

**The Councils of the
City and County of Kilkenny**



**Kilkenny City & Environs
Draft Mobility Management
Plan
2009-2014**



Consultation Issue



Kilkenny Borough Council
City Hall
High St Kilkenny

Kilkenny County Council
County Hall
John St Kilkenny

Executive Summary

The purpose of this document is to establish a formal mobility and traffic management plan dealing with transport modal shift and accessibility for the City of Kilkenny. It will outline recent legislation and guidance and present a variety of studies undertaken by the Councils of the City and County of Kilkenny in relation to projects aimed at encouraging this modal shift and reducing traffic congestion in the city.

A series of mobility management proposals is set out along with an implementation plan for delivery of these projects. The plan is intended to be flexible and to adapt to the changing traffic, travel and accessibility needs and challenges facing the City into the future.

The mobility management proposals for the city include the following key measures:

- The introduction of more than 50km of cycleway lanes through out the city environs street network and within proposed new road developments. This scheme is currently being rolled out, with the first phase due for completion by the end of 2009. The network will be extended further, over the course of the 5 year implementation plan, to incorporate minor routes and interconnectivity of main routes, and through the completion of key proposed road infrastructure.
- The introduction of a one-way street system encompassing John St, Rose Inn St and High St and Michael Street. A smaller one-way system is also proposed for Upper Patrick St / Jacob Street for implementation in 2009.
- The rollout of parking charges proposals with the provision of the necessary equipment and resources to implement the introduction of these charges commenced in 2008 and is expected to be complete in 2009. The scheme is intended to deter long stay parking in the inner city, reduce traffic congestion and generate revenue which could be assigned to the implementation of other mobility management proposals.
- The consideration of a bus shuttle service for the inner city and two bus routes servicing the city environs on an east-west and north-south alignment. These services would be subject to considerable financial subvention but it is considered that the services could be introduced within the lifetime of the Mobility Management Plan with support from central government.

- Initial findings in relation to the provision of park and ride facilities suggest that the proposal would not be currently viable on financial or practical grounds at the moment. However, this will be kept under review over the lifetime of the plan.
- The introduction of intelligent signage to provide motorists with real time information on the availability of city car parking spaces. The proposed strategy is aimed at trying to encourage particular groups of users to particular car parks. On street parking in the city centre is aimed at the short stay parker, while on street parking away from the core city centre is aimed at the longer stay parker. Long stay car parks are aimed at commuters, while private car parks are aimed at visitors to the facilities they are attached to. Implementation of this scheme is expected next year with annual reviews thereafter to determine the requirement for additional signage as necessary.
- The introduction of special speed limits of 30km per hour on John Street, High Street, The Parade, part of Patrick Street, Friary Street and James Street.
- An option for full pedestrianisation of High Street, from its junction with Friary Street to its junction with James Street, during busy shopping periods or on festive/cultural occasions.

A school safety programme commenced in 2007 aimed at the provision of 30kph speed limit signage, pedestrian crossings and traffic management where appropriate. This programme is expected to conclude in 2009. A part time road safety officer is to be assigned to co-ordinate other programmes such as the “walking bus” and “cycle train” initiatives amongst others on an ongoing basis.

The Mobility Management Plan takes full cognizance of the Disability Act 2005 and seeks to incorporate accessibility arrangements into the built environment proposed under the various schemes herein.

Finally, the plan incorporates for the provisions of a number of “soft” options such as awareness and information campaigns, and policies affecting regulation measures, technology standards, fiscal policies and work-life balance issues.

1.	INTRODUCTION.....	1
1.1.	DEFINITIONS	1
1.2.	PURPOSE OF MOBILITY MANAGEMENT PLAN.....	1
1.3.	IMPLEMENTATION OBJECTIVES.....	2
1.4.	EXPECTED BENEFITS.....	3
2.	GUIDANCE AND LEGISLATION	4
2.1.	SUSTAINABLE DEVELOPMENT: A STRATEGY FOR IRELAND.....	4
2.2.	NATIONAL SPATIAL STRATEGY 2002 -2020.....	4
2.3.	NATIONAL DEVELOPMENT PLAN 2007-2013	5
2.4.	2020 VISION – SUSTAINABLE TRAVEL AND TRANSPORT - DEPARTMENT OF TRANSPORT	5
2.5.	SOUTH EAST REGIONAL PLANNING GUIDELINES	6
2.6.	KILKENNY COUNTY DEVELOPMENT PLAN 2008-2014.....	6
2.7.	KILKENNY CITY & ENVIRONS DEVELOPMENT PLAN 2008 - 2014.....	6
2.8.	LOCAL AREA PLANS.....	7
2.8.1.	<i>Kilkenny City Centre Local Area Plan 2005</i>	7
2.8.2.	<i>Loughmacask Local Area Plan 2008 -2014</i>	8
2.8.3.	<i>Western Environs Local Area Plan 2004</i>	9
2.9.	2005 DISABILITY ACT.....	9
3.	EXISTING SITUATION AND ROAD NETWORK	12
3.1.	KILKENNY CITY.....	12
3.2.	POPULATION	12
3.3.	EXISTING ROAD NETWORK.....	13
4.	TRAFFIC AND MOBILITY STUDIES	17
4.1.	OVERVIEW	17
4.2.	PEDESTRIAN & CYCLE NETWORK STUDY 2002	17
4.3.	KILKENNY CITY ONE-WAY SYSTEM 2004	18
4.4.	KILKENNY CITY TRAFFIC MODEL 2007.....	19
4.5.	FEASIBILITY STUDY ON TOWN CENTRE SHUTTLE BUS SERVICE 2008.....	21
4.6.	FEASIBILITY STUDY ON TOWN CENTRE BUS SERVICE.....	22
4.7.	FEASIBILITY STUDY ON PARK AND RIDE/WALK SCHEME	23
4.8.	FEASIBILITY STUDY ON REAL TIME PARKING INFORMATION SIGNAGE 2008.....	25
4.9.	FEASIBILITY STUDY ON JOHN ST / HIGH ST ONE-WAY SYSTEM 2008.....	27
4.10.	ECONOMIC ASSESSMENT OF ON-STREET PARKING CHARGES.....	30
5.	MOBILITY MANAGEMENT PROPOSALS.....	32
5.1.	CYCLEWAY NETWORK.....	32
5.2.	ONE –WAY TRAFFIC SYSTEMS	32
5.3.	CITY BUS SERVICES.....	33
5.4.	PARKING	34
5.5.	REAL TIME INTELLIGENT INFORMATION SIGNAGE.....	34
5.6.	STREET PEDESTRIANISATION.....	35
5.7.	PARK - WALK AND RIDE SCHEMES.....	36
5.8.	DISABILITY ACCESS IMPLEMENTATION PLAN	36
5.9.	SAFE ROUTES TO SCHOOL PROGRAMMES.....	38
5.10.	AWARENESS AND EDUCATION INITIATIVES.....	39
6.	IMPLEMENTATION PLAN.....	42
6.1.	ROLES AND RESPONSIBILITIES.....	42

6.2.	TARGETS AND OBJECTIVES	42
6.3.	PROGRAMME	43
6.4.	BUDGET & COST BENEFIT ASSESSMENT	43
7.	SUMMARY	44
	APPENDICES	45
	APPENDIX A - BIBLIOGRAPHY & REFERENCES	46
	APPENDIX B - CYCLE TRACK NETWORK	49
	APPENDIX C - PLAN OF PROPOSED ONE-WAY SYSTEMS	50
	APPENDIX D - TRAFFIC MODEL OUTPUT SCENARIOS	51
	APPENDIX E - SHUTTLE BUS AND CITY ENVIRONS BUS ROUTES	52
	APPENDIX F – EXISTING CAR PARKS AND PARK AND RIDE LOCATIONS	53
	APPENDIX G - KILKENNY CITY & ENVIRONS	54
	APPENDIX H - KEY ROAD NETWORK IMPROVEMENT SCHEMES	55
	APPENDIX I - DRAFT PROGRAMME FOR MOBILITY MANAGEMENT PLAN 2009-2014	67

1. Introduction

1.1. Definitions

Mobility Management

Mobility management may be defined as a transport demand management mechanism that seeks to provide for the transportation need of people and goods. Its aim is to reduce demand for and use of cars by increasing the attractiveness and practicality of other modes of transport. – (Mobility Management Plans – DTO Advice Note 2002, Dublin Transportation Office) It may be applied to individual developments or in a wider context to towns and cities.

Mobility Management Plan

The Mobility Management Plan is a management tool comprising a series of measures designed for the needs of a particular city or area to improve travel and access to, from and within the city. The plan may take the form of a formally published document which outlines its measures and targets for improvement, or may evolve over time as different initiatives are piloted.

1.2. Purpose of Mobility Management Plan

In the context of Kilkenny City, the purpose of the Mobility Management Plan is to introduce a series of measures which will improve the attractiveness of using public transport, cycling and walking, and car-pooling. This modal shift from a dependency on car based travel will assist in combating traffic congestion in the city, with associated environmental benefits in relation to noise emissions and air quality. Improvements in traffic management, the upgrade of existing infrastructure and the provision of new infrastructure are proposed to achieve improved circulation of traffic within the city and provide additional facilities for pedestrians and cyclists. The management and effective use of the city's road network is key to the development of an integrated and sustainable transport system. Whilst the scope for the provision of new infrastructure or expanding the existing network can be limited and difficult to provide within an established city environment, the provision of additional infrastructure may be necessary to enable other projects to be realised. These projects typically become more effective when combined with other initiatives to provide a structured and balanced approach to achieve improved mobility within the city environs. Particularly, when the demands of private development are considered, a mobility management framework is essential to manage the demands of individual developments and the overall requirements of the city.

Whilst there is no statutory requirement to provide a Mobility Management Plan, it is clearly in the interest of proper and sustainable development for Kilkenny City that a Mobility Management Plan be established. This approach is supported at National level as outlined in sustainable Development: A Strategy for Ireland the 2020 Vision – Sustainable Travel and Transport: Public Consultation Document.

The Development Plans for the County, City and Environs of Kilkenny promote modal shift away from the private car. In addition, they also seek to achieve a balance between the use of private transport with the need to promote alternative modes of transport, such as public transport, cycling and walking.

1.3. Implementation Objectives

It is envisaged that the Mobility Management Plan will set objectives over a stated period, typically five years. The Plan takes into consideration the existing infrastructure and includes proposed projects which are currently being implemented to assess the overall impact on mobility within the city and environs. The Plan sets out a programme for the delivery of proposed elements of improvement works and strategies, whether on a stand alone basis or integrated phased basis as several projects are dependent on others to achieve the intended results. The primary objectives are as follows:

- to effectively manage the movement of people and goods within the City Environs
- to reduce demand for and use of cars by increasing the attractiveness and practicality of other modes of transport
- to improve facilities for pedestrians and access facilities for people with special mobility needs in line with aims of the European Charter of Pedestrian Rights
- to promote and improve sustainable active travel modes such as walking cycling and public transport
- to provide and control the development of parking for both long and short term parking demands to optimise the use of all spaces
- to ensure through price control measures, that the city centre car parking spaces are for short stay purposes
- to investigate the provision of improved bus services within the city

- to investigate the establishment of a Transport Forum to oversee transport policy for the City in conjunction with the County Development Board
- to establish guidelines for the preparation of mobility plans for private development where appropriate

1.4. Expected Benefits

The Mobility Plan Guide Book, published by the European COMMERCE (Creating Optimal Mobility Measures to Enable Reduced Commuter Emissions) project, indicates that several million journeys are made every day in the major agglomerations, almost two thirds of which are made by car, with road transport representing 90% of the transport sector's CO₂ emissions. Since 1990, emissions from transportation in Ireland have risen by about 140 percent.

It is established that throughout Europe millions of hours per year are lost in traffic jams, which has a serious impact on business operations and in people's lifestyle and quality of life, and the planet as a whole. In Europe, it is estimated that 2 GDP (Gross Domestic Product) points are lost annually owing to traffic congestion. In London, traffic congestion related costs are estimated at £5 billion sterling per annum. The cost of congestion in the Greater Dublin area in 2005 was €2.5 billion. (*Dublin Chamber of Commerce, Transport 21:Future for Dublin Jan 10th 2005*) These statistics alone demonstrate the significant economic savings which could be made with better urban mobility management. Other benefits accruing from improved mobility management and the modal shift away from private car use include:

- Resolution of transport and access problems such as commuter delays, access arrangements, parking difficulties and deterrents to recruiting or keeping qualified staff in business due to poor access to the workplace and retail areas
- Meeting environmental targets by reducing air pollution, CO₂ emissions and greenhouse gasses and noise emissions
- Achieving cost savings by reducing the cost of transport, parking and transport related accidents
- Encouragement of better health through walking and cycling and by offering less stressful travel options for commuters, shoppers visitors and residents

Whilst Kilkenny city does not compare to major European cities in terms of size and population, nonetheless these benefits will accrue albeit on a lesser scale.

2. Guidance and Legislation

2.1. Sustainable Development: A Strategy for Ireland

In 1997, the Government published *Sustainable Development: A Strategy for Ireland* (Department of the Environment). The key elements relating to transportation include:

- Minimisation of the potential growth in transport demand will be incorporated in land use planning
- Increased efforts to manage the existing road network more efficiently
- Government policy to support and improve public transport and infrastructure
- Relevant agencies to provide more sustainable and environmentally acceptable alternatives to private car transport
- Implementation of the DTI (Dublin Transport Initiative) strategy will be intensified
- Opportunities for non motorised transport will be improved
- Appropriate agencies will actively encourage public awareness of the unsustainable aspects of increasing use of vehicle transport
- Continuing efforts to reduce CO₂ emissions from motor vehicles

This document redefined all relevant aspects of government policy in the context of sustainable development.

2.2. National Spatial Strategy 2002 -2020

The *National Spatial Strategy* (NSS) was published in December 2002. The Strategy is a twenty-year planning framework designed to achieve a better balance of social, economic, physical development and population growth between centres. The Strategy seeks to renew, consolidate and develop existing urban centres keeping them as physically compact and public transport-friendly as possible to minimise urban sprawl while also achieving a high quality of design in new development. The NSS also sets a national context for spatial planning to inform regional planning guidelines and strategies including the statutory Development Plans.

Under the NSS, critical mass in the South East Region will be enhanced through Waterford performing as a gateway, supported by Kilkenny and Wexford as hubs. These three together form a nationally strategic 'growth triangle'. Kilkenny City is designated as a Hub with a projected target population of 30,000+ by the year 2020.

2.3. National Development Plan 2007-2013

The NDP sets out a strong framework for the promotion of regional development with a particular focus on investment in the implementation of the National Spatial Strategy (NSS). Strong urban centres are directly related to regional growth and development, affecting employment, incomes and quality of life throughout the regions. The investment framework and strategy of the NDP will assist and enhance physical and spatial planning.

The National Development Plan (NDP) 2007-2013, outlines that regional population and economic trends have implications for transportation. A rapidly increasing population, rising employment and income levels have resulted in car ownership levels in Ireland increasing significantly. The population of Kilkenny City and its Environs has increased by 6% between 2002 and 2007, and as a 'Hub' town, the target population for Kilkenny City and Environs by 2020 is 30,000 persons.

2.4. 2020 Vision – Sustainable Travel and Transport - Department of Transport

In 2008 the Department of Transport published a public consultation document entitled 2020 Vision – Sustainable Travel and Transport. It sets out key trends for both freight and personnel transport across a number of indicators, including modal split, congestion and emissions. It notes that current trends for travel and transport in Ireland are not sustainable, with urban congestion and greenhouse gas emissions worsening. The publication proposes a vision of a sustainable transport system by 2020, which aims for a significant shift towards the use of public transport, car sharing, cycling, walking and trip reduction as well as improved access to transport services. Government commitment to the delivery of a more sustainable transport system is identified in Transport 21, which is a capital investment framework for the transport system for 2006 to 2015. This consultation document is intended to culminate in the production of a Sustainable Travel and Transport Action Plan which would address the need to integrate transport infrastructure and spatial planning and improved public transport services. It would include new policies to promote cycling and walking, new initiatives to change travel behaviour and steps to address fuel efficiency. Improved institutional arrangements would be put in place to support these goals.

Additional measures in the form of policies to influence and change personal travel behaviour include mobility management, information awareness, fiscal measures and regulatory instruments will also form part of the overall strategy.

2.5. South East Regional Planning Guidelines

The Regional Planning Guidelines, developed by the Regional Authority, represent a planning framework for the period 2004-2020 designed to achieve a better spatial balance of social, economic and physical development throughout the region. It is intended that the Guidelines will strengthen local authority development plans.

The Regional Planning Guidelines expand on the NSS and identify critical enabling investment priorities for the region. The RPGs also establish a settlement typology identifying six classifications of population centres based on size and function, in line with the NSS.

2.6. Kilkenny County Development Plan 2008-2014

National planning policy sets out to promote sustainable development within the county through the integration of transportation and land use policies in order to reduce the need to travel and to promote modal shift away from the private car. The Kilkenny County Development Plan encourages the use of public transport in preference to the private car. In addition, it also seeks to achieve a balance between the use of private transport with the need to promote alternative modes of transport, such as public transport, cycling and walking.

2.7. Kilkenny City & Environs Development Plan 2008 - 2014

It is an objective of the Plan to implement the recommendations of the Kilkenny City & Environs' Cycle Routes Study, as part of the transport strategy for the City, and to complete a mobility and traffic management plan dealing with issues such as changes in accessibility arrangements to encourage alternative means of transport to the private car.

The Plan contains a wide range of objectives to cater for the future development of the city, increases in population and the improvement of services and quality of life. Inherent in many of these objectives, is also the intention to generate a modal shift from car orientated travel to alternative modes of transport and access to the city. The principle proposals in this regards are summaries as follows:

- The reservation of lands free of development to facilitate the construction of key new road network schemes such as the Central Access Scheme, Western Environs, Ring Road Extension, Northern Ring Road Extension and River Crossing

- Road network improvements to the existing N10 Ring Road and approaches, the Kells Road, the Eastern Environs road schemes and commercial development areas such as Hebron and Outrath amongst others
- The provision of cycleway facilities throughout the city environs
- The pedestrianisation of some primary city centre streets and provision of pedestrian crossing points throughout the city environs
- To incorporate facilities for disability access within improvements schemes
- The implementation of one-way traffic systems and traffic calming measures at various locations throughout the city environs
- Provision of traffic calming measures, speed limits and crossing points at schools
- To provide suitable bus facilities, including bus stop locations, shelters and coach parking
- The introduction of parking charges for on-street parking in the city
- The levying of financial contributions on developers who benefit from the provision of roads infrastructure provided to accommodate future development
- The provision of a new pedestrian bridge over the River Nore at Carnegie Library
- To promote the diversion of heavy through traffic out of the city and on to the Ring Road.

2.8. Local Area Plans

2.8.1. Kilkenny City Centre Local Area Plan 2005

Some of the main challenges and opportunities of the Kilkenny City Centre Local Area Plan (LAP) are to:

- Facilitate the future development of the city Centre in accordance with a comprehensive vision.
- Facilitate the population growth anticipated in the NSS.
- Accommodate access to the city centre.

The proposed road development envisaged in the LAP will help to achieve these policies through the following:

- The provision of infrastructure to serve planned future population centres;
- The improvement of travel times within Kilkenny City and Environs.
- The provision of an additional bridge crossing within Kilkenny City and
- The provision of the Central Access Scheme will provide the means whereby future road schemes and public transport and modal shift policies can be met.

Section 2.1 of the LAP outlines the policies and objectives of the LAP in relation to traffic management and linkage, and it is acknowledged that the transport network is a fundamental element contributing to the economic and social development of the City.

The LAP states that the medieval fabric and street pattern of the City Centre are subject to modern traffic pressures with extensive traffic volumes, parking and servicing requirements. In this regard, within Section 2.1.3, Road and Street Hierarchy, the LAP outlines that:

‘The Inner Relief Road(Central Access Scheme), Eastern Ring Road and North Link Road are the strategic routes that will have a significant impact on traffic flow in the City’.

and

‘The Inner Relief Road(Central Access Scheme), will provide for strategic vehicular movement around the City Centre’.

The LAP sets out policies and objectives in relation to the provision of city centre gateways which will provide for the safe passage of pedestrians and cyclists. Section 2.1.6 and 2.1.7 of the LAP outline policies in relation to the cycle and pedestrian network for the City. It is a key sustainability principle of the LAP to improve the accessibility of the City Centre for pedestrians and cyclists.

Section 2.1.10 of the LAP outlines the ‘Transport Management and Linkages Objectives’ of the LAP.

2.8.2. Loughmacask Local Area Plan 2008 -2014

The area subject to the Loughmacask LAP is situated to the northwest of Kilkenny City. The proposed Central Access Scheme will act as a distributor road

for the area and as a relief road for the city. It is proposed at detail design stage that restrictions will be introduced to protect the function of the Central Access Scheme and to minimise severance between the Western Environs the city centre and the LAP area. These restrictions will include limiting the number of development access points and junctions and restricting access to improve road safety around the existing and proposed schools. Provision of safe crossing points for pedestrians and cyclists shall be made. Schemes, such as a “Walking Bus” scheme for school children will be encouraged. It is policy to establish a cycling and pedestrian movement network throughout the plan area, which will be integrated in a sustainable manner with future residential developments and the adjoining city area. Furthermore it is policy to improve the efficiency, performance and attractiveness of transport facilities through provision of an integrated traffic management network which will offer wider benefits throughout the LAP, the city and environs areas. It is also noted that *‘the full Inner Relief Road (Central Access Scheme) is required if the committed development outlined above is to be fully realised’*.

2.8.3. Western Environs Local Area Plan 2004

The Western Environs Local Area Plan states that safe fast and convenient access is essential for the functioning of any urban area. In the drawing up of a Transportation and Movement strategy it is useful to consider the needs of different road users separately. The basic philosophy to this plan proposes to direct non-essential traffic away from the village centre and residential areas.

Within the village centre and residential area primacy will be given to the pedestrian. Safe routes to schools, recreation and community facilities from the residential areas must be identified. Whilst a public transport service is not currently available, the viability of a local urban bus service will be greatly enhanced if bus routes are designed into the scheme from the outset. It is a policy of the Councils to actively promote the establishment of a town bus service to serve the existing city and the new Western Environs and to encourage sustainable modes of transport. It will be an objective of the Councils to provide two public car parks in the village centre.

2.9. 2005 Disability Act

Ireland has experienced a huge shift over the two decades in how we think about people that experience exclusion, including people with disabilities. In 1993 the Minister of Equality and Law Reform, Mervyn Taylor T.D. established The Commission on the Status of People with Disabilities. Terms of reference

included capturing the life experiences of people with disabilities in Ireland, identifying their needs and making recommendations for changes to legislation, policy, structures and practices to ensure that disability related needs were actually met.

The subsequent report “*A Strategy for Equality*” (1996) contained 402 recommendations for change and addressed all major areas of life. This report heralded a paradigm shift in relation to disability and began the ongoing process of change in relation to how Irish society views and acts towards people with disabilities.

In 1995 the Barcelona Declaration was launched. This document introduced the “design for all” concept and provided a framework for Local Authorities to deal with disability issues using a structured and strategic approach. Local Authorities were given the opportunity to formally adopt the Barcelona declaration and then translate their commitment into actions that include consulting with people with disabilities and drawing up and implementing local action plans on disability.

The Disability Act 2005 requires public bodies to provide:

1. Accessible buildings
2. Accessible information
3. Accessible services

In 2006, in accordance with the Act the Minister responsible for Local Authorities in the Department of Environment, Heritage and Local Government published its Sectoral Plan.

Chapter 4 of the plan is dedicated to Local Authorities. There is a requirement on each Local Authority to produce their own implementation plan to explain how they will:

“...promote universal access to all public spaces, buildings and services owned and operated by Local Authorities.”

This plan is an important step towards meeting our legal responsibilities as a Local Authority and reaching the ultimate goal of universal access to all spaces, buildings, facilities and services that we own or operate.

Having regard to the built environment, Kilkenny Local Authorities undertook detailed assessments of all Kilkenny Local Authorities public buildings, heritage sites, amenities, towns, villages and car parks. Included in the priority list of works agreed were to improve the:

- Pathways, crossings, car parks and access routes throughout Kilkenny's towns and villages
- Access to libraries and Kilkenny's main public buildings

Kilkenny Local Authorities, in its consideration of projects to be incorporated in its Mobility Management Plan, shall take into consideration the requirements of the 2005 Disability Act to promote universal access for all persons within the design construction and operation of any works undertaken.

3. Existing Situation and Road Network

3.1. Kilkenny City

Kilkenny is known as the medieval capital of Ireland and is characterised by beautifully restored old buildings and winding slipways. It is an ancient city with a vibrant outlook. It retains a unique character and has become one of Ireland's most cherished urban environments.

Kilkenny City is the capital of the county and the principal service centre for the wider hinterland. The development of Kilkenny over the last three development plans has been primarily concentrated to the south and east of the City, influenced by the availability of services and good road connections. The City accommodates vital services for the County such as the headquarters of Kilkenny County Council, the Health Services Executive offices, the Garda, Court Services and St Luke's General Hospital. It also serves a wide hinterland in terms of community facilities, fire services, law enforcement and education.

Currently 25.4% of the population of Kilkenny County resides within Kilkenny City & Environs and consequently it is the dominant population centre in County.

A balanced, compact city form combined with efficient public transport links between employment and residential locations will facilitate easier circulation and mobility within the City and Environs. The resulting density and scale of population will support a wider range of retail, commercial, social and civic services than would be the case in a more dispersed city. The provision of a wide range of dwelling types and densities within the City and Environs will be critical in counteracting the current trend of leakage of residential development into the surrounding towns and rural areas. By providing residential accommodation within a compact city form there are substantial economies of scale to be made in terms of the costs of service provision.

A compact, balanced and focused city will place greater emphasis on the role of the central core in maintaining the vitality of the city. This approach is in complete harmony with the economic development role envisaged for Kilkenny in the NSS, not only in terms of the development of a hub, but also in terms of protecting and maintaining the rural environment which surrounds the city and in terms of reducing the demand for travel by the reduction of commuting.

3.2. Population

The 2006 Population Census identified the population for Kilkenny City and Environs as 22,179 and as 87,558 persons for the County. The County has

experienced considerable economic growth in recent years and almost all towns within the County have experienced growth in population, with one significant exception being Graiguenamanagh, which recorded a small decline in population between 2002 and 2006. The Census indicates that as the county population increases, a greater percentage of the resulting population is now living within the urban centres of the county. The major focus for expansion in population has been in the Environs of Kilkenny City and the Environs of Waterford City within County Kilkenny. Waterford City is classified as a Gateway City with Kilkenny designated a Hub City.

Projections of population for Kilkenny City and Environs indicate that the population will increase to approximately 30,000 persons by 2020.

3.3. Existing Road Network

The existing road network within Kilkenny is shown in Appendix G.

The City has a partial Ring Road which serves to link the two legs of the N10 from Dublin in the east and from Waterford in the south. The Ring Road has been extended round the eastern side of Kilkenny to link to the N77 Castlecomer Road at the north side of Kilkenny. There will still be a number of routes to the west of the City that remain unconnected by the ring road, such as the R693 Freshford Road and the R695 Ballycallan Road and the N76 Callan Road to Clonmel.

The main traffic flows into the city centre are currently taken by the roads listed below:-

In the South

- N10 Dublin Road
- R700 Castle Road becoming the Parade
- N76 Callan Road becoming College Road
- N10 Waterford Road becoming Patrick Street

In the North

- N77 Castlecomer Road
- R693 Freshford Road becoming Bishops Hill
- R695 Kennyswell Road

Traffic from these roads converges at the existing bridges, Greens Bridge on the north side and Johns Bridge on the south side.

Existing Traffic Conditions

The current conditions cause queues to develop at peak hours of travel on the main approaches to the city centre and on the ring road. As discussed above, the traffic is heaviest on the approaches to the bridge crossings.

A mixture of roundabouts and traffic signals control the flows at the intersections within the city centre. These layouts have limited success in managing the traffic flows through peak periods. For example, the roundabout at New Park drive and New Road Junction with Castlecomer Road often becomes clogged and impedes the free flow of traffic.

The flows between Greens Bridge and Dean Street are slowed by the narrowness of Vicar Street where trucks cannot easily pass due to widths as low as 4.5m.

Key Junctions

There are four key junctions controlling flows in the city centre:

- **Dublin Road/John Street/Wolfe Tone Street/Hebron Road/ McDonagh Station:**

Currently traffic here is controlled by traffic signals. The junction is basically a crossroads with one-way traffic only permitted to enter Wolfe Tone Street.

- **Dean Street/ Irish Town-Parliament Street/ St Canice's Place/Vicar Street:**

This junction is a form of T-Junction with access to the town centre being via the leg of the T, Irishtown-Parliament Street. The Dean Street/St Canice's Place legs connect to Vicar Street and Waterbarrack Roundabout and together form part of a route that circumnavigates the city centre. The current layout of this signal-controlled junction is awkward whereby the through traffic going west have to manoeuvre around opposing traffic waiting to turn right into the city centre. Significant numbers of pedestrians also cross the road on journeys to and from the city centre at this junction.

- **High Street/ The Parade/ Patrick Street/ Rose Inn Street:**

This junction is controlled by traffic signals and is poorly arranged in terms of geometry. It also caters for a fifth leg which accesses Ormond Street on which a multi-storey car park is located. It becomes overly congested

because traffic cannot always clear the junction due to queuing for Johns Bridge and parking activity around the castle on the Parade.

- **Castlecomer Road / New Road / Newpark Drive:**

The fourth junction worth noting is the Castlecomer Road / New Road / Newpark Drive junction. This roundabout controls the eastern approach to Greens Bridge. It is smaller than required for a standard roundabout and consequently large vehicles have some difficulty in manoeuvring around the circulatory carriageway when undertaking right turns. Straight through flows on Castlecomer Road can sometimes block the use of the roundabout by vehicles from the other legs.

River Crossings

There are only two crossings of the River Nore in the city centre: Greens Bridge and Johns Bridge.

Greens Bridge is a multiple stone arch bridge dating back to the 18th century. It carries a road that is approximately 5m wide and was modified in 1969 to incorporate a 1.5m footpath cantilevered from the north side. The bridge crosses the river perpendicularly on a crest curve that limits forward visibility. Two trucks cannot pass on the bridge. At its eastern end, there is a crossroads with Greensbridge Street and Greens Hill Street. This junction has particularly poor visibility for vehicles emerging for the latter streets that run alongside the River Nore.

Johns Bridge is slightly wider than Greens Bridge and was more recently constructed in 1910. It is constructed in reinforced concrete in a single span that is approximately perpendicular to the line of the river. The road is 6.6m wide across it with 1.5m wide footpaths on either side. However, the approach from John's Street is narrower with a slight bend just at east end of the bridge. The road narrows at this location to 5.4m wide. Traffic is further impeded by a T-junction on either end where Bateman's Quay and John's Quay connect on the north side.

Traffic Growth Prediction

Significant levels of traffic growth have been predicted to occur in the period 2002 – 2020. This growth will result from three distinct elements. Firstly, there will be an increase in global or background traffic that occurs from changes in socio-

economic indicators, such as population and employment levels and car ownership. This growth will occur on a national or regional basis, but will impact on Kilkenny in an increase in the volume of through traffic. Secondly, there will be traffic growth resulting from an intensification of existing development within Kilkenny and thirdly, there will be traffic growth resulting from the significant amount of new development that is proposed for Kilkenny in the immediate future.

Using a combination of growth factors supplied by the National Roads Authority, together with trip generation calculations for the new development proposals, it has been estimated that the following traffic growth rates will occur:

- 2002 - 2008 +24%
- 2002 – 2011 +38%
- 2002 - 2014 +57%
- 2002 - 2020 +80%.

Journey Times

Speeds within the city centre have been measured as low as 3kph on the periphery of the city centre. Consequently, journey times can be long and variable depending on the time of the day.

4. Traffic and Mobility Studies

4.1. Overview

A road and street hierarchy is essential in order to classify the function, shape and use of all roads and streets in the city. The Kilkenny City Centre Local Area Plan (2005) established a road and street hierarchy for the city centre which defines the function, shape and use of all roads, streets, lanes and slips. This hierarchy will form the basis for determining appropriate forms of traffic management.

In addition, over the past number of years the Kilkenny Local Authorities have commissioned reports and studies into various aspects of traffic management in the city. These are listed and summarized below.

4.2. Pedestrian & Cycle Network Study 2002

In 2000, Arup Consulting Engineers were commissioned by Kilkenny County Council to carry out a cycle and pedestrian network study for Kilkenny City. Kilkenny County Council recognises the importance of pedestrians and cyclists in the development of a sustainable transport policy for the city of Kilkenny and commissioned this study to develop a safe and comprehensive cycle and pedestrian network in Kilkenny City and its Environs.

Cycling is an increasingly important element in transportation strategies to achieve sustainable development. It offers health, environmental and economic benefits.

Kilkenny is a relatively flat and compact City with a significant proportion of its population living within 2-3 kilometres of the city centre. These characteristics contribute towards making Kilkenny City and Environs an ideal location for commuting to work or school by bicycle. A unique opportunity also exists in Kilkenny to promote leisure cycling, by the creation of high quality routes linking places of local and national interest.

Local Authorities in Ireland have acknowledged the negative social and environmental aspects of increasing car usage. It is generally accepted that without remedial measures the impact of the private car on the quality of life within towns and cities will continue to increase.

The Cycle Network project for Kilkenny incorporates 8 radial routes and one orbital route along the ring road, with smaller isolated route recommended to complement the overall cycle network. The eight radial routes include the following:

1. Kilkenny College Cycle Route
2. Hebron Road Cycle Route
3. Dublin Road Cycle Route
4. Bennetsbridge Road Cycle Route
5. Waterford Road Cycle Route
6. College Road Cycle Route
7. Grange Road Cycle Route
8. Freshford Road Cycle Route

The provision of a city centre cycleway is proposed for John St., Rose Inn St. and High Street with the introduction of the one-way traffic system outlined below.

A leisure cycle route is also proposed by the Parks Department of Kilkenny County Council along both sides of the River Nore between John's Bridge and Ossory Bridge on the Ring Road along existing riverside pathways.

4.3. Kilkenny City One-Way System 2004

In 2004, Consulting Engineers Atkins were appointed to carry out modelling and analysis tasks with regard to the provision of a traffic one-way system and management measures, based on a one-way route identified by the Local Authority prior to a 1994 Traffic Study. The study included the following options:

- A proposed one-way system operating in a clockwise direction around the city centre which includes High St, Parliament St, Irishtown, St. Canice's Place, Vicar St, Greens' Bridge, Wolfe Tone St, John St. and Rose Inn St.;
- A smaller clockwise one-way system along High St, Bateman Quay and Rose Inn St.;
- A combination of the two schemes above; and
- The removal of the right turn from High St to Patrick St.

These options were assessed using the updated Kilkenny Traffic Model which was carried out by Atkins in 2002.

The assessment assumed that a variety of modifications would be implemented at the key junctions along the proposed routes. The do-minimum model with an assessment year of 2002 was compared to a model assessment year of 2008 (without the N77 Ring Road Extension) for the various options.

On the basis of this study, it was found that none of the traffic management options would have a significant impact on the road network surrounding the traffic management measures, with only localised decreases in traffic volumes from the do-minimum scenario. There would be no significant relief to traffic congestion in the city centre as the one-way systems would not reduce the total volume on the streets that are converted, and would likely to result in an increase on many streets. It is generally acknowledged that there would be an increase in average traffic speed arising from the perception that there is no opposing traffic. This may require the introduction of traffic calming measures to counter the increase speeds and potential for pedestrian accidents.

4.4. Kilkenny City Traffic Model 2007

In 2006 Kilkenny County Council, commissioned Malone O'Regan Scott Wilson (MORSW) to produce a traffic model that would allow for a variety of both public infrastructural and significant private commercial development proposals to be assessed. The study comprised three reports as detailed below:

Traffic Survey Report 2007 – Report 1

This report describes the various traffic surveys that were undertaken in October and November 2006 and January 2007, to provide data for the development of the Kilkenny City Traffic Model. The report provides full details of all of the various types of surveys undertaken. The locations where the surveys were undertaken has been provided, together with full details of the methods by which data was collected, checked, and analysed

- Automatic Traffic counts (ATC's),
- Manual Classified Counts (MCC's),
- A road network inventory
- Journey times,
- Road Side Interviews (RSI's) to gain data on the origins and destinations of trip movements.

The report provides full details of the work undertaken in carrying out the program of traffic surveys. The main conclusions of the report are that:

- The predominant trip purpose in the AM and PM Peaks is commuter trips between home and work,
- Some of the strategic traffic movements observed may reassign to alternative routes away from the city centre if additional network capacity is provided,
- Observed traffic flows are higher on a weekday than on a Saturday,
- The percentage volume of traffic with a destination in Kilkenny Centre is higher on Saturday than on a weekday.

Model Validation Report 2007 – Report 2

This report provides details of how the Kilkenny City Traffic Model was developed using the Saturn suite of transport modelling programs. The purpose of this report was to check that the models used were reliable for the conducting of future forecast traffic assignments and for the testing the various route options for the scheme.

Calibration and validation of the model was undertaken against observed sets of data for cordon, screen line and individual link flows, turning movement flows at key junctions and journey times along three routes. The calibration and validation results have shown to be a standard that is above that recommended for this type of traffic model by the Design Manual for Roads and Bridges.

The report confirms that the traffic model is producing results that are sensible and robust across the key routes in the model study area. It concludes that the model represents a suitable base from which reliable forecast assignments can be derived and development proposals assessed.

Traffic Forecasting Report 2007 – Report 3

This report provides full details of all the work undertaken in producing the traffic forecast assignments for the Kilkenny City Traffic Model. A program of traffic surveys was undertaken in and around Kilkenny City and the data collected from these surveys was used to develop the Base Year traffic models. A description of the key assignment results is provided, together with a capacity analysis of key junctions within Kilkenny City.

From the data collected in the period 2006-2007 it was concluded that Kilkenny City will experience significant levels of traffic growth, if all existing committed development occurs. The new N10-N77 Ring Road Extension will reduce congestion on some city centre links but significant congestion will still occur on the city centre.

The implementation of the proposed Central Access Scheme will significantly reduce the level of city centre congestion. The development at the former cattle mart site and Diageo is not considered to be sustainable without the Central Access Scheme being operational. Also the complete development in the Western Environs is not considered to be sustainable without the full proposed Central Access Scheme being operational.

4.5. Feasibility Study on Town Centre Shuttle Bus Service 2008

Kilkenny County Council commissioned Scott Wilson to investigate the possibility of a shuttle bus serving the town centre area and connecting it with the railway station and the new proposed developments on the cattle mart site.

The proposed route runs on a circular basis and takes into account the proposed route of the Central Access Scheme. It starts from the railway station, interchanging with the National bus and rail services and then runs via John Street, High Street, Irishtown, and Green's Bridge via the proposed Kmart site, before returning to the railway station. The total length of the route is 3.5km and it serves the most significant journey attractors.

In order to have the service running in the most efficient manner an anti-clockwise routing is preferable, as it minimises right hand turns which tend to be slower than left turns at junctions. However, there is a desire to operate John Street one way which would force the bus to operate clockwise. This results in a longer journey time and a reduced frequency of service but this may not be a significant issue as the most difficult junctions are signal controlled. There is equipment available to allow a 'hurry call' to be sent to the signals by the approaching bus to mitigate the problem if it becomes a significant issue.

A high frequency will be required to encourage use. If the gap between buses is longer than the walking time to the destination, people can be expected to walk given no other factors. The operation must also be consistent, especially if more than one vehicle is running to prevent 'bunching' from occurring.

Using one bus on this route, a frequency of 4 buses trips per hour should be attainable reliably. This includes potential slow running through the possibly pedestrianised High Street, giving the bus a real advantage over the car. Buses can also operate through any future pedestrianised areas if the vehicles are driven slowly and stick to a consistent path.

To provide more resilience in the service, a second vehicle could be used to provide an element of layover e.g. at the railway station. This layover may become necessary if, for example, electric vehicles are used which need re-charging during the day. The issue of spare vehicles also needs to be addressed.

In conclusion, any vehicle used must be low floor and accessible. Given the size of the streets to be used, a mid-sized vehicle of around 25-30 seats is the best option. Two potentially suitable vehicles are an Optare Solo or Dennis Dart. Neither of these vehicles is available in hybrid form or with alternative fuel propulsion system. It may be appropriate to trial the service using conventional vehicles, and upgrade if the use does look promising.

While it is not possible to accurately assess the likely numbers using the service, the likely annual cost of the service is €135,000 per vehicle. A subvention is likely to be required. If a low emission vehicle is used, and a spare vehicle to the same specification is demanded, the subvention is likely to be in the region of €155,000.

Pedestrianisation of High Street at a future stage is unlikely to be an issue. If the service cannot access the core of the city centre, there will be less benefit to people using it and demand will be reduced. It is vital therefore that any pedestrianisation proposals are made with a view to ensuring that bus access is not unduly impeded.

4.6. Feasibility Study on Town Centre Bus Service

Kilkenny Borough Council commissioned Scot Wilson to undertake a feasibility study of operating a City Bus Service in Kilkenny. The provision of such a service is included as an objective of the 2005 Local Area Plan for the Kilkenny City and Environs.

Demand modelling for this study was based on the model developed for the Kilkenny City Public Transport Study KCPTS. The KCPTS was built using the existing AM peak Saturn traffic model and 2002 census data. It is based on industry-standard procedures and was calibrated using observed traffic flows.

The selection of potential bus routes was determined by notionally dividing the city and environs in a series of sectors that could be served by radial bus routes, namely; Freshford Road; the N77 Castlecomer Road; Eastern Environs; the N10 Dublin Road; Bennetsbridge Road; the N10 Waterford Road; the N76 Clonmel Road and the Kilmanagh Road. In addition, an area within approximately 600m of High St was identified as being close enough to the city centre for most people to walk. The location of hospitals and schools were identified and taken into consideration.

The study proposes that two separate bus route could be established initially. One route would run east/west (Green Route) from Eastern Environs (East) to the N76 Clonmel Road/ Kilmanagh Rd/ Western Environs (West) and the second running north/south (Blue Route) from the Freshford Road (North) to Bennetsbridge Road (South). The remaining sectors were consider to have less

need initially for a bus service due either to higher than average car ownership levels or for the potential for the existing regional bus routes to serve these areas. The proposed routes are shown in Appendix E. The proposed routes are intended to alleviate the increasing traffic volumes on both the regional road converging on Kilkenny and local distributor roads in the city by as far as possible meeting the transport-related social needs of the urban population.

The estimated demand on the service is relatively modest (40 to 50 passengers an hour) and on this basis substantial subvention would be required for any service. Assuming an average fare of €1, and the provision of a half hourly service on the two proposed routes, the estimated annual subvention is in the order of €300,000. This figure assumes an operating profit of 10% of costs. Any extension of the service would in all likelihood, require subvention in the order of €75,000 per bus.

Initial capital project funding would have to be expended to provide infrastructural improvements on the routes, including bus stops, shelters, accessibility facilities, signage and turning bays.

An alternative Red Route, which would serve all areas in lieu of the provision of the Blue and Green Routes was also considered. The route would have the advantage of a reduced operational cost with a lower requirement for buses and drivers. However, in a relatively compact city such as Kilkenny, a service taking some 73 minutes for a complete round trip is unlikely to be attractive and therefore there is likely to be a significant loss in patronage, which will be reflected in the subvention required.

4.7. Feasibility Study on Park and Ride/Walk Scheme

Kilkenny County and Borough Councils commissioned Scott Wilson to review options for park and ride/walk services in the city, in conjunction with the planned on-street car parking charging in the city centre.

The following principles apply to park and ride facilities:

1. The motorist should not have to divert too far from their direct route as the time penalty involved deters use.
2. Bus service must be frequent enough to ensure the journey time is not significantly extended. An appropriate service frequency is every 10 minutes at peak times and every 15 minutes off peak.
3. Bus priority is essential to encourage motorists to use park and ride facilities. If a bus is seen to be quicker than a car it will encourage use.

Using traffic counts generated as part of other projects in Kilkenny the potential use of the park and ride sites was assessed.

In total, eight sites were examined. These were;

- Kilkenny Rugby Club
- O' Loughlin Gaels GAA ground
- Dicksborough GAA ground
- Nowlan Park
- St. James Park greyhound and sports ground
- Kilkenny Industrial and Business Park
- Hebron Industrial Estate
- Kilkenny Retail Park

The potential for park and walk facilities was examined also. A total of four sites were examined. These sites were;

- James Street
- Nowlan Park
- Padmore & Barnes
- Kmart

These site locations are indicated on the Drawings included in Appendix F.

As regards both park and ride and park and walk facilities, each site had both positive and negative aspects to its use.

It was concluded that none of the current sites have the realistic potential to approach commercial viability. The number of buses required to provide an attractive service, and the limited number of spaces available would mean that many buses would run either empty or near empty.

Kilkenny Retail Park has the capacity to become viable but this is offset by the availability of parking in the city centre. It would be possible to attract a reverse flow, i.e. taking people from the city centre to the retail park, which would provide extra revenue for the service. However, this detracts from trade in the city centre.

The best possible solution would be to combine the park and ride with a local service, at least operationally. This could allow the peak frequency on park and ride to be maintained. The service would generate additional revenue from local passengers to offset the costs but the service would have to be carefully designed. It is important to ensure that at peak times local passengers get a service while park and ride frequency remains high enough to attract users.

The significant costs compared with the minimal benefit in traffic management terms means that a comprehensive park and ride system for Kilkenny is unlikely to be the best way of solving congestion issues.

The possible alternative of providing a bus rapid transit route is not feasible due to the nature of the road network around the city. Restricted road widths on most approach roads mean bus priority options are limited. However some priority at signalled junctions may be possible if investments on vehicle equipment are made.

In the long term, a site at Blanchfieldsland, where the M9 link road joins the ring road, may be an appropriate site for park and ride development, aligned with bus priority on the Hebron Road where possible.

In 2008, Kilkenny County Council sought expressions of interest from the public and interested parties in relation to the provision of park and ride facilities. However, the number of responses was very low and no significant information was obtained.

There are currently an estimated 4,460 parking spaces in the city centre area. These are shown in Appendix F. When compared to population and vehicle ownership numbers in the city it is apparent that the Kilkenny is well served in this regard. The costs of providing out of centre park and ride space is estimated at €10,000 per car inclusive of acquisition and capital works. Because of the scale of investment, the current availability of city centre and the relatively modest population of the city by comparison with international comparators it is estimated that full scale park and ride is not feasible at this time.

4.8. Feasibility Study on Real Time Parking Information Signage 2008

Kilkenny County and Borough Councils commissioned Scott Wilson to investigate the feasibility of providing motorists with real time information on the availability of car parking spaces before they reach the city centre.

The first step was to identify which car-parks could usefully be included in such a scheme, based on the target market. A signing strategy which aims to direct motorists to the most appropriate car park, where possible avoiding travelling through the city centre was identified. A review was conducted of equipment suppliers and car park operators to find out what systems were available, what systems are in operation, what works in practice and any problems which need to be avoided or managed in the implementation of such a system.

The proposed strategy is aimed at trying to encourage particular groups of users to particular car parks. On street parking in the city centre is aimed at the short stay parker, while on street parking away from the core city centre is aimed at the longer stay parker. Long stay car parks are aimed at commuters, while private car parks are aimed at visitors to the facilities they are attached to. Because private car parks are primarily for the use of visitors, the priority for signing should be given to these.

The private car parks include those located at;

- Mc Donagh Junction
- Ormond Street
- Market Cross
- Market Yard
- Kmart Site (in the future)

And the council operated car parks at

- St. Mary's
- St. Canices
- Fairgreen
- Wolfe Tone Street

There are three stages involved in real time car park information.

Firstly, the number of cars entering and leaving a car park is counted to calculate the number of spaces available. As the target car parks are fitted with a barrier system, this basic information is available.

Once the basic information is available, it needs to be transmitted to the signs. In order to do so, an interface between the car park barriers and the communications network is required. For modern systems, the barrier information is stored digitally and is easily transmitted. For older systems an analogue system may be in place which is more difficult to interface. This may be the case with Market Yard.

Information can be transmitted to the signs by wired transmission if appropriate. Alternatives include a pager system, a private radio network or a WIFI network. It is recommended to update the information at least every 60 seconds but at busier times it may be appropriate to update the information every 30 seconds.

Finally, the information displayed to the driver must be clear and legible under all lighting and weather conditions. It is recommended that the dynamic part of the

sign be kept as simple as possible and the overall format of the sign needs to be familiar to motorists.

Information on parking availability needs to be given early enough for motorists to make an informed decision as to their chosen parking but not too early as the information may be unreliable. Motorists approach Kilkenny from 5 main roads; N10 Waterford Road, N77 Castlecomer Road, N10 Dublin Road, N76 Clonmel Road and the R693 Freshford Road and the R700 Bennetsbridge Road. Given that all but the Freshford Road connect directly to the Ring Road (which has a 5 – 10 minute travel time to the city centre) it is an appropriate point to give information on parking in the city.

As the parking is primarily aimed at visitors, the next issue is directing motorists to the car parks. A large number of signs was deemed inappropriate for the city. The following suggestions were made; McDonagh Junction, Kmart and Wolfetone St carparks can be signed from the ring road, N77, N10 and also from Freshford Road. Ormond Street can be signed from Waterford Road and Market Cross can be signed from Freshford Road and Clonmel Road. Market Yard is more difficult to sign in all directions due to its central location adjacent to the river.

In conclusion, a Variable Message Sign (VMS) system can assist in traffic management by directing traffic to the most appropriate car park. The number of vehicles circulating in search of parking is reduced which in turn reduces congestion and emissions leading to an overall environmental benefit. The target car parks should mainly be those catering for day time leisure and shopping.

The main costs are in the dynamic signs and in the communications infrastructure. Excluding communication costs, the likely capital expenditure ranges from €80,000 to €350,000. Communications may add anything from €5,000 to €250,000 to this. The running costs depend on the communications network adopted, an internal system will cost very little compared to a paid provider system costing in the region of €10,000 per annum.

The introduction of a charging scheme for on street parking will generate a revenue stream which could be used to fund the system. However, as most of the car parks targeted are privately operated and likely to benefit from the scheme, it may be appropriate to ask the operators for a contribution to either the capital costs or the revenue costs of the system.

4.9. Feasibility Study on John St / High St One-Way System 2008

Kilkenny County and Borough Councils commissioned Scott Wilson to examine options for making John Street one-way, either on its own or as part of a bigger system, to allow an improvement to the pedestrian environment on route

between McDonagh Station on the east side of the River Nore and the existing city centre area on the west side.

Three options were assessed;

Option 1

John Street and Rose Inn Street become one-way westbound toward High St. High Street is partially pedestrianised, Bateman Quay is made one-way southbound for a distance of 50m from its junction with John Street. (While this measure is not essential, it would minimise delay to through traffic)

Option 2

Option 2 is similar to option 1 except it allows one-way traffic along the length of High Street. This provides a shorter through route for traffic from the south to the north of the City Centre.

Option 3

Option 3 is a direct reversal of option 1. John Street and Rose Inn Street become one way eastbound. Bateman Quay becomes one way northbound for a distance of 50m from the junction with John's Bridge.

The options were tested using the Kilkenny Traffic Model. In order to ensure consistency with other traffic studies currently ongoing, the various options were tested using the Kilkenny SATURN model that was updated using 2006 traffic study data for the assessment of the Kilkenny Central Access Scheme. The year chosen for comparison of options is 2014 and the traffic flows referred to are for the morning peak hour in that year.

All three options require traffic to re-route to cross the river in one direction. The majority of this movement is taken up by the new River Nore Crossing but there would also be an increased use of Greens Bridge, which as a result would become more congested than the base network.

All Options show a slight reduction in traffic along the south eastern sector of the Kilkenny Ring Road as routes through the City Centre would become slightly freer running as a result of there being fewer opposing turning movements in key junctions.

All three options show a reduction in traffic in one direction, but in all cases John Street would experience a reduction in traffic in the opposite direction as a result of the restricted turns at Bateman Quay and the pedestrianisation of High Street.

Under all three options, access to and from the Market Yard car park becomes more restricted generally forcing extra traffic into Parliament Street.

In conclusion, the following is expected:

Option 1

This option offers the greatest benefit to pedestrians as it would facilitate an improved pedestrian environment on both John Street and High Street. However, traffic would increase in at least one direction on some of the alternative routes (e.g Stephen St). The flow on Greens Bridge would also increase.

Option 2

Traffic flow around the City Centre would improve but the potential benefits to pedestrians on High Street would be limited. This option would mean all day use of High Street would continue to be permitted but care would be required to ensure that one-way traffic along High Street did not encourage higher speeds than are currently possible. The main advantage of option 2 over option 1 is that it would not cause as large an increase in flows along Stephen Street.

Option 3

This option shows an increased total number of vehicles crossing the River Nore. This reflects the SATURN traffic model's fixed matrix and may not in fact occur. In practice people may choose an alternative destination leading to a greater individual inconvenience rather than an increase in vehicles crossing the river. Option 3 puts more traffic on Dublin Road, Waterford Road and Bennettsbridge Road. It also forces all traffic leaving Market Yard car park along Parliament Street, further loading the junction there.

Of the three options, the best for traffic movement overall is to have John Street and Rose Inn Street one-way westbound, with High Street open to northbound traffic only. This would allow some improvement of John Street for pedestrians. However, the improvement may be limited in terms of footway width due to the need to maintain loading bays for premises without rear access and to provide sufficient road space to pass an obstruction (e.g. a broken down vehicle) and allow turning room and sightlines for vehicles using the side accesses that exist.

With this information in hand, the model was also used to forecast traffic flows for a commencement year in 2009, details of which are shown in Appendix D. Drawings of the one-way systems are included in Appendix C.

4.10. Economic Assessment of On-street Parking Charges

Kilkenny County and Borough Councils commissioned Scott Wilson to advise on the introduction of on-street parking charges in an effort to reduce congestion, control commuter parking, improve access and ensure space for people who wish to do business in the city.

Kilkenny Borough Council identified an overall zone within which it is proposed to see parking changes implemented. Certain streets within this zone were suggested as being appropriate for high turnover / limited stay parking. These streets are;

- John Street
- High Street
- Parliament Street
- Friary Street
- Patrick Street
- The Parade (from Castle to Patrick Street)
- Bateman Quay
- Johns Green

A review of all existing parking arrangements in the city centre was conducted and a survey of the same completed during site visits. Several issues were identified. These include dispersal of parking around the boundary of the areas where parking charges are proposed and the possible diversion of trade from the city centre. A draft scheme was prepared, which attempts to address all the issues identified.

There are two parking zones; a zone of limited stay parking in the city centre and an all-day charged parking zone within the outer boundary. The areas covered by the parking scheme are determined by the nature of the central area and the pattern of development being undertaken.

In addition to the streets proposed by Kilkenny Borough Council for limited stay parking, there are pockets of currently limited parking, such as James Street and William Street, which could also be charged under the same regime to prevent abuse.

Since McDonagh Junction development opened, there has been significant commuter parking in the area, in particular on John's Green. It is proposed that the area is charged under the short stay regime to encourage use by people visiting local businesses.

In conclusion, the areas proposed for short and long stay paid parking have been reviewed and are considered to be appropriate. There may be some dispersal of

parking into surrounding residential areas. It is necessary to ensure that a plan is in place to alleviate any resulting problems.

The capital cost of implementing the scheme is estimated to be in the order of €465,000. The annual running cost of the scheme, additional to existing resources, is estimated to be of the order of €420,000. The revenue from the scheme is estimated to be of the order of €1,000,000.

Furthermore it is noted that loading bays within the paid parking zone should continue to operate as at present, but with better enforcement to prevent their abuse.

Spaces for disabled users should be provided as at present. Blue badge holders would be entitled to park free in these spaces but would be required to pay to park in non-designated spaces. Ex-gratia disabled spaces outside houses need to be considered for formalising under the Bye Laws.

A scheme of residents parking permits should be set up to allow people living within the zone to park in their own street without charge.

The Wolfe Tone Street car park should be converted to pay operation, using barriers.

On-street parking should be collected using machines located near designated parking areas. A similar system could be used for car parks, but barrier control is recommended at car parks where an agreement is in place to allow free parking for church services.

The Bye Laws relating to parking in the centre of Kilkenny will have to be redrafted to make the above changes enforceable.

The supply of parking machines and their maintenance should be procured separately from the enabling works, in order to comply with the requirements from an EU tendering procedure for the machines, and to allow detailed design for the works.

5. Mobility Management Proposals

Having regard to the previous studies, analyses and the current policy context, the following proposals are recommended for implementation.

5.1. Cycleway Network

A study was carried out in 2002 in relation to the provision of a cycleway network within the City and Environs as outlined in Section 4.1 above. In 2008, detailed design drawings were prepared for the implementation of the scheme and a public consultation process was carried out. Works on the installation of the cycle-ways have commenced, with a view of completing the initial phases of the scheme by the end of 2009. Drawings showing the proposed network are included in Appendix B.

5.2. One –way Traffic Systems

Over the past two decades, several studies have been conducted in relation to the feasibility of providing a one-way system taking in John Street, Rose Inn Street and High Street, with the most current proposals outlined in Section 4.8. Of the options looked at, the best for traffic movement overall is to have John Street and Rose Inn Street one-way westbound, with High Street open to northbound traffic only. This would allow some improvement of John Street for pedestrians. However, the improvement may be limited in terms of footway width due to the need to maintain loading bays for premises without rear access and to provide sufficient road space to pass an obstruction (e.g. a broken down vehicle) and allow turning room and sightlines for vehicles using the side accesses that exist.

The operation of the proposed one-way would give rise to additional traffic volumes on alternative routes and in particular at Vicar Street and Greens Bridge. However, in the context of generating a modal shift, facilities for pedestrians and cyclists would be significantly improved. This is a significant policy shift in that it prioritizes the needs of pedestrians and cyclists over motorists in the city centre area.

Details of the traffic model out-put scenarios are included in Appendix D. In order to achieve the optimum impact from the proposal, the completion of the proposed Central Access Scheme would be of significant importance. Notwithstanding the

provision of the CAS which is currently progressing through the planning process, there is merit in implementing the one-way system or elements of it on a short term basis. It is envisaged that this could commence on completion of the re-generation works at the Parade, which are currently ongoing, and the proposed improvement works on the N10 Ring Road between the Dublin and Bohernatounish Roundabouts are expected to start in mid 2009 subject to funding.

Another area of the city which would be suitable for the implementation of a one-way system is at the Upper Patrick St / Jacob St/ Upper New Street. The provision of a traffic management plan in this area is an objective of the Kilkenny City and Environs Development Plan 2008 -2014 and arising from existing narrow cross section of these streets and the relatively short circulation length between the three key junctions a one-way system would be feasible. This would provide scope to regulate the traffic flows and improve significantly the footpaths and pedestrian facilities particularly in the vicinity of the school. Some preliminary design has been undertaken in this regard and a public consultation process could be conducted in 2009.

Drawings showing proposed layouts are included in Appendix C.

5.3. City Bus Services

Two recent feasibility studies in relation to the provision of a shuttle bus service and a city town centre bus service are summarised in Sections 4.4 and 4.5.

Both studies indicate that the services could be introduced in the city and environs and appropriate routes were identified. The primary issue relating to the provision of bus services arises from funding as both reports identified the likelihood that significant financial subvention of these projects would be required operate them and to make them viable. An initial financial outlay for capital works would be necessary to provide bus stops, shelters access platforms, turning circles and signage. The shuttle bus service would require the introduction of a one-way system via John St and High St to optimise the service. The provision of the Central Access Scheme is also required for an efficient operating system.

It is proposed to conduct a more detailed cost benefit analysis of the introduction of a bus service, with the caveat that subvention funding commitments would need to be secured from central government.

5.4. Parking

Kilkenny County and Borough Councils commissioned Scott Wilson to advise on the introduction of on-street parking charges in an effort to reduce congestion, control commuter parking, improve access and ensure space for people who wish to do business in the city. A summary is included in Section 4.9 above.

The study estimated that capital cost of implementing the scheme is in the order of €465,000. The annual running cost of the scheme, additional to existing resources, is estimated to be of the order of €420,000. The revenue from the scheme is estimated to be of the order of €1,000,000.

It is Kilkenny Borough Council's intention to proceed with the rollout of the parking charges proposals with the provision of the necessary equipment and resources to implement the introduction of these charges in late 2008 / early 2009. This will involve the introduction of new parking bye-laws and a procurement tendering process to supply and install the necessary infrastructure.

It is envisaged that revenues generated through the parking charges scheme could also be allocated towards the funding of other mobility management projects as outlined in this plan.

5.5. Real Time Intelligent Information Signage

The feasibility of providing motorists with real time information on the availability of car parking spaces before they reach the city centre is summarised in Section 4.7 above.

The introduction of a Variable Message Sign (VMS) system would assist in traffic management by directing traffic to the most appropriate car park. The number of vehicles circulating in search of parking is reduced which in turn reduces congestion and emissions leading to an overall environmental benefit.

The main costs are associated with the dynamic signs and in the communications infrastructure. Excluding communication costs, the likely capital expenditure is in the region of €150,000. Communications may potentially increase this cost by an additional 50%. The running costs depend on the communications network adopted; an internal system will cost very little compared to a paid provider system costing in the region of €10,000 per annum.

The introduction of a charging scheme for on street parking will generate a revenue stream which could be used to fund the system. However, as most of the car parks targeted are privately operated and likely to benefit from the

scheme, it may be appropriate to ask the operators for a contribution to either the capital costs or the revenue costs of the system.

It is proposed to carry further analysis and costing of the proposal, design and public consultation of the proposed project in mid 2009 with a view to implement a scheme by early 2010.

5.6. Street Pedestrianisation

High Street remains the premier shopping street in the city, characterised by its colourful buildings and shop fronts. Kieran Street is developing into an ambient canopy-covered street of coffee shops and retail uses. The 2005 City Centre Local Area Plan aims to protect and ensure the continued vitality and viability of the core retail area to protect this important retail function.

The city centre contains the core retail area and main tourist trails and therefore must provide an overall priority to pedestrians. This priority can take a variety of forms and following the completion of the Kilkenny Central Access Scheme, should it proceed, the full pedestrianisation of St Kieran's Street, and High Street, from Friary Street to St Kieran's Street, can be delivered.

A key element of new linkages is the provision of pedestrian and cycle linkages on both the east and west bank of the river. These will serve as both amenity routes and access routes to the city centre. As amenity routes, they will form part of long distance amenity routes along the Nore. Within the urban area of the City they will provide ideal short and longer distance walking routes along the river incorporating the existing bridges, the Central Access Scheme Bridge, and proposed pedestrian bridges at John's Quay and to the south of John's Bridge. These links will form part of the Bateman Quay and County Hall sites and will open up new vistas of the City and in particular the Castle.

The Councils recognise the importance of walking and that an essential element of any integrated transport system is to provide for the needs of cyclists and pedestrians. The plan therefore includes for increased footpath widths on John Street, Rose Inn Street, High Street and the completion of works on Kieran Street.

A Pedestrian Signage Scheme is also proposed which is focused on directing pedestrians within the City Centre area to the main tourist attractions, amenity walking routes, public buildings, main retail areas and main public car parks.

5.7. Park - Walk and Ride Schemes

In practice “*park and walk*” car parks need to be within a ten minutes walk from the core city business district, and need to have adequate surfacing and marking and will require continuous supervision/security.

Experience in Ireland has shown that “*Park and Ride*” facilities have been unsuccessful where catchments/city populations are less than 100,000 persons.

The purpose of investigating the feasibility of Park and Ride in Kilkenny is to address, at an early stage, the challenge of reducing carbon emissions in the transport sector through the provision of a network of out-of-centre long term parking facilities. It is envisaged that these would be served by shuttle bus public transport in the medium term. Secondary objectives relate to tackling the issue of car domination on Kilkenny’s streets and to reduce parking on arterial routes and housing estates in the city.

Expressions of interest were sought from the public early in 2008, which was aimed primarily at sports clubs, parish councils, state/educational institutions and private developers. It was noted that the intention of the Local Authorities is to consider leasing /part rental agreements over a fixed time period and to enter into enabling negotiations with property owners on terms and conditions yet to be decided. The number and degree of responses indicated that the scope for park/walk and ride facilities is very limited at present.

5.8. Disability Access Implementation Plan

Pursuant to the 2005 Disability Act Kilkenny Local Authorities are producing their own implementation plan to explain how they intend to “*promote universal access to all public spaces, buildings and services owned and operated by Local Authorities.*”

Kilkenny Local Authorities are committed to working towards creating and maintaining accessible facilities and services. Our thinking is underpinned by the social model of disability, i.e. that attitudes, buildings, facilities, policies, procedures and services “disable” people by preventing them from accessing and participating in society. People may have functional differences but they are not inherently disabled and we can help to enable or disable people in the decisions we make.

To ensure that we enable rather than disable our customers across all our buildings, information and services also demands clear structures for assigning responsibility, authority and accountability.

Detailed assessments have been undertaken of all Kilkenny Local Authorities public buildings, heritage sites, amenities, towns, villages and car parks.

A small number of pilot audits were carried out in 2005/2006. Configure Limited carried out access audits in 2007 on all remaining buildings and locations. The audits identified physical barriers which prevent people with disabilities from engaging fully in these areas. This generated a significant amount of data, comprising measurements and photographs which will be used by the Local Authorities to address issues over the life of the Implementation Plan.

Following consultation with representative groups and the Implementation Team members, criteria for creating a priority list were drawn up of the main areas audited which required addressing in the short term. The chief criteria for prioritizing were agreed as those actions which most 'enhance participation in society'. Other considerations included budget, funding and the views of representative groups.

The Priority List of works agreed were to improve the:

- Pathways, crossings, car parks and access routes throughout Kilkenny's towns and villages
- Access to libraries and Kilkenny's main public buildings

In 2008, representatives of the Implementation Team met with the Senior Management Team to deliver the Team's findings and actions required, and wording was agreed for changes to Procurement Policy to ensure universal access is reflected at the design stage of projects.

With regard to the built environment, it is proposed to devise a rolling 3 year plan of access improvements from audits with the following goals:

- To incorporate findings of prioritised access audits of Roads and Streets into engineering works plans
- To incorporate prioritised remedial works to prioritised buildings
- To include changes to procurement policy to ensure new buildings are accessible

5.9. Safe Routes to School Programmes

In 2007, a review of the access arrangements and facilities in the vicinity of schools within the City and County of Kilkenny was carried out and a programme of improvements works was undertaken, which is anticipated to be complete by the end of 2009. The works include the introduction of special electronic 30kph speed limits signs which operate during school hours and standard 30kph speed limit signs with information plates. As part of this programme and following a needs assessment, new or improved pedestrian crossings and associated traffic calming measures are being installed at school locations.

Kilkenny County Council intends to assign a member of staff as a part-time Road Safety Officer with appropriate resources, whose duties would include the co-ordination and implementation of schemes for the promotion of Road Safety in the City and County. This would include liaison with first level schools in relation to the implementation of the following Road Safety Schemes:

- Safe Cross Code
- Cycle Training
- Such other Road Safety Projects as may be implemented by the National Safety Council.

The RS officer would provide encouragement of Road Safety activities in second level schools and perform other duties relevant to promoting Road Safety as may be required by the local authority. The introduction of schemes such as the “Walking bus” and “Cycle train” initiatives could be incorporated into this function.

5.10. Awareness and Education Initiatives

Information Awareness

The promotion of sustainable travel through information awareness campaigns can improve the effectiveness of the introduction of physical, fiscal or regulatory measures aimed at achieving a modal shift in transport patterns. The following outline a series of approaches that could be undertaken.

Awareness Campaigns

In addition to individual initiatives introduced as part of the Mobility Management Plan, an awareness programme should be formulated to operate in conjunction with the Plan. Initiatives such as the Power of One and National Climate Change Awareness campaigns target the need to reduce energy consumption and emissions through fuel economy and eco-driving. The 2020 Vision Sustainable Travel and Transport document suggests that there is potential to launch a Sustainable Travel Demonstration Towns Campaign or “Proud Cities and Town Programme” as referred to in the Agreed Programme for Government, which would look at “best practice” and “Most Improved” sustainable urban travel towns in Ireland and promote traffic free areas and sustainable communities. This could offer a competitive incentive, similar to Tidy Towns, and be supported by capital grants for infrastructure improvements.

Eco Driving

Eco driving is a means of reducing fuel consumption and maximising fuel economy through increasing driver awareness and changing personal driving behaviour. Techniques to improve efficiencies would include vehicle maintenance, optimising acceleration and speed, trip combinations, avoidance of traffic congestion, sudden braking and avoidable engine idling and the minimisation of car luggage loads.

Regulatory Measures

At national level regulatory measures could comprise measures such as revised speed limits and the regulation of vehicle or fuel standards. Carbon emissions can vary considerable with travel speed particularly above 80kph. In many countries, a speed limit of 30kph in urban residential areas is considered best practice to give priority to cyclists and pedestrians.

Technology solutions

The introduction of a variety of technological innovations may assist in achieving increased benefits in energy savings. These would include the use of bio-fuels,

and other alternative energy conserving technologies such as hybrid electric vehicles, electric vehicles, hydrogen fuel cells, and the used of liquefied petroleum gas (LPG) and compressed natural gas (CNG).

Technological advances within the motor industry are critically important to the introduction of increased fuel efficient technologies and the Government is supportive of EU proposal to limit average emissions from private cars.

Carpooling

Car-sharing schemes aim to encourage individuals to share private vehicles for particular journeys. These may be informal or more structured, such as matching trips for individuals within an organisation for commuting journeys or frequent attendance at particular locations in the course of work. It is estimated that car sharing can reduce private car journeys by up to 3%.

Active Health

In the period from 1991 to 2006, the proportion of commuters walking to work school or college has fallen from 11.1% to 10.9% and the proportion of primary school children walking to school has dropped from 39.4 % to 24.3%. These reductions have a negative impact on the health and welfare of individuals. The World Health Organisation suggests that a half hour's physical exercise per day, such as cycling or walking, combined with a healthy diet, is sufficient to reduce the risk of a heart attack, heart diseases and certain cancers by 50% and increases life expectancy by six years.

Significant benefits in overall health and wellbeing can be achieved through the introduction of improvements to the urban walking environment utilising pedestrian friendly design. The provision and maintenance of long distance and looped footpaths support a culture of walking and are integral to the promotion of walking and hiking as recreational activities. Programmes such "walking buses" and "cycle trains" targeted at schools are effective initiatives at encouraging healthy lifestyles and reducing the dependency on private car use.

Work Life Balance

Flexible working reduces the need to travel to a physical workplace at an appointed time by staggering work over different time periods and physical locations. For the employer, it can provide the advantages of matching work allocation more closely with customer/product demand; reduced fixed costs; less demand for parking spaces; recruitment and retention of employees; increased productivity and efficiency; improved staff morale; and reduced absenteeism. For the employee, there is opportunity for increased motivation, job satisfaction and a better work-life balance. The introduction of Workplace Travel Plans (WTP) could comprise;

- Working with employees to address perceptions and practical difficulties in overcoming car dependency
- Establishing databases to assist in car sharing
- Providing shuttle services to nearby rail or bus services
- Provision of on-site measures to make cycling and walking safer and more attractive
- Providing incentives to use non car modes
- Promote flexible working hours

Fiscal Policies

International experience suggests that promoting changes in travel behaviour needs to be accompanied by disincentives and fiscal measures. There are advantages and disadvantages to these approaches as they tend to be focused at national level and do not necessarily cater for individual scenarios. Examples of these fiscal measures include:

- Rebalancing of Vehicle Registration Tax (VRT) and Motor Tax
- Infrastructure Charging
- Road Pricing
- Congestion Charges and Workplace Parking Levies
- Fuel and Carbon Taxes
- Transport Subsidies
- Carbon trading

6. Implementation of the Plan

6.1. Roles and Responsibilities

Kilkenny County Council and Kilkenny Borough Council are jointly responsible for the implementation of the Mobility Management Plan. In the Development Plans for the County and City & Environs both Authorities have set out an objective to complete a mobility and traffic management plan dealing with issues such as modal shift accessibility.

In conjunction, with key stakeholders such government agencies, statutory bodies and local organisations and through public consultation, the roll –out of the Plan shall encompass forward planning, design, feasibility assessments, consultation, cost benefit analysis and regular reviews to refine the approach adopted toward mobility management strategies.

6.2. Targets and Objectives

The aim of the Mobility Management Plan is to reduce demand for and use of cars by increasing the attractiveness and practicality of other modes of transport.

The reduction in car use will give rise to improvements in noise emissions and air quality, quality of life, health benefits and enhance the attractiveness of the city for visitors and residents alike.

It is envisaged that the Mobility Management Plan shall set objectives over a stated period, typically five years. The Plan shall take into consideration the existing infrastructure and include proposed projects and projects which are currently being implemented to assess the overall impact on mobility within the city and environs.

The Plan shall indicate a programme for the delivery of proposed elements of improvement works and strategies, whether on a stand alone basis or integrated phased basis, as several projects are interdependent on others to achieve the intended results.

The objectives and targets of the Plan shall be adjusted where necessary as part of a regular review process over the life of the Plan, having due regard to changes in legislation, deliverability of projects, cost effectiveness and the allocation of sustainable funding and resources.

6.3. Programme

It is proposed to develop a programme within the Mobility Management Plan to effectively deliver the targets and objectives set out on the Plan. The initial programme will be phased over 5 years. The plan is intended to be flexible and evolve with the delivery of various projects and to adapt to the changing environment and needs of the city. It is the intended to deliver projects on a prioritised and phased basis have due regard to the timing and completion of key road improvement schemes within the city and environs.

Regular reviews of the programme are recommended, with an annual review considered appropriate. It would be considered valid and prudent to review the programme on completion of individual schemes, to assess the changes in traffic patterns and to establish the “before and after” effect of these schemes.

The regular updating of the Kilkenny Traffic Model is recommended to assist with the validation of traffic analysis for individual schemes.

A draft programme for the delivery of key mobility management plan targets is contained in Appendix I. It is proposed to review this programme on completion of the consultation process for the Mobility Management Plan 2009-2014, for inclusion in the final issue.

6.4. Budget & Cost Benefit Assessment

This document sets out preliminary costings for a number of the proposed projects outlined herein. However, prior to implementation of schemes further detailed cost benefit analysis is recommended to more accurately determine the capital outlay costs, maintenance and operational costs and to provide a monetary estimate of the potential direct and indirect savings accruing from the implementation of the schemes in terms of reduced emissions, fuel and journey time savings and improved health of the general population. Cost savings to the individual by reduced car use and the uptake of walking and cycling are also likely to accrue. The implementation of the parking charges programme will generate revenue, which could in turn be used to fund other projects under the Mobility Management Plan.

The deliverability and timing of other major projects such as the Eastern Environs, Western Environs and Central Access Scheme should also be taken into consideration as these schemes can directly affect the viability and effectiveness of projects such as the one-way systems and city centre bus schemes.

7. Summary

This draft Mobility Management Plan 2009 -2014 sets out the goals and objectives of the Councils of the City and County of Kilkenny in relation to mobility and transport management for the city and environs.

It highlights the legislation and guidance available which identifies the unsustainability of the dependency on car use in the long term, and offers solutions and approaches to generate a modal shift to alternative forms of transport. Potential benefits include environmental enhancements, improved work-life balance, general health and wellbeing, along with energy savings and reductions in traffic congestion.

Studies undertaken by the Local Authority in conjunction with the planning and development process for Kilkenny City have identified a series of measures to enhance mobility within the city and targets have been established for the delivery of these measures.

A system of regular review is envisaged to refine and update the mobility planning to assist with the sustainable and controlled development of the city.

The above process will allow the Mobility Management Plan to develop and adapt to the changing needs of the city over the next five years and in subsequent phases in the future.

APPENDICES

Appendix A - Bibliography & References

Bibliography & References

Kilkenny County Development Plan, 2008-2014

Kilkenny City and Environs Development Plan, 2008-2014

Kilkenny City Centre Local Area Plan 2005

Loughmacask Local Area Plan 2008 -2014

Western Environs Local Area Plan 2004

National Spatial Strategy for Ireland 2002 -2020 Government Publications Office

South East Regional Planning Guidelines South-East Regional Authority 2004

Sustainable Development: A Strategy for Ireland Department of the Environment 1997

National Development Plan 2007-2013 Government Publications Office 2007

Disability Act 2005 N0.14 of 2005 Office of the Houses of the Oireachtas, Leinster House

2020 Vision- Sustainable Travel and Transport: Public Consultation Document Department of Transport 2008

Mobility Management Plans – DTO Advice Note Dublin Transportation Office 2002

Mobility Plan Guide Book COMMERCE (Creating Optimal Mobility Measure to Enable Reduced Commuter Emissions) Project 2008

Kilkenny City Traffic Model Traffic Survey Report Final 2007 Malone O'Regan Scott Wilson/ Kilkenny County Council

Kilkenny City Traffic Model Traffic Forecast Report Final 2007 Malone O'Regan Scott Wilson/ Kilkenny County Council

Kilkenny City Traffic Model Validation Report Final 2007 Malone O'Regan Scott Wilson/ Kilkenny County Council

Kilkenny City & Environs Pedestrian and Cycle Network Study 2002 Arup Consulting Engineers /Kilkenny County Council

Kilkenny City One-Way System –Traffic Model Assessment Atkins/ Kilkenny Borough Council

Bus Service Feasibility Study Scott Wilson / Kilkenny Borough Council 2007

Town Centre Shuttle Bus Scott Wilson/ Kilkenny Borough Council 2008

Park and Ride Scott Wilson/ Kilkenny Borough Council 2008

Car Park Realtime Information Scott Wilson/ Kilkenny Borough Council 2008

On-Street Parking Charges Scott Wilson/ Kilkenny Borough Council 2008

John Street One-Way Scott Wilson/ Kilkenny Borough Council 2008

Cycle Network in Kilkenny City Environs and associated Traffic Calming Works – Part VIII Planning Report Kilkenny County Council 2008

Disability Implementation Plan Kilkenny Local Authorities 2008

Appendix B - Cycle Track Network

Appendix C - Plan of proposed One-way systems

John St

High St

Upper Patrick St – Jacob St

Appendix D - Traffic Model Output Scenarios

Appendix E - Shuttle Bus and City Environs Bus Routes

Appendix F – Existing Car Parks and Park and Ride Locations

Appendix G - Kilkenny City & Environs

Appendix H - Key Road Network Improvement Schemes

N77 Ring Road Extension

This project extends the existing ring road around Kilkenny City from the N10 Dublin Ring Road Roundabout east of the City to the N77 Castlecomer Road on the Northern side of the City. Since the schemes opening in late 2007 it has improved the National Network (N77) through the City from the Dublin Road Roundabout to the Castlecomer Road in terms of capacity, safety and pavement strength. It has reduced the negative environmental impacts of forcing traffic volumes to use the existing deficient network.

The scheme has the positive net benefit of to the economy in terms of accident reduction and savings on time and fuel. From a social and community viewpoint the reduction of traffic volumes through residential streets will enhance the quality of life for all who reside there. The new Ring Road Extension provides shorter journey times for traffic using the N77 and the provision of a segregated footway/cycleway has also proved to be an important leisure amenity to the people of the City.

Western Environs

A Local Area Plan was adopted in 2004 for some 140 hectares of zoned lands in the townlands of Drakeland Lower, Poulgour, Wetland in County Kilkenny. The area will be known as the Kilkenny Western Environs. Extensive strategic infrastructure will be required to service the lands. Kilkenny County Council now proposes to construct the first phase of the infrastructure to include the upgrading of the Callan and Kilmanagh Roads and the construction of a portion of the Kilkenny access Road between the Callan Road and the Kilmanagh Road. Water supply and foul sewerage infrastructure will be included in this first phase.

The proposed contract for this scheme shall comprise the execution and completion of the Works including but not limited to the provision of the following:-

- Site clearance and earthworks
- Widening and improvement works over a 1.3km length of the N76 Callan Road to include footpaths and cycle tracks;
- Construction of 1.3km section of the Kilkenny Central Access Road to include footpaths and cycle tracks;
- Construction of 3 No. roundabouts;
- Diversion of the Breagagh River;
- Construction of 2 No. bridges over the Breagagh river;
- Construction of trunk water mains, sewers and utilities mains;
- Construction of 2 No. foul Sewage pumping Stations;

- Construction of retaining walls;
- Fencing and other accommodation works;
- Provision of road markings and signage
- Provision of public lighting and traffic signals.

Central Access Scheme

The proposed scheme comprises two distinct sections: An east-west link on the north side of the City centre incorporating a new crossing of the River Nore; and a north-south link bypassing the existing residential area in the north west of the city and providing access to proposed new development further west.

It is intended that some parts of the scheme will be built or funded through future development. Those parts of the scheme and adjoining works that are covered by separate planning submissions (for the Kilkenny Western Environs and the former Cattle Mart Site).

The east-west link extends the line of Dean Street and St Canice's Place to both west and east. Starting some 450m west of Waterbarrack Roundabout, it crosses the River Breagagh and connects to the west side of Waterbarrack Roundabout. It then follows Dean Street and St. Canice's Place on-line with minimal alteration, continues through the brewery site to cross the River Nore just south of the ruined mill, meets Michael Street and Wolfe Tone Street approximately at grade and continues through the Cattle Mart site to a new junction with the Castlecomer Road.

The north-south link connects to the proposed Kilkenny Western Environs road at a new roundabout just south of the River Breagagh. It crosses the Breagagh and continues north to meet the western end of the east-west link at a second roundabout. Continuing north, the road crosses the river Breagagh for a second time and crosses Tullaroan Road before turning west of north to follow a laneway to Lough Macask. The alignment then turns at right angles, running slightly north of east to cross the Dunningstown Road and ultimately to tie into the Freshford Road.

The proposed carriageway cross section for both links is a single carriageway with 3.65m wide lanes in each direction, widening as necessary to provide refuges for pedestrians crossing or vehicles turning right. Where possible, 3.3m wide footway-cycleways will be provided on both sides of the road. Dean Street, which is approximately 10m wide at present, will be re-marked to provide a 3.5m wide lane and 1.5m wide cycle lane in each direction except in the vicinity of

Waterbarrack Roundabout where the cycle lane will be taken up onto the footway. St Canice's Place is too narrow to provide dedicated space for cyclists as well as a right turning lane for eastbound traffic and a refuge for pedestrians. Cyclists will share the carriageway with other vehicles over this 100m section.

Within the City centre, priority (give way) junctions or traffic signal controlled junctions are proposed, depending on capacity requirements. West of Waterbarrack Roundabout, roundabouts are proposed. The entire route would be illuminated and subject to a 50 kph speed limit.

Eastern Environs

The Eastern Environs comprises a series project as follows:

Golf Links Road/ Lovers Lane / New Orchard Road

Kilkenny County Council proposes to upgrade both the Golf Links Road (LP2613) and New Orchard Road (LP2613) between the N77 Ring Road and Johnswell Road. The upgrading works also extend along Lovers Lane (LP2613) from its junction with Golf Links Road for approximately 450m westwards. This scheme forms part of the ongoing programme of improvement works in this developing area. The road improvement works proposed at Golf Links Road, New Orchard Road and Lovers Lane, are approximately 1.8 km in length.

Although pedestrians can currently use existing footpaths to walk along some of the existing corridor the intermittent nature and poor quality of the footpath infrastructure is not conducive to the encouragement of walking along the corridor, particularly as pedestrians have to cross the road carriageway on a number of occasions to access the available footpaths. The improvement scheme provides for sustainable modes of travel including walking, cycling and public transport. To this end, buses set down areas are proposed along the route at current and expected pedestrian destinations.

Cognisant of the significant residential development which has occurred on the lands abutting Golf Links Roads, New Orchard Road and Lovers Lane, it is considered prudent that any enhancement to the existing corridor should incorporate facilities for pedestrians and cyclists. As a result, the adopted concept design provides for a 1.5m wide raised cycle path and 1.8m wide footpath along both sides of the road carriageway, from the N77 Ring Road to the Johnswell Road roundabout. In addition a 1.8m wide footpath will also be provided on both sides of Lover's Lane.

The design methodology seeks to provide a consistent level of infrastructure provision along the corridor for all users including pedestrians, cyclists, public

transport patrons and private vehicles, in an attempt to achieve a more sustainable solution as set out in the County Development Plan, 2002, Volume III, Kilkenny City and Environs.

Ballybought Street

This project involved the widening and refurbishment of Ballybought Street from Castlecomer Road to Golf Links Road which joins into to the works completed on the Golf Links Road. The main features of the project included the following:

- Provision of parking bays on both sides of the street for the full length. All private accesses will be maintained.
- New footpaths both sides of the street for the full length of the street.
- Removal of 'The Old Schoolhouse' part of the perimeter wall of Stephens Barracks, a protected structure and replacement of perimeter wall in revised position to match adjacent walls.
- Removal of front wall of St. Johns Senior School and replacement of wall in revised location.
- Provision of an uncontrolled pedestrian crossing
- Placing underground of all over head service wires
- Installation of new sewer, water main, high voltage ESB cable to substation and new street lighting.
- Provision of new surface water drainage scheme
- Landscaping of green strip along the army barracks wall with the new footpath

Newpark Drive

Over the past number of years, there has been a significant residential development in the eastern environs of Kilkenny City, particularly along Johnswell Road and Newpark Upper. This is leading to increased traffic demand on the existing road network. Work is ongoing to improve the roads in this area by constructing a new Link Road between Newpark Drive/ Johnswell Road and the Hebron Road and by improving the existing access roads serving the area. Newpark Drive is deficient in terms of width to such an extent that it is difficult for two vehicles to safely pass each other in places. The existing footpath on the northern side is too narrow and safe pedestrian passage is compromised. There is no footpath on the southern side of the road and vehicles exiting from dwellings along the road are unable to do so safely due to lack of visibility.

As part of this work, and in order to safely accommodate anticipated increases in traffic flows, it is now proposed to carry out realignment and widening work to Newpark Drive.

This project involves the improvement of approximately 450m of Newpark Drive between the recently constructed New Road Roundabout on the N77 and the new Johnswell Road roundabout.

The main elements of the project are as follows: -

- Widening of the carriageway to 6.2m between kerbs
- Widening the footpath on the northern road side to 1.8m
- Provision of a new footpath on the southern side of the road, generally 1.8m wide, but reducing to 1.5m wide adjacent to the Military Barracks.
- Provision of appropriate surface water road drainage.
- Provision of new road markings.
- New 500mm Watermain and replacement of existing underground services.

Northern Ring Road Extension & Nore River Crossing

The Kilkenny Ring road has been completed from the Dublin Road to the Callan Road to the east and south of the City. The section of ring road from the Dublin Road to the Castlecomer Road to the east of the City opened in late 2007. The remaining section of the ring road from the Castlecomer Road to the Callan Road would complete the loop around the City. The linkage from the Castlecomer Road to the Freshford Road requires a bridge crossing at a single location. The proposed route would connect the ring road extension on the Castlecomer Road to the Freshford Road north of Auteven Hospital.

This link has been identified in the Kilkenny Development Plan 2008-2014.

Currently there is significant traffic demand crossing the River Nore from east to west to the north of Kilkenny City. This traffic demand is currently catered for by Green's Bridge and Johns Bridge leading to significant congestion at peak times in Kilkenny City. The Northern Ring Road Extension will provide a Northern link over the River Nore connecting the N77 Ring Road Extension to the Central Access Scheme via the Freshford Road. The proposed Scheme is a specific objective of the Development Plan and it will facilitate the development of Kilkenny City and Environs in its role as a Hub town.

Significant relief would be given to Green's Bridge and John's Bridge reducing traffic levels and traffic in Kilkenny City. The resultant reduction in volumes of HGV traffic and other traffic in Kilkenny City will improve environmental amenity in the City and allow for the provision of safer City centre streetscapes. Directing large volumes of traffic inclusive of HGV from the City Centre will reduce

congestion levels on the City's streets encouraging a transport modal shift by providing an environment to improve public transport, cyclist and pedestrian linkages.

The preparation of the Constraints Study for the project is currently underway and preliminary site Investigation works are expected to commence in early 2009.

N10 Dublin Road Improvement Scheme

The proposed scheme includes the upgrade of approximately 1.2km of the existing N10, improvement of pedestrian facilities and the improvement of two key junctions along the route. The proposed section of upgraded roadway is located approximately 2.5km to the south east of Kilkenny City centre.

There is a mix of private residents and commercial properties along this route, including junctions for two separate Industrial Estates / Business Parks. Congestion occurs at peak times into the city with queuing lengths extending north of the Mart Road Roundabout.

Atkins carried out a traffic assessment of the proposed junction upgrades. These junctions currently take the form of priority controlled major-minor "T"-junctions and are located at the intersections of the N10 with Sion Road and the entrance to Purcellsinch Business Park. The assessment confirmed that the N10 Dublin Road/Sion Road priority-controlled junction will operate within practical capacity, without significant queuing and delay in both the opening year (2008) and the design year (2023) for the junction. The assessment also confirmed that the N10 Dublin Road/Purcellsinch Business Park junction will operate with the greatest spare capacity as a roundabout controlled junction in both the opening year (2008) and design year (2023).

The main features of the proposed improvement works include:

- Provision of lane structure that maximizes capacity of the road.
- Provision of 2 inbound lanes between Sion Road junction & Dublin Road roundabout to maximize capacity.
- Provision of a right turning facility at the Sion Road junction.
- Provision of a roundabout at N10 Dublin Road / Purcellsinch Business Park junction.
- Provision of a 3.1m wide hatched median along the centre of the N10 Dublin Road from Sion Road junction to Mart Road roundabout to facilitate right turning lanes at junctions.

- Provision of 1.8m wide footpath on the northern side of the N10 Dublin Road from existing footpath opposite Sion Road junction to existing footpath at Aughmologue Bridge.
- Provision of 2 bus bays / loading bays.
- Pavement overlay improvement of the N10 Dublin Road.
- Provision of dropped kerbs with tactile paving at all strategic pedestrian crossing points.
- Upgrading / alterations to existing surface water drainage system.
- Regularisation of on street parking.
- Upgrading of existing public lighting.
- Upgrading of signage
- Provision of road markings in accordance with the Traffic Signs Manual.
- Landscaping

N10 Ring Road Improvement Scheme

This scheme comprises the upgrade of a 2.5km section of the N10 Kilkenny Ring Road from the Dublin Road Roundabout to the Waterford Road Roundabout.

The brief for this project requires that the design should bring the existing section of road to a standard comparable with the N77 Ring Road Extension, which was recently constructed.

The proposed scheme will include for the provision of a footpath & raised cycleway on the urban side of the N10 Ring Road and a footpath on the rural side from Waterford Road roundabout to Bohernatounish Road roundabout.

The Scheme also includes for the installation of a single wide cross-section carriageway layout with modified road markings and signage at roundabouts to maximise capacity. Public lighting improvements and landscaping will also be included as part of this scheme proposal. It is proposed to omit the dual carriageway cross-section and central median/barrier as detailed in the public display drawings until approval and funding is attained from the National Roads Authority. However, the proposed footway/cycleway kerblines will be set back sufficiently to cater for the future implementation of the four lane carriageway.

Description of the Proposed Improvement Works

The main features of the proposed improvement works include:

- Provision of a 1.8m wide footpath & 1.75m wide raised cycleway on the urban side of the carriageway along the entire Scheme.
- Provision of a 1.8m wide footpath on the rural side of the carriageway from Waterford Road Roundabout to Bohernatounish Road Roundabout.

- Upgrade Bennetsbridge Road Roundabout.
- Upgrade Waterford Road Roundabout.
- Improve existing junction at Outrath Road.
- Provision of dropped kerbs with tactile paving at all strategic pedestrian crossing points.
- Upgrading of existing public lighting.
- Upgrade existing signage.
- Provision of road markings in accordance with the Traffic Signs Manual.
- Improvement to existing drainage system.
- Erection of retaining walls. Existing boundaries to be replaced if affected by construction of retaining walls.
- Landscaping.
- 2.5km of pavement improvements.

R697 Kells Road Improvement Scheme

Kilkenny County Council proposes to upgrade both the horizontal and vertical alignment of the Kells Road between the Ring Road and the Upper Patrick Street as part of their ongoing programme of improvement works to this developing area.

The improvement works shall extend from the Kells Road – Ring Road roundabout and extend north-eastwards for approximately 1.1km to the Kells Road – Upper Patrick Street junction.

The main features of the proposed improvement works include:

- Improvement to horizontal and vertical alignment of carriageway.
- Pavement improvement.
- Provision of a 1.8m wide footpath and 1.75m raised cycle track on each side along the proposed realigned section of road.
- The provision of right turning lanes for key access points along the proposed realigned section of road.
- Provision of dropped kerbs with tactile paving at all strategic pedestrian crossing points.
- Provision of a signalised controlled pedestrian crossing to the south of the junction with Upper Patrick Street.
- Upgrading of existing junctions.

- Upgrading of existing public lighting.
- Relocation and under grounding, where feasible, of existing overhead and buried utility lines.
- The provision of additional green areas and associated landscaping.
- Provision of on-street sheltered parking bays and regularisation of parking along the route.
- Up-grading / provision of surface water drainage system.
- The provision of road signage and markings.
- The preservation of an existing watermain and gas main within the road space.
- Erection of fencing and walls along newly formed boundaries created by the proposed scheme.

Kilkenny Urban Renewal Scheme of The Parade

Kilkenny Urban Renewal Scheme of The Parade, Mayors Walk, Canal Square and Canal Walk, commonly and collectively known as The Parade Project, is the result of a commitment by Kilkenny Borough Council in their Kilkenny City Centre Local Area Plan to reinstate The Parade as the city's main urban space and to redevelop Canal Square as a gateway to Canal Walk.

The finalised design involves the following;

The Parade

Location

Between the Mayors Walk on the northside and the business and residences on the southside and extending from the junction with Rose Inn Street to the pedestrian crossing lights on the Castle road past the entrance to Kilkenny Castle.

Design

The design allows for use of non slip pavers of varying sizes to indicate the different areas including;

The main parade area, formally the taxi rank and parking areas, which will now become a pedestrianised plaza that can be used as a performance area

The realigned 2 way carriageway which will move away from the existing footpath on the southside to allow for a mobility impaired footpath to be

constructed outside the steps at Kilkenny Design Centre and Rinuccini's, and

The new taxi, loading and parking facility will be provided for on the southside.

The paved area of the main parade will be dissected at numerous points by ground mounted strip lighting as the architects and Kilkenny Borough Council wish to avoid the erection of poles so as to give an open feeling to the finished product.

The distinction between the carriageway and the plaza will be delineated by a marble strip, the concept of which originates from that witnessed by the architects during a visit to St Canice's Cathedral Kilkenny.

Public seating will be incorporated at intervals along the left hand side of the plaza as one approaches the castle

The Mayors Walk

Location

Between the Rose Garden Wall on the northside and the railings on the southside and the steps at National Irish Bank and the entrance to the Rose Garden in front of the Castle.

Design

The architectural design allows for:

the removal of the existing public toilets and the construction of a new kiosk away from the Rose Garden Wall which will incorporate a vending area, 4 automatic toilets and a wardens office.

The Reconstruction of the Rose Garden Wall which was removed in the 1960's when the old public toilet block was constructed. Under agreement with the conservation department of the Department of the Environment, Heritage and Local Government this section of wall is to be reinstated as per the original construction

The Railings and Entrance Piers are to be refurbished and reinstated as per the instructions of the conservation department of the Department of the Environment, Heritage and Local Government

The surface of the Mayors Walk will be a mixture of selected non slip paving and bound gravel. The bound gravel concept is based on the

premise that the original surface was gravel as per the alternative name for the area “The Gravel Walk”

Public seating will be incorporated along the Rose Garden Wall and up lighters installed along the length of the wall to emphasise the architectural features of the wall.

Canal Square

Location

Bordered by the Nore River to the north and the business premises and Rose Garden Wall to the south and stretching from Rose Inn Street to the gated entrance to Canal Walk.

The Design

The Canal Square design is based on converting the area into a paved plaza with a loading bay located on Rose Inn Street

The ESB Sub Station currently located there will be cladding to reduce the negative visual impact that it currently projects. The gated entrance to Canal Walk will be removed to allow a free lowing connection to Canal Walk.

Public seating and lighting will be installed to provide an inviting ambiance for the new plaza.

Canal Walk

Location

The walk runs along the south bank of the River Nore stretching from Canal Square for approximately 100m towards the stepped entrance to the Castle.

The Design

The existing river wall is to be removed and a new stainless steel railing installed to visually open up the area. The surface is to be a polished concrete punctuated with selected non slip pavers. Public lighting is to be installed in the surface to act as up lighters for the Rose Garden Wall again highlighting the architectural features visible.

Appendix I - Draft Programme for Mobility Management Plan 2009-2014