

## Transportation

The principal form of transportation infrastructure will be vehicular roads augmented by a network of pedestrian and cycle routes. Transport infrastructure development will be commensurate with the development of a level of critical mass sufficient to justify the infrastructure provision. Initial public transportation measures will be based on bus services, integrated, by links to the existing rail services from Dundalk. In the longer term it is envisaged that a dedicated rail station could be provided in the extreme south of the DSWLAP area in order to facilitate both the residential areas and the employment generating areas located to the south of the plan area.

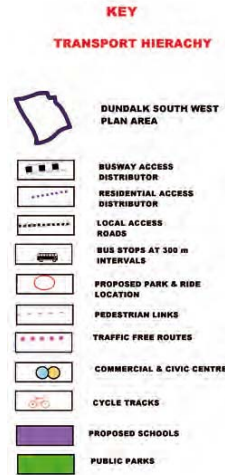


Dundalk Station.



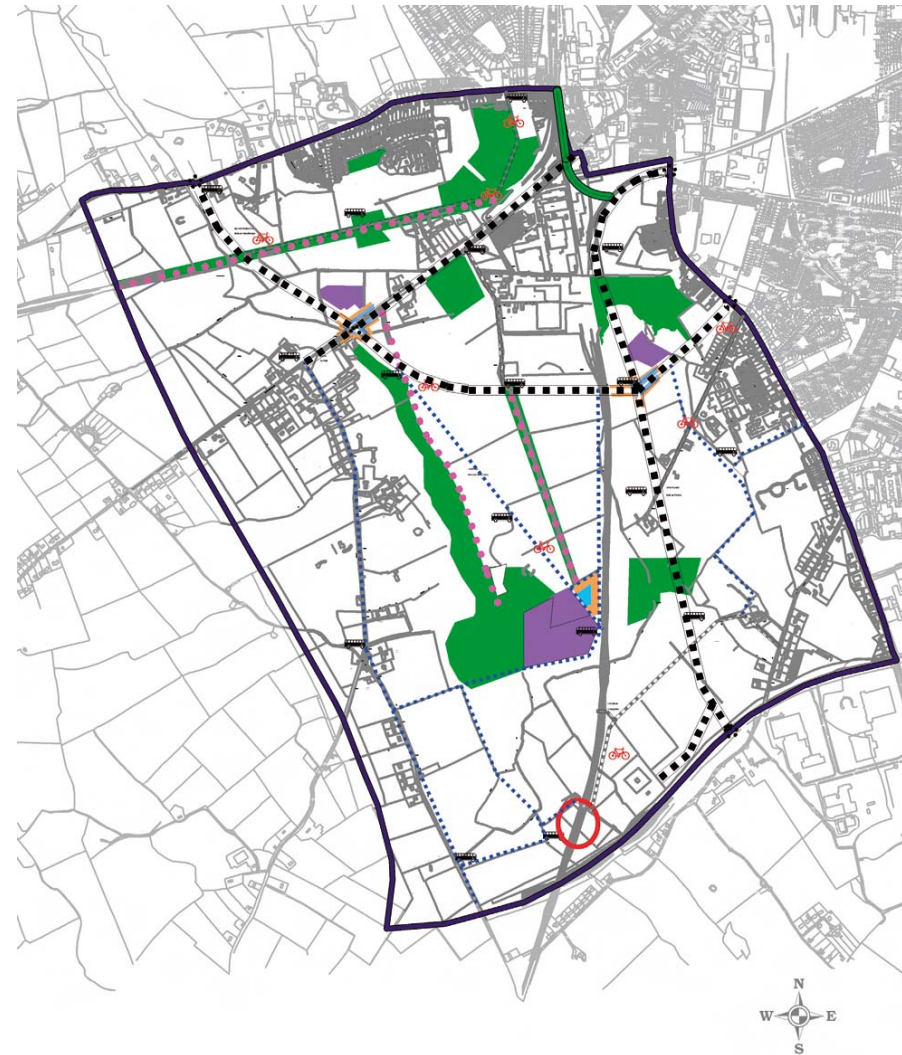
Modern Train.

It is the intention that a number of key transport measures will be developed from the outset in order to progress development. These include the development of the western roads infrastructure incorporating both busways and cycle routes.



A number of key guiding principals underline the approach to transportation within the plan area. These include:

- Development proposals must prioritise access arrangements other than by private car and should therefore positively and demonstratively contribute to sustainable transportation aims.
- Higher residential densities will be permitted within the designated Civic and Commercial Centres and Local Centre and along principle road transport corridors within the plan area.
- Priority must be given to the provision of pedestrians, cyclist and those with restricted mobility requirements in the design and layout of any developments within the plan area.
- The encouragement of a modal shift in transportation terms from the private car to alternative modes including rail, bus and cycling.
- Promotion of clustered mixed use areas designed to maximise access by public transport and other non motorised transport modes



Map 10 Transport Hierarchy.

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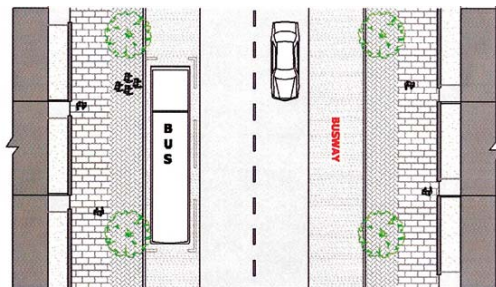
## Road Infrastructure Hierarchy

Transportation in the DSWLAP is predicated on the construction of major north to south and east to west roadways designed to provide access both to the plan area and to the wider Dundalk and Environs area.

### Busway Access Residential Distributor Roads (Principle Distributor Roads)

These roadways will accommodate both normal vehicular traffic with buses and segregated cycle track provision. The north to south road will run in a generally northerly direction for the first 1.3 km from its junction with the Southern Link Road paralleling the existing Dublin Road, and will be known as Roadway 5 for the purpose of the plan. At this point the road splits into three directions with one branch continuing north before curving east to reach a junction with the proposed Hill Street / Inner Relief Road link. (Roadway 1) The second branch curves north west crossing the existing operational railway to meet the Carrickmacross and Knockbridge / Ardee Roads to the north of the plan area. (Roadway 2) A third, shorter branch gives direct access eastwards onto the existing N1 Dublin Road. (Roadway 3) In addition to these links, an upgraded roadway will be provided from Rath in the west area of the plan area along the alignment of the existing Knockbridge / Ardee Road. (Roadway 4) The final section of roadway comprises a link between the Ardee and Carrickmacross Roads along a north to south alignment. (Roadway 6)

All of the above mentioned routes will be classed as Busway Access Residential Distributor Roads (Principle Distributor Roads) in that they have been designed to ultimately incorporate bi-directional, with-flow, dedicated busways throughout. The inclusion of future busways will be dictated by the development of a sufficient critical mass of potential passengers within the plan area. The requirements of both cyclists and pedestrians will also be incorporated within the roadway designs.

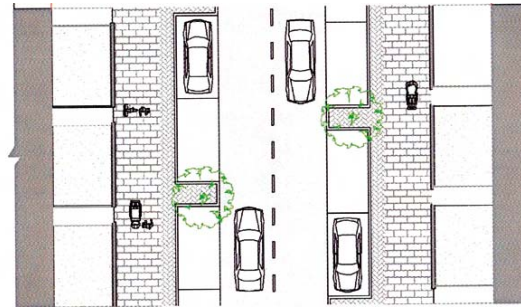


*Busway Access Residential Distributor Road – Typical Layout.*

The routes will provide strategic access to the DSWLAP area whilst negating the need for local traffic movements to utilise the adjacent Dundalk Western Bypass Motorway, which is to be reserved for long distance traffic. Access to the major road infrastructure will be controlled through signalised junctions. Direct accesses are likely to take the form of roundabouts, signalised or priority junctions. These will be fed from the internal development parcels.

## Residential Distributor Roads

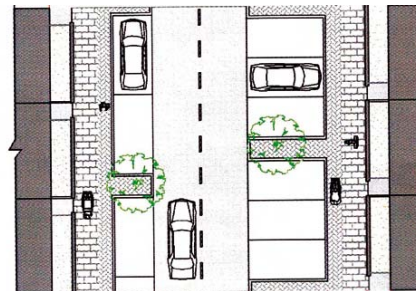
The second tier of road provision comprises Residential Distributor Roads. These roads are designed to permit the maximum possible access to the DSWLAP lands whilst also discouraging un-necessary through traffic.



*Residential Distributor Road – Typical Layout.*

## Local Roads

The third tier of the road infrastructure comprises local roads. These roads will serve individual parcels and feed into the wider network. Widths will vary between 5.5 m and 6.0 m in width with a combination of parallel, perpendicular, in-curtilage and / or mixed parking permitted along any sections of such roadways.



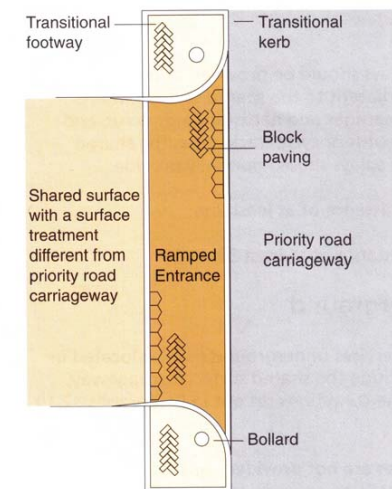
*Local Roads – Typical Layout.*

Internal roads within the five sectors will be based on a cell structure which acts to filter vehicular traffic through the entire sector thus avoiding the funnelling of large amounts of traffic onto a limited number of access routes. The layout of the sectors allows a high degree of permeability with a balance struck between traffic movements and residential amenity. At the basic level of individual residential developments should take the form of a series of “Homezone” type layouts and street configurations. Extensive use of traffic calming features will be encouraged within all sectors.

## Traffic Calming and Homezone Principles

Residential areas designed around the “Homezone” concept will be encouraged in all the sectors. Homezones are created around relatively small housing developments or distinct areas within wider schemes. A series of homezone proposals can be prepared for these larger areas. The following principals should be incorporated when designing “Homezone” type layouts. Not all elements of homezone design will necessarily have to be included within any one proposal.

- Homezones should be designed for a normal peak flow in the region of 100 vehicles per hour. The minimum width of a vehicle pathway through a homezone should be not less than 3.0m with passing opportunities in the carriageway at least every 50m.
- The entrance(s) to a homezone should be clearly marked by localised signage and physical changes in the street surface.



*Homezone Entrance – Typical Layout.*



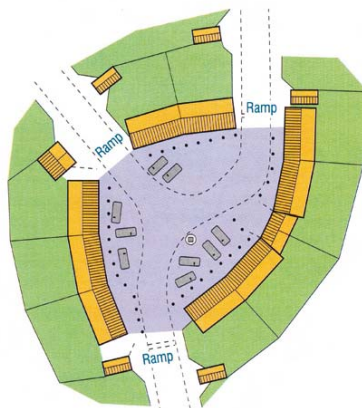
- The extensive use of cul-de-sacs in Homezones is not desirable as permeability is compromised. This does not however preclude the use of cul-de-sacs as integral parts of wider residential schemes incorporating homezone principals.
- The Homezone should incorporate features which require drivers to drive slowly: such as speed bumps, ramps, chicanes, unclear junction priorities, and restricted carriageway widths.



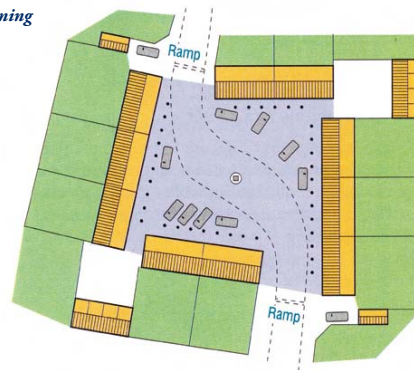
*Traffic Calming Slalom.*



*Traffic Calming by Road Buildout.*



*Examples of Traffic Calming Measures.*

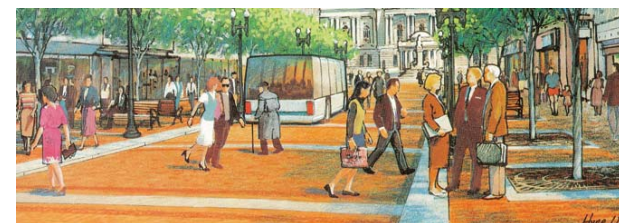


- Bus routes normally do not pass directly through homezones but pass around their perimeter 'within comfortable walking distance in the range 100 – 200m



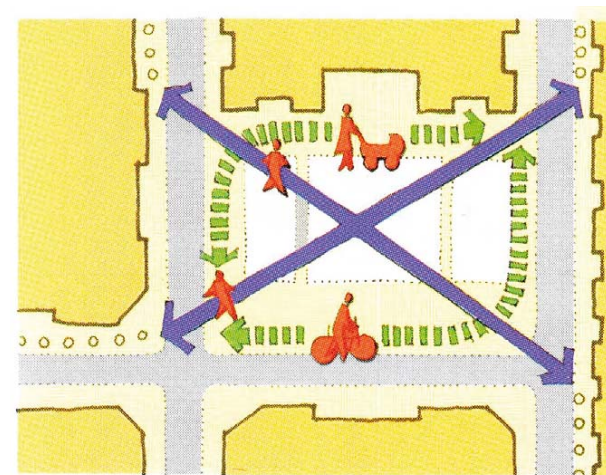
*Traffic Calming Roadbumps.*

- A shared surface for vehicles, pedestrians and cyclists – with no separate raised pavements is generally preferable. A variety of surface treatments suited to a pedestrian environment trees, planting and street furniture bollards and street lighting should be incorporated to afford pedestrian protection.
- One way streets are not recommended in Homezones due to the tendency for vehicle drivers to increase speed in such areas.
- Pedestrians may use the full width of the highway within an area defined as a homezone, playing on the roadway is also permitted. Drivers within a homezone may not drive faster than at a walking pace. They must make allowance for the possible presence of pedestrians, including children at play, unmarked objects and irregularities in the road surface, and the alignment of the roadway.



*Shared Surface Indicative Scheme.*

- Effective pedestrian and cycle desirelines are paramount to the success of a homezone. Thus it is essential that both groups of users can reach their destination in safety and with greater convenience than vehicular traffic.



*Pedestrian Desirelines in Urban Square.*



- Careful consideration should be given to the requirements of people with mobility impairment including people with physical disabilities, people with sensory impairment, parents with prams / young children and elderly people. Special attention should be made to surface treatments.
- Homezones encourage higher density development due to the predominance of on street parking and by designing the streets to act as communal outdoor spaces thus reducing the requirement for individual open space for each dwelling unit.
- Homezones should incorporate a wide variety of housing design and development layout. This variety should include variations in the building line, varied building heights, deviations in the width and alignment of vehicle paths (Both vertical and horizontal) a variety of surface treatments and extensive use of street furniture and planting.

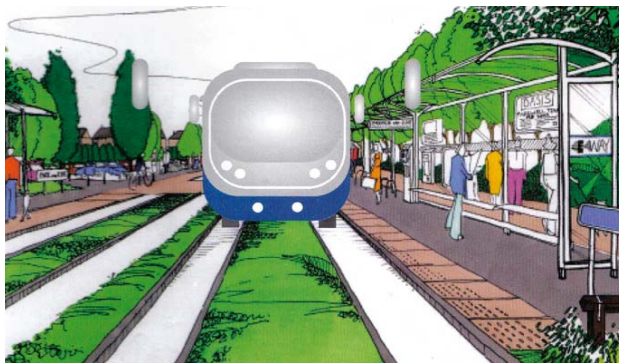
### Public Transport: Bus Services

Dundalk is a major centre for bus services and hosts a range of local and long distance bus services serving neighbouring towns and villages in surrounding rural areas of counties Louth, Monaghan, Cavan and Meath together with long distance routes travelling towards Dublin, Belfast and Athlone.

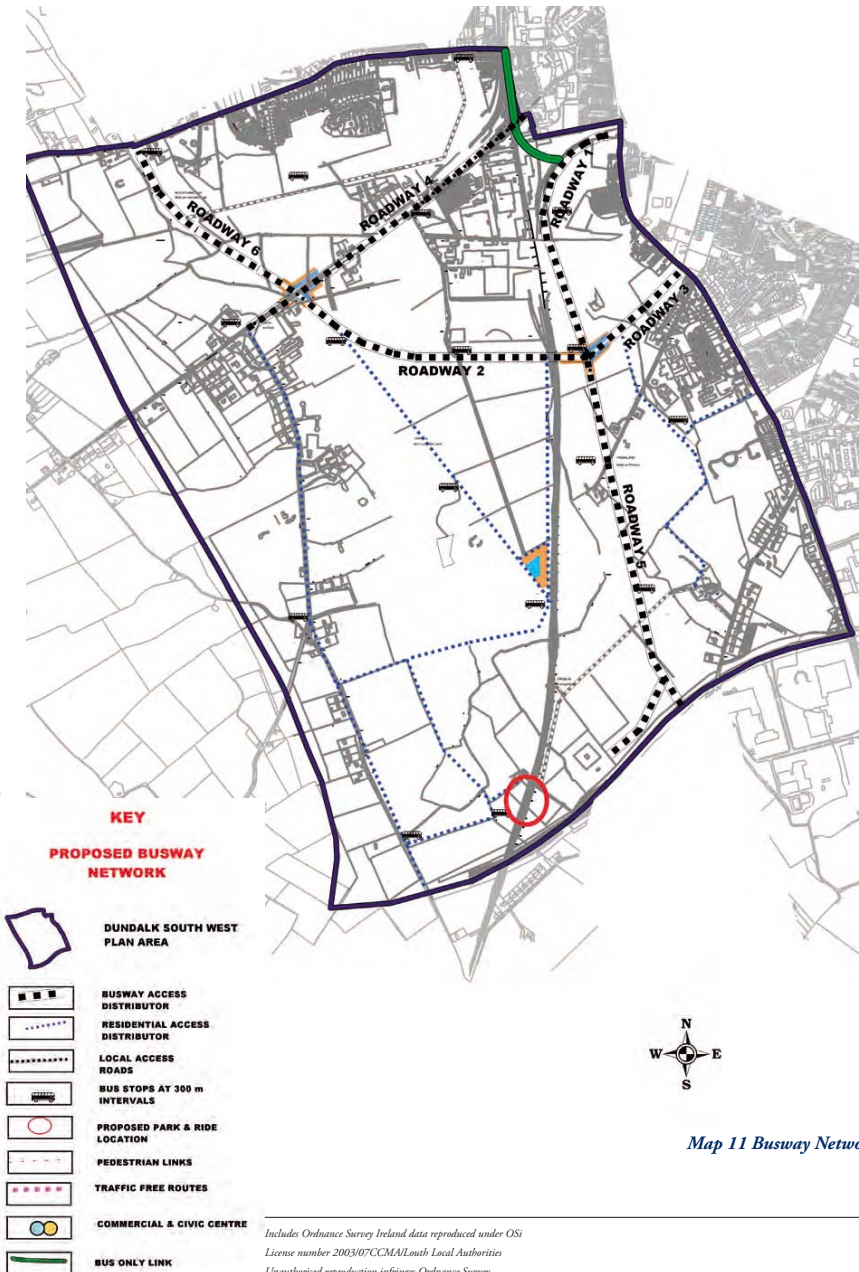
A network of internal suburban bus routes are operated by Bus Éireann and the private operator Halpenny Travel. This network links the town centre with the suburban areas of Fatima, Coes Road, Cox's, Bay Estate, Muirhevnaimuir and Blackrock. Within the Dundalk South West LAP area, bus services will provide the principal form of public transport. The scale and nature of development is such that extensions to the existing internal town bus services should be feasible.

### Busway Network

The DSWLAP road hierarchy contains a network of Busway Access Residential Distributor Roads as its principle form of road infrastructure. As the name suggests, purpose built segregated busways may ultimately form an integral part of these roads. The inclusion of segregated busways into the principle road network will provide a comprehensive public transport network throughout the plan area. The busway network permits both radial and orbital routes. Radial routes will originate in the town centre and utilise Roadways 1, 4 and 5 whilst orbital routes will utilise Roadways 2, 3 and 6. In addition to these routes, a dedicated bus only link is to be provided from Roadway 1 at the point where it turns due east to join Hill Street.



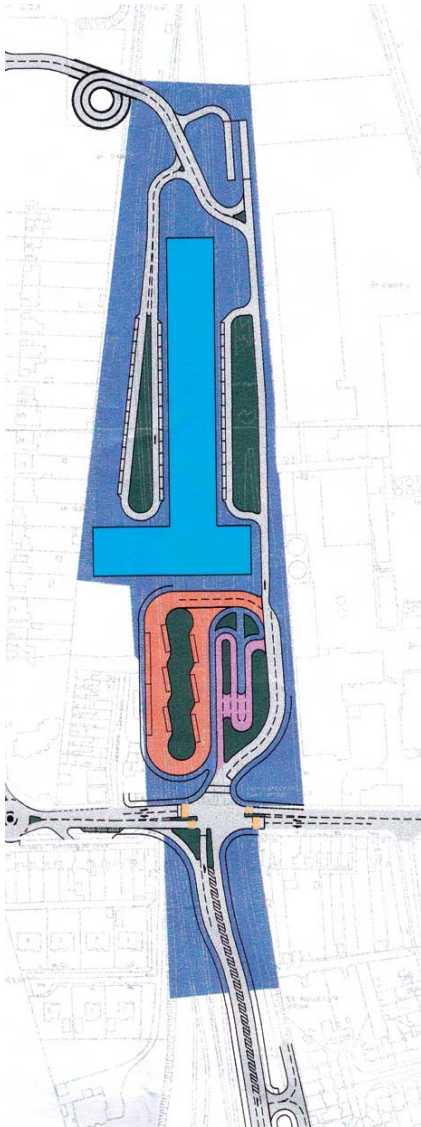
Bus Only Link/Segregated Busway – Typical Layout.



Map 11 Busway Network.

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The Bus Only link will continue northwards parallel to the railway before crossing the Ardee Road to gain access to a new Transportation Hub sited within the existing railway station environs. Direct rail / bus interchange facilities will be provided at the Transportation Hub as envisaged under the Phase 4 of the Dundalk Town Centre Transportation Study 2005.



Proposed Dundalk Transport Hub – Layout.

The Bus Only link will incorporate access control measures designed to restrict use of the link to buses only. Other routes incorporating bus priority measures will include those Residential Distributor Roads which link the Fairhill and Crumlin Civic and Commercial Centres. Bus priority measures on these roads will comprise on road bus lanes.



Bus Lane in High Density Development.

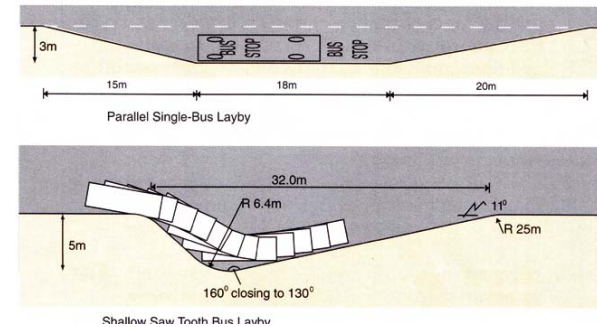


Public Transport Hub.

## Bus Infrastructure Provision

Throughout the DSWLAP area Bus Priority measures will be encouraged. Within entirely new development locations, high priority should be given to ensuring effective bus penetration to the site. In the past, bus provision has often been treated as a secondary consideration. The result has been the siting of bus waiting facilities at inconvenient locations, often remote from the main pedestrian entrances to the development resulting in passengers being forced to negotiate large car parks and busy internal service roads.

Internal circular distribution routes should be designed to permit full penetration by public transport services. The overall layout should contribute to the efficient and logical movement of buses around the area. It may be necessary to carry out “swept path analyses” of internal distribution roads at an early stage in order to assess their suitability for bus traffic. A swept path analysis determines the ability of a standard sized bus to manoeuvre safely along residential roads.



Bus Layby Swept Path Analysis.



## Public Transport Catchments

A bus route will only be viable if there are enough people within a 400m radius (or approx. 5 min. walk) of each stop. If bus stops are provided at 300m intervals a minimum density of 98 – 100 persons per hectare along a corridor 400m wide each side of the route will provide a potential passenger market which will prove attractive to bus operators. The locations of these high density corridors will be dictated by the routes of the Busway Access Residential Distributer Roads.

The arrangement of land uses must be such, that bus based trips journeys are busy at all times (rather than full buses departing residential areas in the morning, and returning empty thereafter), thus increasing the viability of the route. This plan has been designed with these principles in mind. Bus routes and potential bus stop locations are identified on map 11.

## Bus Stops

Bus stops should be within easy reach of all dwellings with the ideal walking distance between dwellings and bus stops not exceeding 400m. As much of the DSWLAP area is hilly, these distances may need to be reduced accordingly.

Bus stops within the DSWLAP area should be spaced at 300 metre intervals along routes. Stops should be located so that they are;

- Close to junctions with minor residential roadways or pedestrian/cycle only accesses.
- Grouped with amenities such as public telephones, post boxes etc.
- In close proximity to public open spaces and overlooked where possible by residential units.
- Free of obtrusive parking which would hinder both bus movement and that of passengers.



*Bus Boarder with Kassel Kerb.*

- Consideration should be given to the use of bus boarder buildouts within areas likely to experience high traffic levels, these will include the District Centre, Civic and Commercial Centres, Schools and Community facilities.
- Careful consideration should be given to the provision of bus facilities including lay-bys, saw-tooth lay-bys, bus gates and termini.



*Quality Bus Shelter.*

## Bus Access Profiles

Planning applications for major sites should include the preparation of access profiles for bus users. Bus passenger facilities should be located as close as possible to the main pedestrian access in accordance with logical pedestrian desirelines. Pedestrian routes from the bus arrival and departure areas should avoid the need to cross any trafficked roads and the route should avoid unnecessary changes in level and unnecessary street furniture. Surface treatments should highlight pedestrian needs and include dropped kerbs, tactile surfaces and clear signage. Bus infrastructure should include the use of infrastructural enhancements such as carriageway bus boarders.

The effectiveness of bus service provision to a new development site can be greatly enhanced through the inclusion, at an early stage of planning, of a bus priority strategy in the overall layout of the development. A variety of relatively inexpensive traffic management measures can greatly enhance the attractiveness of bus travel by prioritising their movement in the road network, thereby providing a more reliable and attractive service. Some of the more common measures include; with and contra flow bus lanes; bus only road links, bus gates, bus only turning exemptions, coloured surface treatments and a variety of traffic calmed / bus friendly methods. Additional appropriate bus priority and bus passenger infrastructural enhancement measures might include elements such as those listed below;

- Carriageway infrastructure alterations to include for example, recessed kerbing and bus stop entry / exit tapering to permit safe use by interurban buses
- The provision of bus stop shelters at key locations particularly at terminus points and along the main radial routes.
- Enhanced waiting facilities at other locations
- With flow bus lanes
- Contra flow bus lanes
- Segregated busways at congested locations
- Bus advance areas with pre-signals for buses, again in congested locations
- Selective vehicle detection for buses along congested corridors
- Bus only turning movements
- Bus gates
- Bus Based Park and Ride Facilities
- Carriageway marking and surface treatments to emphasise bus priority
- Ease of access for all users including the mobility impaired, pedestrians and cyclists through the use of physical measures such as ramps and tactile surface treatments
- Ensuring that the design, layout and access arrangements of surrounding developments should enable people to gain access, walk and cycle with ease and safety in order to join public transport services.

## Bus Based Park and Ride

It is anticipated that a dedicated, bus based, Park and Ride facility could be established within the Crumlin sector. The site for this facility would be in close proximity to the Southern Link road and all vehicles using the facility would be afforded direct access to the road and thence to the M1 motorway. The advantages of such a scheme are numerous. They include the relative speed with which the facility could be operational, the lower cost of such a scheme vis-à-vis a rail station and the opportunity to establish a link between the DSWALP area, the existing urban area and one of the principal transportation arteries of the state. In the longer term, it is anticipated that the bus based park and ride site could be readily adopted to service any new rail facility in the area. The Dublin to Belfast railway line lies to the immediate east of the proposed bus based Park and Ride site and both new and existing road infrastructure has been designed to facilitate flexibility in providing both such facilities.

The development of a park and ride facility at the Crumlin site will not be to the exclusion of other commercial activities as permitted by the surrounding “Employment Mixed Use” zoning.

### Generic Requirements for Park and Ride Facility (Bus / Rail)

Site Extent: 1.7 hectares

Potential Capacity 200 – 300 Parking Spaces



*Bus Based Park and Ride Scheme.*

## Bus/Rail Interchange Facilities

The DSWLAP will endeavour to encourage the rail and bus operators to arrange their respective services and networks to maximise the convenience of interchange between modes where and when necessary. The Dundalk Town Centre Transportation Study 2005 envisages the long term creation of an integrated Bus / Rail Station on the site of the current Rail Station. The DSWLAP will encourage this long term development by creating direct bus access to the station via the Bus Only link. In generic terms, bus terminals at rail stations should be sited as close as possible to the train departure areas with clear pedestrian desirelines established between both. These should avoid the need for passengers to traverse any roads and or busy car parks. Boarding points for both modes should avoid excessive inclines and the need to use stairs and should maximise the use of surface treatments and furniture, specifically designed to aid all users. All features should take account of the needs of those members of society with reduced mobility.



*Integrated Bus/Rail Station.*

## Pedestrian and Cycle Infrastructure: General Principles

Pedestrian & Cycle routes should be as direct as practicable between commercial and residential areas and major attractors such as Civic and Commercial Centres and Bus Stops. The routes should make efficient use of local topography and attractive natural features.

Routes should minimise likely conflicts with vehicular traffic but should be inter-visible between each other. The layout and detailed design of the internal road network should ensure that non-residential vehicular traffic finds the main distributor roads more convenient than local access roads. In this respect, it is recommended that non residential traffic be deterred in residential areas particularly, through the use of speed restraint measures including vertical and horizontal displacement. Within purely residential areas, consideration should be given to shared surface layouts and “Homezone” configurations.

## Cycle Requirements

In order to promote greater cycle usage developers will be required to provide cycle facilities within development sites and to provide linkages beyond the site boundaries which will ultimately form a comprehensive cycle network around the DSWLAP area.

Development proposals should identify the optimal clear cycle desirelines both within the development site and to major local attractors such as housing areas, shopping, leisure, educational and public transport facilities. These desirelines should then be prioritised within layouts in order to give safe priority and advantage to cyclists over motorised traffic.

Segregated or shared pedestrian / cycle tracks should be provided throughout developments. Excessive gradients should be avoided where possible. Where only a limited number of vehicular entrances are proposed, the possibility of providing additional horizontally controlled cycle / pedestrian accesses, should be investigated. Bicycle parking areas equipped with suitable upright parking features, should be provided at locations as close to pedestrian entrances to the development as possible.



*Cycle Lanes Alongside Road.*

Railway services generally cater for the carriage of cycles on board trains to a much greater extent than buses. Railway services can be utilised as part of a dual mode journey with the train service providing transport over the longer links of the trip. It is thus important that the needs of cyclists are taken into account when linking any new development to railway infrastructure.



*Cycle Parking at Railway Station.*

### Traffic Free Routes

The DSWLAP includes a number of traffic free cycle and pedestrian routes. These routes utilize existing laneways and in the case of the Mounthamilton sector, the former railway trackbed will be utilised. The traffic free routes will provide safe routes around and between sectors for the use of children, leisure cyclists, people with restricted mobility and mothers with children. They will have the added benefit of providing wildlife refuges in the heart of the sectors.



*Traffic Free Cycle Route.*

### Pedestrian Facilities

Pedestrian facilities share much of the features of cycle provision and both can often be provided in tandem. Pedestrian facilities should be as direct as practicable in relation to local facilities both within and beyond the development. Routes through and around the development should be both attractive and safe. The principles of defensible space should be adopted at all times.

### School / Educational Transport Requirements

Schools have become the focus for debate in relation to the journey to school; this has become a significant element particularly in morning rush hour traffic. In relation to existing schools much thought is being given to initiatives seeking to provide safe and viable alternatives to the car, such as the “walking bus” and dedicated cycling routes. In the development of new schools and other institutional uses these should be sited in locations where they can be accessed by a variety of modes of transport. Local and intermediate services should be sited in existing centres or adjacent to significant concentrations of housing. Provision should be made for such uses in any major planned housing area and the centre of an “urban village” type development would be an ideal location.