a new product (see paragraph 66) a new entrant to the industry on a 'greenfield' site is at the disadvantage of having no established reputation as a manufacturer of any kind of brick. We found only one case of new entry by greenfield investment in recent years.

(c) Research and development

100. Research and development in the brick industry is concerned partly with manufacturing techniques and partly with structural problems with a view to enlarging the field in which bricks can be used. It is conducted partly by individual manufacturers and partly by outside agencies including research associations, universities and individual consultants. The work done by outside agencies is paid for either by general subscriptions to such agencies, usually related to the value of the subscriber's sales, or by support for specific projects given by individual manufacturers or by trade associations. The brick industry benefits from the activities of the Building Research Establishment of the Department of the Environment which is concerned, over a wide field, with constructional problems and the behaviour of building materials.

101. The work done by individual manufacturers is directed mainly to quality control, improvements in manufacturing techniques and machinery and the solution of local difficulties presented by the characteristics of different clays. Some individual manufacturers conduct or sponsor investigations into constructional matters which are normally regarded as more appropriate to outside agencies. In recognition of the importance of comparative 'in-the-wall' costs as between bricks and competitive materials, and bearing in mind that the delivered price of materials is a small proportion of such costs, brick manufacturers have of recent years been concerned to improve the speed and convenience with which bricks can be transferred from the delivery vehicle to the bricklayer's hands. This entails co-operation with builders, who are also concerned to reduce site costs, with a view to harmonisation of delivery equipment and site equipment. Support has also been given to investigations of methods of bricklaying.

102. Apart from the Building Research Establishment, the British Ceramic Research Association (BCRA) can be regarded as the most comprehensive research organisation to which the brick industry has access. Its income from members' subscriptions is augmented by Government grant. BCRA was for many years concerned only with clay bricks but now covers calcium silicate bricks as well; research into the production and use of such bricks is also separately funded by the Calcium Brick Division of the Welwyn Hall Research Association.

103. The research and development work of the Brick Development Association (BDA) is shown (for 1974) in Appendix 3.

CHAPTER 5

London Brick Company Limited: Technical background

(a) Growth of the business

104. LBC was incorporated in 1900, some 20 years after a method of manufacturing bricks from the lower Oxford clay was discovered at Fletton, near Peterborough. LBC manufactures and sells common and facing bricks, hollow clay blocks, field drain pipes, and machinery and equipment for brick production and handling. Through a wholly owned subsidiary, London Brick Land Development Company Limited which was formed in 1970, it promotes and develops the use of worked out clay pits for commercial purposes such as waste disposal and the provision of recreational facilities. In May 1974 it acquired Banbury Buildings Holdings Limited (Banbury Buildings) which manufactures prefabricated buildings for sale mainly to householders for 'do-it-yourself' erection.

105. Brickmaking is the principal activity. In 1973 this contributed about 95 per cent of group turnover and group profits. In 1974, following the acquisition of Banbury Buildings, bricks contributed about 75 per cent in both cases.

106. LBC told us that, before the first world war, the market for fletton bricks was restricted to the London area, parts of the East Midlands and East Anglia. Between the wars, LBC sought to extend its market area into the remainder of Southern England, the Midlands and the North by direct selling to architects and builders at a time when most bricks were supplied through merchants. Soon after the second world war LBC was regularly supplying commons and facings to all areas of England and Wales and was beginning to supply facings to Scotland. By 1950 (see Table 9 in paragraph 16) it was contributing about 70 per cent of fletton deliveries and about 24 per cent of total brick deliveries.

107. Between 1950 and 1967 LBC's share of fletton deliveries remained fairly constant at around 70 per cent but its share of total deliveries increased to around 30 per cent. At the beginning of 1968 LBC had four competitors in fletton brickmaking—Marston Valley Brick Company Limited (representing about 14 per cent of fletton deliveries), Redland Limited (about 8 per cent), Whittlesea Central Brick Company Limited (about 4 per cent) and Flettons Limited (about 2 per cent). Flettons Limited ceased production in 1970. LBC acquired Marston Valley in 1968, Redland's fletton works in 1971, and Whittlesea's works in 1973. By 1974 LBC was the sole producer of fletton bricks, supplying (see Table 9 in paragraph 16) about 41 per cent of total brick deliveries. As LBC does not produce engineering bricks (see paragraph 109) it is relevant to add that its share of common and facing brick deliveries in 1974 was 44 per cent (see Table 13 in paragraph 118).

108. The three acquisitions made by LBC between 1968 and 1973 brought under LBC control a total annual capacity amounting to some 36 per cent of its deliveries in 1967. LBC told us that it had been encouraged by a report of the National Board for Prices and Incomes[1] to believe that such acquisitions might prove a sensible and logical step; the original approaches, however, were made by

[1]Report No 47 *Prices of Fletton and Non-Fletton Bricks*, Cmnd 3480.

the other companies concerned. Our enquiries confirmed this, and we found nothing to suggest that LBC had set out to obtain a complete monopoly as a matter of policy.

(b) Production facilities

The lower Oxford clay

109. The lower Oxford clay from which fletton bricks are made has both advantages and disadvantages as a brickmaking material. The advantages are a low fuel requirement[1], due to the carbonaceous content of the clay; a high strength in the unburnt and in the burnt brick which reduces the number of distinct manufacturing processes required; a very uniform size in the unburnt and the burnt brick which allows accurate control over bricks dispatched to the customer without elaborate size testing; a lightweight burnt brick. The disadvantages are that it is not possible to make engineering bricks or bricks of special quality; fletton bricks are unsuitable for use in certain design situations where the brickwork is subjected to particularly severe conditions of exposure; the fact that the faces of most fletton bricks are 'applied' makes such bricks more vulnerable to damage than are 'through-colour' bricks; the range of aesthetic appeal is more limited than is the wide range obtainable from the variety of other clays available in the non-fletton sector of the industry.

110. The balance of manufacturing advantage in the use of lower Oxford clay is, however, very favourable so we enquired whether and, if so, to what extent, LBC's monopoly of fletton brickmaking might have come about through control of supplies of such clay and whether a prospective new entrant would be able to obtain supplies. We were greatly assisted in these enquiries by the Institute of Geological Sciences, which provided resource evaluation maps, and by the Department of the Environment which supplied land use maps to show the extent to which land, *prima facie* suitable, geologically, for fletton brickmaking is already developed for other purposes.

111. LBC estimated that the total area of the Oxford clay outcrop throughout Great Britain is about 1,900 square miles of which about 70 square miles, excluding land owned by LBC itself, might be workable. LBC has planning permission for about 9 square miles (about 5,750 acres) but owns significant surrounding and contiguous areas.

112. In its survey of the potentialities, for fletton brick-making, of the total Oxford clay deposits, the Institute of Geological Sciences identified four objective criteria which can be used for purposes of categorisation. Three of these criteria are geological. The fourth is the existence of active or defunct fletton-type brickworks. By reference to these criteria, the Institute defined three categories of area on their resource evaluation maps:

A: areas with a history of fletton brickmaking where the geological criteria are known to be met collectively;

B: areas of probable potential where map interpretation favours the view that the geological criteria are met;

C: areas of possible potential where ground investigation might confirm the existence of workable deposits.

[1]LBC estimates that the fletton brick requires only one quarter of the external fuel needed to produce non-fletton bricks.

113. Areas in category A, with two small exceptions, are already owned by LBC. Areas in category B cover roughly 224 square miles. For the purposes of this report areas in category C can be set aside as presenting too speculative an investigation for a potential new entrant to fletton brickmaking to attempt. Areas in category B are subject to the qualification that, while the possibility of fletton brickmaking cannot be ruled out by the nature of the clay, exploration might reveal difficulties and there is no history of brickmaking by reference to which the likelihood of such difficulties appearing can be assessed.

114. LBC's ownership of almost all the areas in category A is not surprising as LBC achieved its monopoly by expansion and acquisition in the traditional areas of fletton brickmaking. There is no evidence, however, that LBC's former competitors went out of business or 'surrendered' to LBC because they did not have, or could not obtain, supplies of clay. The reasons for the absence of any evidence of fletton brickmaking in the category B areas outside LBC's control, much of which are not already developed for other purposes, must be a matter for conjecture but the advice of the Institute of Geological Sciences is that this cannot be ascribed to purely geological considerations. It would therefore appear to be possible, so far as supplies of potentially suitable clay are concerned, for a new entrant to establish a footing in fletton brickmaking.

Number and capacity of works

115. At the beginning of 1974 LBC was operating 22 works, in the Peterborough, Bedford and Bletchley areas, with a total target capacity[1] of about 3,450 million bricks. Ample capacity was therefore available in relation to total deliveries of fletton bricks in 1972 and 1973 of around 3,000 million in each year. Due, however, to the severity of the decline in demand which was experienced in 1974 and which led to deliveries falling to 2,050 million, 8 works were closed, and production was reduced at 10 others, in the course of the year. Even so, stocks of finished bricks stood at some 360 million in December 1974. The first production target for 1975 was set at 1,950 million but this was subsequently increased to 2,150 million in response to an improvement in demand. Target production for 1976 has been set at 2,400 million subject to review early in the new year in the light of demand at that time.

116. The size of the 23 individual works which were operating in 1973 covered a wide range as can be seen from Table 11 in paragraph 23 which reflects target capacity in a year of strong demand for bricks and shows that 13 of the 23 works then operating were small (under 100 million), 3 were of medium size (100 million to 150 million), 4 were large (150 million to 250 million) and 3 were extra large. One small works was closed in September 1973. Of the 8 works closed in 1974, 6 were small in terms of this classification and 2 were of medium size. Of the remaining 14 works, 6 are small, 1 is of medium size, 4 are large and 3 extra large although (see paragraph 114) production has, in some cases, been restricted.

117. All but two of LBC's works are pre-war although many such works have been modernised to the extent that is possible without complete rebuilding. The two new works, of which one (New Saxon) is classified as of medium size and one (Kings Dyke) is classified as large, have been built since 1968. Such works are referred to by the company as 'new generation' works.

[1]Assuming no overtime, a shift week of 40 hours and, in most cases, two shifts.

Flexibility to produce facing bricks

118. Table 9 in paragraph 16 shows that LBC increased its share of total brick deliveries from 24·1 per cent in 1950 to 40·9 per cent in 1974. The growth of its business in common and facing bricks together; in commons alone; and in facings alone, is shown in Tables 13 to 15 below.

Table 13: Deliveries of common and facing bricks: millions

Year	*Total*	*LBC*	*LBC as % of total*
1950	5,744	1,427	24·8
1955	6,965	1,885	27·1
1960	6,930	2,011	29·0
1965	7,091	2,164	30·5
1969	6,110	2,388	39·1
1970	5,965	2,309	38·7
1971	6,399	2,762	43·2
1972	6,605	2,880	43·6
1973	6,583	2,883	43·8
1974	4,662	2,050	44·0
1975 (Jan.–Sept.)	3,809	1,724	45·3

Table 14: Deliveries of common bricks: millions

Year	*Total*	*LBC*	*LBC as % of total*	*Commons as % of LBC deliveries of all bricks*
1950	4,347	1,117	25·7	78·3
1955	5,028	1,372	27·3	72·8
1960	4,623	1,352	29·2	67·2
1965	4,258	1,328	31·2	61·4
1969	3,545	1,443	40·7	60·4
1970	3,334	1,292	38·8	56·0
1971	3,339	1,397	41·8	50·6
1972	3,275	1,408	43·0	48·9
1973	3,191	1,363	42·7	47·3
1974	2,406	1,113	46·3	54·3
1975 (Jan.–Sept.)	1,831	840	45·9	48·7

These figures show that the increase of 1,456 million (102 per cent) in LBC's total deliveries of commons and facings between 1950 and 1973 consisted mainly of an increase of 1,210 million (390 per cent) in facings; and that the proportion of facings to LBC's total deliveries rose from 21·7 per cent to 52·7 per cent during the period. In 1974 there was a much sharper fall (38 per cent) in deliveries of facings than in deliveries of commons (18 per cent), due mainly to the severe decline in private housebuilding for which up to two-thirds of LBC's output is normally sold.

119. The proportion of facings to total deliveries in 1973 was two and a half times the proportion delivered in 1950 but existing production facilities do not enable this proportion to be increased at will. In the Hoffman transverse-arch type

of kiln used in the fletton manufacturing process, the bricks in the bottom half of the kiln must be 'set on edge' to give sufficient strength throughout the whole kiln during the drying process. The faces of bricks 'set on edge' are often in contact with other bricks and this results in a blemish. This blemish was not aesthetically acceptable in the original types of fletton facing bricks so, at one time, facings could be made only in the top half of the kiln by being 'set flat' in such a way that no facing surface was in contact with another brick. This restricted the production of satisfactory facings to a theoretical maximum of 50 per cent of total output

Table 15: Deliveries of facing bricks: millions

Year	*Total*	*LBC*	*LBC as % of total*	*Facings as % of LBC deliveries of all bricks*
1950	1,397	310	22·2	21·7
1955	1,937	513	26·5	27·2
1960	2,307	660	28·6	32·8
1965	2,833	836	29·5	38·6
1969	2,565	945	36·8	39·6
1970	2,631	1,017	38·7	44·0
1971	3,060	1,365	44·6	49·4
1972	3,330	1,472	44·2	51·1
1973	3,392	1,520	44·8	52·7
1974	2,256	937	41·5	45·7
1975 (Jan.–Sept.)	1,978	884	44·7	51·3

Sources of Tables 13–15: Department of the Environment and LBC.

which was never achieved in practice. A range of textured facings was therefore developed in the early 1960s which must still be 'set on edge' in the bottom half of the kiln but in which the blemish is used as a feature of the brick's appearance. Such bricks can be 'set on edge' throughout the kiln and, at the New Saxon and Kings Dyke works, can be associated with 'set flat' facings with satisfactory results.

120. Nevertheless, flexibility in the production of commons and facings is still limited by technical and marketing constraints. At works at which agricultural drain pipes are produced with bricks, these must be set in the upper half of the kiln above common bricks as facing bricks cannot be satisfactorily fired beneath pipes. At all but the New Saxon and Kings Dyke works, experience has shown that, if 'set flat' facings are put on top of 'set on edge' facings, wastage of the latter is likely to exceed 5 per cent, with lower general quality, and it is therefore the practice to support 'set flat facings' on commons except at these two new works. The marketing constraint is the continuing demand for 'set flat' facings which prevents concentration on 'set on edge' facings.

121. LBC's production of commons is therefore partly 'unavoidable', ie resulting from technical and marketing constraints on the production of facings, and partly 'voluntary', ie those produced in excess of the 'unavoidable' minimum. The information supplied by LBC in this connection is summarised for the period 1969 to mid-1975 in Table 16.

Table 16: Facings and commons as percentages of production: 1969 to mid-1975

	1969		1970		1971		1972		1973		1974		Jan/June 1975	
	Total	*Cmns*	*Total*	*Cmns*	*Total*	*Cmns*	*Total*	*Cmns*	*Total*	*Cmns*	*Total*	*Cmns*	*Total*	*Cmns*
SOE facings	13·8		17·7		23·0		22·2		24·9		19·4		25·3	
SF facings	26·7		28·8		26·4		28·0		28·0		23·0		28·0	
Total facings	40·5		46·5		49·4		50·2		52·9		42·4		53·3	
Cmns with SF facings	37·4	62·8	39·3	73·5	36·2	72·2	37·3	75·8	35·0	75·4	28·1	49·4	31·5	67·5
Cmns with pipes	4·3	7·3	4·1	7·6	3·0	5·9	2·9	6·0	3·2	6·9	3·6	6·4	4·4	9·5
Total 'unavoidable' cmns	41·7	70·1	43·4	81·1	39·2	78·1	40·2	81·8	38·2	82·3	31·7	55·8	35·9	77·0
'Voluntary' cmns	17·8	29·9	10·1	18·9	11·0	21·9	9·0	18·2	8·2	17·7	25·1	44·2	10·7	23·0
Total cmns	59·5	100·0	53·5	100·0	50·2	100·0	49·2	100·0	46·4	100·0	56·8	100·0	46·6	100·0
Total facings and cmns	100·0		100·0		99·6		99·4		99·3		99·2		99·9	

Notes:
1. SOE = set on edge; SF = set flat; cmns = commons.
2. The total of facings and commons is less than 100 per cent of production after 1970 because of the production, in the later years, of 'calculon' bricks. Such bricks are, in effect, a larger version of the common brick and are included as commons in certain preceding tables but it would not be appropriate to include them as such in this particular table.

122. Table 16 shows that the preponderance of 'unavoidable' commons results from their production as a support, in the kiln, for 'set flat' facings and that commons so produced accounted for between 62·8 per cent and 75·8 per cent of all commons produced throughout the period reviewed, except in 1974 when the reduction in demand for all facings was more drastic than was the reduction in demand for commons. If, in the future, commons became difficult to sell, and 'set flat' facings were still required, it would be necessary to build new works or reconstruct existing works, if high wastage rates (see paragraph 120) were to be avoided. The two existing new works are nominally capable of 100 per cent production of facings. In 1973 they produced 49·9 per cent 'set on edge' facings, 47·4 per cent 'set flat' facings and 2·7 per cent commons.

Production and production costs at individual works

123. The following table shows the number of commons and facings produced at individual works in 1973 and 1974 together with the relative production costs per 1,000 bricks. The figures are in terms of 'gross makes', ie bricks used at the works, or unfit for sale, are included as well as bricks sold or put to stock. The table for 1973 (21 works) does not include the two works acquired from Whittlesea Central Brick Company Limited in November 1973 as detailed costs for these works are not available for that year. The 1974 table (22 works) includes those

Table 17: Gross makes (millions); costs per 1,000 bricks indexed from Kings Dyke as 100

	1973				*1974*			
Works	*Cmns*	*Facings*	*Total*	*Cost per 1,000*	*Cmns*	*Facings*	*Total*	*Cost per 1,000*
Kings Dyke	4	123	127	100·0	64	71	135	100·0
New Saxon	3	103	106	103·9	37	72	109	95·1
Beebys*	85	79	164	124·1	80	49	129	127·8
Norman Cross*	21	34	55	126·4	24	19	43	126·8
Dogsthorpe*	1	36	37	127·2	4	25	29	123·0
Stewartby*	412	326	738	128·4	342	221	563	141·0
LB 1*	38	54	92	129·9	34	40	74	132·5
Calvert*	206	198	404	131·0	127	122	249	134·5
Jubilee†	34	29	63	136·6	29	18	47	135·1
Bletchley	85	123	208	137·8	100	79	179	138·0
Northam	12	23	35	138·0	20	8	28	133·2
Hicks*	54	37	91	142·1	53	16	69	134·4
Orton*	25	79	104	144·1	34	49	83	143·1
LB 2/4†	61	46	107	150·0	31	3	34	146·7
Ridgmont*	188	218	406	150·2	197	138	335	141·0
Coronation†	88	33	121	153·6	25	2	27	162·0
Star Whittlesey†	19	18	37	159·4	8	2	10	143·2
Victory†	32	3	35	161·0	11	—	11	153·6
Kempston*	64	103	167	165·5	72	43	115	171·3
Elstow (closed in September 1973)	26	—	26	166·8	—	—	—	—
Saxon†	26	10	36	225·2	19	1	20	265·5
Central 1†	—	—	—	—	17	6	23	154·0
Central 2†	—	—	—	—	32	22	54	172·1

* Reduced to single shift working, and/or kilns put out, in the course of 1974.
† Closed in the course of 1974.

works (Central 1 and Central 2) but not Elstow which was closed in September 1973. The cost figures are struck before depreciation and do not allow for certain small overhead items. As facings are more expensive to produce than are commons, the costs at the different works are affected by the proportions of commons and facings produced. Costs in 1974 are also affected by closures and reductions in target capacity in the course of that year.

(c) Technical developments

124. LBC has been concerned, over the years, to improve the processes, plant and equipment required for fletton brickmaking and to develop mechanical forms of delivery of the bricks, by road and rail, and mechanical handling on the building site.

125. Improved clay preparation, grinding and screening machinery, presses and 'green' brick handling devices have been introduced including a form of fork-lift truck which, using pneumatic rubber tubes, lifts and conveys a load of bricks without the use of pallets. Research into kiln design and fire control has reduced the time spent by 'green' bricks in the kiln by up to 50 per cent. The introduction of a range of facing bricks which (see paragraph 119) can be 'set on edge' throughout the kiln was facilitated by the development by the company of the necessary production machinery.

126. The 'new generation' works at New Saxon and Kings Dyke (see paragraph 117) incorporate all the technical improvements achieved over the years in the pursuit of lower labour intensiveness and better plant utilisation including flexibility of production as between commons and facings. Some such improvements are in use at all works; some are in use at some works only; some works which were operating at the beginning of 1974 were comparatively old fashioned and, at the date of our Report, were closed.

127. The most important technical development in the production process which is currently under investigation is the mechanical 'setting' of the 'green' bricks prior to their transfer to the kiln. This is already mechanised in modern non-fletton works but the type of setting machine which can be used for non-fletton bricks would not be suitable for fletton bricks because the setting patterns for such bricks are more complex than are the patterns for non-fletton bricks. This is due to the need to allow the unique, endemic carbonaceous gases, given off by the lower Oxford clay, to clear from the bricks during their firing. LBC has, however, purchased an experimental machine, is collaborating with the manufacturer in its development and is itself developing the necessary associated equipment and kiln patterns.

128. The 'selfstak' equipment for brick handling which LBC has developed enables units of over 300 bricks to be mechanically loaded on to lorries, and unloaded at the building site, by the driver of the vehicle alone. Special brick cages and barrows have been developed to enable the 'selfstak' units to be passed through to the bricklayer without recourse to the traditional hod. The development of the 'selfstak' system was initiated in the 1960s when competition from alternative materials became increasingly severe and comparative site handling costs increasingly significant in the customer's choice between alternative materials. Other mechanical handling systems were introduced during the same period by other brickmakers.

129. Most LBC bricks are delivered direct by road from the works to the customer's site but LBC has also introduced what it terms 'indirect' delivery systems with a view to providing a better service to the customer and reducing the cost of delivery to distant points. A small proportion of deliveries is made in 'trunking' vehicles to roadheads where the bricks are mechanically transferred to smaller lorries which complete the delivery. At two of the three roadheads, the bricks are finally unloaded by hand. At the third roadhead, 'selfstak' (see paragraph 128) is used. LBC has calculated that, for a roadhead depot to be worthwhile, (a) the majority of deliveries from the depot must be to final destinations within about 18 miles of the depot and, mostly, further away from the depot than from the works; (b) there must be a regular demand in the depot's catchment area of about 400,000 bricks a week. Up to 10 per cent of deliveries are made via nine railhead depots including those served by the 'fletliner' system which LBC has developed. This system enables bricks to be mechanically loaded, alongside the kilns, into skeletal containers which are transferred, at the distant rail terminal, to special lorries for mechanical unloading at the building site. LBC has calculated that the 'fletliner' system can normally be profitable, as compared with direct road haulage, if (a) depots are at least 100 radial miles from the supplying works, (b) they serve catchment areas with a regular demand of 1·6 million bricks (ie 5 train loads) a week, and (c) a single works, or a group of works in close proximity, can supply the quantity and range of bricks required. The Liverpool/Manchester 'fletliner' service, which was introduced in mid-1973, fulfils these criteria. The next such service to be introduced will be to the North East. The London service, introduced in 1974, is a special case, so far as distance from the works is concerned, because of the effect of traffic densities on the economics of direct road haulage.

(d) Scale economies

130. Paragraphs 68 to 72 discuss the extent to which economies of scale in production are available in fletton brickmaking and suggest that, all things considered, a modern 250 million a year works is probably the minimum efficient size with the possibility of small capital savings, but not labour savings, beyond this size. LBC's 'new generation' works at Kings Dyke has a capacity of 250 million a year. The 'new generation' works at New Saxon has a capacity of 125 million.

131. LBC told us that it derives significant non-production scale economies from engineering, transport, purchasing, marketing and research and development. The costs for a number of these items are to some extent indivisible and more sales mean that the costs can be spread over a wide area.

132. LBC makes virtually all its own equipment. It is the only customer for the special equipment required for the unique fletton manufacturing process and the company estimates that, with no engineering department, the capital cost of the Kings Dyke works, for example, would have been 20 per cent higher, although much of this saving is due to the fact that no commercial profit is included in the value which LBC puts upon the engineering department's services. Apart from savings in machinery costs, the benefits to LBC, from having an engineering department, include closer relations with the production side than outside engineers could enjoy; greater reliability and regularity of supply and the need to hold less equipment and stocks; and greater ability to keep fletton production knowledge within the company. LBC said that, if its output levels fell sharply,

the *pro rata* engineering overheads would rise steeply and it would need to re-examine the logic of maintaining an engineering department at the present level. It considered that the cut-off point for maintaining engineering operations at their present level was annual production of about 2,000 million bricks; output levels above this helped to spread the engineering overheads. The significance of these points is uncertain, however, because LBC also said that any 'slack' in the engineering operations can often be taken up by gaining outside business. Its Iranian venture (see paragraph 146) is another example of how LBC's engineering facility can be used for wider purposes.

133. Up to 90 per cent of LBC bricks are delivered by road from the works to the customer's site, whether direct or through roadhead depots, and road transport is also involved in the final delivery of bricks dispatched from the works to railheads, including 'fletliner' terminals. Nearly half the road haulage required at times of peak demand is provided by the company's own fleet of over 600 vehicles, which are maintained by the company's transport department. LBC told us that it saw no transport cost advantages in being above the minimum level of output required to support an efficient maintenance organisation for its own road vehicles. LBC considered that each transport garage should serve between 50 and 150 vehicles; in larger units maintenance efficiency fell away. LBC employs outside hauliers, as a matter of policy, for the delivery of around 50 per cent of its bricks at times of peak demand. It believes that its weight as a negotiator may affect the terms which it is able to obtain for outside road haulage.

134. The advantages of a 'fletliner' service (see paragraph 129) are available only to a large company such as LBC.

135. In purchasing, LBC told us that its size and expertise enable it to secure considerable discounts. For example, as compared with the prices quoted to, or paid by, certain other companies it had purchased a conveyor belt for some 39 per cent less, coal for some 31 per cent less, 'derv' for some 10 per cent less. Negotiating efficiency played its part in such transactions but in the company's view, its size was of critical importance.

136. In marketing, LBC said that its size enabled it to establish a national marketing organisation many years ago and that this organisation, which accounts for about 2 per cent of ex-works costs, was able to absorb the additional sales of the works acquired since 1967 (amounting—see paragraph 108—to some 36 per cent of LBC's deliveries in that year) without increasing the sales force. In 1973 LBC salesmen achieved an average of brick sales per man/year nearly three times the level achieved by the salesmen of one of the groups of works taken over.

137. LBC told us that it had always been the only fletton brickmaker to maintain its own research and development department, in addition to contributing to the cost of work undertaken by outside organisations, and that its size enabled it to provide the necessary funds. The sums allocated for research in the company's laboratories and as contributions to outside research (about £180,000 in 1973) do not reflect the full weight of the company's effort as much of the work is carried on in the engineering and transport departments and is not separately recorded. Because of its size, and its dominant position, over the years, in fletton brickmaking LBC has always made itself responsible for that industry's research into pollution problems in conjunction with the Alkali Inspectorate of the Department

of the Environment. The company said that, as the main costs involved in research and development were the costs of maintaining a unit at all, output would need to be severely hit over a long period of time before it would consider reducing research expenditure.

(e) Market areas and methods of distribution

138. LBC supplied us with an analysis of its deliveries by road and rail in terms of the 60 distribution areas, mainly geographical counties but with separate figures for roadheads and railheads, for which it maintains statistics. For the period July to December 1973[1], deliveries by groups of counties, including roadheads and railheads situated therein and collections by customers in their own vehicles, showed the following pattern in terms of percentages of total deliveries during the period.

Table 18: Distribution of deliveries by geographical areas: July to December 1973

Area	*Counties included*	*% of total deliveries*
1.	Bedfordshire, Buckinghamshire, Cambridge and Isle of Ely, Hertfordshire, Huntingdonshire, Northamptonshire, Rutland	15·0
2.	Berkshire, Derbyshire, Essex, Gloucestershire, Hampshire, Kent, Leicestershire, Lincolnshire, London, Norfolk, Nottinghamshire, Oxfordshire, Staffordshire, Suffolk, Surrey, Sussex, Warwickshire, Wiltshire, Worcestershire.	62·6
3.	The rest of England and Wales.	22·0
4.	Scotland.	0·4

139. LBC does not maintain comprehensive statistics of deliveries in terms of radial mileage from its works. LBC supplied us with the following figures of deliveries by road, including 'indirect' deliveries by road from road and rail depots as well as direct deliveries by road from the works. As the mileage travelled to the rail and road depots is not included in the percentage calculations, the 'Up to 50' band is overstated, and the wider bands are understated, to the extent that bricks 'indirectly' delivered have travelled considerable distances before reaching the road and rail depots. Up to 10 per cent of the total number of bricks dispatched from the works are delivered by road to final destination from road and rail depots.

Table 19: Deliveries by road: percentages by radial mileage

	July/Dec	*Jan/Dec*	*Jan/July*
Radial miles	*1973*	*1974*	*1975*
Up to 50	47·90	49·84	47·41
51–100	37·12	37·17	39·01
101 and over	14·98	12·94	13·48
Total	100·00	99·95	99·90

[1]Demand for bricks was relatively high during the period July to December 1973. The corresponding percentage figures for the period January to June 1974, when demand was relatively low, were: 15·7; 63·2; 20·7; 0·4.

140. As to proportional trading between sales direct to customers and sales through merchants, LBC told us that it had built up its national market by direct sales to architects and builders but its former policy of concentration on direct selling had been progressively modified as it acquired the remaining fletton brickmakers who had sold mainly through merchants. In 1967 less than 20 per cent of LBC's sales were through merchants but this proportion had risen to nearly 40 per cent by 1974. Part of the increase in recent years is attributable to increased repairs and maintenance work undertaken by small builders who tend to trade with merchants.

141. It was suggested to us by some witnesses that LBC supplied merchants only 'under sufferance' and that it appeared to be company policy to confine its merchants trade to a limited number of selected individuals. LBC told us that it imposes no general limitation upon new merchant customers except credit worthiness and willingness to accept deliveries of not less than 6,000 bricks. In times of high demand, however, a new merchant customer would, in addition to being given a date-line (see paragraph 223) 'most probably' be asked to deal, at least initially, on a 'yard-trade-only' basis. The company's reason for this last restriction is its belief that a merchant performing the full range of functions (see paragraph 25) serves a useful and important purpose in the construction industry but that the value of what the company termed the 'brass plater' (eg the brick factor—see paragraph 26) is more doubtful. There is also the risk, the company thinks, of a builder masquerading as a 'brass plate' merchant in order to obtain the merchant's rebate on the ex-works price; only through experience of a new merchant customer can any such doubts be resolved.

142. LBC emphasised, however, that once a merchant is accepted as a customer he receives the same treatment in times of high demand as does any other customer, ie the base-line system of allocating supplies (see paragraph 223) is strictly applied to him without discrimination.

(f) Non-reference activities

143. By non-reference activities we mean activities outside our terms of reference, which are confined to the supply of building bricks in Great Britain. The non-reference activities of LBC which are carried on in the United Kingdom, are mentioned in paragraph 104. Outside the United Kingdom, LBC has recently entered into a joint venture with Iranian partners to build and operate a brick-works in Iran.

144. We did not find it necessary, for the purposes of our inquiry, to investigate these non-reference activities in any detail. As regards the London Brick Land Development Company Limited, we noted that upwards of 4,500 acres have been excavated over the years and that excavation continues at the rate of about 100 acres a year. We were told that, up to the second world war, little had been done to restore derelict pits but that redevelopment schemes since undertaken, or approved to be undertaken, will result in the reclamation or re-use of over 2,550 acres which are currently excavated. Some 87,000 trees have been planted for amenity purposes during the last 30 years.

145. Whereas the activities of London Brick Land Development Company can be regarded as consequential upon the company's main business of brick-

making, the acquisition of Banbury Buildings Holdings Limited represents an attempt to reduce LBC's dependence upon brickmaking. LBC, however, regards the Banbury activities as complementary to brickmaking and as its first step into the field of industrialised building.

146. In the joint venture in Iran, which was publicly announced on 30 September 1975, LBC will take up to 20 per cent of the shares in an Iranian public company, Tehran London Brick. The brickworks will have an initial capacity of about 145 million bricks a year and will be capable of expansion to twice that capacity. LBC will design the works and supply the specialised plant and machinery.

CHAPTER 6

London Brick Company Limited: Policy and performance

(a) Prices

147. At Appendix 4 we show 'national' price indices derived from Department of Industry statistics from 1963 to October 1975 (1963=100) for fletton commons, fletton facings, all building bricks, and housebuilding materials. We understand that, for fletton commons and fletton facings, the statistics are compiled by the Department of Industry from the simple average of delivered prices to five areas (Bristol, Sheffield, Birmingham, Southampton, and central London) and, in the case of fletton facings, from the simple average of delivered prices of four facing brick types (Heather, Hardwick, Tudor, and Rustic). The statistics for all building bricks (based on delivered prices) and for housebuilding materials (based on a mixture of delivered and ex-works prices) are compiled by reference to average prices as reported by individual manufacturers weighted in proportion to their sales volumes incorporated in Census of Production returns. We were told by the Department of Industry that the current (1975) weightings are taken from the 1968 Census of Production; the figures would not therefore include the effect of changes in the pattern of sales from year to year since then. The indices in Appendix 4 for fletton commons and fletton facings show lower increases than would indices relating solely to LBC because of the inclusion of higher priced non-LBC flettons in the years before LBC became the sole producer.

148. At Appendix 5 we show the changes in LBC's ex-works selling prices from 1 July 1963 to 21 July 1975 for its commons and for five of its facing brick types (Rustic, Tudor, Golden Buff, Heather and Dapple Light). This Appendix also shows, for each brick type, at October 1975, following the latest price change date of 21 July 1975, an ex-works price index (1 July 1963 = 100).

149. To see how LBC's prices compare with those of other brickmakers, we obtained from six clay brickmakers, two calcium silicate brickmakers, and one concrete brickmaker their ex-works prices at 23 October 1975 for commons and for the range of facings offered.

Table 20: Selected ex-works selling prices per 1,000 bricks at 23 October 1975

		Commons £	*Facings* £
1. *Clay bricks*			
Fletton	LBC	17·42	18·02–21·83
Non-fletton	Company 1	18·00 and 30·00	38·15–77·60
	2	22·67	28·26–53·00
	3	24·00	37·00–47·00
	4	34·40	48·40–60·00
	5	23.50	37·30–46·25
	6	21·50 and 33·00	35·75–91·00
2. *Calcium silicate*			
	7	18·00	26·25–36·75
	8	18·25	23·25–42·25
3. *Concrete bricks*			
	9	17·00	21·25–29·50

(b) Profits and related matters

General

150. We obtained from LBC summaries of sales values, profits, and capital employed in respect of the company's brickmaking activities for the six financial years to 31 December 1974. The company's allocations of total brickmaking costs and capital employed between the three varieties of building brick made by LBC, namely commons, calculon, and facings, are explained in paragraphs 162 and 163. Calculon bricks (in effect, large common bricks) contribute about 1 per cent of ex-works sales values.

151. We also obtained some comparable information in respect of the brickmaking activities of five selected non-fletton clay brickmakers, covering the same period[1] for comparison with those of LBC. We show below, for LBC, and for the five non-fletton brickmakers combined, the sales volumes, in 1969, 1973 and 1974, of commons, facings and all bricks (including any engineering bricks) and the respective percentages of total deliveries.

Table 21: Sales volumes and percentages, LBC and others: 1969, 1973 and 1974

Brick type	*Year*	*LBC* (m bricks sold)	*The five others* (m bricks sold)	*Total deliveries* (m bricks sold)	*LBC* (per cent of total deliveries)	*The five others* (per cent of total deliveries)
Commons	1969	1,443	311	3,545	40·7	8·8
	1973	1,363	365	3,191	42·7	11·4
	1974	1,113	313	2,406	46·3	13·0
Facings	1969	945	225	2,565	36·8	8·8
	1973	1,520	431	3,392	44·8	12·7
	1974	937	338	2,256	41·5	15·0
All bricks	1969	2,388	596	6,481	36·8	9·2
	1973	2,883	884	6,998	41·2	12·6
	1974	2,050	737	5,011	40·9	14·7

LBC Group profits

152. At Appendix 6 we show a summary of LBC's group capital employed and profit[2] for the 20 year period 1955 to 1974 with capital employed on both a 'company' basis (A) and a Commission historic basis (B)[3]. LBC has expressed the opinion that the 'company' basis would give more meaningful profit rates than the historic basis.

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[1]References to calendar years are in respect of financial years ending at dates nearest to 31 December.

[2]The group profit rates are compiled after taking into account investments as part of capital employed and investment income as part of profit. Group capital employed includes all cash on deposit and fixed assets are shown after deducting investment grants. In other respects the group profit rates on an historic basis are compiled in the same manner as are the historic profit rates on brickmaking shown in Appendix 7.

[3]Capital employed on a 'company' basis includes a revaluation of fixed assets at the beginning of 1968, the effect of which was to increase capital employed for 1968 from the historic figure of £18·8 million to £25·6 million. From 1969 to 1974 the profit rates are lower on a 'company' basis than on a Commission historic basis. The latter is subsequently referred to in this Report as an historic basis.

153. The company told us that its target profit rate in a period when demand for bricks was high was a return of 20 to 25 per cent on a 'company' basis and a return of 18 to 20 per cent on turnover. The equivalent target profit rate on capital employed on an historic basis would be of the order of 25 to 30 per cent.

154. Appendix 6 shows that, in all the years from 1955 to 1965 the 'company' and historic returns on capital employed were above 20 per cent, ranging between 22·3 per cent and 29·5 per cent, but, in 1966 and 1967, fell below 20 per cent. The revaluation of fixed assets at the beginning of 1968 produced significantly lower profit rates from 1968 onwards on a 'company' basis than on an historic basis. During the seven years period, 1968 to 1974, the group profit rates in 1971, 1972 and 1973 were within the LBC target of 20 to 25 per cent on capital employed on a 'company' basis and within the historic equivalent of 25 to 30 per cent. In the remaining years, 1968 to 1970 and 1974, the profit rates were well below 20 per cent on a 'company' basis, and below 20 per cent on an historic basis. Over the 20 years 1955 to 1974 the simple averages of the returns on capital employed were 22·0 per cent on a 'company' basis within a range of 8·3 per cent to 29·5 per cent, and 23·5 per cent on an historic basis within a range of 9·5 per cent to 29·5 per cent.

155. In 1974 the group historic return on capital employed fell to 9·5 per cent. The rate for brick-related activities[1] in that year was 7·7 per cent. The group profit of £3·4 million for 1974 included the profit from Banbury Buildings (see paragraph 104) and is stated before charging loan stock interest of £684,000 (equivalent to £927,700 in a full year) on £6·6 million of 14 per cent unsecured loan stock which was issued in connection with the acquisition of Banbury Buildings.

156. Following publication of the report of the Inflation Accounting Committee we discussed with LBC the implications of the Current Cost Accounting System (CCA) as recommended by that Committee. We asked LBC to restate its profits and capital employed from 1969 to 1974 as under the CCA proposals but were told that this could not be completed in the very short time available. However, the data to calculate the return for the LBC group as a whole on a Current Purchasing Power basis (CPP) was available for 1974 and the group accounts for that year incorporated a CPP statement[2]. On this basis the 1974 group profit rate on closing capital employed was 2·7 per cent; the rate for brick-related activities was 1·6 per cent.

157. The company chairman's statement with the 1974 group accounts reviewed that year's results in the following terms:

> 'The year was the most difficult in the long history of the Company. Fletton brickmaking is a continuous process industry where any disruption in the mass production techniques employed leads to a disproportionate effect on costs. All our operations, in production, marketing and distribution, benefit from economies of scale and therefore, in a situation where demand drops as heavily and rapidly as it did in 1974, margins are very severely affected. If these conditions are further aggravated by a system of price control which does not allow rapidly escalating costs to be speedily translated into higher selling prices, then all the ingredients exist for a most unprofitable year. This is what happened to London Brick in 1974.'

[1]Principally the manufacture and sale of clay products (mainly bricks), and including farming activities (on land not yet excavated) and operation of waste disposal services and rentals from 'leisure' activities (on land previously excavated).

[2]On the basis of Provisional Statement of Standard Accounting Practice No 7 issued by the Accounting Standards Steering Committee.

158. The 1975 interim report for the first six months of 1975 showed group turnover of £32·0 million, including £25·5 million for brick-related activities; total group profit was £5·6 million (before interest charges and taxation), including £5·0 million for brick-related activities, equivalent to 19·6 per cent of turnover. The corresponding figures for the whole year 1974 were total group turnover of £45·1 million including £36·2 million for brick-related activities; total group profit was £3·4 million, including £2·5 million profit for brick-related activities, equivalent to 6·9 per cent of turnover. The recovery in the first six months of 1975 was attributed by LBC to a combination of factors, the most important being 'a steady rise in the level of housebuilding following the collapse that occurred in 1974'. A gradual improvement in demand had enabled the company to lift some 168 million bricks from stock during the first six months of 1975, out of the total of bricks stacked of 361 million at 31 December 1974, and had left the company with what was described as 'only a working stock of standard bricks' by the end of August 1975. We were told that the total profit of £5·6 million shown by the 1975 interim results included an element of stock profit, estimated at some £1·2 million.

159. LBC's forecast for the full year 1975 in respect of all clay products suggests the likelihood of a return on delivered sales of about 18 per cent (13 per cent excluding estimated stock profit). This 18 per cent compares with actual returns on delivered sales of bricks of 19.9 per cent in 1973 and 7·5 per cent in 1974, as shown in Appendix 4.

160. It will be seen from Table 22 that in only three years in the eleven years period from 1963 to 1973 did the group historic profit rate fall below 19 per cent but in 1974 it fell to 9·5 per cent. The Table shows that, in periods of low demand for bricks prior to 1974, eg in 1965 and 1966 and again in 1969 and 1970, the historic profit rate fell to 15 per cent or below in 1966 and 1969 but recovered in each following year. In 1967 sales volume increased by 11 per cent compared with 1966; in 1970, sales volume decreased by 6 per cent compared with 1969. There was a small selling price increase in 1967 and substantial price increases just before, and during, 1970 (see Appendix 5). The year 1975, in relation to 1974, seems likely to follow a similar pattern but at a higher level of profitability.

Table 22: Deliveries and profits rates: 1963 to 1974

Year	*LBC deliveries (millions)*	*Group historic profit rate* %
1963	2,054	24·5
1964	2,192	29·2
1965	2,164	22·3
1966	2,064	15·0
1967	2,293	19·2
1968	2,245	19·9
1969	1,995	12·7
1970	1,883	18·3
1971	2,321	28·5
1972	2,880	28·2
1973	2,883	28·9
1974	2,050	9·5*

* 7·7 per cent on brick-related activities.

161. LBC has not prepared a forecast of capital employed in 1975 which would enable the forecast profit to be expressed in terms of historic capital employed. However, if the 1975 profit forecast is achieved, we think it likely that the return on historic capital employed will approach the 1973 rate of about 29 per cent for the LBC group (about 30 per cent for all clay products).

Brickmaking profits

(i) Allocations of LBC brickmaking costs and capital employed

162. The allocations by LBC of brickmaking costs between commons, calculon, and facings take account of the ascertained direct costs of facings. However, there are additional costs relating to certain processes involved in the manufacture of facings but LBC told us it had not considered it worthwhile to quantify such costs. These unascertained costs arise in both the manufacture and sale of facings. In manufacture, for example, they include the costs of double screening the clay at certain works and the higher costs of depreciation on the machinery developed to make facings.

163. For the purposes of this inquiry, capital employed has been allocated between commons, calculon, and facings in proportion to the respective allocated costs of delivered sales.

164. Included in the land and farm buildings which accounted for some 10 per cent of the book value of capital employed in 1974 is unexcavated land temporarily farmed by tenants of LBC or by LBC itself; in 1974 for example, some 8,900 acres was so farmed, out of a total land holding of about 17,000 acres including land previously excavated. The profit on brickmaking in 1974 (£2,558,000 as shown in Appendix 7) includes an operating profit of £41,000 derived from these farming activities.

(ii) Profit rates—all LBC bricks

165. LBC's historic profit rates on delivered sales values and on capital employed[1] for commons, facings and all bricks, are shown in Appendix 7[2]. The different profit rates for commons and facings are discussed in paragraphs 168 to 170. The LBC all bricks profit rates on capital employed are shown at Table 23 together with the historic profit rates for quoted companies in United Kingdom manufacturing industry compiled on a similar basis:

[1]For the Commission's purposes in assessing the historic profit rate on brickmaking, capital employed comprises (i) tangible fixed assets at historic cost (before deducting plant and machinery investment grants) less accumulated depreciation thereon, ie before taking into account company revaluations of fixed assets; and (ii) net current assets (including, in the case of LBC, cash on deposit as a 'buffer' against downturns of demand) before deducting (a) bank loans and overdrafts, (b) future tax liabilities, and (c) proposed dividends. Historic profit is expressed after deducting depreciation of fixed assets at original cost and is before deducting interest payable and corporate taxation.

[2]The summaries in Appendix 7 exclude Marston Valley Brick Company Limited from 1969 to 1971 because the Marston Valley figures for those years were not allocated between commons and facings. Inclusion of the total figures would have a negligible effect on profit rates shown.

Table 23: Percentage return on capital employed (historic basis): all bricks

	1969	*1970*	*1971*	*1972*	*1973*	*1974*
LBC						
Commons	–6·6	4·1	12·7	15·6	19·4	1·7
Facings	41·6	36·3	43·7	42·7	41·4	17·0
All bricks	14·4	19·7	29·0	29·7	31·5	9·1
Quoted companies in UK manufacturing industry	12·4	11·4	12·5	14·9	17·4	17·9*

*Provisional.

The company's profit rates are struck after taking into account, as capital employed, a proportion of its bank deposits from 1969 to 1973[1].

166. It can be calculated from Appendix 7 that the simple average of the historic profit rates for all bricks over the 'cyclical' period 1970 to 1974 was 23·8 per cent on capital employed (15·6 per cent on delivered sales). Over the three most profitable years in that period, 1971 to 1973, the return averaged 30·1 per cent on capital employed and 19·0 per cent on delivered sales.

167. The 1974 profit of £2·558 million shown in Appendix 7 does not allow for 'extraordinary' payments of £716,000 for redundancy and severance payments arising from the reductions in brickmaking capacity which were made in that year. Inclusion of these extraordinary payments as a cost would have reduced the 1974 historic profit rate on capital employed for all bricks from 9·1 per cent to 6·6 per cent, and the average of the profit rates from 1970 to 1974 from 23·8 per cent to 23·3 per cent.

(iii) LBC commons and facings profits

168. Having observed that, in the six years 1969 to 1974, facings yielded higher profit rates than did commons, we made calculations to ascertain what percentage changes in the average ex-works selling prices in each year would have been required to equalise the profit rates for facings and commons on the basis of the return on ex-works sales[2], assuming no change in the respective sales volumes. The figures below show that the changes required (in percentage points terms) have been substantially reduced over the period.

Table 24: Changes required to equalise commons and facings profit rates

	1969 %	*1970* %	*1971* %	*1972* %	*1973* %	*1974* %
On ex-works sales values						
(i) Excess of facings profit rate over commons (in percentage points terms)	48	32	31	27	22	15
(ii) Changes in ex-works selling price to eliminate the excess in (i) above						
Commons (per cent price addition)	+30	+19	+17	+14	+11	+9
Facings (per cent price reduction)	–22	–14	–11	–9	–7	–8
(iii) Selling price gap in (ii) (in percentage points terms)	52	33	28	23	18	17

[1]The bank deposits treated as capital employed comprise amounts to cover (i) the current taxation liability, plus (ii) up to £2 million of the remainder, as being the least amount (in excess of a normal working balance) needed to offset the effect of downturns in brick demand.

[2]Approximately the same results would be obtained on the basis of the return on capital employed.

169. The company itself calculated that the effect of its decision to apply the same flat rate ex-works price increases to commons and facings on 5 August 1974, 9 January 1975 and 21 July 1975 (see Appendix 5) further reduced the selling price gap from 17 percentage points to 8 percentage points and that this gap would be eliminated if the commons ex-works price were 4 per cent higher, and the facings ex-works price 4 per cent lower, than the prices set on 21 July 1975.

170. The company considers that the unascertained costs not included in its allocation of the additional costs of producing facings (see paragraph 162) may already bridge the eight percentage points gap without the need for price adjustments. However, we estimated that, for this to be so, the unascertained additional costs of facings, on the basis of cost increases since 1974 and the level of ex-works selling prices at 21 July 1975 would have to amount to some £570,000, equivalent to some 30 per cent of the total additional costs of facings or some 4 per cent of the total ex-works costs of facings. Some reservation applies to the figure of £570,000 as the calculation depends to some extent upon the method adopted in the allocation of costs to facings, particularly overhead costs. LBC commented on the calculation in the following terms:

> 'Whilst it may be a subjective judgement, it is still our view that additional costs arising from the plant processes, and effect on quality of common bricks [fired] under facings, more or less equate with the now small difference in profit percentages between commons and facings.'

(iv) Brickmaking sales and operating profits of LBC's individual works

171. Full details of the operating profits of its individual works in 1973 and 1974 were supplied to us by LBC and showed that such profits, as percentages of ex-works sales values, covered a wide range. The sales and profit contributions from the seven works with the largest profits in absolute terms in 1973 and 1974 together accounted for 71 per cent of ex-works sales in 1974 and 84 per cent of the total operating profit in that year. Eight of the other 15 works operating in 1974 were closed and production was reduced at 10 works including four of the seven most profitable (see Table 17 in paragraph 123).

(v) Comparison between LBC and the five selected non-fletton brickmakers

172. We summarise below the historic profit rates on capital employed on brickmaking activities from 1969 to 1974 for LBC and for each of the five selected non-fletton clay brickmakers (see paragraph 147). The latter have been designated A to E in descending order of their profit rates for 1973.

Table 25: Percentage return on capital employed (historic basis), LBC and others: 1969 to 1974

Company	*1969*	*1970*	*1971*	*1972*	*1973*	*1974*
LBC	14·4	19·7	29·0	29·7	31·5	9·1
A	10·8	12·9	22·7	34·0	53·0	19·5
B	–2·8	3·1	25·4	60·2	40·5	12·3
C	16·0	17·0	14·4	24·8	30·1	16·6
D	6·5	7·7	22·8	32·3	24·2	14·5
E	(not available)	–2·9	5·7	13·9	20·6	2·6
Simple average of profit rates of A–E	7·6	7·6	18·2	33·0	33·7	13·1

173. Product mix affects profitability because commons are less profitable than are facings and engineering bricks. The product mix of LBC and each of the five selected non-fletton brickmakers is shown below in terms of the percentage composition of total sales volumes in 1973.

Table 26: Product mix of LBC and others: percentage of total 1973 sales volumes

Brick type	*LBC*	*Non-fletton brickmaker*				
		A	*B*	*C*	*D*	*E*
Commons	47	18	15	15	17	100
Facings	53	70	77	57	71	nil
Engineering and others	nil	12	8	28	12	nil
Total	100	100	100	100	100	100

174. It will be seen from Table 25 in paragraph 172 that the three most profitable years for LBC, 1971 to 1973, were also years of relatively higher profitability for the five selected non-fletton brickmakers except in two cases in 1971. In 1974 all five of these brickmakers suffered drastic reductions in historic return on capital employed as compared with 1973 but four achieved higher returns in 1974 than did LBC as compared with two in 1973.

175. Breakdowns of LBC's sales, costs and profits in 1973 and 1974, in absolute terms and per 1,000 bricks sold, are given in Appendix 8. LBC's total ex-works costs per 1,000 bricks in 1973 compare as follows with those of the five selected non-fletton brickmakers:

LBC	*A*	*B*	*C*	*D*	*E*	*Simple average of A–E*
£8·28	£16·24	£22·14	£16·44	£20·07	£11·89	£17·36

To some extent these figures reflect the different product mixes of each company as shown in paragraph 173.

176. Table 27 below shows the extent to which, in 1973 and 1974, electricity and fuel costs per 1,000 bricks produced were lower for LBC than for the five selected non-fletton brickmakers. The percentage increase in such costs in 1974 was also lower for LBC.

Table 27: Electricity and fuel costs per 1,000 bricks produced

	LBC	*Selected non-fletton brickmakers*				
1973		*A*	*B*	*C*	*D*	*E*
	£	£	£	£	£	£
Commons	0·61	(not available separately)		2·86	2·46	1·28
Facings	0·67			(not available separately)	4·84	(production all commons)
All bricks	0·65	3·10	3·97	2·77	4·13	1·28
1974						
Commons	0·84	(not available separately)		2·94	5·15	1·83
Facings	0·92			(not available separately)	8·42	(production all commons)
All bricks	0·89	5·87	7·69	4·57	7·71	1·83
All bricks percentage increases in 1974	37%	89%	94%	65%	87%	43%

LBC's sources and uses of funds 1955 to 1974

177. We prepared a summary of LBC group sources and uses of funds from 1955 to 1974 and we show in Appendix 9 the last six years' figures from 1969 to 1974. The total figures for 1974 are adjusted to exclude the effect of the acquisition in May 1974 of Banbury Buildings but the figures for earlier years are not adjusted to exclude the effect of previous acquisitions of brickmaking assets. Sources of funds from 1955 to 1973 were generated from internal cash flow, apart from some use of bank overdraft facilities.

178. The period 1969 to 1974 includes the peak years of high profitability from 1971 to 1973 (see Table 22 in paragraph 160); the internal cash flow had risen to nearly £6 million in 1973. In almost every year from 1955 to 1974 expenditure on fixed assets exceeded the net change in working capital. Additions to fixed assets were increasing from 1964 onwards; over the three years 1971 to 1973 there was an expansion in expenditure on fixed assets which totalled nearly £12m (including acquisitions for a cash consideration). In historic terms, expenditure on fixed assets totalled £14.2 million over the 16 years from 1955 to 1970 and over the remaining 4 years from 1971 to 1974 (excluding the acquisition of Banbury Buildings' fixed assets) was also £14.2 million. Such a comparison does not take account of the effect of changes in the value of money; even so, capital expenditure would have increased substantially in real terms in the four years from 1971 to 1974.

(c) Pricing policies

179. LBC told us that it seeks to increase turnover through volume of sales, rather than through higher prices and believes that, if its volume of sales is to be maintained and increased, the price of its product should remain comparatively low. It therefore sets prices at the lowest level commensurate with a reasonable return of capital employed. It is assisted in maintaining comparatively low prices by the advantages conferred by the use of fletton clay and the scale economies made possible by the size of the business. When setting prices for facings, the company considers, but in general is not influenced by, the prices charged by other brickmakers. When setting prices for commons, it attaches importance to the 'in-the-wall' building costs of commons as compared with those of concrete blocks. The company is not of course free to set prices at will as, in common with much of British industry, it has been subject to price control on either a voluntary or a statutory basis for much of the period since 1963.

180. Redland Limited told us that it had entered fletton brickmaking in 1963 and that one of the reasons why it sold out to LBC in 1971 was that LBC had always, in Redland's view, been able to dominate prices for fletton bricks and its policy of maintaining maximum utilisation of its productive capacity had led to prices which Redland described as 'unattractively low'. Redland had more than once considered whether to re-enter fletton brickmaking but had decided not to do so. 'So long as LBC remains in control of that sector of the brick market', Redland said, 'we would not want to be in it as a small No 2.' In the opinion of another brickmaker, the 'uneconomic' prices set for fletton commons had been a factor, over the years, in the decline in production of non-fletton clay commons.

181. LBC does not operate any quantity rebate or similar scheme or any other form of special allowance for large orders or annual turnover. Its discounts to merchants are in terms of specific cash allowances per thousand bricks instead of

the 5 per cent of ex-works prices usually provided by other brickmakers. With effect from 1 October 1975 the LBC allowances for commons and facings are 45p and 75p per thousand respectively, equivalent to 2·64 per cent of ex-works prices for commons and about 4 per cent on average for facings.

Pricing of commons and facings

182. Until the range of facing bricks that could be set anywhere in the kiln was developed, more than half of total production (see paragraph 119) unavoidably consisted of commons. As total sales of commons were declining in the face of competition from concrete blocks, the company tended to protect the sale of its own commons by applying lower price increases to them than to facings. With the agreement of the National Board for Prices and Incomes, the company began to reverse this policy in the 1960s when demand for the new range of facings had been established and a higher proportion of facings could be produced. The table of price increases in Appendix 5 shows that, between July 1963 and July 1975, the ex-works price of commons was increased by a factor of 3·56 as compared with a simple average of 2·18 for the five varieties of facings listed. The figures in paragraphs 168 and 169 show that, since 1969, the percentage changes to the average ex-works selling prices that would have been required to equalise the profit rates for commons and facings on the basis of the return on ex-works sales, assuming no change in the respective sales volume, have been reduced from 52 to 8 percentage points. The figure of 8 percentage points is overstated to the extent that certain additional costs in the production of facings are not included but, as these costs have not been calculated by the company (see paragraph 162), their effect cannot be quantified.

Transport costs and charges

183. Delivered prices for the company's bricks are arrived at by adding, to the ex-works price, a charge for transport which increases with every five radial miles from the supplying works. The company aims to recover in full the overall cost of transport and largely succeeds. In 1973, charges to customers were £11·161 million and the residual cost to the company, including a small element of internal service, was £0·431 million, equivalent to 3·86 per cent of the charges recovered. The corresponding figures in 1974 were £9·364 million, £0·531 million; 5·67 per cent. The residual transport costs represented 1·80 per cent of ex-works costs in 1973 and 2·39 per cent in 1974.

184. The transport charges to customers are not calculated to recover the costs within each radial band. The more distant customer is undercharged for his transport at the expense of the nearby customer as shown in the following examples of weighted average road haulage costs and charges:

Table 28: Weighted average road haulage costs[1] and charges: £ per 1,000 bricks

Delivery distance (miles)	*Cost*			*Charge*			*Overcharge (+) Undercharge (–)*		
	Dec 1973	*April 1975*	*July 1975*	*Dec 1973*	*April 1975*	*July 1975*	*Dec 1973*	*April 1975*	*July 1975*
5	1·55	1·90	2·19	2·01	2·36	2·60	+0·46	+0·46	+0·41
30	2·49	3·03	3·48	2·62	3·22	3·76	+0·13	+0·19	+0·28
40	2·90	3·55	4·08	2·85	3·45	3·99	–0·05	–0·10	–0·09
60	3·69	4·49	5·16	3·32	4·22	5·02	–0·37	–0·27	–0·14
90	4·62	5·40	6·21	3·97	4·87	5·67	–0·65	–0·53	–0·54
120	5·70	6·65	7·64	4·66	5·81	6·94	–1·04	–0·84	–0·70

[1]These costs do not include the residual costs shown in paragraph 183.

185. The ex-works prices (£ per 1,000 bricks) to which these delivery charges were added were:

	Commons	*Facings*
December 1973	9·28	9·88–14·09
April 1975	15·15	15·75–19·56
July 1975	17·42	18·02–21·83

186. It can be calculated from these figures that the value of the overcharge/undercharge, as a percentage of delivered prices, was as follows:

Table 29: Overcharge (+) Undercharge (–) as percentage of delivered price

Delivery distance	*Commons*		*Facings*	
(miles)	*Dec 1973*	*July 1975*	*Dec 1973*	*July 1975*
5	+4·07	+2·05	+3·87/+2·86	+1·99/+1·68
30	+1·09	+1·32	+1·04/+0·79	+1·29/+1·09
40	–0·41	–0·42	–0·39/–0·27	–0·41/–0·35
60	–2·94	–0·62	–2·80/–2·12	–0·61/–0·52
90	–4·91	–2·34	–4·69/–3·60	–2·28/–1·96
120	–7·46	–2·87	–7·15/–5·55	–2·80/–2·43

187. For distances in excess of 120 miles the company gave us the following examples of standard road haulage costs and charges at 30 September 1974 and 21 July 1975 in terms of £ per 1,000 bricks.

	30 Sept 1974			*21 July 1975*		
	Cost	*Charge*	*Undercharge*	*Cost*	*Charge*	*Undercharge*
150 miles						
Bala, Merioneth	7·70	6·87	–0·83	8·92	8·00	–0·92
Bampton, Devon	7·70	6·68	–1·02	8·92	7·81	–1·11
200 miles						
Haverford West, Pembrokeshire	9·75	8·17	–1·58	11·22	9·30	–1·92

The value of these undercharges, as a percentage of delivered prices, was:

	Commons		*Facings*	
	30 Sept 1974	*21 July 1975*	*30 Sept 1974*	*21 July 1975*
150 miles				
Bala	–4·39	–3·61	–4·26/3·58	–3·53/3·09
Bampton	–5·45	–4·40	–5·28/4·44	–4·20/3·75
200 miles				
Haverford West	–7·82	–7·18	–7·60/6·45	–7·03/6·19

188. It will be seen from these various figures that in some cases (30, 90, 150 and 200 miles) the actual overcharge/undercharge was higher in July 1975 than at the earlier date of comparison but that, expressed as a percentage of the delivered price, it was lower in all cases except at 30 and 40 miles. At distances from 5 to 120 miles, this percentage had been reduced, in the case of commons, from 11·53 points (+4·07/–7·46) to 4·92 points (+2·05/–2·87). For facings, the reduction was from 11·02 points to 4·79 points for the cheapest and from 8·41 points to 4·11 points for the dearest. At 150–200 miles the reductions were considerably less.

At 200 miles, the July 1975 undercharges for commons and the cheapest facings were over 17 per cent of the cost of transport, equivalent to over 7 per cent of the delivered prices and about 11 per cent of the ex-works prices.

189. These figures understate the amount of undercharge because LBC does not recover its overall transport costs in full (see paragraph 183). The main reason for this overall deficit is that it costs LBC more to deliver bricks to certain of its more distant customers by its own vehicles than by those of private hauliers who are often able to obtain return loads; and in such cases LBC relates the charge for delivery by its own vehicles to the rates appropriate to the private haulier.

190. LBC told us that the policy of adjusting transport charges, so as to undercharge the more distant customer at the expense of the nearby customer, was originally adopted to assist in extending the area of its operations and has been continued, since the company became a national distributor, in order to help to maintain a strong national market for fletton bricks. LBC regards the maintenance of such a market as important for the brick industry as a whole in its resistance to competition from other materials and forms of construction. The company also drew attention to the possible effect, in distant areas, upon local authorities, and others who engage in large, cost limited housing schemes, of higher prices resulting from removal of the undercharges. The company is of the opinion that, if fletton prices were increased on removal of the undercharges, the prices of other bricks and alternative materials would follow. Removal of the undercharges would not, in the company's view, benefit local brickmakers as competition presented to commons by alternative materials would not be affected and the undercharges are too small to affect the customer's choice of facings.

191. We discussed with LBC what effect upon its sales was to be expected if the arrangements for undercharging the more distant customer at the expense of the nearby customer were abandoned. The company thought that the effect would be likely to be no more than marginal, overall, but perhaps a little greater in the case of commons than in the case of facings. The effect on unit costs would also be marginal. The value, in terms of percentage of delivered price, of the departures, in the pricing schedules, from the principle of relating transport charges to transport costs has recently been much reduced (see paragraph 188). The policy of accepting lower margins at distant points, the company said, was now to be regarded as largely historical. The company would not, however, wish to disturb its price structure in the North East pending introduction of a 'fletliner' service there as the economic justification for a 'fletliner' (see paragraph 129), is dependent upon the maintenance of an adequate market.

192. The margins earned (£ per 1,000 bricks sold) between average ex-works costs and average ex-works prices were as follows in 1973 and 1974:

	1973	*1974*
Commons	1·57	0·11
Facings	3·86	2·30
All bricks	2·80	1·14

Comparison of these figures with the transport overcharge/undercharge figures in paragraph 184 and 187 shows that a proportion of common bricks sales were made at a loss in 1974.

193. The company has had under consideration a new pricing structure to replace the existing arrangements under which (see paragraph 183) the delivered price increases with every five radial miles from the supplying works. In this new structure the country would be divided into zones approximately 25 miles wide, the boundaries of which would be based on postal code designations. Within any one zone the delivered price for any particular type of brick would be the same irrespective of the precise location of the customer and of the location of the works or depot from which the bricks would be supplied. The delivered price to each zone would be related to the present weighted average cost of supply into that zone from all works from which the zone is currently supplied. Provision could be made for special zones in which the costs differ, or might differ, from normal road delivery costs, eg areas served by 'fletliner'. The company estimated in 1974 that such a structure would entail price steps between adjacent zones of not less than £1 per 1,000 bricks at the road haulage costs then current; the scheme would therefore entail customers up to 25 miles apart being charged the same prices. The company sees several advantages in this proposed restructuring. Under present arrangements a delivered price must be calculated for each order by reference to the distance between the delivery point and the works from which supply is actually made; if supply cannot be made from the nearest works the additional haulage is charged. Under the new arrangements it would be possible to issue delivered price lists based on postal codes; the necessity for a customer to write or telephone for a price whenever he wished to change the delivery point would be eliminated. There would be a corresponding simplification in the company's administrative system. The proposed restructuring would entail some coarsening of delivered price differentials as compared with the existing system, but not, in the company's view, to an extent which could be considered unreasonable in the light of the advantages. The company considers that a less coarse price differential would be impracticable because the vagaries of the post code district boundaries would give rise to proportionally greater zone width variations and to a likelihood of bricks passing through a higher price zone en route to delivery in a zone with a lower price. It would be open for decision, in the detailed design of the proposed new structure, whether or not the distant customer should continue to be undercharged at the expense of the nearby customer and, if so, to what extent.

Small loads

194. A professional organisation concerned with the construction industry suggested that delivery charges for bricks should include provision for the surcharging of uneconomic loads. LBC told us that it was well aware of the cost savings obtainable from larger loads and, in recent years, had been able to replace a proportion of the smaller vehicles in its road transport fleet by more economical medium sized vehicles because more customers had come to accept delivery in larger loads. The company does not, however, offer discounts on large loads or impose surcharges on customers requesting small loads because, in normal trade conditions, about half the company's road haulage is undertaken by private contractors and the company does not know in advance what size of vehicle the contractor will use. Discounts for large loads would therefore, in the company's view, be arbitrary and impracticable; and surcharges for customers requesting small loads could result in a customer, so surcharged, seeing deliveries being made in small loads to other customers who had not been surcharged. The company has hitherto felt constrained by the practical difficulties as it sees them

but told us that it recognises the logic and attraction of surcharging customers who request small loads and would not wish to rule out the possibility of introducing such surcharges in the future.

(d) Wages and industrial relations

195. In view of the suggestion contained in paragraph 68 of a report by the National Board for Prices and Incomes[1], to the effect that LBC may be under no pressure to resist wage demands because it can pass on any wage increase to its customers, we obtained some information as to minimum hourly wage rates for certain manual occupations in brick manufacture and average hourly earnings for certain occupations in that industry. This information is summarised in Appendix 10 and shows higher figures for LBC. LBC offered no comment on table (a) in Appendix 10 but, on table (b), it commented that, in interpreting the figures, account should be taken of differing degrees of skill and of the extent to which earnings are derived from piecework rather than timework. A comparison of the average earnings, for a 40-hour week, as at 1 October 1974, of manual workers in six industries, including fletton brickmaking, involved in building and construction was supplied to us by a trade union representative. This showed that, as compared with such earnings in LBC, two were higher, two were lower and one was level. It was suggested to us by another trade union representative that LBC craft workers were much worse paid than were comparable workers in other industries but, as specific evidence in support of this suggestion was not provided, we did not seek the comments of the company.

196. Representatives of the Trades Union Congress and of certain trade unions representing workers employed by LBC gave evidence to us on working conditions and the company's industrial relations. We summarise this evidence as follows:

(a) working conditions for manual workers in open, unheated sheds were unpleasant and attempts to obtain improvements had been unsuccessful;
(b) the acquisition by LBC of other fletton brickmaking companies had, however, been advantageous to employees in that safety arrangements and working conditions had in general been improved by the adoption of LBC standards;
(c) there was no prior consultation between LBC's management and the representatives of its workers about changes in the content, or procedure for the implementation, of the health, safety and welfare code for manual workers;
(d) having regard to the severity of the downturn, in 1974, in the demand for bricks, LBC could not in general have been expected to do more than it had done to safeguard the interests of its employees;
(e) when a works was closed, or production was reduced, LBC was 'extremely co-operative' in arranging for transfer and re-deployment of workers within the company but there was no prior consultation with the unions before decisions were taken and no opportunity was given to employees to look for work elsewhere when closure was 'within sight';
(f) redundancy payments were no more than 'normal';
(g) the arrangements for redundancy, and the implementation of procedures for prior consultation, were in some respects unsatisfactory;
(h) in general, the attitude of the LBC management was one of 'benevolent

[1]Report No 150 entitled *Pay and other Terms and Conditions of Employment in the Fletton Brick Industry and the Prices Charged by the London Brick Company* published in July 1970.

paternalism' but this was no longer as acceptable to the unions as it may at one time have been and as the management appeared to believe that it still was.

197. The company commented to the following effect on the criticisms made by the unions:

(a) during the period 1969 to June 1975 some £400,000 had been spent on improvements to working conditions, many of which had been requested by union representatives at Works Liaison Committee meetings;

(c) there have, for many years, been Safety Committees at the various works which deal with health, safety and welfare matters on a consultative basis; at the time the TUC and trade union witnesses gave their evidence the provisions of the Health and Safety at Work etc Act, 1974, did not apply and no formal code was therefore in being;

(e) trade union representatives were kept fully informed of the deteriorating situation in 1974; cuts in production could therefore have come as no surprise; the 1974 decisions as to where production should be cut were taken by management but timing and implementation was thrown open to full consultation and negotiation: in any future case, the management will seek to provide the unions with at least six weeks notice; the approach to redundancy in 1974, following negotiation with the unions, emphasised voluntary and early retirement and therefore left little time for a search for alternative employment;

(f) in addition to the statutory requirements, payments were made to those with less than two years' service and no employee, however short his service, left with less than two weeks' pay;

(g) in only one case, to the company's knowledge, in a total of over 1,600 cases, was the agreed procedure not observed; the arrangements themselves were worked out through the consultative machinery;

(h) the company agreed with the unions that 'benevolent paternalism' is no substitute for a good and effective system of industrial relations; it is, however, a supplement. There could not, in the company's view, have been any serious deficiency in the company's approach or procedures if, as in 1974, it was possible to carry through over 1,600 redundancies without any disruption of production.

198. The company's comments in paragraph 197 relate to the evidence which we received from the TUC and trade union representatives in November 1974. In November 1975 we were informed by the TUC that certain unions had subsequently reached agreement with the company not only for the minimum six weeks notice of redundancy mentioned by the company in paragraph 197(e) but also for improved severance pay and the possibility of work sharing as an alternative to redundancy. As to 'benevolent paternalism', the TUC said, 'there are signs that a more realistic approach to present day trade union aspirations is growing'.

199. LBC told us that, for ancillary benefits such as sick pay and pensions (of which it provided us with details), it regarded itself as an above average employer with 'a tradition of caring about people'. It thought that the benefits it provided were much better than those provided in the brick industry at large but would not regard the brick industry as the criterion. It would be looking at large companies outside that industry as a basis for comparison.

(e) Efficiency

200. LBC's claim to technological leadership in fletton brickmaking since its incorporation 75 years ago, and its main achievements in production and distribution, are summarized in paragraphs 124 to 129. Bearing in mind, however, the significant natural cost advantages of fletton brick production and the fact that, as long ago as 1950, LBC was delivering 70 per cent of fletton bricks and had few competitors, we asked the company whether there might not have been a greater stimulus to modernisation, innovation and efficiency, over the years, had LBC's position not been so strong. We also asked how the company is able to assess its efficiency now that, as a complete monopolist in fletton brickmaking, it is unable to compare its performance with that of others in the same field.

201. As regards modernisation and innovation, LBC said that it stood on its record and that the unique fletton manufacturing process was a stimulus to innovation and improvement in that these had to be made by those engaged in the industry in the absence of any outside source of superior knowledge or skill. In comparison with other fletton brickmakers taken over, LBC claimed that the evidence available on acquisition showed that in no case was a former competitor's manufacturing efficiency as high as the average efficiency achieved at LBC works. Two of the three concerns acquired since 1968 had been charging higher prices for some bricks which LBC reduced to its own levels after acquisition.

202. Now that no direct external comparisons exist, overall performance is reflected in profitability and prices. Internally, performance is monitored between different works, depots and offices.

203. An overall profit plan is prepared in detail, is monitored monthly and, normally, is reviewed four times in the year for which it is set. Long-term profit plans are not prepared in detail and, in the company's view, could not be, because demand for the company's bricks is so much a function of the demand for housing which (see paragraphs 43 and 208) is difficult to forecast.

204. Financial targets are set for works managers in terms of target production, the associated prime costs and wastage rates at the individual works. The aim is to establish, in each case, a genuine target in relation to the maximum attainable level of efficiency, given the estimated capacity utilisation, at each plant. Targets are set annually, but broken down into monthly periods. Monitoring of performance relative to target is carried out monthly and major deviations are investigated in detail. In this way, the company aims to monitor the performance of each manager in relation to his own works but it does not make inter-plant comparisons of productivity as it does not believe that any two plants are sufficiently alike for this to serve any useful purpose. Unit costs between works in 1973 varied by a factor of up to two (see Table 17 in paragraph 123) but, as the unit costs of a works are affected by its size and by the age of its plant, no meaningful comparison of management efficiency could be made by reference to the ranking of individual plants in terms of unit costs or man hours per thousand bricks. Moreover, the present accounting system of the company does not provide calculations of capital inputs at individual works, and there is no satisfactory proxy measure of such costs. The senior works managers, the District Manager, the Production Manager and the Works Director are given targets in relation to the aggregate of the works under their respective responsibility. Monitoring of results is carried out monthly.

205. As an aid to production, distribution, pricing decisions and forecasting, LBC has in recent years developed a linear programmed operational scheduling model of its production and distribution system. The model incorporates cost data for each works, split into fixed, semi-fixed and variable elements. For distribution, it reflects information such as the different road haulage rates to different areas and rail rates. The model also incorporates any restrictions on production or distribution, eg minimum quantities for despatch by rail.

206. There are many purposes and uses of the model. It is used in the monthly scheduling of production and deliveries, including the operation of the base-line system (see paragraph 223) when this is in operation. In this way the model helps to allocate orders to the different works so as to maximise total company profits, taking account of the many interacting cost and production constraints involved. We were told that use of the model in monthly scheduling has enabled the company to make substantial cost savings. The model has been used to appraise the effects on the total profitability of the company of opening new works and of employing a different transport system. During a recession the model helps to decide which works should be shut and what level of stocks should be held. It can also be used to help to evaluate alternative pricing strategies. In essence, the model helps to calculate the chain effect on total profitability of particular changes in production, distribution or pricing.

207. Production targets at works or groups of works, and the production schedules derived from the model, are elements of the assessments which the company makes of the likely demand for its product. The LBC view of forecasting, as an aid to production decisions, is that, because of the sensitivity of the construction industry, and hence the demand for bricks, to national economic strategy, forecasts of brick deliveries are largely speculative. LBC attempts to forecast for up to one year ahead. In assembling an overall forecast, LBC starts with individual sector forecasts, eg bricks for private house building. Each sector forecast is formulated on the basis of current deliveries, forecasts made by district sales office managers and a study of forecasts of housebuilding or construction made by outside bodies such as NEDO. LBC attaches great importance, and devotes considerable effort, to the development of improved forecasting techniques. Its work in this field has included an unsuccessful joint attempt with consultants to produce an econometric model.

208. The table below shows, for the period 1971 to 1974, the LBC forecasts made in the autumn of each year of deliveries (million bricks) in the following year:

Forecast made	*Delivery forecast*	*Actual deliveries*	*Error % in deliveries against forecasts*
November 1970 for 1971	2,325	2,763	+18·8
January 1972 for 1972	2,953	2,880	−2·5
December 1972 for 1973	3,175	2,883	−9·2
November 1973 for 1974	2,867	2,050	−28·5

The results of these year ahead forecasts are a vivid illustration of the difficulties presented to brickmakers in production planning. Each year ahead forecast is, of course, updated as the relevant year progresses.

(f) Investment

General policy

209. LBC's capital consists partly of investment in manufacturing and partly of investment in distribution. Most of the investment in manufacturing is regarded by the company as a form of modernisation or replacement investment as (a) it does not expect much growth in future brick production and sales, although it thinks that flettons will increase their market share; (b) a brickworks has an economic life much longer than the period for which the future demand for its output can be forecast. LBC has, therefore, used its technological knowledge to build new works with unit costs that are lower, due partly to scale economies, than are those of existing works and has justified new works economically on the basis of their replacement of less efficient production units. LBC has also improved the production processes of some of its older works to the extent, in its view, that this is possible without rebuilding. An important consideration in new construction and modernisation has been the high and increasing cost of labour, which has made investment in labour saving plant increasingly profitable. A further advantage has been the opportunity to improve working conditions thus making labour recruitment and retention easier. New works are environmentally more acceptable and have a more flexible product mix, with a nominal capability to produce 100 per cent facing bricks if required.

210. LBC told us that it is not its policy to maintain enough plant to meet peak demands in full, without some delay in deliveries, whatever the level to which such peaks may rise. However, to help in meeting requirements in periods of high demand, older production units, which new plants have nominally replaced, might be kept in production as 'buffer' works until a fall in demand enforced closure. A closed works might be re-opened, either wholly or partially, when demand revived. However, as LBC now claims to be capable of building a works with an output of 125 million bricks per annum in eighteen months at low capital costs, the necessity, even in the short term, for keeping older 'marginal' works in production is reduced. In the field of distribution the development of the 'selfstak' and 'fletliner' systems (see paragraphs 128 to 129) is an indication of the company's willingness to invest when technical problems have been solved and projects have been shown to be economically justifiable.

Appraisal of investments

211. Major projects (normally those over £50,000 although smaller projects may be included on their merits) are subject to DCF appraisal. They must show a return, which includes a risk premium (see paragraph 214) and some allowance for capital expenditure, for example welfare, which yields no direct return, appropriate to the circumstances of the time when the appraisal is made. In 1974 the required DCF return was 20 per cent. Lower rates of return would be considered if necessary to break into a new market. No allowance for inflation is made in the DCF appraisals, on the assumption that this will affect prices as well as operating costs. Decisions are not based solely on DCF calculations but also take account of considerations which cannot be built into the mathematical appraisal. We were told that follow-up investigations of selected projects had indicated that decisions taken on a DCF basis had generally proved to have been well based.

212. The company has no loan capital related to brickmaking and little preference capital. The cost of brickmaking capital is therefore almost entirely related

to the rate of ordinary dividends and it is the need to offer an acceptable return to the ordinary shareholder that dictates the required return on profit making capital investment. The company does not consider that the cost of capital could be substantially lowered by higher gearing. The target DCF return is not directly related to the overall target return on capital employed. LBC recognises that there can be conflict between the two types of rate of return but said that its investment decisions had never been constrained by the overall profit target, partly because investment projects matured relatively quickly and were based on familiar technology and partly because of the flexible way in which the overall profit target is used.

213. The case for a new works is examined in relation to the cyclical pattern of demand and evaluated over a period of years at high, medium and low demand levels. As production from a low cost new works will affect the need for deliveries from other works within the area, LBC uses its mathematical scheduling model (see paragraph 205) to show the effect on the overall production pattern and overall company profitability, if new works were introduced, and which works would be candidates for closure at times of medium and low demand. The DCF calculations are based on the projected difference in total company profits with, and without, the new works, for different demand assumptions. If the appraisal indicates a DCF return of less than 20 per cent for periods of normal demand, the project will probably be delayed or abandoned. The company said that the main difficulty in making such appraisals is doubt as to how long a period of low demand might last and, therefore, what compensatory rate of return would be required when demand increased.

214. Like other brickmakers whom we consulted, LBC considered that the main element of risk associated with the manufacture of bricks is uncertainty about the level of demand. As a high percentage of its output (see paragraph 118) is sold to private housebuilders, LBC is critically affected by the level of private house building which is particularly volatile. LBC considers that the risk associated with new plant and equipment is negligible as much of this has been developed, and is made, by the company and all of it is well proven. The labour force required for new investments can be estimated with a high degree of accuracy. LBC's competitive position is such that, in normal circumstances, it would expect to be able to recover post-investment cost increases by price increases.

Investment projects

215. During the period 1964 to 1974, LBC invested some £10 million in new works, major improvements to existing works and major improvements in handling and distribution facilities. The company provided details of its major manufacturing investments over the last ten years. During the first half of this period, the company concentrated on improving and extending existing works. This involved the application of technical improvements, such as the instrumentation of kilns, the introduction of fork lift trucks and the conversion of kilns for their use, and improvements in the operation of pits. It also included the building of manufacturing plant and kilns to increase production at selected works. Some £4·7 million was spent on major projects (over £50,000) for such purposes during the period 1964 to 1973. During the second half of the period, modernisation was supplemented by a programme for the construction of 'new generation' works. Kings Dyke was built in two stages from 1968 to 1971 and 1973 to 1975 and has a

capacity of 250 million bricks a year. New Saxon was built in 1971 and 1973 and has a capacity of 125 million bricks a year. The company said that the acquisition of Marston Valley Brick Company Limited in 1968 and the fletton assets of Redland Ltd in 1971 fitted into this pattern. LBC was able to absorb these facilities into its own organisation, and, by rationalisation, investment and improvements in efficiency, produce economically viable units. LBC told us it was contemplating the building of a new works on the site of the Whittlesea Central works acquired in 1973 but would make no decision until there were such signs of an improvement in demand, and conditions for investment, as, in the company's view, would justify the investment. Before building such a new works the company would bring back into full production the more efficient of its old works. LBC said that the uncertainties to which fluctuations in the demand for bricks give rise have not deterred it from its policy of investing in new works but considered that its financial position would have been much worse during 1974 if all its works had been new.

The level of the company's investment in new works

216. To provide some indication of whether LBC may be considered to have invested enough in new works to replace old works, we examined the DCF returns for the second stage of Kings Dyke (known as Kings Dyke 3 and 4) and also compared the profitability of New Saxon, adjusted for the costs of capital, with the profitability (gross of depreciation) of existing works. We recognise that neither approach is sufficient for the purpose in hand nor a substitute for a fresh DCF appraisal of another projected new works.

217. To appraise the prospective profitability of Kings Dyke 3 and 4 LBC used its mathematical operational scheduling model to see what difference the introduction of the new works would make to the total profitability of the company. The DCF returns, based on three separate assumptions of overall sales, were calculated by the company in Novembr 1972, as follows:

Demand assumption	*DCF return*
Sales of 3,300 million a year	28·8%
Production of 2,850 million bricks; sales of 2,550 million taking credit at ex-works values for putting 300 million bricks to stock	15·74%
Production and sales of 2,550 million bricks	4·58%

Sales of all fletton bricks averaged 3,100 million a year during the period 1964 to 1968, within a range of 2,873 million to 3,238 million. During the period 1969 to 1973 average sales were 2,900 million within a range 2,746 million to 3,020 million. In the light of these calculations it was decided to proceed with Kings Dyke 3 and 4. A DCF appraisal of another new works, if made in 1975, would reflect, *inter alia*, lower deliveries in 1974 and higher wage costs.

218. A rough guide to whether or not LBC could have justified, or could justify, yet a further new works, as a replacement for old works, is provided by a comparison of the profitability of new works, after allowing for depreciation and for the cost of capital, with the profitability of some of the old works with no allowance, at the old works, for capital costs. As New Saxon was in full production by early 1973, but Kings Dyke 3 and 4 was not in full production until late 1974/early 1975, we adjusted, for the years 1973 and 1974, the profits of New Saxon for its capital costs including both depreciation and a charge for the cost of

capital employed. The 'adjusted' profit to sales ratio (see Table 30) was then compared with the profit to sales figure (gross of depreciation) of LBC's least profitable works in both years. We also adjusted the 1974 profit figures for New Saxon to allow for capital costs equivalent to the capital costs of Kings Dyke 3 and 4. The latter works shares some common services with Kings Dyke 1 and 2 but, as Kings Dyke 3 and 4 is similar in design and location to New Saxon, we think that the profit rate resulting from this last adjustment gives the best available indication of an 'adjusted' profit rate of any new works introduced in 1974 for comparison with the profit rates of the least profitable works at that time.

219. In adjusting the profit rates of New Saxon we used the methods of depreciation adopted by LBC (whose depreciation policy aims at recovering the original costs of equipment over its expected lifetime) and LBC's 1974 estimate of 20 per cent as the cost of capital. There is some question about the base to which the 20 per cent rate should be applied. As allowance is made for depreciation, the capital to be regarded as represented by the new works will diminish in the later years. It would not be appropriate to work on an unweighted average of the net book value over the lifetime of the works. It is necessary to calculate an expected 'adjusted profit rate' for each year of the expected life of the new works, assuming constant profits and sales, and to judge from this whether further new works might have been justified, on a return on sales basis, giving appropriate weight to the fact that more capital is represented in the early years of the new works than in the later years. In Table 30 we show the profit rates adjusted only on the basis of the total capital costs. Interpretation of the figures is subject to the following qualifications:

The capital costs of New Saxon were below the costs of a new works at end 1973 or 1974 prices; it is designed for a nominal capability of 100 per cent of the more profitable facing bricks; as it was not fully operational throughout 1973, and may have incurred 'start up' costs in that year, the 'adjusted profit rates' shown may be conservative; on the other hand, as the capital costs of new works quoted by LBC and used in our calculations, do not include any commercial profit margin on the work done by its engineering department, these rates are correspondingly inflated; no allowance is made for the effects of taxation and capital allowances, for the 'gestation' period of new plants or for inflation, all of which factors influence investment decisions in practice.

220. The figures referred to in paragraph 218 are as follows:

Table 30: Adjusted profit rates for New Saxon

	New Saxon 1973	*New Saxon 1974*	*New Saxon with capital costs updated* 1974*
Profit† (£'000)	667	653	653
minus			
Depreciation	71	73	83
20% total capital cost	310	310	374
Adjusted profit	286	270	196
Sales	1,198	1,348	1,348
Adjusted profits as % of sales	23·9	20·0	14·5

*Equivalent to capital costs for Kings Dyke 3 and 4 and depreciation for a full year for that works.
†Before taking account of depreciation and certain overheads.

221. We compared the figures in Table 30 with the profit to sales ratios (excluding depreciation) of LBC's least profitable works in 1973 and 1974. For 1973 we used the New Saxon 1973 figure; for 1974, the New Saxon 'capital costs updated' figure. In the 1973 comparison we assumed that certain closures would be likely to come under consideration as a result of the construction of Kings Dyke 3 and 4. We then found that the relevant New Saxon rates were very similar to the adjusted rates of the least profitable works in existence at the end of each year; however, where production was reduced at a works in 1974, the least profitable parts would be closed and the profitability of the remaining parts would be higher than the profitability of the whole works for the complete year.

(g) Supply in times of high and low demand

222. We received a number of complaints to the effect that, in times of high demand, large customers receive more favourable treatment from LBC than do small customers and that, in times of low demand, LBC 'dumps' its bricks in distant areas from which it withholds supplies (or 'withdraws') in times of high demand. LBC responded to these complaints by explaining the system, known as the base-line system, by which, since the early 1970s, supply to individual customers is regulated when the need for such regulation exists.

223. Each customer is awarded a base-line by reference to the monthly average of his purchases over a specified preceding period, usually three years. The base-line of a customer with a purchasing record of less than three years is decided in discussion with him. Allocations are related to base-line expectations *pro rata* with changes in the overall level of supplies available. A customer seeking supply at a time of high demand is given a date-line, ie a date before which he cannot be supplied. Subject to base-line limitations, orders are dealt with in rotation according to the date of receipt. The company claims that its system is dispassionately and strictly operated and that no favour is shown to one customer against another whether customers be large or small, public or private, builders or merchants, nearby or distant. The company maintains that the base-line system provides an inherent safeguard against 'withdrawal' and 'dumping', as every customer receives his fair share of available supplies at all times and the company does not manipulate its prices according to the state of demand.

224. The company supplied us with details of area-by-area deliveries for most of the period since 1964. We prepared, from this information, the following table showing the percentage of the company's total deliveries which were made to selected areas in selected periods of high and low demand. Two of the selected

Table 31: LBC deliveries by selected areas in selected periods

	Area 1					*Area 2*				
	1964	*1967*	*1970*	*July–Dec 1973*	*Jan–June 1974*	*1964*	*1967*	*1970*	*July–Dec 1973*	*Jan–June 1974*
Deliveries (million)	292	302	250	188	166	618	566	485	329	27·2
% of company's total deliveries	13·3	13·2	13·3	14·7	15·6	28·1	24·6	25·8	25·7	25·7
	Area 3					*Area 4*				
Deliveries (million)	50	59	50	42	30	37	60	39	25	15
% of company's total deliveries	2·3	2·6	2·6	3·2	2·8	1·7	2·6	2·1	2·0	1·4

areas (Area 1: Bedfordshire, Buckinghamshire, Leicestershire, Northamptonshire, Lincolnshire, Rutland; Area 2: London, Middlesex, Surrey, Hertfordshire, Essex, Kent) are nearby, or comparatively nearby, areas. Two are distant (Area 3: Wales; Area 4: Cumberland, Westmorland, Northumberland, Durham). The total demand for bricks was high in 1964, 1967 and 1973; low in 1970; very low in 1974.

225. The company commented that care should be exercised in extrapolating from such figures as they take no account of regional variations in demand at different times and it would therefore be unwise to infer that variations in delivery levels to specific areas at particular times were due solely to the availability of supplies to each area. We accept the need for caution in the interpretation of the figures in Table 31 but we agree with the company's further comment that the figures in the table give no support to the allegations of 'withdrawal' and 'dumping' which were made. The complaints which we received about 'withdrawal' and 'dumping' were not supported by statistical evidence.

226. One of the complaints to the effect that large customers receive more favourable treatment than do small was based on the belief that large customers with direct accounts with the company are able to reserve supplies of bricks before actual orders are placed and, in the case of local authorities, before plans have been finalised or a contractor appointed. The company told us that it encourages its customers to give advance notice of possible requirements as an aid to production planning, and such notifications are discussed with the customer as necessary, but the company does not operate a reservation scheme whether formally or informally. A local authority architect can however 'register' forthcoming requirements and the contractor, when appointed, can refer to this 'registration' when ordering supplies. The date of the order will then be backdated to the date of the registration. This arrangement recognises the fact that a private builder is generally in a position to place an order at an early stage in his planning but a builder for a local authority cannot do so until he has been awarded the contract. The company emphasised however that its 'registration' scheme is not a 'reservation' scheme. The quantity of bricks registered is not guaranteed to be available in full to the contractor as and when he requires them. Supply in times of high demand is regulated by the base-line system (see paragraph 223) and limitations resulting from the application of that system are not affected by prior 'registration'.

227. As to the balance of its trade between large customers and small, the company told us that, in 1973, it traded with 6,958 customers of whom 4,430 (63·7 per cent) had credit accounts and 2,528 (36·3 per cent) had cash-with-order accounts. 5,465 of all customers (78·5 per cent) ordered less than £5,000 worth of bricks, ie from 1 to 50 loads. The 2,528 cash-with-order customers accounted for only 2·2 per cent of the company's total sales by value. The balance of trade between direct customers and merchants, and the question whether merchants receive the same treatment as do direct customers, is discussed in paragraphs 140 to 142.

(h) Complaints and other matters

Complaints and criticisms

228. The written and oral evidence we received from a total of over 280 witnesses (brick manufacturers, builders merchants, building contractors, professional bodies and trade associations, local authorities) included 24 complaints or

criticisms. These referred to the elimination of competitive price quotations and delivery dates for fletton bricks as a result of the concentration of fletton brick-making in the hands of LBC; to alleged discrimination by LBC against merchants (see paragraph 141) and the level of discounts allowed to merchants (paragraph 181); to alleged discrimination, in times of high demand, in favour of large customers (paragraph 226); to alleged 'withdrawal' of supplies from distant areas in times of high demand and 'dumping' in times of low demand (paragraph 225); to the restrictions imposed on the collection of bricks by customers in their own vehicles (paragraph 232); to the effect of the company's pricing policies on the ability of other manufacturers to obtain an acceptable return, particularly for common bricks (paragraph 189); to shortages of bricks at times of high demand (see paragraphs 62 to 64) and to the company's standards of service to the customer.

229. Most of these complaints and criticisms are covered, as is indicated, in preceding discussions of the subjects to which they relate. As to shortages of bricks in times of high demand, the company made it clear (see paragraph 210) that it is not its policy to maintain sufficient production capacity to meet peak demands in full without some delay in deliveries, whatever the level to which such peaks may rise. As to standards of service, the company made the following comments.

230. The company attaches great importance to the establishment and maintenance of good relations and effective communication with its customers; this is a first line responsibility of the sales staff. Customers are kept informed of any changes in marketing procedures; visits to works and technical discussions, are arranged which, in 1974, were attended by some 900 individuals representing local authorities, architects and surveyors and members of the building industry. Contact with customers is also maintained on a regular basis by senior sales management and by specialist staff as required. The company strongly repudiated suggestions that its attitude to customers is dictatorial or autocratic. It agreed that its base-line system of allocating supplies in times of high demand might be regarded by some customers, anxious to obtain supplies, as less flexible than more informal systems, but maintained that all customers benefit from the base-line system as this is strictly and impartially operated so that no customer, large or small, direct or indirect, is favoured at the expense of any other.

231. The company supplied us with details of its procedures for investigating complaints about the quality of its products and of the number of such complaints received in relation to the number of bricks delivered. The company claims that complaints are investigated, and the customer informed of the recommendation to be made to the District Sales Manager, within a week of receipt of the complaint; that this is followed by an investigation at the relevant works; and that, in the majority of straightforward cases, any reimbursement due is made between one and two months. During 1973 and 1974 the number of complaints received per million bricks delivered varied between something under 0·4 to something over 0·9 on a monthly basis, with a positive correlation between falling demand and a rising level of complaints. The highest number of bricks per million delivered on which an allowance was made was less than 3,000.

Collection of bricks in customers' own vehicles

232. It was suggested to us by a merchant that LBC should be encouraged to allow customers to collect bricks in their own vehicles when supplies were available but deliveries were delayed by shortage of other transport. The company told us that it had no objection in principle to collection by customers in suitable vehicles at normal times. The normal demand for the collection of bricks was about 1 per cent of deliveries, in contrast to a high proportion of field drainage pipes collected mainly by drainage contractors. When demand for bricks was high, the demand for collection of bricks increased but the company was unwilling to allow collection at such times in the interests of fair treatment of all customers, the avoidance of vehicle congestion in the yards and the dispatch of the maximum number of bricks without avoidable delay. If collection by customers were to be allowed at times of high demand it would be necessary, in the company's view, to set up 'collection stockyards' for each individual type of brick at every works in order to ensure that the appropriate type of brick was available when the customer's vehicle arrived. Costs would be incurred in the provision of additional equipment and in the transfer of bricks to the special collection areas. Such costs would have to be recovered by charging a premium for collection. No estimates of costs, or of the consequential premium, had been made by the company because it did not believe there was any genuine demand. In the latter half of 1973, when there was a shortage of hired haulage, customers had been invited to collect their bricks but the collection rate rose to only 1·3 per cent.

The creation of a brick 'bank'

233. The representatives of the Trades Union Congress and trade unions who criticised the wages and working conditions provided by LBC and the company's industrial relations (see paragraphs 195 and 196), suggested that 'a framework of public ownership in co-ordination with a public construction corporation could smooth the problems caused [in the brick industry] by fluctuations [in the demand for bricks], by production for stock in downturns, themselves of less depth, and by removing the stress on showing a year-to-year profit, instead of a longer term return'. These witnesses were concerned mainly, in this part of their evidence, with the effects upon employment of the peaks and troughs of activity experienced in the construction industry. So far as the brick industry was concerned, there was a need, in their view, for the provision of guarantees of employment at a more constant level and for the creation of a brick 'bank', perhaps financed by Government, of a size much greater (say 2,000 million bricks) than the quantum of the stocks which the brickmaking companies were prepared to hold before reducing production when demand fell away. It was suggested that the costs of such a brick 'bank' in times of low demand, including the provision of storage accommodation, the handling costs and the administrative charges, might be recovered through higher selling prices when the stocks were dispersed in times of high demand.

CHAPTER 7

Conclusions and recommendations

The conditions

234. We are required by the terms of our reference first to determine whether 'conditions' to which the 1948 Act (as amended and extended) applies prevail as respects the supply of building bricks in Great Britain.

235. As we have shown in paragraph 16, the London Brick Company (LBC) supplies over 40 per cent of the market for building bricks in Great Britain. We conclude therefore that 'conditions' to which the Act applies prevail because LBC supplies at least one-third of the building bricks which are supplied in Great Britain.

236. There is no other company supplying as much as one-third of the building bricks which are supplied in Great Britain. Our reference required us to investigate the supply of building bricks in Great Britain as a whole, and was not concerned with the possibility that another company, or companies, might supply at least one-third of the building bricks supplied in any substantial part of Great Britain.

The public interest

Competition

237. LBC's market power is greater than might be inferred from the statistic that in 1974 it supplied 40·9 per cent of the market for building bricks in Great Britain (see paragraph 16) or 44 per cent if engineering bricks are excluded (see paragraph 107), since LBC has a complete monopoly of fletton brickmaking. Although there is a degree of interchangeability between fletton and non-fletton bricks, the two types do not have precisely the same characteristics and serve somewhat different markets. The relationship differs as between facings and commons and is complex because of the variety of non-fletton facing bricks. We consider that LBC's dominance of fletton brickmaking has given it substantial additional market power.

238. LBC's complete monopoly of fletton brickmaking is relatively recent. From 1950 until 1968 LBC supplied about 70 per cent of the fletton market. In 1968 the remainder of the fletton market was supplied by the following companies in the approximate proportions shown:

	per cent
Marston Valley	14
Redland	8
Whittlesea Central	4
Flettons Ltd	2

239. Flettons Ltd ceased production in 1970, and between 1968 and 1973 LBC acquired Marston Valley (1968), the fletton brickworks of Redland (1971) and those of Whittlesea Central (1973). Although in each case the approach was made by the other party, LBC saw the acquisition of these works as a sensible and logical step. It was confident that its efficiency could be further increased if the scale of its operations could be enlarged and it considered this to be necessary in order to meet competition from alternative materials and methods of building.

It is plain therefore that it welcomed the opportunity to acquire its remaining competitors in fletton brickmaking, but there is no evidence that its present complete monopoly position was deliberately and specifically sought.

240. New entry into fletton brickmaking now seems unlikely. Redland Bricks Ltd told us that what it regarded as LBC's 'unattractively low prices' was one of its main reasons for deciding to sell its fletton interest to LBC; and that it had considered re-entering the field but had come to the conclusion that it did not want to enter an activity dominated by LBC (see paragraph 180). In order to compete with LBC in terms of costs, a competitor would have to erect at least one modern plant of efficient size. Such a plant, capable of producing 5 million bricks per week would cost about £5 million at 1975 prices (see paragraph 70). A new entrant from outside the brick industry would have to build up a marketing organisation and connections, and it would not enjoy the flexibility which LBC derives from its multi-plant operations. Any new entrant would be dependent on LBC for LBC's know-how. Even if it set up at a distance from LBC's works, it would probably find itself largely forced to follow LBC's price leadership. In these circumstances, and bearing in mind that brickmaking is not a growth industry, that the market is a fluctuating one and that the return on capital would be uncertain, LBC's monopoly of fletton brickmaking seems unlikely to be challenged.

241. In relation to non-fletton brickmakers, LBC enjoys advantages arising from the characteristics of the Oxford clay which is the raw material for its bricks. Much the most important advantage conferred by this clay is its exceptionally high carbonaceous content. LBC estimates that this enables it to fire its bricks with only about one-quarter of the external fuel needed by other brickmakers. The statistics in paragraph 176 indicate the higher fuel and electricity costs per 1,000 bricks incurred in producing non-fletton bricks and suggest (as might be expected) that the general increase in fuel costs in 1974 increased the comparative cost advantage enjoyed by fletton brickmaking. However, as fletton bricks are transported over greater distances from their works than are most other bricks, the improvement in LBC's comparative production costs arising from higher energy prices is offset in part in the more distant areas by the increased fuel cost of delivery there.

242. LBC refers also to other, lesser, advantages arising from use of Oxford clay, namely, 'green' brick strength, the uniform size of the bricks, and their light weight. As against these advantages fletton bricks have some shortcomings (see paragraph 109) which do not however prevent them from having a wide range of applications.

243. The principal advantage of fletton facings is their cheapness. They tend to be used where cost is the main consideration. Non-fletton facings tend to be chosen where considerations of technical qualities or appearance take precedence over cost. The demand for fletton facings tends to be unresponsive to changes in their price, so long as this is kept significantly below that of non-fletton facings. LBC points out that all facings encounter competition from building materials other than bricks, including faced concrete blocks, tilehanging to timber and factory assembled materials and components. So far, however, the use of such materials in private housing, which constitutes LBC's most important single market, has been small (see paragraphs 15 and 118).

244. In the case of common bricks, there is little to choose between the characteristics of flettons and non-flettons for most applications and the market for them is therefore much more homogeneous than that for facings. As a consequence, the range of prices is much narrower. However, LBC considers that the main competition to its common bricks does not come from other common bricks but from other building materials, in particular concrete blocks. Its contention has support from the fact that concrete blocks have gained substantially at the expense of common bricks during the past ten years (see paragraph 14).

245. In assessing LBC's competitive strength, account has to be taken of the cost of delivering bricks. It is a characteristic of most traditional building materials that they are cheap to make but costly to transport, and it is a matter of observation that most older buildings were constructed predominantly from local materials. Cheap transport has altered the balance but, because the cost of transporting bricks is very high in relation to their cost of production, transport continues to exercise a profound influence on the market for them. Bricks can be made wherever there is suitable clay or other material but bricks with particular characteristics can only be made where the clay giving these characteristics to the finished bricks is found. Thus, 'blue' engineering bricks are largely made in Staffordshire, and there is a national market for such bricks because of their loadbearing, low porosity and other characteristics. Other types of building bricks, perhaps made from a unique clay deposit giving exceptional beauty or colour or texture to the finished brick, enjoy a national market because cost is not the ruling factor in their choice. At the other end of the scale are bricks made from clay which does not confer any special qualities on the finished article and these therefore have to be sold primarily on price. Such bricks tend to have a purely local market because the cost of transporting them makes them uncompetitive when sold at any substantial distance from their place of production. A local market radius of 30 miles is typical for a small brickworks making such bricks. Within these extremes there are brickmakers, large and small, making bricks having a wide variety of characteristics and enjoying a market that is not narrowly local but is nevertheless not wider than regional.

246. Fletton bricks have no special physical advantages other than their uniformity and lightness. However, because they can be produced so much more cheaply than other bricks, they can bear much higher transport costs without ceasing to be competitive. Uniquely therefore they are a common purpose brick which has come to enjoy a wide national market in England and Wales with limited sales as far afield as Scotland despite the cost of transport. LBC is confident that its share of the market for bricks will increase in the longer term. If the company's confidence is well founded, its market power would be likely to grow.

247. We go on to consider whether LBC's market power has or is likely to lead to adverse effects or abuses. First, we consider whether LBC's prices and profits have, in all the circumstances, been reasonable. We then consider LBC's investment policy, its efficiency and its labour relations. This is followed by an examination of certain of its trading practices, namely its pricing policy for common bricks and its policy on transport charges; and of other, minor, matters. Finally, we comment on some problems arising from fluctuations in the demand for bricks.

Prices and profits

248. LBC says that it seeks to achieve its profit objectives by increasing the volume and efficiency of its production rather than by raising its prices. It also

states that the prices of some of the bricks produced at the Redland and Whittlesea Central works which it acquired were higher than its own and that, after acquisition, it reduced the prices of these bricks to the LBC level. We have noted that since 1963 LBC increased the price of its facing bricks considerably less than the price of its common bricks (see Appendix 5), even though its market power has been greater in facings.

249. LBC's prices can be judged by reference to its profits and its efficiency. We discuss the latter in paragraph 257. In Appendix 6 we show LBC's group profits over the past 20 years in terms of capital employed on an historic basis[1]. It will be seen that in no year did LBC's group profits exceed 30 per cent. The separate calculation of profits over the past five years for bricks alone (see paragraph 165) suggests that the profitability of LBC's brickmaking activities tends to be slightly higher than the profitability of the group as a whole, and in 1973 the return on capital for bricks alone, at 31.5 per cent, was slightly in excess of 30 per cent. The average level of group profit over the 20-year period was 23.5 per cent.

250. LBC says that the most important element in the risk attaching to new projects is uncertainty about the level of demand (see paragraphs 211 and 214). We are, however, struck by the consistency of LBC's profits record. Only in four years out of the past twenty did group profits fall below 19 per cent, and only in one of these (1974) did they fall below 10 per cent. This suggests to us that the risks attached to LBC's brickmaking activities are smaller than might be inferred from the vagaries of the brickmaking industry. Such a conclusion would be consistent with our opinion as to LBC's market power. The evidence indicates that LBC has not exploited its market power to raise prices at times when demand for bricks has been strong but has been able to use its market power to raise its prices in a recession so as to recover its profitability (see paragraph 160). The resilience of LBC's profits in periods of recession also reflects the advantages of operating a large number of plants of varying levels of profitability (see paragraph 254).

251. While LBC has not in our view exploited its monopoly position to charge excessive prices or to make excessive profits, we nevertheless consider that it has the market power to do both these things. If its policies in these respects were to change, therefore, there might be a case for a further reference to this Commission.

LBC's investment policy

252. We have no reason to dispute LBC's claim that it has reached the practical limit in the modernisation of its old works, (see paragraph 209), and our interest therefore centres on its policy in relation to the construction of what it calls 'new generation' works (see paragraph 117) of which two, Kings Dyke and New Saxon, are in operation.

253. In general, new works may be constructed either for the purpose of increasing capacity or reducing costs or both. Table 9 (see paragraph 16) shows that brickmaking is not a growth industry and that for the last ten years fletton bricks have done little more than maintain their share of the total brick market. We have referred (see paragraph 246) to LBC's confidence that it can increase its market share in the longer term, but the main justification for new works has been

[1]We have been unable to compare results on either a Current Purchasing Power basis or a Current Cost Accounting basis as CPP figures are available for 1974 only and CCA figures not at all. (See paragraph 156.)

to reduce costs rather than to expand overall brickmaking capacity though increased facings capacity has also been an objective. The methods by which LBC appraises the case for new works projects are explained in paragraphs 211 to 213. The return of 20 per cent on a discounted cash flow basis for which LBC has aimed in respect of new projects is not in our view unreasonable after making allowance for investment on which no direct return is sought and for risk. The level of LBC's investment in new works is discussed in paragraphs 216 to 221.

254. LBC says that the uncertainties arising from fluctuations in the demand for bricks have not deterred it from its policy of investing in new works, but that its financial position would have been much worse in 1974 if all its plants had been new with continuing capital charges. The closing of modern plant would not have cut costs as effectively as the closing of old plant the variable costs of which are higher. The older, labour intensive, works have therefore acted in commercial, but not human, terms as a valuable buffer against the vagaries of the cycle. It is not clear from calculations which we have made that LBC could reduce its costs overall by building further new works irrespective of the effects of recession. The fact that it has kept in being works of widely varying performance (see paragraph 123) is understandable.

255. LBC's present strategy is to get back into full operation the more efficient of its 'old' plants and then to build a further 'new generation' works; the timing would depend on the market and the overall economic situation. We see no grounds for criticism of the company's recent investment performance or of its current strategy.

256. LBC, in common with the brickmaking industry at large, has come under some criticism for its inability to satisfy the demand for bricks at peak periods. LBC says it does not aim to meet every peak of demand, irrespective of its duration or height. We do not think LBC would have been justified in undertaking greater investment in fixed plant for this purpose particularly as such a course would have left it with an even larger amount of unused capacity in 1974–75. Investment in brick stocks would be an alternative to greater investment in fixed plant. Stocking involves substantial outlays and risks, and we do not criticise LBC's stocking policy. We refer again to these matters in our comment on the problems arising from fluctuations in the demand for bricks (see paragraph 275).

Efficiency

257. LBC's efficiency can no longer be measured against fletton competition because this has disappeared. However, LBC claims that it was able to improve the productivity and profits of both the Marston Valley and Redland brickworks, after taking them over, by the injection of funds for further modernisation, by rationalisation and by the application of LBC's know-how in fletton brickmaking. It also states that the evidence on acquisition showed that in no case was the efficiency of its erstwhile fletton competitors as high as its own average efficiency. LBC claims that virtually all innovation in the fletton industry has originated within the company. We have not been able to test these various claims, but we have no reason to doubt them. We note innovations such as 'selfstak' and the development of the 'fletliner' service, and its initiative in the design of 'new generation' works. We have noted also its methods of monitoring its internal efficiency (see paragraphs 202 to 204) and the development of its operational scheduling model for the efficient control and development of the company's

operation (see paragraphs 205 and 206). We have already referred to LBC's general investment policy and performance (see paragraphs 252 to 256). Our broad conclusion is that LBC is efficiently managed.

Industrial relations and wages

258. Representatives of the TUC and the principal unions involved praised the company for the improvement it had effected to working conditions and safety in plants which it had acquired and for its efforts to find alternative employment for redundant labour in other works in the 1974 recession; but in 1974 they were extremely critical about LBC's method of industrial relations, in that they alleged lack of consultation on a variety of matters and an unresponsiveness to trade union complaints on working conditions, redundancies and other matters. The company was considered to have an outdated paternalistic attitude towards its labour and to be unconscious of the bad state of industrial relations which, in the union's view, in fact existed. LBC, on the other hand, claimed credit for good industrial relations and suggested that it could not have carried through smoothly the difficult operations of production cutbacks and redundancies in 1974 without the co-operation and understanding of its workers (see paragraph 197). We found it difficult to assess the effect of the evidence which we received in 1974 because it was so conflicting but it did not justify any complacency on the part of LBC about the state of its industrial relations at that time. In 1975, the TUC informed us that there had been some improvement from the union standpoint (see paragraph 198). In any event, we consider that no connection is established between the state of LBC's industrial relations and its monopoly of fletton brickmaking.

259. In view of the suggestion contained in paragraph 68 of a report by the National Board for Prices and Incomes (NBPI)[1] to the effect that LBC may be under no pressure to resist wage demands because it can pass on any wage increase to its customers, we made a limited investigation into certain wages paid by LBC in relation to those of other brickmakers and to those paid by certain manufacturers of other materials. The evidence we obtained (see paragraph 195) was insufficient to support any view that LBC has adopted an easy-going attitude towards wages because it can afford to do so.

LBC's pricing policy for common bricks

260. For many years LBC has, as a matter of policy, accepted lower margins on its common bricks than on its facing bricks. The NBPI report to which we have already referred (see paragraph 259) concluded in 1970 that LBC's ex-works prices of common and facing bricks did not reflect relative costs and recommended that any further increase in prices should be concentrated on the price of common bricks. In fact, since 1969 LBC has reduced the disparity progressively.

261. In its original evidence to the Commission, in February 1974, LBC stated that, as a matter of policy, it would wish to see the margins on common bricks improved; but, because of the effect of any sharp change in building costs, it considered that this could only be achieved over a period. Moreover, while the development of 'set-on-edge' facing bricks (see paragraph 119) increased operational flexibility, a proportion of commons still had to be produced (see paragraphs

[1]Report No 150 entitled *Pay and other Terms and Conditions of Employment in the Fletton Brick Industry and the Prices Charged by the London Brick Company* published in July 1970.

120 to 121). LBC later claimed (see paragraphs 169 and 170) that price adjustments and additional costs incurred in the production of facings had brought the margins into line.

262. LBC has been unable to substantiate this claim as it has not in the past ascertained all the additional costs incurred in the production of facings. On the basis of ascertained costs alone, a 4 per cent rise in the price of commons and a 4 per cent reduction in the prices of facings would be necessary to close the gap in the margins, even after the price adjustment in July 1975. There might well remain a gap even if all the additional costs, both ascertained and unascertained could be brought into the reckoning, but it would be smaller.

263. We feel we are entitled to assume that it is now LBC's policy to keep the margins in line. We think that this policy is right in present circumstances but that any present difference in the margins is not important enough to justify any recommendation by us.

Transport charges

264. We have already observed (see paragraph 245) that the cost of transporting bricks is high in relation to production costs, and that LBC's exceptionally low costs of production enable its bricks to bear much higher transport costs than other general purpose bricks without ceasing to be competitive (see paragraph 246). In 1973, for instance, the costs incurred by LBC in delivering its bricks (£11·6 million) amounted to approximately one-half of all its other costs (£23·4 million) (see paragraph 183 and Appendix 8). The method by which LBC recovers its transport costs from its customers can therefore have a material effect on its delivered prices and on its competitive position.

265. LBC's broad policy is to recover the total costs of delivering its bricks without making either a profit or a loss on its transport account. This is also the policy of most other brickmakers. Nevertheless, in practice LBC usually incurs a loss; in 1973 and 1974 taken together, the loss amounted to nearly £1 million out of £21·5 million of total transport costs incurred (see paragraph 183).

266. Although it is LBC's broad policy to make neither a profit nor a loss on its transport operations overall, this does not apply to its individual charges. LBC has for long maintained the practice of overcharging for delivering bricks relatively close to its works, and undercharging for delivering at a distance. The NBPI in their report referred to in paragraph 259 recommended that LBC's scale of charges at different distances should, unless there were good reasons to the contrary, reflect the actual costs of delivery. Recently, the amounts of the disparities at most distances have become somewhat less particularly when expressed as a percentage of the delivered price (see paragraphs 184 to 188). Nevertheless, LBC's charges for delivering bricks to the most distant areas are still below the cost of transport, in some cases by 17 per cent which is more than 7 per cent of the delivered price and about 11 per cent of the ex-works price (see paragraph 188). This practice represents unfair competition, and could lead to an inefficient use of national resources. This could arise if, as a consequence of LBC's pricing policy, some builders in (say) Wales were to find LBC's bricks cheaper than equivalent locally produced bricks when the costs of producing and delivering the latter were lower. This would be objectionable particularly if the importing area suffered from relatively high unemployment.

267. LBC's explanation of the origin of the practice and the arguments for continuing it are set out in paragraph 190. We appreciate that its abandonment could entail some increase in LBC's prices in some distant areas, and that this in turn might lead to some charging of higher prices by LBC's competitors in those areas. However, although the building trade in these areas might have to pay some higher prices, the building trade in areas close to LBC's works should pay lower prices.

268. LBC regards the amount of the undercharges as small in relation to the delivered price of bricks and would not expect the effect on its sales of their removal to be other than marginal. We do not think the practice can be condoned on the grounds that the amounts are not great in many parts of the country in view of the figures which we quote in paragraph 266. We have no wish to discourage LBC's further penetration of the brick market, but we think that the company should, so far as it is reasonably practicable so to do, relate its transport charges to the customer to the cost of delivery to him.

269. There are some resemblances and some differences between the facts and circumstances of LBC's practice in regard to transport charges and those of the uniform delivered price practice of the BPB group which the Commission criticised in their report on Plasterboard[1]. Common to both are the market power of LBC and the BPB group, the high cost of transport relative to the cost of production and the failure to relate transport charges to the cost of delivery to the customer. The fact that the two cases are not in all respects parallel does not in our view[2] justify different conclusions.

270. We have been made aware during the course of our inquiry that LBC has it in mind to change its present zoning system for the calculation of transport charges (see paragraph 193). Although these proposals will have the effect of 'coarsening' the rate structure, we consider that they can be implemented without material detriment to the principle (see paragraph 268) on which we think transport charges should be based.

271. We consider that an exception to the principle can be justified if lower transport charges are used for developing a particular market to a point where it will become self-supporting. Thus, provided that a 'fletliner' service is introduced in the North-East by LBC in the near future, we see no objection to the continuation of some degree of under-charging these so long as the delivery charges are not set below the level which would be appropriate with a 'fletliner' service in operation.

Complaints and other matters

272. We received some complaints to the effect that (a) in times of low demand LBC 'dumps' bricks in distant areas but withholds them when demand recovers, and (b) in times of high demand large customers receive more favourable treatment than do small customers. LBC contends that these allegations are untrue, and we are satisfied that the available statistical evidence does not support them. LBC has also explained to us the operation of its base-line entitlement system which determines allocation at times of high demand (see paragraphs 223 and 226). We are satisfied by the company's explanations in this respect.

[1] *A Report on the Supply of Plasterboard* published by Her Majesty's Stationery Office on 21 January 1974.
[2] See note of dissent in paragraphs 281 to 284.

273. LBC normally permits its customers to collect from its works at an ex-works price, but suspends this facility during periods of high demand. It asserts that in normal times there is almost no demand for this facility; but in times of high demand customers hope to 'jump the queue' by collecting, and the presence of their lorries would add to vehicle congestion at the works and reduce vehicle throughput at a time when it was important to maximise it. It says that it would also add to administration costs, and that to overcome the difficulties it would be necessary to set up special stockyards at these times for which the collecting customer would probably be unwilling to pay. We think LBC should consider the practicability of accommodating in times of high demand those of its customers who make it their practice to collect in normal times, but have no other suggestion to make.

274. The NBPI report to which we have already referred (see paragraph 259) recommended that small loads should attract a delivery surcharge. This recommendation was not followed by LBC for reasons of administrative difficulty. If the difficulties could be overcome, we would see no objection if LBC, within a policy of incurring neither profit nor loss on its transport operations overall, were to surcharge by the amount of the additional expense involved, the customer who requested delivery in lorries smaller than the company or its private hauliers would normally select.

Fluctuations in the demand for bricks

275. We have referred in paragraph 256 and elsewhere in our Report (see Chapter 3) to the fluctuations in the demand for bricks which have been a recurrent theme during our inquiry. The brickmaking industry tends to suffer particularly severely from fluctuations which affect the construction industry as a whole. This is partly because bricks are a 'starting' material and brickmaking is therefore affected by changes in demand sooner, and with less warning, than almost any other building material. The impact on the industry tends to be exacerbated by multiple ordering when brick supplies are short followed by a collapse in orders when the shortage disappears. These rapid reversals pose particular problems for makers of clay bricks because the economic production of these bricks depends on continuous flow through the kilns. In time of boom, brickmakers are often unable to meet in full the demand for bricks. In a recession, on the other hand, brickmakers are often faced, because of the high cost of operating below capacity, with the alternatives of stockpiling bricks for which there is no immediate demand or shutting down works altogether and dispersing the labour force that operates them. The fluctuations create additional costs and increase the risks of investment. Thus, they affect the consumer adversely because they lead to higher prices and because shortages of bricks can add materially to building costs.

276. There are no remedies short of the creation of a more stable climate for the industry, for which Government has a special degree of responsibility. Measures taken by Government to influence the level of demand in the economy at large affect the industry, and variations in the level of new orders by public authorities, which may arise as part of the process of central economic management, have direct and substantial impact; public sector construction work accounts for a substantial proportion of all building (see footnote to paragraph 38).

277. On the assumption that some fluctuation in the demand for bricks is unavoidable, we have considered whether its effects could be mitigated. We have

already recorded our view that LBC would not have been justified in undertaking more investment in fixed plant for the purpose of meeting shortages at peak periods and we do not criticise LBC's stocking policy (see paragraph 256). We take a similar view in relation to the brickmaking industry as a whole. However, we consider that the creation of buffer stocks of bricks could be a means by which adverse effects of the fluctuations for both producers and consumers of bricks might be lessened. The unions strongly supported the creation of a 'brick bank' when demand recedes for the purpose of securing a greater degree of continuity of employment (see paragraph 233). While the unions, in putting forward this proposal, appeared to have the problem of redundancy primarily in mind we think that the stockpiling of bricks in a recession might often be less costly in commercial as well as in human terms than shutting down works; could reduce the price of bricks; and make them more readily available when demand recovers from the depressed periods of the cycles.

278. The policy of different brickmakers towards producing for stock varies and indeed in some cases the protracted stocking of bricks may not be practicable for reasons of space or because of deterioration in the product. We have not discussed with individual brickmakers or representatives of the industry the practicability of producing bricks for stock in a recession to a greater extent than at present or schemes by which this might be encouraged, but we suggest that the Government should consider the desirability of doing so. Considerations relevant to the success of a scheme would include the reliability of medium-term forecasts of demand for bricks and the availability of risk capital for investment in stocks.

Summary of conclusions

279. Our conclusions may be summarised as follows:

(1) The 'conditions' of the Act prevail as respects the supply of building bricks in Great Britain by reason of the fact that LBC supplies at least one-third of the building bricks which are supplied in Great Britain (see paragraph 235).
(2) The 'conditions' do not operate and may not be expected to operate against the public interest. (See paragraphs 251 and 257.)
(3) LBC's practice of overcharging, for transport, customers relatively close to its works and undercharging customers relatively distant from its works is a thing done as a result of the conditions and operates and may be expected to operate against the public interest (see paragraphs 264 to 269)[1].
(4) There are no other things done as a result of, or for the purpose of preserving, the conditions which operate or may be expected to operate against the public interest.

Recommendation

280. In view of our conclusion (3) above, we recommend that, subject to the qualifications contained in paragraphs 270 and 271, LBC should in future relate its transport charges to the customer to the cost of delivery to him (see paragraph 268)[1].

[1]See note of dissent in paragraphs 281 to 284.

ASHTON ROSKILL (*Chairman*)
G. F. ASHFORD
(*Subject to note of dissent*)
T BARNA
ROGER FALK
F E JONES
R G OPIE
S A ROBINSON
RITA STEPHEN
Y LOVAT WILLIAMS (*Secretary*)
25 November 1975

Note of dissent by Mr Ashford

281. I am unable to agree with my colleagues' conclusion and recommendation on the subject of transport charges. My colleagues recommend that LBC should relate its transport charges to the customer to the cost of delivery to him. In my opinion this recommendation would be likely to result in a restriction in competition in those areas of Great Britain where LBC's share of the market is today small and in an increase of LBC's dominance in those areas where LBC's share is already large.

282. I do not consider that undercharging for transport on the scale at present practised by LBC is likely to lead to an inefficient use of national resources in view of the inherent savings of energy and capital costs in the production of LBC's bricks (see paragraphs 176, 70 and 75).

283. I agree that undercharging for transport by LBC to the extent of 7 per cent of the delivered cost might be regarded by competitors as unfair competition, but for the reasons already mentioned I do not consider that on balance such competition is contrary to the public interest.

284. In my opinion my conclusion is not in conflict with the finding of the Commission on uniform delivered prices in their report on Plasterboard. In the Plasterboard reference the company concerned had 100 per cent of the plasterboard market and of the only competing material which was gypsum plaster. In the present case LBC has only 40·9 per cent of the brick market and there are many other competing materials (see paragraph 4). In the Plasterboard report the Commission attached particular importance to the deterrent effect of uniform delivered prices on a potential new competitor. In the present case LBC has a large number of competitors, all of whom are much smaller than LBC but some of whom are expanding faster (see paragraph 151) and showing a higher return on capital employed than LBC (see paragraph 172).

APPENDIX 1

(referred to in paragraph 2)

Manufacturing processes for clay, calcium silicate and concrete bricks

Clay bricks

1. So called clay bricks can be made from a wide variety of clays, marls, shales and alluvial deposits. The main stages of manufacture are in principle the same in all cases and consist of (a) winning the material from the pit or quarry; (b) reducing the material by grinding, adjustment of the water content and inclusion of any necessary additives, to a consistency suitable for the formation of 'green' bricks; (c) forming 'green' bricks by moulding, by pressing or by extrusion into a column which is then wirecut to size; (d) 'setting' the 'green' bricks in formation for transfer to the kiln or clamp; (e) 'burning' or firing the bricks in a kiln or clamp with or without preliminary drying; (f) sorting out such burnt bricks as are unsuitable for sale, or suitable for sale only as 'seconds', and assembling saleable bricks into packs for conveyance to the customer.

2. All stages of manufacture, except the grading of 'burnt' bricks for sale, are capable of mechanisation and are, in practice, wholly or mainly mechanised in modern works. Some non-fletton clay bricks are moulded by hand to meet the special requirements of individual customers or for use in repair and maintenance work in old buildings. It is not as yet possible to 'set' fletton bricks mechanically; because the lower Oxford clay from which such bricks are made has a high carbonaceous content, it is necessary to 'set' the bricks in such a way as to allow the resulting gases to clear from the bricks during firing and the setting patterns required are more complex than in the case of other materials. Otherwise, the degree of mechanisation introduced at a particular works represents a choice between capital costs and labour costs which is made by each brickmaker in the light of his individual circumstances.

3. Whether 'green' bricks, once moulded, pressed or wirecut can be put at once into the kiln or clamp without further attention depends on the material from which they are made and the appearance required in the finished bricks. Fletton bricks do not require to be dried before introduction into the kiln but many non-fletton clay bricks do and these are passed, on their way to the kiln, through drying chambers heated by surplus gases from the kiln itself. Some non-fletton materials yield bricks of a sufficiently attractive appearance to be sold as facings with no special treatment of the surface, eg by scouring, sand-blasting, or the application of pigments, before they are fired. Other non-fletton bricks, however, are so treated. All fletton facings are 'textured' or are given an applied face by spraying with powdered inorganic oxides or similar material. It is possible, by such methods, to produce facings of widely different appearance from the same basic material but bricks with applied faces are more vulnerable to surface damage than are through-colour bricks.

4. Kilns for clay brickmaking can be 'intermittent' or 'continuous'. In intermittent kilns the fire is lit afresh for each batch of bricks. In this respect the clamp, now little used, can be regarded as a primitive form of intermittent kiln. In

continuous kilns the fire is continuously maintained and the bricks are either passed on cars through the fire in a tunnel or the fire is led through a closed circuit of chambers in which batches of bricks are set. The maximum temperature required, and the length of time for which this must be maintained, varies with the material used and the type of finished brick required. Most bricks nowadays are produced in continuous kilns. The tunnel type of continuous kiln is almost invariably installed in modern non-fletton brickworks but is unsuitable for the production of fletton bricks. For these, closed circuit multi-chamber continuous kilns of the Hoffman transverse-arch type are used and variations of such kilns are also extensively used in the non-fletton sector of the industry. The intermittent kiln is preferred by some small brickmakers, and, for the production of special orders, by some larger brickmakers. Such kilns are also convenient for the production of Staffordshire Blue engineering bricks which are made from etruria marl and in which the distinctive blue colour is induced by reduction of the inflow of oxygen at a critical stage of the firing process.

5. Kilns for clay brickmaking, whether intermittent or continuous, have a long life, given proper maintenance, but, if taken out of production, are liable to structural damage through shrinkage and distortion to the point, in extreme cases, of collapse.

Calcium silicate bricks

6. Calcium silicate bricks are composed of a mixture of lime and sand (sand lime) or lime and siliceous gravel or rock (flint lime). The sand, gravel or rock is usually quarried from deposits adjacent to the works. The lime is usually bought in 'quick'. The quick lime is crushed and mixed with the sand or other material. The mixture is left in silos to hydrate and the slaked mix is pressed into bricks. The 'green' bricks are transferred to autoclaves where they are hardened by the chemical action induced by the application of live steam under pressure.

Concrete bricks

7. Concrete bricks are composed of a mixture of cement and either a natural aggregate, furnace clinker, slag, ash, crushed clay brick rubble or similar material. Water is added to the dry mix and the bricks are formed in hydraulic presses. They are then usually 'cured' in heated chambers but, unlike the steam treatment required for calcium silicate bricks, this is not an essential part of the manufacturing process.

8. The manufacturing processes for both calcium silicate and concrete bricks are more flexible than are those for clay bricks, the rate of production can more easily be adjusted to changes in demand and this can be done with little or no risk of damage to equipment taken temporarily out of use.

APPENDIX 2

(referred to in paragraph 3)

British Standard specifications for clay, calcium silicate and concrete bricks

1. The British Standard specifications in force during our inquiry were *BS 3921: 1974*: Clay bricks and blocks; *BS 187: 1970*: Calcium silicate (sand lime and flintlime) bricks; *BS 1180: 1972*: Concrete bricks and fixing bricks.

2. In *BS 3921: 1974* a brick is defined as a walling unit not exceeding 337·5 mm in length, 225 mm in width, or 112·5 mm in height. A walling unit exceeding these dimensions is defined as a block. The standard format of bricks is given as 225 mm × 112·5 mm × 75 mm including the thickness of mortar joints of 10 mm. The standard work size is therefore 215 mm × 102·5 mm × 65 mm. Compliance with standard dimensions is tested by reference to the overall dimensions of a sample of 24 bricks, ie bricks are not required to be tested for size individually.

3. Three qualities of brick are defined; internal (suitable for internal use only); ordinary (less durable than special quality but normally durable in the external face of a building); special (durable even when used in situations of extreme exposure where the structure may become saturated or frozen, eg in retaining walls, sewerage plants or pavings).

4. Procedures are laid down for testing compressive strength and absorption of fluid. Loadbearing bricks are classified from 1 to 15 for compressive strength with no specific test for absorption of fluid. Engineering bricks are classified A or B according to a combination of high compressive strength and low absorption. Common and facing bricks of internal, ordinary and special quality are tested for efflorescence and this must be no more than 'moderate'. The soluble salts content of bricks of special quality must not exceed a defined percentage. The manufacturer of such bricks must also provide evidence that similar bricks have, in the past, successfully resisted conditions of exposure at least as severe as the conditions likely to be experienced by the bricks which he is offering for sale in the location in which it is proposed to use them.

Calcium silicate bricks; concrete bricks

5. *BS 187: 1970*, for calcium silicate bricks, and *BS 1180: 1972*, for concrete bricks, provide definitions and tests for such bricks with the same general objectives as in the case of clay bricks but with variations appropriate to the differences in the composition of the bricks and their characteristic behaviour. Calcium silicate bricks are classified from 1 to 7 by reference to a combination of the average compressive strength of a sample when wet, uniformity of compressive strength, and drying shrinkage. Concrete bricks for general use are classified by reference to compressive strength (equivalent to classes 1 to 6 for clay bricks) combined, as in the case of calcium silicate bricks, with uniformity and drying shrinkage requirements within similar, but not identical, limits. *BS 1180: 1972* also deals with fixing bricks which are defined as solid concrete bricks of no particular compressive strength or drying shrinkage but of a consistency to permit the easy driving of, and provide a good purchase for, nails or screws.

APPENDIX 3

(referred to in paragraphs 34 and 103)

Research projects sponsored by the Brick Development Association in 1974

The Association sponsored projects in 1974 included:

(a) Investigating methods of bricklaying designed to increase productivity (Liverpool University).

(b) Ascertaining the relative advantages and disadvantages of bricks of various metric formats both on site, with particular reference to dimensional co-ordination, and in the factory with particular reference to production costs (Peterborough Building Site in conjunction with DoE and BRE).

(c) Investigating the possible uses for the grouted cavity system of brickwork construction (Jenkins and Potter, London).

(d) Consideration and evaluation of the various problems of dimensional co-ordination (a continuous process involving liaison with the British Standards Institution, Government Departments and International Standards Organisations) (P D Edmondson, Consultant).

(e) An investigation into 'creep' of brickwork (University of Wales).

(f) A review of existing systems of prefabricated brickwork (Liverpool Polytechnic).

(g) The effect of damp proof courses on the long term strength of loadbearing brickwork (Southampton University).

(h) An investigation into the properties of loadbearing brickwork (Edinburgh University).

(i) Comparison of the masonry codes of various European countries with the object of providing data for a single code for Europe (Heads of Laboratories Committee of The Federation Européenne de Tuiles et de Briques).

(j) The effect of mixing time on masonry cement mortars (Southampton University).

APPENDIX 4

Indices of prices of fletton commons, fletton facings, all building bricks and house building materials (1963=100)

(referred to in paragraph 147)

Year or month	*Fletton*		*All building bricks (fletton and non-fletton)*	*House building materials*
	Commons	*Facings*		
1963	100	100	100	100
1964	102	105	103	103
1965	102	105	105	107
1966	102	105	107	110
1967	103	106	108	110
1968	112	109	114	117
1969	116	110	114	121
1970	135	117	124	132
1971	150	123	142	146
1972	163	128	163	157
1973	174	141	183	187
1974	201	157	222	236
1975 July	279	209	272	276
1975 October*	306	227	293	286

*Provisional.
Source: Derived from Department of Industry Wholesale Price Indices.
Note: The indices for fletton commons and fletton facings and all building bricks are based on delivered prices. In the case of housebuilding materials the index is a mixture of delivered and ex-works prices.

APPENDIX 5

(referred to in paragraph 148)

Changes in LBC's ex-works prices for commons and selected facings: 1 July 1963 to 21 July 1975

Price change date		*Fletton Commons*	*Rustic*	*Fletton facings Tudor*	*Golden buff*	*Heather*	*Dapple light*
		(Ex-works prices £ per 1,000 bricks)					
1 July	1963	4·90	7·30	8·80	10·05	10·20	10·43
1 August	1967	5·10	7·50	9·00	10·25	10·40	10·63
1 January	1968	5·40	7·50	9·00	10·25	10·40	10·63
17 November	1969	6·15	7·50	9·00	10·25	10·40	10·63
13 July	1970	7·15	8·50	10·00	11·25	11·40	11·63
26 July	1971	7·95	8·50	10·00	11·25	11·40	11·63
1 January	1972	7·92	8·50	10·90	11·25	11·40	12·43
1 August	1972	8·92	9·50	11·90	12·25	12·40	13·43
9 October	1972	9·28	9·88	12·38	12·74	12·90	13·97
7 February	1974	9·93	10·53	12·63	12·99	13·15	14·22
5 August	1974	12·03	12·63	14·73	15·09	15·25	16·32
9 January	1975	15·15	15·75	17·85	18·21	18·37	19·44
21 July	1975	17·42	18·02	20·12	20·48	20·64	21·71
		Ex-works price index, (1 July 1963 = 100)					
2 October	1975	356	247	229	204	202	208

APPENDIX 6

(referred to in paragraphs 152 to 156)

LBC group capital employed and profits: 1955 to 1974

Year	(A) *Company basis average capital employed* [see (1)]	*Profit before loan stock interest and tax*	Return on capital employed:	(B) *Historic basis average capital employed* [see (1)]	*Profit before loan stock interest and tax*	Return on capital employed:	(C) *Group turnover shown in published accounts*
	£'000	£'000	per cent	£'000	£'000	per cent	£m
1955	6,964	1,888	27·1	6,964	1,888	27·1	
1956	7,319	1,734	23·7	7,319	1,734	23·7	
1957	7,748	2,232	28·8	7,748	2,232	28·8	
1958	8,357	2,188	26·2	8,357	2,188	26·2	
1959	9,012	2,381	26·4	9,012	2,381	26·4	
1960	9,726	2,499	25·7	9,726	2,499	25·7	
1961	10,833	3,193	29·5	10,833	3,193	29·5	
1962	12,241	3,175	25·9	12,241	3,175	25·9	19·2
1963	13,637	3,347	24·5	13,637	3,347	24·5	20·0
1964	15,507	4,527	29·2	15,507	4,527	29·2	22·5
1965	17,259	3,857	22·3	17,259	3,857	22·3	21·8
1966	18,217	2,733	15·0	18,217	2,733	15·0	20·6
1967	19,059	3,658	19·2	19,059	3,658	19·2	22·9
1968	26,961	3,943	14·6	19,819	3,943	19·9	24·6
1969	26,309	2,477	9·4	19,497	2,477	12·7	25·5
1970	26,616	3,674	13·8	20,056	3,674	18·3	27·5
1971	29,488	6,634	22·5	23,309	6,634	28·5	36·0
1972	32,727	7,283	23·2	26,903	7,583	28·2	41·2
1973	36,357	8,927	24·6	30,851	8,927	28·9	45·5
1974	41,231	3,399	8·3	35,881	3,399	9·5	45·1

Notes:

(1) For an explanation of 'Company' basis and Commission 'historic' basis of capital employed see footnotes 1 and 2 to paragraph 152.

(2) The returns on average capital employed from 1961 to 1967 are calculated after deducting transfers to reserves in lieu of depreciation provisions.

(3) The return on closing capital employed in 1974 was 2·7 per cent on the Current Purchasing Power basis advocated in Provisional Statement of Standard Accounting Practice No 7.

APPENDIX 7

(referred to in paragraphs 164 to 168)

LBC's brickmaking sales, profits and capital employed: 1969 to 1974

		1969	*1970*	*1971*	*1972*	*1973*	*1974*
Commons [see (1)]							
Delivered sales value	£'000	9,773	10,006	12,321	16,511	17,606	16,450
Profit/-loss		−563	316	1,094	1,782	2,337	242
Capital employed		8,529	7,752	8,598	11,451	12,064	14,484
Profit/-losses as return on							
Delivered sales	Per cent	−5·8	3·2	8·9	10·8	13·3	1·5
Capital employed		−6·6	4·1	12·7	15·6	19·4	1·7
£ per 1,000 bricks sold							
Delivered sales value	£	8·44	9·96	10·90	11·87	13·12	14·96
Profit		−0·49	0·31	0·97	1·28	1·74	0·22
Facings							
Delivered sales value	£'000	10,737	11,758	16,578	22,163	24,963	17,053
Profit		2,744	2,649	4,155	5,493	6,157	2,252
Capital employed		6,596	7,288	9,513	12,960	14,860	13,226
Profit as return on							
Delivered sales	Per cent	25·6	22·5	25·1	24·8	24·7	13·2
Capital employed		41·6	36·3	43·7	42·7	41·4	17·0
£ per 1,000 bricks sold							
Delivered sales value	£	12·81	13·40	14·03	15·05	16·42	18·21
Profit		3·27	3·02	3·52	3·73	4·05	2·40
All bricks							
Sales—Commons	m bricks	1,157·6	1,004·9	1,130·0	1,391·2	1,342·0	1,099·4
Calculon				9·4	16·5	20·6	14·0
Facings		837·9	877·7	1,181·5	1,472·5	1,520·4	936·7
Total		1,995·5	1,882·6	2,320·9	2,880·2	2,883·0	2,050·1
Delivered sales value	£'000	20,510	21,764	29,126	39,077	43,091	33,892
Profit		2,181	2,965	5,297	7,338	8,583	2,558
Capital employed		15,125	15,040	18,248	24,675	27,265	28,001
Profit as return on							
Delivered sales	Per cent	10·6	13·6	18·2	18·8	19·9	7·5
Capital employed		14·4	19·7	29·0	29·7	31·5	9·1
£ per 1,000 bricks sold							
Delivered sales	£	10·28	11·56	12·55	13·57	14·95	16·53
Profit		1·09	1·57	2·28	2·55	2·98	1·25

Notes:
(1) Excluding calculon bricks (see Note 2 to Table 16 in paragraph 121).

APPENDIX 8

(referred to in paragraph 175)

Sales, costs and profits of all LBC clay products: 1973 and 1974

(a) 1973

	Commons	*Calculon*	*Facings*	*All bricks*	*Blocks, pipes and bats*	*All clay products*
1. *Total sales, costs and profit*	£'000	£'000	£'000	£'000	£'000	£'000
Sales						
Ex-works sales	12,408	378	19,144	31,930	1,639	33,569
Transport charges	5,198	144	5,819	11,161	200	11,361
Delivered sales	17,606	522	24,963	43,091	1,839	44,930
Costs						
Direct costs	5,272	159	6,815	12,246	900	13,146
Indirect costs*	5,035	135	6,464	11,634	659	12,293
Total ex-works costs	10,307	294	13,279	23,880	1,559	25,439
Transport charges	5,198	144	5,819	11,161	200	11,361
Total costs of delivered sales	15,505	438	19,098	35,041	1,759	36,800
Profit	2,101	84	5,865	8,050	80	8,130
Add: Interest receivable	236	5	292	533	28	561
Total profit	2,337	89	6,157	8,583	108	8,691
Return on delivered sales	13·3%	17·0%	24·7%	19·9%	5·9%	19·3%
2. *£ per 1,000 bricks sold*	£	£	£	£		
Sales						
Ex-works sales	9·25	18·35	12·59	11·08		
Transport charges	3·87	6·99	3·83	3·87		
Delivered sales	13·12	25·34	16·42	14·95		
Costs						
Direct costs	3·93	7·72	4·48	4·25		
Indirect costs*	3·75	6·55	4·25	4·04		
Total ex-works costs	7·68	14·27	8·73	8·29		
Transport charges	3·87	6·99	3·83	3·87		
Total costs of delivered sales	11·55	21·26	12·56	12·16		
Profit	1·57	4·08	3·86	2·79		
Add: Interest receivable	0·17	0·24	0·19	0·19		
Total profit	1·74	4·32	4·05	2·98		
3. *Total sales volumes* (million bricks)	1,342·0	20·6	1,520·4	2,883·0		

*Includes the residual cost of transport (see paragraph 183).

(b) 1974

	Commons £'000	*Calculon* £'000	*Facings* £'000	*All bricks* £'000	*Blocks, pipes and bats* £'000	*All clay products* £'000
1. *Total sales, costs and profit*						
Sales						
Ex-works sales	11,456	274	12,798	24,528	1,456	25,984
Transport charges	4,994	115	4,255	9,364	184	9,548
Delivered sales	16,450	389	17,053	33,892	1,640	35,532
Costs						
Direct costs	4,926	110	5,211	10,247	928	11,175
Indirect costs*	6,403	103	5,440	11,946	766	12,712
Total ex-works costs	11,329	213	10,651	22,193	1,694	23,887
Transport charges	4,994	115	4,255	9,364	184	9,548
Total costs of delivered sales	16,323	328	14,906	31,557	1,878	33,435
Profit/-loss	127	61	2,147	2,335	–238	2,097
Add: Interest receivable	115	3	105	223	13	236
Total profit	242	64	2,252	2,558	–225	2,333
Return on delivered sales	1·5%	16·5%	13·2%	7·5%	13·7%	6·6%
	£	£	£	£		
2. £ *per 1,000 bricks sold*						
Sales						
Ex-works sales	10·42	19·57	13·66	11·96		
Transport charges	4·54	8·22	4·55	4·57		
Delivered sales	14·96	27·79	18·21	16·53		
Costs						
Direct costs	4·48	7·86	5·56	5·00		
Indirect costs*	5·82	7·35	5·81	5·83		
Total ex-works costs	10·30	15·21	11·37	10·83		
Transport charges	4·54	8·22	4·55	4·56		
Total costs of delivered sales	14·84	23·43	15·92	15·39		
Profit	0·12	4·36	2·29	1·14		
Add: Interest receivable	0·10	0·21	0·11	0·11		
Total profit	0·22	4·57	2·40	1·25		
3. *Total sales volumes* (million bricks)	1,099·4	14·0	936·7	2,050·1		

*Includes the residual cost of transport (see paragraph 183).

APPENDIX 9

(referred to in paragraphs 177 and 178)

LBC group sources and uses of funds: 1969 to 1974

(£'000)	*1969*	*1970*	*1971*	*1972*	*1973*	*1974*	*1969 to 1974*
Sources							
Profit before tax and loan stock interest	2,477	3,674	6,634	7,583	8,927	3,399	32,694
Deduct							
Loan stock interest						–729	–729
Tax paid	–2,407	–2,187	–1,419	–1,976	–2,776	–2,223	–12,988
Dividends paid	–1,178	–734	–1,005	–766	–1,391	–1,485	–6,559
Balance of profit/-loss	–1,108	753	4,210	4,841	4,760	–1,038	12,418
Add depreciation provisions	920	925	922	955	1,160	1,460	6,342
Internal cash flow	188	1,678	5,132	5,796	5,920	422	18,760
Other items	–45	–110	64				–91
Total sources	–233	1,568	5,196	5,796	5,920	422	18,669
Uses							
Changes in working capital							
Stocks	368	–539	269	383	1,219	2,387	4,087
Debtors less creditors	–523	438	909	1,772	–2,110	1,145	1,631
Total changes	–155	–101	1,178	2,155	–891	3,532	5,718
Fixed assets	1,101	355	3,531	2,919	5,463	2,244	15,613
Investments	–2,861		–180		1,853	291	–897
Goodwill arising on consolidation	25	55	646		350		1,076
Other items				–2		335	333
Together	–1,890	309	5,175	5,072	6,775	6,402	21,843
Movement in liquid funds	1,657	1,259	21	724	–855	–5,980	–3,174
Total uses	–233	1,568	5,196	5,796	5,920	422	18,669

Notes:

1. The total figures shown for 1974 are adjusted to exclude the effects on the balance sheet changes of the acquisition of Banbury Buildings Holdings Limited in May 1974.
2. The figure for investments in 1974 is the cash part of the consideration for the acquisition of Banbury Buildings Holdings Limited. The total consideration for the acquisition comprised:

	£'000
Book value of net assets acquired from Banbury	3,134
Acquisition expenses	176
Premium on acquisitions	3,622
Total consideration	6,932
This consideration was discharged by:	
Issue of 14 per cent convertible unsecured loan stock	6,641
Cash	291
Total, as above	6,932

APPENDIX 10

(referred to in paragraph 195)

Selected hourly wage rates and earnings in the building brick industry

Table (a) Minimum hourly wage rates for certain manual occupations in brick manufacture (pence)

Fletton (Agreements of the Joint Negotiating Committee for the Fletton Brick Industry)

	From 30.9.68	*From 1.10.69*	*From 7.7.70*	*From 5.7.71*	*From 25.9.72*	*From 2.7.73*	*From 6.1.75**
General labourers	34·90	36·35	45·00	50·42	58·75	63·60	69·23
Pan feeders	36·36	37·91	46·94	52·60	61·29	66·24	72·87
Setters (in kiln chamber)	38·65	40·20	49·82	55·81	65·03	70·12	76·75
Dumper driver (unlicensed)	36·36	37·91	46·94	52·60	61·29	66·24	72·87
Forklift operators (up to 5,000 lbs)	37·92	39·47	48·86	54·74	63·78	68·83	75·46
Kiln burners on continuous shiftwork	45·21	47·17	57·51	66·74	77·73	87·38	96·33

Non-fletton (Agreement of the National Joint Council for the Building Brick and Allied Industries)

	From 9.11.68	*From 27.12.69*	*From 3.4.71*	*From 1.4.72*	*From 28.10.72*	*From 7.11.73*	*From 9.11.74*
Labourers	28·75	30·42	41·25	46·00	53·50	59·30	73·30
Panmen	29·69	31·36	42·19	46·94	54·44	60·24	74·24
Setters	30·63	32·30	43·13	47·88	55·38	61·18	75·18
Dumper drivers	29·90	31·57	42·40	47·15	54·65	60·45	74·45
Forklift operators (mechanically operated gripper fork)	30·31	31·98	42·81	47·56	55·06	60·86	74·86
Kiln burners on continuous shiftwork	36·50	44·17	46·88	52·00	59·50	65·30	82·90

*This agreement also provided for cost of living supplements amounting to £4·40 per week.

Table (b) Average hourly earnings for certain occupations in the building bricks industry for the week beginning 6 May 1974 (pence)

	LBC	*Non-fletton*	*Excess of LBC earnings over non-fletton earnings*
General labourers	77·3	81·1	− 4·7%
Kiln burners	121·9	100·6	+21·2%
Machine attendants on timework	81·5	82·5	− 1·2%
Forklift drivers on timework	99·5	81·6	+21·9%
Forklift drivers on piecework	151·2	145·3	+ 4·1%
H.G.V. drivers on timework	92·7	84·9	+ 9·2%
H.G.V. drivers on piecework	121·7	88·1	+38·1%

Notes to Tables (a) and (b):
1. The source of Table (a) is *Time Rates of Wages and Hours of Work* (Department of Employment).
2. Table (b) is derived from a sample survey by Commission staff of 10 LBC works (including 1 transport depot) and 11 non-fletton works (including 1 transport depot).

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