THE EFFECTS AND REPERCUSSIONS OF TRANSPORT INFRASTRUCTURE AND URBAN DEVELOPMENT INVESTMENT IN LONDON'S DOCKLANDS

T S MERVYN JONES
City University (Transport Studies Group),
London, United Kingdom

1. London Docklands Redevelopment, - Location

1.1 "This is one of the largest single urban opportunities in this country up to the present time"

"No plan can please all, and in selecting a particular plan the community as a whole will be choosing to meet the demands of some and to turn down, in part or completely the claims of others."*

The significance of this perceptive statement made nearly twenty years ago will become apparent later.

The London Docklands redevelopment area stretches for nearly twelve kilometres. Its widest portion from north to south is approximately five kilometres. It has a total area of approximately 2,200 hectares of which ten per cent (220 hectares) represents the water area of the former enclosed dock system.

The river divides the Docklands Redevelopment area into five land sub-divisions: Wapping, Rotherhithe, Poplar and the Isle of Dogs, The Greenwich Peninsular Silvertown to Barking Creek (including Beckton). Administratively the redevelopment area was within the confines of the Greater London Council (abolished 1986). It now incorporates, however, former parts of three** London Boroughs: Newham (1,126 ha), Southwark 214 ha) and Tower Hamlets (562 ha).

1.2 London has been a port since Roman times, due to the fact that direct access to the sea was afforded by the River Thames. As early as the 16th century both sides of the River Thames in the vicinity of the Tower of London were extensively developed with wharves and warehouses. These docks and facilities become considerably overloaded by the end of the 18th century. This congestion of sea traffic resulted in the building of numerous enclosed docks, between 1802 and 1921 when the final extension to the London dock system was opened (all within the present redevelopment area).

The whole system suffered very badly during World War II, losing much of its traffic and sustaining extensive bomb damage. After the war mechanization became widespread, resulting in a reduction in the labour force required. The older docks were not suited to modern vessels and mechanized cargo handling and closures followed.

Commercial sea freight activity of any significance ceased in the late 1970's.

Complementing the development and the demise of London's docks were population and employment changes. (Table 1)

---

*The London Docklands Study Team Report, Volume 1, published in 1973.

**As a point of accuracy very small parts of Greenwich (279 ha) and Lewisham (69 ha) were in the 1970s, part of the present Docklands.

Table 1: Changes in the Docklands populations (by boroughs) 1901 and 1951.

Borough	Population 1901	1951	% Change 1901/51
Bermondsey MB	131,000	61,000	-54
Deptford MB	110,000	75,000	-32
Greenvich MB	96,000	90,000	-6
Poplar MB	169,000	73,000	-56
Stepney MB	299,000	99,000	-67
East Ham UDC	96,000	121,000	-26
West Ham CBC	267,000	171,000	-36
	1168,000	690,000	-41

Source: 1901 and 1951 censuses

Therefore during the mid and late sixties the characteristics of London Docklands (figure 1) would have been accurately described as follows:-

i) A run down inner city area

ii) Very poor public transport

iii) A predominant proportion of unskilled workers

iv) General lack of social and cultural facilities

v) No new business willing to come to the area

vi) A vaste waterscape of abandoned docks and its adjacent landscape.

Figure1: The Docklands Redevelopment Area in Relation to Its Adjacent Boroughs and to Greater London.

2. Land Use and Transport Planning - Background

2.1 Against this economic history and consequent social decline, a number of planning reports and proposals were undertaken for the area in the late sixties and seventies. In 1973 Travers Morgan & Associates produced a most thoughtful and technically future looking report. In their volume one, the implicit overriding aim was to produce a plan for the area which would satisfy physical and social objectives for the area, in particular to create an environment which would utilize the areas most outstanding characteristic: namely its location relative to the rest of London and the immediate proximity to the River Thames, also to provide social amenities.

In 1974 a Docklands Joint Committee (DJC) was created,* which was made up of representatives from five London Boroughs. This body was entrusted with the task to promote a development plan for the area.

In 1976** the DJC published the 'London Docklands Strategic Plan' for a target population of 55,000 people. It dealt with such social issues as: employment, health, education and recreation: as well as its overall land use proposals for redeveloping the whole area. The importance of transport in acting as a catalyst to rejuvenate this area was an explicit

proposal of the plan. Other key requirements for success included: A commitment by central government to invest public money in this area over a planned period. The release of land at an early stage by large landowners in the area. It was the public utilities, namely the Port of London Authority (PLA), gas, water, electricity and railway undertakings who were the large owners of land.

A most important fact was that these public undertakings together with the local authorities, accounted for as much as 80 per cent of land ownership within the plan boundaries. Therefore, although the DJC may be credited with identifying the main social and economic problems of the area, they were less successful in fulfilling the critical objective of acquiring land in the docklands.

2.2 In 1979 DJC was abolished by the newly elected Conservative Government; by 1980 the Local Government Planning and Land Act was enacted and an Urban Development Corporation (on the British new towns model) established by the Secretary of State. The London Docklands Development Corporation (LDDC) had a financier (Sir Nigel Broakes, Head of Trafalgar House Group) as its first chairman and it is not accidental that its structure was established similar to that of a private company, but was funded with an initial grant of around £250 million up to 1985 (this figure will have risen to around £500 million by 1992). However, the internal structure is now very similar to that of a traditional local authority, or any other new town corporation, with the usual range of chief officers.

* This committee was a result of the Local Government Act 1972 (Labour).

** It should be remembered that there was a weak economic climate at this time in Britain post the 1973 oil price crisis.

initiate market development*: LDDC as a whole uses a criterion of 'leverage', ie. the ratio of public investment to private investment that is attracted in order to assess the performance between areas.

There is no overall strategic land use plan for Docklands as a whole, in fact LDDC is not empowered to do so.** In contrast the LDDC prepares a financial and corporate plan for its future strategy for the area, and after this stage relates the objectives to a physical plan of implementation.

The LDDC is able to do this due to the fact it was provided with considerable executive power by central government, which enables it to perform at least six key identifiable functions:

i) To acquire and purchase land (compulsorily if necessary).

ii) To hold land as necessary for a prescribed future use as decided by LDDC.

iii) To dispose of land as and when it wishes.

iv) To plan and build infrastructure as considered appropriate (e.g. layman of Fibre Optic Cables).

v) To provide infrastructure services where and when required, e.g. gas, drainage, etc,.

vi) To plan and promote land for industrial, commercial or housing developments for sale or lease to the private and public sector.

In addition since 1984 the LDDC has had the powerful and important option to reinvest any revenues it earns from its activities, e.g. from land sales.

These special powers conferred by a Conservative Government certainly enabled the LDDC to overcome the difficulties DJC had experienced with the former large land owners, the utilities and the local authorities. The importance of being able to acquire land quickly and in key locations cannot be emphasized too much.

2.3 The three key methods which have been employed for land acquisition in Docklands by the LDDC are:

i) Compulsory purchase at market rates.

ii) Acquisition by mutual agreement.

iii) Vesting, i.e. transfer of land from one state organization to another, e.g from the utilities and from local authorities to the LDDC. (This power again being conferred by central government.

*In practice this was not strictly the case and the markets for which they are competing are often different. In fact the dynamism of the former chief executive, together with a corporate strategy tended to dominate decisions.

**This procedure is completely different from all local authorities in England and Wales, who have to provide a statutory local land use plan for their areas.

This last method, although sparingly use, was most important in the early stages of the LDDC programme. It was this fact, together with high guaranteed government funding initially that was a major reason for new LDDC to take its opportunities and to succeed. the financial acumen of all the subsequent LDDC chairmen, the vision of its first Chief Executive* together with the professionalism of newly acquired staff have all been ingredients in the LDDC 'success story' since that time.

2.4 Turning to the transport planning background, during the past war years public transport provision, comprising bus services to the other parts of the area had decreased both in actual numbers and in efficiency. Throughout the sixties it was hoped to solve the problem with the building of the Fleet Line (later renamed the Jubilee Line) which was to have served the area and increased mobility opportunities for the local communities in Docklands, providing direct access to the whole London subway network. However it was not built on economic grounds at that time and its rejection to the docklands was followed up by a study of low cost alternatives in 1980 . The passenger traffic forecasts provided at that time ranged from only 2,900 - 3,800 persons per hour in each direction (PPG/ED), travelling to and from central London in the morning peak in 1990, for the proposed busway and street tram options while 3,400 - 4,300 PPH/ED were predicted for a new light rail system. The variations reflecting the different postulated catchment areas to be served by the different options.

This 1980 study did attempt to highlight the fact that on the basis of its evaluation (although admittedly limited) that 'the transport benefits of the options do not increase in proportion to the investment. A decision on which options to pursue, therefore needed to reflect the importance attached to the social planning and economic benefits and the actual funds available'. The options put forward during this period for further investigation included both a light rail and busway solution.

2.5 A further study in 1982 'Public Transport for Docklands' eventually decided upon an east/west and north/south light rail network system with an estimated capital cost of £65 million. This particular decision being influenced by an earlier independent London Transport report which stated:-

"In the Docklands situation a light rail system would have the following objectives:

a) To link together the main development areas of Docklands without incurring the high costs of river crossings in deep tunnel and to provide a link to central London.

b) To provide a high quality public transport service in terms of frequency, journey time and day to day reliability.

c) To provide an intermediate capacity public transport system appropriate for a forecast demand level of up to some 4,500 passengers in one direction during the maximum peak hour, over the heaviest section.

---

* Undoubtedly, Mr. Reg Ward with his entrepreneurship and marketing abilities contributed significantly at this crucial period.

Report no. 376/4244/BB/AR 'A Study of Lower Cost Alternatives to

Formal Government endorsement of the scheme came quickly in the autumn of 1982 and was based on a strict cash limit of £67 million for the combined east/west and north/south schemes (later increased to £77 million). It was shortly after this formal commitment for a light rail project that further design work determined and suggested that the new system should be an automatic one.

3. The System

3.1 The first 12.1 kilometres were completed and opened for scheduled service in August 1987., This length comprises an east/west line and north/south line. This line is mainly elevated and has utilized extensively disused but existing rail alignments and intersects at a triangular junction at Poplar (Figure 2).

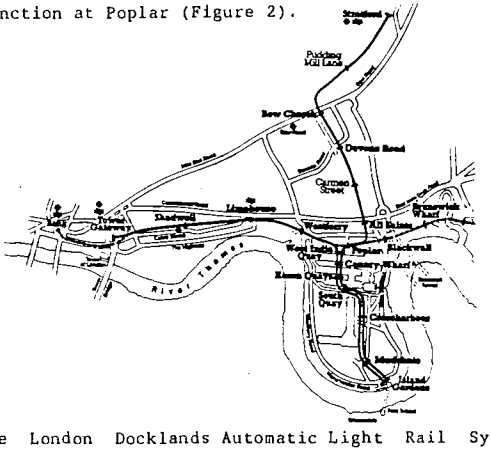


Figure 2: The London Docklands Automatic Light Rail System (July 1989) and future extensions

The dimensions, control speed, capacity and weight of a Docklands Light Railway vehicle are given in Table.

Table 2: Dimensions, control speed and capacity of a DLR articulated car unit

Length	28 metres (91 ft 10 inches)
Width	2.65 metres (8 ft 8 inches)
Height (to roof)	3.40 metres (11 ft 2 inches)
Speed (maximum design)	80 km/h (50 mph)
Acceleration	1.0 m/s^2
Capacity	214 passengers
Control	Thristor (Chopper) light traction

Source: modified from The Docklands Light Railway Handbook

There are sixteen new stations, each platform is thirty metres long (98.5 ft) but will in fact be extended by five metres in the future.

Interestingly from a design viewpoint the stations have been designed around a 'Kit of parts' and therefore can be replaced quickly when necessary, say because of vandalism, accidental damage, etc.

3.2 Other key features of the system are the track, curvature, gradient and signalling control characteristics. Due to the low axle load of the light rolling stock (Table 2), the running rails (standard gauge 4 ft 8.5 inches for DLR) are only 71 percent the weight of normal British Rail main line rails. Both a concrete track base with direct fastenings and a conventional ballasted track base were used in the construction. The computer monitor is set into the track, noise reduction was also a prime objective throughout the track design.

The DLR has curvature and gradient characteristics which are directly comparable to 'Minitram' minimum design standards for vertical and horizontal alignments - Figure 3. At the triangular north/south and east/west junction the gradient is at the maximum i.e. 5 percent, at the Bank extension a 6 percent gradient will be used. the curve radius of this triangular junction is only forty metres, while other tight curves, for example at the Waterside development area of South Quay, are also of this order. This important design feature of DLR has allowed for maximum flexibility (which would not have been possible with say, a Jubilee Line).

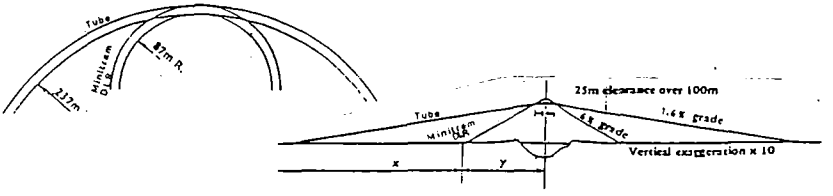


Figure 3: A theoretical comparison of minimum design standards between a typical London transport Tube and the DLR system

No standard coloured light signals are used on the DLR[&]. A central computer continually monitors the actual position of each train in the system with stored timetable information.

4. The observable effects of Docklands redevelopment 1980 - 1989

4.1 The physical transformation on the ground of a large part of the 8.5 square miles of once derelict and enclosed land into a high technology, vibrant, modern area has been quite dramatic to witness. To date the record stands as follows:-

i) Nearly 15,000 homes (essentially high quality and fashionable houses and flats) have been built or are under construction.

ii) Nearly three million square feet of non residential space will have been completed by 1990 (including 2 million square feet of essentially office space at South Quay).

iii) Modern shopping centres and recreation zones are already in daily use and more are planned.

v) 11 kilometres (7.5 miles) of the public funded DLR is in operation.

vi) The Stolport runway and the City Airport have been built and flight services are operating to certain capital cities in Europe.

It has been a success storey for attracting venture capital, which incidentally has reaped very high rewards. It is presently estimated by LDDC that it, via central government funds, has invested around £500 million in infra-structure for docklands, while the private sector has invested over £3 billion (a ratio of 6 to 1), a figure which is still increasing.

In 1981 LDDC housing land could have been bought for around £33,000 an acre. In 1989 a prime acre of waterfront land could cost over £4 million around £1.4 million an acre. Commercial land values likewise have risen from £75,000 an acre to around £2.5 million in mid 1989. The current average office rent charged in Docklands is about £20 pr square foot, compared with around £60 per square foot rents in the Square Mile of the City. Clearly all this entrepreneurial activity and the investment that has taken place, particularly in the Isle of Dogs enterprise zone, has given Docklands a momentum of its own and financiers are postulating that critical mass* has been achieved.

4.2 Two major and disturbing effects of the Docklands redevelopment are already identifiable. The indigenous local residents (largely unskilled and predominantly council house tenants) for whom the numerous plans produced by the consultants and the local authorities in the early seventies were really intended, are becoming completely overwhelmed by the scale, type and pace of development. Clearly of the new private housing the majority of developments are predominantly targeted at the very wealthy. The price of a number of units being in the £0.25 million category, thus this area is becoming one of the most expensive in London. A memorandum prepared by the ex Greater London Council and the local neighbouring Tower Hamlets Council recognised in 1985 that 'one of the most controversial issues in Docklands is the question of how much land (and money) is allocated for public housing' by LDDC. The surrounding boroughs however are desperately short of land for public housing but now cannot afford to buy in Docklands. This effect has caused and is a major concern for the 50,000 'non rich' population. Written abuse in the form of graffiti with the slogan 'People before Profits' may be seen in many parts of the area, as a direct and honest response to what is happening.**

Axiomatic to the high land values being paid for office, shopping and housing developments, has been the effect to 'squeeze out' existing local industries (employing predominantly local labour) with little or no chance of their being able to afford to return even to an enterprise

---

* Term is applied by financiers to mean that there is enough infra-structure in place and personnel to generate further investment opportunity.

** At this point I would wish to remind you of the words quoted in the opening statement of this paper.

zone, presumably created originally for their behalf. Again the vast majority of long term jobs being created are in the tertiary sector and not suitable at all for the traditional 'blue collar' worker from the east of London.

5. Repercussions for transport and land use infrastructure

5.1 The most important repercussion of the Docklands light railway being built (after the bridge section* over West India Quay, Canary Wharf, Heron Quays and South Quay on the Isle of Dogs was completed) was the announcement that a privately funded extension was proposed to the City's square mile financial centre which is only some one and half kilometres distant from the public funded terminus of Tower Gateway (Figure 4). This City extension was approved by Parliament in 1987 and is programmed to open in late 1990, and will cost over £120 million (i.e. over a 60 percent higher cost than the original system). This extension incidentally will directly connect the DLR system to the extensive London underground network.

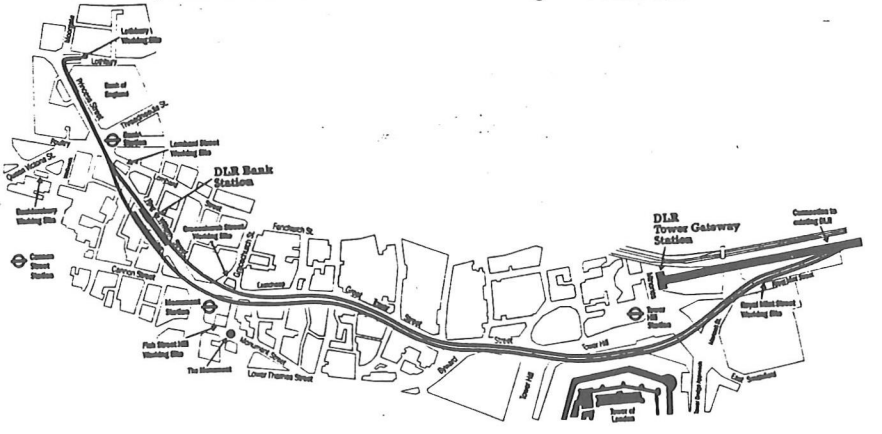


Figure 4. The alignment of the City extension (see inset for depth)

A second and much longer proposed extension of the DLR System is known as the Beckton Extension (again to the privately funded). This extension as planned at present would pass very close to the new City Airport. A people mover system (although not official policy yet) could link with the airport, making that location a fifteen to twenty minute DLR journey from the City airport to Canary Wharf or Bank stations respectively.

Two operators§ have both already realized the potential of this market and fly from the City airport, up to fifty flights a week to European cities.

The longer term, essentially post 1991, proposals for DLR include consideration of the following possibilities:

1). A Beckton to Barking extension.

---

* It is worth noting that when the bridge section was completed, land values doubled 'overnight' on the Isle of Dogs.

§ Brymon Airways and Eurecity Express Airways (part of the British Midland Group) are the major operators.

2). A line from Beckton, or from a station near to the Royal Docks, to Woolwich or Thamesmead via a tunnel under the Thames.

3). An extension from the Island Gardens station to Greenwich and Lewisham via a tunnel under the Thames.

Therefore the DLR is certainly destined to be a much larger system than ever envisaged or planned for in the transport studies of the seventies.

A future repercussion is likely to be that the cheap competitively tendered DLR may not be able to cope with the passenger traffic generated - largely as a result of the long term implications of the Canary Wharf and City Airport developments. Currently, the station platforms are already being lengthened and the bridge sections strengthened and enlarged.

Therefore further lines or substantial upgrading to a true 'mass transit' system with a capacity for peak flows in the region of 15,000 to 20,000 PPH/ED may well be needed**. It must be correctly argued that the railway and the area are indivisible.

5.2 A direct further repercussion of the City extension is the Canary Wharf project. This scheme represents the largest single property development currently being built in the world, ten million square feet, mainly of office space, to be sited on the former Canary Wharf in the heart of the Docklands redevelopment and strategically placed between Bank (London's established financial centre) and the City airport

Originally it was proposed that the office element would largely be accommodated in three 600 - 800 foot high skyscraper blocks*. A number of large public concourses,smaller tower blocks and shopping malls were also incorporated in the plan. However the scheme now being built will comprise a single massive structure which will be the highest in Europe.

The initial idea and commitment for the project come from a consortium of American and European banking and financial organizations (including Credit Suisse, First Boston and Morgan Stanley). However in 1987 the entire scheme was taken over by the Canadian Development Conglomerate Olympia and York. The new plan is not too dissimilar to the original proposals but with only one massive tower block with a DLR station integrated into its fabric.

The scheme is almost entirely within the enterprise zone which means that the occupiers will not have to pay local authority rates until April 1992, a considerable saving compared to other areas in London. This particular concession however does not represent the major raison d'etre for the mammoth proposal of the consortium. More fundamental, theoretical and pragmatic reasons may be suggested in terms of geography, history and timing. The man-made peninsular of Canary Wharf (just under a kilometre long) is located exactly on the 0° Greenwich meridian of longitude. This

---

* This would have made these particular buildings among the highest in Europe.

** It is worth noting however that the DLR system is capable of great flexibility and certain London transport analysts now confidently predict flows of 12,000 PPH/ED and even up to 16,000 are possible in the year 2000 AD when the system may be virtually completed.

tends to reinforce Britain's ancient and present artificially created location as centre of the world, particularly in respect of the important time zones between New York 74° W and Tokyo 140° E. The Chairman and Chief Executive of Credit Sussie, First Boston (Mr. J.M. Hennessy) clearly recognized its importance when he stated in 1968 that 'for historical reasons, for cultural reasons, London really is the centre of today's global market place' and it is an important and accepted fact that financial markets operate over a twenty-four hour time cycle.

5.3 The timing of this project in relation to the 'Big Bang' may be considered most important and cannot be over-emphasized too strongly. In December 1986 the New York Chairman of Merrill Lynch Capital Markets (Dr. Michael von Chemm) summed up the situation quite succinctly: 'One has to create a new kind of working space for firms which are trading in securities and money and exchange on a global basis. These very large financial trading firms are suffering in terms of costs and efficiencies and management control because their operations are scattered in different locations in the existing Square Mile ... the City of London is not able to provide this kind of space ... that is why Canary Wharf is so exciting, it is an unbelievable historical coincidence of an overriding need being met by an extraordinary urban development in just the right location'.

The fact also that LDDC have laid out much of Docklands with a fibre-optic cable network means that good telecommunications is assured - a most important factor for modern business.

Certainly the existing 69 million square feet of office space located within the Square Mile can only be increased gradually in the short term. Even allowing for some relaxation in planning controls which came about in early 1986 and which could allow for the creation of an additional 20,000 square feet. Some City of London* local government planners are understandably, unofficially, against the Canary Wharf project. They realize (almost certainly correctly) that the City's dominant role as a provider of very lucrative office space will be partially undermined by the consortium's development.

It will be interesting for the developers and others to witness Canary Wharf after the turn of the century. Will it become a true satellite of the City or vice versa? They could be destined to become the major geographically twin financial centres of the world.

6. Conclusions - Open questions

6.1 In essence the Docklands regeneration to date represents a classic case history of generally uncoordinated, fortuitious and incremental decision making, with the longer term consequences yet to come. Certainly LDDC's market led approach, has been highly successful in encouraging the developers to take advantage of the land availability. Not that the developers needed much wooing with the accelerating high demand for offices for the financial and ancillary sector; by domstic and international companies (post 1979 new Exchange Control Regulations), also the guaranteed access provided by the new rail system.

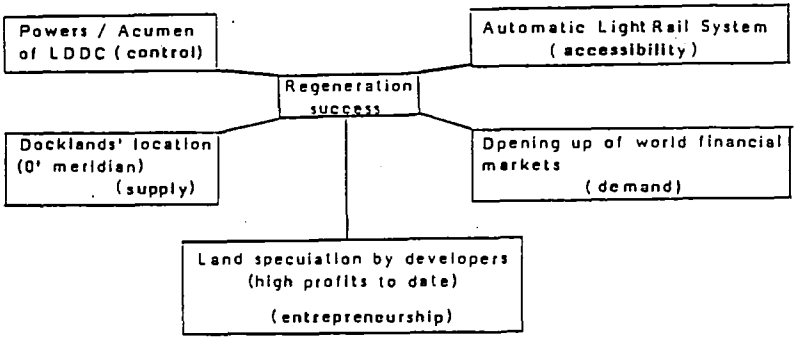
---

* The City of London Corporation however publicly accept the necessity for office developments being located in Docklands.

This particular factor was greatly enhanced by the decision (rather late in the day) to build an automatic light rail system, which provided the forward looking and high technology image* for Docklands, which was exactly what was needed in this early 80's period. Two other critical factors may also be postulated for the regeneration: the strong powers which were given to LDDC by central government, enabled the 'vesting' procedure to overcome the hitherto stubborness of the utilities releasing strategically placed land. This being placed subsequently on the open market by LDDC. An injection of government funding at this critical period was also of importance.

6.2 The last but undoubtedly the most significant factor of all is Dockland's location** close to one of the established financial centres of the world - the City of London. The fact also that part of Docklands lies symbolically exactly asride the 0' meridian gives it a perceptive edge in the 'global' world of revolving finance.

It is highly probable that if there had been on absence of any of these factors / cornerstones present during the period 1980 - 1989 (together with the 'developer'), it is most unlikely that London's Docklands would have been regenerated in such a rapid and spectacular way. Figure 5.



( ) key influencing elements

Figure 5: The major factors in Docklands' Regeneration 1980-1989

---

* It is interesting to speculate what might have happened if the recommended busway system had been selected instead of rail (Transport Report 1981)

** It is doubtful if any future urban development corporation in Britain even if given similar powers to LDDC will be able to achieve so much so quickly due to the locational uniqueness of Docklands.

6.3 Certainly Docklands regeneration of land use and transport infrastructure has represented a 'bonanza' for the developers with annual profits on average being in excess of 500 per cent annually on land developed for housing and commercial activities. (Table 3)

Type of land	1981 Average selling price per acre £	1987 Average selling price per acre £	Difference £	Annual % change
Housing land	33,000	1,100,000	1,067,000	538+
Commercial land	75,000	2,000,000	1,925,000	427+

NB No allowance is made in this table for inflation over the 6 year period

Table 3: The difference in land values in Docklands 1981-1987

Interestingly in 1988 and 1989 it would appear that land values are levelling off and show only marginal increases*. Therefore such high annual profits are unlikely in the future.

It may be legitimately concluded that Docklands' regeneration 1980-1988 by the LDDC has not been orientated or motivated directly towards the local and social needs of the former population and employers of the area, which was clearly the main objective of the regeneration plans produced in the 70's. The 'on the ground' evidence reveals that the needs of the developer and more lately the demands of new high income residents have received most attention. Whether or not this strategy will continue is likely to depend on external public and political pressure on the management decisions of the LDDC§

6.4 A final conclusion is also in the form of a criticism of the LDDC and as the 1985 Memorandum on the LDDC correctly argues "The LDDC has been given development control and other local authority poers under normal circumstances, when a local authority exercises these powers it is subject to the checks and balances imposed by the democratic process". The permissions have already been granted for up to 20 million square feet of office, commercial and leisure space together with up to 20,000 houses / flats by the year 2000.

In the absence of any forward planning framework or any authoritative quantitative or qualitative evaluation of the likely effects of the scale of these developments, the checks and balances should / could be in the form

---

* These figures are not included in this table as they have not officially been published.

§ In 1989 LDDC have openly recognised the problem of providing social housing in the area, and nine member of senior officers are to be employed to try and deal with these aspects.

of published objective research. To be accountable LDDC should have undertaken studies on such fundalmental (even if hypothetical) open questions, such as:

(i) The likely travel behaviour characteristics of its high income residents (e.g. Surrey Docks) and the consequent accessbility demands within and outside the area?

(ii) What might be the long term future for the DLR? Could it become privatised completely and become a most important horizontal shuttle service between Bank, Canary Wharf and the City airport (with a possible extension to a future Peckham Rise Terminal to connect with a high speed train to Europe).

(iii) How successful will be the Canadian developers, Olympia and York, in letting the whole 12 million square feet* of office and commercial space that they are now building? (Even allowing for the relative cheap rents £30 square foot - March 1989 figure).

(iv) What type of place is Docklands really destined to become in the twenty first century - a vibrant 24 hour inner city activity generator or a more sterile and grandiose office complex, with a mixture of expensive private and social housing where demarcation lines are likely to be firmly drawn and the security boundary the norm?

Research is urgently needed to shed light on these open questions. While continual monitoring and sensitivity to the physical and social manifestations of the Docklands' regeneration should be among the prime objectives for the LDDC policy makers in the 90's.

References

Bonnet, C. (1987)	On Track with a New Transport Artery, Transport, Vol. 2, No. 2, June edition
Cullen, G. (1982)	Isle of Dogs. A guide to design and development opportunities - London Docklands Development Corporation
Docklands Joint Board (1976)	London Docklands - A strategic plan report published by Docklands Development Team
Doe et al (1981)	A study of Lower Cost Alternatives, published as a special report, 1981
Euromoney (1986)	Canary Wharf - A special supplement - special edition, December
Goldsack, P.J. (1987)	LRT gives London Docklands a chance, Mass Transit, Vol. XIV, No. 6 June

* To date only quarter million square feet has been let (to Merril Lynch and Associates), although high inducements are rumoured to be common in the city.

Greater London Council & Docklands Boroughs (1985)	Memorandum on the London Docklands Development Corporation - GLC Supplies Dept.
International Railway Journal (1986)	Editorial Docklands leads British LRT revival, Vol. XXIV, No. 4, March
Jolly, S. and Bayman, B. (1967)	Docklands Light Railway Official Handbook, Capital Transport Publications
Jones, T.S.M. (1986)	Riverside Urban Redevelopments - The Way Ahead, Public Space Tokyo (published in Japanese) Vol. 2, No. 8
Jones, T.S.M. (1987)	Tokyo and London Urban Development Situation, Public Space Tokyo (published in Japanese), Vol. 3, No. 9, 1987
Jones, T.S.M. (1988)	Transport Infrastructure and Docklands Redevelopment, Working Paper, No. 1, City University Transport Studies Group
London Docklands Development Corporation (1984-1988)	Corporate Plans
London Transport (1980)	The possible future role of intermediate capacity guided transport system in London. A special report prepared by Railway Development Group.
London Transport (1981)	Docklands Rail Study
Shepherd, J. (1985)	Land, landholders and the regeneration of London Docklands. Occasional lecture.
Smith, A. (1987)	Housing in Docklands. A report prepared and published by Docklands Forum.
Travers Morgan & Associates (1973)	London Docklands. Vols. 1 & 2. A consultant report
Wyse, W.J. (1986)	Docklands update. Modern Tramways. Vol. 49, No. 585, September edition.