

6 MOVEMENT AND MOBILITY

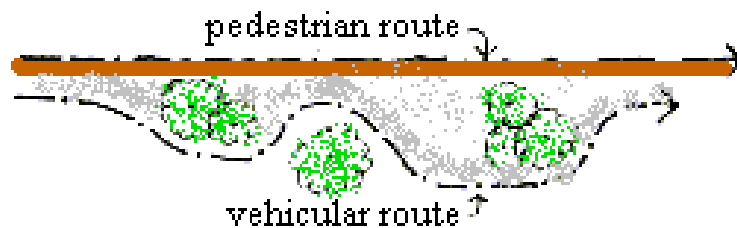
6.1 Priority

The movement network for the Clonmagadden SDZ was designed on the basis of the following order of priority:

- Pedestrians and cyclists
- Public transport
- Access for emergency vehicles
- Efficient circulation of local traffic
- Externalising non local traffic

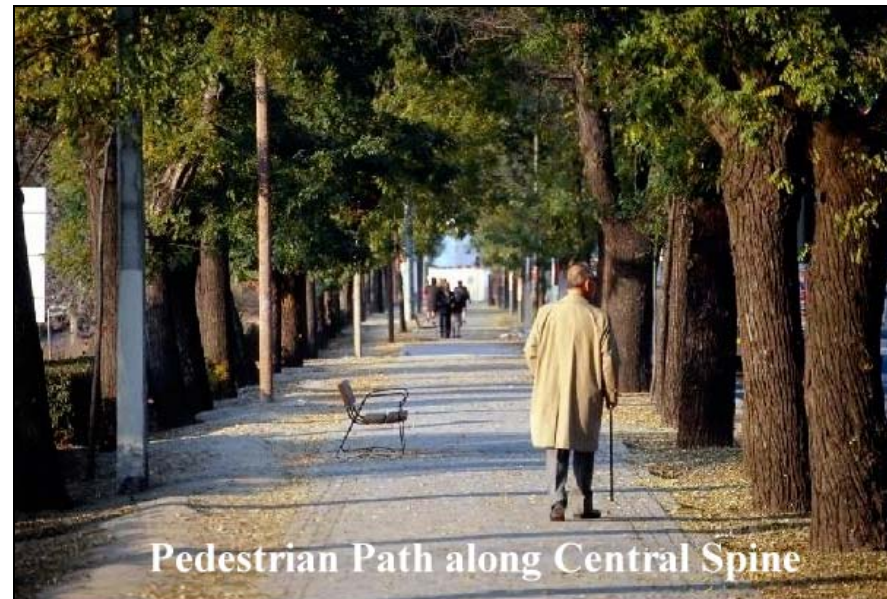
6.2 Planning for the Pedestrian

Walking is the most important mode in terms of number of trips or part-trips (though not of course distance). Walking constitutes the majority of trips for non-car-owners, women and children. Even quite modest changes in walking habits will therefore have an impact on overall energy use. At distances less than 0.5km the vast majority walk, but at a distance of 1km, which non-car-users generally walk, most car users rely on their vehicles.



Pedestrian routes should be direct.
Vehicular routes should be winding but not excessively circuitous.

In the case of Clonmagadden the basic principles of pedestrian planning for the area are:



- The provision of convenient and prominent pedestrian access points in terms of signage, lighting and gradients.
- A pattern of footpaths/pavements, which allows easy permeability; a choice of routes filtering through the area.
- Routes from houses to local facilities, including especially shops, schools and bus stops, are as direct and pleasant as possible avoiding steep slopes or steps/kerbs where possible.
- Use of green ‘open space network’ for longer distance walks linking to external facilities such as The Boyne Walk.
- Dedicated pedestrian routes along green corridors.
- The potential for future development of a pedestrian link between the SDZ site and the Blackcastle housing estate is recognised: the scheme shall be developed in a manner which will provide for such an linkage.

The proposals for the provision of pedestrian facilities are indicated on the Movement and Mobility Network Map at the end of this section, which indicates the overall movement network for the lands.

6.3 Planning for the Cyclist

For a cycle network to be successful it needs to be continuous and convenient with appropriate trip-end provision.

While walking and public transport are complementary modes of transport, the position of cycling is rather more equivocal. The principal motorised alternative for many cyclists is not the car, but the bus. An increase in bike use is liable to be at the expense of the bus, and expensive buses oblige people to get on their bikes. Conversely the bike is available to many people at low cost, is innately energy efficient, and can provide benefits in terms of health and fitness.

The average length of journey by bicycle according to some recent research is about 3km with a maximum regular trip no more than 16km (10 miles). The threshold beyond which cycling will generally not be used as the mode of travel lies around 5km (3miles).



In relation to Clonmagadden the proposed cycle network consists of:

- Dedicated cycleways and

- Cycle routes within residential areas

In the case of dedicated cycleways, these run along the bus route and along the green pedestrian routes. They do not in general run along the housing access roads.

Within housing access areas the cycle routes will be on road. However roads within residential areas will be required to be designed so as to provide for the cyclist.



Cyclist on Estate Road

The proposals for the provision of cycle facilities are indicated on the Movement and Mobility Network Map, which indicates the overall movement network for the lands.

6.4 Public Transport

The overall pattern of development has been designed so that a good level of public transport accessibility is afforded to all parts of the development with the minimum number of routes. The points where routes meet or cross (nodes) then become the location for jobs and services.

The structure of public transport provision is critical to sustainability of the development. Achieving the most effective public transport configuration must be given pre-eminence in the

design process. Different land uses can then be ‘hung’ on the public transport network. The network becomes a starting point, not an afterthought.

6.4.1 Access to Stops

The bus route in Clonmagadden has been designed so that all significant development is within easy walking distance of a good (or potential good) public transport service. The general guideline distance used in this regard is 400metres. Achieving this is considered critical – the ‘bottom line’ of sustainable development – and for medium scale developments as in the case of Clonmagadden, is not negotiable.



Key planning principles for effective bus operation:

- Providing direct routes for buses between points of primary attraction.
- Ensuring through bus-only lanes or priority measures, the bus will rarely be slowed or delayed by traffic congestion.
- Providing balanced housing densities along the routes with the highest density housing being close to stop.



Example of Bus Gate

- Providing direct and pleasant pedestrian access routes from the housing or commercial areas, avoiding physical or psychological deterrents (e.g. dual carriageway).
- Locating secondary trip objectives on the line of the route between key points – e.g. schools, post offices, public buildings.

In the case of Clonmagadden it is proposed to:

- Locate the Navan Ring Road on the edge of the site.
- Provide a shared busway running as a spine through the middle of the site.
- The shared busway will be designed so as to give priority to buses over cars by for instance not providing for bus lay-bys so that buses control the speed of traffic on this route.

- Through access for buses through the site and having no through access for cars through the site. Cars and other non-bus methods of vehicle transport generated from the east of the site have to go east to access the external road system and traffic at the west has to similarly travel west. This will be achieved by the provision of a ‘bus gate’ in the centre of the spine road.
- Providing bus stops within 400 metres of the majority of homes within the SDZ area.
- Providing higher intensity of development either by use and /or density within 100 metres of the bus stops.

The proposals for the provision of a bus facility are indicated on the Movement and Mobility Network Map, which indicates the overall movement network for the lands.

6.5 Roads and Traffic

6.5.1 External Traffic

External traffic has both its origin and destination outside the area.



In general, external traffic should not be permitted to use the mainly residential area of Clonmagadden as a short cut or ‘rat run’ to other areas.

The Navan Environs Development Plan 1997 shows the building of a Distributor Road around Navan as a specific objective. This road is shown on an indicative basis as passing through the middle of Clonmagadden SDZ.

Traffic modelling has shown that approximately 800 vehicles would pass along the Distributor Road at Clonmagadden in the AM peak hour in the year 2010. Approximately 550 vehicles will be generated by the SDZ in the AM peak hour in 2010.

The introduction of this level of additional external traffic into the Clonmagadden SDZ area would have serious repercussions for the quality of the environment within the Clonmagadden SDZ including community severance, noise and pollution and traffic danger.

It would also seriously undermine the strategy indicated in this document in relation to the priority of movement.

It would sever links between the parts of the development to either side of the road and would reduce the importance of public transport by allowing all vehicles to move through the SDZ. It would also be incompatible with a high-density housing development.

On this basis, it was decided to propose the location of this road to generally extend along the edge of the SDZ area with no provision for direct vehicular access through the SDZ lands.

In addition, proposals for Clonmagadden SDZ as indicated in the above sections will ensure that only public transport, pedestrians and cyclists will be able to pass through the area. The routing of

the proposed ring road will not add significantly to journey times on the ring road.

This option has no adverse effects on external traffic moving between the Slane Road and the main Distributor Road around Navan. This option is of great benefit to the SDZ, allowing greater movement within the development as well as ensuring that only public transport, pedestrians and cyclists can pass through the area.

A setback of 10 metres for roads purposes along the Kingscourt Road between the north of the SDZ and Tara Glen will provide the opportunity for the widening of this road and also to introduce safety measures for cyclists and pedestrians. A further 10 metre setback for open space purposes will also be required along this western boundary of the site.

Development at Clonmagadden SDZ will increase the overall volume of traffic in the north of Navan. However, the provision of the Distributor Road between the Slane Road and the N3, including a new bridge over the River Blackwater will mitigate the adverse impact of the development. Development of the SDZ lands will make a significant contribution to the provision of the Distributor Road and new bridge. In fact, with this Distributor Road in place by 2010 and Clonmagadden at its full size, the total traffic on the Inner Relief Road and Flower Hill is reduced by approximately 700 vehicles.

Development of the site in accordance with the Clonmagadden SDZ planning scheme will be subject to the provision of the necessary infrastructure.

6.5.2 Road Access

The main access to the Clonmagadden SDZ lands for cars and service vehicles will be the shared bus/vehicular spine, which runs through the middle of the scheme.

The design of this route will be such as to give priority for bus movements. Its width shall be 5 metres with no bus lay-bys. This will ensure that cars and other private vehicles will have to ‘wait their turn’ behind buses.



No through access will be allowed for cars and other private vehicles across the Clonmagadden SDZ. A device such as ‘bus gate’ will be provided to ensure this at an appropriate location.

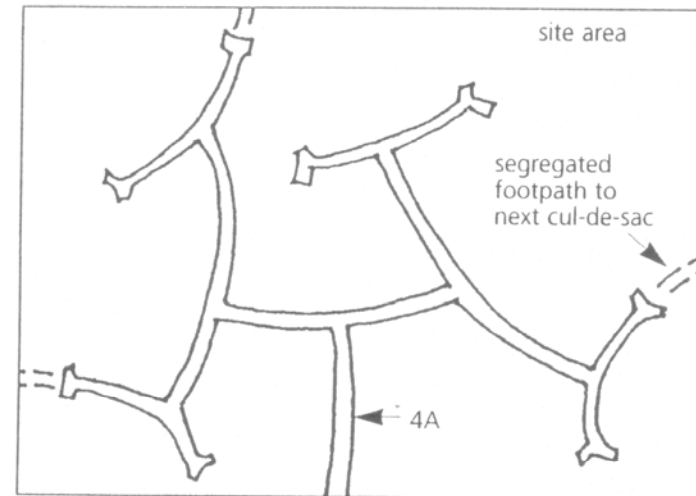
The design speed of this route will be 30mph. Where possible the use of ramps and platforms should be avoided as these may produce noise and vibration, wear and tear on cars and speeding between them.

6.5.3 Access Roads

6.5.3.1 Cul-de-sac

The use of cul-de-sacs result in a ‘tree’ structure of access, with only one main entry to the site. The diagram below shows this hierarchy of roads, which produces high vehicle flows towards the entrance. Dwellings located on the ‘Access Road’ suffer significantly more air and noise pollution, and risk of accident, than those within the cul-de-sac. The access road is also a

relatively hostile environment for pedestrians and cyclists. Alternative routes for the latter, on segregated paths from the end of cul-de-sacs may be neither direct in terms of distance, nor safe in terms of security.

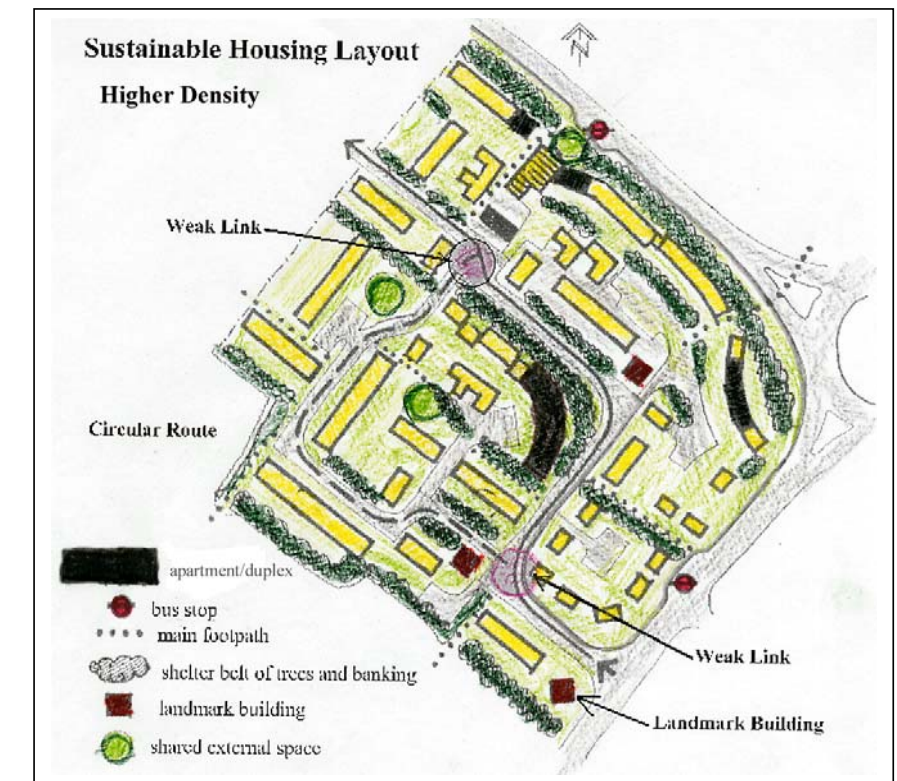


6.5.3.2 The Network Alternative

An increase in the number of access points (related to density and the location of external attractions) provides for peak vehicle flows to be kept to a minimum. Traffic is distributed more evenly throughout the layout. The consequences for pedestrian and cycle movement are significant. Shared surfaces can be used more generally, routes tend to be more direct, with higher amenity and safety. The plan is potentially more coherent and legible on the ground. Further advantages are that the roads are narrower, taking up to 9% less land area, and constructed to a lower specification, therefore using fewer natural resources. Costs remain similar owing perhaps to increased complexity at a detailed level.

Loops and circuits are better for service vehicles (e.g. milk delivery) and also reduce the problems of nuisance caused by reversing and turning vehicles. ‘Weak links’ allow service vehicles and emergency services to travel along the short segregated cycle and pathways, which break up the traffic grid.

Discontinuity would otherwise be a nuisance, and reduce the quality of the environment.



In general the access road layout for Clonmagadden is based on:

- A multiplicity of access points
- The provision of traffic cells
- A permeable structure
- Weak links through housing areas to facilitate service and emergency vehicles but to deter through traffic

6.5.4 Detailed Design of Roads

In relation to the detailed design of such roads:

- The hierarchy of roads and areas accessible by vehicles should be clearly communicated by signs, changes of

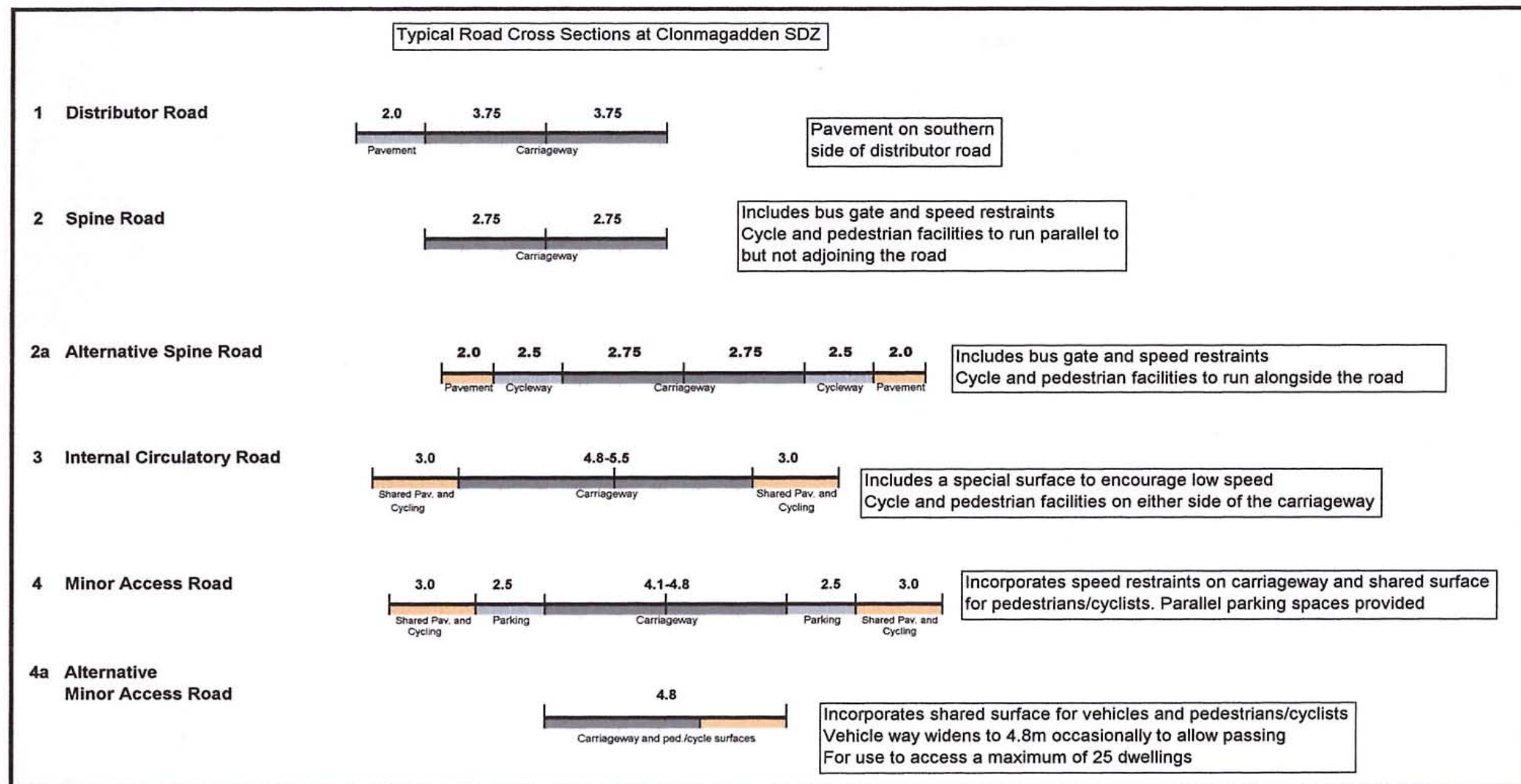
surface, enclosure at entrances, landscaping and progressive slowing down.

- The Ring Road will be a 7.5 metre single carriageway.
- The main access road (the ‘spine’ road) should have a ‘target maximum mean speed’ of 30 mph, with an emphasis on achieving steady speeds (thereby reducing fuel consumption, noise and danger). This road will have a maximum carriageway width of 5.5 metres.

- Internal access roads should have a target design speed of 20 mph. These are roads, which provide internal access to residential and other areas. They will have a carriageway width of between 4.8 metres – 5.5 metres. They will have dedicated 1.8 metre footpaths either side. Cyclists will use the road surface.
- Loop layouts and the linking of cul-de-sacs with ‘weak links’ (accessible only by authorised vehicles) facilitate delivery/collection by service vehicles. Large vehicles otherwise require large turning areas. Note that the expanses

of roadway associated with turning access are often used for haphazard car parking, which then constrains turning by service vehicles. These roads will have a maximum width of 4.1 metres with dedicated footpaths of 1.8 metres in width either side. Cyclists will use the road surface.

- Shared surface roads (to serve up to 25 dwellings in a cul-de-sac; up to 50 dwellings where conventional roads are located at each end) have the advantage of providing sufficient space for large vehicles to approach close to houses without giving an impression of a ‘tarmac prairie’. Delineation of parking



- and access ways, and footways, is essential. These roads will have a maximum carriageway width of 3.0 metres with the addition of integrated footpaths at 1.0 metre on either side.
- Road widths may be reduced to the minimum under an integrated traffic calming schemes (e.g. 4.8, 4.1 and 3m as shown on the diagram below) saving resources and land; but while a ‘squeeze’ may be positive to reduce car speeds, it can be dangerous for pedestrians and cyclists, so the road designs and signs should give clear priority to the latter.

6.5.5 Standards for Path Design

It is sometimes assumed that pedestrians and cyclists are so ‘mobile’ that almost any surface, gradient or width of path will suffice. Streets have been so thoroughly orientated to the needs of vehicular traffic that even the remaining refuge of the pedestrian, the footpath, is undermined by proliferating traffic signs and parked vehicles. The challenge for sustainable design is to create streets that contain vehicles, and are wholly safe and enjoyable for energy efficient modes of movement – including the movement of people with prams, small children, the elderly and those with impaired vision or mobility.

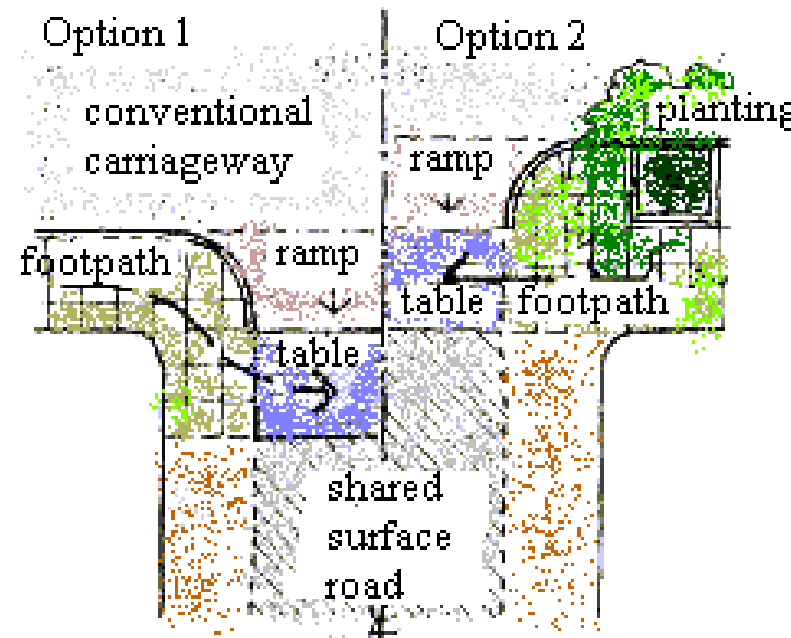
6.5.5.1 Continuity

Routes should not end abruptly at hazardous junctions. With reference to the diagram below where minor vehicular routes cross the pathway, pedestrians should have absolute priority, but the path should be set back from the side of the road. The designers of junctions would best serve the public if they can accept that pedestrians and cyclists use every opportunity to take the shortest route between two points; similarly that cyclists do not favour ‘stop-start’ conditions because of the additional physical effort involved. Layout should be checked for their

compatibility with the *desire-lines* revealed in the course of site appraisal, and modified by the new proposals.

6.5.5.2 Gradients

Pedestrian and cycle routes should generally ‘follow the contours’ when a site layout is first planned. A normal maximum gradient is 5% (1:20), through for cycle routes this



footpath alignment at junction

Option 1 requires a diversion. Option 2 permits a direct pathway but requires a buffer zone (for planting, bus-shelters, seats etc.

should not exceed 100 metres distance. Absolute maxima are 8% (1:12) for pedestrians over very short distance, and 7%

(1:14) for cyclists not exceeding 30 metres distance.

6.5.5.3 Widths

A 2 metre wide path is the minimum size to cater for up to 50 dwellings, enabling a single person (760mm) to pass a person with pram and small child (1250mm); extra width must be provided for obstructions such as lamp standards and carparking. A 2.5 metre width can cater for unsegregated cycling/pedestrian use, provided there are less than 200 cycle movements per hour (1000/hour if segregated).

For larger numbers of cyclists (unsegregated) and at school entrances, in alleyways under buildings, and at bus stops, a path should be more than 3 metres wide. Note, that cyclists require additional width on steep hills and bends.

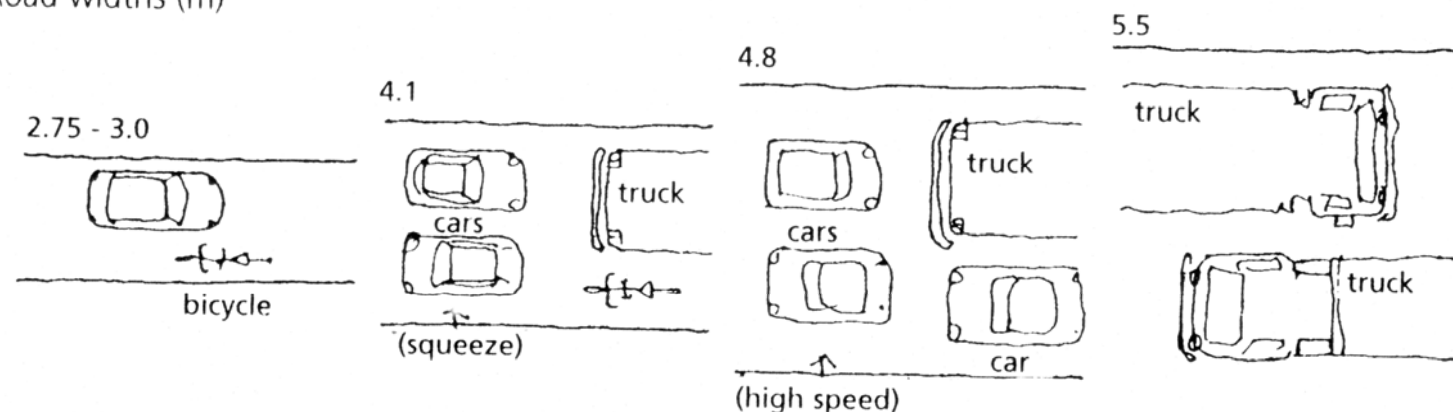
6.5.5.4 Surfaces

Dropped kerbs are required, preferably in conjunction with raised platforms across carriageways. While pedestrians require surface texture to prevent sliding, cyclists need very smooth, well drained, well maintained pathways without drainage gratings and manhole covers. With reference to the need to maximise water infiltration great care must be taken in the specification of materials and the proposed maintenance regime.

6.5.6 Car Parking

Parking control is one of the main mechanisms currently available for deterring car use. However, parking standards need

Road widths (m)



to be carefully devised to reinforce the public transport and higher density land use policies without causing undesirable side effects for residents or penalising car use where essential.

Car parking should generally be sited within established building lines in such a manner as to ensure minimal injury to the amenity of adjoining premises. In the town centre parking spaces should be located behind buildings or underground wherever possible, to encourage the continuity of streetscapes. Where parking will be opened to public view, adequate landscaping and tree planting must be provided to counteract the appearance of parking areas.

Construction and layout standards for multi-storey and underground car-parks are set out in the document, - ‘Design Recommendation for Multi-Storey and Underground Car Parks’ (current edition), published by the Joint Committee of the Institute of Structural Engineers and the Institution of Highways and Transportation.

6.5.7 Multi-Storey Car Parking

It is proposed to provide one multi-storey car park to serve the development of those land uses, which are likely to attract significant traffic from outside the SDZ site. Such uses are indicated with an asterisk in Para. 7.1.2 on the Landuse Table.

Two possible locations for the multi-storey car park are identified on the Clonmagadden Plan - Overall Scheme Map. However it is envisaged that only one multi-storey car park will be provided, if any.

The sizing of the multi-storey car park should have regard to the overall parking requirements associated with the comprehensive development of lands available for community/commercial uses. The external design of the multi-storey building shall be designed so as not to provide a single or major massing. In particular it shall relate to:

- (a) The water feature
 - (b) To the general scale of the adjoining square
- The design of the building should also have regard to its prominent location adjoining the Distributor Road and will also be required to be of a particularly high quality finish and design. Significant detailing should be provided in the façades of the car park and if necessary the car park should be presented as a series of buildings rather than one individual form by use of both design and materials. Particular attention should be paid to design to ensure that the traditional car park design approach, which presents a series of voids to the façade is avoided. In essence, the multi-storey car park should not form an overall dominant monolithic structure, but should read as buildings, which sit readily into the grain of development adjacent to the multi-storey car park. The multi-storey car park should be a high quality landmark building in its own right and subject to design and finishes constraints associated with such buildings as outline in Para. 8.9.

6.5.7.1 Parking Standards

Land Use - Residential	Car Parking Requirement
Dwellings	2 per conventional dwelling
Flats/Apartments	1.25 per unit
Hotel Accommodation	1 per bedroom
Guesthouses	1 per bedroom
Motel Accommodation	1 per bedroom
Hostel Accommodation	1 per bedroom or 1 per 10 bed
Self-Catering Accommodation	1 per unit
Institutions	1 per employee

Land Use - Employment	Car Parking Requirement
Offices	1 per 25 sq. gross floor area

Land Use - Commercial	Car Parking Requirement
Shop	1 per 20 sq.m. gross floor area
Banks	1 per 20 sq.m. gross floor area
Restaurants	1 per 5 sq.m. dining area
Bars, Lounges, Function Rooms incl. such spaces in hotels	1 per 4 sq.m. of public area

Land Use - Commercial	Car Parking Requirement
Service Garages	To be determined by the planning authority
Retail Outlets with garages	1 per 20 sq.m of net floor area

Land Use - Health and Education Facilities	Car Parking Requirement
Hospital Facility	1 per bed
Surgeries	2 per consulting room
Nursing Homes	1 per 3 beds and one space per employee
Schools	3 per classroom

Land Use - Community Facilities	Car Parking Requirement
Churches	1 per 6 seats
Libraries	1 per 20 sq.m. gross floor area
Cultural Buildings	To be determined by the planning authority

Crèches	1 per employee and dedicated set down area 1 per 5 children
Community Centres	To be determined by the planning authority

Land Use: Sports Facilities	Car Parking Requirement
Sport Clubs - including swimming pools tennis courts, etc.	2 per court, 5 per 100 sq.m.

6.5.7.2 Demand for Parking

Type	Description of Location	Provision of Parking
Standard Housing	Housing within residential areas Excluding mixed use areas	100% of requirement
Apartment	Units within Residential Areas	80% of requirement
Local Services in solely commercial blocks		100% of requirement
Local Services and residential in mixed-use blocks		80% of requirement
All other areas within 100 metres of a bus stop		80% of requirement

In assessing the need for car parking in any particular scheme account will be taken of:

- The particular location of a land use
- The intensity of employment and the exact nature of the proposed use, particularly in retail shopping
- Grouped or dual parking provision where peak demands do not coincide (especially where day and night uses are combined)
- Existing on and off street car parking

- Proximity to public transport
- The availability of quality pedestrian, cyclist and public transport routes

In the case of any specific uses not listed in the above table, the planning authority will specify its requirements in relation to parking.

Parking facilities for mobility impaired drivers and their vehicles shall be provided at the general rate of 1 per 100 spaces and shall be proximate to entry points to the proposed buildings.

6.5.7.3 Loading and Unloading

In addition to the general car parking requirements, service parking space may be required for cars or other necessary vehicles involved in the operation of the business or a particular building, e.g. delivery and collection of goods. In commercial developments, developers will be required to provide loading and unloading facilities sufficient to meet the likely demand of such development. Off-street loading facilities shall be designed to conform to the following requirements:

- Each required space shall be not less than 3.7 metres in width, 6 metres in length and 4.3 metres in height exclusive of drives and manoeuvring space and located entirely on the site being served.
- Loading spaces may be enclosed within a structure and must be enclosed if located within 15 metres of the curtilage of the residence where the use involves regular night operation.
- There shall be appropriate means of access to a street or road as well as adequate manoeuvring space.

- The maximum width of driveway openings at the street boundary shall be 6 metres and the minimum width shall be 3.6 metres.

Loading facilities shall be provided and maintained so long as the use exists which the facilities were designed to serve. They shall not be reduced in total extent after their provision and all reasonable precautions shall be taken by the owner or sponsor of particular uses to assure availability of required facilities to the delivery and pick-up vehicles that they are designed to serve.

However, the planning authority may modify the requirements of loading and unloading facilities in any specific case where it appears that it would be in the interest of the proper planning and sustainable development of the areas to do so.

6.5.7.4 Design Criteria

RECOMMENDED AISLE WIDTHS	
Parking Angle	Preferred Width
90 degrees	7 metres (two way aisle)
90 degrees	6 metres (two way aisle)
80 degrees	5.25 metres
70 degrees	4.7 metres
60 degrees	4.2 metres
50 degrees	3.8 metres
45 degrees	3.6 metres

The basic dimension required for the layout of car parking areas is as follows:

1. Short-term parking bays (for shopping centres particularly) shall be 2.5 metres wide by 4.75 metres in length. In no instance shall a width of less than 2.4 metres be accepted, even for long-term (office blocks) parking spaces.
2. Parking bays for disabled persons will be a minimum of 3.0 metres wide by 4.75 metres long. This includes disabled parking bays in the proposed multi-storey car park. The number of spaces provide will be determined by the planning authority in accordance with the Building Regulations (Part M) and any other relevant guidelines.

6.5.7.5 Heavy Vehicles

The indiscriminate parking of heavy commercial vehicles or machinery in residential areas detracts greatly from the amenities of these areas. It is the intention of the planning authority to protect and improve residential amenities in all areas of the town. The planning authority will co-operate with all other bodies that exercise control over this type of parking, to eliminate the nuisance created.

6.5.7.6 Cycle Parking

Secure cycle parking facilities shall be provided in new office, residential, retail and employment generating developments. Bicycle racks shall be provided in all cases where the planning authority deems bicycle parking necessary. Such facilities should be within 25 metres of a destination for short-term parking, (shops) and 50 metres for long term parking (school, college and office). Where stands cannot be provided on site, a contribution will be required towards the provision of public cycle stands by the Council at the rate of €100 per space required. The number of stands required will be approximately a third of the number of car spaces required for the development, subject to a minimum of one stand.



















All long-term (more than 3 hours) cycle racks shall be protected from the weather. From a security viewpoint cycle racks should not be located in out-of-the-way locations.

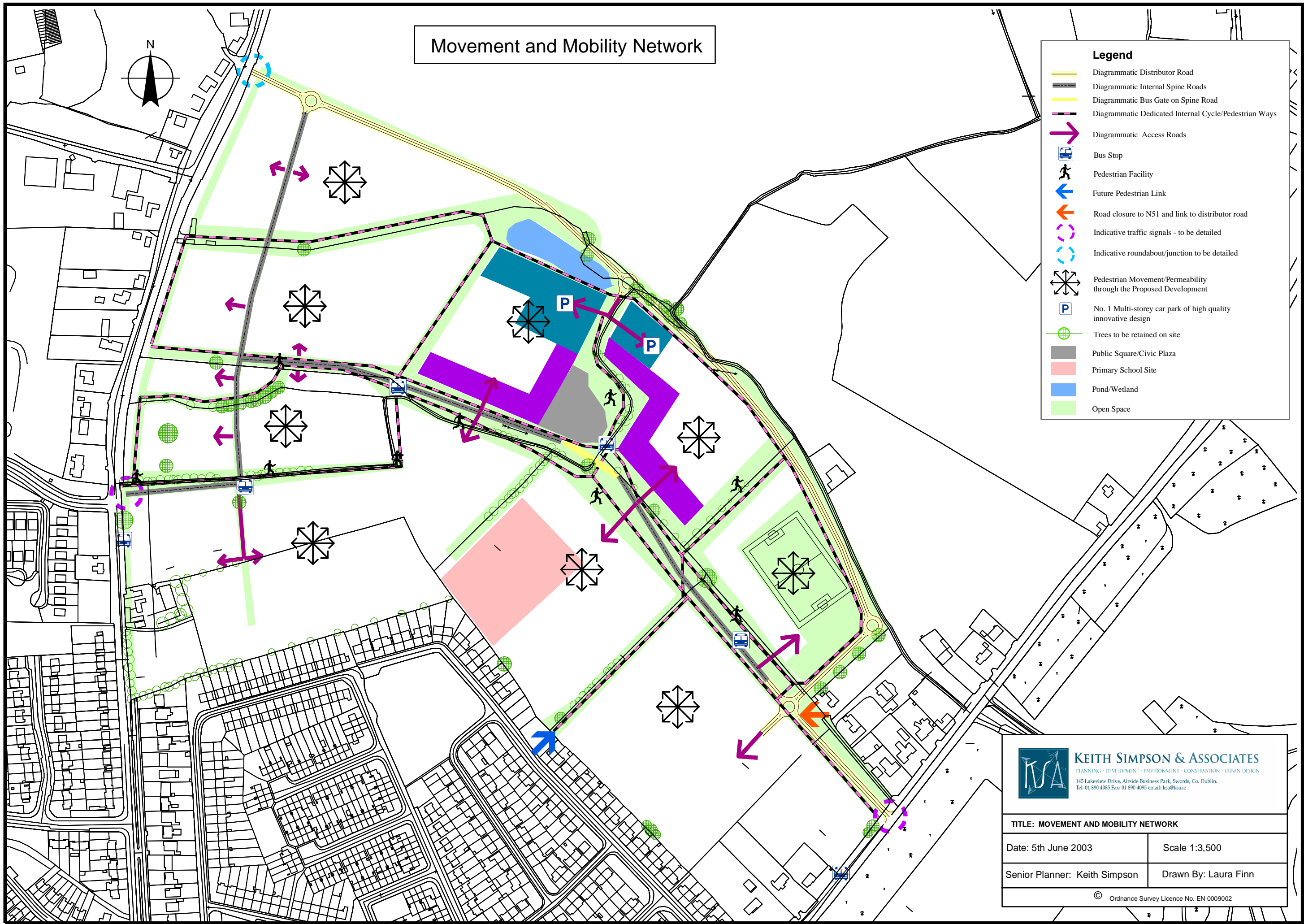
All cycle facilities in multi-storey car parks shall be at ground floor level and completely segregated from vehicle traffic. Cyclists should also have designated entry and exit routes at the car park.


Cycle parking facilities shall be conveniently located, secure, easy to use, adequately lit and well posted. Weather protected facilities should be considered where appropriate. In addition, parking should be placed within a populated, well-supervised area, and monitored by CCTV where possible.

Movement and Mobility Network

Legend

-  Diagrammatic Distributor Road
-  Diagrammatic Internal Spine Roads
-  Diagrammatic Bus Gate on Spine Road
-  Diagrammatic Dedicated Internal Cycle/Pedestrian Ways
-  Diagrammatic Access Roads
-  Bus Stop
-  Pedestrian Facility
-  Future Pedestrian Link
-  Road closure to N51 and link to distributor road
-  Indicative traffic signals - to be detailed
-  Indicative roundabout/junction to be detailed
-  Pedestrian Movement/Permeability through the Proposed Development
-  No. 1 Multi-storey car park of high quality innovative design
-  Trees to be retained on site
-  Public Square/Civic Plaza
-  Primary School Site
-  Pond/Wetland
-  Open Space





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TITLE: MOVEMENT AND MOBILITY NETWORK

Date: 5th June 2003	Scale 1:3,500
Senior Planner: Keith Simpson	Drawn By: Laura Finn

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