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THE ROLE OF DIRECT LABOUR ORGANIZATIONS WITHIN THE CONSTRUCTION INDUSTRY

by

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Summary

The thesis examines the history, structure, organization and performance of direct labour organizations. The basic theme is that productivity in direct labour organizations is comparable to those of contractors despite the peculiar operating conditions which govern the activities of direct labour. If this is seen to be so then the less tangible benefits of direct labour will come into sharper focus. These factors have been identified as safety, training of apprentices, quality of workmanship, stability of labour and service to the community they serve. The thesis reviews these aspects and makes comparisons with contractors and uses case studies to amplify the discussion. The case studies consider direct labour and contractor organized construction sites and the effect of the building performance upon maintenance requirements for a series of local authority housing estates. The use of direct labour outside local authorities is discussed and finally the legislation affecting direct labour organization is reviewed.

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PREFACE

In order to understand DLOs as a movement it is important to seek their origins. In Chapter 1 the origins and development of DLOs are discussed and wherever possible source material is used to express the divisions of opinion which existed about the formation of municipal building enterprise. Many of the arguments put forward in the early days of DLOs have found an echo in current debate. Chapter 2 examines the diverse management structures, accounting procedures, methods of obtaining work. The diversity found is testimony to the involvement of management bodies (Council Committee) of varying political complexions. The work is directed to comparing 'service' department (those DLOs which automatically do the whole or a proportion of the local authorities building work) or 'trading' departments (where the DLO merely acts as any other local contractor would). This leads us to Chapter 3 where the accounting procedures are discussed in depth. The reports made by government and other bodies with their recommendations for the tighter control of the financial side of DLO operations are reviewed and commented upon. Chapters 4 and 5 - the employers and trade union attitudes are explored. Chapter 4 investigates the employers and Conservative Party opinion. The combination of two distinct organizations into a single chapter may seem unconventional, however the uniformity of opinion is such that the two need to be considered together. The approach is also adopted in Chapter 5 on Trade Union and Labour Party attitudes. The principle underpinning this conjunction is that the trade unions have expressed industrial support for DLOs whilst the Labour movement have reinforced these views in the political arena. However direct labour is not the exclusive province of local government

and private industry has experience of its use. Chapter 6 uses two case studies to explore the benefit of direct labour to an industrial corporation and a major retailing chain.

Productivity has also been a major issue. Chapter 7 reviews the factors influencing productivity, the manner in which productivity studies in the building industry have been done and then comments upon the studies which have compared the productivity of DLOs with that of private contractors. Chapter 8 uses the available data to compare DLOs and the private sector in terms of employment, output and training. Chapter 9 investigates the maintenance aspect of DLO operations.

Finally some comparisons between DLOs and the private sector are made using the Department of Employment Housing and Construction statistics. In this employment, training and output trends are examined over the last five years in both sectors.

INTRODUCTION

An abiding theme of the debate within the construction industry in the 1970's has been that of direct labour organizations. Much of the discussion has centred upon the validity of expanding DLOs into the arena of new building work, little opposition to the repairs and maintenance aspect of their operating has been observed. Yet the debate has often been clouded by political adventures, either in attempting to close down DLOs where they are proven entities or to unrealistically expand them at inappropriate times.

The project attempts to view DLOs as organizations with a part to play in the provision of socially necessary facilities for a particular geographical area. It reviews the literature on the subject and undertakes a small study to compare the productivity of a DLO against that of a comparible contractor. This of itself is an acceptance that the arguments about productivity which have permeated the debate are important. In any society where resources are scarce, social policy should be designed to optimise such resources for the maximum benefit of its inhabitants.

To this end the manner in which DLO performance is reviewed is given extensive coverage. However, productivity is not an end in itself; other considerations will appear in the equation, industrial relations, safety, training and above all the quality of the built environment. It is this latter point which will influence how people respond to their immediate environs.

Now if DLOs can be seen to be equal to or better than the private sector in terms of productivity then the ancillary factors need to be weighed more carefully than before. It is the hypothesis of this project that the fundamentals of productivity are not worse than those of the private sector but that the consequential benefits of DLO type organizations proffer many advantages to the community which they serve. Quality of the built environment is therefore measured as an important comparison.

DLO s began some 80 years ago with the intention of service and whilst this idea has inevitably changed over time, the fundamental concept remains. The reductionism of the productivity argument needs to be balanced with a wider view of DLO s and the organizational framework in which they work. The project reviews the all round performance of DLO s, point out the strengths and weaknesses of their organization.

CHAPTER 1

THE HISTORY AND DEVELOPMENT OF DLO S

The current debate concerning the role and efficiency of DLO s is not a new one. Since the development of direct labour organizations they have been susceptible to political influences from many quarters. This chapter traces the factors that have influenced the growth and development of DLO s. In part these have been political but the underlying concept has been the changing economic environment in which DLO s have had to work.

The seeds of DLO s were set by the development of a Fabian group giving political representation on the London County Council. This group, although small, was influencial in the ruling Progressive Party. Under Fabian pressure the Progressives enacted a by-law which enforced contractors working on LCC* contracts to abide by Trade Union agreed conditions. The background to this by-law was agitation from the Fair Wages Movement which had argued the case. The contractors' response to the Fair Wages clause in contracts was firm with tenders being lifted to accommodate increased labour costs.

This reaction combined together with two other important factors to ensure the setting up of the first municipal DLO in 1892. One important incentive for the establishment of DLO was public concern over corruption scandals associated with building works let by the Metropolitan Board of Works (the forerunner of the LCC). Another was allied to the housing crisis pertaining at the time.

*London County Council

During the 1860's and 1870's speculative builders constructed thousands of working class dwellings for rent. After this boom they became reluctant to commit resources to this form of investment. Their reasoning was sound given the prevailing economic conditions, wages were generally regarded as poor, unemployment was high and these economic difficulties made regular rent contributions somewhat problematic. In consequence the speculative house market shifted to middle class housing for sale. Pressure groups were set up to re-establish the provision of working class housing, perhaps the best known of these was the "Workmans National Housing Council" which demanded action on the slums and actively compaigned for municipalities to be directly involved in housing provision.

The establishment of a DLO was clearly a bold move, many other services now seen as the prerogative of local authorities were still run by private individuals. To many the establishment of such a municipal enterprise was revolutionary. Concepts of individual entrepreneurial activity associated with the Victorian era were still widely held.

As John Burns, one of the early Fabian Leaders, commented

> "The establishment of a works department by the County Council was inevitable. It was forced upon us by contractors themselves. It owed its inception more to the faults and failures of the contractors, their withdrawing their

tenders, and their systematic cornering of the Council, than to any initiative on the part of the labour members. The new Department has completely revolutionized the old corrupt order of things. It has made the County Council independent in its public works."(79)

The first contract awarded to this new DLO was a sewer in Battersea. Like most contracts today this particular job was won in competition with contractors. The lowest tender received from a contractor was £11,000. The new DLO estimated the costs at £7000. The final account came to £6854. In the early days of the LCC the Direct Works Department was responsible for smaller contracts whereas larger contracts were awarded to the Private Sector. LCC Direct Works were primarily responsible for school and council office building and in the earliest days did not undertake house building. But under pressure from the Labour members the DLO was used to check contractors' prices. The early successes of the LCC DLO were noted by surrounding local authorities, Battersea set up a DLO in 1894 and West Ham followed in 1896. The work undertaken varied according to local needs. For instance, the Battersea DLO undertook to construct the Battersea Power Station and contracted the first mass council house estates (although small developments of local authority housing had taken place in Birmingham). The venture in Battersea progressed so well that all local authority work was done by the DLO. Clearly such a move was bound to cause controversy, in the main the criticism was based upon the cost effectiveness of such carte blanche handling over of work. There were other views:-

"The profit and loss fallacy is not indulged in at Battersea. I gathered that good materials, good and expeditious workmanship and proper conditions of labour were the points to be aimed at and whether the eventual cost came out above or below the estimate, the community benefited in the end."

Mr. Williams, Architect to Battersea Local Authority (79)

The new DLO was inevitably the subject of controversy and became a focal point of the local elections of 1908. In this election the Progressives lost control of the LCC and the incoming party - the 'Moderates' proceeded to dismantle the DLO with the labour force of 3000 laid off.

The closure of the LCC Direct Works Department resurfaced as an election issue in 1910. An electoral address in South West Bethnal Green sums up the indignation:-

"The works department was established to secure just conditions of employment to men engaged on the council's work and to protect the ratepayers from being imposed upon by contractors in the large public works required for a population of nearly five millions. One of the first actions of the "Moderates" was to appoint an outside auditor, Mr. Waterhouse, to report on the management of the department, but this gentleman certified that the 'present position of the department from a commercial point of view indicates sound and careful management'. This department had secured the hositility of

the contractors, and though large works still remain to be carried out the Moderates had a forced sale of the valuable plant belonging to the ratepayers at far below its price and at a time when the labour market was at its worst - 3000 men were turned out on the streets. We shall take the first opportunity to secure the direct employment of labour under the council and the re-establishment of a works department."(37)

The progress of DLOs was then stalled until after the first world war. During the war the housing programme was halted and obviously the quality of the housing stock declined. It was not therefore until after World War 1 that DLOs became a larger component of the construction industry. There are several reasons for this development in the post war period.

Firstly, the policy of 'Homes fit for Heroes' demanded serious attention to a construction programme. In order to encourage local authorities to build houses (not necessarily by DLOs) housing subsidies were set up. In 1919 the government paid a subsidy of £3 - £4 per annum for every house completed.

The subsequent Chamberlain Government increased this subsidy to £6 but a rider to this grant was made. Government Circular No.388 stated that DLO schemes should be small, if they were large in comparison to the private sector housing construction then the

subsidy would be withheld. The first Labour government of 1923 increased this subsidy to £9 and lifted the proviso laid down in Government Circular 388. This was an emphatic move in the development of DLOs.

The second point encouraging the growth of DLOs was that of inflation. Between the years 1914-1921 inflation in key building materials was dramatic. A sample is given below:(77)

Wages	..	170%
Timber	..	300%
Slates	..	225%
Lime	..	200%
Baths	..	284%

From these inflationary rates contractors were accused of profiteering. The evidence for this is uncertain but the allegation combined with vigorous compaigning by Trade Unions and Labour organizations led the Chamberlain Government to set up a report on house building. This report recommended that Liverpool Council set up a DLO and built houses as an experiment. In many ways the role of DLOs was envisaged as a check on contractors' prices rather than a municipal enterprise. The Liverpool experiment was considered a success and many other local authorities followed in Liverpool's wake. Some examples might illustrate the point. In 1920 Hull built 350 houses at an average of £929 each. The lowest outside tender was £1026 each. In Newbury a similar picture emerges. The DLO built houses

for £700 whereas the lowest tender was £875. In 1921 Bangor estimated the costs of houses to be £1,000, the actual costs were £800. In Newmarket the DLO estimated costs of £875 per house and actually built them for £760, the lowest tender being £1040. In 1923 Manchester recorded a saving of £100 per house over contractors' prices; furthermore they observed that the DLO constantly gave better quality.

From these recorded examples the growth of DLOs was set. Furthermore the geographical spread of operating DLOs is significant. Between 1919 and 1920, 70 new Direct Labour Organizations were sanctioned, involving the construction of 5855 houses. This seems little by contemporary standards but the total number of houses built under the 1919 Housing Act was 43,700. The 19 DLO schemes of 100 houses or more are listed below:(81)

Barnes ..	104	Basingstoke ..	157
Bedford ..	410	Birmingham ..	500
Cadworth ..	126	Itchen ..	176
Kingston-on-Hull	250	Lancaster ..	150
Ledbury ..	200	Liverpool ..	500
Llantrisant	200	Manchester ..	500
Norwich ..	144	Swansea ..	150
Tonbridge ..	226	Tottenham ..	200
Walsall ..	200	West Hartlepool ..	171
Worcester ..	100		

By 1923 the case for direct labour had been established, tender prices for local authority houses began to decline. In 1924 DLOs built slightly less than 10% (this figure is high relative to later proportions) of local authority new housing. However by 1948 this had fallen to 8% and only 5% in 1974. This growth in the influence of direct labour had taken place against the economic background of the slump of 1920-4. During this period unemployment increased and trade union membership declined but the evidence for DLOs was now sufficient for them to stand on their own without the political backbone of the T.U. and labour movement to reinforce them.

Labour Conditions

One of the main arguments put forward by the advocates of DLOs in this period was the beneficial conditions which could be afforded to labour. However even amongst the proponents of direct labour there was not universal agreement upon the character of such conditions. Three distinct arguments could be observed. The first being that direct labour conditions should be as anywhere else in the private sector. The advocates of this argument desired a uniformity of labour conditions and pay with the private sector, hence neutralizing the argument that DLO s were feather beds of employment. The substance of this decree was the fear that workers would get better conditions out of local authorities than from the private sector. The second went along the lines that conditions should be comfortable and certainly be better than the private sector. However

such conditions should be the subject of negotiations between Trade Unions and the local authority. The third view was that not only should conditions be better than that experienced in the private sector but that DLOs should be the ground for putting into practice the claims and demands of the Labour and Trade Union Movement. Whilst these three positions represented the broad strands of the arguments each local authority was free to decide the character of working conditions pertaining within its direct works department. Legal restrictions imposed an element of constraint. The Trade Union Act of 1927 forbade local authorities making T.U. membership a condition of employment within DLOs. Despite the debate about precise conditions of employment and the facility for local autonomy some generally agreed principles applied. The principle only concerned wages - it was widely accepted that DLOs should pay the T.U. rate. Some authorities took this further to suggest that whenever a dispute arose in the industry the DLOs should meet the claim. Clearly this was an open ended agreement and those authorities pursuing this line added the footnote that the T.U's. should not seek higher wages than they could achieve in the private sector.

Many of the working conditions accepted as the norm today were pioneered by DLOs in the mid 1920's. 'Wet time' became accepted on many DLOs, a 44 hour week became the normal working week, even holiday pay was accepted by some of the northern DLOs (this latter principle was not incorporated into the industry's working rule agreement until 1947).

Another important debate conducted around the time was the relationship between direct labour management and that of its workers. Again views polarized. There were some local authorities who argued for an identical industrial relations policy as that conducted in private industry, namely that the role of the shop stewards was to put forward grievances and such grievances would be negotiable with the DLO committee. The other view, commonly held in Labour controlled councils, was that the DLO should foster the spirit of collective responsibility. Such a policy entailed direct representation on the works committee. Various formats of this industrial democracy were experimented with. In Swansea a joint advisory committee was set up with workers elected from each craft, these representatives would sit with equal numbers of elected councillors on the housing committee. Its function was to review progress of works on the jobs, to report on the quality of the materials received and to recommend promotions from operative to section foreman. In Swansea this was merely a consultative committee. In Clay Cross, Derbyshire, the controlling authority, the Works Committee, comprised of equal numbers of workers and elected officials. The Clay Cross scheme was short lived due to the ambiguity of roles experienced by the worker representatives.(120)

The advances, both in the organization and the volume of work undertaken by the DLOs, alarmed the representatives of the contractors. Whilst the issue of direct labour had featured as local election issues, little nationally co-ordinated campaigning had been conducted on the issue. 1927 saw the NFBTE publish "The Menace of Direct

Labour". This campaign had its origins in the slump in house building for the middle classes. Work was scarce and contractors sought to recapture more of the local authority housing market. Observers familiar with the campaign by contractors prior to the General Election of 1979 will recognise the arguments. They were mainly couched in terms of the cost effectiveness of DLOs. To some this point did not seem to matter, DLOs were not merely a question of saving money (if this is what they did) but were "a step towards the social organization of the future and as such must be supported by everyone in the Labour Movement".(120)

The defence of DLOs in this period was taken up by John Wheatley, MP:

> "It has been found by actual experience that public bodies can accomplish the work equally as expeditiously as the private builder, if not more so; that the cost of the work is generally less; that the quality of the materials used and of the work generally, is higher, because of the constant supervision of the public experts and the removal of incentive to use inferior materials and to scamp the work, and the workers themselves are more satisfied."(79)

By and large the aggressive attitude of the contractors dissipated during the relatively prosperous years leading up to the second war. Yet Government committees felt sufficiently defensive to comment upon the workings of DLOs. The Barr Committee on Scottish Building costs in 1939 observed "The majority of witnesses who had experienced direct labour in connection with individual trades were agreed that this

method involved greater costs but generally achieved a better standard of building".

The Simon Committee on the Placing and Management of Building Contracts 1944, commented that:

> "The officers of DLO whom we have interviewed claimed that some savings had been effected by the use of these organizations. In several other cases while there was little or no difference in cost between the direct labour estimate and the contractor's tender it was claimed that the cost of maintenance subsequent to completion was less on these houses which were carried out by DLOs."

Again, the Simon Committee:

> "We are satisfied that the best DLOs have built considerable numbers of good houses at prices comparable with contractors."

> "We have no doubt that the knowledge by the building industry that a DLO is in competition with those who tender serve in some cases as a valuable check on excessive prices."

The period after the war saw a massive increase in the number of authorities prepared to use DLOs. In common with the aftermath of the first world war the post 1945 period was one of strength and militancy amongst the Labour Movement and secondly because of the deficit in housing and other building works prices were soaring.

The first point meant that there were many more labour strongholds who were prepared to develop a DLO. Often local trades councils took the initiative in this matter and sent out investigative teams to look at the organization of successful DLOs and reporting their conclusions to the local authority. The second concerned the increases in building prices. The post war period saw the development of mass council house developments and often councils required DLOs to check contractors' prices.

The year of 1948 saw the high point in DLO house construction - 175,213 dwellings were constructed in this year.(119) By 1949 there were twice as many DLOs in operations as in 1939. The move out of the "Age of Austerity" into the booming economic conditions of the 1950's meant that the DLO sector and the private sector of the industry conducted an uneasy policy of co-existence. DLOs experienced great difficulties in attracting and holding the scarce skilled labour. Plus rates abounded in the private sector whilst DLOs were firmly tied to official trade union rates plus the maximum 20% of earnings bonus.

Economic conditions for the industry were sound, work was plentiful and output rose rapidly between 1951-57 but levelled out in 1957 and actually fell in 1958. The amount of public money committed to public housing work fell by 20% during 1957-58.(60) Work became tighter. Under these conditions new constraints were put upon DLO workings. The Ministry of Housing and Local Government in the

MacMillan Government imposed a criterion that DLOs should win every third contract in competition with the private sector. This 1 in 3 requirement obviously had its impact upon the confidence and growth of DLOs. It jeopardized the continuity of employment which DLOs had used as an incentive for attracting and holding labour. By and large the private sector welcomed this new directive to DLOs but paradoxically they were arguing that DLOs could only be competitive in competition yet they could operate more efficiently if they had a secure workload obtained by negotiation.

This 1 in 3 rule was revoked in a government circular of 1968 (under the Department of Environment Minister, Anthony Crossland) although the circular was not an edict and the application of this rule was left to the discretion of local authorities.

One other milestone is worthy of record at this juncture (although it will be elaborated upon later) is the Manual of Principles commended to DLO in 1969.(29)

In conclusion it is clear that influences such as market forces have compounded with political influences, at local and at national level, to induce uncertainty and uneven changes. Nonetheless DLOs have persevered and are at the centre of a major debate being conducted throughout the Building Industry. This is a testimony to its impact upon the industry.

CHAPTER 2

THE STRUCTURE AND CONTROL OF DLOs

Local government reorganization in 1973 removed the fragmentation of local government and like many other departments direct labour organizations have become larger, and in consequence more viable units. Before the reorganization there were approximately 1450 local authorities which undertook direct works; post reorganization there are some 350 DLO s. The numbers employed by these organizations has not changed significantly. Hence the local government reorganization developed the strength of DLO s, neighbouring local authorities could rationalize their existing operations, leading to greater specialization and efficiency. Prior to reorganization many of the 1450 DLO s were involved in preventative maintenance and maintaining mechanical and electrical equipment in housing, schools and other local authority buildings. The amalgamation of DLO s enabled them to undertake a different kind of work. Post reorganization some 300 of the 350 DLO s have undertaken new construction work. The Institute of Municipal Building Management confidently expect this area of DLO s work to expand, although the Bain's report which sanctioned local government reorganization said little about the direction of direct labour but the new local authorities have taken the initiative.

The immediate effect of local government reorganization can be shown by taking two examples, the Metropolitan districts of Wigan and Sunderland. Wigan is a new district council which is a conglomeration of 14 different authorities. They all had their own small direct labour departments with Wigan Corporation being the only authority which had its own small capital works department which built local

authority dwellings, small branch libraries and small primary schools under the borough engineer. Post reorganization all 14 direct labour departments have been grouped together under a Director of Operations. Obviously there are problems, blending the different accounting systems unifying bonus arrangements etc. However, the primary point is that Wigan has a viably sized DLO to undertake major capital works in the district. Formerly this was not the case.

In Sunderland the Metropolitan District was forged from the Old County Borough of Sunderland, Houghton le Spring UDC, Hetton UDC, Washington UDC and some activities from Durham County. The County of Sunderland had a direct works department which tendered for schools, old people's homes, housing and civil engineering. Its turnover was £4½ m. For example Houghton and Hetton both had small capital works departments which had turnovers of around £400,000. In the first year these merged DLO s had a turnover of over £11 m of which £7 - 8 m will be capital works. The reorganization has meant that the capital works section has rapidly expanded along with an anticipated increase in the housing maintenance field.

Another aspect of local authority reorganization is that direct labour organizations have been afforded a new autonomy. Whilst DLO s were small units they often fell under the umbrella of the Architect's department, Borough Engineer's or Housing Department; such an organizational arrangement meant that DLO s did not have an independent identity. The reorganization of local authorities and the commensurate growth in the size of DLO s has meant that the DLO has had to be organized as a separate department with its own chief executives.

Hence there has been a direct relationship (albeit the Bain Committee did not specifically foresee it) between local authority reorganization and the growth of DLO s especially in their ability to carry out capital works programmes.

However, the reorganization of local authorities did present its problems for DLO s. Concomitant with the reorganization the Local Authority (Goods and Services) Act 1970 forbade the new DLO s to carry out new work across county lines, although repairs and maintenance were allowed. Furthermore, DLO s could not contract for work for departments that had been transferred to new Regional Health or Water Authorities. DLO s were merely left with new housing work as their capital works programme. For some DLO s this change significantly affected their workload. Swansea for instance lost 50 per cent of its capital programme overnight. The government recognised the difficulties that this particular piece of legislation created for DLO s and in recompense some 24 temporary orders were made from the Secretary of State to allow some DLO s to do the former work. At the same time several metropolitan areas introduced Bills into Parliament to enable their DLO s to do work for other public bodies.

The effect of the Local Authority (Goods and Services) Act mitigated the beneficial aspects of local authority reorganization. This was generally recognized by the Government and attempts were made to nullify the effects of this legislation in the 1976 Direct Labour Bill.(42) The proposals embodied in this proposed legislation were to allow a DLO of any county or district council to work for any local authority, housing association or new town development corporation within the County. Secondly, DLO s were to be given the right to

work in the private sector particularly in Housing Action Areas, General Improvement Areas or in houses formerly owned by the local authority. Finally, the Bill gave powers to the Secretary of State to give permission to DLO s to work for other local authorities and to work for other public bodies such as the nationalised industries. However, the proposals in the Bill did not become law, it being withdrawn as a part of the Liberal/Labour pact formed in 1977. However the 24 temporary agreements were made permanent.

In this way the structure of DLO s has been influenced by local authority reorganization and political forces.

This extension of the capital works programme threw into focus the question of the structure of DLO s of which two basic views exist. One recommends that DLO's act as a service department and carry out work for the 'client departments' within the Council. The work, whilst based on an estimate, is charged at the actual cost. Obviously this cost is to include administrative expenses as well as the costs of labour, materials and plant. In some local authorities where the 'service' principle applies, the DLO does not even produce an estimate of costs but merely monitors the financial progress of the work.

The second type of structure operated by DLO s is that of a trading department. In this instance the DLO acts as a contractor and is subject to the same commercial discipline as any other tenderer for council contracts. Obviously the DLO is well placed to be on the client's selected list of tenders. Even when the DLO is a tenderer in competition with other contractors the practice of 'closed door

tendering' has somewhat eroded the principle of fairness. The former practice of inviting tenderers' representatives to observe the opening of the tenders has been disbanded in many local authorities. When the DLO wins the contract there are, of course, allegations that the tender was 'fixed', the DLO cutting their estimate to a figure below that of a private competitor.

The two formats described above are polarizations of structure but in many local authorities no clear distinctions exist between the two types of organization. Some DLO s based on the 'service' principle will act as traders for larger contracts and those DLO's primarily considered as trading departments will, on occasion, be asked to undertake work without a formal tender. The compromise position is often found. This comprises of DLO s combining the functions of the 'service' and 'trading' departments. Contracts above a certain cost estimate are put out to tender with the DLO being one of the invited tenderers. When this established cost estimate is not breached the DLO is automatically asked to carry out the work.

Clearly the type of work will be influenced in determining the position of the DLO in relation to a particular contract. Positive repair and maintenance is almost always carried out by DLO s on the basis of a service. Little opposition has been met with regard to this particular aspect of the construction market. By and large the private sector is not geared up to meet the specific needs of maintenance unless it is let on mass job lots. To quote from the Conservative Westminister Council, "the advantage of direct labour is its flexibility

because the council can control its priorities". Furthermore DLO s can be faster and more responsive to tenants' requirements.

When DLO s began they acted solely as a service to other local authority departments. Many in favour of direct labour regret the erosion of this principle. The shift away from servicing and towards trading has been seen as an attempt to turn DLO s into quasi-contractors, operating similar management/worker relationships and with more emphasis upon financial control than hitherto had been the case. This shift has, of course, been the public sector's response to the allegation of ineffeciency and loose accounting procedures. The substance to the opposition to trading departments is that if the DLO is to be a local contractor then it and its workers must be subjected to much of the same pressures that apply to contractors, i.e. fluctuating and uncertain workloads, casual employment, problematic cash flow and all the other difficulties which beset contractors in the construction industry. This is clearly not in line with the general philosophy of supplanting private with public enterprise.

Control of DLO s

The direction of the DLO is the responsibility of the council committee overseeing its activities. This is sometimes an uneasy relationship. when a local authority has established a direct labour department the question of what status it is to be afforded is often posed. Most authorities accept that the DLO should be subject to the same controls as to their other departments. It is within this concept that many DLO s falter, the special nature of the construction industry means that a DLO cannot be treated as any

other council department. The tempo and complexity of a building site demands far more autonomy than can be offered in other departments. Also, DLO s are one service in which municipal enterprise is in competition with contractors (unlike say public health, rubbish collection etc.). This unique situation demands a different managerial approach by the local authority. If the DLO s are to function in a competitive world, then the management structure should recognise this. Furthermore, this should also be noted by the committee. The relationship between the relevant committee chairman and the chief executive of the DLO needs to be sound and the committee should merely lay down broad lines of policy. This policy should of course be directed towards producing a financial saving for the ratepayers. The committee should also monitor contracts in progress although the committee should not interfere with the officers of the DLO. (The latter point was stressed in the Maud report on Local Government Management.) Intervention into the management structure of a DLO is bad for morale and blurs the responsibility of the DLO management.

Finally, the principle of corporate management needs to be considered in DLO s. The relationship between client departments and the DLO needs to be clear and unambiguous.

To conclude, the structure of DLO s, whilst being a function of individual local authorities, has been collectively determined by political and administrative events. Namely, local government reorganization, the political process in and out of parliament. Further, at the local level the relationship between the controlling committee and the DLO needs to be clear so that the DLO can perform its function without undue interference.

CHAPTER 3

ACCOUNTING PROCEDURES OF DLOs

One of the most controversial aspects of DLO structure is the accounting procedure. It is from this base that many of the attacks on DLO have been launched. In response to these criticisms the Government put forward circular 57/69 and followed it with a "Manual of Principles of Financial and Management Control for Local Authorities Carrying Out New Construction by Direct Labour".(39) This document produced in 1969 set out to "consider financial and management control and to draw up a manual of principles for guidance of local authorities carrying out new work". The Committee drawing up the document did not see itself as advocates or detractors of DLO's as such.

The first area of concern for this document was the role of the management committee. By and large it advocated the independence of the DLO from other departments as commented upon earlier in this chapter. It did however add some further observations. Namely, that if the DLO breaks even or only shows a marginal saving against contractors prices then this means that the DLO is using more resources and is therefore less efficient. Whilst this deduction is not fully explained it presumably refers to the differential in price arising from the absence of the profit margin in DLO work. Although it is often suggested that DLO s should be cheaper due to the fact that they are non profit making this is discounted by those involved in DLO operations. The decasualized nature of the workforce means that extra payments are made as a benefit of DLO employment. Long service supplements, additional superannuation payments, the commitment of decasualization, holiday pay

and sick pay all add to labour costs. In addition to these direct costs of employment hidden costs are also found. Training carried out by DLO s is not subsidized by the CITB and DLO s are not eligible for training grants. Also many DLO s fulfil their statutory obligation under the Disabled Persons (Employment) Act. The employment of a disabled person is said to cost in the region of £1700 (at 1974 prices) in administration and special costs. The whole construction industry employs less than one per cent disabled persons, DLO s have a greater employment percentage than this. All of these factors add about 7 per cent to the labour rate. Assuming that this extra expenditure is profit it denies the argument that DLO s should be cheaper because they do not make profit. So if prices are comparable and as DLO and contractors will spend equally on materials and subcontractors the losses are concentrated on labour. This is the area where any construction organization has the most discretion over control.

The argument outlined above is of course based upon the premise that estimates of direct costs are precise and that the major variable is the mark-up. In practice estimating is often imprecise and the variations on tender sums will not directly reflect the percentage mark-up of a particular contractor but more the variability of applied unit rates for the work. In a sense contractors profit will be a measure of 'insurance' against unforseen circumstances and any adverse turn of events, the profit can be enhanced by greater efficiency than anticipated reducing overheads associated with good working conditions. If a DLO is tendering without this 'insurance' then unforseen circumstances can make it appear that individual jobs are running at a loss. But this ignores the built-in profit or loss arising from unit rates for

items of work. Contractors will have the profit margin insurance whilst DLO s will not, therefore any adverse impression in estimating by the DLO will be immediately reflected in higher costs, whereas a similar occurance for a contractor can be offset by other jobs where the estimated rates have been generous. Overall the contractor may show a profit on a years trading and this is an acceptable outcome but DLO's will be judged in the results of individual schemes.

The second key observation concerns the continuity of work. The manual notes that continuity is an important component in the success of a DLO. The Local Authority can help in this manner by planning for a minimum level of work to be allocated to the DLO. This allocation however was to be based upon contracts won in competition as well as that taken by negotiation. Those contracts which are negotiated must be subject to satisfactory cost estimates and the capability of the DLO to provide the necessary managerial staff, plant and labour, in the qualitative dimension as well as in number. Another consideration when negotiation is envisaged is the experience of the DLO in the kind of work and its recent performance in terms of price and time.

The manual accepts that there is a paradox contained within it. Continuity is sometimes difficult to reconcile with competition. The Manual states "For effective comparisons to be made with contractors' tenders, the Building Department should be required to compete for a considerable and representative proportion of its work subject to similar contractual conditions as a contractor would have to comply with". Statements expressing similar sentiments are made by the majority of commentators on the subject. There are those who

believe that terms such as "considerable proportion" are far too vague and non-restrictive. Despite this, competition means that the DLO will not by the nature of things receive all the work in the authority and the manual recommends that the DLO management does not bank on winning particular large contracts to keep the resources moving. It comments that this can lead to unrealistic pricing and consequent losses, because DLOs could have the dubious advantage of informal liaison with the client department of the local authority with the possibility of inside information being available.

Another intersting principle laid down by the manual concerns expansion. It advises management committees to limit the rate of DLO expansion. It was accepted that hard and fast limits were difficult to apply but its guidance put a limit of 25 per cent growth in turnover per annum and that no single contract should represent more than six months turnover. Despite these restrictions the Manual did accept the need for good progressive management of DLOs with the levels of autonomy mentioned in Chapter 2. The DLO manager must have the ability and authority to hire and fire workers but must retain a nucleus of technical and advisory staffs. Also managers must be given the flexibility to retain key staff - this improves morale. Also a stable labour force ensures the climate of continuity on which effective forward planning can take place. It is also suggested that management should be paid well in order to attract and hold the calibre of person necessary to run a large DLO. This means that not all promotions should come from within but that managers would often be better drawn from industry. However management and operative training should be an ongoing activity within a DLO.

Despite the autonomy proposed the Manual felt that the accounts should be prepared by an independent group. It suggested the Treasurer's Department of the council was best suited for this role. The Treasurer's Department was deemed to have the facility of independence but it was to ask the DLO what data it required and the form on which it was to be presented. This information was to be based upon the principles of management accounting rather than 'financial' accounting. It was suggested that the Treasurer's Deptment should assert overall financial control but that contract control should be undertaken by the DLO itself.

In particular the Treasurer's Deptment should keep a check on profits with records being held which show:-

- positive or negative results of each scheme (i.e. the cost of DLO jobs compared with the lowest tender).
- the positive or negative result of each financial year
- a periodic written report on the DLO showing positive or negative results with the DLO managers comments. This should be presented to the management committee of the DLO and the financial committee.
  This report should show the breakdown of
- savings or losses as a percentage of the costs or parts of the job that the DLO was directly responsible, i.e. excluding nominated subcontractors work.

If the above reports are made available then they can be used as a check upon the efficiency of the DLO s and to enable suitable performance reviews.

Despite this attempt to draw DLO accounting into line with the private sector there are difficulties with this approach. For instance DLO s cannot offset losses from one job by gains from another. This denies the flexibility of operation which a contractor enjoys. On the other hand DLO s do not have the difficulties of funding that many contractors face. A contractor will have to fund a job pending interim valuations and the Manual recommends that DLOs be treated likewise. The Treasurer should keep a record of costs and valuations. The difference between the two should be multiplied by the short-term interest rate to give a funding charge. The valuation should not apply immediately but should be left for the comparable period for contractors (i.e. 14 days).

Valuations for DLO work are again a sensitive area. During the life of a DLO job valuations must be made to compare costs incurred and value of work to date. The costs on a job should be itemized by the Treasurer's Dept. The classification of expenditure should be in accordance with the estimators break down. As within any other costing system, the Treasurer may need to guess certain costs for times sake. Valuations should be prepared by a Q.S. from the Architect's Dept. or from outside but the Q.S. should be independent of the DLO. As in the private sector the Q.S. is to agree the valuation with the DLO. The accuracy of the valuation is clearly important if an accurate picture of the job is to be attained. The manual recommends a limit of accuracy of $\pm$ 2½%. Accuracy such as this is difficlut to attain and can be costly.

Final accounts should also be presented to the committee within nine

months of completion of the work. The final account should identify under or overspending on the scheme. And as already pointed out this account should declare the savings made directly by the DLO (i.e. discount the nominated subcontractors work).

The Manual goes on to specify particular control devices which should be used when running a DLO. These are based upon normal construction management tools such as planning charts, labour control, work study and bonusing, material and plant control. The comments are of a general nature and as such do not merit inclusion in a review of accounting procedures. One important item discussed in the manual is the possibility of including a profit element within DLO prices. The manual rejects this principle on the basis that it doubts whether any benefits would accrue from such an exercise and even argues that the inclusion of such a profit element might even prove to be a disincentive, since the knowledge that it is only a paper figure it might be used as a cushion to absorb increased costs.

The Manual of Principles laid down broad guidelines for operation but disquiet about loose accounting persisted and in 1975 the Chartered Institute of Public Finance Accounting (CIPFA) took it upon themselves to publish a booklet entitled "Direct Works undertaking Accounting"[27]. This booklet developed out of work carried out by Maurice Sharples at the University of Birmingham. In spite of the hostile tone of the booklet, the principles outlined in it were accepted by the majori ty of DLO s.

The CIPFA report reinforced the view that DLOs should tender and win in competition the largest part of their work and that charges to other

departments should be based on valuations rather than the costs accrued. It did accept however that this principle might be difficult to incorporate into local authority structures, since grants, subsidies and borrowing facilities relating to local authority housing are based upon expenditure not value. Hence there is a temptation to base transfers to the DLOs on costs rather than valuations.

The report laid down an accounting structure and then elaborated upon how expenditure should be treated and how performance should be measured. Finally it maps out general directions in which change might take place in the accounting structures of DLOs. The first section covers the accounting structure. It recommends that this should be geared to show the following:-

(i) the financial position of DLOs.

(ii) the necessary action by management upon receipt of the financial report

(iii) the need for remedial action

(iv) the performance of the DLO in relation to its competitors

(v) the financial relationship between the DLO and the client department

(vi) The separation of charges for major works, maintenance and minor works. This was felt necessary since the methods of accounting will need to reflect the differences in organization structure inherent in the different types of work. Also the charges structure will vary and perhaps even the labour force.

As a general point financial reports should show the current position of major contracts with actual costs being compared against the

estimated costs. In conjunction with the Manual the CIPFA report (29) recommends the use of an independent Q.S. For minor works the same detail is not required, post-hoc comparisons being sufficient. If this principle is accepted the division between major and minor works becomes critical for accounting purposes. Major works can be defined in any one of three ways. The first and probably the easiest is the cost of a job. The CIPFA report recommended a fulcrum of £5,000 in 1975 but this figure would be subject to review. The second test of major works could be the existence of an estimate or tender based on a specification or Bill of Quantities. Thirdly the existence of an autonomous site organization could define a major work. Whichever definition is accepted the distinction must be made.

The CIPFA report comments at length on how expenditure on DLO contracts should be treated. In parallel with the Manual it suggests that administrative costs should be included in job costs. Also in line with accounting practice in the private sector, job numbers should be allocated and costs charged to it.

This is particularly important for large jobs whilst routine maintenance should have a standing job number. The developments in computer technology can assist in the analysis of job costs but the analysis of expenditure should cover the following points

- job costs statements
- costs to date on major works
- analysis of labour costs by trade or job
- contra-charges to the client department
- stores records
- financial accounts including overheads

The report goes on to suggest that accounts should be divided up into 5 broad headings. This particular aspect seeks to draw parallels with the private sector. The headings suggested are:-

(i) Labour

(ii) Materials

(iii) Plant and motor haulage

(iv) Subcontractors

(v) Overheads including administration

The discussion in the document reviews how these five areas of expenditure might be dealt with. In line with its general philosophy they are not significantly different from how a contractor might account for these items. Nonetheless the fact that DLO s are subject to public scrutiny the divisions of expenditure need to be far more rigorous than in the private sector.

It is in the area of standards of performance that the CIPFA has most to say. Given these the report restates the obvious:- in order to survive DLO's must demonstrate that they are not only equal to the private sector but are in effect a beneficial component of local authority services. In general, five aspects of performance need to be considered. The report poses these as questions to be asked by the management committee. They are:-

(i) it is operating efficiently?

(ii) is it competitive?

(iii) is it completing jobs on time?

(iv) are final accounts produced promptly?

(v) is the quality of work produced satisfactory?

On these questions the report puts forward some comments. The answers to the first question is somewhat muted by the vagaries of the tendering position. Variables well known can make the industry's economic evaluations difficult. However due to the inevitable uneveness of contract performance it is important that economic comparisons are made across the board rather than on single contracts. The CIPFA report recommends that if a review of performance over a large number of jobs come within ± 1 per cent of the estimate or tender figure then this is a satisfactory situation. Caution might be expressed here since variations, additions and price fluctuations to the contract may mean that the 1 per cent tolerance level is rendered redundant. Further a ± 1 per cent seems a remarkably tight performance requirement. As in the private sector where one contract shows signs of overspending, this will need close examination although overspent contracts will need to be compared against the next lowest tender. It is accepted that this particular comparison is crude since it does not take into account expected profit and the effect of variations, claims etc.

In line with the Manual of Principles the CIPFA report demands early presentation of final accounts. They suggest that this document is a useful barometer of performance, matching cost against value. This, of course, is not to deny the value of interim valuations in monitoring progress but clearly these are not as accurate as final accounts. Distortions can arise in the incurring of high costs early on in the contract. Three points need considering they are rapid expansion, competiveness and completions on time.

In the case of rapid expansion, the CIPFA report concurred with the

Manual of Principles. Too rapid expansion can hamper performance, stability and continuity of workload being the most important aspect of good performance along with a minimum workload - this was considered to be £1½m at June 1975.

The area of competitiveness is a difficult area to assess, however general principles can be generated. Where tenders are negotiated the rates should reflect those paid for in an earlier, competitively won contract. Also a tender performance record should be kept which shows the following information:-

(i) tenders won and lost

(ii) the value of work

(iii) the next lowest or winning tender

(iv) the percentage difference between the DLO tender and the winning bid.

In relation to the record of completion on time it is generally known that contracts not completed on time are costly and in the housing market are socially undesirable. DLOs also have a point to prove in respect of completions, much of the invective against DLOs have centred upon failures to complete on time. This aspect clearly excites criticisms. Finally a poor record on completions is bad for the morale of the DLO concerned. In many cases the DLO is not directly to blame. The ambiguous relationship between the DLO and another council department blurs the hard commercial nature of client/contractor bond. The CIPFA report emphasises this point. The primary point made is that DLOs should be competitive with the private sector.

Delay in the presentation of the final account will distort the real value of the word due to the currently high (20 per cent) level of inflation. Similarly 'profitability' is a key criterion of success for DLOs, final accounts will predict this aspect of performance. However the Ministry of Housing and Local Government recommends a nine month period between the completion of the contract and final account presentation, the JCT contract (Local Authority with Quantities) allows six months. There is clearly a divergence of opinion on this matter. In many contracts, whether they are in the public or private sector, disputes arise concerning the valuation of the variations, where such disputes concern a DLO then provisional reports should be presented to the committee rather than delay the reporting.

The final question posed in the CIPFA report refers to the quality of work. As outlined in Chapter 1 this has always been assumed as a positive feature of DLO working. Whilst it is often assumed that quality in DLOs is better than contractors, no real evidence is given to substantiate this point. In many cases the quality claim may be used as an argument for poor financial performance. Quality can be measured in three ways:

(i) The ratio of the cost of defects to the final account (However differences in design and specification may affect this ratio)

(ii) The valuation, the snagging list (but again the stringency of the c.o.w. cannot be quantified)

(iii) The costs of repair work for the first 12 months of the post contract period.

Quality is a problematic area and merits further consideration.

The CIPFA report, whilst reviewing the current position and emphasising points of financial control for local authorities, is obviously not satisfied with the status-quo. This is indicated in the final section "Proposals for Change".

In this section the traditional role of DLO final accounts is questioned. It makes the point that performance reviews are imperative for DLO's since unlike other council services the building department can be substituted by outside services (i.e. contractors). In this light the principle of public accountability is important. Performance reviews should be presented at various levels, the more comprehensive to the DLO management. The Management committee should be served by a broad picture of operations with a clear division made between maintenance and new construction work. The ratepayers are best served by a short narrative account supported by a few financial graphs, since too much detail is of value to the DLO s competitors.

The report identifies the need for changes in certain areas of DLO's accounting procedure. The basis of current accounting practice is that the costs incurred by the DLO is charged to the client dept. This has certain disadvantages, namely:-

- the absence of real financial limits on what can be charged removes financial discipline. The Bill of Quantities is a better predictor of performance
- without the discipline of a Bill of Quantities contracts can be awarded to the DLO without fair competition.

The completion of accounts on contracts won should be on the basis outlined earlier in this chapter. However, one additional point needs to be made, surpluses can be carried forward, whereas losses must be

met from the rates. However where previous deficits have been met from the rates any surpluses should be repaid into this fund.

The concept of DLOs accruing surpluses or deficits breeds an "esprit de corps" within a DLO, this position might not be so if any savings made by the DLO returned to the client dept. (Surplus is defined as the difference between costs incurred and the charges to the client dept). The CIPFA report favours this method where valuations are the basis of transfers from the client dept to the DLO. This system is seen as favourable to the transfers being based upon actual costs where the DLO has no compunction to operate within the discipline of a fixed price. Also the actual cost method differentiates the treatment of the DLO from that of the contractor. If comparisons are sought then methods of payment must be similar.

The CIPFA report made little impact upon the industry at the time of its publication but as the Managing Director of Wimpey Construction observed[113] "its provisions were promoted by the FCEC and NFBTE in their efforts to reduce the role of DLOs and in the end became accepted by the DoE."

More recently the DoE established its own working party on DLOs.[146] The NFBTE claimed that the DoE paper was a whitewash - this reaction may have been caused by their exclusion from the working party. It consisted of nine central government civil servants and eight local government officers. The local government section held strong representation from CIPFA and the Society of District Auditors. The terms of reference of the working party were "to review the organization and operation of local authority direct labour departments including accounting and

tendering procedures". The working party was to be a fact finding mission to establish present practices and to identify strengths and weaknesses of operations and to provide the basis of a policy for future development. Inevitably the accounting and tendering procedures were emphasised because of public concern over these areas. The working party also saw its role of establishing uniform practices which could act as financial comparatives with the private sector. By and large the working party followed the general line of the CIPFA report with strong emphasis upon trading accounts but the major point revolved around a demand for a five per cent notional return on capital employed. This is in line with the Government's requested return for nationalized industries. The difference between the necessary competitive character of DLOs and the monopoly position of nationalized industries is not mentioned. In this respect contractors bids which DLO s have to compete with are more a reflection of the market rather than a notional return on capital employed. The working party defines capital employed as assets being valued at the current market rate which is regarded as the current replacement cost. Such assets together with the working capital requirements provide the true measure of the capital employed. Now if the DLO assets are to be valued at current market prices for the five per cent return to be calculated it does not seem unreasonable that DLOs should demand brand new facilities since they will be financially evaluated as having such up-to-date assets.

The five per cent return on capital is not to be calculated in the conventional way - it is to be calculated on a 'current cost accounting basis' - this accounting method is a particular form of inflation accounting whereby a profit or loss is struck after allowing for all

charges including the replacement cost of all assets used in production (see above). This method does not command universal acceptance in the accountancy profession and is only being experimented with in industry and is not accepted practice within building. Furthermore, whilst the Treasury look upon the method with favour the Inland Revenue are concerned about its use.

There are specific problems in this proposed method of accounting for a five per cent return. Namely:-

(1) A lot of building work and practically all maintenance work is not capital intensive. Therefore depreciating assets associated with building production i.e. premises, small tools would not have the same effect as depreciating machinery more commonly associated with engineering production.

(2) Land will be part of the means of production in building, particularly on house building, depreciation of the land at replacement cost will sometimes be lower than writing it down at historic costs and may follow the opposite trend.

(3) The accounting treatment of borrowings to attain working capital will be difficult. The real cost of borrowings from debentures or bank overdraft will often be cheap when compared against the current inflation rate. However public bodies will be mindful of the political pressures which may arise if rate payers money is spent in servicing debts. Such borrowing may be beneficial to particular municipal enterprises but unacceptable to the authority as a whole. The question of borrowing cannot be coped with in the current cost accounting system as easily as that for inflation accounting.

These reasons mean that if the accounting proposals of the working party are accepted and applied to DLOs then the basis of comparison with industry is not even. Whilst this would not be of concern if there was not so much pressure on DLOs but in the current climate the ambiguities that varying accounting methods will create can only be to the detriment of DLOs.

In all the government circulars 57/69, the recommended Manual of Principles and the CIPFA report strive to encourage DLOs to act as trading departments and in consequence make the accounting procedures similar to that operated by contractors. To many people sympathetic to DLOs this attempt to make DLOs similar to contractors operating in the private sector is regrettable. But under the present economic and political climate the longevity of DLOs is in many ways a function of the manner in which they conduct their financial affairs. Until the character of the whole construction industry changes this condition is likely to remain.

CHAPTER 4

THE CONTRACTORS VIEW OF DLOS

The campaign against DLOs has always been a function of the employers organization. From the earliest times employers have been unhappy about the existence of DLOs. In some periods this opposition sharpens. Such was the case in 1908, 1928 and 1970's. All of these periods have been ones of slump for the building industry. Many groups have been involved in the campaign, the National Federation of Building Trades Employers (NFBTE), the Federation of Master Builders (FMB), the Federation of Civil Engineering Contractors (FCEC), the Conservative Party, the National Union of Rate Payers Associations and the Aims for Freedom and Enterprise. The current campaign against DLOs began with the slump of 1974, the NFBTE set up a committee in defence of private contractors. Because of the impending legislation (the Freeson Bill)(42) the committee's activities soon focussed upon direct labour. Articles were written, posters prepared, leaflets distributed - the tools being used were similar to those used in a political campaign. But the tools were directed against an extension of DLO s. By 1977 the campaign had had some success. The Freeson Bill had been defeated and in many areas DLOs had become an issue in the 1978 county council elections.

The employers argument was set out in the document 'Let us Build'.(95) This document suggested that the issue of DLOs was not a party political one. But around this document they lobbied Ministers, Councillors, Newspapers Editors etc. to inform them how inefficient DLOs were. To this end a dossier was prepared which gave detailed accounts of specific DLO jobs that had gone sour.

In particular the dossier included data upon

- particular overspent DLO contracts
- statistics showing that DLO s are less efficient than contractors.

The argument concerning overspending was developed to suggest the overspent DLO contracts were cushioned by the ratepayers whereas builders in a similar position would go bankrupt. As said before this unpublished supplement was given to a variety of key people. The NFBTE report of 1975/7 records its thanks for the support they received.(95)

"There can be no doubt that the time spent by members on this communication aspect has brought benefit to the industry. Notable progress has been made in establishing a body of better informed opinion on building industry affairs in these places where decisions are taken". And "No record of (NFBTE) progress should omit reference to the debt which the Federation owes to the National, Provincial and Technical Press and to the Broadcasting Services. The assistance given by the media in publicising the.....Federations views and observations on a variety of building and general industrial topics has proved to be an invaluable adjunct to the more personal lines of communication opened up by members with various political interests".

The lobbying capability of the NFBTE was supported in more strident terms by publications from the Aims for Freedom and Enterprise. In particular 3 pamphlets were produced "Waste in Wandsworth - How Direct Labour Squanders Ratepayers Money and the National Resources".(119) Secondly, "Is the Party Really Over - Why Rates Rise in the North East"(69) and finally "Glasgow Belongs to Whom?".(67) The first pamphlet (written by Alfred Sherman, a Councillor for the Royal Borough of

Kensington and Chelsea) discusses the problems of the Wandsworth DLO. Particular emphasis is placed upon losses made by the DLO on specific contracts. The principle cause, Mr Sherman argues is the inadequate accounting and control pro cedures. Further he ascribes the expansion of the DLO to 'partly (from) ideological motives and partly ..... pressure from the building unions to provide 'soft-options' at public expense.'

Malcolm Hoppe, claimed to be one of the country's most authorative writers on direct labour has commented on the DLO situation in the North East - in the pamphlet "Is the Party Really Over". This phrase coined from the late Anthony Crossland's statement about the need to restrict public spending has been taken up by Hoppe in this pamphlet. In it he argues that the organization of DLO's do little to ensure competent financial control over their operations and that DLO s in the North East are essentially 'lame-ducks' and should not be bolstered from the public purse. In particular he accuses DLO s in the North East of being over ambitious with regard to expansion. He cites Darlington, Newcastle, Wear Valley and South Tyneside as examples of over ambitious growth targets. Other claims that Hoppe uses to justify the case is of overmanning, absenteeism and the failure to run a bonus scheme economically. No evidence is offered to substantiate these claims. The third booklet again by Hoppe "Glasgow belongs to Whom?" pursues the same line. Losses on particular contracts are given prominence and the financial backup from the ratepayers is emphasised.

The theme running through the 'Aims' publications is that the general case against DLO s can be made by identifying losses, overspending or delays on particular contracts. Other observers of the

construction industry would argue that these criteria are common - place throughout the construction industry irrespective of whether the work is carried out by the public or private sector. Claims, extensions of time, variations etc. all add to contract costs and durations. These are not mentioned by Hoppe in his publications.

The stridency of the views advanced by the Aims for Freedom and Enterprise have been countered by many publications. For instance the claim that bankruptcy is the proper economic regulator of efficiency. Firms which go bankrupt on local authority contracts inevitably mean additional contractual payments for the completing contractor. In 1975/76 the G.L.C. set aside £4m in anticipation of ex-gratia payments that could be necessary to pay contractors to complete contracted work.(2)

The second general point made by the 'Aims" publications is that the public purse is cushioning public enterprise. This discounts the view that the private sector receives a number of subsidies from the public purse. One only has to quote the Drake and Cubbit saga where £700,000 was given over to keep the firm solvent. A further £14m was given over to W & C French to keep the organization afloat.

The Federation of Civil Engineering Contractors also produced a document in essence hostile to DLO s. This was entitled, "Direct Labour - the case for competition".(45) This was submitted to the Minister for Housing and Construction in July 1976. The title of the document reveals its alignment but the arguments presented were far more sophisticated than previous submissions.

It argued that DLO s mis-allocated resources, detracted from viability of the private sector, generated instability of demand, caused unemployment and finally adversely effected the export market for construction products. The arguments are well based and merit further consideration.

On the area of misallocation of resources the document suggests that not even the largest Local Authorities are able to generate sufficient major or specialist new works. That their DLO's tend to be geared both in terms of the skills which they have available and in their plant and other resources to carry out more normal, routine types of work. The document agrees that this has the consequence of allocation of work in response to the resources of a DLO rather than actual demand. Examples quoted to illustrate this point include the devotion of resources to maintenance work and road widening whilst major bottlenecks are left untouched. The FCEC sees this as a misallocation of resources.

The FCEC also sees the dominance of DLO's in maintenance work as a threat to the establishment of new companies. It is postulated that new companies enter into this area of the market and if the DLO is a competitor then this will stifle the establishment and growth of new firms. This will be damaging to the long term interests of the industry - concentrating the workload into few hands.

The third point concerns the stability of demand on the construction industry. The construction industry (as it has been accepted in all quarters) is variable in its demand for work. If DLO s take on the base load of work then the fluctuations affecting the private sector are likely to be more dramatic than usual. Such rapid changes in

demand levels are exceedingly damaging to the industry and have the affect of substantially increasing costs. Such increases in costs are contrary to public and private sector interests. Further, the argument goes, that if DLO s build up their resources, periods of slack demand will result in local authorities 'finding' work for its DLO. The document argues that this position would mean a less than optimum allocation of available resources.

On the fourth count the FCEC criticise DLO s for their harbouring of labour. Here the document alleges that local authorities, for electoral reasons, do not shed labour in response to economic conditions. In consequence local authorities will maintain labour in DLO s in order to fend off the electoral consequences of redundancies. The effect of this policy is to transfer the necessary unemployment from one section of the industry to another. Employment prospects are likely to be reduced in the transfer of 'efficient' to 'inefficient' contracting organizations.

The final point concerns the export market. The document rightly argues that construction firms compete successfully for overseas work in the face of strong international competition. If domestic work is taken from them then their capacity to carry out work overseas would be hampered.

The report goes on to say that where DLO's do exist then the basis of operation should be in line with the CIPFA recommendation outlined in Chapter 2.

As mentioned earlier the Conservative Party have entered the debate concerning DLO s with some vigour. To quote Keith Speed, one time Conservative spokesman on Local Government - "The Conservative Party believes in a strong and thriving free enterprise building and construction industry"[123], however the Conservative Party have often been philosophically opposed to DLO's. The Selsdon Group - "Direct Labour is an area of direct conflict between Labour ideology and Conservative principle". "Precisely because direct labour departments, financed by the taxpayer can be made to satisfy political as opposed to economic objectives, their existence can actually distort competition". The Selsdon brief goes on to say that "Direct labour departments will always be subject to political pressures and interference. Only abolition will solve the problem".[35]

Yet the position of the Conservative Party is somewhat ambiguous. In the Commons debate concerning a Bill to restore certain powers to direct labour organizations, Conservative M.P., Albert Costain said "DLO s should be opposed because it makes DLO s a permanent fixture and gave them opportunity to go into competition with ordinary private enterprise". The ambiguity being the broad acceptance of free competition as long as this is restricted to firms operating in the private sector.

Robin Chichester Clark one time Conservative spokesman on construction set out a general philosophy on DLO's in an article in National Builder.[30] He felt that the issue at stake was the role of the state in business. By nature Conservatives have been suspicious of permitting the public sector to compete with the private sector where the private sector can meet the demand. To this end Conservatives have consistently opposed the 50/65 circular which abolished the "one in three" tender rule. When this

circular was announced the party established a working group to consider whether councils should employ building workers at all but resolved that the freedom to decide this should be left with local authorities. This judgement developed from the view that there was a place for DLO s in areas "which were of marginal interest to contractors".

The working group report went on to argue that circular 50/65 must be withdrawn and a ruling that 85 per cent of work (by value) must be put out to tender. Amongst the areas to be tendered for is maintenance but "for little jobs such as mending gates or bath taps that hardly matters. Few contractors would be interested in that sort of work".

It is also recommended that DLO s should add a fixed percentage to their tenders so that administration costs were covered.

In general Conservatives feel that DLO s cannot observe a financial discipline, should consistent overspending occur then the Minister should have the authority to close down a DLO.

The reasons for this are manifold. The solidarity with the employers federation is clearly one. But perhaps the most obvious reason is that the industry is going through a severe slump. In the boom times of a few years ago private housebuilding preoccupied Conservative thinking about the building industry. As the Investors Chronicle said in 1974 "The houses are the acceptable side of making profits out of land appreciation. In extreme cases.....no houses were built at all and the profit was taken in the disposal of land bought at much lower cost". This is no longer the case, physical construction needs to be in

evidence in order for profits to materialize. Hence in the current climate contractors seek all the work available.

Another component of the employers campaign against DLO is the insertion of academic articles in trade journals. By and large these have concentrated upon productivity in, and the accountability of, DLO's. The question of accountability has been dealt with and productivity is afforded a separate chapter.

In conclusion the employers have drawn together an argument which resists the expansion of DLO s and in some cases the very existence of these organizations. Whilst the campaign has historical origins the current position is determined by the cases in the construction industry. In boom times contractors were not concerned to contract for local authority work, in lean times the expansion of DLO's has meant a shortening workload for the contractors. This is the primary reason for their current stance.

CHAPTER 5

TRADE UNION ATTITUDES TO DLOS

Traditionally trade unions allied to the Building Industry have supported direct labour. In Chapter 1 it was demonstrated that trade union representatives were in the forefront of the fight to establish local DLOs. The support for direct labour has been constant. At the 1978 National Conference of the Union of Construction Allied Trades and Technicians (UCATT) the following resolution emphasised the support for DLOs.(131)

Composite NQ4 Direct Works Dept.

"This conference welcomes the support given by members of this union to direct labour departments. Therefore conference calls upon the executive council to initiate a national campaign supporting the expansion of direct labour departments to fight for the speedy re-introduction of the Freeson Bill and to combat the bitter attacks launched by the Tories and the construction employers in direct labour." This campaign should be aimed at explaining UCATT policy for the public ownership of the construction industry as well as developing a programme of action in concert with other interested organizations and sections of the community".

To some extent, like many other trade union campaigns, it is defensive in nature. It is responding to attacks on DLOs from employers' representatives. Trade union support for DLOs can be discussed under several headings, namely, levels of unionization, the opposition to casual employment within the industry, further democratic rights for construction industry workers, health and safety, wages and training,

Employment and Unionization in Construction

Total Operatives in 1976

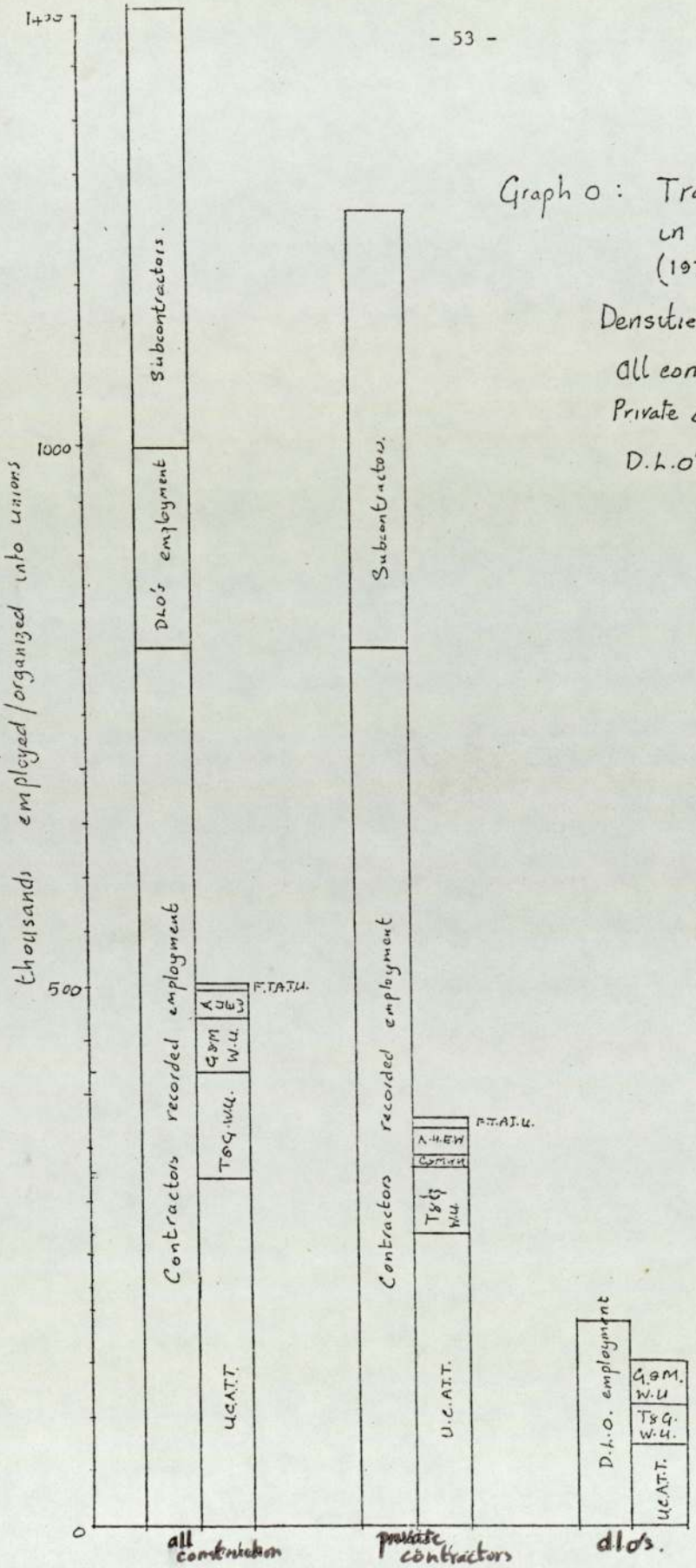
Public sector	..	233,000
Private sector	..	1,025,000
made up of 775,000 recorded employment		
250,000 estimate of unrecorded employment		

The big four unions, UCATT, T & GWU, GMWU and FTAT, claim to represent 'no more than a third of the total workforce' (quoted in Building Britain's Future). If the public sector is highly unionized and a small allowance is made for other unions in building, i.e. EEPTU, CEU, then this brings the total up to about 35 per cent unionization. If 20 per cent of the unionized workforce are in the public sector and the remainder of union members concentrated in certain regions (London, Merseyside, Clydeside etc.), the picture for union organisation is bleak.

Levels of Unionization

One of the principal advantages of direct labour for trade unionists has been the almost unusual acceptance of trade union membership in direct labour organizations. Compared with the low level of unionization in the private sector, DLOs' workers are highly unionized. The relative densities can be seen in Graph 0.

There are reasons for this disparity. The type of employment available in direct labour organizations has a bearing. By and large it is constant and steady, with the stronger emphasis upon routine maintenance rather than in complex new works. This problem of work ensures continuity of employment both in the absolute numbers employed and the



Graph 0: Trade Union membership in construction (1975 employment figures used)

Densities:

All construction	37%.
Private contractors	31%
D.L.O's	85%

length of service of employees. This stability enables union organization to grow. The second reason for high union densities in DLOs is associated with political control of DLOs. Many of the larger and more adventurous DLOs operate in Labour controlled districts or boroughs. Such political control can ensure that trade union membership is encouraged as a condition of employment (notwithstanding the provisions of the Trade Union and Labour Relations Act). Thirdly, the age structure of DLO employees may be an influence upon trade union membership. Prior to the last war the Building Industry was strongly unionized. The acceptance of plus rate bonussing in 1947 eroded the strength of the unions to negotiate the effective rate of pay for building workers. The levels of unionization fell from 87 per cent in 1947 to 37 per cent in 1975. Hence those workers with work experience dating from the pre-war days, are more likely to have come into direct contact with strong unions than younger men. The age structure of DLO employment would seem to concentrate upon the older and more experienced worker. For whatever reasons, the density of union members is higher in DLOs than elsewhere. Trade Unions with their constant desire to grow see the growth of DLOs in direct relationship with the growth of their own unions.

Casual employment

The construction industry is notorious for its emphasis upon the use of casual labour. The trade unions have constantly opposed this type of employment practice. Pressure from trade unions and government has enforced the voluntary register of contractors and sub-contractors with a further register of construction manpower in the pipeline. However, many observers of the construction industry see these as

mere palliatives to the Unions. Casual labour is still widely used in the industry. Again, this segment of the workforce is difficult for the unions to organize and many unions and their members have seen the use of casual labour as undermining the collective strength of union members at the workplace. DLOs have a good record in not using casual employment. In some instances managers have resented the policy of not using such labour. Their argument being that it is their job to build, not to solve the particular difficulties of the construction industry. However, by and large, DLOs have resisted the pressure to use casual labour (although bona fide subcontracting for specialist trades is widely used, as in the private sector). Despite this there have been periods when DLOs have been forced to use casual labour. In times of boom, the construction industry is short of skilled manpower and as such wage rates applicable in the industry as a whole reflected this. Because DLO wage rates were more fixed to pay in the town hall than the industry, permanent labour was difficult to attract. Hence councils had to use the expedient of casual labour. This led to a conflict with trade unions (and often management committees) but agreement over philosophy prevailed between DLOs and trade unions. This meant that any conflict was short lived. In the main, the absence of casual labour from DLOs has forged sound relationships between DLOs and the trade unions.

Trades Unions and Jobs

This is one of the intangible and more philosophical aspects of trade union organization. To quote Pete Carter, Convenor of Sandwell Direct Labour Department:-(34)

"Fighting the closure of a direct labour department is not just

fighting for jobs. It's much more. It's a democratic struggle to determine a much more civilized form of employment for building workers. It's a democratic struggle to decasualize the industry and to bring this important sector under public control. People smile when you say you work for the council. Council workers are viewed as second class citizens and the work they do is greatly undervalued. It is time we restored the dignity of our labour. We choose to work for the Council and are proud to do so. We work for people, we serve the community in a democratic process to create an environment that helps to enrich peoples lives".

This dramatic quote sums up the position of the trade unions in relation to jobs and the function of DLOs. Trade Unions, quite properly, have attempted to launch campaigns against losses of jobs in the industry. When DLOs are run down either due to political or commercial pressures it is natural that the trade unions should seek to defend jobs. In many areas local trades councils have taken up defence of DLO when they have come under attack. Another aspect of this matter is the openness of DLOs commercial operations, this means that intended rundowns of DLO works places the Trade Unions in an advantageous position in comparison with private organisations.

It is the area of jobs and control of DLOs that disputes have arisen between DLOs and trade unions. The Government's circular on Local Government Manpower (Circular 30/75, March 1975) expressed the view that cuts in local authority staff was to be a spearhead in cuts in public expenditure. Hence DLOs have been forced into the position of reducing staff. This has been the source of friction between trade unions and DLOs.

Many campaigns have been launched to defend jobs in DLOs by trade unions in conjunction with trades councils. For instance in Swansea the Trades Council joined in defence of the DLO. Swansea DLO in response to Government pressure sought to reduce the employment in the organization by some 20 per cent. Representations to the Welsh Office were made by Trade Unions to resist the impending redundancies. In Hackney a similar position can be recorded with a joint shop stewards committee being formed to inform Councillors of an intended run down of the DLO. In Hull the fear that public expenditure cuts were falling on the DLO led the Trade Unions to take action through a one day stoppage. Similar examples can be quoted from Colchester and Birmingham.

However such disputes have often arisen out of attempts by Local Conservative administrations to close or curtail the activities of the DLO. In this sense the trade union movement have undertaken action in support of rather than against the principle of direct labour.

Health and Safety

Trade Unions have a firm interest in this matter. It is often assumed that DLOs have a better record of safety than exists in the private sector. Whilst no firm evidence exists to support this claim, personal observations substantiate it. Trade Unions have often commented that the nature of employment and the emphasis upon production in the private sector detracts from proper concern for safety. The 1975 Factory Inspector's report confirmed this view when he commented that "if contractors paid as much attention to health and safety as they did to the profit and loss accounts the position would be far more satisfactory".

Some trade union observers have admired the Swedish system of conducting safety. The Swedish Foundation for Occupational Safety and Health in the construction industry reported that ergonomic and health factors were important in attaining productivity. Here the positive benefits of good welfare and safety are emphasised rather than the punitive aspects associated with the British system would be welcomed by British Trade Unions. It is in this area that DLOs to be seen as 'good employers' ensures that health and safety is put into the framework of benefits rather than punishment.

Wages

The question of wages excites much concern by Trade Unions. This question in relation to DLOs is not different. Primarily trade union attitudes have been influenced by the obvious wage differential which exists between the private sector and DLOs. In a period of wage restraint (either by agreement or by statute) DLOs, being under public scrutiny and working in the public sector, have had to adhere firmly to the policy pertaining at the time. This cannot be said for the private sector. Bonuses and other emoluments added some 100-120 per cent to basic rates. DLOs cannot compete on such grounds, the wages paid being under severe scrutiny from the district auditor. However bonuses are a predominant feature of DLO employment as the table over (p.60) illustrates.

It is difficult to estimate with any accuracy the proportion of bonus to total earnings in private firms. The Wages and Conditions claim for the Construction Industries in 1978, drawn up jointly by FTAT, GMWU,

A recent health and safety report emphasises this point with some figures. Workers in the poorly unionized construction industry are five times more liekly to be killed at work than in manufacturing industry.

YEAR	RATE OF FATAL ACCIDENTS PER 1000 AT RISK:		RATE OF SERIOUS ACCIDENTS PER 1000 AT RISK:		RATE OF ACCIDENT PER 1000 AT RISK:	
	MANF'ING	CONSTR.	MANF'ING	CONSTR.	MANF'ING	CONSTR.
1972	3.9	18.7	610	820	3520	3600
1973	4.2	21.6	590	710	3710	3540
1974	4.5	16.0	580	760	3520	3320
1975	3.7	17.7	540	740	3490	3460
1976	3.4	15.7	560	580	3460	3640

Breakdown of earnings in DLOs (Nov. 1977)

	Maintenance Craftsmen	Capital Works Craftsmen	Labourers
Average earnings of which:	£64.22	£71.87	£58.77
Basic	37.15	37.07	32.76
£6 supplement	6.00	6.00	6.00
5% supplement	3.06	3.34	2.86
Overtime/Weekend/Night	2.15	2.33	2.53
Incentive bonus	13.16	20.20	12.30
Fixed productivity) self finance lead-in)	8.37	0.15	0.20
London Allowance	1.02	1.44	1.30
Others	0.95	1.06	0.54
Service supplement	0.36	0.28	0.28

TGWU and UCATT is based upon an average earnings figure for private construction workers of £71.20 in April 1977. The figure is derived from the Government's New Earnings Survey. The way in which data are collected for this survey and the form in which they are presented make accurate estimates of the significance of bonus payments impossible. Obviously there is a wages gap opening up - this has been of concern to the trade unions in local authorities. As yet no satisfactory solution has been found but the security of employment, better sickness benefit, superannuation schemes etc. which are a function of local authority employment have helped to mollify trade union claims in this area.

Another potential dispute between local authorities and trade unions is the claim that the type of work done by DLOs is suited to multi-trade operatives with a special rate of pay applicable to this grade of worker. The use of multi-trade workers for maintenance work would make DLOs more comparable with the 'jack of all trades' operative employed by private

contractors on the maintenance market. Trade Unions have firmly resisted this overture. Historically trade divisions have been emphasised, partially as a recognition of skill and status and partially as a focal point of union organization (inst. the skilled trades once had their separate unions ASW, bricklayers union, plasterers union, painters union etc. These formed into the 'skill' union UCATT, whilst unskilled workers are more typically organized into the T & GWU). The dilution of this separate skill would be naturally resisted by trade unions. An associated point is that if the multi-trade person was employed by DLOs then the trade unions fear that quality would suffer.

Related to this last point is the question of training. In this aspect the trade unions blame the current shortage of craftsmen upon the private sector of the industry. The analysis of this situation is mapped out in 'Direct labour and the crisis in construction' written by the Housing Group of the Socialist Economist Conference.(37)

"The lack of sufficient and adequate forms of training is firmly noted in the whole organization of the industry. Employers have no obligation to provide training and many do not bother. Higher labour turnover gives little incentive to provide adequate training as one skilled operative is unlikely to be employed continuously by the firm. In booms work can be easily won, irrespective of the skills of the workforce the contractor employs. In slumps, any individual contractor may have insufficient work for operatives who are already skilled let alone apprentices. With economic factors like these in operation, it is not surprising that training programmes are low. In

slumps, moreover, many workers leave the industry forever".

The tendency for large firms to become project managers has also had its impact upon training. This is reflected in the table below:

Size of firm by No. of Employees	No. of Operatives including Trainees	Trainees	% of Labour
2-7	72.300	8,375	11.6
8-13	57,200	6,720	11.7
4-24	72,900	8,760	12.0
25-34	44,600	5,165	11.6
35-59	69,700	7,700	11.0
60-79	34,000	3,660	10.8
80-144	42,900	4,470	10.4
145-779	105,600	9,410	8.9
300-599	67,200	4,500	6.7
600-1199	68,400	4,755	7.0
1200+	140,000	7,325	5.2
TOTAL	774,800	70,840	9.1

The situation in DLO is different - in all they employed 10025 apprentices in October 1976. The large ones operate extensive training programmes: Manchester DLO for example employs nearly 400 apprentices out of a total workforce of 3,000 similar situation can be reported from other DLOs.(144) This is in spite of the ineligibility of DLOs for CITB training grants. Trade Unions have urged DLOs to come under the aegis of the CITB to enable them to claim such grants.

The quality of training in DLOs is also a source of comfort for the unions. The CITB has publically accepted that the Manchester training scheme is far superior to anything that the Board has so far accomplished.

Implicit in training programmes is the associated question of quality of workmanship. Here the trade unions are concerned. Historically trade unions have seen one of their functions as being arbiters of

standards in a particular craft. In this respect DLOs have always expressed a desire to attain good quality workmanship, in fact often the defence of DLOs is based merely on this point - irrespective of accountability, efficiency etc. In the respect of quality of workmanship trade unions have always respected the genuine attempts to attain it. This policy has meant that only bona-fide time served craftsmen are likely to be employed in DLOs. This enhances trade union claims that union membership is one identifier of skill.

Thus the trade unions have supported DLOs in their efforts to improve training, both in quantity and quality.

An associated point is that many DLOs are committed to the full quota of disabled people specified under the Disabled Persons (Employment) Act. Few private concerns have such a good record.

Finally the foregoing illustration of the support that trade unions have given DLO s have had practical benefits in terms of industrial relations. The close relationships and the structure and stability of local authority employment have fostered a useful mahcinery of joint consultation in many DLOs. This practice was well established long before the Bullock Report.

For instance in the Harringey DLO a particularly interesting experiment has been set up. It is called P.E.L.A.W. (Participatory Experiment in Local Authority Works)[4]. This unit is part of Harringey's Building Works division, although PELAW is independent from the DLO and is mainly concerned with long term rehabilitation projects. A feature

of the unit is the participation element - there is a weekly meeting of the PELAW staff (9 in number) and 6 elected workers. This body decides the general policy of the unit but there is a monthly general meeting attended by all PELAW members.

One of the motivational aids in addition to the participatory style of management is a profit sharing scheme. (Profit in PELAW is defined as the difference between the original estimate and the final cost). Some 20 per cent of the profit is retained by the council to offset any future losses and the remainder is shared out (using hours input as the basis) between the workers. Staff and operatives get the same share. In conjunction with this a conventional bonus scheme operates. The workforce on PELAW is remarkably stable - the profit share is forfeited if a person leaves. In return for this approach the unions have agreed to drop demarcation of trades - tradesmen are expected to do some labouring as well as carry out other trades. Labourers also carry out a small proportion of skilled work. Wages structures are also different - skilled and unskilled workers are paid the same basic rate.

It is too early to say if PELAW has been a success but the dynamic approach to management is to be welcomed. The attitude of defining everyone within the organization as 'partners' with a constitution which outlines the degree of participation is farsighted and may become a template for co-operatives established within the private sector.

So in many of the areas mentioned above DLOs have admirably fulfilled many of the more progressive demands of the T.U. movement. In this

respect the support that DLOs have received from Trade Unions is only to be expected. However the inherently defensive nature of the trade union movement in many ways hampers the coherent advancement of a policy towards DLOs.

Allied to the T.U. movement thought is the political wing of the T.U. movement - the Labour Party. The Labour Party have been firm advocates of DLOs from their outset. The most recent venture into the discussion was the document accepted by the National Executive Committee of the Labour Party - Building Britain's Future.(78) This document sought to relive some of the legislative restrictive Local Authorities (Goods and Services) Act 1970. This legislation forbade DLO to carry out work for neighbouring local authorities. This Act clearly limits DLOs to a narrow geographical area which would be totally unacceptable to the private sector. The proposals embodied in 'Building Britain's Future' was to allow DLOs to expand.

The rationale for this is set out in the document. It accepts that the role of DLOs is limited and purports that this is in part, due to lack of initiative by some Labour Local Authorities and sustained campaigns by the Conservative Party, building employers organizations and free enterprise pressure groups. Building Britain's Future accepts that many cases the invective over inefficiency and bad management have been justified but suggests that as the composition and management of DLOs will vary according to local circumstances with no national agency imposing uniform practices then levels of efficiency will vary, just as they do among private contractors.

The document restates the disabilities of DLO organizations. In

particular, mention is made of the confinement of DLOs in working for a single client, and the necessity for DLOs to show a profit on each contract rather than allowing the position to be examined over a number of jobs. A survey carried out by the Ashridge Management Centre suggested that private contractors only made profits out of 48 per cent of local authority housing and schools contracts).

Further reference is made to the policy of decasualization in most DLOs and the provision of good working conditions and training provision. It has been calculated that the extra 'social cost' quote properly borne by DLOs are at least equal to the profit element of a private contractors costs, rebutting the view that DLOs 'ought to be cheaper' simply because they are publicly owned. Other presumed advantages of DLOs are examined. Namely, the effect upon tenders when the DLO is in competition with private contractors and the ability for a local authority to have direct control over the politically sensitive area of council house repairs and maintenance. For these reasons the Labour Party believes that the expansion of DLOs, particularly in the area of new work, should be considered by local authorities. The organization of such DLOs should be based upon municipal enterprise as outlined in the CIPFA document. In addition DLOs should separate out 'social costs' from 'construction costs' in the accounts. Finally DLOs should be extended to allow them to:-

- undertake work for other public bodies
- form consortia to undertake larger works
- undertake repairs and maintenance in private sector housing
- claim CITB grants
- extend industrial democracy in the construction industry.

Building Britain's Future argues that the establishment of 'a new central agency to pool and disseminate the best in local experience and to provide co-ordination and standardization in such areas as documentation, costing, accounting, working practices and building methods'.

The Managing Director of Wimpey Construction, has argued that Building Britain's Future had a disruptive effect because it was ill prepared and not particularly well written. But it prompted the CABIN campaign and hence created a lot of work for the industry. He says its impact, if any, will be long term but that it might be said that it was responsible for arousing opposition to the Labour Party and that this led to a larger majority for the Conservatives (in the May 1979) election than might otherwise be the case.(113)

The Labour Party therefore believes that reformed DLOs could make a substantial contribution to the industry, notwithstanding the fact that the scale of DLO operations is essentially local. This factor combined with their lack of experience in large scale industrial building and civil engineering does not however provide an adequate basis for public ownership throughout the construction industry.

ASTON UNIVERSITY LIBRARY

CHAPTER 6

DIRECT LABOUR OUTSIDE OF LOCAL GOVERNMENT

Local authorities are not the only employers of direct labour. Other public bodies such as central government, nationalized industries have small building teams principally dedicated to maintenance work. However, the scope and advantages of direct labour have been recognized by organizations outside the public sector. In the main these have been larger organizations with a high capital investment in building stock as one of their factors of production. Obviously the nature and mechanics of direct labour operations on such organizations will be directly related to the needs of organizations, but this in itself reflects the nature of direct labour. In the main industrial organizations use direct labour as a service to the focal point of their trading activities, be it in manufacture or retailing. To provide supporting evidence of the direct labour principle two organizations using such in-house building services were examined and their method of operation, employment conditions and organizational structure compared against the use of outside contractors. The organizations selected for this area of research were Imperial Chemical Industries (I.C.I), a large multi-national corporation with diverse manufacturing interests, and the London Co-operative Society (L.C.S.), a multi-interest firm operating in the retailing industry. Whilst the method of operation reflects the different type of company, many of the characteristics of direct labour are to be found within them. For instance, stability of labour, high levels of unionization, concern for quality of workmanship, concern for response time to emergencies etc. were

primary reasons for the existence of direct labour in both instances. The pragmatic approach to the use of direct labour is obviously more in evidence in a firm like I.C.I. where the concept guiding the use of direct labour is a vertical integration of company organization. With the L.C.S. a stronger ideological commitment could be detected - this is perhaps not surprising given the philosophy of the Co-operative movement.

Since the two organizations reviewed acted as 'services' to the principal activities of the organizations the direct works sections saw no reason for conducting productivity comparisons with outside contractors - in a sense this activity would be difficult to do given the type of work they were concerned with but there was a strong variance of opinion amongst management. I.C.I. felt that productivity of their direct works was poorer than that of outside contractors - the reasons for this varied, 'too familiar management/ worker relationship' was cited as one reason, whilst an over-concern for quality was given by another manager. In the L.C.S., management did not perceive a great deal of difference in productivity. However it must be emphasised that comparisons between workforces dedicated to one-off jobs is difficult, if not impossible, to monitor. Suffice it to say that both companies had long experience of direct labour and had continued to use it. There follows an account of the organizations and how they use direct labour.

Imperial Chemical Industries

I.C.I. have a multi-plant organization each operating as an independent operating division with each plant having its own direct labour set up,

In each plant direct labour is used to service the baseload of activity. In all locations the workload in the maintenance side will vary and the general policy is to service 75 per cent of the demand for work with the peaks of demand being provided by contractors employed on a daywork basis. In many ways the organization of the I.C.I. direct labour is analogous to local authorities. The size and balance of the labour force employed in each operating division will depend upon the magnitude and kind of work to be carried out. For instance, the head office direct labour force employed 22 men comprising of carpenters, electricians, plumbers, fitters and general labourers. This labour force is stable and this befits a company who have established a policy of continuity of employment. The works division of the head office is conscious of the necessity to adhere to this policy and therefore slow and cautious expansion has been the watchword. In this respect building workers with I.C.I. enjoy the same kind of job security that local authority DLO workers enjoy. A similar situation was evident in the Paints Division of I.C.I. Direct labour was used to service the majority of work and also to accommodate special one-off jobs. Here the labour force consisted of 4 carpenters, 1 wet tradesperson (although another was required), 4 painters, 2 scaffolders and 4 general labourers. Supervision at this plant was provided by 2 personnel, a planner and a supervisor. In both locations the profile of the labour force is typical of direct labour; there was a low turnover of labour. In the paints division only 3 people had voluntarily left the direct works in 14 years with many of the tradesmen serving their apprenticeship in the company. Again both direct labour forces exhibited a higher than average age - several factors could explain this.

Firstly, the financial security offered by I.C.I. employment. It is Company policy to retain labour and the substantive and procedure agreement relating to weekly paid employees states that "It is the Company's intention that there should be full stability of earnings in all normal circumstances". Such stability can be contrasted with the construction industry where fluctuating pay packets are normal.

Secondly, the remuneration under I.C.I. employment compares favourably with that of the building industry. All the tradesmen are categorized as Grade 7 workers where normal earnings are £106.42 for a 40 hour week. The direct labour section were recording average overtime of 16 per cent, thus making the working week 46.4 hours. This would increase the gross pay to £129.46. Productivity bonuses of 7 - 8 per cent of basic and the profit share scheme of 7½ per cent of basic would give an additional £471.67 per annum. This compares favourably with the average gross earnings for a bricklayer of £2.06 per hour on 44.3 hours giving a gross wage of £91.26 in April 1979, assuming a 20 per cent increase to take it up to June 1980 (the I.C.I. agreement). This makes it £109.51. (New Earnings Survey). Thirdly, the negotiated fringe benefits also encourage stability. The Company/Union agreement states "employees who are absent from work because of sickness or industrial injury will continue to be paid the salary for their normal job together with any disturbance payment or working conditions payment associated with that job". Sickness payments are however graduated in terms of length of service:-

Length of service -	
6 months - 1 year	4 weeks sickness and 4 weeks industrial injury

over 1 year and up to 2 years	8 weeks sickness and 8 weeks industrial injury
over 2 years and up to 3 years	13 weeks sickness and 13 weeks industrial injury
3 years and over	26 weeks sickness and 26 weeks industrial injury.

Employees absent for more than 3 days must send appropriate medical certificates to their management. Hence I.C.I. direct labour employees have staff salary conditions on sickness pay. This compares favourably with the Building Industry conditions where no sickness pay is paid in the first three days of absence and then only £4.20 per day thereafter. Dismissal procedures also vary. I.C.I. direct labour are given one week's notice during the first four weeks of employment: from 4 weeks to 5 years this increases to 1 month's notice: for those with between 5 and 12 years' service, 1 week for every year of service and after 12 years the maximum notice of 12 weeks is applicable. In the contracting side of the industry the NWRA offers the following dismissal periods:-

(a) Up to 6 days employment	..	2 hours
(b) 6 days - 4 weeks	..	1 day
(c) 4 weeks - 2 years	..	1 week
(d) 2 - 12 years	..	1 week for each year's service
(e) more than 12 years	..	12 weeks

The brevity of the notice offered in the earlier stages of employment in the NWRA is indicative of the casual nature of employment in the construction industry. I.C.I. direct works consistent with their local authority conterparts have sought to stabilize employment conditions.

In many ways the better wages and employment conditions offered to the direct labour at I.C.I. are a result of union organization. We have seen earlier that unionization in local authority direct works is high (78 per cent) in comparison to the industry as a whole.

In the direct labour in the Paints Division all direct labour was unionized, the carpenters and painters into UCATT and the remainder into the T & GWU. The company maintained negotiating rights with UCATT although the NWRA did not hold sway within the company. However, for I.C.I. direct labour workers there may have been more than instrumental reasons for holding union membership; pride in their craft may have been just as important. Evidence for this arose in the nature of the work which the work force were asked to carry out. Quality of the work was deemed to be very high but at the expense of time. Craftsmen operating within the plant preferred to conduct work to a high specification and it was becoming increasingly difficult to educate tradesmen to a new lower standard of workmanship that was now required. The high concern for quality shown by the craftsmen was often seen to be wasteful of time and managers of the direct labour complained of low output when compared against contractors. However, it must be said that the kind of work which the direct labour would be employed on would, of its nature, be the type of work which typifies low productivity, one-off jobs associated with emergency services on locations dispersed over the whole factory area.

High quality was a function of the I.C.I. direct labour. In a sense this is understandable - the tempo of maintenance works is very different from capital works, thus encouraging quality but perhaps

more pertinently the direct works can afford to wait for labour. Contractors will be used in the organization and the company have an opportunity to view the worker. If a vacancy arises within the I.C.I. organization then the contractor's man is well placed to apply for the opening.

It was accepted that the contractor's dayworkers were probably faster than the direct labour. The reasons for this are more social than organizational. Dayworkers will be fresh to the organization and will be keen to impress since the client can send them back to the yard. Hence the dayworker will wish to be seen to be 'having a go'. Also day workers recognize that they have not the direct security of employment on that particular job. However I.C.I. see benefits to direct labour, response time is fast for emergency work, workers are able to appreciate the standards required, localty to the organization and the maintenance of good industrial relationships along with a sensitivity to the necessities of commercial life are all important benefits to I.C.I.

The I.C.I. Head Office DLO had a budget which was established on the basis of manpower. There are three aspects of the budget:-

(i) salaries

(ii) materials - (a) revenue account

(b) capital account

(iii) holding stores.

These resources were applied to a planned maintenance programme along with emergency requests. The planned maintenance is based upon the assessments of building experts in the direct works department. The

structure of the organization for emergency works is that a department requiring work makes out a job ticket which is directed to the foreman who assesses the job and decides whether the DLO can carry it out or whether it is a dayworker job. If the DLO is to do the work an estimate of time is made and work schedules established. No cost control is applied to jobs but the jobs done over a year are compared against manning levels.

In the Paints Division the work of the direct labour amounted to some £400,000 per annum - this budget included £30,000 worth of dayworks allotted to contractors. The principle governing its organization was one of service, with little need for stringent financial control. In the main, jobs were initiated by production departments - such work would include emergency repairs and planned maintenance. The jobs coming into the direct works would be classified as 'urgent' or 'not urgent' and the work fitted into an overall programme. This programme was planned for four months in advance and reviewed monthly. This system worked smoothly.

In many ways the direct labour at the I.C.I. Paints Division reflected the method of organization of direct works with its strengths and obvious weaknesses. Fast response time, familiarity with the procedures and personnel, safety requirements etc. were major advantages of any direct labour but concern over the productivity achieved still prevailed. But this drawback must not be exaggerated. The type of work carried out is difficult to analyse in terms of work content since much of it will depend upon a tradesman's knowledge and experience - the work being labour intensive with little material being required. It

is significant that a concern such as I.C.I. chooses to employ direct labour - whilst its use is limited (unlike, for example, the Lenin Komosol car factory in Leningrad which has its own capital works department dedicated to building workers' flats) the advantages perceived are evidence to the general principle of direct works.

London Co-operative Society (L.C.S.)

The direct works department of the London Co-operative Society covers a very large geographical area - from Southend in the East to High Wycombe in the West, North of the Thames to Harlow on the North/South boundaries. Within this area over a 1000 properties have to be maintained including retail outlets, dairies, garages etc. The L.C.S. has a strong tradition of using direct labour and immediately after the war the organization employed some 600 people who were responsible for capital works and maintenance programmes for the L.C.S. along with an element of contracting for Local Authority houses and hospitals. Some six years ago 200 people were employed but the current manning level is 130. This labour force incorporates all the major building trades but inevitably the finishing trades are well represented in this composition. Also included are 20 workers employed in the joinery shop. This labour force is being expanded to accommodate a large capital expenditure programme, for example the L.C.S. plans to spend £18m in 1980, £14m in 1981 and £11m in 1982 on developing and improving property - the direct works department will be strongly involved in this expansion programme. Much of the work will be small works where existing properties are upgraded or expanded - in this kind of operation the direct works will expect to do 80-85 per cent of the work whilst major new developments are mainly contract work although the

direct works seeks to undertake 30-40 per cent of the capital works budget. (The cut off point between small works and capital projects is in the region of £40-50,000). For many of the major developments the LCS act as a management contractor and parcels of the works are let out to builders with the technical services section of the direct works holding the contractual ring - outside architects are invariably used when this contractual arrangement comes into play.

Typical of many direct labour organizations the labour force was highly stable - resignations from the direct works were rare and the average age of LCS workers was in the region of 40 - 45, although this is decreasing due to the facility of early retirement for workers in the 55-60 age bracket. Again this stability could be seen as a result of favourable employment conditions. The LCS had its own union agreements which were based upon the building industry WRA but in most instances offered better conditions of service. For example the sick pay arrangement gave the WRA conditions up to one year's employment then after one year this increased to 4 weeks on full pay, after two years this increased to 6 weeks and after 5 years this came to a maximum of 9 weeks allowable sick leave. Holidays entitlements were also better than the WRA - 4 weeks was the standard allowance but this increased to 5 after 15 years service. Membership of a contributory pension scheme was a condition of service.

Wages earned by the LCS direct workers compared favourably with the building industry. Craftsmen earned a basic wage of £100.80 for a 39 hour week plus an £8 per week standing bonus (June 1980 agreement). Labourers grossed £91.20 plus for £8 bonus. Unusually for direct

labour, overtime featured heavily in building up the pay packet. In the period of the development programme overtime of 15-20 hours per week were not untypical and as the overtime premiums were better than those in the WRA this supplemented the take home pay considerably. The £8 per week standing bonus merits further mention. Up until 1978 bonus has been measured by surveyors who had set targets for particular operations. The application of the targets led to a strong delineation of the trades with a high incidence of demarcation between trades. In 1978 this scheme was abandoned and the measured bonus payments were subsumed into a consolidated rate with a standing bonus of £8 being given across the board irrespective of trade or grade. This has had the effect of limiting demarcation disputes since part of the agreement which consolidated the rate abandoned trade delineations. This, of course, did not withdraw differentials but made the operation of the available manpower more flexible.

The L.C.S. direct works are also aware of their social responsibilities. Training was considered an important feature of the organization and a commitment to training was evident. Apprentices in all trades were employed and the organization took on a constant number each year irrespective of trading conditions. Approximately 11 per cent of the total labour force were apprentices but the ratio of skilled men to apprentices approached 4:1. The L.C.S. also had firm adherence to the Disabled Persons (Employment) Act 1978. The labour force comprised of 3 per cent registered disabled people. Safety was also important to L.C.S., no accident statistics were available but only one fatality had been recorded in the previous 40 years.

Many of these features of the L.C.S. direct works resulted from good

industrial relations. Strikes were unknown in the L.C.S. despite one of the employment conditions being a post-entry closed shop. Several unions were represented in the shop stewards committee; union membership was principally concentrated into UCATT and T&GWU although electricians were organised into the EEPTU, fitters into the AUEW and shopfitters into FTATU (Furnishings, Timber and Allied Trades Union) although the organization had this multi-trade union structure there was craft distinction between the unions and all were represented on the negotiating committee.

Job Organization

It was freely accepted that the management principle most in evidence at L.C.S. was 'crisis management'. In the main the direct works responded to emergency calls for maintenance but a more coherent approach was adopted for the capital works. The managers of the direct works were seeking to introduce a system of planned maintenance but the problem lay in persuading retail managers that works (which the retail managers would see as disruptive) were necessary to ensure the health of the building fabric. Since Area Managers requested work for the shops under their control it was difficult to build up a systematic approach to maintenance. Where requests for major works were received then the technical staff would seek an architect to prepare schemes, the technical staff would plan the job and monitor the progress of work carried out by the direct labour. The costs of the work would be debited against the premises requesting work.

The management structure was a fairly conventional one with the direct works being divided up into two geographical regions, East and West,

each with its own supervisor who would control several general foremen who in turn would manage individual or several projects depending upon their size and complexity. Technical services such as design, costing, surveying etc. were a management service to the organization.

The quality of the work produced was thought to be good but the management had regretfully accepted that quality of work had been relegated in recent years behind speed and cost of the work done. However it was felt that quality was being maintained because the direct works knew the standards expected by the retailing side of the organization and they would work to these standards.

An interesting organization feature of the LCS direct works was its willingness to undertake outside contract work when internally generated work was slack. Examples of the kind of work undertaken included blocks of flats for the London Borough of Newham, handicapped peoples home in Chigwell, Orsett hospital extension, shopfitting for Moss Brothers and several city banks etc. This type of work was generally won in competition with contractors and was expected to make a profit for LCS. Work done directly for the LCS was conducted as a service rather than a profit making activity. The involvement of the LCS in the contracting field have given them a crude yardstick of productivity comparisons with private contractors. It was the belief of the L.C.S. direct works management that there was little difference between the productivity of contractors and that of their own labour but the better quality attained made it beneficial for the L.C.S. to use direct labour.

The arguments the L.C.S. management used to justify their direct labour

are familiar. It was claimed that they could exercise better control (in terms of cost and quality) over their own labour than that of contractors, it gave them flexibility of operations when many hundreds of small shops had to be maintained with a fast response time with workers who knew what would be required. Contractors on dayworks had proved unsatisfactory in the past.

In many ways the L.C.S. direct works followed the pattern of a local authority D.L.O. but with the freedom to sell the service outside of the L.C.S. This contact with the commercial realities of the construction industry improved the performance and organization whilst at the same time retaining the concept of service to its parent body.

CHAPTER 7

PRODUCTIVITY COMPARISONS

In this chapter, DLOs performance will be gauged against this criteria of efficiency and the productivity comparisons between DLOs and private contractors will be made. The campaign waged by contractors against DLOs has focused upon productivity comparisons between DlOs and the private sector. Hence it is important to investigate the manner in which these comparisons have been conducted, the factors which have not been included in the comparisons but have a bearing upon them and the nature or cause of the wide variations in productivity observed in studies that have been carried out.

General Background to Productivity Measures

E. Jay Howenstine in an article 'Productivity in Building - the Universal Enigma' [43] discusses how construction productivity can be measured. In the article he identifies the two possible ways of measurement. They are:-

(i) Global, and

(ii) Direct

The global approach measures output and labour inputs over the whole industry. Prior to World War II Colean and Newcombe used this method to compare the behavoiur of cost indices with what was actually happening in the construction industry in the U.S.A. Another team, Grebler, Blank & Winnick, used the same approach. Both studies found that increases in productivity were negligible. In the post-war period statistical techniques improved and the use of computers

enabled more data to be analysed but the results attained in productivity measurements were still unreliable. In the United States macro-construction data gave the following annaual productivity increases in the immediate post-war period. The following researchers operating independently found the year on year improvement in productivity to be as follows:-

Dacy	..	3%
Gordon	..	2.75%
Sims	..	2.3%
Cassimatis	..	1.5 - 2.9%
Domer et al	..	1.8%
Alterman & Jacobs	..	2.0%
Claque	..	2.5%
Greenberg	..	0.6%

The research attempted to determine growth in productivity on a year on year basis and the methods used were broadly the same; dividing the total value of production by the total recorded inputs. Variations in the manner of accounting for inputted resources tend to detract from firm conclusions. However, the advantages of using this method are clear. Studies can be prepared easily and quickly from the available data and can give a single estimate of average productivity. Despite these advantages, such information is of little practical value since it cannot show the cause of any change in productivity over a period of time. Also, the aggregating of inputs and outputs can distort the picture (e.g. year on year productivity may be seen to be increasing but the bulking together of prefabricated and traditional construction may be causing this

increase because resources inputted in the factory for the prefabricated structures are not being accounted for).

The global method has often been used to compare sectors operating within the industry. Professor O'Brien has undertaken such comparisons on this basis (see later).

Productivity can also be measured directly. This method relies upon detached studies of a few firms operating within the construction industry and is deemed to be more reliable. However, certain precautions need to be taken in adopting this method. Clearly the capability of measuring productivity in this way is dependent upon co-operating firms. Only the more confident, progressive and efficient firms are likely to open up the organization for examination. This factor may introduce a statistical bias into the sample. Other general difficulties likely to be encountered are comparabilities of firms in terms of size, organization, structure, the nature of the project being measured, geographic market conditions. However, the direct method is more useful in making inter-firm comparisons since it is possible to ensure the consistency and accuracy of the data relating to output and labour expended. Further estimates of average levels of productivity may often be obtained to greater accuracy using the direct method. Finally, the direct method provides not only the average productivity but also the variations from the average within individual firms and show how these variations are related to the conditions and characteristics of production.

Notwithstanding this there are technical problems in the direct method. It is not always possible to obtain accurate measurement of labour inputs. Largely this difficulty is associated with the level of detail required. If man hour input for a site is required then time sheets will generally be adequate but if finer observation is required then it will be necessary to undertake direct observation of the work.

Secondarily, the choice of a convenient measure of output presents some problems - it may be the number of houses built, but this will be variable with the specification and size of the house. The number of hours per 1000 bricks laid can be easily observed but less routine elements such as joinery are less easy to measure. Other direct methods such as the labour input per m^2 of floor area or per £1000 worth of work have been tried but the productivity attained is often more responsive to design and specification variables.

Work done on direct measurement tends to confirm the upward trend of the global approach but finds side variations in productivity between heavy civil engineering construction and building construction and between large and small sites. Heavy civil work was twice as productive as the smaller projects. It is this very variability of output that has intrigued researchers into construction productivity. As we shall see, it is a universal phenomena and has a strong bearing upon productivity comparisons between DLOs and the private sector.

Direct productivity measurements have been carried out by the B.R.E. The first study was carried out in the 1950's on 3-bedroom local authority houses between 850 - 1050 ft² floor area.[31] Productivity was measured in terms of manhour per house. Some interesting conclusions were drawn from this study. Firstly there was a great range of variability of productivity on the observed sites. The least efficient sites required three times the labour input as the best. Secondly, design was deemed to be less influencial than the quality of the site organization. Thirdly, there was little relationship between the floor area of a house and the manhour input required to build it.

Further studies carried out on 12 firms by the B.R.E. between 1961 - 65 gave a wide range of manhours for housebuilding.[31] The study revealed that the variation in manhours was from 600 to 1900 with an average of 1100 hours. This is a significant improvement upon a 1949 study which gave an average labour content of 2665 hours (but the shortage of materials in 1949 may have had an important part to play in this figure). The 1960's study confirmed that the variation in floor area and design were over-shadowed in influence by the continuity of work and the experience of the contractor. The best productivity being achieved by firms having a long experience in housebuilding and providing continuity of employment to operatives. To this end the B.R.E. determined four levels of productivity in house building. They were:-

No.	Manhours	Type
1	+ 2400	Contractors not using any planning system
2	1300 - 1800	experienced general contractors working on large sites
3	900 - 1300	contractors specializing in conventional house construction
4	750	small terraced housing with some prefabrication built by specialized contractors

DLOs fit into category 3 or 4 within the list. Furthermore, their experience of housebuilding and continuity of employment offered make them well placed to be productive if the BRE guidelines are valid.

Another interesting observation was that there was a difference in manhour content between local authority system built dwellings and local authority traditional dwellings.

	1	2	3
	completed construction including external works. avg.time	superstructure and finishes only avg.time	av.manhours per dwelling
la. system	39 weeks	27 weeks	1070
la. traditional	59 "	36 "	1200

The type of work which DLOs are most likely to carry out is local authority traditional houses. If these are likely to demand more manhours then comparisons made with contrators who have oligopoly systems are likely to show unfavourable trends for DLOs. In many

of the productivity studies comparing the two factors this variance of market suitability is not mentioned.

The occurrence of variability in firms' performance has been observed elsewhere. Housebuilding productivity in the U.S.A. by Roberta Shippam observed that the worst producers expended something like three times the manhours as the best. There was also a variation in the manhours required for various types of construction. Reinforced concrete requiring an average 1054 hours, brick 1374 and timber 1260. But the given average manhours can be misleading. 'A productivity study of housebuilding'[109] by the Irish Building Research Establishment (An Foras Forbartha) confirmed the wide variability of manhour content. The relative variation of manhours can be expressed as a coefficient of variation where the following relationship applies, coefficient of variation = $\frac{\text{standard deviation}}{\text{mean}}$ (expressed as a percentage). The Irish studies found that the mean coefficient of variation for 3 sites was 11.1%. This compares to Bishops*[5] 5% on 5 sites and Walkers**[137][139] 4.46% of 847 dlo built houses on 8 sites. From the above data it is clear that for the private sector studied by An Foras Forbartha and Bishop, there is a wider range of variability than the DLO sites studied by Walker (albeit that Bishop and Walker are comparable in terms of country studied and the results attained). The variability coefficients stated

* Labour requirements of house building 1965.

** A study of the variations in output of building operators.

mean that in the Irish study the manhours for any house constructed lie within ± 22 per cent of the average, whereas Walker's work on DLO built houses will lie between ± 9 per cent of the average. There is no evidence to suggest that these ranges of manhour inputs fall within a normal distribution or the manner of any skewing but the smaller variability in the DLO study suggests that more consistent performances or a more limited range of types are possible within DLO organizations. This, of course, may be a function of the specialized character of DLO building and the stability of employment within DLOs along with a limited range of housing types with which they deal. Two factors which BRE suggest are important components to good productivity on site.

Yet increased productivity by contractors or DLOs should not be seen as an end in itself. In a scholarly discourse Professor Bishop defines productivity as the "optimum use of resources to obtain an acceptable goal"[5]. Therefore it should include wider issues including the value of the output to society, the quality of life of those engaged in the operations involved and those affected indirectly by the activity or the outcome, or by both. He comments "Social benefits from higher productivity are deployed on the next most important activity, or when work is allocated to share the benefits of higher productivity, e.g. by shorter working hours".

This view is clearly far-sighted and makes an acute observation upon the direction of industrial life. But more immediate demands for increased productivity permeate industrial life. As Branko Salag and Herbert Silberman[116]* of the Swedish Building Research Establishment

*Efficiency of labour input in Swedish construction

have commented that the efficiency of labour is important for two reasons: increased productivity gives scope for wage increases, and secondly it evaluates the costs and benefits to the economy when labour is moved in and out of the construction industry. Therefore the evaluation of productivity is important in an era where productivity deals are seen as a method of paying for increased wages and as a method of macro-economic planning.

Sources of increased productivity

If productivity is important and increases in it are to be used as a method of distributing resources, then the debate over DLO productivity will be central to the optimum allocation of resources. Several sources of increased productivity have been identified. They are:

(i) Size of firm and Project

Bishop has argued that productivity in craft based operations is not significantly affected by the size of the enterprise for which the operators worked (although this is contradicted by Swedish research which suggests that large firms, defined by greater than 500 workers, use 15% fewer manhours for similar buildings than smaller contractors, defined as having less than 100 workers) but Irish research does strongly suggest that the size of the project is important as far as the manhour content per house is concerned. Piggott in "A productivity study of house-building"(108) suggests there is a linear relationship between the average superstructure manhours and the size of the project, the relationship being:-

$$x = 12 \frac{- y}{90}$$

where x = manhours/m

y = no of units in each project

This holds for a range of 56 - 248 houses and beyond this there is a logarithmic regression. The Irish research suggests that as the job size increases, the mean of the manhours required is reduced by 10 per cent for every doubling of the job size. Naturally this principle runs parallel to the basic learning curve theory which is applicable to a wider range of construction jobs. Whilst this is generally confirmed by British research the decay of productivity outside the 56 - 248 limits is not shown. The Department of Scientific Industrial Research found in 1950 that the larger the conract the greater the productivity and this held for contracts from 2 - 80 houses.(111) Using a 20 house contract as an index of 100, then the following productivity indices were found:-

Size of contract	Index of labour expenditure
4	109
10	104
20	100
40	96
80	93

This is emphasised with the bricklayer hours:-

Size of contract	Bricklayers hours expended per house	As a percentage of labour expended on 20 houses
4	727	118
10	663	108
20	615	100
40	566	92
80	518	84

Obviously job sizes will have increased in the period 1950 - 1969 and it is probably true to say that the 1950 study did not have an opportunity to study the larger developments which became popular in the mid 1960's. The view that project size is more important than organization size is confirmed by Swedish research. Salag Silberman found on a study of 1240 jobs covering 27 million m^3 of building that the manhours/m^3 fall as the project size increases but the rate of reduction falls when jobs become very large. Travelling time around the site, overstretched supervisors and the technical complexity of the job will create this situation.

DLO contracts are likely to fall within the band of 56 - 248 houses and from the available evidence are set to optimize the productivity attainable from size of projects. American research reinforce the importance of job size. McNally and Havers (86) in 'Labour Productivity in the Construction Industry' claim that the duration of the job affects productivity; if the job duration is short it must start at high efficiency. Labour co-ordination difficulties occur if a rapid build-up is experienced, whereas long jobs are more flexible - slower build-ups are possible with more time to change strategies. John Hackney in the 'Control & Management of Capital projects' also says that size is an important component of productivity. Jobs of greater than 200,000 manhours have lower productivity than smaller schemes. This of itself is surprising since large jobs have an opportunity to institute cost-reduction schemes but management complexities and greater on-site travel may decrease overall productivity. Also the type of job will influence labour productivity. Prefabrication and standardization along with repetition can induce productivity.

(ii) Interruption to work.

The number of visits to a particular work station will effect the productivity on any site. The number of visits needed can be due to the following points:-

(a) the nature of the operation, i.e. two visits are required to complete the work;

(b) design, i.e. because of the design more than one visit is required;

(c) shortage of materials;

(d) materials;

(e) poor organisation of work.

The last three points will be responsibe to the quality of site management.

(iii) Labour availability

Leo Brebler observed in "Production of new housing" that productivity increases when labour supply is plentiful and decreases when scarce. He argues that this is because workers produce more when they are in competition for work. By and large the supply of labour in an area is related to training of craftsmen. As Harber & Levinson have commented in "Labour relations and productivity in the Building Trades", training is not that successful since the 'median age of the skilled workforce is increasing in the U.S.A.' Another factor is that contractors do not like taking apprentices (this is evidenced later on). The conventional view is that apprentices reduce overall productivity. This is obviously a short term view - a more longsighted position would accept that a younger, well-trained labour force helps to increase productivity.

DLOs in general undertake far more training than contractors.

(iv) Gang size and supervision rates.

The manner in which gang size affects productivity will obviously be dependent upon the element being constructed and the type of job. Piggott suggests that a 2 : 1 skilled to unskilled ratio is the most productive combination. This small gang size is confirmed by McNally & Havers where they consider that several small gangs are more productive than one large one. The ratio of operatives to supervisor may also be important. For technical work the ratio of 10 - 15 : 1 is suggested but this may be increased for more repetitive work.

(v) Overtime performance

Overtime is a consistent feature of the construction worker's industrial life. The number of hours worked by construction workers has not changed for 30 years. 46.6 hours was the average number worked in 1948 and it is still the same in 1979 (46.5 hours per week). The overtime worked is seen as one method of supplementing a very poor basic rate payable in the industry. Yet the performance in overtime is often less than that for the working day proper. Overtime used on a casual basis can be 100% productive if the job is well planned and the men know that it is to be finished in the shortest possible time, but if overtime is repeated then productivity falls. Similarly, if shifts are used then the second shift is 93% as productive as the first with the third shift fall to 88% productive.

(vi) Incentives

Incentive schemes have long been recognized as an aid to productivity and studies completed have shown that incentives are an important component in reducing the manhour content of dwellings. Although this view is the subject of current debate financial incentives are widely used in the construction industry. Two broad types can be identified - the 'target-bonus' and 'extra payments' system. The target bonus is related to production whilst the 'extra-payments' is an arbitrary system being somewhat detrimental to the best interests of all concerned and the long term defects outweigh any immediate advantages. The Department of Scientific and Industrial Research carried out a study in 1950 comparing the two methods[iii]. Their results are summarized below:-

Average labour expenditure on contracts with and without incentive schemes - main contractors

Trade	Target Bonus schemes (manhours per house)		Extra payments (manhours per house)		Standard Rates (Manhours per house)	
	Actual hours	Percent of hours at standard rate	Actual hours	Percent of hours at standard rate	Actual hours	Percent of hours at standard rate
Site works (General and bricklayers labourers	881	90	903	93	975	100
Bricklayer (skilled)	573	83	629	91	688	100
Carpenter	359	86	448	107	418	100
Plasterer	274	78	329	93	352	100
Plumber	127	71	170	94	180	100
Painter	188	84	228	101	225	100

As can be seen the average labour expenditure on the contracts with target bonus schemes is shown to be consistently smaller than on contracts with standard wage rates only, the difference ranging from ten to twenty-nine percent on the various trades. The average difference is about fifteen percent. The differences between the average labour expenditure on contracts with extra payments and that on contracts with standard wage rates are less consistent in the various trades. There would seem, however, to be on average a small advantage of between three and five percent in favour of the contracts with extra payments.

Also the following figures reinforce the point. Averaging manhours on sites using the three schemes outlined above, the following results are attained:-

	No. of sites	Average manhours used
Target based schemes	48	2795
Extra payment (spot bonus)	33	2925
None	82	3605

Another interesting feature is that the Department of Scientific and Industrial Research's study did not show a relationship between bad workmanship and bonus payments. Workmanship on site was classified into three sections: above average, average and below average. The following results were attained:-

Quality measure	Total	Sites using incentive scheme	Sites not using incentive scheme
Above average	42	24	18
Average	102	53	49
Below average	19	4	15

This emphasises the point that the use of bonus schemes is a feature of good site organization. In many ways the work of the Department of Scientific and Industrial Research followed on from the Girdwood Committee report on the 'Cost of Housing'[57], published in 1950. Within it the benefits of incentive schemes were emphasised; it claimed that about half the reductions of manhour content of houses were due to bonus schemes. It found that where incentives have been used general savings of about £15 per house were experienced and commented that further scope was possible. Now it is interesting to note that DLOs can only operate target bonus schemes related to productivity; the district auditor would accept such a method whilst rejecting the more ad-hoc extra payments system. Public accountability ensures this.

(viii) Client contractor relationship

A feature of the construction industry over the last 15 years has been a growing involvement of clients in the construction process. Increasingly sophisticated clients with a continuous building programme can create favourable conditions for a more economic and

productive construction industry and can help to overcome many of the problems inherent in a fragmented industry. The client's role can be seen under three headings:-

(a) controlling the flow of investment into the building industry - a controlled flow can smooth out demand fluctuations;

(b) setting the trend for advanced methods;

(c) fostering research and development - if a client stimulates research and development which results in greater efficiency in design or a reduction in costs, then clients are well placed to benefit to a greater extent than contractors or professions.

Let us consider the local authority to DLO relationship under these three headings. Firstly, because of the level of expenditure a local authority makes on construction activity it is well placed to smooth out demand for local construction work. It can accelerate or delay projects to suit the demand conditions - multi project network analyses with the option of resource smoothing can be used to good effect. (Currently the socialist countries are well in advance in the technique with a strong emphasis upon economic planning.) In this a DLO can offer great assistance in advising upon labour material availability and the current market conditions pertaining in the construction industry but more directly by participating in a rolling construction programme detached from the worst aspects of the uncertainties of the construction market. Many would argue that this is a recipe for complacency - it may be so - but the benefits of continuity of work upon productivity can be brought to fruition if proper control in terms of cost and time is exercised.

Secondly, local authorities can set the trend for the use of advanced techniques. The experience and continuity gained from client-contractor co-operation can release resources to develop production techniques which can be incorporated into a rolling construction programme. The unique bonus scheme for maintenance work developed by the DLO of the G.L.C. in conjunction with the housing department is an example of this. (This scheme involving a management by objectives approach has been widely acclaimed and is being considered by several cities in the U.S.A.)

Also the DLO can assist local authority client departments in defining these objectives and establishing an effective client-contractor communications system where authority and responsibility are clearly defined.

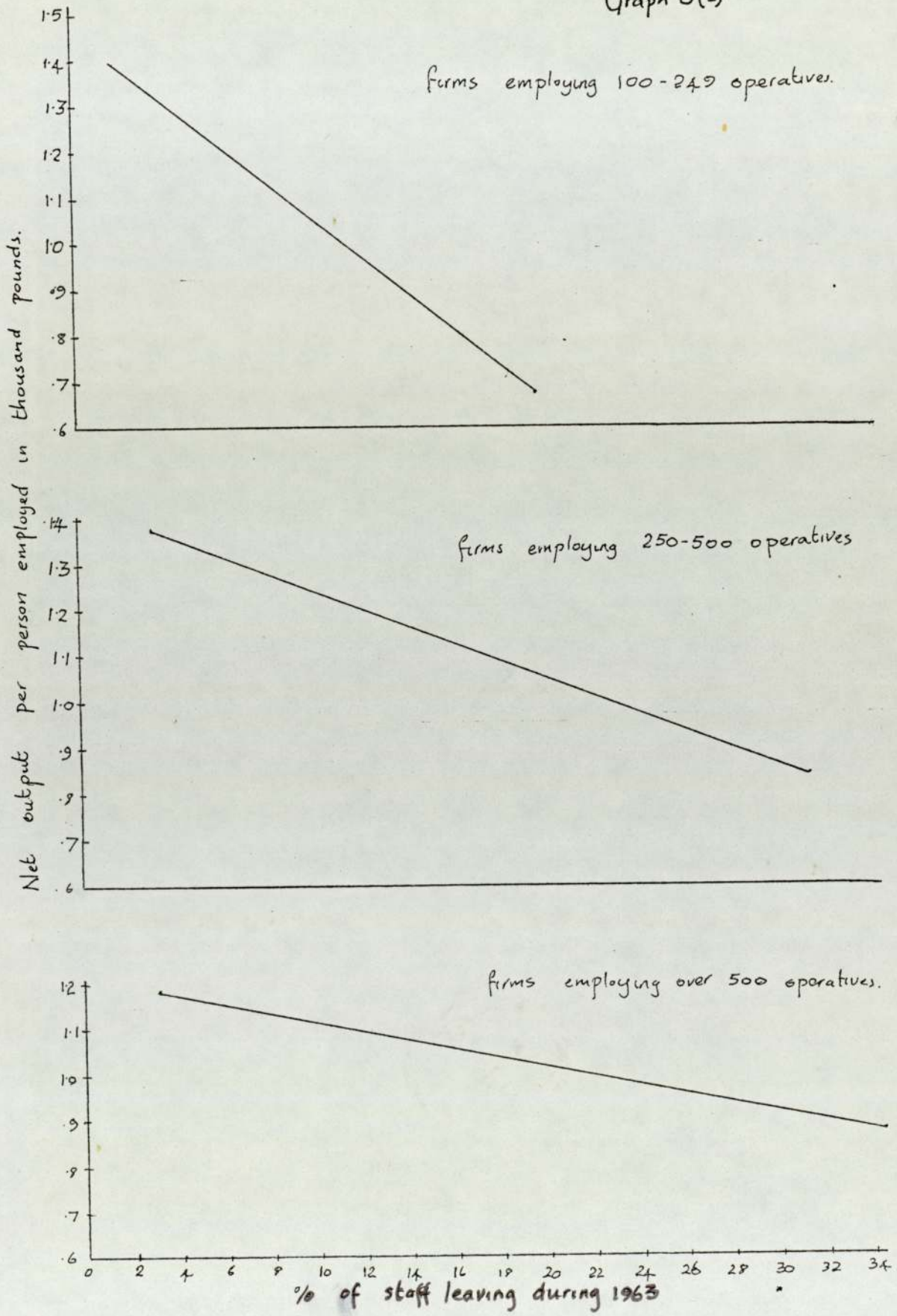
Thirdly, local authorities have often fostered research and development into construction systems which have universal application for local authorities. The CLASP and MACE systems for school projects have been illustrations of this. Also substantial savings can be made through bulk purchase and the use of serial tendering. Other examples will be housing research carried out by every large local authority which can assist in identifying local housing needs which the DLO can then assist in formulating schemes to provide such needs.

In all the organizational relationship which can exist between a local authority and its DLO can provide a sound basis for improvements in productivity on local authority projects.

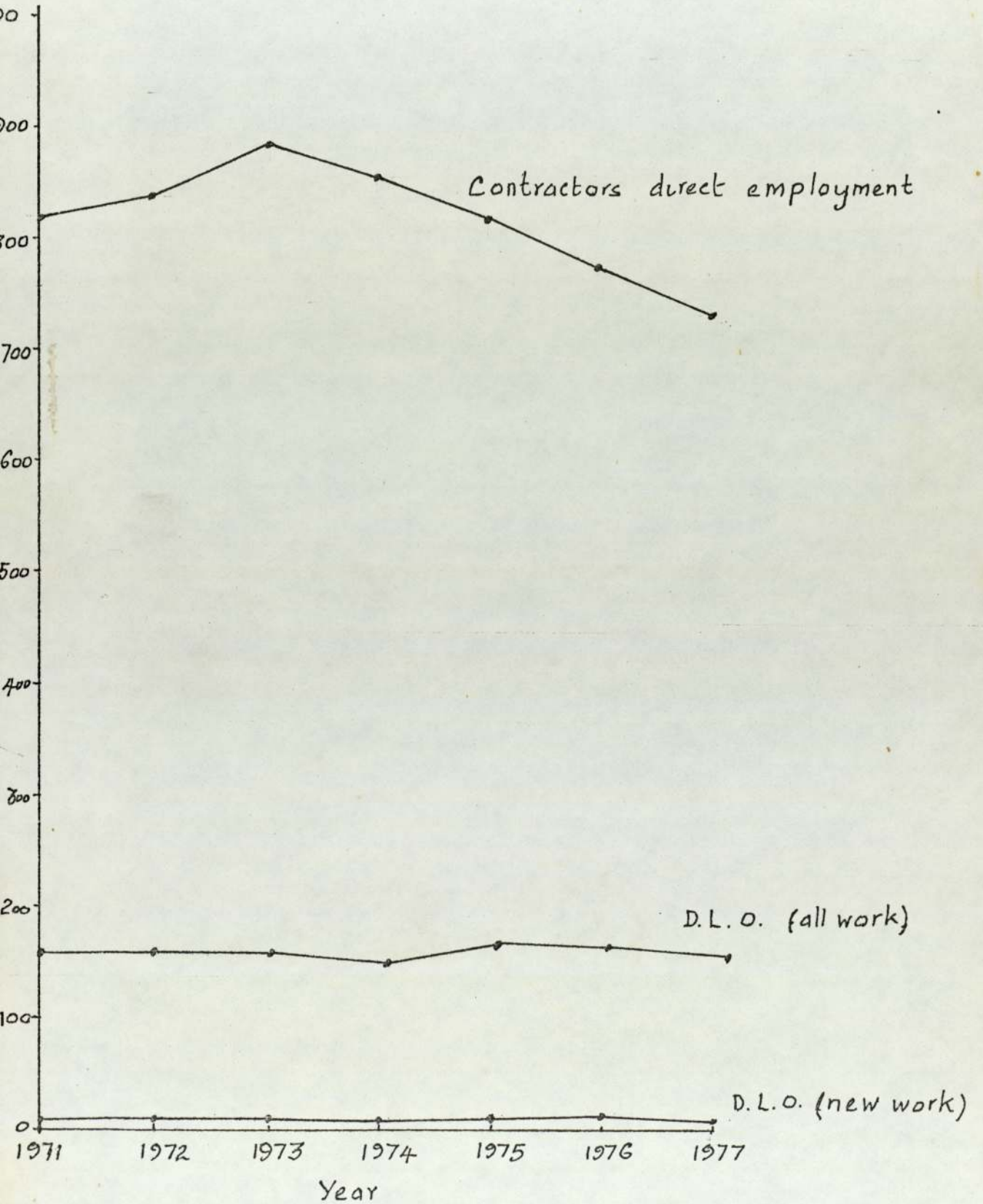
(viii) Stability of Labour

Much has been said about the casual nature of the labour force in the construction industry. The problem of labour mobility has drawn much attention from all sections of the industry but these observations have left little or no impact upon the employment practice of the industry. Casual employment is still widespread. This phenomena is in spite of the fact that it has been universally recognized that stability of labour is an important component of productivity. Studies carried out at the B.R.E. have shown that one of the most important criteria for the most productive firms is that of labour stability. The Department of Scientific and Industrial Research report Productivity on House-Building (1st Report) also reported that high productivity sites have a stable labour force. Little quantitative data is available to support these suppositions but the universal nature of the claim lends authority to it. Another feature is the stability of management and technical staff within a firm. Here harder evidence is available. Sufi Nazim explored the effect of high turnover of technical and managerial staff on productivity in the industry.(94) He concluded that a high rate of turnover of such staff tends to reduce productivity. The impact on net output is shown in the graphs overleaf. (The linear relationship has been produced from scatter diagrams.) Now if stability of employment induces higher productivity, then DLOs are well placed to take advantage of any benefits from this source. The trends in employment indicate the stability of DLO employment in comparison to contractors. (see page 102 Graph I)

Graph 0(I)


Net output per person employed in thousand pounds.
1·5
1·4
1·3
1·2
1·1
1·0
·9
·8
·7
·6
firms employing 100-249 operatives.
firms employing 250-500 operatives
firms employing over 500 operatives.
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
% of staff leaving during 1963

Graph I: Trends in Employment



The employment trends are commented upon in more detail in Chapter 7.

(ix) The experience of the contractor

In 1969 B.R.E. studies on productivity tentatively established four levels of productivity in house building (see page 87). The manhours given may of course be over optimistic since only the more efficient contractors are likely to agree to participate in such a study. This was a refinement of an earlier evaluation which classified contractors into two types - 'house builders' and 'other builders' according to their experience of housebuilding. The average manhour content for these two types of builders for a traditional 3 bedroom local authority house is given below.

Trade	House builders manhours per house	Other Builders Manhours per house	% Difference housebuilder v non housebuilder
Site works (inc. general and bricklayers labourers)	896	978	91.6%
Bricklayers (skilled)	600	680	88.2%
Carpenter	400	428	93.4%
Plasterer	301	365	82.5%
Plumber	161	182	88.5%
Painter	220	204	107.8%

Hence if specialist house builders are likely - because of their experience to be more productive - then again DLO should benefit from the limited type of work which they undertake. This view is substantiated by Walker, who undertook a study of the manhour content of housing on 8 sites built by the Castleford DLO.(137) The level of output achieved placed the DLO near the top of the B.R.E. league mentioned earlier. (Incidentally, Walker also found that the workforce at Castleford DLO was remarkably stable, approximately half of the labour employed had been with the DLO for over 12 years).

Hence the experience gained by DLOs in house-building is another pointer to the potential productivity the DLOs can attain in this area of work.

(x) Site Organization

This is the most important factor in attaining productivity on site. The way the work is organized will have a bearing upon the labour efficiency. Building sites may be considered as autonomous units within the framework of individual firms. Therefore the levels of productivity attained on each site will be a function of the quality of site management. The variability of performance evidenced by all studies (generally in the region of 3 : 1) bears testimony to the importance of good organization to ensure good productivity. The varability of organizational performance suggests that some DLOs will be better than others, similarly some private contractors will be better than others. The character of site organization will be independent of whether it is a DLO or private sector site.

The above discusses the factors which will affect productivity on site.

They are summarized and evaluated in their impact in the table below:-

Item	Observations
(i) size of contract	(a) Does not affect the technical basis for productivity comparisons. (b) Conflicting evidence on the impact of size of job. (c) DLOs likely to undertake smaller job sizes.
(ii) interuptions to work	(a) Does not affect the technical basis for productivity comparisons. (b) Mainly a function of design and organization. (c) These can affect DLOs and contractors in a like manner
(iii) Labour availability	(a) If there is a labour shortage then DLOs more likely to be affected than contractors due to the more flexible bargaining structure available in the private sector.
(iv) gang-size	(a) Does not affect the technical basis of productivity comparisons. (b) Mainly a function of organization of work.
(v) overtime	(a) Does not affect the technical basis of productivity comparisons. (b) More a function of job duration and environmental factors.
(vi) Incentives	(a) DLOs due to the district auditor's supervision need to apply measured bonus. Contractors often use spot-bonus. Measured bonus proven aid to productivity.
(vii) client aids to productivity	(a) Integration of client and contractor more likely in local authorities if DLO the contractor.
(viii) stability of labour	(a) DLOs have more stable labour force thus able to gain productive benefits from this.
(ix) experience	(a) DLOs very experienced in a limited range of the construction market. Contractor likely to diversify to pick up all possible work within scope.
(x) site organization	(a) does not affect productivity comparison since sites will be independent. (b) More a function of quality of site management.

Some Global and Direct Comparisons

However all of the foregoing is merely circumstantial evidence. It sets out the factors affecting productivity and how these factors can be influential in productivity comparisons. But to draw any conclusions harder evidence is required. For this purpose several studies have been completed. The only widely published productivity comparisons that have been done on DLOs have used the global method with comparisons being made on the basis of value of work produced. Professor O'Brien, writing exclusively in National Builder, the NFBTE house journal, has taken the value of output for the private sector from the private contractors' census and divides this by the number of operatives employed.(100) The same method is used for the figures on DLOs. He determined from this that the private sector was two times more efficient than the public one. This theme was pursued by Michael Fleming, a senior lecturer in Economics at the University of Loughborough. In an article appearing again in the National Builder, he draws some observations on the changes in local authority manpower and compares productivity in the two sectors.(47)(49) He accepts the difficulty of the latter task since the industry does not produce a standard product to act as a standard of comparison. Fleming notes the Department of Employment's comment that productivity in DLOs should not be extrapolated from the figures since the work carried out by DLO's and the private sector are not necessarily comparable because DLOs contain, for the most part, no profit element. Nonetheless, he asserts that the magnitude of the difference in productivity is alarming and goes on to give a more refined analysis.

He does this by examining a breakdown by type of work. This is done by comparing the two sectors in the new housing field. Here Fleming asserts that the productivity advantages (after allowing for profits) to the private sector are in the order of 60 per cent. The table he uses is given below:-

The effects of profits and type of work on productivity comparisons

Comparative productivity of contractors and local authorities direct labour on public sector work by type. Quarterly output per operative, public sector work only 3rd quarter 1974.

	New Housing	New Non-housing	Repairs and Maintenance Housing	Repairs and Maintenance Non-housing
Direct labour	£1453.5	£1496.9	£896.8	£1123.1
Contractors Gross value	£2338.6	£2735.7	N/A	£1817.0
Gross value as %age of direct labour	160.9%	182.8%	-	161.8%
Gross value less estimated profit				
Gross value less estimated margin	£2238.1	£2618.0	-	£1738.
Gross value less estimate margin as %age of DLO	154.0%	174.9%	-	154.8%

Fleming mentions the impact of the unrecorded work of 'lump' workers but discounts this as being of little significance.

The arguments put forward by Fleming are picked up by John Sugden from University College, London. In an article appearing in Municipal Building Management (128) he criticises the work on two basic grounds. Firstly, the statistical method, and secondly the source material used. Sugden argues that articles by Fleming and O'Brien have not mapped out an economic mechanism by which the productivities of the two sectors can be compared. In particular, the figures used in the comparisons are gross figures, including materials prices and labour. This is unconventional practice and net prices should have

been used. For example, a plumber fixing gold taps would appear more productive than another plumber fixing brass taps because the gross value, including the materials is so vastly different. The question of materials is important in DLOs. Much of DLOs output is in the maintenance field where there is little material content. This will greatly distort the figures if gross comparisons are made. Also, the type of projects carried out by organisations varies the on-site labour input. DLOs primarily build traditional houses when they become involved in capital works whereas contractors have access to off-site prefabrication systems. Whilst there is little reason to prevent DLOs from setting up prefab. systems the Local authority (G & S) Act would prevent sales outside their immediate area thus restricting the market for systems. Hence, only the site labour used is recorded, making the private sector appear more productive. Another point is that DLOs may only do site work for contractor developments. The materials input for such work is automatically assumed to be the same for the complete house-building process. This is clearly not the case.

The structure of DLO workings may also distort the picture. The basis on which Fleming and O'Brien have compared the sectors is the value of output. Now if value of output = Price x Quantity, and if, as O'Brien suggests, DLOs are insulated from the market price, then this means that the 'price' in the above equation is merely a 'transfer price' not a market one. This is likely to be the case where the DLO is acting as a service to other local authority departments. If transfer prices are the basis on which the value of the output is measured then contractors will inevitably appear more productive.

On the second question, that of source material, Sugden is also critical. Contractors in the industry respond negatively to calls for statistical evidence. Bias in reporting can be observed and this will distort the picture on the question. Several particular technical points merit

discussion.

i) Double counting and the subcontractor. Here it is widely claimed that the labour used by private contractors is underestimated and the output figure is inflated as a result of the widespread use of subcontractors. Main contractors' returns on output are supposed to exclude the value of work done for them by subcontractors but to include the value of materials supplied by the main contractor for use by labour only subcontractors. Their returns on employment are also supposed to include only directly employed workers. This means that the value of materials supplied to LOSC and other subcontractors are included in the value of output, the employment which gives rise to this output is not included in the labour returns. In global measures of productivity, this position could be corrected if LOSC filled in returns This rarely happens. If some 200-300,000 workers are employed as LOSC then the loss in employment to divide through the value of output will significantly alter the figures.

Furthermore, the value of output reported by the main contractor is often exaggerated because of failures to deduct the full value of work done by normal subcontractors, even though the questionnaire asks for this adjustment to be made. This can be significant since the tendency has been for main contractors to become project managers with the largest part of the work subcontracted.

The Reddaway Report on the Effects of the Selective Employment Tax (Occasional paper 32, Department of Applied Economics, Cambridge University)[110] notes "Whether or not contractors in reporting the value of their output are likely to deduct the value of payments made to subcontractors depends partly on the method of response chosen.

Several methods of response exist, and the ambiguity of the question of value of output sent to firms permits considerable flexibility in response. Firms are asked for 'estimates of the amount chargeable to your customers for building, civil engineering, and associated work'. The use of the word 'estimate' is in itself perhaps unfortunate. It might indicate reference to the back of an envelope rather than to a firm's accounts."(110)

Also, contractors are concerned about the reliability of their returns.
John Summer in "Contract Journal"
"I don't think this form (questionnaire) is going to be taken seriously by the industry .....(indeed) the answers we give, let's be honest, won't amount to anything more than superficial guesswork.... ..(they are) notional as opposed to accurate."
Another point on this accuracy of the returns is that the DoE does not have a complete register of firms. It is difficult for them to identity all of the small firms, mainly doing jobbing work which is associated with low productivity. Their absence from the census figure overstates the private sector's productivity.

In comparison, DLO figures tend to be more accurate. Because DLO's do not use LOSC the underreporting of employment is not likely to occur. Also, DLO s return data on actual costs whereas contractors return market values, this may be very different to cost. Since the questionnaire asks for the value of work done by their own labour, DLO s are well placed to provide this information.

These views are strongly supported by T.E. Julien, the chief executive of Management Consultancy Services at the National Building Agency.(77) He also argues that the comparative analysis offered by O'Brien and Fleming is misleading. The incautious use of statistics led to this position and claims that a productivity gap postulated by O'Brien and Fleming is unlikely to exist. He mentions several factors that have not been included. They are:-

(i) lump labour

(ii) the difference between the amount charged to customers by DLO's and the final account figures of contractors (this can be large in the housing market particularly at boom times).

(iii) the differences in workload. DLOs undertake, in the main, small scale work. Contractors' output figures include more large-scale work including civil engineering with commensurately higher plant utilization.

(iv) The ratio of operatives employed on maintenance/new work in DLOs is about 5½ : 1, whereas it is near to 1 : 1 for contractors.

(v) The productivity quotient derived by dividing output by the number of operatives is suspect - it takes no account of the capital employed to produce the output or the materials cost.

The global approach has also derived many answers to the productivity comparison. The very variability of the claims of contractor superiority is a testament to the difficulties. Since 1976 some four studies have been carried out comparing productivity in this way.

They are:-

Date	Contractor Superiority	Author
September 1976	100%	O'Brien (100) National Builder
February 1977	54%	Fleming (47) National Building
March 1978	33%	Fleming (104) National Builder
July 1978	15 - 22%	Economist Intelligence Unit in a study carried out for CABIN. (44)

All of these points emphasise the difficulty of carrying out productivity studies in this way. The DoE accepts this point and heads its statistics on local authorities' output and labour with the rider "The value of output by direct labour departments of local authorities for the most part contain no profit element and the type of work performed by direct labour operatives is not necessarily similar to that performed under the same heading (e.g. public works) by private contractors' operatives. Thus the ratios of output per operative for direct labour departments are not strictly comparable with those obtained from the private contractors' census".(41)

This assessment has been reinforced by Fleming (although he has used the data to compare productivity). In a comprehensive review of sources of data for the construction industry he accepts the difficulty of productivity calculations. "At the practical level the deficiencies in the data of output and employment are such as to make the calculations meaningless; quite apart from the objections in principle".

Despite the reservations about the measurement and methodology of the existing productivity research, such comparisons must be made if the accusations concerning 'value for money', 'wasted resources' etc. are to be refuted or substantiated. Clearly the Direct method seems more promising. In a study reported in 1950, the Department of Scientific and Industrial Research undertook to measure manhour contents on 177 contracts. A representative proportion of this sample were DLOs in the London area. The results of this study are summarized over:-

TRADE	All Main Contractors			Contractors in London			DLO's in London		
	man hours per house	avg lab. cost in £ per house	No. of contracts included	man hours per house	avg. lab cost in £ per house	No. of contracts included	man hours per house	avg. lab cost in £ per house	No. of contracts included
SITE WORKS (general, bricklayers labourers)	914	120.9	96	1130	161.5	5	1088	150.2	10
BRICKLAYERS (skilled)	618	94.7	117	608	108.4	7	616	100.1	12
CARPENTER	406	59.1	115	351	56.7	6	403	63.0	11
PLASTERER	312	48.0	40	353*	52.2*	*	353	52.2	5
PLUMBER	165	22.9	55	173	29.6	4	148	22.5	11
PAINTER	217	31.6	75	265	45.0	8	218	34.1	12
TOTAL	2632	377.2	-	2880	453.4	-	2826	422.1	-
per cent comparison against heaviest user of labour	91.4%	83.2%	-	100%	100%	-	98.1%	93.1%	-

* Less than four contracts were available for measurement in these trades.

The figures have been based upon identical figures for DLOs.

The above figures exclude roof tilers, glaziers, floor layers and electricians which were not available for main contractor operations in the whole survey but were available for DLO. It is apparent that the labour content required in the London region is greater than the overall average. The regional difference in average labour expenditure was as follows:-

North	(manhours	per	house)	2507
Midlands	"	"	"	2637
South	"	"	"	2753

There are many possible explanations of the regional differences in labour expenditure. For example, a larger brick was used almost invariably in the North and in 4 contracts in 5 in the Midlands but was found on only 1 contract in 20 in the South. The over-hand method of bricklaying is common practice in the North-West and Wales but is rarely employed in the South. It is not possible to discriminate between these numerous possible causes from the results shown. What is important, however, is that the labour expenditure in DLOs is 98% of that of contractors in the London region.

If one adds in the trades which could not be measured for contractors, a similar result is attained. The analysis is shown overleaf.

Trade	Contractors in the London Area			DLOs in London		
	manhours per house	Labour costs in £ per house	No. of Contracts	manhours per house	Labour costs in £ per house	No. of Contracts
Site Works (general & bricklayers labourers)	1130	161.5	5	1088	150.2	10
Bricklayers (skilled)	608	108.4	7	616	100.1	12
Carpenter	351	56.7	6	403	63.0	11
Plasterer	*1 353	*1 52.2	*1	353	52.2	5
Roof Tiler	*2 60	*3 9.9	*4 5	86	12.8	6
Plumber	173	26.9	4	148	22.5	11
Painter	256	45.0	8	218	34.1	12
Electrician	*2 69	*3 11.4	*4 9	60	9.8	5
Total	3009	472.0	-	2972	444.7	-
Per cent comparison against heaviest user of labour	100%	100%	-	98.7%	94.2%	-

*1 Less than four contracts available in this trade and the equivalent figures for DLOs have been used.

*2 These operations are likely to be subcontracted in a contractor organization and therefore the average manhours per house for subcontractos in this trade in the London area have been used (quoted in this research).

*3 The average labour cost has been compiled by dividing the manhour requirement by the average cost of labour per house for all the skilled trades then obtaining an average skilled rate and multiplying by the manhour content in these trades.

*4 Figure abstracted from the number of subcontractors on which the survey was based.

Within the tables lies the first tangible evidence that there is little difference in productivity between DLO s and the private sector. Nonetheless the data are somewhat out of date and further studies were necessary to confirm the premise. The difficulty in undertaking a similar study of labour expenditure is that extensive resources are necessary to enable the data to be collected. A simplified method of comparing productivity is required - activity sampling and production time studies on key trades can provide the simplicity. A small study using a combination of these methods was carried out by Langford in 1978. Activity sampling was used to evaluate overall levels of activity on DLO and contractors sites. With comparable levels of confidence the levels of activity observed on DLO and contractor sites carrying out local authority housing work of similar design

By and large the results on this count were comparable.
Activity rates varied from:

Site A	68%	DLO
B	69.7%	DLO
C	65.5%	Contractor

It was in the area of time studies on bricklayers that variances began to appear. On site A the bricklayers averaged 124 bricks per hour and Site C 165 bricks per hour. These results were obtained from a sample of direct observation of the bricklayers at work. A third measure of bricklaying production reconciled the measured progress on the site and the number of bricklayers hours (excluding labourer service) that had been inputted to achieve this volume of production. The results were as follows:

Site A	49.5	bricks per bricklayer hour
B	19.9	" " " "
C	42.8	" " " "

Site B was a somewhat unusual site since the DLO had taken over the very congested site from a contractor who had gone bankrupt. Furthermore a considerable amount of demolition and alteration had to take place before bricklaying could commence hence bricklayers were retained on the site although they had little actual brickwork to do. This explains the very low figure. Again, if one excludes this rogue result one can see that there is very little difference in the output achieved between the two sectos. However it must be pointed out that the limited sample precludes any firm conclusion but they merely are an indication of trends. The details of the research are to be found in Appendix A.

DLO s themselves have been conscious of the need to evaluate their productivity. In the main this has been done in monitoring the number of dwellings built per man/year. Manchester DLO recorded the following figures.(143)

Year	Dwellings completed	Dwellings per man/year
1972	682	1.25
1973	1051	1.33
1974	1303	1.5

Similar studies have been carried out in Sheffield which revealed a dwelling per man/year rate of 1.8 and in Hull of 1.6. The reported average for the building industry in 1974 was 0.98 dwellings per man and this included prefabricated housing.

Value for Money

Obviously the debate over productivity cannot be carried on in a financial vacuum. Detractors of DLO s have claimed that DLO s cost the ratepayers money, with competition between the two sectors being the safeguard

against inefficiency. Classical economic theory postulates that the weakest - in this context the inefficient - will go bankrupt whilst the more efficient will prosper. The market place being the arbiter of efficiency and cost effectiveness. But the relationship between efficiency and competition in the classical economic theory depends upon conditions and assumptions about the quality of this competition - these are never met in practice. Tender collusion, cover prices, material supply rings mitigate against this theory becoming practice. The economic theory which sustains the idea of staff competition depends upon builders going bankrupt, this is expensive for clients. In particular bankruptcies affect local authorities. For instance, the GLC have to set aside £4m to cover the effect of bankruptcies on their contracts. Also the high rate of bankruptcies have social and economic consequences - social in terms of the insecurity of employment it creates and the delays to much needed housing. Economic, since the bad debts incurred by bankrupts (in terms of materials etc) have to be spread across prices charged for construction products. Also the pre-bankruptcy period is usually characterized by bad workmanship. Further competition does not guarantee efficiency any more than public supply of construction services. For many who have used the 'efficiency' argument there is no case at all for public supply except where there is a socially beneficial reason (e.g. medicine) or where the private sector fails to provide the goods. This analysis is not value free.

On the other side there have been claims that public works should be restricted to DLO's and contractors of substance, with a test of turnover and liquidity for firms wishing to contract for public works. Other factors such as the management to operative ratio and annual turnover per employee might also be considered. Nonetheless in the debate over

DLO savings to the ratepayer needs to be considered in the here and now. Some useful comparisons can be made using performance reports of DLO s. Three can be cited (these may be unrepresentative since the DLO's have been sufficiently confident to publish them) Manchester, Lambeth and Stoke-on-Trent. In the period 1960-1974 Manchester had completed 71 housing schemes gained by competition and negotiation. The tenders or original valuations amounted to £33,877,092. The final costs of these 71 schemes came to £33,408,549, representing a saving of £468,543 or 1.4% of the original estimates. A similar picture is represented in school construction. Thirty seven schemes have been completed with an original tender or estimate of £3,663,503 whereas the final costs amounted to £3,533,115 a direct saving of £129,388 or 3.53% of value. Further savings can be observed if the difference between DLO tenders and those from the next lowest bidder is taken into account. If this was included the savings on schools would amount to £187,341 or 5.1%.

Manchester also claim that their DLO acts as a counter inflationary device since its existence will depress contractors prices. They substantiate this by quoting several contracts, these are detailed in Appendix B.

Stoke-on-Trent DLO also report major savings on new construction with a saving of £237,661 on £2,617,163 worth of work. The details of these are also shown in Appendix B. The London Borough of Lambeth Construction Services also record the financial benefits of using the DLO with savings of £1,003,230 in 1974/75 on a turnover of over £6m.[94] (See Appendix B).

But often the assessments of efficiency will go beyond the immediate tender price. An overall cost to value analysis may be necessary. This will incorporate the following criteria:-

(i) the actual cost

(ii) the speed of completion or compliance with the contract period

(iii) standard of work and maintenance costs.

Number (i) is widely known, number (ii) is often forgotten and number (iii) will be the subject of a separate section of this report. Looking at (ii) - if the contract can be completed on or before time then beneficial occupation can take place. This renders the council additional revenue from rent and rates. On a discounted basis this can be an important factor in the housing revenue account of a local authority. However there is no evidence to suggest that DLOs are any better than contractors at finishing the job on time.

In conclusion, we have seen how the global method of measuring productivity has its severe limitations - the variability of the result obtained gives rise to certain reservations about the general viability of such measurements. The direct method with its more detailed appraoch is obviously better for making inter-organization comparisons with the labour manhours expended being a reliable guide to productivity. Studies of this kind are, however, scarce and further work needs to be considered within this area. Finally the comparison of DLO tender prices with those of contractors has been considered. This last method will not of course evaluate productivity in the accepted sense of the word but merely compares costs. On the evidence available from the direct observation methods it is tentatively suggested that DLOs are as productive, if not marginally more so, than contractors when they are operating within the limited range of construction projects. If one accepts Professor Bishop's view that productivity is a function of experience in particular work types it is not surprising that this is the case. If this is the case then the conventional wisdom of

DLO s being inferior to private contractors because they are not subject to market disciplines needs challenging.

To challenge on the basis of the available evidence would be rash. More research, conducted on a wide scale, with adequate funding could draw sound conclusions. It is therefore a pity that many DLO s are being run down before such studies can be embarked upon.

CHAPTER 8

STATISTICAL COMPARISONS

Whilst accepting the reservations concerning productivity comparisons the Dept. of the Environment's statistical publications can shed some light upon the two sectors. This section discusses:- (i) the comparisons of operations employed and its impact upon stability of the workforce. (ii) The value of work undertaken by DLOs in relation to the whole. (iii) The distribution of trades within DLO organizations (iv) The trends in training in DLOs and (v) the structure of DLOs.

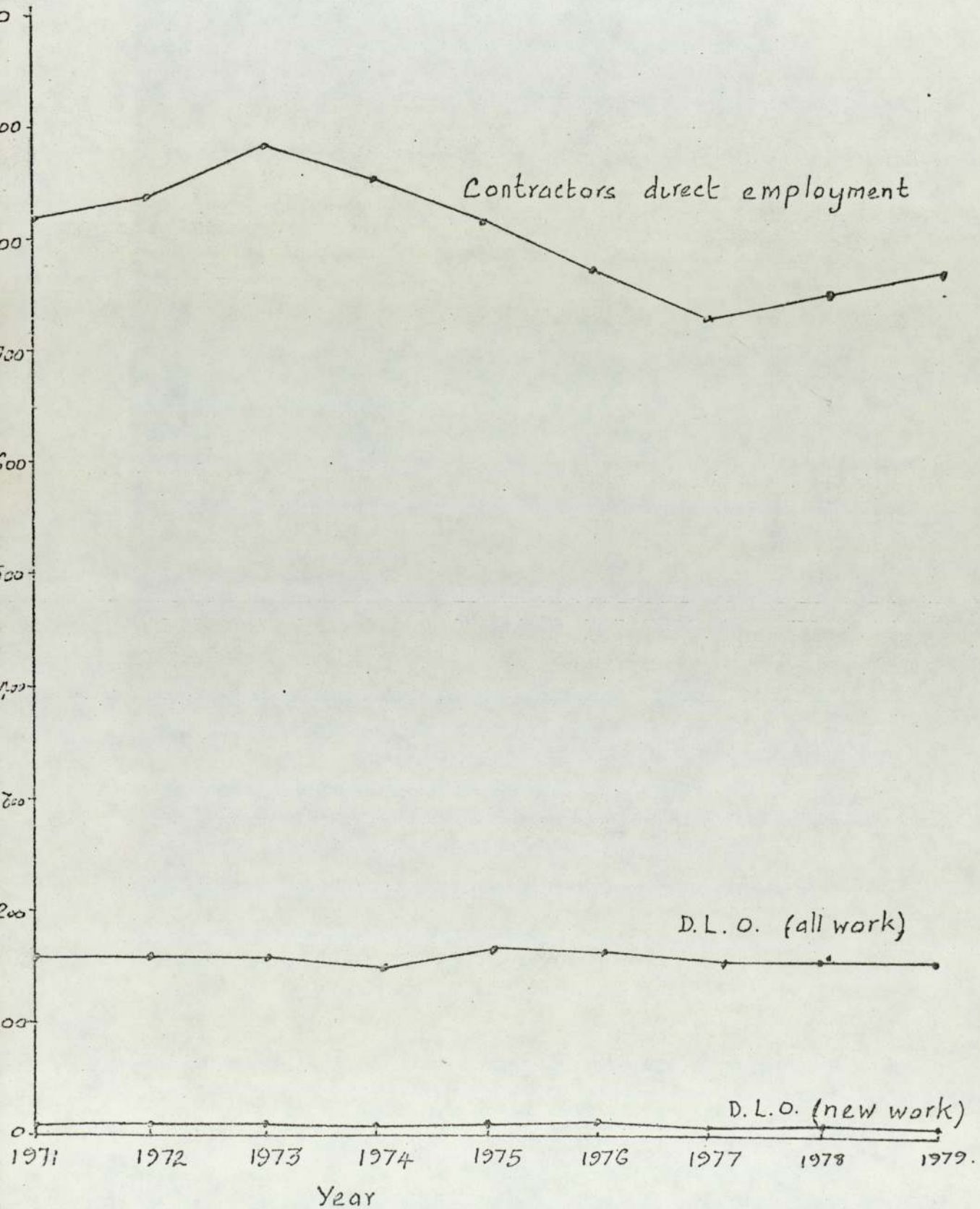
Employment

DLOs entrance into the new housing field came in the immediate post war period. At this time some 23,000 of DLOs total workforce of some 100,000 were engaged in new construction work. Some 20 years later the picture had changed dramatically. In 1971 only 16.3 per cent of the workforce were engaged in new work. By 1977 this proportion had fallen to 13.6 per cent. The picture for the proportions of new work done by DLOs in relation to the contractors workforce has also declined in the period of 1971-1977. In 1971 the DLO employees engaged upon new work, as a proportion of the recorded contractors workforce was 2.9 per cent. However if the figures are matched up for DLO employment as a whole (new works, repairs and maintenance) the percentage of DLO employment as a proportion of the whole workforce a somewhat reversed trend is shown. In 1971 DLO s employed some 17.5 per cent of the total, by 1977 this proportion had risen to 18.5 per cent, So, the DLO labour force has increased as a percentage of the total whilst the emphasis upon new works declined. What are the reasons for this? Perhaps the most significant is the campaign against DLOs in carrying out capital works - this will

have affected the confidence of many DLOs to carry out new projects. Secondly the Government circulars 57/69 and the CIPFA report demanding that DLOs obtain work in open competition will have influenced the situation. Thirdly the cut-backs in public spending with strong emphasis upon capital projects for local authorities will have deprived DLOs of much of the base load for new construction. These may be some of the reasons for the decline in the labour employed on new work. The increase in the total proportion is less easy to explain. But the first point is that construction industry has been in crisis since 1974/75 workload has been falling, with it contractors have been shedding labour (in 1971 820,700 workers were recorded, by 1977 this had fallen to 729,000) the stabler working conditions in DLOs have not meant such a drastic fall. In this way the percentage of workers in DLOs will be artificially inflated. Another reason is the shift away from capital projects to rehabilitation of existing property. As much of the older type housing is in local authority ownership DLOs were well placed to undertake this new aspect of the construction market. The relative stability of DLO employment in contrast to that of the private sector can be seen in graph No. 1A Table 1.

It should be pointed out at this juncture that the DoE records merely record 'direct' employment. This influence of LOSC cannot be discounted. The nature of this kind of employment will mean that in a slump these people will be the first to be laid off. If these people were taken into account then the contractors graph could show a more emphatic downward trend. The magnitude of this is difficult to evaluate. The point really being that DLOs offer the stability of employment demanded by many observers of the construction industry. This was recognized by

Graph I: Trends in Employment



Operatives Employed

YEAR	DLOs		TOTAL	CONTRACTORS	PER CENT EMPLOYED BY DLOs COMPARED TO CONTRACTORS	
	NEW WORK	REPAIRS			NEW WORK ONLY	TOTAL
1971	28,454	145,542	173,996	820,700	2.86	17.49
1972	28,041	150,433	178,474	839,400	2.75	17.53
1973	27,509	148,100	175,609	885,150	2.59	16.56
1974	25,831	138,453	164,284	857,800	2.53	16.07
1975	25,886	151,176	177,062	997,362	2.60	17.75
1976	27,545	145,036	172,581	774,800	2.91	18.22
1977	22,485	143,095	165,580	729,000	2.51	18.51
1978	20,912	141,863	162,775	750,000	2.78	21.70
1979	18,871	142,382	161,253	771,000	2.45	20.91

the Office of Population and Censuses Survey in a report of May 1980 "compared to the private sector, employment in Local authority and Government building and maintenance departments represents something of a haven of stability."(106) The report also showed that the public sector is more likely to provide employment for older workers than the private sector. Here again DLOs provide a social facility since in the current economic situation older workers are at particular risk with regard to unemployment. DLOs provide work for the older worker who may have difficulty of finding other work.

Values of Output

In this respect the value of work done by DLOs parallels the trend in employment in 1972. Almost two per cent of the total value of output for the construction industry was taken up by DLOs doing new work. This had fallen to a little over 1.8 per cent by 1977 (despite a slight aberation in 1976 when the per cent was 2.07). This fall in value of new work is not matched with the fall in total work carried out by DLOs. This has increased from 8.7 per cent of the total output in 1972 to 10.40 per cent in 1977. So not only does the employment trends show the retreat from new work but the output figures confirm this. The trends in value of output are shown in graph II, Table 2. Inflation obviously distorts the trends, but the gradients of the lines indicate that the gap in total value of work done is widening. Graph IIA shows the figures corrected for inflation.

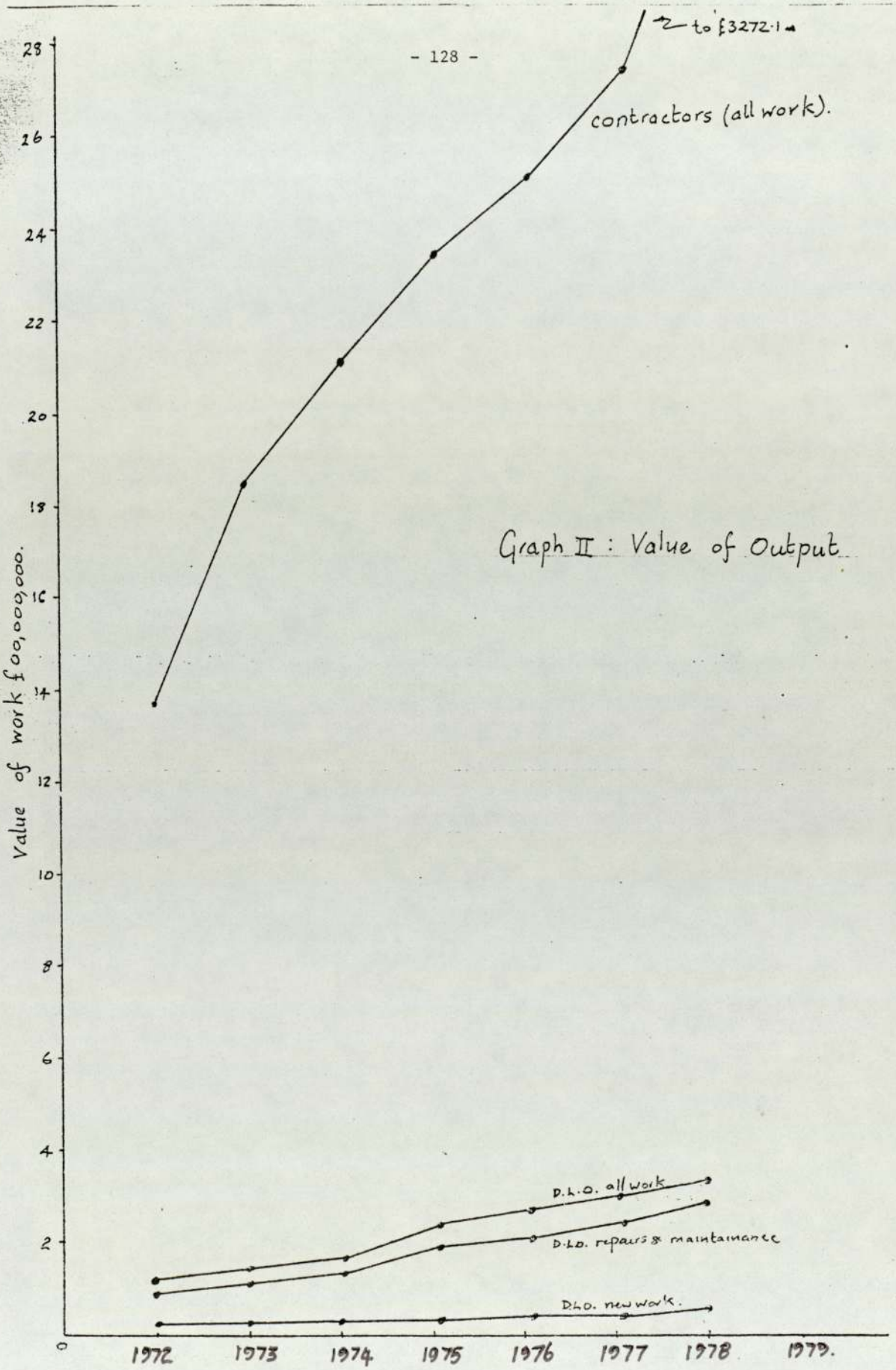
Some observers might remark that DLOs are carrying out roughly 10 per cent of the total output with 17-18 per cent of the workforce. But the output figures are composites of labour and materials. With the workload

of DLOs being mainly in the less material intensive and more labour intensive maintenance/repairs sector it is not surprising that this diversity occurs. The already commented upon 'transfer' versus 'market' prices will also affect this.

The distribution of trades within DLOs workforce reinforces the dominance of maintenance and repairs as a feature of DLO work. The most populated 'trade' is that of painters followed by carpenters and joiners, paviours then bricklayers. The trends in employment through the trades are mapped out in Graph III, Table 3. There are two noticeable features here. The stability of the major trades and the post 1974 decline in these areas of employment not directly related to house or other public utility maintenance - namely labourers and paviours. However these figures may be misleading because often DLOs could not obtain skilled operatives in the boom period of pre 1974. The apparent stability may be more related to market conditions than inherently sound manpower planning by DLOs.

Although DLOs have never been heavily involved in the civil engineering part of the construction market, they have been involved to some extent. The civil side of construction has been severely hit by public expenditure cuts and the smaller skill content probably explains the reduction of the labour force in these trades mentioned above.

The manual and supervisory staffs have not been affected by such cutbacks as shown in Graph IV and Table 4.



Graph II : Value of Output

Value of Work Done

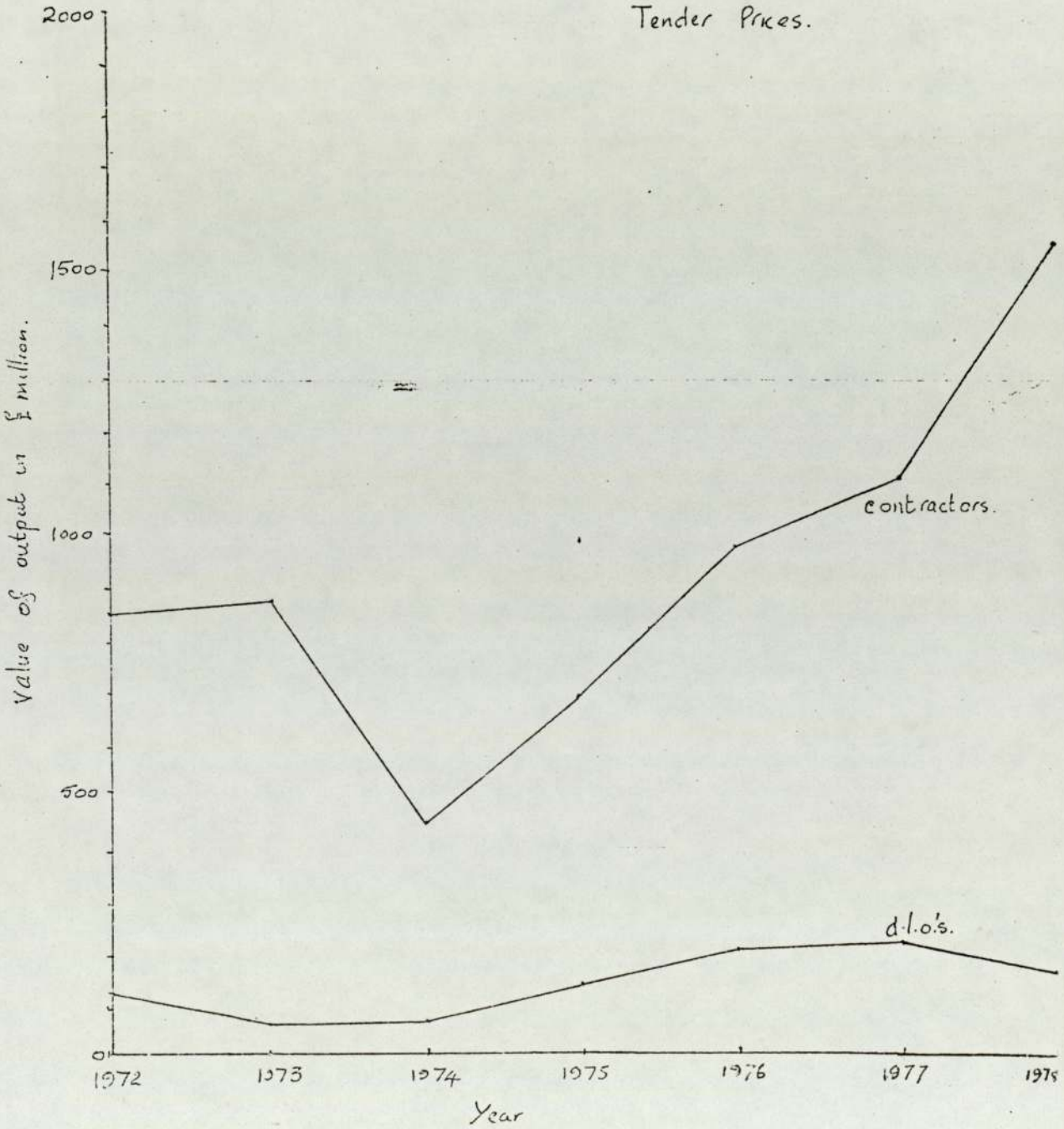
YEAR	DLOS			CONTRACTORS		DLOS	
	NEW WORK £m	REPAIRS £m	TOTAL £m	Total Value. £m.	D.L.O. NEW WORK AS A % OF ALL WORK	NEW WORK AS A % OF DLO WORKLOAD	% OF TOTAL WORKLOAD
1972	29.2	99.8	128.9	1356.0	1.96	22.65	8.68
1973	35.1	117.3	152.5	1773.7	1.77	23.02	7.71
1974	38.2	139.9	178.1	2074.1	1.69	21.45	7.90
1975	47.7	200.6	248.3	2312.9	1.86	19.21	9.69
1976	57.0	220.6	277.6	2479.8	2.07	20.53	10.06
1977	56.0	259.6	315.6	2717.8	1.84	17.74	10.40
1978	57·1	288·6	345·7	3272·1	1·74	16·61	10·56

TABLE 2A

YEAR	CATEGORY	NEW WORK HOUSING	NEW WORK NON-HSG	REPAIRS AND MAINTENANCE HOUSING	REPAIRS AND MAINTENANCE NON-HSG	TOTAL
1972	Value(£m)	9.4	19.7	38.9	60.9	128.9
	% of total	7.29	15.28	30.18	47.25	
		+ 22.57		+ 77.43		
1973	Value	12.0	23.1	51.0	66.3	152.5
	% of total	7.87	15.15	33.44	43.48	
		23.02		76.92		
1974	Value	15.6	22.6	61.8	78.1	178.1
	% of total	8.76	12.69	34.70	43.85	
		21.45		78.55		
1975	Value	20.2	27.5	90.8	109.8	248.3
	% of total	8.14	11.08	36.57	44.22	
		19.22		80.79		
1976	Value	26.1	30.9	103.8	116.8	277.6
	% of total	9.40	11.13	37.39	42.08	
		20.53		79.47		
1977	Value	27.1	28.9	122.4	137.2	315.6
	% of total	8.59	9.16	38.78	43.47	
		17.75		82.25		
1978	Value	26·4	30·7	132·0	156·6	345·7
	% of total	7·63	8·88	38·18	45·29	

The type of work undertaken by DLOs and its relation to the Whole Value.

Graph II A : Value of output related to 1972 Tender Prices.



Graph III : Trends in d.l.o. employment by trade.

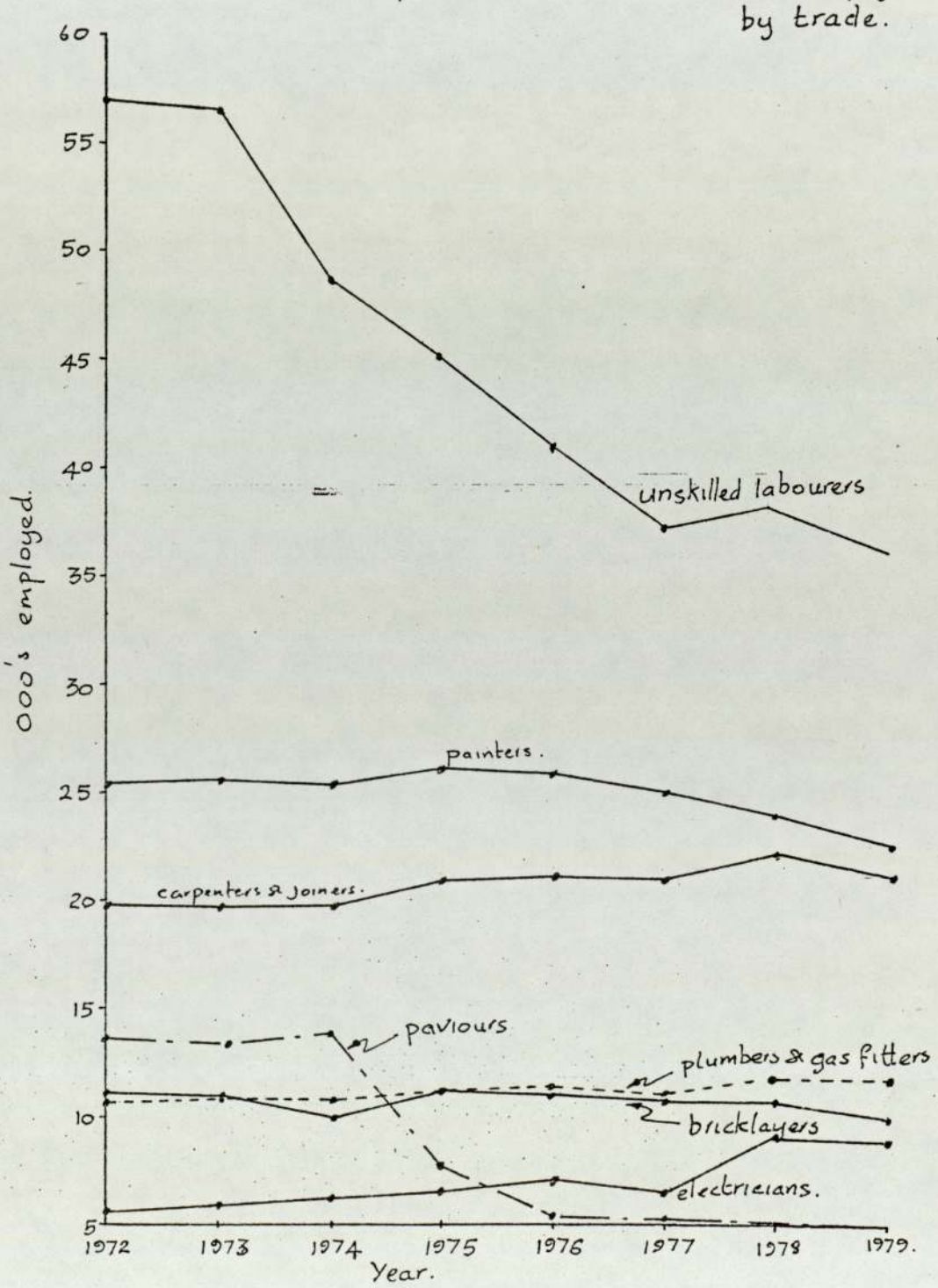


TABLE 3

CRAFT BREAKDOWN OF DLOs

TRADE	1972	1973	1974	1975	1976	1977	1978
*Carpenters & Joiners	19169	18937	19170	21488	22149	22092	22229
*Bricklayers	11351	11005	9406	11774	11593	11053	10634
Tilers	1125	1239	1244	1330	1744	1340	1326
*Plasterers	2765	2883	3012	3324	3420	3149	3105
*Painters	24612	24976	24745	26191	25835	24167	23741
*Plumber & Gas fitters	10513	10796	10720	11837	12145	11669	11806
Heating & Ventilating	620	691	664	635	786	807	854
Glaziers	854	496	473	588	654	653	739
*Paviours	13351	13065	13468	7567	5358	5211	4322
Scaffolders	457	493	527	576	821	666	685
Steel erectors & fixers	79	76	85	106	104	155	N/A.
Electricians	5371	5778	5858	6282	6862	6329	6513
Mech. Plant Ops.	7084	6436	5802	6778	6599	6172	6028
Other Trades	6850	6641	5481	17091	16491	18518	17550
All other occupations	18458	16901	15605	17368	17757	16967	16129
* Unskilled labourers	55815	55216	47757	44127	40263	36633	37932.

*Trades plotted on graph.

Graph IV Trends in d.l.o. employment of supervisory & management staff

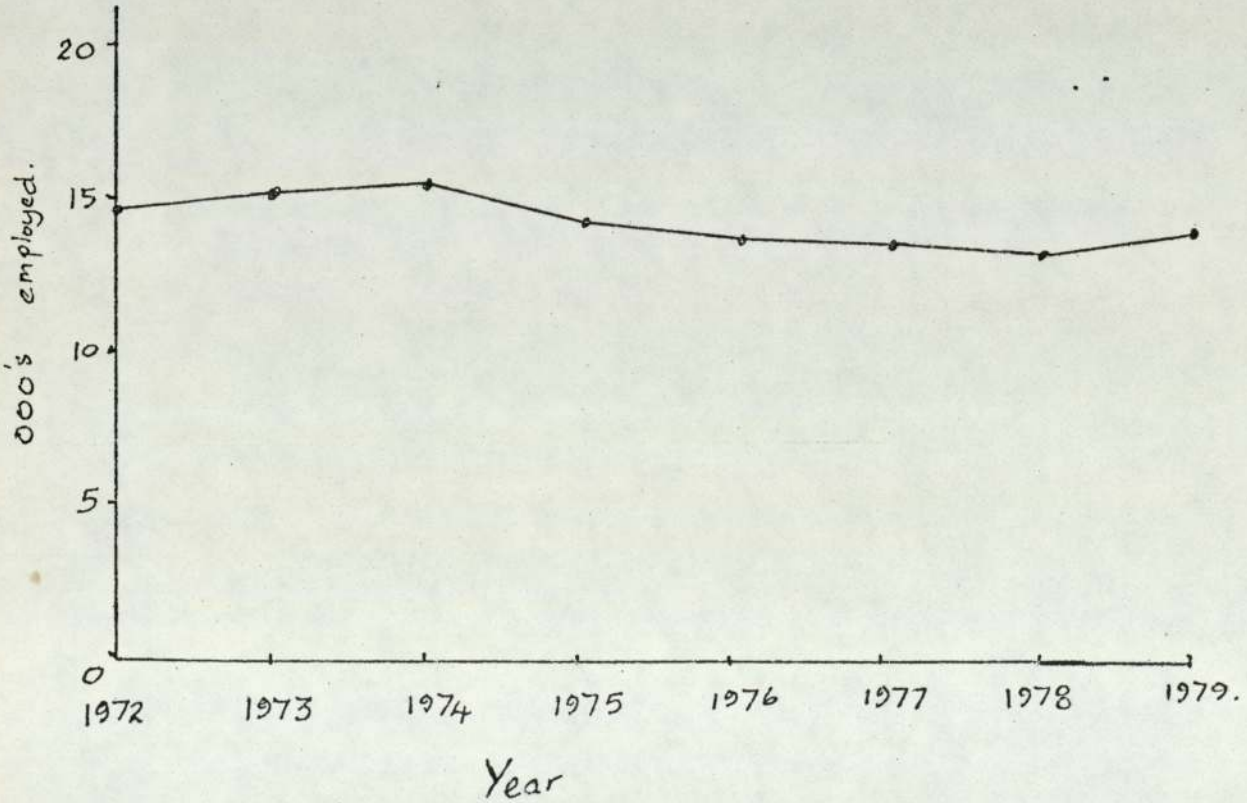


TABLE 4

MANAGERIAL & SUPERVISORS STAFFS DLOs

NUMBERS							
72	73	74	75	76	77	78	79.
14,796	15,099	15,432	14,121	13,675	13,600	13695	14280
per cent of operative staff							
8.29	8.59	9.39	7.98	7.92	8.21	8.41	8.86

Graph V : Trends in trainee employment in d.i.o.'s by trades.

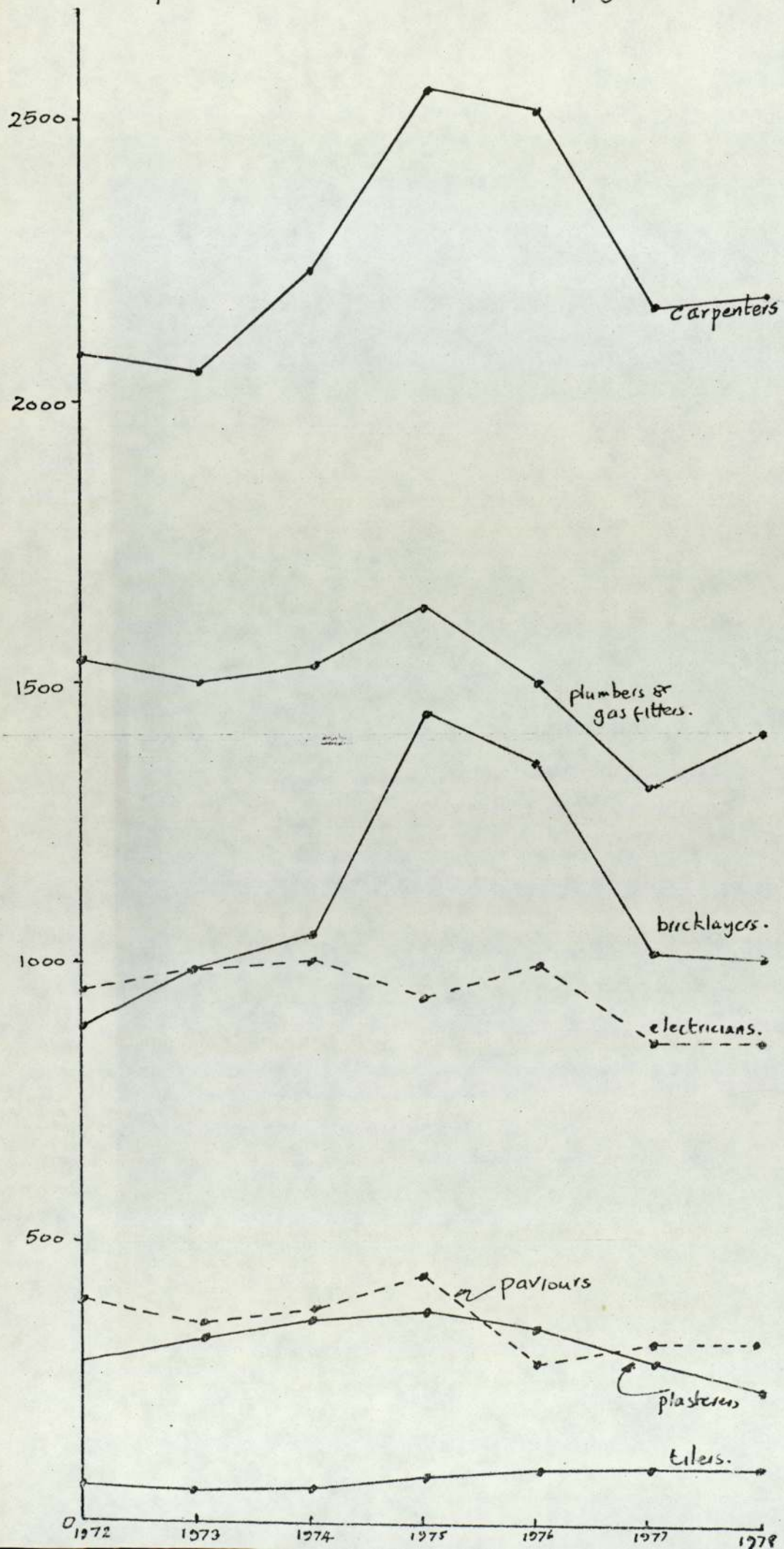


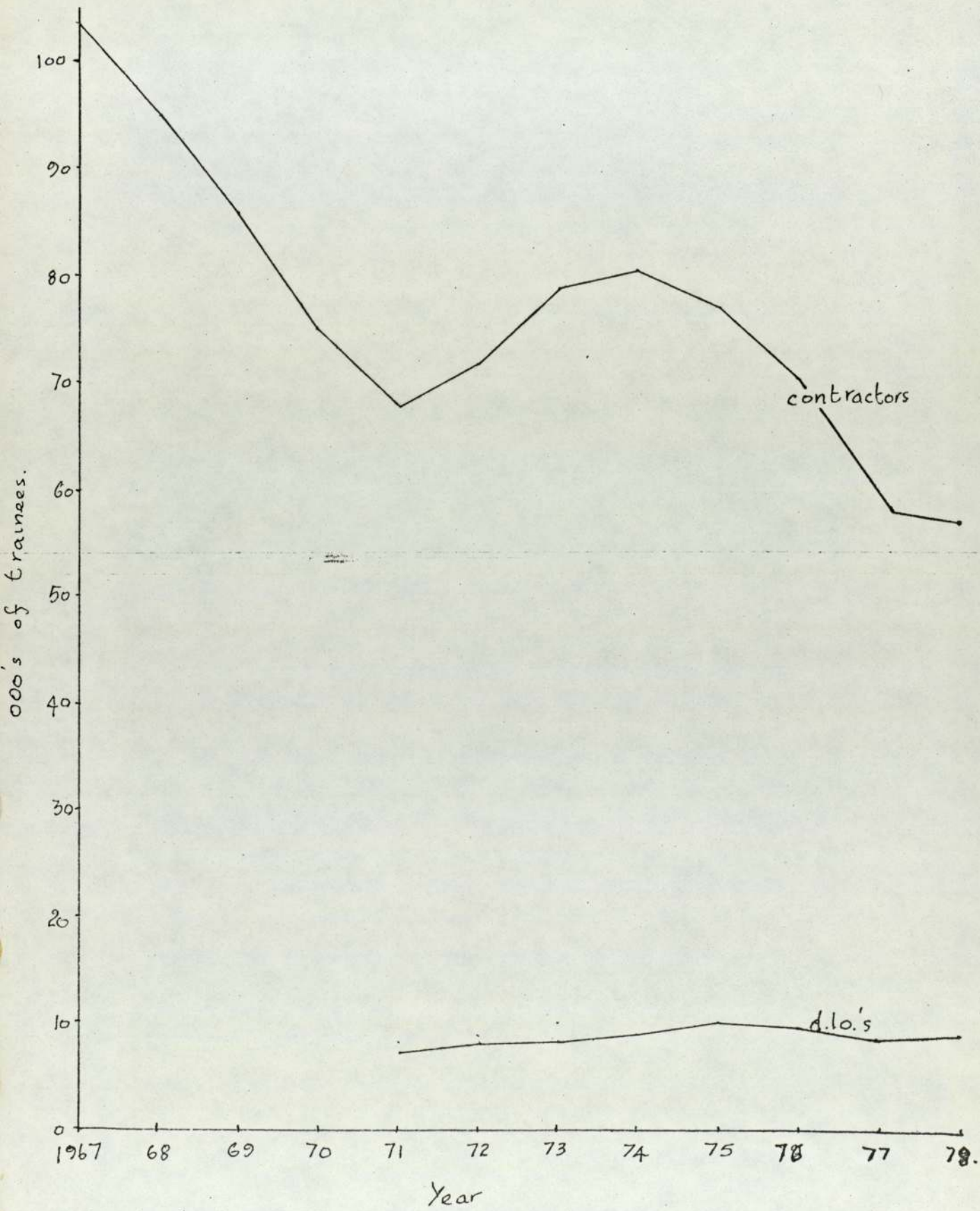
TABLE 5

APPRENTICES ENGAGED IN DLOs

NUMBER

TRADE	1972	1973	1974	1975	1976	1977	1978
Carpenters & Joiners	2049	2019	2195	2514	2488	2140	2185
Bricklayers	867	973	1030	1424	1343	1006	1018
Tilers	65	57	69	77	96	93	109
Plasterers	283	322	355	373	346	287	248
Painters	1825	1839	2001	2190	2145	1829	1820
Plumber & Gas Fitters	1511	1475	1502	1613	1481	1301	1408
H & V Engineers	54	76	78	75	90	80	89
Glaziers	20	25	33	31	33	29	29
Paviours	391	351	379	441	289	316	327
Electricians	933	974	993	929	986	849	867
Mech. Plant Ops.	14	28	47	21	5	10	4
Other Trades	196	206	299	457	451	792	950
=	8208	8345	8981	10420	10025	8732	9054
			per cent of trained personnel				
Carpenters and Joiners	10.69	10.66	11.45	11.70	11.23	9.69	9·83
Bricklayers	7.64	8.84	10.95	12.09	11.41	9.10	9·57
Tilers	5.77	4.60	5.55	5.79	7.22	6.94	8·22
Plasterers	10.24	11.17	11.79	11.22	10.11	9.11	7·99
Painters	7.42	7.36	8.09	8.36	8.30	7.57	4·72
Plumbers & Gas Fitters	14.37	13.66	14.01	16.63	12.19	11.15	11·93
H & V Engineers	8.71	10.99	11.75	11.81	11.45	9.91	10·42
Glaziers	2.34	5.04	6.98	4.88	5.05	4.44	3·92
Paviours	2.93	2.68	2.81	5.83	5.39	6.06	7·57
Electricians	17.37	16.86	16.95	14.79	14.37	13.42	13·28
Mech. Plant Ops.	0.19	0.44	0.36	0.31	0.07	0.14	0·06
Other Trades	2.86	3.10	5.46	2.67	0.11	4.28	5·41

Graph VI : Trends in trainees entering the construction industry



Training Patterns

Again DLOs have a good record in this particular area of these activities with consistent levels of training being recorded. This has been achieved without the access to CITB grant facilities which are afforded to firms operating in the private sector. (Local authorities subscribe to the Local Government Training Board - this body is more concerned with the development of administrative clerical and financial skills than with those directly allied to the building industry). The picture with regard to training is presented in graph V and Table 5. (The peaks and troughs seem emphasised due to the small vertical scale). The eveness of the overall picture is shown in Graph VI as compared to the contractors annual intake.

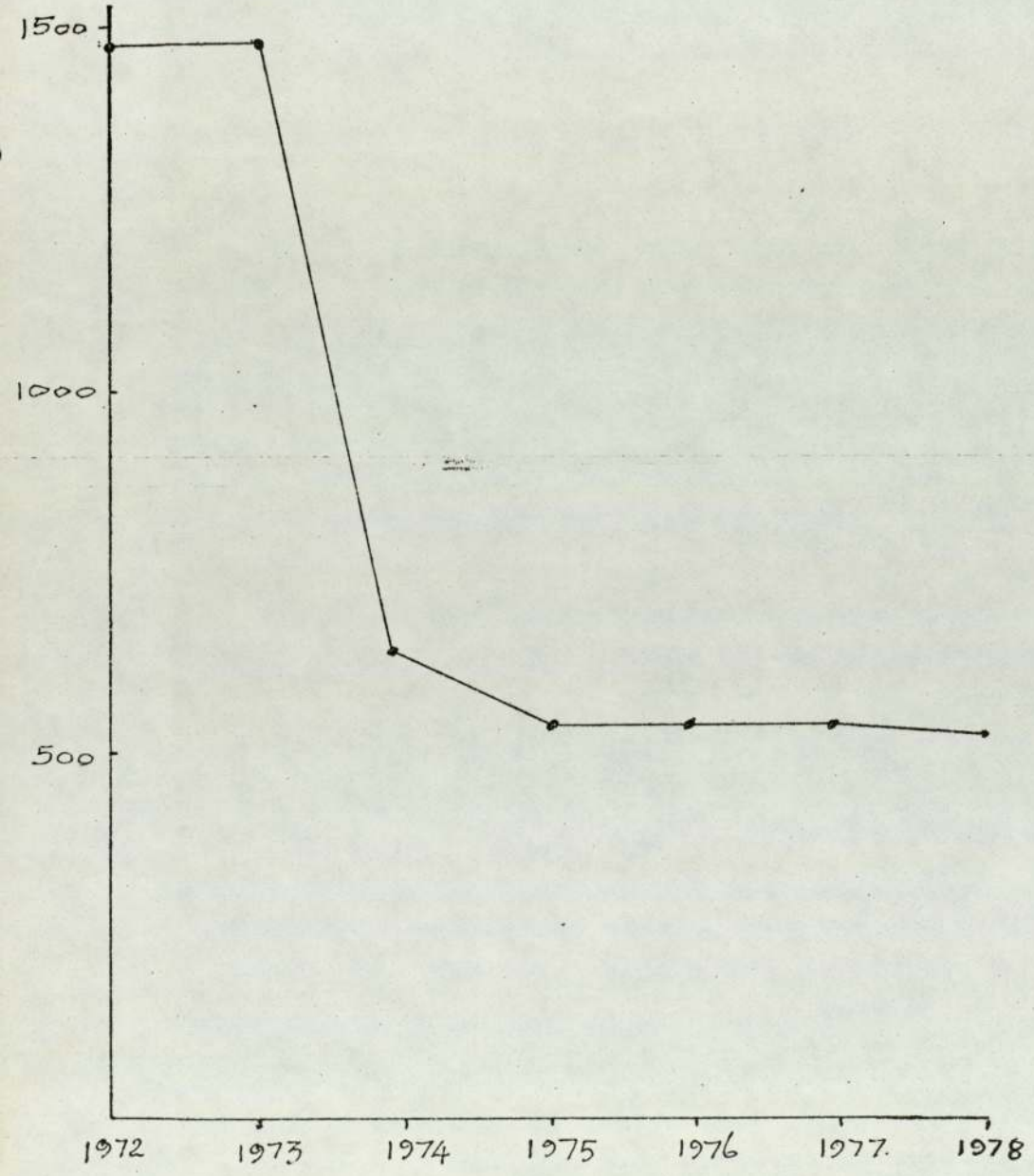
The Development of DLOs

As commented upon the reorganization of local government gave a stimulus to DLO growth. But not only do more local authorities have DLOs but in parallel with the construction industry their has been a tendency for the organizations to grow. Graph VII compares the number of DLOs against years, Graph VIII looks at the number of DLOs as matched against their size. Graph IX compares the number of employees against size of DLOs.

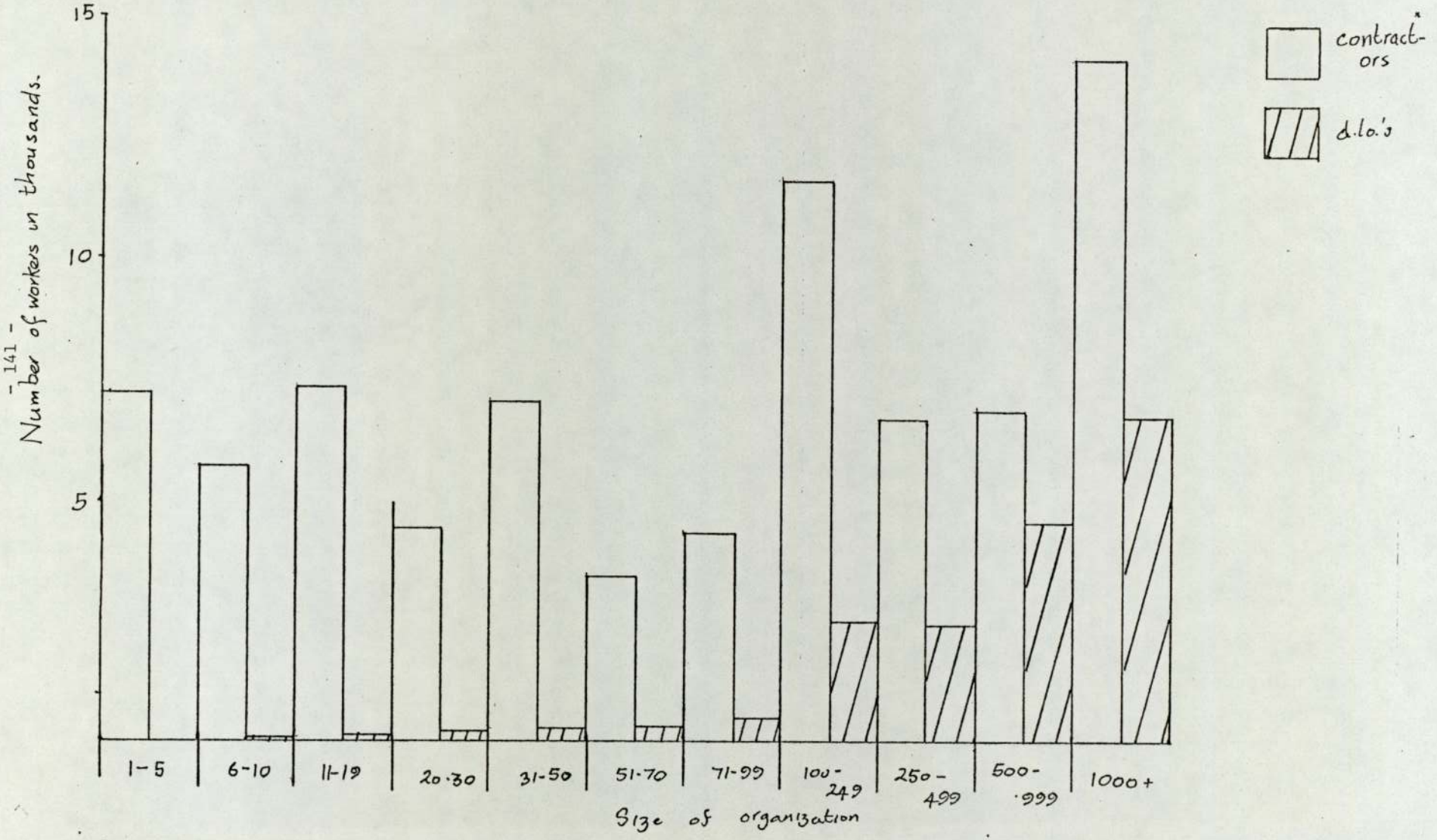
The point worthy of note on Graph VII is the marked change in the number of operating DLOs yet the values of output and employment did not change in this year.

It is of interest in Graph VIII to note where employment occurs in DLOs and contractors organizations. The eveness of growth of the DLO is compared to the variability in the private sector.

Graph VII : Numbers of d.lo's.



Graph VIII : Size of organization against employment in 1976



Graph IX : Numbers of d.l.o's in relation to their size.

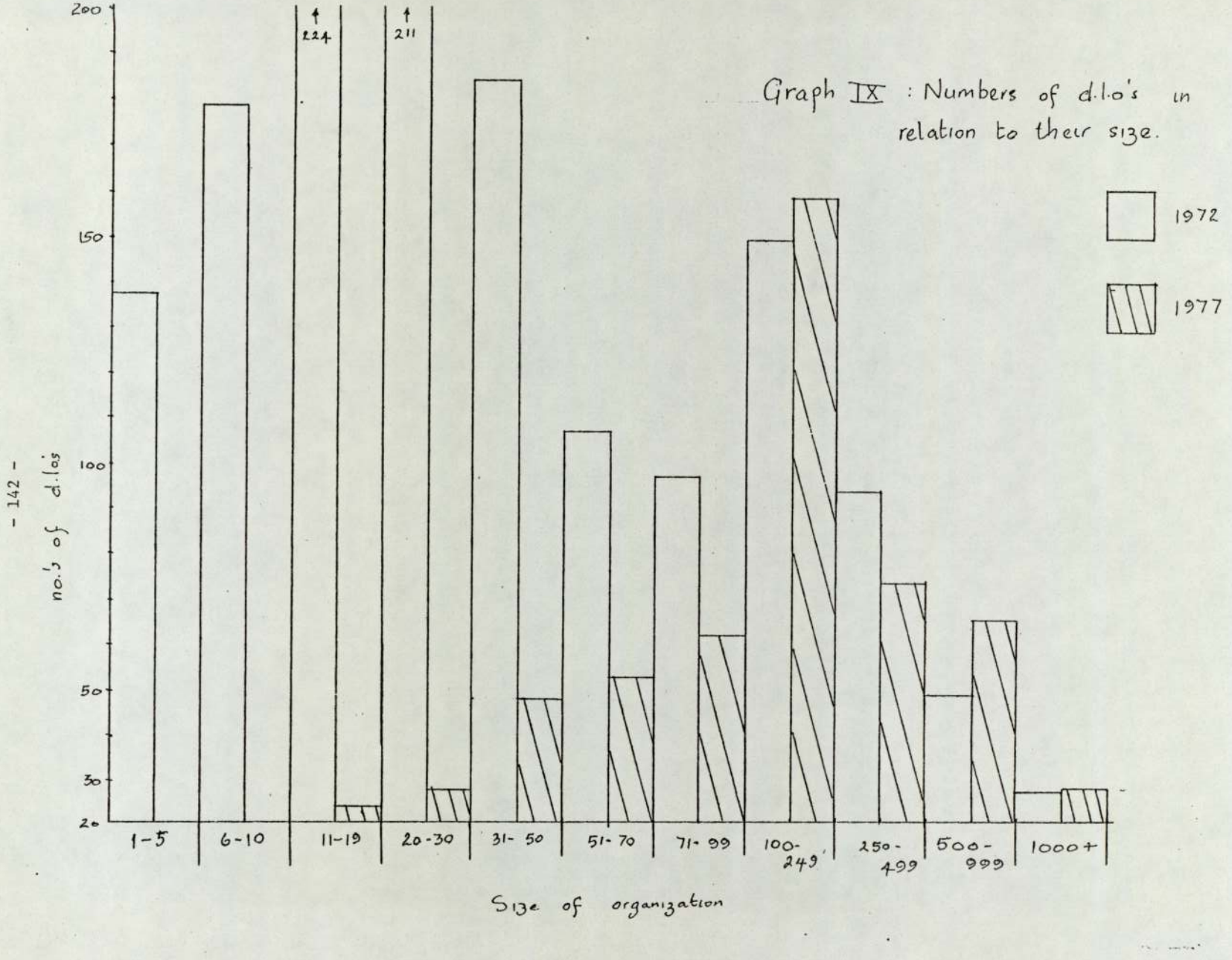


TABLE 6

NUMBER OF DLOS/OPERATIVES EMPLOYED

ize of orgn.

0	288/0	231/0	79/0	11/0	12/0	10/0
1-5	137/462	144/458	32/101			
6-10	179/1421	174/1392	28/221	23/292	20/263	23/270
11-19	224/3263	233/3416	31/464			
20-30	211/5176	210/5198	43/1096	22/565	24/614	27/676
31-50	183/7051	179/6942	57/2240	49/1916	53/2134	49/1946
51-70	107/6352	101/6053	57/3428	54/3172	55/3273	52/3090
71-99	97/8009	97/8066	61/5173	59/5073	61/5233	61/5139
100-249	150/23838	153/23986	159/25300	155/25046	151/24701	159/25605
250-499	93/32686	89/31484	78/25438	76/26065	76/25562	72/24178
500-999	49/35914	48/34083	63/44804	64/47316	65/46946	65/45275
1000+	27/54302	26/54531	29/56019	32/50843*	29/47243*	29/48954*
5000+				3/16810	3/16612	2/10447
YEAR	72	73	74	75	76	77
	1457	1457	638	537	537	539

Use of DLOs

*this bracket includes 1000 - 4999

Coding - Looking at the 1972 column and in the 31-50 row then there were 183 DLOs in this size bracket employing 7051 workers. By 1977 the number of DLOs in this size bracket had been reduced to 49 employing 1946 workers.

CHAPTER 9

MAINTENANCE REQUIREMENTS OF CAPITAL WORKS

The strong emphasis of DLO operations upon maintenance has already been quoted. Most local authorities have a direct labour force of some kind but in the main such direct labour is engaged upon maintenance of local authority property rather than involved in new capital works construction. Despite DLOs strong commitment to maintenance, contractors still account for slightly less than half of all estimated expenditure on building maintenance. The question of organization by local authorities is not the principle theme of this report but in order to illustrate the underpinnings of a decision whether DLOs or contractors are to be used the advantages and disadvantages of using direct labour for maintenance are summarized. The advantages are as follows:-

(1) a swifter response to emergencies can be obtained with direct labour - this facilitates greater flexibility in terms of the hours worked and the work to be carried out. Where maintenance work is carried out by a contractor the instructions to commence work must be passed through another organization which may not be able (and willing) to withdraw men from the works as quickly as the situation demands. Furthermore, the existence of council standing orders stating that contracts must only be given on a basis of competitive tendering will obviously delay matters further. Losses in terms of the additional damage caused or the loss of a facility should be taken into account when comparing the costs of direct labour and contract.

(2) Direct labour operatives can, by experience, acquire an

intimate knowledge of the buildings to be maintained and the user requirements for maintenance. These factors will simplify the communication of job information. Also the operative will develop a background knowledge of the situation with less risk of personal misunderstandings with the building user. The knowledge of the location of stockpiles, switches, manholes stopcocks etc. will also be immediately available to the directly employed employee. Additionally better working relationships between the DLO and the client department of the local authority can be engendered.

(3) Better quality control of maintenance operations is possible with direct labour. The DLO can employ people of known and tested ability at maintenance work - versatility, ability to improvise and a sympathetic nature will be important skills for such a person. The directly employed operative will have a greater sense of identity with the firm and will see maintenance as a continuing process in which defective work will only create more problems at a later date. Also negative motivation may apply in that the directly employed person is within the firm and therefore poor quality work is easily referred back to him or her after the event. There is thus a greater incentive for the directly employed operative to do the work correctly the first time.

Secondly, it is important to consider the maintenance costs over a period of time rather than marginal savings on an individual job. Because contractors are likely to see each maintenance

contract as a one off there is more likelihood of skimping the work. For example, preparatory work for external painting, if skimped, will lead to a shortened period to the next painting. In this sense direct labour can ensure a higher quality and a longer lasting job because of the durability of the labour force.

(4) A directly employed labour force can be closely monitored for performance and output. Usually where work is let out to contract lump sums will be involved in evaluating the price of various types of maintenance work. These are more often responsive to market conditions than the work content. Such an evaluation is of little value when local authorities are trying to programme a budget planned maintenance programme, manhours are far more important in this respect. Also, as the GLC Maintenance Department has shown, experimentation with different methods can take place with direct labour. Such experiments can monitor manhours associated with various technologies, incentive schemes and administrative systems - this will be important for local authority planning.

(5) Where the work involves a security risk it is better to have a tried and trusted employee rather than an unknown employee of a contractor.

On the other hand directly employed labour on maintenance work has its disadvantages - namely:

(1) A lack of specialization may be observed in DLO maintenance

departments. This fact is, of course, not peculiar to DLOs. Those firms operating in the private sector who undertake maintenance are characterized by undercapitalization and a high bankruptcy rate. In fact most of the large DLO organizations are demonstratively better equipped than the small, ad-hoc building firm.

(2) The final costs of DLO maintenance work sometimes considerably exceeds the original estimate (although this is not an unusual phenomenon for the construction industry). The Comptroller and Auditor General observed in 1967-68 that direct labour was abnormally expensive in maintaining hospital buildings.(58) However comparing tenders of contractors is not necessarily a sound way of measuring efficiency. Contractors submitting low tenders for maintenance work is not automatically the most efficient way. A low tender may be the result of inaccurate estimating or a reflection of the desire to obtain work at the expense of quality. DLOs do not make 'profit' (in the sense of generating surplus value) and therefore must measure efficiency in other ways. One reasonable way in which this may be done is to compare the labour hours expended and the cost of materials but as each maintenance job is different accurate comparisons are difficult.

Another problem arising in attempting to compare maintenance performance is that the contractor is free to bid anywhere and is not restricted to a particular client (the same position occurs in capital works). As such the contractor, in time of boom, may select jobs which present least problems and maximum

profit without regard to the social necessity of maintenance. Therefore DLOs are often placed in the position of having to undertake jobs, by nature of their smallness and/or complexity which are not attractive to contractors. The point about the benefits of continuity of work has previously been made in this report. In maintenance continuity of work within an overall plan is one of the biggest economic advantages to be gained from direct labour. If DLOs were required to tender for each maintenance job then uncertainty would be introduced to the planning and uneven flow of work would follow coupled with under-utilization of plant and inhibiting forward bulk purchase of materials.

Also the nature of maintenance obviates direct comparison. In the field there are many small-time consuming jobs which fall to direct labour. In a DHSS document "Maintenance of Buildings, Plant and Equipment"(59) it was stated that up to 50 per cent of the total maintenance budget was absorbed by minor breakdowns and ad-hoc requests. Undoubtedly some of these demands could be eliminated by planned maintenance but by no means all.

Finally, far too often the efficiency of DLOs has been guaged against performance on individual contracts. A DLO is not able to balance gains on one contract against losses on another. Similarly the sole criterion of costs need to be balanced against the benefits which are attainable. The concept of value measured against costs will be returned to later on in the chapter.

(3) It is often stated that operatives are often underemployed in DLOs. Short response times to emergencies may necessitate this. In such circumstances efficiency is best measured by the average time taken to rectify the problem. Nonetheless, where such situations are prevalent one may question the extensive use of expedient emergency services against the possibility of planned maintenance.

(4) Some criticism of direct labour is founded on the assertion that some costs are hidden and one local authority auditor has questioned how it can be established that a DLO is effectively competing with contractors when it operates departments for which the costs are unknown.

(5) The risk allocation may also be an important point in maintenance work. Where a local authority employs contractors on a lump sum basis then extra costs incurred by unforeseeable circumstances are usually the contractors responsibility and as a result cannot be passed on to the client. This is in fact more a theoretical statement than one of practice. More often smaller jobs associated with maintenance will be based upon cost reimbursement and therefore throws the financial risk back to the client who is demanded to control the job method - not always an easy proposition with small, often disorganised, contractors.

Such arguments are, of course, central to the use of DLOs for exclusively maintenance work but the major theme of the work is the impact of DLOs on capital works. Nonetheless, the points

included above have some bearing on the matter. In particular the question of cost in use alluded to in point b of the 'disadvantages' is important. In essence the maintenance requirements of new buildings is a reflection of the quality of construction in the first place. Increasingly there has been a recognition that the tender price of work should not be the sole criterion of efficiency, with a cost/value analysis being a more convincing measure. Such a cost/value analysis will include the standards of work and maintenance costs attained. This is pertinent to the point. It is often difficult to undertake measurements on this question since comparable conditions are often not available. Design, specifications, location and the social basis of the development will often vary. However the claims that DLOs can produce better quality work and hence a better cost/value job have been offered some substance by the available evidence. In the immediate post-war period the then London Borough of Edmonton set a maintenance budget of £10 per house. Cyril Lacey reporting in Social Services News[11] recorded that the DLO built estates were easily able to conform to this budget whereas contractor built estates were never able to get within this financial limit. More recently Manchester sought a basis on which comparisons could be made. In 1974 they found two estates which had almost identical characteristics. The results are presented overleaf.[144]

In London the Auditor for the GLC has shown that it would have cost the GLC an additional £8m per year (at 1975/76 prices) if the Housing maintenance work done by direct labour were to be placed with contractors who submitted the lowest tender[145] (see Appendix E).

	DLO CONTRACT		CONTRACTOR CONTRACT	
	Total (£)	Unit Cost (£)	Total (£)	Unit Cost (£)
External Repairs	10213	6.90	13814	10.77
Internal Repairs	9831	6.64	11069	8.63
Vandalism	862	0.58	1195	0.93
	20906	14.12	26078	20.33
Paths	159	0.11	598	0.47
Pointing	-	-	77	0.06
Fences/Gates	32	0.02	262	0.20
	191	0.13	937	0.73
Special Sanctions	69	0.05	247	0.19
Relet Repairs	897	0.59	3638	4.39
Relet Decorations	618	0.42	3352	2.61
	1566	1.06	9237	7.19
Grand Total	22663	15.31	36252	28.25

As one can see from these results that DLO built estates have an 84 per cent smaller maintenance bill but this result should be evaluated with a little care. Items such as vandalism, relet repairs and relet decorations could more easily be associated with factors than the quality of the original building. If one discounts these factors the unit costs are DLO £13.65 to Contractor £20.62. This reduces the DLO advantages to 51 per cent. The magnitude of the advantage cannot be denied.

More recent research in this area has been carried out by Langford in Wandsworth. Initially the Housing Department refused to release the figures, due to the fact that the Council was running down the DLO and the results would be sensitive. Further enquiries directed through a local councillor revealed the following figures on eight estates (overleaf).

So superficially the available data confirm the assertion that DLO capital works produce better quality work in terms of the post contract maintenance requirement. Again it is accepted that the information presented is only a small sample and only tentative conclusions can be drawn. The limitations that have been placed upon capital works by DLOs will obviously put restrictions upon similar comparisons for current work but records should be available to compare maintenance requirements of existing estates. This is an area for further work. However the available data has been analysed overleaf.

One can see from the figures that the maintenance requirement 'league'

Unit Costs of repairs in £

	DLO SCHEMES						CONTRACTORS SCHEMES					
	Robertson St.	Larch Rd.	Baylin Rd.	Average Low Rise*	Livingstone IV	Overall Average	Lochinvar Estate Extension	Gideon Rd.	Balham Park Rd.	Average Low Rise*	York Rd II	Overall Average
1976/77												
Routine Repairs	64.35	32.92	38.14	47.27	74.91	62.70	41.35	50.89	20.04	36.07	56.98	48.44
Ext. Decs.	-	-	-	-	-	-	-	-	-	-	-	-
Special Repairs	-	-	-	-	-	-	-	-	-	-	-	-
1977/78												
Routine Repairs	75.34	62.23	54.92	67.42	128.45	92.51	139.29	31.36	37.62	71.37	67.95	69.82
Ext. Decs.	-	-	-	-	81.37	45.44	-	-	-	-	120.93	54.63.
Special Repairs	-	-	-	-	-	-	-	-	-	-	-	-
1978/79												
Routine Repairs	66.88	95.58	46.27	67.51	170.32	135.63	115.08	65.86	52.43	77.75	96.75	86.15
Ext. Decs.	-	-	-	-	7.39	4.00	-	-	96.92	14.87	-	8.31
Special Repairs	-	-	-	-	3.13	1.75	-	-	-	-	23.02	10.16
Total over 3 years	206.57	190.73	139.33	182.20	465.57	342.03	295.72	148.11	207.01	200.06	365.63	277.51
Average over 3 years	68.86	64.81	46.44		155.19		98.57	49.37	69.00		121.88	

* These averages are compiled from the costs of internal decs., general repairs and vandalism for all the estates in the section.

is as follows:

Low Rise

1.	Baylin Road	DLO built	£46.44
2.	Gideon Road	Contractor built	£49.37
3.	Larch Road	DLO built	£64.81
4.	Robertson Street	DLO built	£68.86
5.	Balham Park Road	Contractor built	£69.00
6.	Lochinvar Estate Extension	Contractor built	£98.57

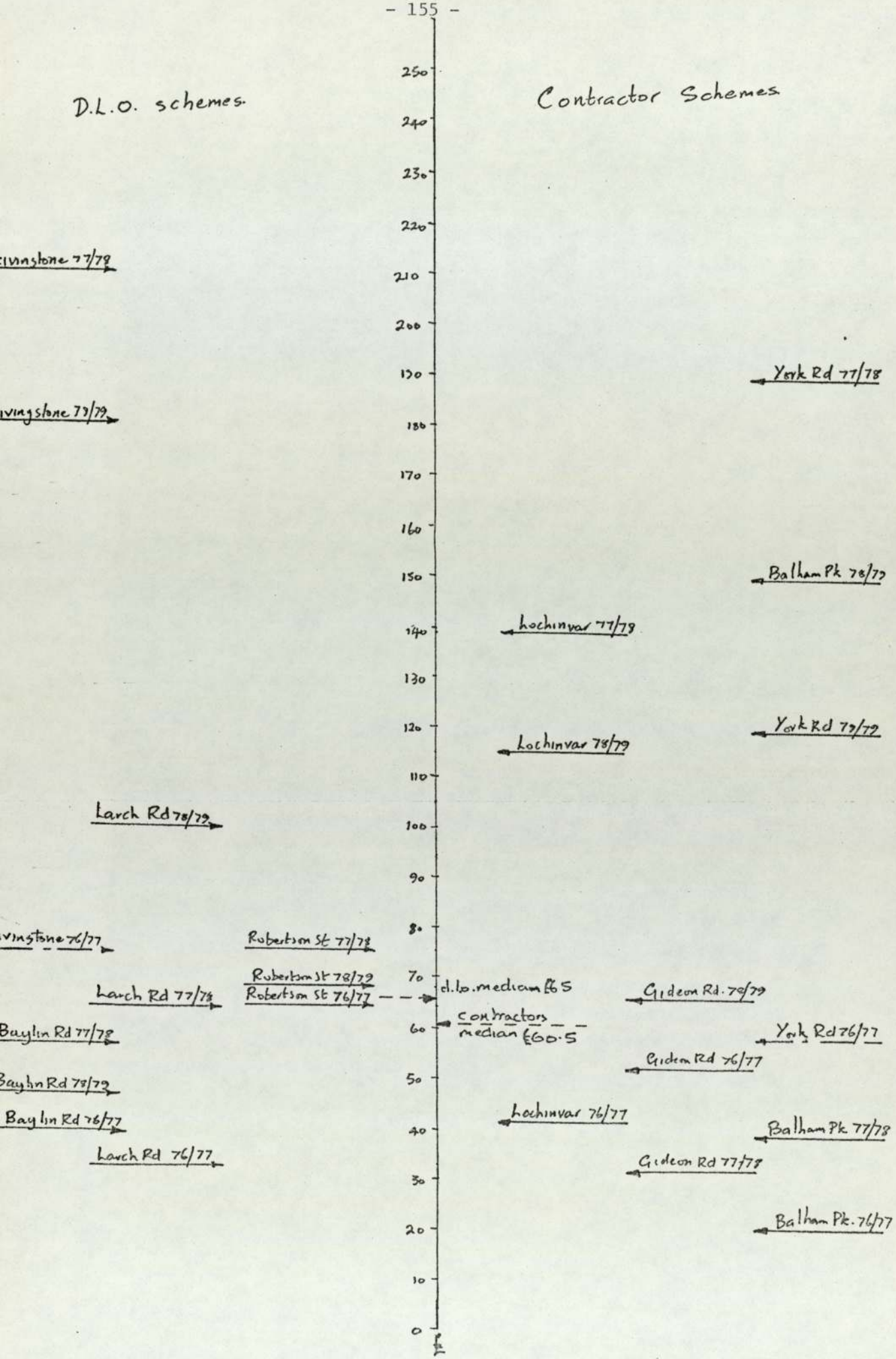
High Rise

York Road II	Contractor built	£365.63
Livingstone IV	DLO built	£465.57

However much of the repairs undertaken fall under the aegis of 'routine repairs'. Such repairs are often more to do with user problems than construction defects. If one eliminates this category of the maintenance requirement, then the following picture emerges:

	D.L.O.				CONTRACTOR			
	Robertson St	Larch Rd	Baylin Rd	Living-stone IV	Lochinvar	Gideon Rd	Balham Pk Rd	York Rd II
1976-79 Total	0	0	0	91.29	0	0	96.92	143.95

These figures present a curious picture since it is hard to believe that 5 out of 6 low rise estates did not require some remedial work in three years. Misallocation of costs is a more likely explanation of this result. If one accepts the first table the unit cost of the low rise DLO built estate is £60.07 whereas the unit costs for maintenance of the contractor built estate is £66.69.



Medians DLO £65 : Contractors £60.5

Due to the anomoly the raw data provided by the borough has been assessed. Grouping the data around medians the picture on p.155 emerges.

As can be seen the median for DLO is £65 and that for contractors £60.5 but the dispersal around the median is far more masked with the contractors side giving the higher average mentioned earlier.

But not only have the direct costs of maintenance to be considered the social basis of the area needs to be considered. To gather information an independent valuation of the social environment was undertaken and classified on a 1 - 3 scale. The following results applied:

Robertson St.	3)	
Larch Road	3)	
Baylin Road	3)	DLO Estates
Livingstone IV	2)	
Lochinvar Estate	2)	
Gideon Road	1)	
Balham Park Rd	2)	Contractor Estates
York Road	2)	

These social indications were built into a statistical model (see Appendix C) to see if social factors affected maintenance requirements. This was the case. It is however difficult to quantify in monetary terms the impact of this difference - nonetheless it is present.

Statistical measures were also carried out to determine if there is a statistical difference between the maintenance requirements of DLO built

estates and those built by contractors (See Appendix C) whilst there is no significant difference between the two (it is only significant at the 14 per cent level) the trend is clear. More data in this area are required to enable firm conclusions to be drawn.

Conclusions

The central premise of the thesis has been that DLOs have to be judged on a wider spectrum of values than productivity alone. However, it is evident that the productivity question has permeated the continuing debate about the role of DLOs since their inception. The early sections of the thesis developed the theme that direct labour organizations have been attacked as inefficient at times of crises in the construction industry particularly when demand for construction work is low. Hence the relationship between the industry as a whole and direct labour organizations has often been uneasy but their durability over the last 90 years has been evidence that DLOs have been recognized as having an important part to play in the provision of construction services for a locality.

Throughout their history the prevailing argument against DLOs is that as organizations they are less productive than contractors operating in the private sector. However the data on which this assertion is based reflects an aggregation of private sector output and public sector output. This very aggregation will distort matters since it cannot be realistically suggested that all DLOs perform worse than all contractors. Organizational performance in both sectors will vary in response to a whole range of factors not considered in such a global measurement, among them management capability, nature of the work, regional economic and market

conditions. It is also impossible using this technique to explain why differences may occur. Indeed there is evidence to suggest that if one compensated for differences in work type, reliability of statistical returns, profits and accounting, the discrepancy is small. The thesis has attempted to move away from this approach and adopt a case study format where DLOs and contractors of similar size operating on similar types and size of contract were compared by direct observation. The results of these observations show that the output of direct labour and private contractors are similar. The significance of these conclusions is limited by sample size but is supported by other research in the area. Now if this is the case then other aspects of DLO organization come into sharper focus. One of the factors that has a bearing is the quality of the buildings produced. Here the oft asserted proposition that DLOs can build to higher standards of quality was tested against criteria of maintenance of property. In a sense this is difficult because maintenance requirements may not be totally controlled by contractors' performance - how the tenants respond to and use the facility will be central.

However, from the research carried out in this field a trend - albeit not a strong one - can be determined which favours direct labour. The reasons for this are various but one important aspect is the characteristics of the DLO labour force. In the case studies and by observation of several DLOs, there is a tendency for DLO

operatives to be older and better trained and they apply their labour in a more dedicated way, quality of the finished product being more important than direct production. This characteristic does not confine itself to local authority DLOs and the case studies carried out in ICI and the London Co-op confirmed this point.

As more resources are being dedicated to maintenance of the building stock it is clear that any savings which can be attained by ensuring high quality at the critical construction stage will have a beneficial effect upon the economy in general and ratepayers of an area in particular. Here the life cycle costs have to be considered and if by using direct labour for construction services a local authority can reduce its maintenance bill, then this fact alone would vindicate the existence of DLOs.

In the maintenance field we have seen that the opposition to DLOs has not been so sharp and we can conclude that this is because contractors do not see that profits can be made from small scale, but socially necessary, emergency repairs. In fact many local authorities (irrespective of their political character) will use DLOs exclusively for maintenance. Clearly there are advantages here in terms of the flexibility of use - the response time can be short and there is an advantage in having the operatives familiar with the premises being maintained and the occupants.

Additionally, it was found that a DLO could have a beneficial effect upon the effectiveness of design for future projects. If a DLO is continually being used to remedy faults with a particular material or design arrangement, then this information can easily be channelled into the local authority's architects department. If a multitude of private contractors are used for maintenance then this co-ordination of information cannot be attained.

However the most identifiable benefit of DLO operations occurs in its ability to set trends for working conditions in the construction industry. From their earliest days DLOs have pioneered good working conditions and industrial relationships along with a compassionate concern for safety. With respect to working conditions many DLOs have afforded operatives the benefits of 'staff' conditions of service with long service supplements to pay, paid sick leave, pension schemes etc. These factors obviously cost money but it is to the credit of DLOs that they have persevered with the policy of good working conditions and these clearly have a repercussive and beneficial effect upon the whole of the industry. The working conditions enjoyed have a positive impact upon industrial relations and here DLOs can claim to have been successful. The argument that high levels of unionization inevitably lead to industrial conflict can be rebutted. DLOs have a relatively high trade union density (85%) but because of advanced systems of joint consultation DLOs have enjoyed good relationships with Trade Unions and in fact the Trade Unions have been in the forefront of the fight to sustain DLOs.

Another benefit of DLOs is that of training. The research undertaken revealed that training featured strongly in DLOs despite not being eligible for CITB grants. In major trades (i.e. Carpentry, Bricklaying, Electricians etc.) DLOs have a strong commitment to training, with 9 - 10% of the labour force being registered apprentices. This compares very favourably with the training record of the private sector where training is often seen as a luxury which can be dispensed with when workloads are slack.

Also DLOs have rejected the concept of a casual labour force for their works. In the main, DLO employment is characterized by stability of employment and earnings. This is sharply contrasted by the uncertain nature of employment in the private sector.

Despite these advantages DLOs have been forced to curtail their activities. By and large this is a political act which was brought about by allegations of waste and inefficiency. But as the foregoing research has shown, there is not clear evidence that inefficiency and waste are occurring to a greater degree than in the private sector - the substitution of private enterprise for public enterprise does not automatically solve the problem of inefficiency - the relationship is far more complex than that. In fact the proven advantages of DLOs in terms of training for the industry, safety, employment practices, and quality, are arguments for their retention and extension rather than their demise.

The existence of DLOs throughout their short history has represented a capacity to respond in different ways at different times to different problems of the community they serve. They represent, in organizational character, differing local political situations which in turn demand different solutions to building problems. Local control and local accountability are central to this concept. Differences in the way the built environment is developed are particularly important in a society uncertain of its solutions to economic and community problems. Where local building needs vary, the imposition of a uniform dependence upon the private sector is wasteful - particularly when the economic and social case for the advantages of private contractors is unproven. Where uncertainty of solutions is apparent, diversity in the short term is the way of learning.

Further work required:

1. A comprehensive measurement of productivity in a direct labour organization and comparison of the results with a similar study conducted in the private sector.

2. Further studies of maintenance requirements of DLO and privately built housing with the development of techniques to evaluate maintenance requirements generated by tenant use rather than building contractor performance.

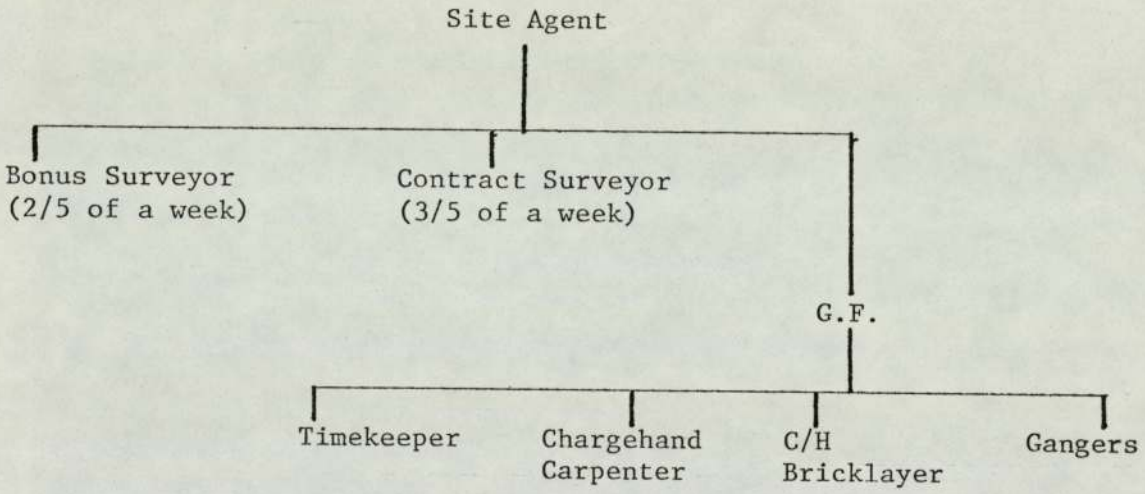
Appendix A

Site Based Productivity Comparisons

Site A

1. General Data

A local authority housing development of 93 units valued at £15m. with a contract duration of 104 weeks. The site organisation structure is as follows:



The total number of workmen on the site at the time of observation was 38 including 1 storekeeper.

2. Activity Sampling

The following graphs were produced from the site observations. The statistical level of confidence with the observations made is given below:

$$N = \frac{K\,[P(1-P)]}{S}$$

where N = No. of observations
K = Standard deviation for the given limit of confidence
P = Percentage activity observed
S = Limit of accuracy

assuming a 95 per cent limit of confidence is required

$$\text{So } 1010 = \frac{2\,[68(1-68)]}{2}$$

Limit of error for this calculation 4.25 per cent i.e. the results shown below will be within ± 4.25 per cent accurate 95 per cent of the time.

The average of the activity counts is given below:

Total number of observations	1010	
Number active	687	68 per cent
Number inactive	323	32 per cent

3. Detailed Time Studies

Every bricklayer on the site was studied for a period of time during the day and the number of bricks laid in this time was recorded. The proportion of time the bricklayer was active was also noted. The bricklayers were again recorded on the second visit to enhance the significance of the results.

Time Study No.	Bricklayer No.	Bricks Laid Per Hour	Time	
			Active	Inactive
1	1	102	98.7	1.3
2	2	135	88.3	11.7
3	3	141	94.3	5.7
4	4	115	87.9	12.1
5	5	102	79.9	21.1
6	6	130	84.5	15.5
7	1	120	74.5	25.5
8	2	115	78.5	21.5
9	3	132	90.0	10.0
10	4	138	100.0	0.0
11	5	138	77.5	22.5
12	6	153	86.2	13.8
13(apprentice)	7	90	86.0	14.0
		123.92	86.64	13.36

Where the bricklayer was racking back etc., allowances have been made to normalise conditions to laying bricks in simple flank walls in straight runs.

4. Subjective Assessments by Bricklayers of their Production

Bricklayer No.	225m Solid Wall Self-Estimated Production Per Hour.
1	would/could not estimate
2	100 per hour
3	190 per hour
4	100 per hour
5	would/could not say
6	would/could not say
7(apprentice)	would/could not say

As one can see half of the bricklayers could or would not estimate the number of bricks they could lay in a day. Those who would were in the right area since the true studies were conducted in a set of conditions where the only task was to lay bricks not to set frames, lay d.p.c's etc. This would tend to make the actual observed figures higher than the estimated products for a day since in a days work, ancillary activities can assume a good deal of time.

5. Aggregated Production Figures

To support the detailed time studies production in terms of bricks laid per bricklayer hour was measured. The bricklayers hours each month were totalized and the bonus records were culled for the amount of production attained in each type of bond. The quantities of brick-work and blockwork normalized to bring the quantities to a common base.

Using half brick wall in commons as a unit of 1, the following constants were applied to the quantities.

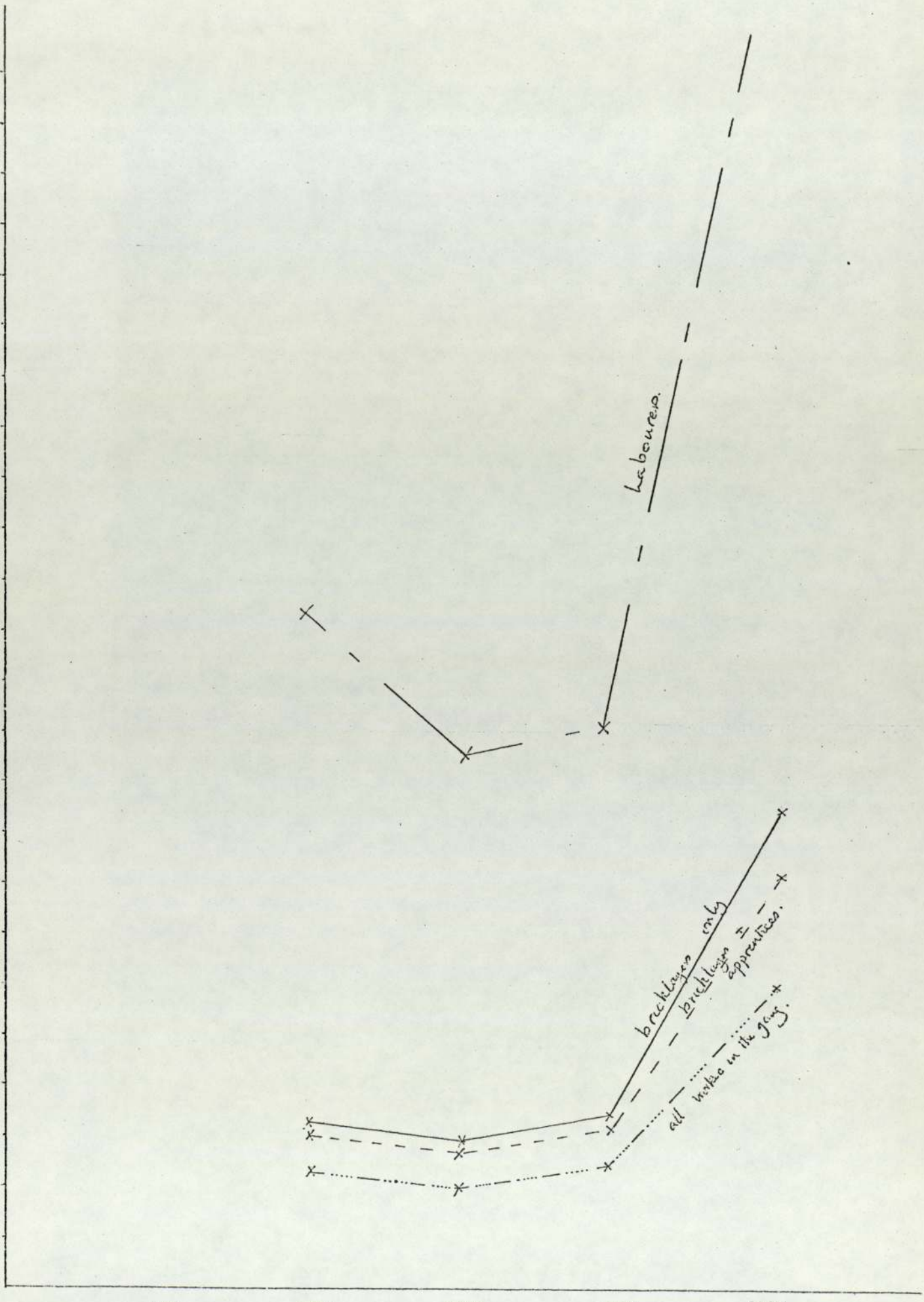
1 Brick Wall in English Bond	=	1.80
½ Brick Wall in Facings	=	1.35
1 Brick Wall in Facings	=	2.20
1½ Brick in Commons	=	2.70
100mm Block	=	0.65
75mm Block	=	1.00
Piers	=	1.10

The basis for these figures is the measured rates labour input in "Building" magazine.

The normalized production figures are represented graphically.

The production is then divided by the bricklayer hours expended to produce the volume of work.

	Labour	Hours	Prod/Lab Hours
February			
Corrected Production	Bricklayers	1982.33	32.00
63490	inc. Apprentices	44.75	31.32
	Labourers	469.75	135.6
	Total	2495.83	25.44
March			
Corrected Production			
74855	Bricklayers	2412.17	31.03
	inc. Apprentices	84.25	30.32
	Labourers	733.75	102.00
	Total	3202.42	23.37


Labourers.
bricklayers only
bricklayers + apprentices.
all trades in the yard.
JAN
FEB
MAR
APR
MAY

	Labour	Hours	Prod/Lab Hours
April			
Corrected Production			
85147	Bricklayers	2292.53	37.14
	inc. Apprentices	84.25	35.82
	Labourers	826.75	102.99
	Total	3203.53	26.58
May			
Corrected Production			
84124	Bricklayers	874.35	96.21
	inc. Apprentices	185.00	79.41
	Labourers	305.00	275.82
	Total	1364.35	61.66

(It should be noted that the May figures are extraordinary high and therefore may be an abberation.

	Labour	Hours	Prod/Lab Hours
Aggregate of all Months			
Weighted Production			
374473	Bricklayers	7561.00	49.52
	inc. Apprentices	370.00	47.21
	Labourers	2335.00	160.35
	Total	17828.00	21.00

6. Craft/Labour Ratios

These figures were produced by totalizing the bricklayer hours expended per month against the bricklayer labourer hours expended per month. A balanced labour force obviously enhances production.

	Bricklayer		Bricklayer Including Apprentices Scaffolders and Labourers		
			Scaffolders		Labourers
	hrs.		hrs.		hrs.
February	4.22	:	4.32	:	1
March	3.29	:	3.36	:	1
April	2.77	:	2.88	:	1
May	2.87	:	3.47	:	1
Average	3.29	:	3.51	:	1

The balance here seems sound. It accords with something like a 3 to 1 gang balance.

	Bricklayer		Apprentice
February	44.30	:	1
March	42.69	:	1
April	27.21	:	1
May	4.72	:	1

7. Bricklayers - Profile

Bricklayers were asked to fill in a questionnaire. The results are presented below. The questionnaire was used to 'test' its value - more widespread use is recommended in further research.

		Less than 6 months	6 mths-1 year	1-5 years
Length of Employment:		33%	50%	17%
Former Employment:	Medium sized contractor		50%	
	Small sized contractor		17%	
	Council building department		17%	
	Under training		17%	

Age Structure:	Under 20	17%
	20 - 30	33%
	30 - 40	17%
	50 - 65	33%
Qualifications of Bricklayers:	Craft apprenticeship	83%
	Government training course	17%
	Picked it up as you went along	0%
Wages:	Under £45 per week	17%(apprentice)
	£66 - £70 " "	17%
	£71 - £75 " "	34%
	£76 - £80 " "	17%
	£81 - £85 " "	0%
	£86 - £90 " "	17%
Bonus:	£ 6.10 per week	17%
	£11.15 " "	34%
	£16.20 " "	17%
	£21.25 " "	0%
	£26.30 " "	34%
Hours Worked:	Summer 41 - 45 hours/week	50%
	46 - 50 " "	50%
	Winter 35 - 40 " "	66%
	41 - 45 " "	33%
Union Membership:	All in UCATT	83%

8. Other Factors Influencing Producitivy

Materials

The quality of the bricks that the bricklayers use obviously affect the

rate of production. The bricklayers were asked their opinions on this matter. The following table summarizes their responses.

Bricks:

Satisfactory	50%
Unsatisfactory	50%

Reason for Unsatisfactory Bricks:

Irregular Shape	100%
Chipped	100%
Large Proportion of Broken Bricks	33%

Mortar:

Satisfactory	33%
Unsatisfactory	67%

Reason for Unsatisfactory Mortar:

Stones in the Mortar	50%
Too Dry	25%
Pre-Mix too Rough	25%

From the above it would appear that greater attention to the quality control of the materials would pay dividends in terms of productivity achieved by the bricklayers.

Supervision

The quality of supervision again will affect the production of the bricklayers. The bricklayers were asked how they responded to the supervision. The results are given below:

Very Good	17%
Good	83%
Neither Good nor Bad	0%
Poor	0%
Very Poor	0%

Furthermore all of the bricklayers felt that little or no time was lost due to insufficient information or poor organising and scheduling of the work. The profile would indicate that the organisation has a secure and effective management on the site, albeit that the sample is far too small to draw definite conclusions.

9. Some General Observations of the Site

(a) Safety

In general, safety consciousness on the site was high. All of the proper safety procedures seemed to be observed, ladders were lashed, scaffolding secure, notices properly displayed, machines guarded etc.

(b) Welfare Facilities

The provision of canteens, drying and mess rooms seemed more than adequate. From conversations with bricklayers this was a significant factor in the rate of working, supporting the premise that good welfare facilities encourage high production.

(c) Quality of Bricklayers Work

The quality of work produced by the bricklayers was good. This was achieved despite some difficulties with the bricks and mortar. The Clerk of the Works seemed to be firm on the standards required and this probably had a positive impact upon the quality of work produced. All of the bricklayers had been through some kind of formal apprenticeship scheme and this also could have been a contributory factor in the standard of workmanship.

(d) Progress

The job was currently running about 3 weeks behind schedule.

(e) Industrial Relations

Whilst some problems were evident in this area a more detailed study would be required to identify the 'problem areas'.

(f) Productivity

1. In several instances the clustering of labour around a particular workface seemed to inhibit the effective use of labour. The phenomena was particularly evident on the 225mm thick cross walls where six bricklayers were working on a run of no more than 7 or 8 metres. This led to bricklayers getting in each others way, a dispersal of these large gangs could enhance productivity.

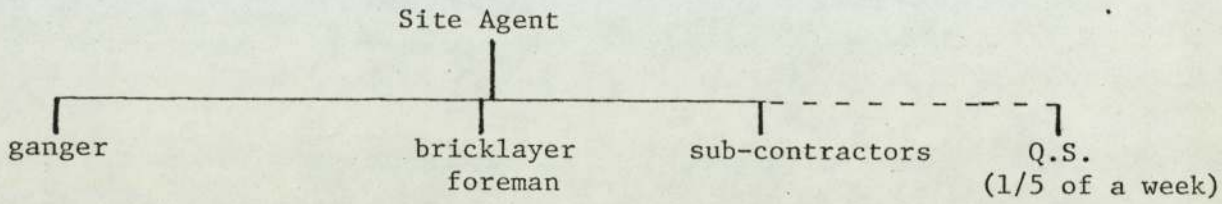
2. From the detailed time studies of the bricklayers by far the largest proportion of down time arose out of bricklayers waiting for mortar. If the Bricklayer/labourer ratio was improved better servicing could be expected thus eliminating this down time.

3. Whilst the production on the site is lower than that of Site B the better quality attained may have positive repercussions on the following trades. For instance, Carpenters may be able to fix frames and grounds better because of the good alignment of the walls, Plasterers may be able to use less material and progress their work quicker for the same reasons. The impact upon the following trades needs to be investigated along with the long term maintenance requirement of the site after completion.

Site B

1. General Data

A local authority housing development of 38 dwellings valued at with a planned contract duration of 65 weeks. The site organisation structure is as follows:



The total number of workmen on the site at the time of observations was 16 with subcontractors adding to this figure.

The site is set in a quiet suburb of north west London with easy access to the head office of the organisation.

2. Activity Sampling

The graphs in Appendix A were produced from the site observations.

The statistical level of confidence with the observations made is given below.

$$N = \frac{K\,[P(1-P)]}{S} \qquad 331 = \frac{2\,[66(1-66)]}{S} = S = 7.2$$

Therefore the sampling will be $\pm$ 7.2%, 95% of the time.

The average of the activity count is given below.

Total number of observations	331
Number active	217 (65.5%)
Number inactive	166 (34.5%)

3. Detailed time studies of bricklayers

Every bricklayer on the site was studied for a period of time during the day and the number of bricks laid during this time was recorded.

The proportion of time that a bricklayer was active (i.e. laying bricks, or associated work) was also noted.

Time study No.	Bricks laid per hour	Time Active	Inactive
1	205	96.6%	3.4%
2	142	86.67%	13.33%
3	196	91.5%	8.5%
4	120	71.9%	28.1%
5	162	93.1%	6.9%
Averages	165	88.0%	12%

When the bricklayer was doing work other than straight runs (e.g. racking back) allowances have been made to normalise conditions to laying bricks in simple flank walls in straight runs.

4. Subjective assessments by bricklayers of their production

To act as a control, bricklayers were asked to assess how many bricks they could lay under ideal conditions. Their assessments are given below:

Bricklayer No.	Self-estimated productivity of225 mm solid wall
1	190 per hour
2	125 per hour
3	250 per hour
4	150 per hour
5	250 per hour

5. Aggregate Production Figures

To support the detailed time studies production in terms of bricks

laid per bricklayer hour were measured. The bricklayers hours each month were totalized and the measure of progress to date was taken. Different types of bond and facings were measured and to normalise the labour input required regulating constants were applied. These regulating constants used a half brick wall in commons as a unit of 1. The following constants were applied to

Facings 2.2

100 mm block 0.65

225 mm block 0.75

The basis for these figures is the 'measured rates labour input' in 'Building magazine.

It was not possible to break down the month by month output but the aggregate production is given below.

Weighted production	Labour	Hours	Prod/Lab. hours
106378 Bricks	Bricklayers	1814	58.64
	Labourers	671	158.37
		2485	42.8

6. Craft to Labour ratio

These figures were produced by totalizing the bricklayer hours expended against the labourer hours inputted. A balanced labour force obviously enhances production.

Bricklayer		Scaffolder		Labourer
2.70	:	0.51	:	1

This balance seems sound and is close to the 5 and 2 gang as intended. There was no apprentices on the gang to conduct craftsmen to apprentice ratios.

7. Bricklayers profile

The bricklayers were asked to fill in a questionnaire. The results are presented below. The questionnaire was used merely to test the validity of a wider use. The sample is so small that it has little statistical validity but merely hints at some problems and the general characteristics of this particular gang.

Further data would obviously enhance the results given.

(a) Length of employment with the firm

Less than 6 months	20%
6 months - 1 year	80%
1 - 5 years	0%
Over 5 years	0%

(b) Former employment

Self-employed	80%
Large contractor	20%

(c) Age Structure

Under 20	0%
20 - 30	20%
30 - 40	80%
40 - 50	0%
50 - 65	0%
65+	0%

(d) Qualifications of bricklayer

Craft apprenticeship	40%
"Picked it up as you went along"	60%

(e) Wages

Under £45 per week	0%
Would not declare	20%

60 - 65	0%
66 - 70	0%
71 - 76	20%
76 - 80	0%
81 - 85	20%
86 - 90	0%
90+	40%

(f) Bonus

Not paid

(g) Hours worked

Summer period	30 - 40 hours	20%
	41 - 45 hours	60%
	46 - 50 hours	20%
Winter period	35 - 40 hours	80%
	41 - 45 hours	20%

(h) Union Membership

Union Members	0%

8. Other factors influencing productivity

Materials.
The quality of bricks that the bricklayers use obviously affects the rate of production. The bricklayers were asked for their opinion on this matter. The table below summarises their responses.

Bricks:	Satisfactory	100%
	Unsatisfactory	0%
Blocks:	Satisfactory	0%
	Unsatisfactory	100%

The level of dissatisfaction over the blocks arose out of the difficulty in cutting them and their deleterious effect on the hands.

Mortar:	Satisfactory	80%
	Unsatisfactory	20%

The reasons given for the unsatisfactory character of the mortar was that it was 'lumpy'.

From the above, it would appear that the quality control of most of the materials is adequate but more attention in the specification of the blocks would yield better productivity.

Supervision: The quality of supervision again will affect the production of the bricklayers. The bricklayers were asked how they responded to the supervision. The results are given below:

Very good	0%
Good	80%
Neither good nor bad	20%
Poor	0%
Very poor	0%

Furthermore, all of the bricklayers felt that little or no time was lost due to insufficient information or poor organising and scheduling of the work.

9. Some General Observations of the Site

(a) Safety: In general, management placed safety in high regard. It was however, obvious that the gang of bricklayers did not put such an emphasis on the matter. Ladders were often left loose and the general approach to the work seemed to dictate that production was paramount, and that safety was of secondary importance. This was reinforced by the bricklayer foreman. His response to sending his men to see a safety film

was "A bit busy this afternoon, might be able to get one of the labourers along at about 3.30". (The film, lecture and discussion was programmed from 2.00 - 4.00 in the afternoon.)

(b) Welfare facilities: As the site was relatively small the provision of a fully equipped canteen and other welfare facilities might not have been justified. However, the area was not well-provided with cafes, etc, and therefore a canteen may well have been provided as a component of the site services. Observations made on other sites have reinforced the opinion that such facilities improve morale and productivity on sites

(c) Quality of Bricklayers work: The quality of the brickwork produced by the bricklayers was neither good nor bad. The Clerk of Works only made periodic visits to the site and consequently standards may have been influenced by the absence of full-time supervision by the client.

Another factor could have been that the majority of bricklayers had not served a proper apprenticeship. The subcontracting arrangement may also have had a worsening effect upon quality.

(d) Progress: The job was currently running to programme allowing for a three week deferred start.

(e) Productivity: The arrangement of work at the workface was good, each bricklayer had his own "patch" to work. This reduced congestion and meant that the labourers could service the bricklayers individually

(albeit that this arrangement added to the labourers work).

Whilst productivity on the site is high, the impact of the quality of work has yet to be determined. Following trades may be hampered in achieving high productivity e.g. carpenters in fixing door frames and grounds, plasterers may need more material to overcome defective alignment, etc. The impact upon the following trade needs to be determined along with the long-term maintenance requirement of the site after completion.

Site C

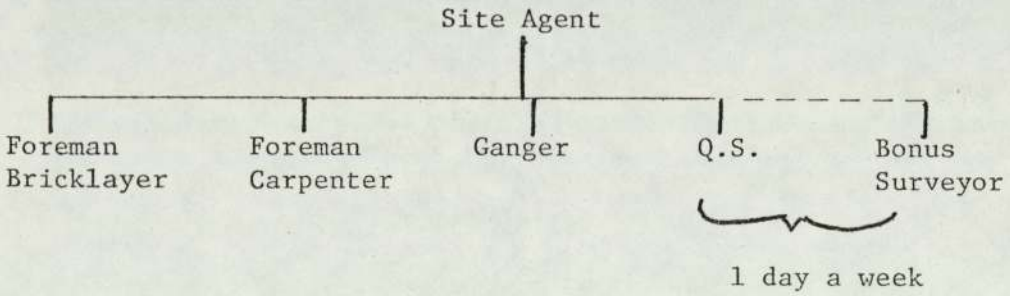
1. General Data

A local authority housing development comprising of 36 units in flats and maisonettes complete with a meeting hall and community centre.

This was an unusual job. The contractor took over the work when a previous contractor became insolvent. Much of the work is being done on a cost plus basis and in this respect is not directly comparable to the other sites. Furthermore, considerable amounts of labour have been deployed on correcting and rectifying faults in the original contractors work. This factor distorts any productivity comparisons.

The site was a busy commercial area within the City of London and the site is well served for public transport. The location of the site meant that it was generally congested and this would also have an impact upon production achieved.

The site organisation structure is as follows:



The value of the contract was £357000 and the planned duration was 70 weeks.

2. Activity Sampling

The statistical level of confidence is given below:

$$N = \frac{K\,[P(1-P)]}{S}$$

N = No. of observations
K = Standard deviation for the given limit of confidence
P = Percentage activity observed
S = Limit of accuracy

Assuming a 95 per cent limit of confidence

$$331 = \frac{2\,[70(-1-70)]}{S}$$

Limit of error ± 7.63 per cent i.e. the results shown below will be ± 7.63 per cent accurate 95 per cent of the time.

The average of the activity count is given below:

Number of observations	331	
Observed active	230	69.7%
Observed inactive	101	30.3%

3. Detailed Time Studies of Bricklayers

Every bricklayer on the site was studied for a period of time during the day and the number of bricks laid during this time was recorded. The proportion of time that a bricklayer was active (i.e. laying bricks or associated work) was also noted.

Time Study No.	Bricks Laid Per Hour	Time Active	Time Inactive
1/1	123	88.89%	11.11%
1/2	174	90.16%	9.84%
1/3	114	98.03%	1.97%
2/1	123	95.00%	5.00%
2/2	126	88.50%	11.50%
3/3	Not available - sick		
Averages	132	92.11%	7.89%

When the bricklayer was doing work other than straight runs (e.g. racking back) allowances have been made to normalize conditions to laying bricks in simple flank walls in straight runs.

4. Subjective Assessments by Bricklayers of Their Production

To act as a control bricklayers were asked to assess how many bricks they felt they could lay under ideal conditions. Their assessments are given below:

Bricklayer No.	225m Solid Wall Self-Estimated Production Per Hour
1	125 per hour
2	125 per hour
3	63 per hour

5. Aggregate Production Figures

To support the detailed time studies production in terms of bricks laid per bricklayer hour were measured. The bricklayers hours each month were totalized and the measure of progress to date was taken. Different types of bond and facings were measured and to normalize the labour input regulating constants were applied. These regulating constants used a half brick wall in commons as a unit of 1. The following constants were applied to the quantities.

1 Brick Facings	=	2.2
½ Brick Facings	=	1.35
100mm Block	=	0.65
190mm Block	=	0.80
Cavity Closings	=	1.10

The basis for these figures is the measured rates labour input in "Building" magazine.

Furthermore the figure produced had to be extrapolated to match the availability of the records of productive hours. It was not possible to break down the month by month output but the figures shown below refer to the period 25th May - 21st June 1978.

	Labour	Hours	Prod/Lab Hours
Weighted Production 13696	Bricklayers	688	19.91
	inc. Apprentices	229	14.94
	Labourers	512	26.75
	Total	1429	9.58

6. Craft to Labour Ratios

These figures were produced by totalizing the bricklayer hours expended against the labourer and scaffolder hours inputed. A balanced labour force obviously enhances production. Apprentice hours are discounted at half value.

Bricklayer (inc. ½ allowance for apprentices)		Scaffolder		Labourer
1.56	:	.22	:	1

This would seem to indicate that the gang could stand some rebalancing. A bricklayer/labourer ration of 2.5/1 would seem more appropriate.

7. Bricklayers Profile

The bricklayers were asked to fill in a questionnaire. The results are presented below. The questionnaire was used merely to test the validity of a wider use. The sample is so small that it has no statistical validity but merely hints at some problems and the general characteristics of this particular gang. Further data would obviously enhance the reliability.

(a) Length of employment with the firm

Less than 6 months	100%

(b) Former employment

Direct labour organization	66.6%
Medium sized contractor	33.3%

(c) Age structure

31 - 40	66.6%
41 - 50	33.3%

(d) Qualifications of bricklayers

Craft apprenticeship	66.6%
"Picked it up as you went along"	33.3%

(e) Wages

Under £45 per week	0%
£61 - £65 " "	0%
£66 - £70 " "	0%
£71 - £75 " "	0%
£76 - £80 " "	66.6%
£81 - £85 " "	0%
£86 - £90 " "	33.3%

(f) Bonus

Would not declare	66.6%
£20 - £25 per week	33.3%

(g) Hours worked

Summer period	41 - 45 hours/week	100%
Winter period	41 - 45 hours/week	100%

(h) Union membership

Union members	100%

8. Other Factors Influencing Productivity

Materials

The quality of the bricks that the bricklayers use obviously affects the rate of production. The bricklayers were asked their opinion on this matter. The table below summarizes their responses.

Bricks:

Satisfactory	33.3%
Unsatisfactory	66.6%

The level of dissatisfaction over the bricks arose out of the irregularity in shape of the material.

Mortar:

Satisfactory	100%
Unsatisfactory	0%

From the above it would appear that the quality control for the mortar is adequate but that more attention to the regularity in shape of the bricks would yield better productivity.

Supervision:

The quality of supervision again will affect the production of the bricklayers. The bricklayers were asked how they responded to the supervision. The results are given below:

Would not declare	66.6%
Very good	0%
Good	0%
Neither Good nor Bad	33.3%
Poor	0%
Very Poor	0%

Furthermore, all of the bricklayers felt that little or no time was lost due to insufficient information or poor organizing and scheduling of work.

9. Some General Observations of the Site

(a) Safety

The safety provisions on the site seemed excellent. Ladders were always tied, scaffolding secure, posters displayed and time was given to the steward to attend safety conferences, meetings etc. This situation was achieved despite obvious difficulties incurred due to the congested nature of the site.

(b) Welfare Facilities

Despite the limited number of operatives on the site a very good canteen was provided offering hot food at break times. Toilets were of an excellent standard and compared very favourably with sites where far greater numbers of workmen were employed. Observations made during the study have reinforced the opinion that good facilities improve morale and productivity on sites.

(c) Quality of Bricklayers Work

The quality of the bricklayers work seemed sound. The attitude and responsibility of the bricklayer foreman probably had a positive impact on quality. He was from the 'gentleman bricklayer' school and was obviously concerned about craftsmanship. (This was emphasised by the attention he paid to the instruction of the apprentices). The Clerk of the Works only visited the site periodically but no unfair advantage was taken in respect of this.

(d) Progress

The job was currently many weeks behind programme. This was, in part, due to the remedial works necessary to rectify the previous contractors errors.

(e) Productivity

One of the difficulties of this site was the intermittent nature of the bricklayers work. The nature of the site did not permit long straight runs of walling, this inevitably had a negative impact on the site when compared to others visited during the summer. It is also clear from the bricklayer/labour ratios that the service that the bricklayers should be getting should not be inhibiting their production, yet during the time study brickies were often delayed for want of mortar.

Whilst productivity is not as high as Site A the quality seemed to be better and the follow on trades, i.e. second fix carpenters and plasterers may be able to achieve good production due to the accuracy of the brickwork. The impact on the following trades and the long-term maintenance requirements need to be investigated.

APPENDIX B

Examples of DLO tenders compared to contractors tenders in 3 Local Authorities

MANCHESTER DLO

Contract No.	Tender Date	No. of Units	Type	DLO Tender £	Contractors lowest tender	Percentage Difference %	Observations
1	March '73	180	H	1,174,150	1,280,284	9.04	-
2	Oct. '73	59	H	473,746	722,196	52.44	Only two tenders received
3	March '74	100	H	832,495	870,288	4.54	-
4	Oct. '74	199	H	1,700,488	1,701,391	.055	-
5	Oct. '74	120	H	1,054,894	1,063,582	.824	-
6	Nov. '74	292	H	2,255,680	2,280,449	1.54	-
7	June '73	-	S	39,994	42,986	7.84	-
8	Aug. '73	-	S	203,985	-	-	only one tender
9	Aug. '73	-	S	281,062	332,954	18.46	-
10	Sept. '73	-	S	154,933	170,587	10.1	-
11	Oct. '73	-	S	31,335	-	-	only one tender
12	June '71	-	S	1,019,683	1,025,265	0.45	-

S = School Projects

H = Housing

STOKE DLO

This statement gives the costs, valuations and savings on six major contracts carried out between 1970 and 1975.

		Tender Figure	Final Account	Declared Surplus	Diff: in next lowest tender	Total
		£	£	£	£	£
1.	1970 New Sixth Form College	*453,820	461,604	14,235	24,239	38,474
2.	1971 102 Dwellings, Bull Lane, Packmoor	319,743	303,802	17,479	-	17,479
3.	1972 58 Dwellings, Ashwood, Longton	191,868	189,757	19,799	-	19,797
		anticipated				
4.	1973 44 Dwellings Goddard Street, Longton	156,410	152,000	18,000	-	18,000
		anticipated				
5.	1974 N.S. Polytechnic	*645,111	710,000	17,500	24,107	41,607
		anticipated				
6.	1975 Cleansing & Transport Depot, Cromer Rd, Hanley	*791,740	800,000	25,000	77,302	102,302
		2,558,692	2,617,163	112,013	125,648	237,661

* tendered in open competition

It should also by emphasised that a reduction of £ 237,000 on capital borrowed for these projects over a period of 60 years at current interest rates, represents well over one million pounds savings to the ratepayers of that city.

LAMBETH CONSTRUCTION SERVICES DLO
1974/1975

Contract	Tenders Submitted		Tenders won in competition	
	Competition	Negotiation	Dlo tender	next lowest
	£	£	£	£
Tulse Hill	-	2,336,894	-	-
Clarence Hill	336,254	-	336,254	372,019
Central Hill	205,257	-	205,257	205,257
Tulse Hill II	-	262,195	-	-
Highland Road	1,239,049	-	1,239,049	1,514,784
Paulet Road	2,040,600	-	2,040,600	2,271,454
Myatts Field	1,235,000	-	1,235,000	1,414,876
Modernization and Conversion	1,200,000	300,000	1,200,000	1,481,000
TOTALS	6,256,160	2,899,089	6,256,160	7,293,390
				6,256,160
			Saving	1,037,230

APPENDIX C

Significance tests

1. To test if maintenance costs are related to social classifications of estate occupants.

   Null hypothesis - There is no relationship between social classification and maintenance costs.

	Maintenance costs 1976 - 79 (£)										
	DLO					Contractor					Total
Social Classification	< 40	41-66	67-92	93-110	119+	<40	41-66	67-92	93-118	119+	
1	1	2	0	0	0	0	0	0	0	0	3
2	2	0	0	0	1	0	1	0	1	1	6
3	2	5	1	1	0	0	0	0	0	0	9
Total	5	7	1	1	1	0	1	0	1	1	18
(E values)											
1	.83	1.17	.16	.16	.16	0	.16	0	.16	.16	
2	1.66	2.33	.33	.33	.33	0	.33	0	.33	.33	
3	2.5	3.5	.5	.5	.5	0	.5	0	.5	.5	
(O - E) values											
1	.03	.11	.026	.026	.026	0	.026	0	.026	.026	.296
2	.12	5.43	0.11	0.11	.45	0	.45	0	.45	.45	7.57
3	.25	2.25	0.25	.25	.25	0	.25	0	.25	.25	4.00
Total	.4	7.79	.386	.386	.726	0	.726	0	.726	.726	11.866

APPENDIX C. 2

= 11.866 degree of freedom (10 - 1) (3 - 1)
= 18

From the percentage points on the distribution table the 5% level with 10 degrees of freedom we get 28.87. Hence we cannot conclude that there is not a relationship between social classification and maintenance costs. If this is not the case there must be one.

The Mann-Whitney U Test

1. Null hypothesis (Ho). There is no difference in maintenance requirements for DLO built estates and contractor built estates.

2. The data

£ per annum maintenance 1976 - 79

Contractors (C)	41	139	115	51	31	66	20	38	149
DLO (D)	64	75	67	33	62	96	38	55	46

3. Ranking the data

20	31	33	38	41	46	51	55	62	64	66	67	75	96	115	139	149
C	C	D	D	C	D	C	D	D	D	C	D	D	D	C	C	C

4. To obtain U

counting the number of times that a C score precedes a D score

U = 2 + 2 + 3 + 4 + 4 + 4 + 5 + 5 + 5 = 34

From tables U = 21 at 5% level for a two tail test.

As the calculated U is less than that quoted in the tables, then the null hypothesis can be rejected. As it is not, then the null hypothesis holds.

APPENDIX C. 5

Whilst statistically there is no significant difference between the maintenance requirements of DLO and contractor built estates, there is a significant relationship (at the 5% level) between the maintenance requirements and the social classification of the occupants of an estate. With a higher social classification the lower the maintenance costs. Now as the DLO estates have, in general, a lower social classification of occupants, the maintenance requirements for them need to be related back to this factor to enable a more even comparison to be made. It would be foolhardy to guess at a correcting figure which could be applied but nonetheless this may make the maintenance requirements of DLO built estates less in real terms than those built by contractors.

APPENDIX D

THE CHRONOLOGICAL SEQUENCE OF DLO DEVELOPMENT	
Date	Events
1835	Municipal Reform Act. Political control of the towns opened up. The hegemony of the Freeman challenged by an emerging merchant class requiring municipal services to support business.
1860 - 1870	Contractors build houses for rent
1870 - 1880	Contractors move out of houses for rent into surburban houses for sale
1889	London Dock Strike. The success of the strike strengthened the will of trade union leaders to enter local politics. Progressives capture control of the London County Council (L.C.C.) and form an alliance with a small Fabian group. Progressives committed to extend municipal enterprises.
1890	Fair Wages by-law passed. This enforced contractors on L.C.C. jobs to pay trade union agreed wages. Contractors raise tender to cover additional labour costs. Inquiry into corruption in letting of L.C.C. contracts.
1892	L.C.C. set up first direct labour organisation (D.L.O.) 'Moderates' refuse to serve on the controlling committee of the council.
1894	'Moderates' enter the council committee to monitor progress of new DLO. Borough of Battersea sets up DLO.
1896	Borough of West Ham sets up DLO.
1898	'Moderates' barred from council committee controlling the L.C.C. DLO.
1908	L.C.C. elections. Moderates win a pledge to close the DLO. 3000 DLO workers laid off.
1910	L.C.C. elections. Moderates retain control. DLO policy sustained.
1914 - 1921	Rapid inflation in building materials. Contractors accused of profiteering. Claims to re-establish L.C.C. DLO.
1918	Post-war reconstruction. DLOs open up to build houses.
1919	First government subsidy to local authorities for housebuilding, £3 - 4 per house. Government report recommends that Liverpool set up a DLO to build houses. This is considered to be an experiment.

APPENDIX D Cont.

THE CHRONOLOGICAL SEQUENCE OF DLO DEVELOPMENT	
Date	Events
1920	Government increases house-building subsidy to £6 per house.
1923	First Labour Government increases house building subsidy to £9 and withdraws circular 388.
1923 - 1927	DLOs pioneer better working conditions for building workers. Wet time, 44 hour week, holiday pay, etc.
1927	NFBTE publish 'The menace of Direct Labour'. House building for sale slumps in response to the economic crisis.
1939	Barr Committee on Scottish building costs reports favourably on the quality of DLO work but is hesitant about costs.
1944	Simon Committee on the Placing and Management of Building Contracts reports favourably on DLOs.
1948	DLO house construction reaches a high point of 175,213 houses.
1949	Number of DLOs double that of 1939.
1958	Conservative Government imposes a criteria that DLOs must win 1 in 3 contracts in open competition.
1968	Labour Government revokes 1 in 3 rule.
1969	Manual of Principles regarding DLO accounting circularized by Government.
1970	Local Authority (Goods & Services) Act prevents DLOs from providing construction services to neighbouring local authorities.
1973	Local Government re-organization. Several small DLOs amalgamated.
1976	Direct Labour Bill seeks to amend the Local Authority (Goods & Services) Act to allow DLOs to work for neighbouring authorities. Bill is defeated in Parliament.
1977——	Concern over productivity in DLOs resurrected. Construction industry recession.

Cost/Productive Standard Hours of Direct Labour with Contractors

Contracts in force during 1975/76						
Overall Cost/Productive Standard Hour					Annual Productive stand. hour	Additional cost if work done by contractor
Trade	Direct Labour	Contrac-tors	Difference	% increase		
	£	£	£			£
Painter	3.72	4.04	0.32	9	2,665,000	852,800
Bricklayer	4.76	6.17	1.41	30	457,000	644,370
Carpenter	6.90	13.10	6.20	90	447,000	2,771,400
Plumber	6.70	12.27	5.57	83	543,000	3,024,510
Electrician	7.10	12.48	5.38	76	147,000	790,860
Glaziers	5.93	7.74	1.81	31	98,000	177,380
					TOTAL -	8,261,320

Definition of a productive standard hour

Contractors on the GLC approved list are invited to submit tenders against a schedule of jobs on an annual basis for each Trade and Borough. The contractors' prices, plus a fixed percentage for administration and control, are converted into a total price per productive standard hour (PSH). The productive standard hour is a workstudy based measurement of the work content. These PSHs are compared against monthly direct labour costs per PSH.

The cost/PSHs are calculated for direct labour and contractors in the following manner:-

Direct Labour

$$\frac{b}{a} + \frac{c}{100} + \frac{d}{a \times 12} + \frac{b}{a} \times \frac{e}{100} + \frac{f}{a} = £/PSH$$

where a = output in terms of productive standard bonus expended per month

b = Direct Labour wages per month

c = Direct Labour on costs (20%)

d = Material cost

e = overhead costs 60% of direct labour wages (fixed)

f = overhead costs (variable)

e.g. a = 1000 PSH

b = £3000

c = £600 (20% x £3000)

d = £18,000

e = £1,800 (60% x £3000)

f = £1,200 (2 supervisors @ £400 per month each + 3 vehicles @ £133 per month each)

$$\frac{3000}{1000} + \frac{600}{100} + \frac{18000}{1000 \times 12} + \frac{3000}{1000} \times \frac{60}{100} + \frac{1200}{1000}$$

£3.60 + £1.50 + £1.80 + £1.20 =

£8.1 per PSH

Contractor's cost per PSH

$$\frac{h}{g}$$

where g = a typical mix of work packages assuming a 5000 PSH work content

h = contractor's price for the job, say £50,000

$$\frac{50000}{5000} = £10 \text{ per PSH} + 10\% \text{ admin. and control}$$

Therefore performance comparison

DLO = £8.10 per unit output of work

Contracting = £11.00 per unit of output of work

Appendix F

Observations on the Local Government Planning and Land Act 1980

The Local Government Planning and Land Act 1980 has many implications for the future of Direct Labour Organizations. Whilst the Act is a general one there are specific Statutory Instruments which have been attached to the Act. They are as follows:-

Direct Labour Organizations (Competition) Regulations

Direct Labour Organizations (Accounting) Regulations

Direct Labour Organizations (Rate of Return on Capital Employed) Regulations

These regulations attached to the Act make specific requirements of DLOs. Namely to:-

(i) keep separate accounts for different categories of work

(ii) obtain tenders for work in each category above certain limits

(iii) to achieve a rate of return on capital employed

(iv) publish accounts and annual reports

(v) submit to closure by the Secretary of State for the Environment if a specified rate of return on capital is met for three consecutive years.

Considering each one in turn:-

First, the necessity for DLOs to keep separate accounts will strongly disadvantage them, since the intention of the Bill is clearly to prevent cross-subsidization within the work of a DLO. Each category of operation, say capital projects, maintenance, highway clearance etc., will have to satisfy the rate of return on capital criteria independently. This approach will be different from the private contractor who has the opportunity to subsidize one area of work by another and would not break down the workload in the manner suggested in the Bill.

The second area is that of tendering. It has always been accepted that DLOs have to win in competition a 'reasonable' amount of their workload. The Bill deliberately seeks to specify the value of "reasonable". For instance, all new capital works over £50,000 and maintenance jobs over £10,000 must be put out to tender. It is clear that the Bill has been drawn up with the intention that private contractors win a significant amount of work from DLOs but in attempting to do this inequity will occur. The private sector's claims to local authority work will be enhanced but DLOs will not be able to smooth out the peaks and troughs of their work-load by tendering for private sector work. This is reinforced by the evidence quoted in the thesis that DLOs tend to be better employers and it is accepted that this virtue costs money. Now, if because the costs of good working conditions etc. are to be reflected in tenders, then work may be transferred to the private sector eventually leading to a lay-off of DLO workers and the deterioration of working conditions for building workers. Supporters

of the Bill and opponents of DLOs may argue that this is a characteristic of 'efficiency' but it is efficiency achieved at the expense of the workforce. Also the premise that such reduction of tenders will save money has shown to be dubious. Evidence quoted in the thesis tells us that contractors' prices often show a marked similarity in local authority tenders and that bids are higher when the local DLO is not in competition; hence the question is raised as to whether the blanket imposition of the requirement to tender will result in more cost effective construction. In addition, the practice of cutting quality to save costs during construction is often used by contractors.

The third area of the Bill's proposals is arguably the most contentious - to impose a rate of return on capital employed. The arguments against this were set out in the section on accounting procedures but additional problems meant discussion. In particular the theoretical base for the rate of return policy is questionable. The assumptions on which the theory is based are that a rate of return on capital is equalized throughout the economy and that capital is freed such that it will seek out high earning opportunities. This supposition depends upon perfect knowledge of market opportunities, perfect free market conditions and the total freedom of the movement of capital. In practice these assumptions do not hold - the closure of a DLO would not necessarily mean that its redundant capital would seek out more productive uses. As an example, closures of steel plants have not resulted in relocation of capital but the devaluation of capital assets and their use as scrap - land associated with such closures is left derelict and unused. But more practical objections can be raised; the use of a stringent financial target as the sole criteria of success will mean that the objectives

of a DLO - to provide a service - will be sacrificed for the new financial criteria. This will mean that speed and the quality of service to the community will suffer. The type of work tendered for will tend to omit difficult jobs and those with high risks, thus making such work of low priority irrespective of their social importance.

The fourth area of concern is the publication of accounts. Here the Bill requires DLOs to publish reports and accounts within six months of the end of the financial year. This in itself is sound. There seems every reason for public accountability for public facilities, but as a by-product it will mean that the DLO trading activities may be closely scrutinized by its private sector competitors whilst not being able to examine private contractors' operations in the same way.

Finally, the Bill opens up the possibility for the Secretary of State for the Environment to close down a DLO if it has not met the rate of return criteria for three consecutive years. It might be considered that the possibility of closure is small since the rate of return has to be missed for three years, but there is an important principle at stake. The legislation will shift the point of ultimate accountability of a DLO to the Secretary of State and away from local control. It is the centralization of power implicit in this aspect of the Bill which is most disturbing.

From this stems the question of why the Bill was introduced.

Certainly many of its proposals stem from the DoE working party on DLOs but this was set up in a climate of crisis for the construction industry such that the Labour party national executive endorsed a proposal for the establishment of a national building corporation with an increased role for DLOs. These factors, coupled with Mrs. Thatcher's government's avowed commitment to reduce the role of the public sector, made DLOs a convenient target for action.

Bibliography

1 Armstrong, Ernest — Conference Address. Municipal Building Management. Vol.4, 1975.

2 Balfe, R. — Direct Labour - Ideas for a more efficient and effective future. Municipal Building Management. Vol.4, 1976.

3 Bar-Hillel, Mira. — Direct Labour: How real the menace? "Building". 29th August 1975.

4 Bezant, Malcolm. — Participation and direct works - the case of PELAW. Building Capital and Labour Architectural Assn. 1978.

5 Bishop, D. — Productivity in the Building Industry. Department of the Environment. 1972.

6 Borcherding, J.D. — Improving Productivity in Industrial Construction. American Society of Civil Engineers, Construction Division. Vol.102, 1976.

7 British Broadcasting Corporation — Transcript "Tonight" T.V. programme. B.B.C. 2nd July 1979.

8 Bromilow, F.J. — The impact of Contract Performance Research on Building Management in Construction. Australian Building Research Station. Date unknown.

9 Editorial — NFBTE/FCEC steer anti-dlo course. "Building". 15th October 1976.

10 " — Nationalization unlikely to be on Labour's Election Manifesto. "Building". 28th July 1978.

11 " — Row over no-tender dlo contract. "Building". 11th August 1978.

12 " — Two Views of Direct Labour. "Building". 11th August 1978.

13 " — Blueprint for Direct Labour. "Building". 28th August 1978.

14 " — Tories launch campaign against construction industry takeover. "Building". 17th February 1978.

15 " — Dlo's should prove their competence, says NFBTE. "Building". 1st August 1978.

16 " — Hostile reception for Mr. Freeson's dlo report. "Building". 1st August 1978.

17	Editorial	Battle joined over Direct Labour. "Building". 29th October 1976.
18	"	FMB to drop its anti-nationalization link with the Conservatives. "Building". 4th August 1978.
19	"	UCATT to push state control at Labour Conference. "Building". 22nd September 1978.
20	"	Productivity in the Construction Industry. "Building". 16th August 1974.
21	"	Heseltine seeks powers to dissolve loss-making dlo's. "Building". 24th August 1979.
22	Building Business	Warning on Productivity Puzzle. "Building". 19th January 1979.
23	Editorial	Bill expanding Direct Labour to be presented. Building Trades Journal. 14th October 1977.
24	"	Labour adopts NEC's plan for Construction. Building Trades Journal. 14th October 1977.
25	"	Who wants more nationalization and bureaucracy? Building Trades Journal. 14th October 1977.
26	Building Workers Charter Movement	Newspaper prepared by rank and file building workers. BWCM - periodically.
27	Campaign against Construction Industry Nationalization	Labour's plan to nationalize the Building Industry. Published by authors - undated.
28	Campaign against Construction Industry Nationalization	Press releases. Published by authors. 21st July 1978.
29	Chartered Institute of Public Finance Accountants	Direct Works undertaking Accounting. Published by authors. 1975.
30	Chichester-Clark,MP.,R.	Direct Labour - time for a re-think. National Builder. July 1968.
31	Clapp, M. A.	Labour requirements for conventional houses. BRE. July 1965.
32	Clapp, M. A.	Productivity on Building Sites. BRE News. Spring/Summer 1980.
33	Comment	Direct Labour - The Tory Attack. The Communist Party. Date unknown.

34	Committee of Local Authority Workers and Stewards	Direct Words. Published by authors. Periodically.
35	Conservative Central Office	Ask the Building Workers - Challenge to Labour. Conservative Party. 18th April 1978
36	Conservative Research Department.	Campaign Guide. Conservative Party. March 1978.
37	Direct Labour Collective	Building with Direct Labour. Published by author. 1978
38	Dilworth, J.	Municipal Building by Direct Works Depts. of Local Authorities. (MSc Thesis) University of Aston. 1975
39	Department of the Environment	Manual of Principles of Financial and Management Control for Local Authorities carrying out new construction by Direct Labour. H.M.S.O.
40	Department of the Environment	Private Contractors Census returns. H.M.S.O. 1971-77
41	Department of the Environment	Housing and construction statistics. H.M.S.O. 1971-77
42	Department of the Environment	Direct Labour (Major Construction Works) Accounting Bill. H.M.S.O. 1976
43	Eaton, L.	Trade Union Relationships with Direct Works Depts. Municipal Building Management Vol.4. 1975
44	The Economist Intelligence Unit	Public Ownership in the Construction Industries. Published by author. June 1978
45	Federation of Civil Engineering Contractors	The case for competition. Published by author. 1976
46	Federation of Master Builders	Press Release. Published by author. 17th April 1978
47	Fleming, M.	Direct Works Departments and the construction industry - trends in employment and comparative productivity. National Builder. February 1977
48	Fleming, M.	Fall in Workload: Increase in Local Authority Manpower. National Builder. October 1977

49 Flynn, N. & Walsh, K. — Direct Labour Organization: implementing the new legislation. Institute of Local Government Studies, University of Birmingham. November 1980

50 Forbes, W.S. — Dimensional Disciplines and the Output of Bricklayers. Building. 27 August 1971

51 Forbes, W.S. — Labour Requirements of Construction. B.R.E. magazine.

52 Forbes, W.S. & Mayer, J.F. — The Output of Bricklayers. B.R.E. CP.32/68. 1968

53 Forbes, W.S. — Some aspects of the Measurement of Productivity in the Building Industry. PACE. 1st April 1966

54 Forbes, W.S. — Survey of Progress in Housebuilding. Building Technology and Management. April 1969

55 France, N. — Building for the Future. Building Maintenance. January 1970

56 Garratt, J. — Direct Labour Answers Back. Building. 7th March 1980

57 Girdwood, — The Cost of House Building. H.M.S.O. 1950

58 H.M.S.O. — Maintenance of Buildings, Plant & Equipment. Hospital Technical Memorandum 12. 1964.

59 Hellman, — How Direct is Labour in Lambeth? A.J. 9th July 1980

60 Hilton, W.S. — Building by Direct Labour. Amalgamated Union of Building Trade Workers. 1954

61 Hilton, W.S. — Direct Labour. Building. 1974

62 Hodgson, G. — Direct Works Building Departments in Scotland. Municipal Building Management. Vol.2. 1976

63 Howarth, E. J. — Productivity in Building - the Universal Enigma. Building Research Practice. 1975

64 Hoppe, M. — Death of a Doctrine. Aims for Freedom and Enterprise. 1970

65 Hoppe, M. — Direct Labour and the Rates. Aims for Freedom and Enterprise. 1966

66 Hoppe, M. — Direct Labour - What Councillors need to know. Aims for Freedom and Enterprise. 1972.

67 Hoppe, M. — Glasgow belongs to.....whom? Aims for Freedom and Enterprise. 1976.

68 Hoppe, M. — Is the party really over? Aims for Freedom and Enterprise. undated

69 Hoppe, M. — The survey from Direct Labour. Aims for Freedom and Enterprise. 1968

70 Hoppe, M. — What went wrong? Aims for Freedom and Enterprise. 1967

71 Ilersic, A.R. — Building Chaos? National Builder. July/August 1977

72 Institute of Municipal Building Management — Value for money in public building. Published by author. 1977

73 Institute of Municipal Building Management — Report on the most appropriate methods of accomplishing the expansion of municipal direct labour departments for new construction, building and civil engineering work. Published by author. 1976

74 Jennings, Margaret — A fillip for direct labour. "Building". date unknown

75 Jones, D.O. — Expansion of Municipal Enterprise. Municipal Building Management. Vol.4. 1976

76 Jones, N. — Does direct labour work?

77 Julien, T.E. — Productivity: private contractors and direct labour. National Builder. February 1976

78 Labour Party National Executive Committee — Building Britain's Future. Labour Party. 1977

79 Labour Research Dept. — Direct Building. Labour Research Dept. 1929

80 Labour Research Dept. — Direct Labour Organizations. Labour Research Dept. November 1978

81 Lacey, C. — Houses by Direct Labour. Labour Research Dept. June 1946

82 Laing, M. — The work of the C.A.B.I.N. Committee. The Builders' Conference. 7th June 1978

83 Lang, R. — Direct Labour Building Organizations - London Borough of Barking Municipal Building Management. Vol.2 1974

84 Layton, Elizabeth — Building by Local Authorities. George Allen & Unwin. 1961

85 Lea, Eleanor and Lansley, P. — Building: Demand and Profitability. "Building". 14th March 1975

86 McNally, H.E. & Havers, J.A. — Labour Productivity in the Construction Industry. American Society of Civil Engineers - Construction Division. Vol.93. 1967

87 Madden, L. — Current list confusion in DLO proposals. "Building". 31st August 1979

88 Mallam, D., Oram, G., & Chartres, M. — Process of attrition: How Wandsworth tackles direct labour. National Builder. May 1979

89 Mayhew-Sanders, J.R. — Management and the Building Manager. Municipal Building Management. Vol.4 1970

90 Miner, T.W. & Shaw, V.A. — Productivity in Building: The role of the client. South African Builder. Vol.4 June 1970

91 Ministry of Housing & Local Government — Circular 57/69 H.M.S.O. 1969

92 Ministry of Works — The Placing and Management of Building Contracts (Simon report) H.M.S.O. 1944

93 Monopolies Commission — The supply of buildings in the Greater London Area. H.M.S.O. 1954

94 Muller, C. — Lambeth Construction Services - Chairman's report. Municipal Building Management. Vol.1. 1976.

95 National Federation of Building Trades Employers — Press Release. Published by authors. 4th September 1978, 9th October 1978, 11th October 1978, 2nd November 1978.

96 Nazem, Sufi — Labour (staff) turnover and its effect on productivity. Building Technology and Management. May 1969.

97 North East Trade Union Information Unit — Direct Labour, the answer to building chaos. Published by author. June 1977

98 Norwegian Building Research Institute — Production data for the construction industry. Published by author. 1970

99 O'Brien, D.P. — Direct Works Departments: Accountancy Problems. National Builder. October 1976

100 O'Brien, D.P. — Direct Works Departments: Output per head still significantly lower. National Builder. December 1976

101 O'Brien, D.P. — Extension of Direct Works Departments will compete for finance with welfare. National Builder. December 1976

102 O'Brien, D.P. — Direct Works Departments: Output per head still significantly lower. National Builder. December 1976

103 O'Brien, D.P. — Extension of Direct Works Departments will compete for finance with welfare. National Builder. December 1976.

104 O'Brien, D.P. & Fleming, M. — Ideological preconceptions on direct labour. National Builder. February 1979

105 O'Brien, D.P. — TUSIU (Trade Union Studies Information Unit) reports on direct labour: Aims at 'socially controlled industry'. National Builder. September 1977

106 Office of Population Census & Surveys — Labour mobility in the Construction Industry: A survey of manual workers. H.M.S.O. May 1980

107 Philpott, R. — Direct Works an Investment for the future. Municipal Building Management. Vol.3, 1975

108 Piggott, Pierce T. — A productivity study of Housebuilding. An Foras Forbartha

109 Piggott, Pierce T. — An examination of labour content in housing. An Foras Forbartha. 1969

110 Reddaway — Reddaway Report. The effects of Selective Employment Tax - final report. Department of Applied Economics, University of Cambridge. Occasional paper 32. 1973

111 Reinert, W.J. & Broughton, H.F. — Productivity in House Building. Special Report No.21. First and second report. H.M.S.O. 1953

112 Rimmer, G. — Direct Labour in retreat. Contract Journal. February 1978

113 Rimmer, G. — Whatever Happened to..... "Building". 28th September 1979

114 Ross, S. — We regret the Minister's grandiose ideas on expansion of municipal enterprise. National Builder. November 1978

115 Ross, Hugh — The Labour Party and the construction industry. B.T.J. 18th November 1977

116 Salaj, Branko and Silberman, H. — Efficiency of labour input in Swedish construction. Building Research Station Summaries. 1975

117 Schrader, C.R. — Boosting construction worker productivity. American Society of Civil Engineers, Construction Division, October 1972

118 Sherman, Alfred — Waste in Wandsworth. Aims for Freedom and Enterprise. undated

119 Social Services News — Building by Direct Labour. Labour Research Department. December 1948

120 Social Services News — Direct Building - it has its part to play. Labour Research Department. February 1945

121 Social Services News — Direct Labour. Labour Research Department. April 1947

122 Social Services News — Local Authorities and Direct Labour. Labour Research Department. April 1947

123 Speed, K. — Nationalization will cripple to economy. B.T.J. 14th October 1977

124 Stevens, A.J. — Activity sampling studies aided by the use of an optical reader. B.R.E. Vol.16, January 1967

125 Stevens, A.J. — Activity Sampling on Building Sites. B.R.E. CP 16/69 May 1969

126 Sugden, J. — Direct Labour: economic arguments at variance with political philosophy. National Builder. February 1979

127 Sugden, J. — Direct Labour - How statistics have passed nothing. Institute of Municipal Engineers. May 1978

128 Tilley, J. — Changing prospoects for Direct Labour. Fabian Tract 45. Fabian Society. 1976

129 Tumey, J. — Speeding up the Building Process. Municipal and Public Services Journal. 20th September 1974

130 UCATT Midland Region — Defend Direct Labour in Sandwell. Published by author, undated.

131 Unknown — Direct Labour - issues in the great debate. New Civil Engineer. January 1977

132 " — Camden and Barnsley dlo's hammered. New Civil Engineer. 6th January 1977

133 " — The Menace of direct labour. National Builder. December 1927

134 " — Wasting Money in the country. Evening Sentinel, Stoke-on-Trent. 1975

135 " — Direct Labour at Southwark. "Building" 27th January 1967

136 Walker, A. — Manhour requirements for conventionally constructed dwelling. Chartered Surveyor. Vol.103. 1970

137 Walker, A. — A study of the variation in output in building operations. Quantity Surveyor. Vol.27. 1972

139 Walker, A. — A study of the factors affecting the level of output on certain building sites. Quantity Surveyor. Vol. 27. 1972

139 Watts, N. — Does direct labour work? Municipal and Public Services Journal. 3rd October 1975

140 Welsh Office — Circular 54/69. H.M.S.O. 1963

141 Wilson, K., Graham, A., Bailey, J. — An appraisal of the DoE Working Party on direct labour organizations. Municipal Building Management. Vol.4, 1978

142 Wilson, W.K. — House building by direct labour. Municipal Building Management. Vol.3, 1975

143 Wilson, K. — The need for direct labour. Municipal Building Management. Vol.4, 1976

144 Wilson, W.S. — Public benefactor or political pawn? Contract Journal. February 1967

145 Working Party on Direct Labour Organization — Final report. Department of the Environment. August 1978

146 Young, A. — How we closed our direct labour department. National Builder. April 1977