
The Suburbanisation of Office Development in Dublin and its Transport Implications

Andrew MacLaran

Department of Geography, Trinity College, Dublin

James Killen

Department of Geography, Trinity College, Dublin

Introduction

Cities exist primarily to accommodate the vast range of functions associated with the division of labour. By and large, it is the private-sector property development sector which equips space to accommodate this multiplicity of operations. Competition for land and buildings between functions possessing different market power, together with the operation of planning systems which have historically favoured monofunctional zoning, have created an urban landscape in which functions tend to become geographically separated. Transport infrastructures provide the essential links between residential environments and employment locations.

The first part of this paper reviews the changing location of office functions in Dublin in recent decades, its focus reflecting the growing significance of office-based employment in the urban economy. It reviews the shift in the geography of development from one which focused predominantly on the inner city during the 1960s until the 1980s, towards one in which numerous and widely-spread suburban sites accounted for a growing proportion of new development in the 1990s.

The second part of the paper discusses some of the transport implications of these locational changes, paying particular attention to the potential role of public transport in catering for the resultant pattern of journeys to work. It alludes also to the extent to which the most important suburban office nodes will benefit if the currently proposed transport infrastructure developments (Dublin Transportation Office, 2000) are implemented. The implication for long-term land-use and transport planning policy are discussed at the end of the paper.

Office Development in Dublin

Over the past fifty years, Dublin has been transformed from a relatively compact city to a sprawling metropolis with an outer commuter belt extending for 90 km. from the city (Williams and Shiels, 2000). Residential suburbanisation through the course of the twentieth century was followed from the 1960s by the movement of industrial functions to purpose-built suburban industrial estates (MacLaran and Beamish, 1985) and the suburbanisation of retailing (Parker, Kelly and Kyne, 2001). With their high requirement for accessibility for workforce and clients, together with the benefits for personal and business interaction afforded by the clustering of operations, city centres long dominated office location. This was especially

true when commuting depended to a greater extent on public transport services, normally organised on a radial basis to bring workers from residential suburbs to the central business area.

During the 1960s, the focus for office development lay in the central-city postal district of Dublin 2 and the high-status inner suburb of Dublin 4. These comprised the most prestigious and best preserved parts of Dublin's townscape, developed from the early eighteenth to late-nineteenth centuries, and were already undergoing functional transformation as residential accommodation became increasingly converted to office use. The development of new office buildings accelerated the existing trend towards functional upgrading and, by the late 1960s, Dublin 2 and 4 had become established as the city's prime office core. Planners' conservation objectives for the existing townscape increasingly lost out to the pressure for redevelopment. Of the 45 office development schemes which were developed during the 1960s, 40 were located in Dublin 2 or Dublin 4. They accounted for 114,200 sq. m. of floorspace, comprising 92 per cent of the total. The most significant of the off-prime developments included the landmark trade-union building, Liberty Hall, in Dublin 1, the Phibsborough Tower, Dublin 7, and Esso House in suburban Stillorgan.

During the early 1970s, the spread of office development continued to widen. It comprised geographically isolated buildings situated in the inner-city postal districts of Dublin 1, 7 and 8, the secondary areas for office development fringing the prime office core. The most notable scheme was Park House (11,148 sq. m.) on the North Circular Road. Located some 2 km. from the city centre, permission had here been granted to develop a scheme with a higher than normal plot ratio in order to encourage schemes on the less-favoured northern side of the river Liffey and away from Dublin 2. Developments outside the canal ring (the traditional demarcation of the inner city) included the city-side of Dublin 6 in Ranelagh and around Ardee road. Office developments in the more distant suburbs were also undertaken, most notably in Inchicore, Finglas and Cabinteely, where the Bank of Ireland developed its computer centre. Schemes were also completed in Dun Laoghaire, at George's Place, and at Sandyford at the Irish Management Institute.

By the end of the 1970s, although there was some evidence of office development overflowing from Dublin 2 and Dublin 4 into the inner-city fringe and even into the inner-suburb of Dublin 6, little dispersal had taken place to the outer suburbs. Only twelve of the 188 office buildings that were built from 1960 to 1979 were located in the outer suburbs. They comprised just 21,435 sq. m., amounting to 3.6 per cent of the city-wide modern office stock of 593,190 sq. m..

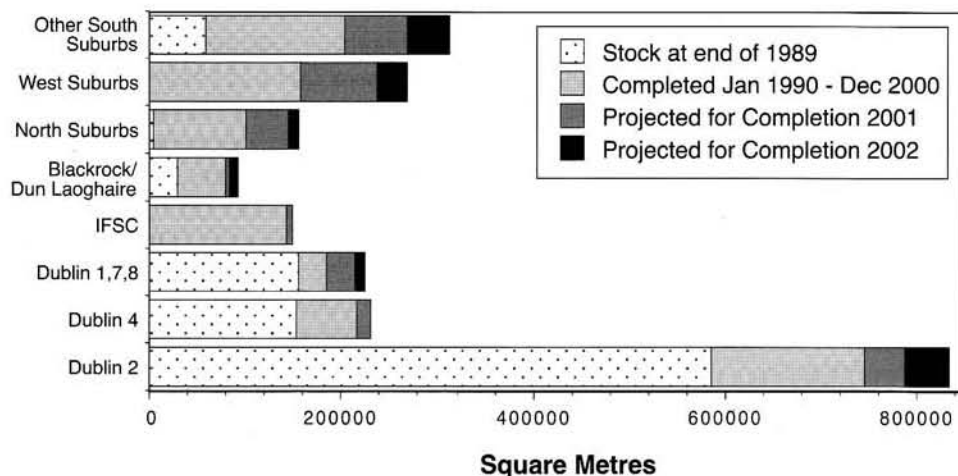
With the arrival of the second office development boom towards the end of the 1970s, growing interest began to be shown by developers in more peripheral sites. During the 1980s, a further 382,100 sq. m. of office space was built, with some 46,840 sq. m., amounting to 12.3 per cent, being located in the outer suburbs. In the early part of the decade, as the second office boom reached its height, Dun Laoghaire and Blackrock emerged as focal points for development. Further space was also developed at Cabinteely, Sandyford-Leopardstown, Stillorgan and Dundrum, while the first office schemes in the inner-suburb of Clonskeagh had reached completion by mid decade. There was also significant development of isolated buildings across a wide range of outer-suburban locations, for example at Ballybrack, Glenageary and Kill O' the Grange to the south and Santry and Swords to the north.

Yet, by the end of the 1980s, when the stock of modern office space amounted to 975,285 sq. m. in 365 developments, its distribution continued to reflect the overwhelming preference of office users for centrally located premises (Figure 1). The postal districts of Dublin 2 and Dublin 4 together accounted for 75 per cent of the modern stock. A further 16 per cent was located in the margins of the inner-city (Dublin 1, 7 and 8). In contrast, the outer suburbs accounted for just 9 per cent of the total. Two areas of significant clustering had emerged at Blackrock, which accounted for 15,250 sq. m. of floorspace, and Dun Laoghaire with 13,120 sq. m.. The remaining outer-suburban office space, amounting to over 24,300 sq. m., was widely dispersed throughout the southern suburbs, with little development having taken place to either the north or west.

Rapid economic expansion during the 1990s generated a growing demand for office space to accommodate the expanding services-sector workforce. This led to the most intensive office development boom in the city's history. The spread of office development sites continued to widen. Fiscal incentives for the redevelopment of designated areas in central Dublin (mainly situated in Dublin 1, 7 and 8) and at a greenfield site in Tallaght, one of the city's three western overspill new towns, contributed to this widening of office development activity. The immediate impact of the incentives can be ascertained from the fact that in 1990-91, 34 per cent of space reaching completion was located in Designated Areas outside Dublin 2, including the International Financial Services Centre (IFSC) at the Custom House Docks in Dublin 1. Within two years, when the stock of modern office space in the city expanded by 18 per cent, a minority of new development was located in the traditional office core.

During the subsequent slump in development in the early-mid 1990s, central-area office sites which, in previous periods of quiescence would have remained fallow until the next office development upturn, became used for alternative functions, notably residential and hotel developments. Thus, when the office development cycle restarted in 1995-6, the paucity

Figure 1. Location of Office Space Completed, 1960-2002 (est.)



Source: CURS database

of central-city sites for office schemes was greater than ever. The shortages were compounded by increased levels of protection for historic buildings and other planning restrictions in the city centre. These increased the relative attraction of peripherally-located sites for development.

Simultaneously, there was an increasing demand by office users for peripheral locations which could more easily provide larger units (>10,000 sq. m.) at lower unit costs and provide higher car parking to floorspace ratios in attractive office or science park environments. Moreover, suburban local authorities encouraged office developments in order to enhance their commercial rates (local property tax) base. Neither was the enhanced accessibility afforded by C-Ring motorway overlooked. The overall result was that the suburbanisation of office development proceeded apace during the 1990s.

During the 1990s, scattered developments continued to reach completion in suburbs such as Stillorgan, Cabinteely, Dundrum, Kilmacud, Ballymount, Clondalkin, Santry and Swords. Development also continued apace in what had either already become or which were emerging as significant suburban office nodes, most notably Blackrock, Dun Laoghaire, Clonskeagh and Sandyford-Leopardstown.

In Sandyford-Leopardstown, adjacent to the Sandyford industrial estate, small-scale office developments took place in the early 1980s, led by McInerney's multi-storey Leopardstown Office Park and by the IDA-developed South County Business Park which was developed later in the decade. The office schemes attracted prestigious occupiers such as International Computers Ltd. (ICL), the Marketing Institute, Beauman and DBMS. However, its significance as a node became more firmly established during the 1990s with the attraction of leading companies such as Microsoft, Oracle, LG Goldstar Design, Trintech, Eurologic, Eircell, the AIB training centre, Barclaycard and Bank of Ireland. Adjacent to the M50 and with the prospect of a light-rail (Luas) connection to the city centre, office development accelerated during the latter half of the decade. It involved both green-field sites and the redevelopment of low-value industrial properties. From having an office stock of just 5,967 sq. m. in 1990, Sandyford will have developed into a substantial suburban office node with over 143,250 sq. m. of office floorspace by the end of 2001.

New proto-nodes also appeared in the inner-suburb of Dublin 3, with the development of the East Point Business Park, and in the outer suburbs at Tallaght, Citywest and along the Nangor road. East Point, Tallaght and Park West availed of fiscal incentives to encourage development. Such was the scale of development activity in these new locations that by the end of 2000, East Point comprised the largest suburban office node, surpassing the more established suburban centres at Blackrock, Dun Laoghaire and Clonskeagh.

During the period 1990-2000, less than 20 per cent of the office space developed in the city was situated in Dublin 2, with a further 8 per cent being located in Dublin 4. In contrast, the outer suburbs accounted for 53 per cent of the total. As a result of the unprecedented scale of the development boom and its changed geographical focus, the distribution of the city's modern office stock had been transformed. By the end of 2000 only 40 per cent of the modern stock was located in Dublin 2, with Dublin 4 accounting for a further 12 per cent. The outer suburbs accommodated some 30 per cent of the total.

A review of the office development schemes under construction in June 2001 permits a projection to be made of the volume of office development that will be completed during 2001 and 2002. The location of projected development is depicted in Figure 1. Over 260,000 sq. m. of office space are likely to reach completion in 2001, with a further 170,000 sq. m. in 2002. Such is the scale of this projected development that, if completed, the city-wide stock of modern office space would increase by 23 per cent from 1.83M sq. m. to 2.264M sq. m. in just two years. Over 66 per cent of the projected completions would involve suburban floorspace. Thus, by the end of 2002, around 36 per cent of all modern office space in the city, comprising almost 830,000 sq. m., may be located in the suburbs. This figure is larger than Dublin's total stock of modern office space in 1984. Moreover, these calculations do not take account of the estimated additional 105,000 sq. m. of modern office space associated with industrial management operations and tele-services functions which is currently in existence on industrial estates, primarily in peripheral locations (MacLaran, 1999).

With regard to the foregoing projection, it needs to be pointed out that a deepening of the current economic down-turn is likely to occasion the scaling down of a proportion of this projected development activity. This is especially true of suburban developments. With peripheral vacancy rates in July 2001 ranging from 11 per cent in the southern suburbs, to 20 per cent in the north and 27 per cent in the western suburbs compared to central-city rates of just 3 per cent, initial rents had fallen by around one third in some peripheral locations during the second half of 2001 and increasing difficulties arose in obtaining funding for further development. Yet, in the longer-term, the spatial trends discussed above are likely to continue.

Suburban Office Nodes and Public Transport Provision

As has been mentioned already, transport and accessibility considerations have been one of the major forces driving the increased suburbanisation of office functions in Dublin. From the point of view of the occupants of the new office developments, a matter of crucial importance concerns the manner in which and the ease (or otherwise) with which the journey to work can be undertaken. On a city-wide basis, the spatial outcomes in terms of the level and pattern of work trips generated by the revised distribution of offices has important planning implications.

At the time when the city centre was the most important location for offices, public transport played a key role in the journey to work. In 1967 for example, Dublin Corporation traffic counts suggest that the breakdown by mode for journeys over the inner cordon in the morning peak hour was estimated to be: car 34 per cent, bus 51 per cent, train 3 per cent and other modes 12 per cent. By 1997, these figures were 48 per cent, 25 per cent, 13 per cent and 14 per cent respectively. While the share of trips being handled by the public transport modes declined over the thirty-year period, they were still playing a significant role in delivering workers to the city centre. The use of public transport for the work trip is obviously desirable in terms for example of using existing road space efficiently and in terms of sustainability.

A crucial issue that the suburbanisation of offices has raised concerns the extent to which public transport can play a significant role in the revised pattern of work trips so created. Exact figures are not available but firm conclusions can be drawn by examining the levels and patterns of public transport provision at some of the more important suburban office locations.

Table 1 and Figure 2 depict the most important of the suburban office locations cited earlier in the paper. These include the long-established nodes at Blackrock and Dun Laoghaire where office development has been grafted on to pre-existing service centres and, in the same vein, Santry and Tallaght which represent similar office centres of more recent origin. Clonskeagh is selected as a location which developed strongly in response to the availability of a suitable development site at a south inner-suburban location and a relaxed planning attitude towards car parking on the part of the former Dublin County Council; much of this site also benefits from a Dublin 4 postal address. Sandyford/ Leopardstown, Citywest Business Park situated west of Tallaght, Park West Business Park adjacent to the Nangor road, and the enterprise zone at East Point Business Park are chosen to represent rapidly growing peripheral office locations which are largely not associated with other commercial development.

Table 1 gives for each of the nine locations cited a number of statistics, namely the number of bus routes with at least ten buses per day in each direction on Monday to Friday serving it,

Table 1. Public Transport Provision at Selected Suburban Office Developments

Location	Number of Routes	Number of Buses	Percentage on Routes To/From City Centre	Other Public Transport*
East Point	1	49	100	None
Nangor Road	1	71	100	Suburban Rail
Sandyford-Leopardstown	2	105	36	None
Citywest	3	106	100	Bus Eireann
Clonskeagh	1	153	100	None
Blackrock	5	418	86	DART
Santry	7	550	58	Bus Eireann
Dun Laoghaire	8	558	74	DART
Tallaght	9	682	83	Bus Eireann

NOTES

Routes using the same number but with different letter designations to indicate minor variations e.g. 7, 7A, 7X are taken as comprising one route.

* As provided by Iarnród Eireann or Bus Eireann; in the case of certain locations (e.g. East Point and Citywest), private bus operators provide limited service.

DART - Dublin Area Rapid Transit, electrified suburban heavy-rail service

Suburban Rail - diesel-based heavy-rail service

Bus Eireann - long-distance coach service

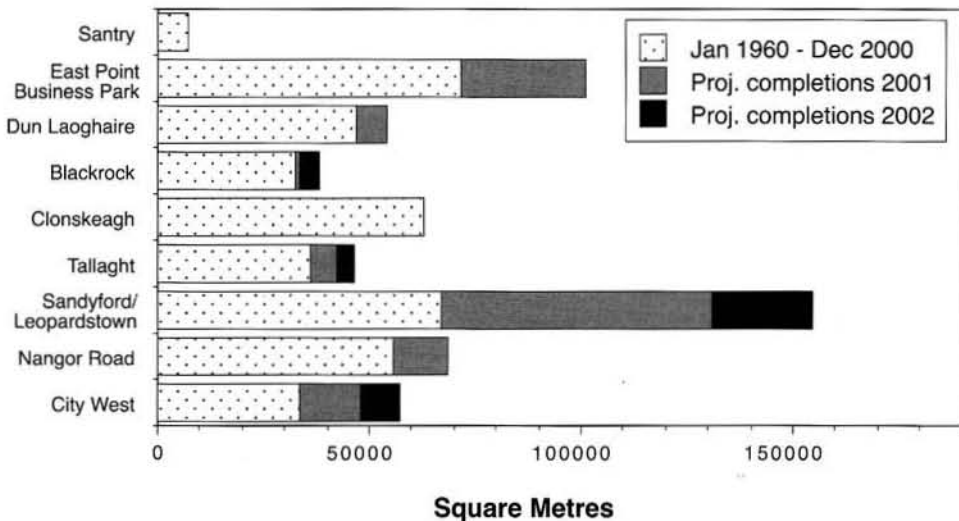
the number of buses arriving at the location per day (Monday to Friday), the proportion of these buses that are en route either to or from the city centre, that is operating on radial rather than on circumferential routes and finally, the other public transport connections available. Routes using the same number but with different letter designations to indicate minor variations have been taken as comprising one route. The information relates to May 2001.

The first point to note is that all of the locations are poorly served by public transport. Indeed, it could be argued that two of them, East Point Business Park and Nangor road are not served at all by the services referred to in Table 1 as in both cases, the relevant bus stops are located some distance from the offices concerned. Yet, East Point Business Park is currently the largest development of those listed in the table. Clonskeagh is served by just one bus route even though it is well established and is currently the second largest of the developments listed. The case of Sandyford/ Leopardstown is also of interest in view of its relative size and planned development; at present, this location is served by just two bus routes with more than ten departures per day. Tallaght, the best served location, has but nine such bus routes. The comparable figure for the city centre is fifty-nine routes of which eight are cross-city routes.

The latter statistic suggests the extent to which the developments listed in Table 1 are at a disadvantage *vis a vis* public transport provision relative to the city centre and hence the relatively limited role that public transport can play *vis a vis* the journey to work. This disadvantage is even more stark when it is considered that the city centre is also located at the hub of the mainline and suburban railway systems and of the bus route networks operated by Bus Eireann and various private operators.

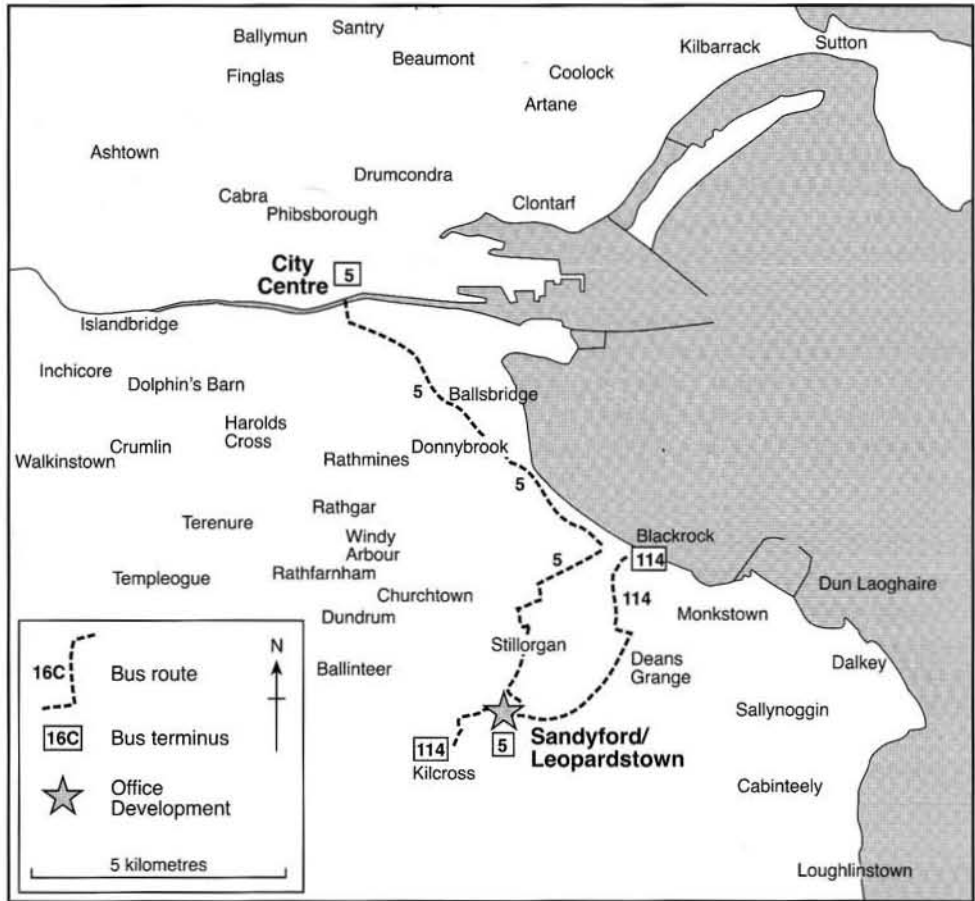
In general, the majority of buses in Dublin operate on radial routes from or to the city centre.

Figure 2. Office Stock at Selected Suburban Nodes & Projected Development 2001-2



Source: CURS database

Figure 3. Sandyford / Leopardstown: Public Transport Routes

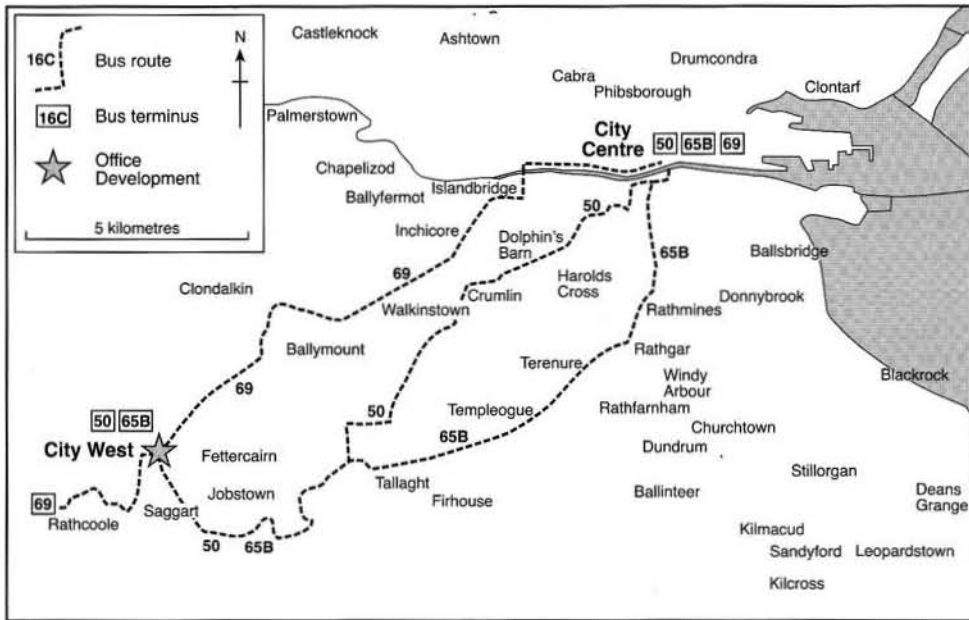


The proportion of buses operating to each location listed in Table 1 that are running on such routes is given in the table. As can be seen, all of the buses serving the East Point, Nangor road, Citywest and Clonskeagh developments are running on such routes as are the majority of buses serving all but one of the other centres. The exception is Sandyford/ Leopardstown where the most frequent bus route operates to a DART station where transfer is available to the city centre.

Given that the public transport service as currently provided focuses mainly on providing service along radial routes, the number of inter-suburban journeys that can be undertaken without travelling to the city centre first is limited. Thus there are major limitations on the range of destinations that can be reached easily by bus from the various suburban office developments.

The relative paucity of destinations that can be reached from some of the major office locations listed in Table 1 is shown in Figures 3 to 7. Figures 3 and 4 show the routes serving Sandyford/ Leopardstown and Citywest respectively. The most frequent route serving Sandyford/

Figure 4. Citywest: Public Transport Routes



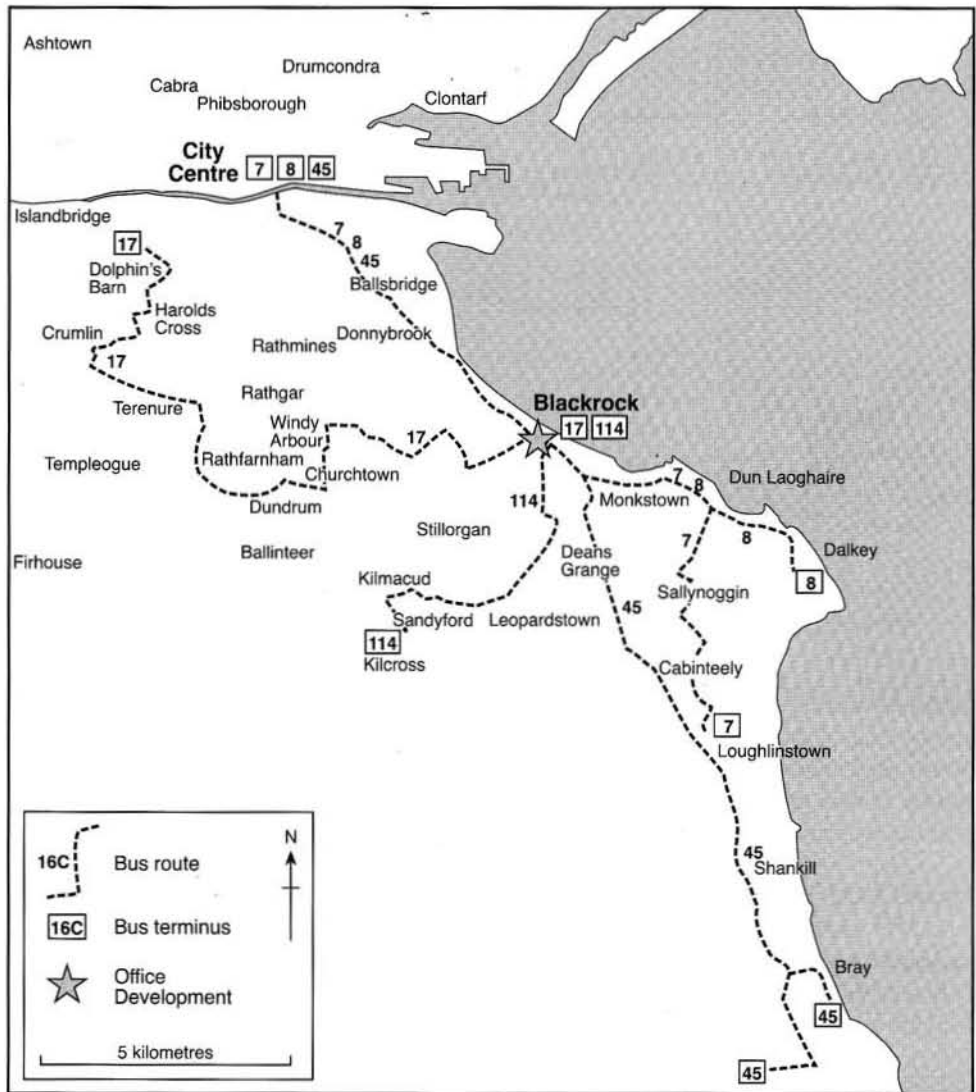
Leopardstown connects the development to the DART station at Blackrock while an infrequent service runs to the city centre. Citywest is at the outer terminus of two routes from the city centre while another route passes by. The maps emphasise the generally poor provision of service at both of these locations; yet, as indicated already, they are already of significant size and are expected to expand considerably in the next two years.

Figures 5 and 6 relate to Blackrock and Tallaght respectively. As can be seen, the level of provision of public transport at both of these locations is better than in the case of Sandyford/Leopardstown and Citywest. The position of Blackrock is enhanced further by the availability of DART service. In terms of bus service, Tallaght is the best served of all the centres listed in Table 1, yet it is served by just nine bus routes.

Figure 7 relates to Santry which has a relatively generous provision of service. Yet, this location does not comprise a pre-existing suburban node in the same sense as Tallaght or Blackrock. The relatively generous provision of public transport at Santry relates at least in part to the fact that Santry is located at the junction of an important radial route and a circumferential route.

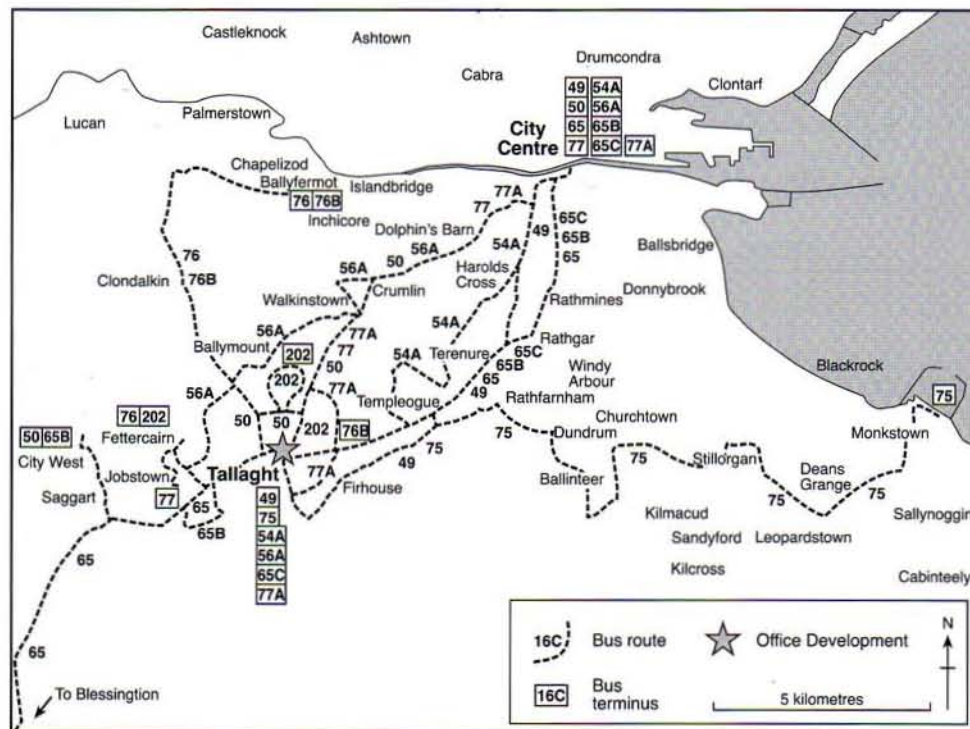
The major conclusion to be drawn from the foregoing is that all of the outer suburban office locations listed in Table 1 are relatively poorly served by public transport. It is notable also that in many cases, the bus routes serving the locations concerned were in existence long before the centres themselves were built. The alterations that have been made in public transport provision as a result of the completion of offices at the locations concerned has been minimal. This is presumably because the pattern of work trips associated with these locations is not one that can be serviced easily by public transport.

Figure 5. Blackrock: Public Transport Routes



Public transport is best placed to make a significant contribution towards meeting travel demands when these demands comprise relatively large flows concentrated along a relatively limited number of well defined routes. Such a pattern of work-trip flows has not been the end product of the suburbanisation of office functions. Rather, the overall geography of office work trip patterns has become more diffuse, connecting a plethora of suburban locations to range of office locations. The main implication of this is that the car has to be the main mode of transport for the work journeys associated with the new office developments. This sits uneasily against a transport policy that calls for an increased emphasis on the use of public transport and, in particular, the rail-based modes. It is also difficult to justify within the context of sustainability.

Figure 6. Tallaght: Public Transport Routes



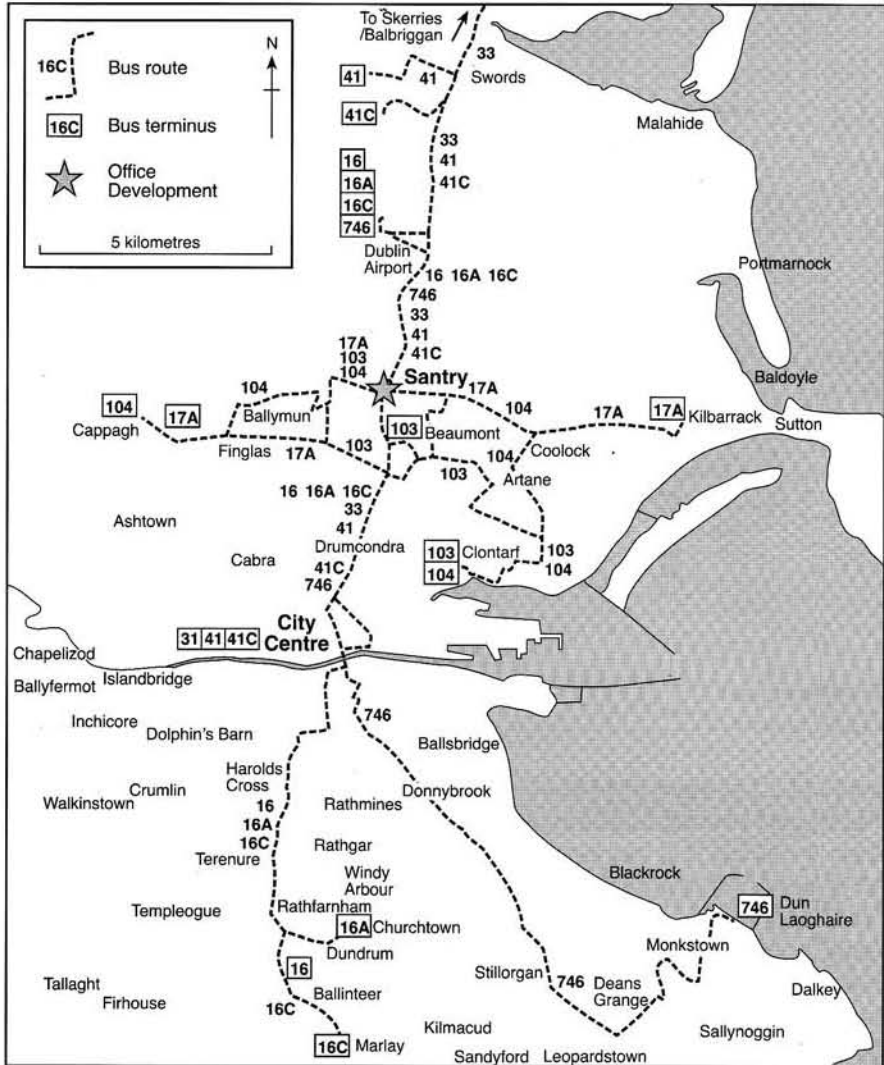
Future Public Transport Provision

Bearing in mind the current poor provision of public transport at the major suburban office locations in Dublin, it is interesting to note how the various locations in Table 1 will be served if the current transport planning proposals for the city and its surrounding region (Dublin Transportation Office, 2000) are implemented fully. Sandyford/ Leopardstown is scheduled to be served by the Luas (later to be upgraded to Metro) from 2003. It is planned that Citywest be served by Luas at a later date while East Point will ultimately enjoy access to both DART and suburban rail. No proposals exist in the current plans to link Clonskeagh or Santry to rail-based public transport. Nor is any improvement foreseen in the case of Nangor road which at present has access to a peripherally located railway station which offers a relatively low frequency train service. Even if the current transport proposals are implemented in full, something that seems less likely with recent economic trends, there will have been a significant time lag between the coming on stream of the office developments and the public transport infrastructure to serve them.

Long-Term Planning Implications

As was stated at the outset, the typical land-use arrangements of West European and North American cities traditionally involved the concentration of office functions in the downtown area with employees commuting from suburban locations. This created a predominantly radial pattern of journey to work trips with relatively large flows on the main routes with, traditionally, a significant proportion of these trips being undertaken by public transport. As has been shown already, the bus was traditionally the main mode of public transport in

Figure 7. Santry: Public Transport Routes



Dublin. This is in contrast to many other European cities where the rail-based modes have traditionally been of far greater importance.

Numerous authors, for example O'Farrell and Markham (1974) in the case of Dublin, have shown that journey time difference is the most important factor underlying the decision to use private or public transport for the work journey. Given that the car will always be at a time advantage relative to the bus where both of these modes are competing for the same road space, it is not surprising that as car ownership rose in Dublin, the car became the preferred mode of transport for the journey to work. Yet, this led to increased traffic congestion for all road users which, as has been stated already, was one of the forces driving the suburbanisation of offices. The suburbanisation of offices led in its turn to an even greater reliance on the car for the journey to work.

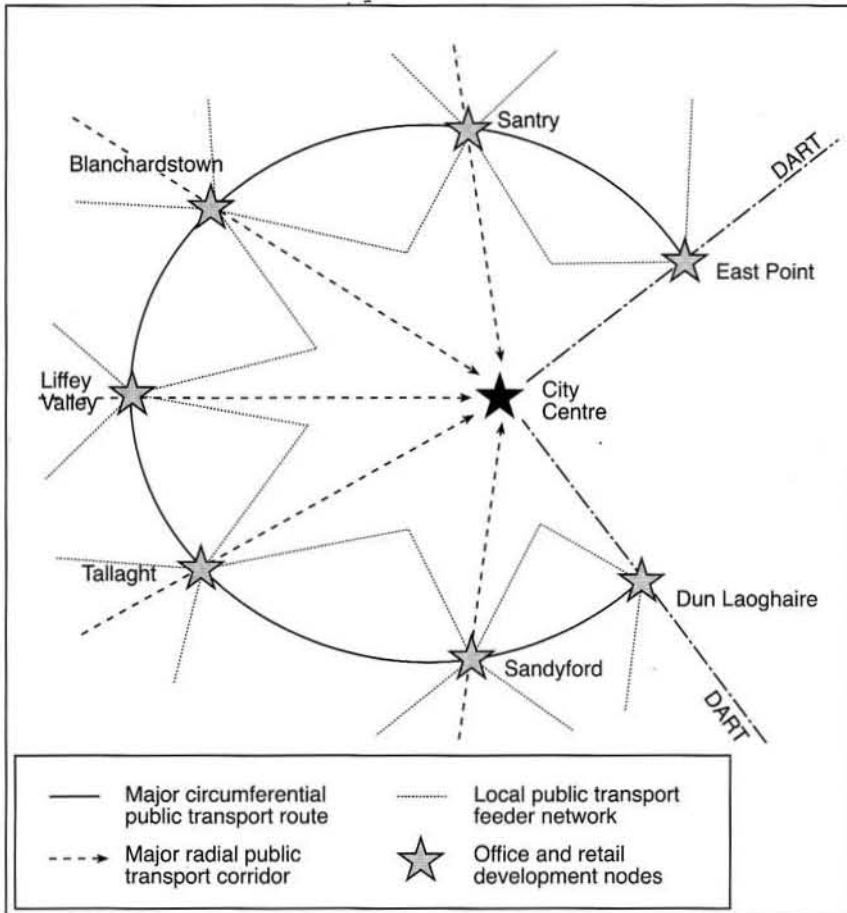
Looking to the future, it is obvious that there is no simple solution to the strains that have emerged as a result of the land-use and transport policies that have been followed in Dublin in recent times. There exists no simple transport fix because the 'problem' is not one of congestion. Rather it concerns the nexus between development, land-uses and the circulation between them. It is highly disturbing that there seems to be little official recognition of the nature, depth and complexity of this nexus; indeed, it could be argued that the current proposal to create a body to coordinate land-use and transport planning in the Greater Dublin area (Department of the Environment and Local Government and Department of Local Enterprise, 2001) represents the first time at national level that the link between these two has been acknowledged formally. On the ground, those currently charged with executing and planning transport policies still tend to approach the 'problem' with highly compartmentalised modes of thinking.

The overall conclusion that must be drawn is that while a planning model that places virtually all office functions in the city centre area, as was the situation traditionally, is inappropriate, one that spreads office development widely at a plethora of peripheral locations, as has been occurring in Dublin recently, is also inappropriate. This leads inevitably to the conclusion that if the macro-scale land-use arrangements in Dublin are to become more sustainable, the only appropriate planning policy is one which limits office locations to the central area and to a very limited number of carefully chosen suburban nodes and which incorporates appropriate transport measures at the design stage.

What properties should these outer suburban office locations have? The most important would seem to be that they must possess a well-developed transport infrastructure and, in particular, that they be served, at least in the future, by high quality public transport. The pre-availability of services and other commercial activities, as would be found at a pre-existing suburban node, would also seem to be an important advantage, if only because such mixed-use developments would help to sustain a high-quality and preferably rail-based public transport service throughout the day, rather than just at rush hour when it would be used by office workers. The development at Liffey Valley, where 8,400 sq. m. of office space is due for completion in 2001-2, is a good example of where the retailing element should provide a rationale for a full public transport service beyond the peak commuting times for office workers.

Figure 8 suggests an arrangement where a limited number of suburban office locations are permitted and are so arranged on a metropolitan scale as to be served by both radial and circumferential public transport services, together with local feeder routes. The model suggests seven suburban locations as candidates for major development as office and retail nodes. These would be linked to the city centre and to one another by high-quality, preferably rail-based public transport routes. Each node would also have local public transport services connecting its hinterland to the core. Such a model which retains a primary status for the city centre whilst assigning significant importance to a limited number of other locations and which has the provision of high quality transport corridors at its core would appear to be the only logical way in which development can be managed into the future. To develop along these lines would be very much in keeping with the philosophy underlying the current Strategic Planning Guidelines (Brady Shipman Martin et al, 1999).

Figure 8. A Model for Public Transport and Office Nodes



Conclusions

In terms of long-term sustainability, rather than profitability for developers, the current land-use/transport arrangements relating to suburban offices are highly inappropriate and inefficient. They do not suggest that any progress has been made in managing the use and conservation of environmental assets. Indeed, they suggest the opposite. The land-use arrangements we permit determine the operational efficiency of the cities we devise, as reflected in the cost of negotiating the ‘friction of distance’, whether measured by time wasted in travel or the costs of energy consumed.

Clearly, there will always be a need for some movement within cities, but the key implication arising from sustainability considerations is that circulation between functional areas of the city needs to be greatly reduced by moving towards a greater heterogeneity of land-uses. This will necessitate to a far greater extent an organisation of land-uses in which people work (and recreate) in locations close to home. It could be argued strongly that Dublin has already gone too far in the opposite direction. Looking to the future, it is imperative that

developments are promoted which move our cities towards the type of model depicted in Figure 8. Such a model recognises the value of the mosaic-like structure of the city and of that now largely abandoned planning concept of the neighbourhood. It is one that fully supports the European Commission's Green Paper on the Urban Environment (1993, 60) which states that:

"The strict zoning policies of the past decades which have led to the separation of land-use and the subsequent development of extensive suburbs have in turn stimulated commuter traffic, which is at the heart of many of the environmental problems currently facing urban areas. We therefore need a fundamental review of the principles on which town-planning practice has been based. Strategies which emphasise mixed-use and denser development are more likely to result in people living close to workplaces and the services they require for everyday life. The car can then become an option rather than a necessity."

Note

An earlier version of this paper was presented at the *Rio+10 Achievement and Challenge* conference, Sept. 2001, in University College Dublin in 2001 and published in Convery, F. & Feehan, J. (eds.) (forthcoming 2002).

References

Brady Shipman Martin et al (1999) *Strategic Planning Guidelines for the Greater Dublin Area*. Brady Shipman Martin & Associates, Dublin.

Commission of the European Communities (1990) *Green Paper on the Urban Environment*. Commission of the European Communities, Luxembourg.

Department of the Environment and Local Government and Department of Public Enterprise (2001) *New Institutional Arrangements for Land Use and Transport in the Greater Dublin Area*. Stationery Office, Dublin.

Dublin Transportation Office (2000) *A Platform for Change*. Dublin Transportation Office, Dublin.

MacLaran, A. (1999) Inner Dublin: Change and Development, in Killen, J. and MacLaran, A. (eds.) *Dublin: Contemporary Trends and Issues for the Twenty-First Century*, The Geographical Society of Ireland, Special Publication No. 11, Centre for Urban and Regional Studies, Trinity College Dublin.

MacLaran, A. and Beamish, C. (1985) Industrial Property Development in Dublin, 1960-1982. *Irish Geography*, 18, 1985, 37-50.

O'Farrell, P.N. and Markham, J. (1974) The Journey to Work: a Behavioural Analysis, *Progress in Planning*, 3 (3), 187-288.

Parker, A. J., Kelly, F.M. and Kyne, D. M. (2001) *The Dublin Shopping Centre and Retail Park Digest*. The Centre for Retail Studies, University College, Dublin.

Williams, B. and Shiels, P. (2000) Acceleration into Sprawl: Causes and Potential Policy Responses. *Quarterly Economic Commentary*, Economic and Social Research Institute, Dublin.