A Platform for Change

Outline of an integrated transportation strategy for the Greater Dublin Area 2000 to 2016

Dublin Transportation Office
September 2000

The Contents

1. The Background

The Final Report of the Dublin Transportation Initiative (DTI) was published in August 1995. It recommended an integrated transportation strategy for the Greater Dublin Area for the period up to 2011. The Government decided that this strategy should provide the planning framework for the future development of the transport network in the Greater Dublin Area.

One of the key recommendations of the DTI Final Report was that its strategy should form the first phase of an ongoing transportation planning process. The Dublin Transportation Office (DTO) was set up in 1995 to carry on that transportation planning process. This report provides a summary of the first updating by the DTO of the original DTI Strategy and outlines the resulting DTO Strategy.

The Greater Dublin Area comprises the local authority areas of Dublin Corporation and the counties of Fingal, South Dublin and Dún Laoghaire-Rathdown (the Dublin Region), and the counties of Kildare, Meath and Wicklow (the Mid-East Region).

The DTO Strategy outlined in this report has been prepared to support and complement the strategic land use planning framework described in the Strategic Planning Guidelines for the Greater Dublin Area, published in February 1999. This framework is illustrated in Figure 1. The current Guidelines are the fundamental basis on which the DTO Strategy rests.

The strategy also takes account of:

- the transport investment proposals in the National Development Plan 2000 to 2006;
- the development plans of the local authorities;
- the National Sustainable Development Strategy;
- the Green Paper on Sustainable Energy;
- the Dublin Suburban Rail Strategic Review;
- the Bus Network Strategy Appraisal for the Greater Dublin Area;
- the National Road Needs Study;
- the Eastern By-Pass Strategic Study;
- the ESRI's Medium Term Review;
- the views of representative organisations and interested bodies.

2. The Vision

The starting point for the development of a transportation strategy was to ask the question: "what type of city and region do we wish to live, work and relax in?". We attempt to answer this question in a Statement, which, in broad terms, describes our Vision for Dublin.

Vision Statement

The Vision sees the Greater Dublin Area as:

- a City and Region which embraces the principles of sustainability;
- a leading European City, proud of its heritage and looking to the future;
- the National Capital, seat of government and national centres of excellence;
- a strong, competitive, dynamic and sustainable Region;
- a Living City and Region, on a human scale, accessible to all and providing a good quality of life for its citizens.

The next step was to translate that Vision into a series of more concrete, though still broad, objectives under five separate headings.

The Regional Economy

- improve accessibility and reduce congestion;
- sustain economic development and regeneration;
- consolidate existing economic activity;
- encourage a further increase in participation in the labour force, particularly by disadvantaged groups in society;
- enhance goods distribution in a sustainable way;

Quality of Life

- reduce growth in the demand for transport, especially private transport;
- reduce the need for car commuting by improving the reliability, availability and quality of public transport;
- reduce travel times and congestion;
- ameliorate direct environmental effects of transport - noise, severance, air pollution and greenhouse gas emissions;
- promote cycling and walking as safe, sustainable and healthy means of transport;
- improve transport safety.

International and National Context

- act consistently with UN, EU and Government plans and policies;
- improve accessibility to ports and airports for passengers and goods;
- improve accessibility to and from the Greater Dublin Area;
- foster sustainable development.

Development of the City and Region

- promote the implementation of the Strategic Planning Guidelines for the Greater Dublin Area and the proposed National Spatial Strategy;
- within the Region, consolidate growth in the Metropolitan Area[1];
- within the Hinterland Area[1], promote the self-sufficiency of the Development Centres.

Efficiency in Implementation

- optimise the use of existing infrastructure and facilities;
- promote sustainable land use;
- ensure timely implementation to meet sustainable transport needs;
- ensure the efficient and cost-effective use of resources - public, EU and private sector;
- ensure that legislative, institutional and administrative structures optimise implementation;
- maximise self-enforcement;
- ensure minimum disruption during construction and implementation.

During the course of the update, the DTO Steering Committee set a number of further, quantifiable objectives:

- reduce the level of congestion to 1991 levels;
- provide adequate capacity for all journeys to work and education;
- the strategy should not focus exclusively on the City Centre but should also serve the wider Metropolitan Area and the Hinterland Area.

1 The Metropolitan Area and the Hinterland Area are defined in the Strategic Planning Guidelines. The Metropolitan Area broadly corresponds with the built up area of Dublin and the Hinterland Area is the rest of the Greater Dublin Area (see figure 1).

Figure 1 STRATEGIC PLANNING GUIDELINES

Legend:

- Transportation Corridor
- Future Transportation Corridor
- Metropolitan Area Boundary
- Primary Development Centre
- Secondary Development Centre
- Strategic Green Belts

3. The Challenge

It is worthwhile to compare the 1995 DTI Strategy with the position today - firstly by looking at the progress made in implementing the recommendations of the 1995 DTI study and secondly by looking at the changes in the demand for transport. This leads to a better understanding of the challenge that the DTO Strategy will face.

Substantial progress has been made in implementing the recommendations of the 1995 DTI Strategy:

- **Quality Bus Corridors (QBCs):** Four QBCs have been opened (Malahide Road, Finglas, Lucan and N11). Six QBCs are under construction (Swords, Blanchardstown, North Clondalkin, South Clondalkin, Tallaght, and Rathfarnham). The orbital QBC (from Tallaght via Clondalkin and Blanchardstown to Dublin Airport) is at the design stage. An additional QBC from Ballymun to the city centre is under construction.
- **DART/Suburban Rail:** the DART extension to Greystones is open. The extension to Malahide (including extra rolling stock) is at the commissioning stage. The improvements to the Maynooth line services are under construction and are due to be completed by end 2000. Signalling work that will increase capacity in the city centre is being commissioned.
- **Light Rail (LUAS):** Line A from Tallaght to Abbey Street is under construction. Line B from Sandyford Industrial Estate to St Stephen's Green is at the tendering stage. A revised Light Railway Order (LRO) application has been submitted for Line C from Abbey Street to Connolly Station. All are expected to be in operation during 2003.
- **Park and Ride:** 2000 extra spaces have been provided at suburban rail stations.
- **National Roads:** the Northern Cross Route (M50), the Balbriggan Bypass (M1), the Leixlip-Maynooth-Kilcock Bypass (M4) and the Finglas Bypass (N2) are open. The Southern Cross Route, junction improvements on the M50 and the Northern Motorway (Airport to Five Roads) are under construction. The South-Eastern Motorway and the Dublin Port Tunnel are at the tender stage.
- **Traffic Management and Parking:** Enforcement of, and accessibility to, on-street parking in the city centre has improved radically - largely due to the introduction of clamping and tow-away vehicles. The computerised traffic signal system in the city centre (SCATS) now covers 250 junctions. There is a new traffic control centre in Tallaght. Traffic cells and traffic calming are widespread.
- **Cycling:** 125Km of two-way cycle routes and 2300 cycle parking spaces have been provided.

There has, however, been considerable slippage in the implementation of elements of that Strategy, especially major infrastructure projects such as LUAS and the Dublin Port Tunnel.

There has been an unprecedented level of economic growth since the DTI Strategy was published in 1995. This has led to very large increases in the levels of traffic, resulting in much greater congestion.

The main factors influencing increases in traffic are economic growth, increases in population, the number of households and the number of people at work, and growth in car ownership and use. All of these factors have shown major increases in recent years. Continuing growth is projected in the period up to 2016, though at a somewhat slower pace.

FACTORS INFLUENCING TRAFFIC GROWTH

Greater Dublin Area	1991	1996	1999	2016
Population (million)	1.35	1.41	1.46	1.75
Households ('000)	402	446	521	675
Employment ('000)	452	549	602	878
Unemployment rate	16%	12%	6%	5%
Car Ownership (per 1000 population)	247	292	342	480
% Growth in GDP since 1991	-	42%	79%	260%

A recent review of the Strategic Planning Guidelines indicates that the forecast of population is conservative by at least 100,000 and the forecast of household numbers is conservative by up to 10%.

Growth to date has far outstripped the projections in the 1995 DTI Strategy:

- the population of the original DTI Area has grown more rapidly than was projected in the original DTI Strategy. The population predicted for 2001 was actually exceeded in 1997;
- GDP grew by 79% between 1991 and 1999, compared with a DTI forecast of 38%;
- the unemployment rate has already declined to around 5% while DTI was forecasting a rate of 17% in 2001 and 12% in 2011;
- the number of employed persons predicted for 2011 was exceeded in 1996;
- car ownership rates have substantially exceeded those projected and are steadily increasing towards the European average of 450 per 1000 population. Car ownership per 1000 population was 292 in 1996 and 342 in 1999, far outstripping the original DTI forecast of 288 for the year 2001;
- total passenger numbers through Dublin Airport in 1999 (12.8m) exceeded those originally projected for 2011 (11.0m), while the annual tonnage throughput at Dublin Port in 1999 (20.0m tonnes) was almost twice the projected level for 2011 (10.7m tonnes).

The consequence of this unexpected growth is that Dublin faces a rapidly increasing demand for travel, the scale of which is illustrated in the following table:

DEMAND FOR TRAVEL (Thousand person trips)

	1991	1997	1999	2016
AM Peak Hour	172	250	283	488
Off Peak Hour	107	157	179	256

Total peak hour trips have grown by 78,000 or 45% between 1991 and 1997. However, the bulk of that growth has been accounted for by private car commuting (+71,000). In 1991 the private car accounted for 64% of peak hour trips; by 1997 that had increased to 72%. The average journey time by car increased from 31 minutes in 1991 to 43 minutes in 1997, reflecting greater congestion and longer journeys.

By 2016, total peak hour trips are forecast to be 488,000, a 95% increase on the 1997 level. Total trips in the off-peak hour in 2016 will be 256,000. That is six thousand trips more than we experienced in the peak hour in 1997.

In addition to overall growth, the Strategy will also have to take account of changing patterns of travel. A comparison of journey destinations in the morning peak hour shows significant changes between the surveys carried out in 1991 and 1997. In the 1991 survey, the city centre was the primary destination. The 1997 survey showed that:

- the city centre continues to be the most popular destination;
- the south-east inner city remains a primary and growing destination;
- the fastest growing destination is Clondalkin/Tallaght. There was almost a fourfold increase in morning peak hour car trips to this area between 1991 and 1997 and it is now the second highest trip destination;
- Dublin Airport is a major destination for trips from all parts of the Greater Dublin Area;
- there is an extensive two-way trip demand between the western towns of Tallaght, Clondalkin, Blanchardstown and Dublin Airport and its environs;
- other areas of growing importance as peak hour destinations include Sandyford and the north fringe of Dublin City.

The challenge for the DTO is to prepare a transportation strategy that meets the objectives derived from the Vision Statement and the additional objectives set by the Steering Committee and that supports the development objectives of the Strategic Planning Guidelines. It must do so in the context of:

- slower than expected delivery of some of the major infrastructure projects recommended in the 1995 DTI Strategy;
- a rapid growth in population and households, leading to increasingly dispersed travel patterns;
- a substantial increase in employment leading to a large increase in the demand for travel in the peak hour;
- increasing car ownership resulting in additional commuting by car, which is economically inefficient and environmentally unsustainable;
- an unprecedented and continuing high level of economic growth.

4. The Technical Tasks

Deciding how to respond effectively to the transportation challenge required a great deal of detailed technical, transportation modelling and evaluation work. This was carried out over the past year by DTO staff, supported by specialist consultants. The following were the main elements of that work:

- updating of the DTO transportation model, taking account of transport infrastructure constructed since 1994, and committed transport infrastructure (such as completion of the M50 and LUAS lines from Tallaght to Abbey Street and from Sandyford to St Stephen's Green);
- updating the DTO transportation model to take account of the major changes in the volume and pattern of trip making;
- forecasting of 2016 transport demand for the DTO area;
- developing a conceptual high quality, high capacity public transport network for modelling purposes, consisting of a tight mesh of radial and orbital links, centred on Dublin City centre. The conceptual network was designed so that, in general, people in the Metropolitan Area need walk no more than 10 minutes to a public transport service;
- testing how this conceptual public transport network would cope with the 2016 forecast transport demand, and using the results to guide the development of an appropriate strategy for the period up to 2016.

The above technical work showed that, even with a comprehensive, high quality, high capacity public transport network, congestion on roads would be even worse than today. This is because many commuters would still choose to drive, even when excellent public transport was available to them.

Given the objective of reducing congestion to 1991 levels, it is clear that any strategy that relies on the provision of additional infrastructure and improved services alone will not succeed. It follows that some form of demand management is necessary. Examples of demand management include designing new developments to minimise the need for motorised travel, reducing the number of workplace parking spaces, increasing the cost of long-stay parking, car sharing, teleworking and road-pricing or congestion charging.

Following the above work on the conceptual network, the next stage was to examine possible practical strategies. The elements of the work carried out by the DTO were:

- establishment of the appropriate level of demand management to reduce congestion to 1991 levels;
- selection of the most appropriate public transport modes (bus, QBC, DART, LUAS or METRO) for each part of the conceptual network, based on the passenger flows;
- development of a set of viable transport strategies for Dublin in 2016, informed by strategic studies of the suburban rail network, the bus network, the Eastern By-Pass and the national road network;
- exhaustive testing and refinement of the transport network options using the DTO transportation model;
- multi criteria evaluation of two alternative transport strategies in terms of the economic, environmental, accessibility and transport integration impacts;
- choice of a preliminary preferred strategy;
- sensitivity testing of the strategy with demands levels 20% higher and lower than forecast;
- further refinement of the preferred strategy, the conclusions of which are summarised in this report.

5. The Strategy

The DTO Strategy has two interdependent elements:

- **Demand Management,** which seeks to reduce the growth in travel while maintaining economic progress, and which is designed to encourage a transfer of trips, especially at peak periods, from the private car to sustainable modes of transport (such as public transport, cycling and walking);
- **Infrastructure and Service Improvements**, including a substantial expansion of the public transport network, some strategic road construction and traffic management.

Complementary land use policies will reinforce and support the DTO Strategy.

The recommended strategy is an integrated one. It will only be effective when both elements are implemented together in a coherent way. Going ahead with the infrastructure element alone will not be enough. It must be accompanied by the demand management element and the complementary policies if the strategy is to achieve its overall objectives.

The rest of this Chapter briefly describes the principal components of the integrated transportation strategy. It includes:

- an integrated public transport network which provides for a radical transformation in the quality and quantity of services provided;
- strategic, but limited, improvements to the road network which will be managed in a way which does not encourage peak hour car commuting;
- traffic and parking policies which will encourage increased use of public transport and will optimise the use of the road network for all users;
- a freight management policy designed to provide the basis for a detailed strategy to facilitate the movement of goods and improve freight access to ports and airports;
- good quality cycling and pedestrian networks;
- a statement of policy on demand management which will provide the basis for the development of a detailed demand management implementation programme;
- guidance on complementary land use policies.

PUBLIC TRANSPORT

The public transport elements of the strategy will provide for approximately 300,000 trips in the morning peak hour in 2016, compared with about 70,000 today. To achieve this it will be necessary to create an integrated public transport network comprising the following principal components:

- a much expanded bus network, comprising an integrated mesh of radial and orbital services and a substantial increase in passenger carrying capacity;
- an improved DART/Suburban rail network including improved passenger carrying capacity on the existing network and the development of more tracks on existing alignments, an interconnector between Heuston Station and East Wall and other new rail lines;
- an extension of the on-street light rail network (LUAS);
- the development of a higher capacity segregated light rail network (METRO);
- a package of measures designed to improve the integration and attractiveness of the public transport network, including park and ride facilities, integrated fares and ticketing, quality interchange facilities and improved passenger information.

The role of the bus is likely to change quite substantially over time, particularly as the longer-term rail-based elements of the programme are put in place. In the short term, the bus will be the primary mode of public transport. As the rail-based networks are put in place, the bus will increasingly be used to feed passengers to rail services as well as carry them directly to their ultimate destination. The bus will also be used to fill in gaps in the mesh of public transport routes where a rail-based system is uneconomic, impractical or not feasible and also to extend the reach of the rail network.

It is our aim to make it possible to complete the bulk of public transport journeys in the Greater Dublin Area with not more than one transfer, whether intra-modal (e.g. bus to bus) or inter-modal (e.g. bus to rail).

When the public transport strategy is in place, the great majority of people living in the Dublin metropolitan region will be able to access the public transport network by walking 10 minutes or less. With this strategy, public transport will be a viable option for the large majority of trips.

Bus **(see figure 2)**

Buses are the most flexible form of public transport. The bus is, consequently, the most widely accessible form of public transport in the Strategy. There will be a tight mesh of radial and orbital routes linking the suburbs with each other and with the city centre. The network will comprise Quality Bus Corridors and extensive bus priority measures on other parts of the network.

The 10 radial Quality Bus Corridors (QBCs) recommended in the 1995 DTI Strategy will be completed. They will be extended and enhanced where necessary to ensure that buses on QBCs are not delayed by congestion. The one orbital QBC recommended in the 1995 DTI Strategy will be completed.

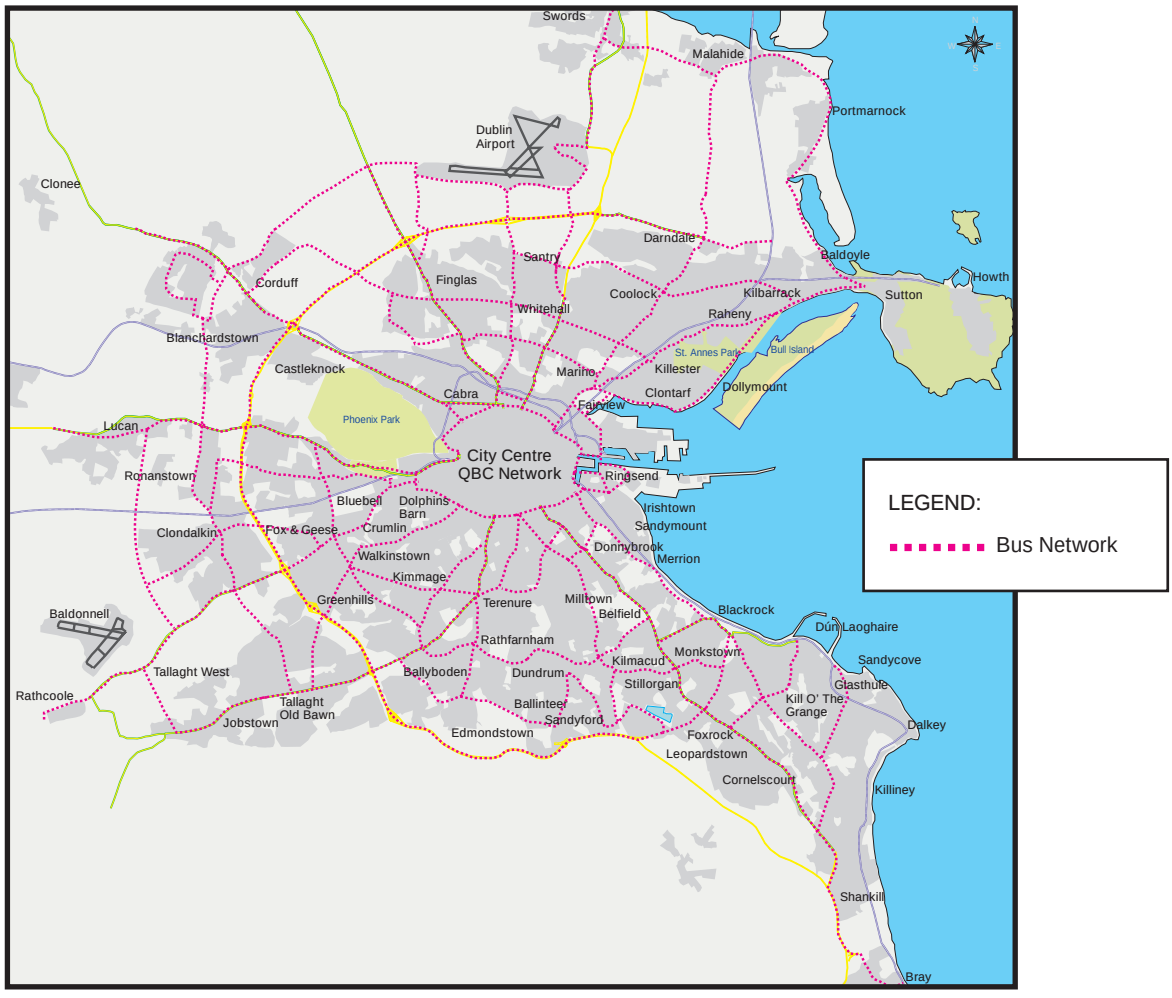
Additional QBCs will be built on radial and orbital routes.

There will be a city centre QBC network that will allow radial QBCs to access all parts of the city centre and to interchange with DART, LUAS and METRO stations. It will also facilitate cross-city services.

There will be bus priority measures apart from QBCs, in particular to access major residential, retail and employment centres.

Local bus services serving town centres in the Metropolitan Area and Development Centres in the Hinterland Area will be introduced and given priority where needed.

Figure 2 QBC/BUS PRIORITY NETWORK



DART/Suburban Rail **(see figure 3)**

Heavy rail systems, such as DART and Arrow, have high potential capacities but are very expensive to build. DART is now experiencing capacity problems during peak hours especially in the city centre. There is a severe bottleneck on the suburban rail services on the northern and Maynooth lines approaching Connolly Station. The Arrow service from Kildare terminates at Heuston Station, which is more than 2Km from the city centre.

The DART/suburban rail strategy is designed to make the maximum use of existing rail lines, in particular by eliminating the capacity constraints in the existing system. This requires:

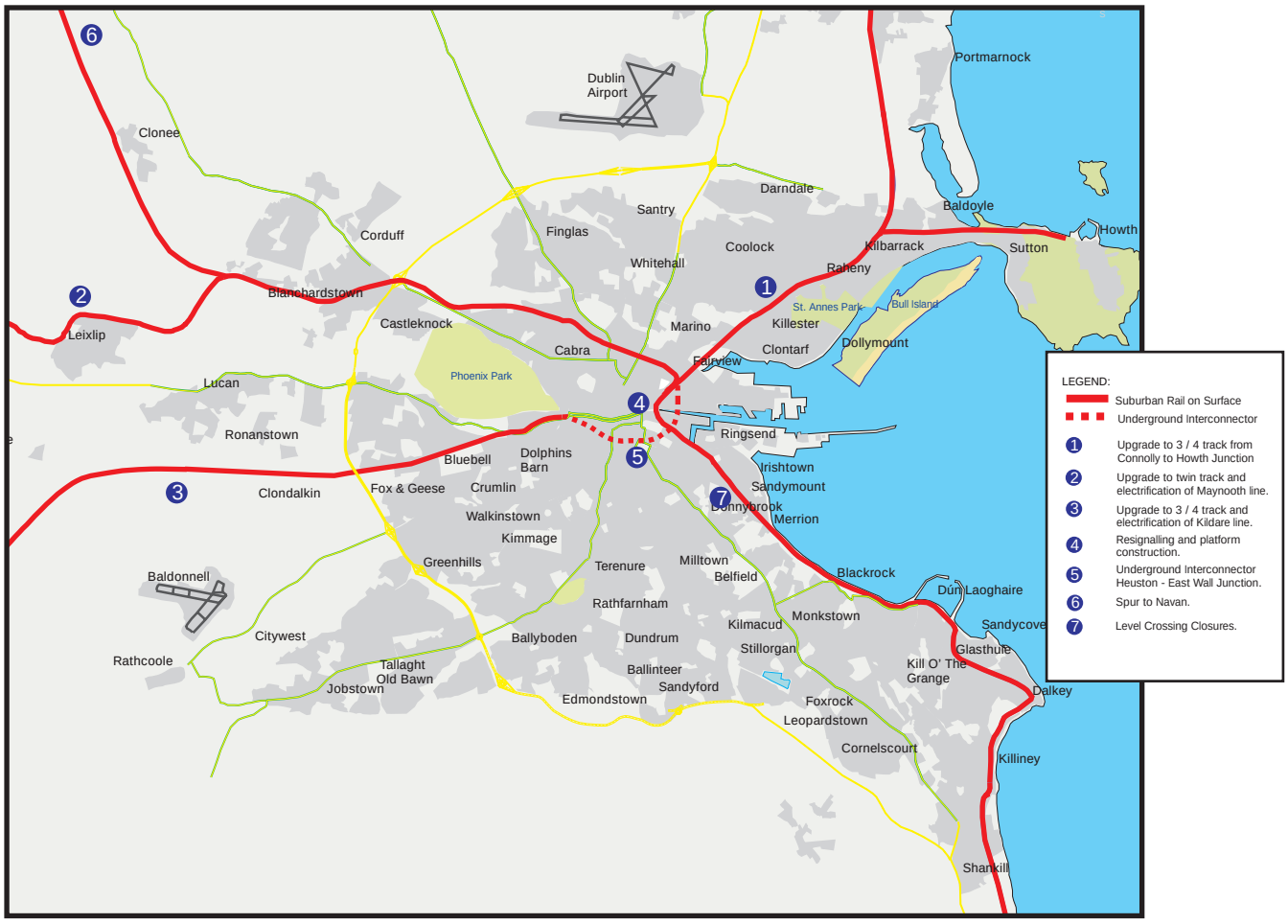
- upgraded signalling on the northern, Maynooth and Kildare lines to allow a substantial increase in the number of peak hour trains;
- lengthening of platforms to allow 8-car DART and Arrow trains;
- new platforms in Connolly Station;
- the removal of level crossings on the DART line south of Pearse Station;
- the segregation of intercity services from suburban services on the northern and Kildare lines. This requires three-or four-tracking from Connolly Station to north of Howth Junction and four-tracking from Cherry Orchard to Sallins.

The centre piece of the DART/Suburban Rail strategy is an underground interconnector linking Heuston Station with East Wall junction via Pearse Station and Docklands. This interconnector allows for through running from the Kildare line to the Maynooth and northern lines. It provides a by-pass to the east of the existing severe bottleneck approaching Connolly Station; it serves areas of high demand, especially the south-east inner city and Docklands; and it allows for the maximum use of the Maynooth and Kildare lines. Both of these lines will be electrified and this will permit a major extension to the present DART system.

There will be new rail stations, particularly near areas of new development adjacent to the existing rail lines.

A new spur rail line will be constructed off the Maynooth line near Clonsilla via Dunboyne to Navan.

Figure 3 DART/SUBURBAN RAIL NETWORK



LUAS (on-street light rail) **(see figure 4)**

The LUAS system is appropriate in corridors where passenger numbers are too high to be accommodated on bus but not high enough to justify the expense of DART or METRO. The LUAS system in this Strategy is founded on LUAS Line A (Tallaght to Abbey Street) which is under construction.

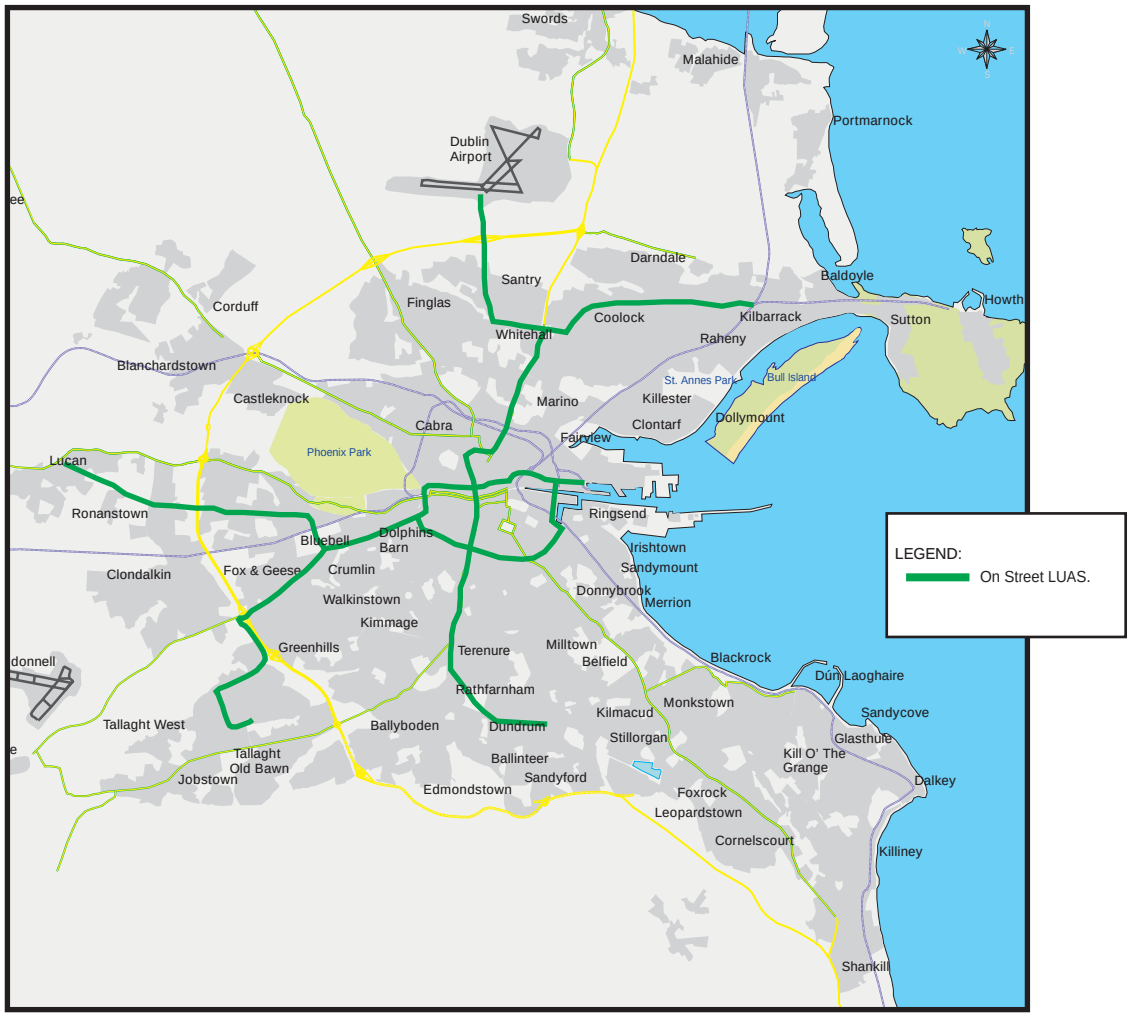
LUAS Line C (Abbey Street to Connolly Station) will be constructed and extended to Docklands.

A new north-south line will be constructed from Ballymun via Whitehall, the city centre, Harold's Cross, Terenure and Rathfarnham to Dundrum. This will be extended north of Ballymun to Sillogue. It will interchange with the METRO at Sillogue, in the north city centre, in the south city centre and at Dundrum. There will be a spur at Whitehall via Coolock to Kilbarrack where it will interchange with DART.

A new east-west line will be constructed from Lucan via Ballyfermot, Dolphin's Barn and the South City Centre to Docklands via the proposed Macken Street Bridge.

LUAS Line B will be constructed between Sandyford and St Stephen's Green and will later be upgraded to METRO.

Figure 4 LUAS NETWORK



METRO **(see figure 5)**

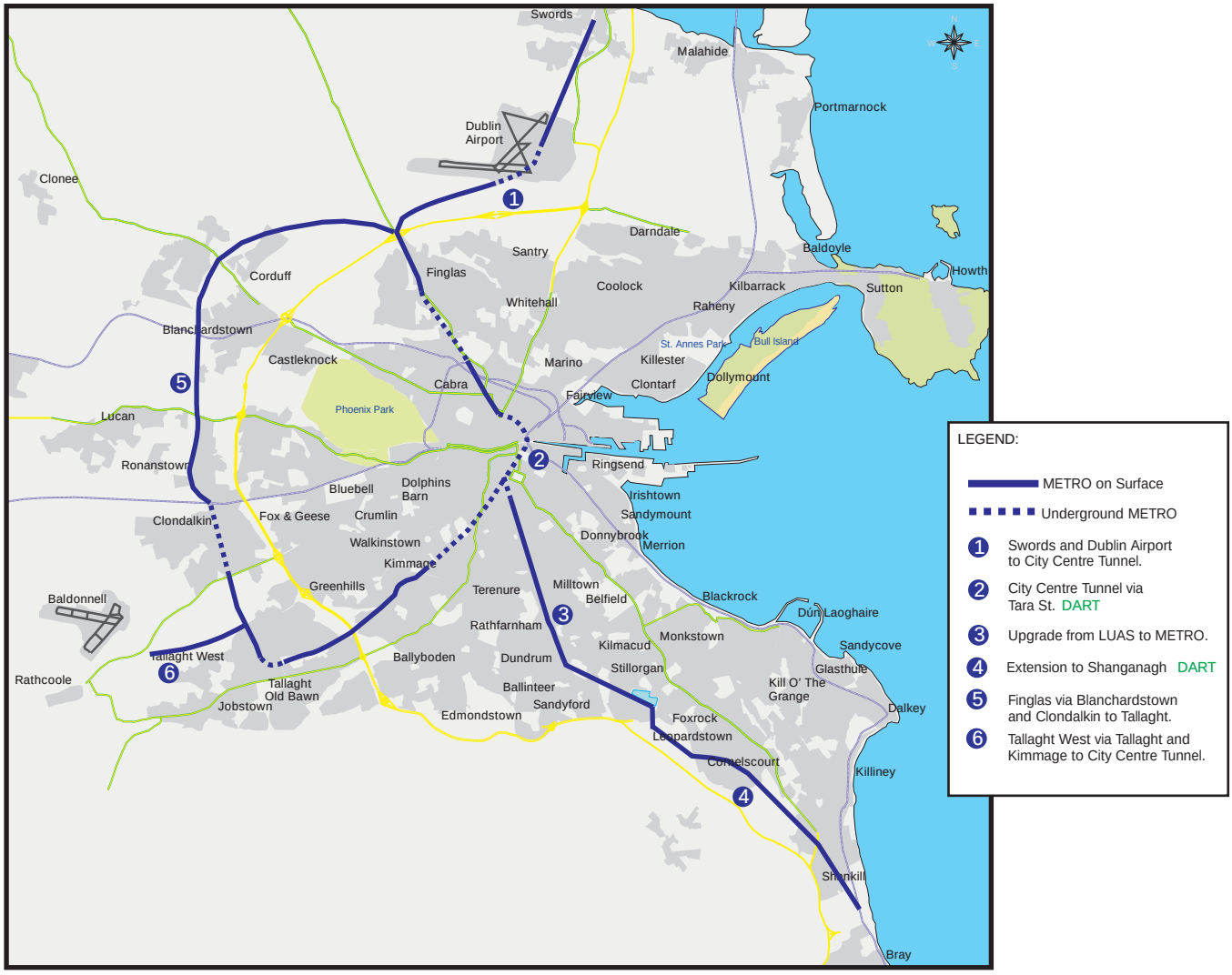
METRO is a light rail system that is similar to LUAS except that it is completely segregated throughout its entire length (that is, it has no on-street sections). This means that it can have long trains, operating at higher speeds and higher frequency and therefore has the potential to provide very high passenger capacity. Tunnels are needed to maintain segregation in densely developed areas.

The METRO system will have a spine from Swords to Shanganagh. This line will run via Dublin Airport, Finglas, Broadstone, the city centre, Ranelagh, Sandyford and Cherrywood. The section between Broadstone and Ranelagh will be in tunnel and will interchange with DART at Tara Street Station. Construction of this line will entail the upgrading of LUAS Line B to METRO between Sandyford and Ranelagh.

There will be a line from Tallaght West via Tallaght and Kimmage, entering the city centre tunnel in the south city.

An orbital line will be formed from a spur off the spine at Finglas via Blanchardstown and Clondalkin to Tallaght.

Figure 5 METRO NETWORK



INTEGRATION **(see figures 6 and 7)**

The strategy is integrated between the various modes of transport.

There will be numerous interchange stations on the METRO, DART/Suburban Rail, LUAS and bus networks, particularly in the city centre. There will be bus feeders to rail-based public transport. It will be possible to make almost all journeys on the public transport networks with just one interchange.

All public transport networks will be fully accessible by people with mobility impairments and disabilities.

A series of public transport nodes will be developed in the city centre and in the northern, western and southern suburbs.

Real time travel information and public transport information services by telephone and on the internet will be introduced.

Park and Ride will integrate the car with public transport. There will be Park and Ride facilities for commuters at strategic locations where the national road network meets the public transport networks. All proposed Park and Ride sites will be assessed to ensure that cars accessing them do not add to congestion.

Cycle parking facilities will be provided at all Park and Ride sites, DART/Suburban Rail and METRO stations, and at LUAS and bus stops where appropriate.

Integrated fares and ticketing will be introduced.

Figure 6 PUBLIC TRANSPORT NETWORKS

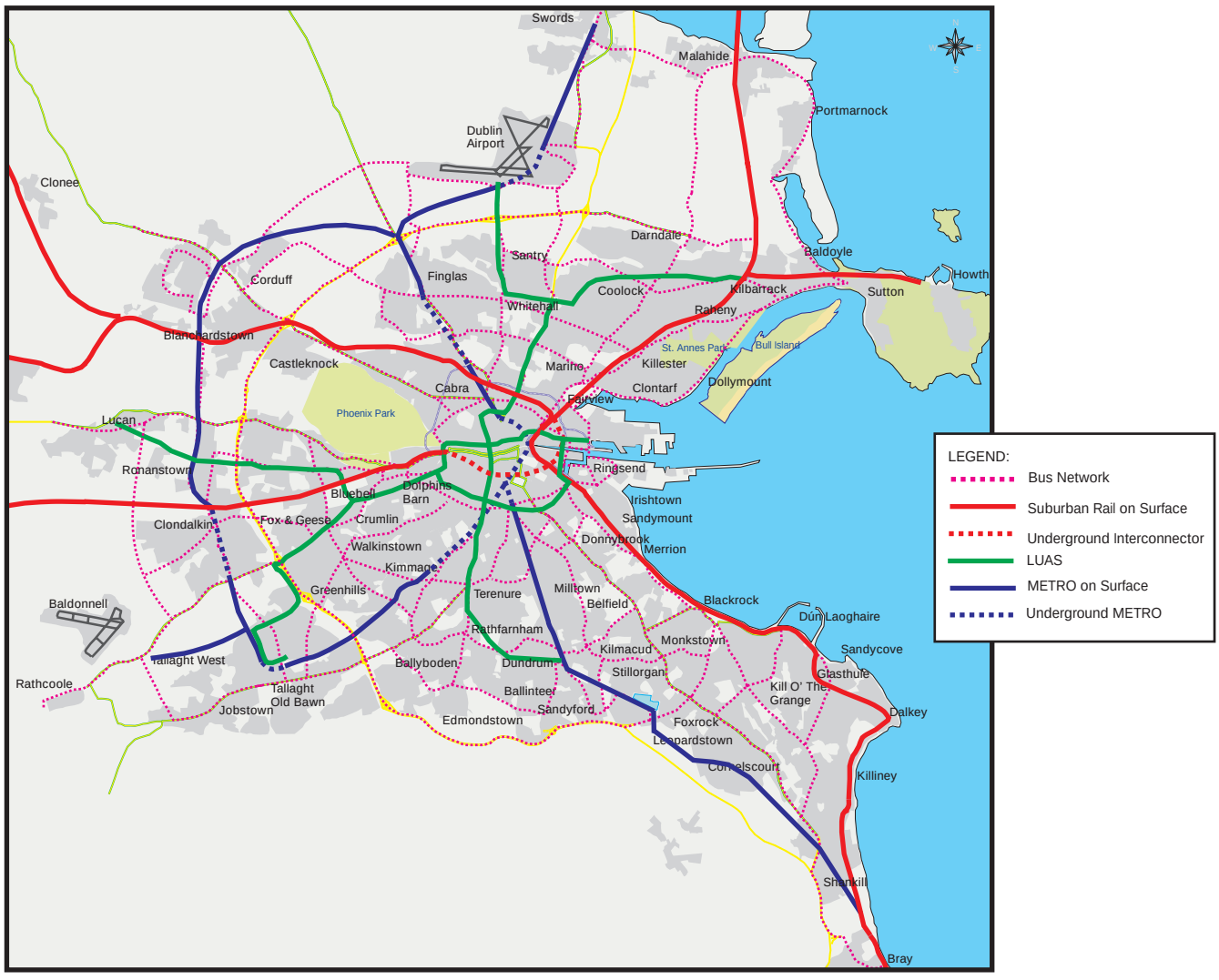


Figure 7 RAIL NETWORK SCHEMATIC

ROADS **(see figure 8)**

The development of the national road network in the Greater Dublin Area meets national economic policy objectives and, accordingly, a number of national road projects are included in the DTO Strategy. There are three main projects. The first is the upgrading and completion of the orbital motorway around Dublin (M50, the Dublin Port Tunnel and Eastern By-Pass). The second is the upgrading of the arterial national routes outside the orbital motorway. The third is the construction of a new road linking the Development Centres of Drogheda, Navan and Naas/Newbridge.

The Strategy includes a number of non-national road projects that have a strategic influence (as distinct from local impacts). The main criteria for inclusion are that the project should:

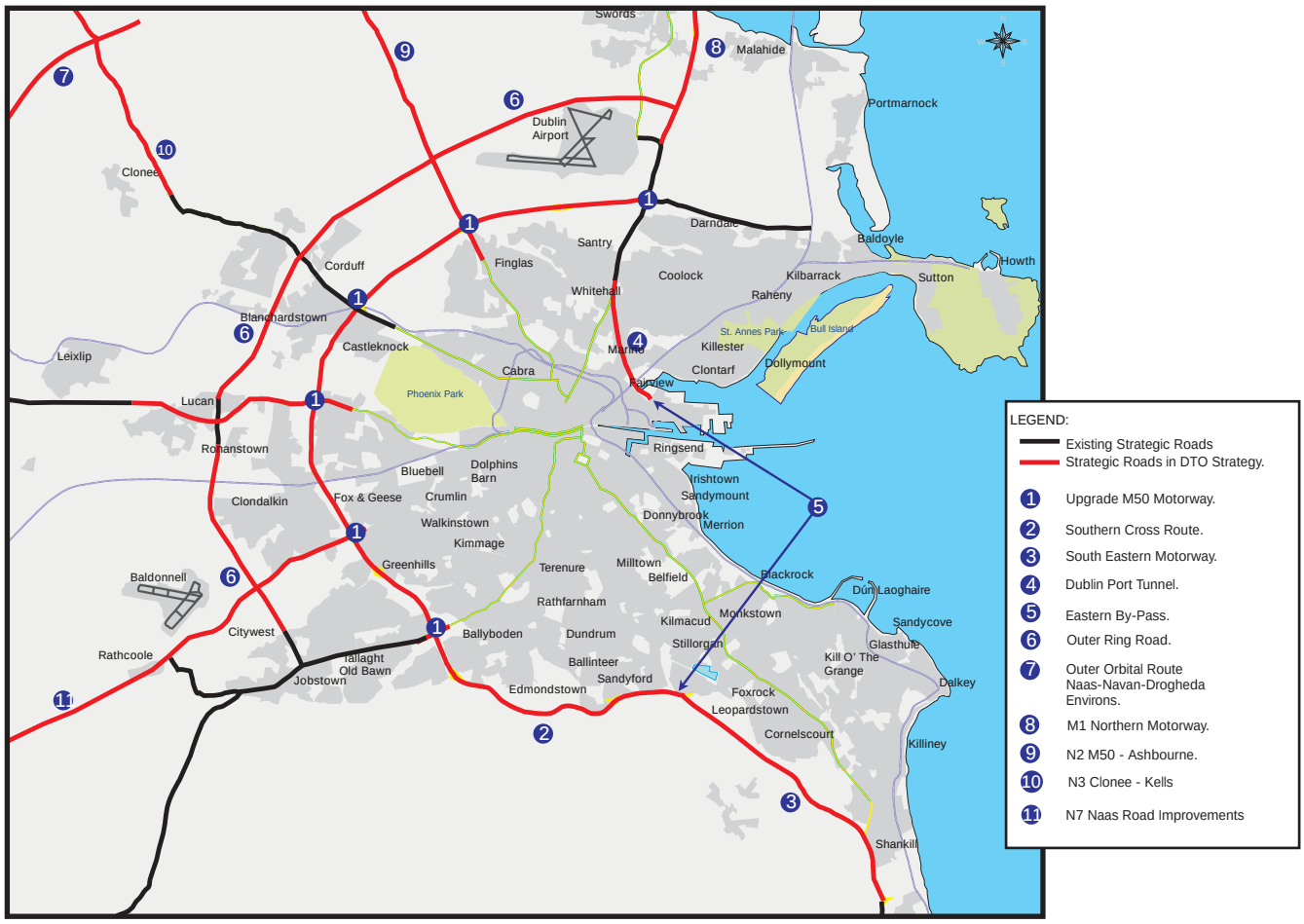
- provide for proper management of access to the M50 and/or national arterial routes;
- complement the Strategic Planning Guidelines;
- serve critical economic development needs in the Metropolitan Area or in the Development Centres identified in the Guidelines;
- provide other environmental or safety benefits;
- increase capacity for public transport.

The principal road projects are listed in Chapter 8.

There will be no significant increase in road space on radial roads inside the M50 Motorway. Further, there should be no additional capacity for car traffic passing through the Metropolitan Area, apart from roads contained in the Strategy.

The construction of new and improved roads, especially by-passes, will be accompanied by the reallocation of road space on the existing road network to pedestrians, cyclists and/or public transport users.

Figure 8 STRATEGIC ROAD NETWORK



TRAFFIC MANAGEMENT

The primary objective in traffic management is to optimise the use of road space for all users. This means developing effective networks for pedestrians, cyclists and public transport users.

Traffic Signals: Traffic signals are the primary tool of traffic management. A regional traffic signal plan will be developed. The plan will seek to achieve broader objectives than simply minimising car delays. It will seek to reduce rat-running, limit congestion on key routes, increase bus speeds and reduce pedestrian delays. There will be regional traffic centres and a motorway management system.

Cycle Network and Facilities: The DTO Strategic Cycle Network will be completed by 2003. An extended network of direct, continuous, consistent and safe cycle routes will be developed, which will link the arterial routes to major destinations and with all main rail stations.

There will be additional local cycle routes.

In total there will be at least 500Km of two-way cycle routes comprising strategic, local and recreational routes.

Cycle parking will be provided at rail stations and destination points. New developments will be required to provide convenient cycle facilities as part of mobility management plans.

Pedestrian facilities: There will be a vast improvement in the quality of pedestrian facilities, particularly in the city centre, geared to reduce pedestrian waiting times and provide convenient, direct and level crossing facilities for pedestrians.

Footpaths with high pedestrian flows will be widened and cleared of obstructing street furniture. Footpaths will also be widened where there are queues for public transport, and in shopping areas.

Traffic Calming and Cells: There will be continued development of traffic cells in the city centre and traffic calming generally. In the case of cells, due provision must be made for cycling and public transport routes, the minimising of severance at cell boundaries, and the requirement to maintain and foster the urban villages and character of streets within the city. The cells will be developed as environments suitable for pedestrians and cyclists.

Heavy Goods Vehicle (HGV) management: HGV management involves directing HGVs away from environmentally sensitive areas. Short-term measures will be required to allow HGVs access the port before the Dublin Port Tunnel is open. HGVs will be directed to the national and regional routes, and banned from unsuitable areas.

DEMAND MANAGEMENT

Demand management is a critical element of this Strategy. The nature of the proposed demand management strategy will be the subject of further study, but the possible measures that may be considered include the following:

- Road user charging schemes, where road users pay a charge that reflects the cost of the journey. Consultants for the Department of the Environment and Local Government demonstrated that road pricing has the potential to contribute substantially to the more effective management of traffic in the Dublin area. Depending on the level of charge the consultants estimated a reduction of between 8% and 12% in total travel.
- Charging for workplace parking. This is an effective way to reduce commuting to work by car, since some people may choose to give up driving to work rather than pay a charge. The Department of Finance is currently leading an examination of different options for charging for 'free' workplace parking.
- The use of taxation measures to reduce growth in travel.
- The implementation of mobility management plans by employers in large employment centres. These plans should examine car pooling, cycle parking/shower facilities, walk links to public transport nodes, flexitime arrangements and teleworking schemes for employees.

LAND USE POLICIES

Central to the effectiveness of the DTO Strategy is that all land use development must be consistent with the Strategic Planning Guidelines. It follows that the public transport infrastructure proposed in the DTO Strategy should be a prime consideration in the location, land use type and density of new development. A corollary of this is that developments that generate a high volume of trips should be located in public transport corridors and not in strategic road corridors.

Developments that generate a high volume of trips may be granted permission in public transport corridors before the public transport is operational. In these cases, interim measures, such as dedicated bus services, should minimise the volume of car commuting. Where parking at a development site is provided on an interim basis, it should be in local authority control and removed when public transport becomes available.

A Parking Strategy will be developed for the Greater Dublin Area, which will establish the maximum amount of parking allowed in new developments.

Framework Plans for Development Centres will be developed to ensure that land use and transportation objectives are sufficiently integrated. Within these frameworks, Local Transport Plans should focus on the improvement of bus-based accessibility to local services, minimise car use for local trips and ensure interconnection with strategic public transport networks. Further to this, Retail/Service Development Centre catchment areas should be identified in the Framework Plans to assist in the identification of local public transport needs.

Local Authority Development Plans should identify opportunities to increase the development densities of appropriate land uses in locations close to public transport. The Parking Strategy should also be incorporated into the Development Plans.

In response to the DTO Strategy, the Strategic Planning Guidelines should be reviewed to ensure a land use pattern that maximises accessibility to the public transport infrastructure and minimises commuting between the Hinterland and Metropolitan Areas. Furthermore, development should be monitored at a regional level to ensure consistency with these objectives.

The National Spatial Strategy should give due regard to the DTO Strategy.

6. The Costs

Most of the costs of the strategy relate to the infrastructure elements. The demand management element will have some set-up costs, but these are likely to be relatively small.

The table below shows the breakdown of the capital costs of the infrastructural elements of the strategy, in the period 2000-2006 and the period 2007 - 2016. The table also includes the revised costs of the projects that are in the National Development Plan (NDP). The cost of the NDP projects, £4.421bn, is included in the total cost of £14.151bn. The costs include land costs and contingencies. VAT is assumed to be at 15% on average.

Capital Costs (£Million)

	2000 - 2006	2007 - 2016	Total	NDP
METRO	1,099	3,956	5,055	-
LUAS	885	503	1388	1,070
DART/Suburban Rail	1,505	1,765	3,270	213
Roads	2,805	1,029	3,834	2,770
QBC / Bus Priority / Traffic Management	489	115	604	368
Total	6,783	7,368	14,151	4,421

Note: the cost of the roads in the NDP has been revised following consultation with the National Roads Authority.

Operating Costs

There will be significant operating and maintenance costs associated with the public transport elements of the Strategy. There will be operating costs associated with the roads infrastructure and demand management elements of the strategy.

As part of the Strategy work, we have estimated the operating costs and anticipated revenue for the public transport elements of the Strategy in 2016. The anticipated revenue assumes that average fares remain approximately the same in real terms as today. The operating costs and fare revenues will grow between now and 2016 as each new infrastructural element of the strategy is added, and as public transport demand increases.

The rail operating costs are derived from the "Dublin Suburban Rail Strategic Review" produced for CIE by Arup Transport Planning in March 2000 and the "DTO Strategy, Cost and Programme Review" prepared for the DTO by Arup Transport Planning in July 2000. They have been further updated by additional information received from Iarnród Éireann. Operating costs for METRO, DART/Suburban Rail and LUAS include train operation and maintenance, track and station maintenance and ticketing costs.

Bus operating costs are based on the operating costs contained in the 1999 Dublin Bus Annual Report, with an allowance for the extra buses required in 2016, compared to 1999.

Vehicle depreciation costs are included for bus (assuming a 12 year vehicle life) but not for rail rolling stock, as replacement costs for the large majority of rolling stock will not be incurred until after 2016 (assuming a 30 year rolling stock life).

Revenues assume a full fare of 80 pence per trip. There is an allowance for discounted and concessionary fares (eg season tickets) which is taken to be of 81% of the full fare in the peak hours and 75% in the off-peak hours.

Operating Costs and Revenues in 2016 (£Million at today's prices)

	Operating costs	Revenues
QBC / Bus	188	149
METRO, LUAS, DART/Suburban Rail	225	289

7. The Benefits

Significant benefits will flow from the implementation of the Strategy relative to the situation if the Strategy were not implemented. In brief,

- The Greater Dublin Area will have a public transport infrastructure that extends over a **larger catchment** area. Most people will live within 10 minutes walking distance of high quality public transport.
- **Accessibility** to work, leisure and retail opportunities will improve for most people. Accessibility to the City Centre and to Dublin Airport will improve by 22% and 43% respectively in the morning peak period and by 11% and 20% respectively in the off-peak period.
- **Average journey times** will reduce dramatically. The average journey time by bus and rail will be 37% and 53% respectively less than the situation if the Strategy were not implemented. The average journey time reduction for car is 39%.

AVERAGE JOURNEY TIMES IN 2016 AM PEAK (Minutes)

	Without the Strategy	With the Strategy
Bus	47	29
Rail	38	18
Car	94	57
Weighted Average	76	34

- Public transport will gain an improved **share** of the market for travel. Public transport will have 63% of the total market for travel in the Greater Dublin Area, rising to 85% of those trips ending in the city centre. This compares very favourably to the situation if the Strategy were not implemented, where public transport would carry only 35% of the total market, and 72% of those trips bound for the city centre. The increase is more marked for the Greater Dublin Area as a whole than for trips to the City Centre. This reflects the Strategy's wide coverage of public transport in the suburbs, and the links between Hinterland Area development centres and the Metropolitan Area.

MODE SPLIT IN THE AM PEAK HOUR (Person Trips)

	1997		2016	
Bus	47,000	19%	69,000	14%
Rail	21,000	8%	239,000	49%
Car	181,000	73%	180,000	37%
Total	**249,000**	**100%**	**488,000**	**100%**

- Directly as an outcome of a better market share for public transport, the level of **congestion** will reduce. It will be less than half what it would be if the strategy were not implemented.
- **Urban centres** within the Greater Dublin Area will become attractive focal points for business, leisure and retail activities.
- **Environmental** benefits will be significant. Total energy consumed will reduce by 41%, and emissions will reduce by 34%.
- **Residential areas** will be safer and more pleasant places to live, and car traffic impacts will be reduced. It is estimated that accidents will reduce by 35%, directly as a result of less travel by car.
- **Road space** will be efficiently organised for the movement of people and goods. The allocation of road space to buses and bicycles will improve the efficiency and reliability of bus services and make cycling safer and therefore more attractive.
- The **competitive position** of the Greater Dublin Area as a choice for locating employment will be maintained because of the increased accessibility of labour.

An independent evaluation of the economic costs and benefits of the Strategy was carried out by Goodbody Economic Consultants. The evaluation compares the situation with the entire Strategy completed to the situation with only committed projects completed (such as the completion of the M50 and LUAS lines from Tallaght to Abbey Street and from Sandyford to St Stephen's Green). The costs include capital costs and operating costs but exclude the capital costs of committed projects and VAT. The benefits include time savings for all transport users, accident savings and pollution savings. Both costs and benefits are discounted to 2000.

The evaluation indicates that the Strategy is good value for money. The net present value is £15,529m, the benefit to cost ratio is 2.75 and the internal rate of return is 14.7%.

SUMMARY OF ECONOMIC EVALUATION

Benefits	£million	Costs	£million
User Time Savings	22,528	Rail Operating Costs	1,502
Accident Savings	1,228	Bus Operating Costs	470
Air Pollution Savings	641	Capital Costs	6,920
Noise Pollution Savings	24		
Total Benefits	**24,421**	**Total Costs**	**8,892**

8. The Programme

The phasing of the Strategy is designed to address short term transportation needs and to put in place an integrated transportation system which will meet the medium to longer term requirements of the Greater Dublin Area.

In the short term, the aim is to provide additional public transport capacity, primarily on the bus network, and to improve traffic management, including better bus priority. In the medium to longer term, the emphasis will switch to rail-based public transport (LUAS, METRO and DART/Suburban Rail) and demand management. The aim is to create an integrated transport network, which has sufficient capacity to meet the transportation requirements of the Greater Dublin Area well beyond the 2016 horizon of this Strategy.

The programme is divided into four phases:

PHASE 1: **by end 2003;**
PHASE 2: **by end 2006 (the end of the National Development Plan);**
PHASE 3: **by end 2010;**
PHASE 4: **by end 2016 (the horizon year of the transportation strategy);**

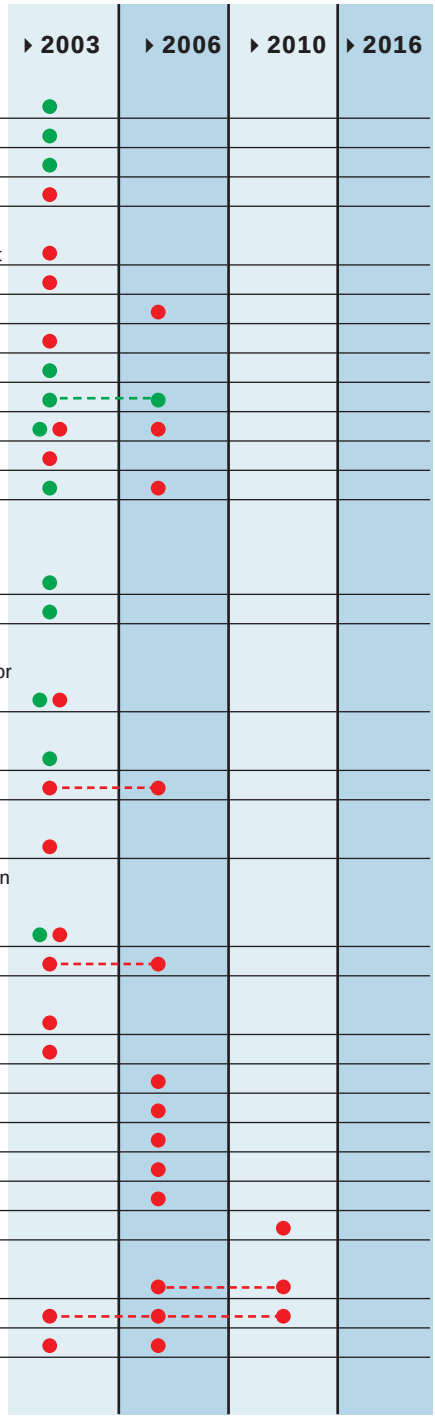
The programme is influenced by a range of factors, including:

- the urgency of the transportation demand (is the investment required to address a demand for transport which exists now or one which will exist at some future date?);
- land use considerations (is the investment required to serve an existing development, a new development or to influence the pattern of future development?);
- the current state of preparedness of the project (is the project only at the conceptual stage or has detailed planning and design been completed?);
- operational issues (will the construction of the project interfere with existing transport services?)
- the physical scale and capital cost of the particular project;
- the lead time required for the planning, design, consultation and statutory approval process;
- whether the project involves the improvement of an existing infrastructure, facility or service or the provision of a new one.

The table overleaf sets out an indicative programme for the period 2000-2016.

Indicative Implementation Programme 2000 to 2016

National Development Plan ● Additional DTO Strategy projects ●



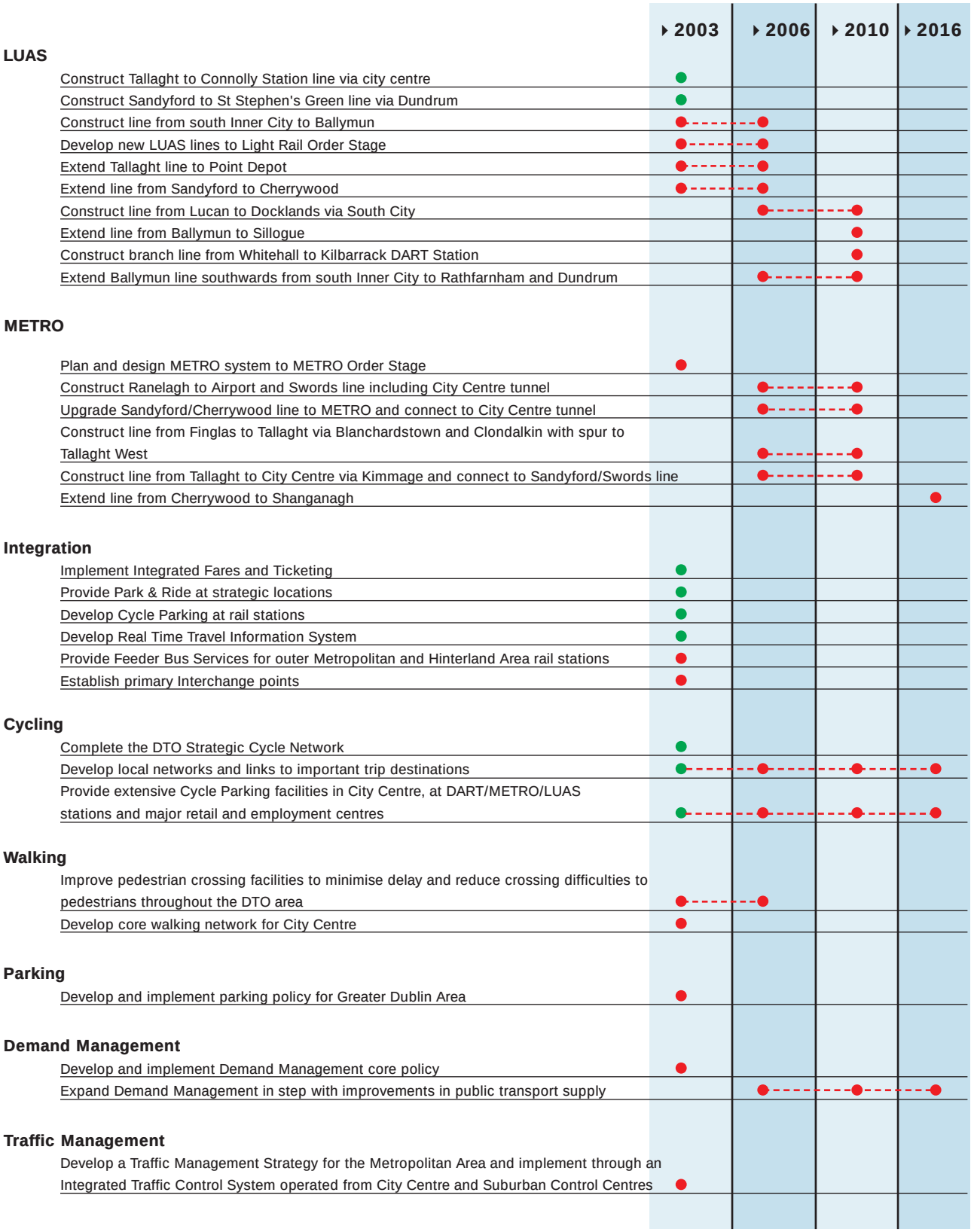
QBC/Bus Priority Projects

- Completion of original 11 QBCs
- Cross City links, links to LUAS, links to Heuston and Connolly Stations
- Merrion Road/Rock Road/Killiney to N11
- Naas Road (N7)
- Bus Priority links between Rail and QBC networks and major suburban employment centres including Sandyford, Tallaght West, Blanchardstown and Mulhuddart
- Local Bus Services and bus priority in Metropolitan and Hinterland town centres
- Additional orbital links
- Outward extension of radial QBCs
- Completion of city centre QBC network
- Additional Radial QBCs
- 500 Additional buses for the Metropolitan Area
- 95 Additional buses for the Hinterland Area
- Additional bus depots

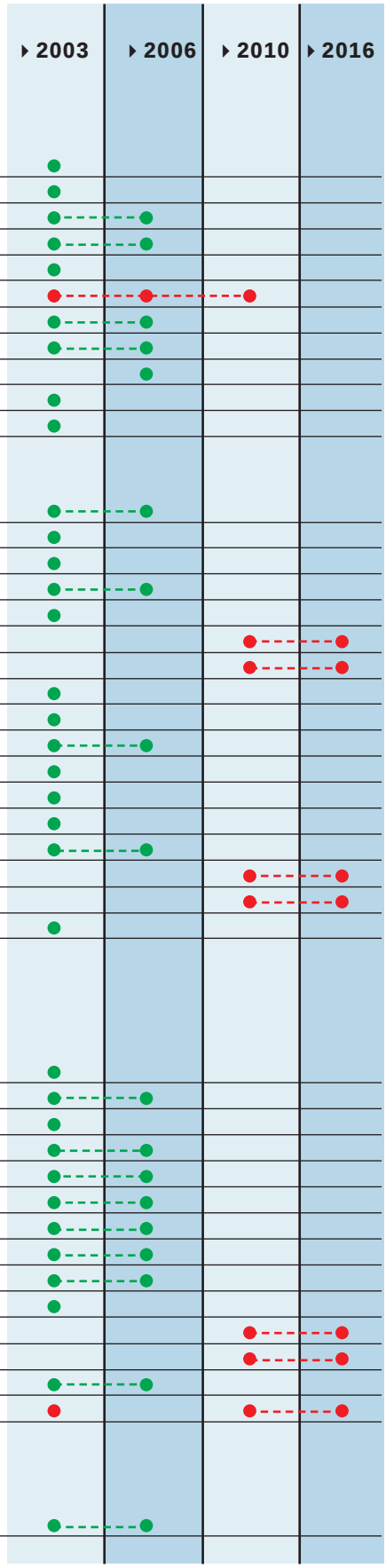
DART/Suburban Rail

- Lengthen all station platforms to accommodate 8-car trains
- Provide additional suburban stations on Maynooth, Kildare and coastal lines
- Construct third track from Heuston Station to Cherry Orchard and third and fourth track from Cherry Orchard to Hazelhatch and provide additional platforms at Heuston Station for suburban trains and reconfigure tracks
- Construct second track between Maynooth and Clonsilla and improve signalling to accommodate up to 8 trains per hour on Maynooth line
- Construct third track from Connolly Station to north of Howth Junction
- Reconfigure tracks north of Connolly Station and construct extra platforms for Maynooth service including twin island platforms
- Reconfigure Tara Street Station platforms, construct additional platforms at Pearse Station and Barrow Street, construct additional track between Pearse Station and Barrow Street, improve signalling from Connolly Station to Barrow Street
- Construct rail line from Maynooth and northern DART lines to Docklands
- Plan and design (to Railway Order stage) the Heuston Station to Maynooth line Interconnector Tunnel (via Docklands) with connection to northern DART line
- Plan and design the Navan rail line to Railway Order stage
- Electrify the Maynooth and Sallins rail lines for suburban services
- Resignal from Heuston Station to Sallins and from Connolly Station to Maynooth
- Construct Rail line from Clonsilla to Dunboyne (Navan line phase 1)
- Remove level crossings south of Barrow Street
- Construct extra tracks west of Hazelhatch to Sallins
- Extend rail line from Dunboyne to Navan
- Construct Interconnector Tunnel from Heuston Station via Pearse Station to Docklands with link to Maynooth and Northern DART lines
- Purchase 740 additional DART/Arrow cars
- Provide additional depot facilities

National Development Plan ● Additional DTO Strategy projects ●



National Development Plan ● Additional DTO Strategy projects ●



Metropolitan Area

National Road Projects

- M1 Northern Motorway (Airport to Five Roads)
- M50 Southern Cross Route and ancillary roads
- M50 upgrade and junction improvements
- M50 South Eastern Motorway
- Dublin Port Tunnel
- Eastern Bypass
- N2 improvement from M50 to north of Ashbourne
- N4 Leixlip to M50
- N7 Naas Road improvements
- N11 Junction improvements (Kilpedder/Delgany/ Enniskerry)
- N81 Tallaght Bypass to N82 improvement

Non-National Road Projects

- Ballycullen Road to Killinniny
- Church Road Phase 3
- Cork Street/The Coombe
- Donabate Bypass
- Dundrum Bypass
- Dun Laoghaire Port - improve access
- East Wall Road (Tolka Quay to Sheriff Street)
- Firhouse Road improvement
- Greenhills Road improvement
- Jamestown Road to St Margaret's Road
- Knocklyon Road to Wellington Roundabout
- Macken Street Bridge
- North King Street
- Outer Ring Road - Cheeverstown to Lucan
- Outer Ring Road - Lucan to N2
- Walkinstown to Saggart via Ballymount and Cookstown
- Wyckham Bypass

Hinterland Area

National Road Projects

- M1 Drogheda Bypass
- M4 Kinnegad to Kilcock
- M7 Kildare Bypass
- M7 Monasterevin Bypass
- N7 Naas Road Improvements (Kildare)
- N3 Clonee to north of Kells
- N9 Kilcullen to Carlow
- N11 Rathnew to Newtownmountkennedy
- N11 Arklow Bypass to Rathnew
- N11 Glen of the Downs
- N51 Slane to Navan
- N78 Athy Relief Road
- N81 Blessington to N82 improvement
- Drogheda/Navan/Newbridge Orbital - establish alignment and construct

Non-National Road Projects

- Lusk Bypass

9. The Next Steps

Implementation

The DTO Strategy provides an overall planning framework for the development of the transport system in the Greater Dublin Area. It is not, nor was it ever intended to be, a detailed blueprint for each of the individual projects and programmes recommended for implementation. Each project will now have to be taken through a detailed planning process involving, as appropriate, route selection, technical feasibility studies, economic and environmental evaluations, detailed design, public consultation and statutory approval procedures. This process is already underway for some projects and has yet to begin for others.

Project Teams

A lead agency will be identified for each major project and programme. A dedicated project team will be appointed, with responsibility for planning and implementing individual projects.

This Strategy contains five major infrastructural projects and it is proposed that each should have a project team led by a particular agency:

DART/Suburban Rail	Iarnród Éireann
METRO	LUAS Project Office
LUAS	LUAS Project Office
QBC/Bus priority	DTO
Roads	National Roads Authority (national roads) and Local Authorities (non-national roads)

Public Private Partnership (PPP)

A number of major projects are suitable for implementation on a public private partnership basis involving an appropriate combination of design, build, maintain, operate and finance. It will be important for the PPP procurement process to ensure consistency of project design, operation and management with the DTO Strategy.

The Government has already decided that the following projects should be implemented on a PPP basis:

- LUAS lines from Tallaght to Abbey Street and from Sandyford to St. Stephen's Green (operation);
- METRO (design, build, finance and operate).

The following projects are also recommended by the DTO as PPP projects:

- the Eastern By-Pass;
- N3 - Clonee to Kells;
- M4 - Enfield to Kinnegad;
- the additional LUAS lines;
- the rail link to Navan.

Regulatory and Institutional Arrangements

The Dublin Transportation Office (DTO) has been operating since 1995 with the mandate of promoting/reviewing the Dublin Transportation Initiative and co-ordinating relevant actions by the implementing agencies. DTO has the status of a corporate body under the Local Government Services (Corporate Bodies) Act, 1971 and, apart from control of QBC (and certain other traffic management related) funding, it must pursue its mandate through voluntary arrangements and consensus. The DTO Steering Committee comprises senior representatives of all significant transport bodies in the Greater Dublin Area; further input from local authority members and the voluntary/commercial sector is provided by an Advisory Committee. DTO has a relatively modest executive organisation (Chief Executive/Director and some 15 staff) comprising mainly transportation and land use planners on secondment from the Dublin local authorities or other public bodies.

The DTO Steering Committee considers that worthwhile progress on a number of fronts has been made within these arrangements:

- the principle of an integrated transport strategy for Dublin with suitable priority for public transport, as set out in DTI, has been successfully defended and advanced since 1995 without major loss (in terms of inconsistent policies and measures being accepted);
- in general, constituent public bodies have given good and high level support to DTO and have bought in to the DTI agenda and the inter agency co-operation necessary to support this;
- monitoring and review of Dublin transport strategies in a rapidly changing economic and demographic situation has been actively addressed by DTO in a number of different ways;
- despite delays, significant progress has been achieved with planned elements of the DTI strategy, e.g. road developments, QBCs, bus services and parking restraint.

Shortcomings in the implementation of the DTI Strategy through DTO have also been evident:

- the powers and/or resources available to DTO have not been sufficient to prevent well documented delays in the implementation of major DTI projects;
- some delays and/or unresolved policy differences have also affected the delivery of medium size to smaller projects (e.g. QBCs, roads and bus shelters);
- the governance of DTO by a largely technocratic and representatively based Steering Committee provides limited exposure to the political process and arguably limited pressure in relation to urgent and accountable decision making.

The Cabinet Committee on Infrastructural Development and Public Private Partnerships is to consider the institutional arrangements for transport in the Greater Dublin Area later this year. Against the above background of its experience since 1995, the DTO Steering Committee offers the following input to this process:

a) international experience does not suggest any single or pre-eminent organisational model for strategic urban transport planning and management. Good (as well as unsatisfactory) urban transport management experiences seem to exist alongside a variety of institutional arrangements;

b) a diverse range of organisations will always be involved in delivering transport services and solutions in major urban areas. The issue is not that of eliminating all of this institutional diversity, but of deciding on the extent and force of the strategic planning and co-ordination arrangements needed in the particular circumstances;

c) the National Roads Authority has been given statutorily based powers to co-ordinate and supervise the planning and delivery of the national roads programme; these include reserve powers to direct, and if necessary substitute for, local authorities in particular instances. Arguably similar powers should also, as a minimum, be available to the body charged with the strategic planning/co-ordination of Dublin transport. Such a stronger co-ordinating and supervisory role would require considerably greater staffing resources than at present enjoyed by DTO;

d) DTO notes the Government's recently published consultative paper on a proposed institutional reform of public transport and proposed new arrangements for the regulation of the bus market in the Greater Dublin Area. DTO welcomes these proposals and supports their implementation, which should assist the effective delivery of the DTO strategy. It may be feasible to combine a strengthened strategic transport planning and co-ordination body as at c) above with the public transport regulator role set out in the Government's proposals;

e) the revised DTO Strategy is importantly based on a planning framework established by the Strategic Planning Guidelines (1999) and First Review (2000). The DTO Strategy directly supports the achievement of the objectives set out in the Guidelines and furthermore recommends that the Guidelines be updated to take advantage of land-use development opportunities provided especially by the public transport elements of the Strategy. At present, regional co-ordination and implementation of the SPG guidelines is being operated on a voluntary basis by the 7 constituent major local authorities of the Greater Dublin Area. If statutorily based arrangements for strategic transport planning as at (c) above are identified as necessary, it will be a matter for consideration whether similar arrangements should not be applied also to strategic land use planning; and if so, whether there would be merit/synergy in combining statutorily based arrangements for Greater Dublin land use and transport strategic planning;

f) governance arrangements for any new or enhanced Dublin regional body as at c) to e) above will need careful consideration taking account of the DTO experience to date and other factors;

Appendix: Steering Committees

DTO Steering Committee

Mr. Conor McCarthy (Chair)	Dublin Transportation Office
Mr. Derek Brady	Dún Laoghaire-Rathdown County Council
Mr. Niall Callan	Department of the Environment and Local Government
Mr. John Henry	Dublin Transportation Office
Mr. Joe Horan	Meath County Council
Mr. Frank Kavanagh	South Dublin County Council
Mr. Owen Keegan	Dublin Corporation
Asst. Commissioner Jim McHugh	Garda Síochána
Mr. Pat Mangan	Department of Public Enterprise
Cllr. Charles O'Connor	DTO Advisory Committee
Prof. Simon Perry	DTO Advisory Committee
Mr. William Soffe	Fingal County Council
Mr. Michael Tobin	National Roads Authority
Mr. Alan Westwell	Dublin Bus

Steering Group for Strategy Update

Mr. Pat Mangan (Chair)	Department of Public Enterprise
Mr. Tim Brick	Dublin Corporation
Mr. Michael Cahill	National Roads Authority
Mr. John Devlin	Department of the Environment and Local Government
Mr. Owen Keegan	Dublin Corporation
Mr. Conor McCarthy	Dublin Transportation Office
Mr. Peter McEvoy	Department of the Environment and Local Government
Mr. Donal Mangan	Light Rail Project Office
Mr. William Murray	Dún Laoghaire-Rathdown County Council
Mr. Jim O'Brien	Department of Finance
Mr. Michael Reidy	Córas Iompair Éireann
Mr. Fintan Towey	Department of Public Enterprise