



## **Limerick-Shannon Metropolitan Area Transport Strategy**

### **Supporting Measures Report**

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National Transport Authority,  
Dun Scéine,  
Harcourt Lane,  
Dublin 2.

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	Name	Position	Date
<b>Originated by</b>	Marjely Caneva	Transport Planner	28-5-2019
<b>Checked by</b>	Kevin Burke	Principal Transport Planner	29-05-2019
<b>Approved by</b>			
<b>NTA Review</b>	David Clements Michael MacAree	Land Use Planner/ Head of Integrated Planning	9-08-2019

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	Name	Position	Date
<b>Originated by</b>			
<b>Checked by</b>	Kevin Burke	Principal Transport Planner	13-08-2019
<b>Approved by</b>			
<b>NTA Review</b>			

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	Name	Position	Date
<b>Originated by</b>			
<b>Checked by</b>			
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<b>NTA Review</b>			

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## 1 Introduction

The National Transport Authority (NTA) is preparing a new transport strategy for the Limerick-Shannon Metropolitan Area (L-SMA) that will consider the future of the transport system in the L-SMA for the period up to the year 2040.

This report explores potential supporting measures and sets out recommendations for options to be brought forward for further consideration, planning and implementation as part of the Limerick-Shannon Metropolitan Area Transport Strategy (L-SMATS). These are consistent with recent changes to Government Policy including the National Planning Framework 2040 and the 2018 Section 28 Sustainable Urban Housing; Design Standards for New Apartments that seek to promote compact development and reduce reliance on the private car—particularly for short trips within the urban environment.

Many of these policies, notably those related car parking management and smarter travel in addition to favourable development patterns, are already being implemented and will be further developed by the NTA and the Local Authorities over the period of the Strategy.

## 2 Issues and Rationale for Supporting Measures

### 2.1 What do Supporting Measures Aim to Achieve

Supporting measures seek to:

- Make the transport network easier to access:

- Quality urban design and walkability improvements.
- For example, through information provision such as pedestrian wayfinding.
- Promote transport options, especially sustainable transport:
  - For example, through workplace travel planning.
- Manage the use of the transport network to derive greater efficiency:
  - For example, through parking management.
- Improve integration between transport networks to achieve greater combined benefits:
  - For example, Mobility As a Service (MaaS) initiatives and integrated smarter public transport ticketing;
- Embrace new technologies to improve the overall efficiency of the transport network:
  - For example, through the application of Intelligent Transport Systems (ITS) to the transport network.

The L-SMA's Supporting Measures will be essential to the creation of physical, social and cultural environments where walking, cycling and public transport are attractive alternatives to the private car. It will take a wide range of supportive initiatives to:

- Create communities that prioritise sustainable transport as instinctive modes of choice;
- Improve public awareness and educate users on available options to help them make the best choices; and
- Improve end-to-end trip facilities and integration.

Supporting measures are primarily demand oriented rather than supply oriented, i.e. they attempt to influence and manage people's travel choices rather than seeking to provide more physical capacity for travel

(such as more roads, bus and train services etc.). Supporting measures can, however, complement supply-oriented programmes that, for example, either reduce the capacity for private vehicles or provide priority in traffic for new or existing public transport services. An example would be where on-street parking availability is reduced as a supporting measure and the space is reallocated to provide for cycle facilities, improved pedestrian environment or public transport priority.

## 2.2 The Role of Supporting Measures within L-SMATS

One of the key principles for L-SMATS is to reduce car dependency within the L-SMA whilst increasing the attractiveness of sustainable transport options. Another fundamental principle of the Strategy is to support the future growth of the L-SMA through the provision of an efficient transport network.

Supporting measures have an important role to play in providing a future transport network that matches up to these principles. The full benefits of the significant investment that will be delivered under L-SMATS cannot be achieved through the provision of infrastructure alone and must be combined with the implementation of measures that support best use of that infrastructure.

## 3 L-SMATS Supporting Measures

There are numerous options available for supporting measures that could be applied or expanded within the Limerick-Shannon Metropolitan Area. Consideration was given, on the basis of professional judgement, to the following criteria:

- How efficient is the supporting measure / how easy the supporting measure is to deliver; and
- How effective is the supporting measure(s) contribution to sustainability?

L-SMATS supporting measures are grouped into the following categories, each of which is described in detail in the following sections:

- 3.1 Land Use & Built Environment Measures
- 3.2 Behavioural Change Programmes
- 3.3 Parking Management
- 3.4 Information and Awareness
- 3.5 End-to-End Trip Facilities and Integration Measures
- 3.6 Strategic Road Demand Management Strategies
- 3.7 Technology for Sustainable Transport

### 3.1 Land Use and Built Environment Measures

Land Use and Built Environment measures seek to provide for development patterns and layout that reduces car use and prioritises the use of sustainable modes. Land use policies that support the provision of new development in appropriate locations and at densities which support walking and cycling and enable the efficient provision of public transport services are to be encouraged.

Built Environment measures seek the application of good practice principles to the design and layout of development that maximises the attractiveness of walking, cycling and public transport safely and efficiently for short journeys.

The Land-Use and Built Environment supporting measures are as follows:

- LU&BE-01 Public Transport Oriented Development
- LU&BE-02 Appropriate Development Densities
- LU&BE-03 Mixed-Use Development Patterns
- LU&BE-04 Public Realm and Urban Design
- LU&BE-05 Pedestrian and Cycle Wayfinding
- LU&BE-06 Providing for Permeability
- LU&BE-07 Safety and Perception of Safety Measures

**3.1.1 LU&BE-01 Public Transport Oriented Development (PTOD)**

<p><b>Public Transport Oriented Development</b></p>	<p>Public Transport Oriented Development (PTOD) is the creation of compact, walkable and cycleable communities centred around high-quality, frequent public transport services.</p>	<p><b>Description of Measure</b></p>	<p>High intensity uses such as employment and mixed-use development is directed to locations at existing or planned stations along the suburban rail network and high frequency bus corridors in L-SMA.</p> <p>Implementing this supporting measure will help to integrate new development at appropriate densities with high capacity public transport infrastructure in conjunction with more attractive walking and cycling networks and associated public realm improvements.</p>	<p><b>L-SMATS Opportunities</b></p>	<p>The development priorities for land uses in L-SMATS will focus on the delivery of PTOD policies as outlines in the Land Use Integration section of the main Strategy Report.</p> <p>To support PTOD, both LCCC and CCC must direct, high-intensity uses such as housing, employment, education and retail uses to areas that are (or planned to be) served by high-frequency public transport stations and services. Appropriate locations include but are not limited to; Colbert Station, Limerick City Centre, BusConnects corridors and Shannon Town Centre.</p> <p>Associated with the promotion of PTOD, ribbon development in locations not served by high-quality public transport should be discouraged by both Local Authorities.</p>
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3.1.2 LU&BE-02 Appropriate Development Densities

<p><b>Appropriate Development Densities</b></p>	<p>Effective land-use consolidation and higher densities contribute to a compact urban footprint that captures a large catchment within close proximity to destinations and quality public transport services within easy walking and cycling distance.</p>	<p><b>Description of Measure</b></p> <p>The density of development has a significant impact on the concentration and distribution of trip demand.</p> <p>Appropriate development densities as a supporting measure seeks to target higher development densities in highly accessible locations by walking and cycling and/or where there are opportunities for current or proposed sustainable transport.</p> <p>This land use measure better aligns the provision of sustainable transport with demand thereby reducing the need to travel by private car.</p>	<p><b>L-SMATS Opportunities</b></p> <p>Both LCCC and CCC should maximise the opportunity to increase densities within existing built-up areas such as Limerick City, Shannon Town Centre and established town centres and villages across the L-SMA.</p> <p>This will contribute to a more compact development footprint that brings more people closer to destinations by walking and cycling networks and improves the viability of public transport services creating the opportunity for increased capacity and frequencies within the L-SMA.</p>
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**3.1.3 LU&BE-03 Mixed-Use Development Patterns**

<p><b>Mixed Use Development Patterns</b></p>	<p>Mixed-use development patterns provide a greater variety of essential services and facilities locally – usually considered to be within immediate walking distances of the home.</p>	<p><b>Description of Measure</b></p>	<p>Mixed-use development as a supporting measure plays an important role in shortening trip lengths by locating key destinations such as schools, health facilities, leisure and retail services within close proximity of where people live.</p>	<p><b>LSMATS Opportunities</b></p>	<p>Both LCCC and CCC should prioritise mixed-use development when redevelopment of sites within Limerick City, Metropolitan town centres such as Sixmilebridge and villages such as Cratloe areas. The concept is equally relevant in greenfield development areas such as Mungret and proposed SDZ sites where schools, shops and essential local services should be provided within safe walking distances and environments to housing.</p> <p>This will need reduce the need to travel and support the ‘10-minute neighbourhood’ or ‘City of Short Distances’ concepts.</p>
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3.1.1 LU&BE-04 BE-01 Public Realm and Urban Design

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Urban Realm</b></p> <p>A quality public realm based on best practice urban design principles is conducive to encouraging safer and higher levels of walking, cycling and public transport use.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Description of Measure</b></p> <p>A mobility friendly built environment includes a safe pedestrian environment, safe street crossings, easy to access public destinations, a mix of housing choices, nearby health centres and recreational facilities.</p> <p>Additional mobility / age friendly urban design features usually entails the use of measures such as; tactile paving, adequate street and park furniture such as rest benches, legible pedestrian signage and well-lit walking areas.</p> <p>The feeling of safety can be greatly enhanced through the adoption of good urban design principles such as ground floor activity providing passive surveillance.</p> <p>Further benefits of high-quality urban design is the contribution to creating urban and natural environments that foster strong local business, create strong communities and contribute to quality of life.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>LSMATS Opportunities</b></p> <p>In the context of supporting L-SMATS, good urban design seeks to provide an external physical environment which prioritises sustainable transport. It evolves from many public and private decisions, made over time, in land-use planning, architecture and engineering fields. Both Local Authorities should prioritise public realm interventions in a manner consistent with the over-arching principles outlined in the updated Design Manual for Urban Roads and Streets (2019).</p> <p>There are several opportunities within Limerick City and Metropolitan town centres and villages to declutter the public realm, reduce traffic volumes and speeds and enhance the pedestrian environment. Pedestrian (and cyclist) desire lines should be identified and enhanced</p> <p>The adoption of place-making principles particularly in new developments and emphasising people-centred interventions in of places like Limerick’s Georgian Quarter, Sixmilebridge and Bunratty will create an attractive environment where people want to live, visit, work and spend time in.</p>
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### 3.1.1 LU&BE-05 Pedestrian and Cycle Wayfinding

<p><b>Pedestrian and Cycle Wayfinding</b></p>	<p>Wayfinding, or legibility, relates to the ease of how people can find their way around an area.</p>	<p><b>Description of Measure</b></p> <p>Many of the measures raised above in the Public Realm and Urban design section are applicable here. Pedestrian and cyclist routes should be clear, direct and obvious. There are several principles that contribute to good wayfinding, such as architectural cues, surface treatments, lighting, sight lines, and signage.</p> <p>The updated Design Manual for Urban Roads and Streets (2019) provides additional guidance on wayfinding and Quality Audits.</p>	<p><b>L-SMATS Opportunities</b></p> <p>There are excellent opportunities to build upon recent good work across the L-SMA including the Shannon Town Park development and the Limerick - UL greenway route.</p> <p>There are several physical barriers to walking and cycling across the L-SMA including those created by the River Shannon, Mulkear River, Canal Network, floodplains and railway tracks which must be overcome to create better local and strategic walking and cycling links.</p> <p>The recent Walkable Neighbourhood Map of Limerick City provides a good example of a template that could be followed elsewhere.</p>
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3.1.2 LU&BE – 06 Providing for Permeability

<p><b>Providing for Permeability</b></p>	<p>Providing for permeability is an essential component of supporting more walkable and cycle friendly cities and neighbourhoods and facilitating better access to public transport.</p>	<p><b>Description of Measure</b></p> <p>Good permeability is achieved through the availability of direct connections between origins and destinations that are accessible, safe and secure.</p> <p>The National Transport Authority’s Permeability Best Practice Guide is available to assist local authorities and other organisations in tackling the issues that impact on permeability providing a basis for addressing the legacy of severance in Irish urban area</p> <p>In many cases, this will involve the opening up of existing (or planned) cul-de-sacs or other barriers to pedestrian movement – particularly housing developments close to schools and supporting local shops and services.</p>	<p><b>LSMATS Opportunities</b></p> <p>Both Local Authority’s should undertake permeability audits of existing built-up areas and identify key pedestrian and cycle desire lines in planned new developments such as Mungret and the proposed SDZ.</p> <p>Permeability must be considered in relation to all future developments on every scale. Opportunities to improve permeability to existing developed areas should be actively sought in conjunction with the implementation of the public transport, pedestrian and cycle network enhancements provided for within L-SMATS; of importance will be:</p> <ul style="list-style-type: none"> <li>■ Direct, high-quality pedestrian connections to high capacity public transport corridors, bus stops and major walking destinations;</li> <li>■ Pedestrian and cycle crossings to link areas that are separated by roads or other physical barriers such as the River Shannon, canals or railway tracks including the use of countdown signals at appropriate crossings;</li> <li>■ Planning and design that ensures accessibility for persons with mobility challenges.</li> <li>■ Low cost measures such as filtered permeability will be used to unlock access, reduce severance and rat-running and form direct connections to local services and longer distance dedicated cycle routes.</li> </ul>
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### 3.1.3 LU&BE-07 Safety and Perception of Safety Measures

<p><b>Safety Measures</b></p> <p>Decisions to use the public transport, walking and cycling networks are often influenced by the reality or perceptions of safety and security.</p>	<p><b>Description of Measure</b></p> <p>Safety concerns across the the transport network and can vary according to characteristics such as gender, age and race.</p> <p>Traditionally, safety concerns have tended to be addressed through hard engineering techniques and/or enforcement measures. However, in recent years there is an appreciation for softer or less tangible measures including the promotion of quality urban design, increasing street activity, sensitive lighting and having a more visibile police presence to discourage opportunistic crime.</p> <p>Other safety concerns relate to speed and volume of traffic, noise, air pollution, poor road user behaviour and lack of pedestrian and cyclist priority in public spaces. These can be addressed through a combination of measures including urban design and sensitive, well thought-out transport solutions.</p>	<p><b>LSMATS Opportunities</b></p> <p>Addressing safety and security issues is a high priority for sustainable modes and must be considered if L-SMATS is to achieve its sustainable transport objectives and maximise its public transport patronage.</p> <p>L-SMATS will promote compact land use patterns and a high quality of urban design that will provide for increased pedestrian activity (safety in numbers) and passive surveillance. The quality of the pedestrian and cycle network (including access to public transport) can be greatly enhanced through projects such as BusConnects.</p> <p>Both Local Authority’s should look to incorporate feedback from a wide range of users before proceeding with transport projects and streetscape interventions.</p> <p>Other measures could potentially include;</p> <ul style="list-style-type: none"> <li>▪ Innovative physical measures such as landscaping, lighting and design;</li> <li>▪ Operational measures including more visible police presence and camera enforcement, and</li> <li>▪ Public awareness initiatives.</li> </ul>
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### 3.2 Behavioural Change Programmes

Behavioural change programmes are aimed at encouraging people to choose more sustainable transport options. Existing behavioural change programmes include the Smarter Travel Workplaces and Campuses programme directly managed by the NTA and the Green Schools Travel Module administered by the NTA and run by An Taisce on behalf of the Department of Transport, Tourism and Sport (DTTAS). Requirements for Travel Plans are set out in local authority development plans. As such, the local authorities also play a significant role in the review and monitoring of Travel Plans.

The Behavioural Change Programmes supporting measures comprise of the following:

- BCP-01 Workplace Travel Plans
- BCP-02 Smarter Travel Campus
- BCP-03 Green Schools Programme
- BCP-04 School Travel Strategy
- BCP-05 Walking and Cycling Officer

### 3.2.1 BCP-01 Workplace Travel Plans

<p><b>Workplace Travel Plans</b></p>	<p>Workplace Travel Plans, also known as Mobility Management Plans, comprise a package of measures to promote / support sustainable travel patterns and reduce the need to travel by private car.</p>	<p><b>Description of Measure</b></p> <p>The Smarter Travel Workplaces Programme, managed by the National Transport Authority, engages with larger employers in the L-SMA in the development and implementation of Workplace Travel Plans.</p> <p>Typically, MMPs identify a range of measures to improve the percentage of staff travelling regularly by sustainable transport and reduce the numbers arriving to work (study) by single occupancy car journeys. These measures normally include walk, cycle and public transport promotion and measures that encourage car-pooling and/or journeys by less polluting vehicles including motorbikes or electric vehicles.</p>	<p><b>LSMATS Opportunities</b></p> <p>Workplace travel planning provides the opportunity to communicate the implementation of L-SMATS and to promote the benefits of the Strategy directly with a large number of commuters.</p> <p>In many cases, large employers are engaged with organisations like the NTA and Limerick Smarter Travel that can effectively deliver the behavioural change that is required to achieve the full benefits of LSMATS. The gradual reduction of workplace parking in tandem with targeted improvements to the walking, cycling, Park and Ride and public transport networks in these areas in an obvious opportunity.</p> <p>Other demand management measures including the consideration of workplace parking levy to fund improvements to the sustainable transport network should be considered.</p>
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### 3.2.2 BCP-02 Smarter Travel Campus

<p><b>Smarter Travel Campus</b></p>	<p>Smarter Travel Campus is a behavioural change programme encompassing actions to encourage and support third level students and staff to walk, cycle, take public transport or carshare on the commute to campus.</p>	<p><b>Description of Measure</b></p> <p>Smarter Travel Campus is a hands-on programme managed by the National Transport Authority working with Third Level Institutions to implement campus travel plans. For example, University College Limerick has been an active Smarter Travel Campus Partner Campus for several years and engage in initiatives during the year to promote smarter travel.</p>	<p><b>LSMATS Opportunities</b></p> <p>Limerick was awarded the title of Ireland’s first Smarter Travel Demonstration City and ran the Smarter Travel initiative between 2012 and 2016.</p> <p>There is an opportunity to extend the Smarter Travel Campus programme as a supporting measure for L-SMATS to communicate the implementation of L-SMATS and to promote the benefits of the Strategy directly with the L-SMA’s third level population, particularly including those attending and working in the large third level institutions, including University of Limerick (UL), Shannon College of Hotel Management, Mary Immaculate College and Limerick Institute of Technology (LIT).</p>
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### 3.2.3 BCP-03 Green Schools Programme Travel Module

<p><b>Green Schools Programme</b></p>	<p>Travel is the fourth theme of the Green-Schools programme under which schools prepare action plans to promote and increase the number of students walking, cycling, scooting, using public transport or carpooling on the way to school.</p>	<p><b>Description of Measure</b></p> <p>The National Transport Authority works with <b>An Taisce</b> to oversee a school travel module as part of the Green Schools programme. The NTA has published a Toolkit for School Travel that presents a set of measures for use by schools to promote ways of reducing car use on the trip to and from school.</p>	<p><b>LSMATS Opportunities</b></p> <p>Potential to extend the Green Schools Programme to all schools in the L-SMA providing the opportunity to communicate the implementation of L-SMATS and to promote the benefits of the Strategy directly with the school population.</p>
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### 3.2.1 BCP-04 School Development and Transport Planning

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>School Travel Strategy</b></p> <p>The ‘school run’ is a significant contributor to peak time congestion. The extent to which transport planning is considered in schools across the L-SMA is of critical importance to the achievement of modal shift, the improvement of public health and reducing the impact of car-based journeys to school / linked trips to school and work.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Description of Measure</b></p> <p>There are several land use planning and transport planning considerations relevant to the provision of new schools and the retrospective provision of walking and cycling infrastructure within the catchment of existing schools. The most significant include:</p> <ul style="list-style-type: none"> <li>■ The appropriate siting of schools. New schools must be better integrated into existing or planned new development areas to optimise walking and cycling catchments;</li> <li>■ A significant uplift in quality of pedestrian and cycle provision in primary and secondary schools</li> <li>■ Mandatory Travel Surveys and Travel Plans for each school in the LSMA;</li> <li>■ Identification of drop off areas for parents and school buses within walking distance of the school to facilitate Park and Stride campaigns or ‘Walking (Cycling) Buses’;</li> <li>■ Review of school opening and closing times including consideration of staggered times in areas where there is a concentration of schools;</li> <li>■ Implementation of vehicle-restricted areas in the immediate vicinity of schools ‘School Streets’;</li> </ul>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>LSMATS Opportunities</b></p> <p>The siting of new schools in highly accessible areas by quality walking, cycling and public transport networks is critical to reducing demand to travel by car. Both Local Authority’s should engage with the Department of Education to encourage the development of schools in brownfield sites or within approved greenfield development sites.</p> <p>L-SMATS recommends the further investigation of this topic through a comprehensive metropolitan-wide School Transport Planning Strategy with tailored measures to reduce the car-based trips of ‘the school run’.</p>
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**3.2.1 BCP-05 Walking and Cycling Officer**

<p><b>Walking and Cycling Officer</b></p>	<p>The establishment of a dedicated L-SMA Walking and Cycling officer is recommended.</p>	<p><b>Description of Measure</b></p> <p>London and Manchester have in recent years, appointed Walking and Cycling Commissioners to raise the profile of active travel and to act as a conduit between local authorities and key stakeholder groups.</p> <p>The measure could facilitate decision-making processes focused on promoting and prioritising walking and cycling above motorised modes in the city.</p>	<p><b>LSMATS Opportunities</b></p> <p>There is an opportunity to build upon the success of the Limerick Smarter Travel programme across the wider L-SMA region.</p> <p>At a minimum, the appointment of a dedicated walking and cycling officer (similar to that of Dublin City Council) should be considered to coordinate promotional events between relevant stakeholder groups and to raise the profile of both modes.</p> <p>There is an opportunity for such an officer to liaise with the emerging NTA National Cycle Office to ensure an uplift in the quality and publicity in any emerging L-SMATS scheme.</p>
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### 3.3 Parking Management

Parking has a significant influence on people's travel behaviour with a long-established link between reliable public transport availability and parking supply. The availability and price of parking are major determinants of the relative attractiveness of the private car versus sustainable transport options. Parking management measures include pricing and supply controls that make car use more expensive and less convenient, thereby increasing the relative attractiveness of non-car modes. Transport demand management through parking restraint can be targeted to locations where accessibility by alternative modes is high thereby encouraging mode shift

to public transport, walking and cycling. Parking restraint can also be applied as a fiscal measure or alongside land use planning measures.

The Parking Management supporting measures comprise:

- P-01 On-Street Parking Controls
- P-02 Parking Standards for New Developments
- P-03 Managing the General Availability of Parking
- P-04 Workplace / Private Parking Levies

3.3.1 P-01 On-Street Parking Controls

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>On-Street Parking Controls</b></p> <p>On-street parking controls are generally considered to refer to the implementation of parking charges, parking duration limits and/or time of day parking restrictions.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Description of Measure</b></p> <p>There are significant and competing demands for kerbside spaces in Limerick City Centre and other Metropolitan Town Centres. These include but are not limited to; loading and unloading facilities, a need to ensure bus priority and ease of boarding, a desire to increase footways, street trees, street crossings and dedicated cycle infrastructure.</p> <p>Effective parking control strategies aim to provide for a suitable balance of long- and short-term parking and parking duration limits to specific sites or areas but increasingly, a need to facilitate streetscape improvements and prioritise sustainable transport interventions.</p> <p>Limerick City Council operates a Pay Parking system for payment of On-Street Parking and some limited residential parking controls in inner- City areas. This approach will be required elsewhere across the L-SMA.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>LSMATS Opportunities</b></p> <p>The availability and pricing structure for council controlled on-street parking within the L-SMA should be reviewed by both LA's in tandem with L-SMATS implementation. In many cases, this will require a reallocation in road space nominally used for on-street parking to facilitate sustainable transport.</p> <p>In general, long-stay commuter and shopper on-street parking within Limerick City and Metropolitan Town Centres should be minimised, regulated to ensure quick turnover of spaces and relocated to strategic Park and Rides where appropriate. Delivery and Servicing requirements should also form part of this consideration.</p> <p>Limerick City Council currently offer 6 dedicated Electric Vehicles (EV's) charging zones and offer the first four hours of parking free for electric vehicles parked in an E.V. charging bay. These incentives may need to be revised in the medium to long term as the attractiveness of EV's increases in light of L-SMATS priorities and competing demands on limited kerbside space.</p>
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**3.3.2 P-02 Parking Standards for New Developments**

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Parking Standards for New Developments</b></p> <p>Appropriate car parking standards are required to manage the parking supply, increase the attractiveness of sustainable transport options and to effectively manage the demand for travel by the private car.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Description of Measure</b></p> <p>Parking standards for new developments are set out in the Limerick City and County Development Plans and Clare County Development Plan.</p> <p>In many cases, minimum parking standards are applied to new development including employment sites. This tends to lead to an over-provision of private car parking acting as a real barrier and disincentive to prioritise sustainable transports.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>LSMATS Opportunities</b></p> <p>L-SMATS provides the opportunity to prescribe more robust parking management in targeted areas in tandem with improvements to sustainable transport provision. These include new regeneration areas ear-marked for development such as Mungret and the proposed South Clare SDZ but also in the redevelopment of sites in the Metropolitan Area.</p> <p>Both Clare and Limerick’s statutory Development Plans are due for review in the short-term of L-SMATS implementation. Maximum parking standards should be applied by both LA’s alongside other measures including more compact development that is highly accessible by public transport, and provision of quality walking and cycling networks.</p> <p>Consideration should be given to a zonal approach to parking standards in the L-SMATS. This approach is consistent with recent changes to government policy outlined in the National Planning Framework 2040 and the Section 28 Sustainable Urban Housing Guidelines.</p>
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### 3.3.3 P-03 Mobility Hubs

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Mobility Hubs</p>	<p>Mobility Hubs are consolidated car parking areas more usually in the form of multi-storey garages or to a lesser extent, underground car parks.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Description of Measure</p> <p>The concept is relatively new to European cities but are gaining traction particularly in new regeneration areas planned around mass public transit systems (Public Transit Oriented Development). Private car parking is minimised and consolidated to areas that often require a short walk to access the vehicle meaning that the instinct to use the car as a primary mode is curtailed somewhat.</p> <p>In addition to providing some private car parking facilities for predominantly residential use, mobility hubs are characterised by a high level of accessibility to high capacity public transport and a high degree of supporting sustainable transport infrastructure (Mobility as a Service systems) including car-sharing, car-clubs, bike-sharing systems, cargo bikes and Electric Vehicle Charging Points (EVCP).</p> <p>The application of mobility hubs is consistent with the NPF 2040 &amp; the Section 28 Sustainable Urban Housing Guidelines which seeks to minimise or wholly reduce car parking in central areas or those well served by public transport.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">LSMATS Opportunities</p> <p>Mobility Hubs will be encouraged in regeneration areas or central areas where high-density housing is supported by high-frequency public transport. They will contribute to sustainable transport mode share targets by prioritising walking, cycling and public transport use with and reducing the need to own a private vehicle.</p> <p>Mobility Hubs will enable low car parking ratios to be applied in accessible, well connected areas across the L-SMA.</p> <p>The provision of Mobility Hubs satisfies several requirements for low parking provision and high-quality cycle parking located within easy reach of public transport. Other advantages include a reduced land take, cost of development and contributions to place-making objectives.</p> <p>This approach is consistent with a growing preference of younger workers to eschew car ownership in favour of being located near workplaces, leisure facilities and public transport.</p>
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**3.3.4 P-04 Managing the General Availability of Parking**

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Reductions in the Availability of Parking</b></p> <p>Managing the availability of long-stay parking particularly within urban centres, is a highly effective way of making sustainable transport options more attractive relative to the private car.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Description of Measure</b></p> <p>More robust management of car parking levels and areas – including the repurposing of existing car parking areas to other uses- is a proven implementation tool in the creation of attractive, prosperous and pedestrian-friendly town centres.</p> <p>Managing the availability of parking can be achieved through the development management process and other mechanisms including town centre renewal projects and regeneration of areas as outlined above in P-01 to PO-3.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>LSMATS Opportunities</b></p> <p>Limerick City and Shannon town centre have significant amounts of long-stay parking – particularly surface car parking. There will be a general reduction in the provision of parking in the vicinity of high capacity public transport corridors and encouraging shared mobility systems to enable more compact development patterns. General reduction of parking should take place in tandem with improvements to the walking, cycling and public transport and Strategic Park and Rides.</p> <p>The benefit of this approach is three-fold as the removal of on-street parking enables more efficient public transport while reducing the attractiveness of private car travel, as well as freeing up kerbside space for place-making initiatives including public seating, cycle parking and parklets.</p> <p>Reducing parking supply also has the potential to support other measures by reallocating surface car parking to urban realm improvements, sustainable modes or more compact development for example. As land values increase, the attractiveness for higher value uses including residential and employment uses increases.</p>
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**3.3.5 P-04 Workplace / Private Parking Levies**

<p><b>Workplace / Private Parking Levies</b></p> <p>The availability of free private parking at destinations has a significant impact on the relative attractiveness of the private car versus sustainable transport options.</p>	<p><b>Description of Measure</b></p> <p>By influencing parking supply, local authorities and organisations can foster a market for priced and controlled (rather than free) long-stay parking.</p> <p>Some cities, notably Nottingham, have introduced a Workplace Parking Levy (WPL) in 2012. All money raised by the tax on business parking spaces has been used to invest in its tram, rail and bus infrastructure.</p>	<p><b>LSMATS Opportunities</b></p> <p>As part of L-SMATS implementation, employers should be encouraged to limit or eliminate the availability of free parking particularly in areas served by the L-SMATS high capacity public transport corridors, connections to strategic Park and Ride facilities, and/or within highly accessible locations served by quality walking and cycling networks.</p> <p>The introduction of a WPL (or similar) to fund investment in the sustainable transport network across the L-SMA should be kept under consideration over the lifetime of the Strategy.</p>
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### 3.4 Information and Awareness

Information, education, promotion and outreach measures, that are aimed at raising awareness and improving understanding of the options and travel choices available to people play an important role in overcoming barriers to switching from private car use to sustainable modes.

The use of technology in the communication of information has evolved considerably over recent years and opportunities to take advantage of effective and efficient new methods of communication should be explored as part of the implementation of L-SMATS.

The Information and Awareness supporting measures comprise:

- IA-01 Journey Planner
- IA-02 Real Time Passenger Information
- IA-03 Marketing/Information Campaigns

#### 3.4.1 IA-01 Journey Planner

<b>Journey Planner</b>	Journey Planners make the public transport network easier to understand and provide the public with readily accessible information on the transport options available to them.	<b>Description of Measure</b>	The National Transport Authority's National Journey Planner and Cycle Planner helps people plan personal journeys, door-to-door, anywhere in Ireland, using public transport, cycling (including Limerick Coca Cola bike scheme) and/ or walking. There is also an App available for download on Android and iPhone.	<b>LSMATS Opportunities</b>	The Journey Planner will need to be updated and regularly maintained as the implementation of L-SMATS progresses for it to remain effective.
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**3.4.1 IA-02 Real Time Passenger Information**

<b>Real Time Passenger Information</b>	RTPI provides accurate information on actual departure and arrival times on a live feed, enabling passengers to more efficiently plan their trips and the public transport operator to maintain or improve performance.	<b>Description of Measure</b>	The National Transport Authority is currently providing a RTPI service for bus passengers in Limerick City. RTPI signs are strategically located where they will provide information to the greatest number of bus passengers and to include as many main routes as possible. All Bus Éireann stops are included on the website, smartphone Apps and SMS phone services.	<b>LSMATS Opportunities</b>	There is potential to extend the RTPI on-street infrastructure within the L-SMA alongside the implementation of public transport improvements delivered by LSMATS.
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**3.4.2 IA-03 Marketing/ Information Campaigns**

<b>Marketing/Information Campaigns</b>	Information provision and appropriate marketing are important factors that can encourage people to use sustainable modes.	<b>Description of Measure</b>	<p>Transport for Ireland is the “single public transport brand” which the National Transport Authority has developed to promote and integrate public transport provision in Ireland.</p> <p>The Authority also delivers marketing campaigns and other customer engagement activities to promote, deliver and encourage sustainable transport use.</p>	<b>LSMATS Opportunities</b>	In delivering sustainable transport improvements, consideration should be given to branding, marketing, and advertising and using smart, creative, cost-efficient campaigns targeted at increasing and maintaining sustainable transport demand. Information campaigns should be an integral part of L-SMATS delivery.
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### 3.5 End to End Trip Facilities and Integration Measures

The End to End Trip Facilities and Integration Measures comprise of:

- I-01 Interchange Facilities
- I-02 Integrated Ticketing
- I-03 Public Transport Fares
- I-04 Bicycle Hire / Sharing Scheme
- I-05 Private Carpooling / Car Sharing Scheme (Lift Sharing)
- I-06 Public Car Sharing Schemes (Car Clubs)
- I-07 Park and Ride

#### 3.5.1 I-01 Interchange Facilities

<b>Interchange Facilities</b>	One of the features of a successful public transport network is how effectively and attractively the opportunities for interchange between various services and modes are presented.	<b>Description of Measure</b>	Effective interchange can significantly enhance the opportunity to use public transport to access a range of destinations. Key aspects of high-quality interchange include coordinated scheduling, comfortable and attractive waiting areas, clear and legible information, and minimised distances between connected services.	<b>LSMATS Opportunities</b>	During the period of the Strategy provision should be made for high quality passenger interchange points integrated with the revised transport networks. Interchange between the proposed radial and orbital bus services, and between bus services and rail, where identified, should be as seamless and attractive as possible.
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3.5.1 I-02 Integrated Ticketing

<p><b>Integrated Ticketing</b></p>	<p>Integrated ticketing and smartcard technology offers a convenient way to pay public transport fares. Smart ticketing allows for responsive fare structures to be implemented to simplify use and offer better value for money. At present, the Leap card offers significant discounts on cash fares and facilitates daily and weekly capping.</p>	<p><b>Description of Measure</b></p> <p>There are significant benefits to passengers should they switch to Leap for their travel including a 30% savings compared to paying with cash at present. In future, the Leap Card is likely to become part of an integrated Mobility As A Service (MaaS) platform that will enable integration with public transport, bicycle sharing systems (BSS) and car clubs and private hire services.</p>	<p><b>LSMATS Opportunities</b></p> <p>One of the goals of L-SMATS is to deliver an integrated transport system to allow people and goods to move efficiently throughout the L-SMA and to provide access with a variety of modes for people. Promotion of Leap (or future MaaS platforms) in Limerick will help to inform existing and potential passengers of the benefits of such a system.</p> <p>There are opportunities to extend the range of payment options and integrated ticketing measures over the lifetime of the Strategy including that of Go Car and the Cycle Hire Scheme as in Dublin. The development of Leap card products is undertaken on a national basis by the NTA.</p>
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3.5.1 I-03 Public Transport Fares

<p><b>Public Transport Fares</b></p> <p>To ensure that public transport fares are attractive and customer friendly, the broad principle for transit fares should include a system that is:</p> <ul style="list-style-type: none"> <li>▪ Easy to use and understand;</li> <li>▪ Regionally integrated;</li> <li>▪ Designed to provide price incentives for more frequent use; and</li> <li>▪ Affordably priced to make transit an attractive alternative to the private car.</li> </ul>	<p><b>Description of Measure</b></p> <p>Public transport faces several areas of competitive disadvantage relating to the price of travel: free parking (especially at workplaces) is the most significant. In the 2017 Fares Determination, the National Transport Authority made significant improvements to the attractiveness of Limerick’s public transport fares by:</p> <ul style="list-style-type: none"> <li>▪ Expansion of the Bus Éireann city fare area to better reflect the current movement of people and include new city suburbs and industrial areas;</li> <li>▪ Increase the Leap discount to 30% on both city and stage carriage bus services; and</li> <li>▪ Extending free travel on PSO subsidies public transport to young children up to the age of 5.</li> </ul>	<p><b>LSMATS Opportunities</b></p> <p>The ongoing improvements to public transport fares being implemented by the NTA should be continued within the lifetime of L-SMATS. A fares structure review should be undertaken to ensure that the L-SMATS networks are supported in a manner that encourages increased public transport use and provides for appropriate cost recovery.</p> <p>The development and implementation of a L-SMA-wide zone-based fare structure will be considered as part of the strategy. For example: Trips that involve the use of multiple public transport services should be considered as a single trip and the fare applied based on the zone to zone fare structure, not the number of public transport services used.</p>
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### 3.5.2 I-04 Bicycle Hire / Sharing Scheme

<p><b>Bike Sharing Scheme</b></p> <p>A public bicycle sharing scheme, such as Limerick Coke Zero Bikes, is a highly effective urban transport system and can have the added benefit of widening the catchment of public transport.</p>	<p><b>Description of Measure</b></p> <p>The Coke Zero Bike scheme launched in Limerick in 2014 and currently comprises of 23 stations and 215 bikes across the City Centre.</p>	<p><b>LSMATS Opportunities</b></p> <p>There may be potential for the expansion of the bicycle sharing scheme with a focus on the strategic cycle network included within L-SMATS and the high capacity public transport corridors.</p> <p>Other bicycle sharing-schemes (BSS) such as dockless bicycles should be considered in the short-term of the L-SMATS lifetime particularly in more peripheral areas that are unlikely to benefit from the Coke Zero Bike scheme.</p>
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**3.5.1 I-05 Private Carpooling / Car Sharing Scheme (Lift Sharing)**

<p><b>Carpooling</b></p>	<p>Carpooling for commuter trips to work and education can reduce traffic congestion and delivers benefits to the individual by way of travel savings. Commuter trips are often the most suitable to carpooling as they are undertaken most often and according to a routine pattern.</p>	<p><b>Description of Measure</b></p> <p>Carpooling is most effective when it is undertaken on a company-wide or office-wide/specific location basis. The National Transport Authority actively supports Car Sharing through the Smarter Travel Workplaces Programme.</p> <p>There is a benefit to employers through reduced overall parking requirements. At the Smarter Travel 2017 awards, Northern Trust (a private company based in Limerick) won the Car-Sharing and Workplace Co-Ordinator award due to their strong and imaginative branding, planning, execution and approach</p> <p>In 2018, Limerick Smarter Travel initiatives reduced car use by up to 8% across thirteen partnered companies and colleges.</p>	<p><b>LSMATS Opportunities</b></p> <p>There are obvious opportunities to build upon previous Smarter Travel work in the area particularly in strong L-SMA employment centres such as Limerick City Centre, Raheen, Dooradoyle, UL and Shannon Airport and industrial estates in the wider Shannon area.</p> <p>Major employers can incentivise Lift Sharing through initiatives such as priority parking for Carpooling staff and Guaranteed Ride Home schemes.</p>
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3.5.1 I-06 Public Car Sharing Schemes (Car Clubs)

<p><b>Car Sharing Schemes</b></p>	<p>Public car sharing is a model of car rental where people rent cars for short periods of time, often by the hour. They are important in urban areas in facilitating car-free or low-car developments. They are particularly attractive to customers who make only occasional use of a vehicle.</p>	<p><b>Description of Measure</b></p> <p>Car sharing schemes can reduce the number of cars on the road and free up land traditionally used for parking spaces. By supporting people who choose not to own a car, car sharing can encourage use of public transport, walking and cycling. Membership of such a scheme can be more cost effective than owning a private car</p> <p>Estimates by car club charity CarPlus (now Comouk) estimate that a car club typically removes at least 10 private cars. Vehicles provided by car clubs are often greener and more environmentally friendly than private cars.</p>	<p><b>LSMATS Opportunities</b></p> <p>Interventions that support the provision of car sharing schemes will be considered as part of L-SMATS such as reserving parking spaces for public car sharing schemes like GoCar and YukoCar. There are currently 7 dedicated car club spaces across Limerick City.</p> <p>A significant increase in the availability of car club vehicles and spaces across Limerick City and Metropolitan Town Centres. Is anticipated over the lifetime of the Strategy. These include consideration of recent innovations in the car club market including electric-vehicle based schemes, tie-in with bike sharing schemes, and ‘floating’ or one-way car club services - where the car club does not necessarily have to be returned to the same bay from which it was taken.</p>
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3.5.2 I-07 Park and Ride

<p><b>Park and Ride</b></p>	<p>Park and Ride involves the provision of high-capacity car parking facilities at designated public transport interchanges to provide onward access to the City Centre and other key destinations via high frequency public transport, walking or cycling.</p>	<p><b>Description of Measure</b></p> <p>Park and Ride as a key component of L-SMATS is a means of increasing the accessibility of the transport network to those that might not otherwise access the network through modes such as walking, cycling or public transport transfer.</p> <p>The location of Park and Ride sites is key to achieving the desired benefits of reducing private car journeys to the city centre - particularly commuter car parking.</p>	<p><b>LSMATS Opportunities</b></p> <p>Park and Ride sites will be proposed at appropriate locations on the periphery of Limerick City (and potentially Shannon) within the L-SMA to widen the catchment and maximise the use of the proposed public transport network.</p> <p>The provision of Park and Ride will provide the opportunity to reduce provision of long-stay commuter parking in the city centre and potentially free-up existing car parking areas for other uses.</p> <p>All strategic Park and Ride facilities will provide ancillary services including sheltered waiting areas, refreshments and RTP1 boards.</p> <p>It is intended that all Park and Ride facilities will be accessible by quality walking, cycling and public transit to ensure that ‘the last mile’ trips can be taken by sustainable transport.</p>
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### 3.6 Strategic Traffic Demand Management Strategies

The Strategic Traffic Demand Management Strategies comprise:

- STDM-01 Road User Charging
- STDM-02 HGV Management Strategies
- STDM-03 Strategic Road Corridor Demand Management Strategies

#### 3.6.1 STDM-01 Road User Charging

<b>Road User Charging</b>	<p>There can be different purposes and benefits of road user charging in demand management terms including:</p> <ul style="list-style-type: none"> <li>■ Prioritising strategic traffic – for example the Dublin Port Tunnel is free for HGV’s and tolled for private cars;</li> <li>■ To influence route choice; and</li> <li>■ To deter the use of the private car in specific areas or at specific times of the day – for example urban area congestion charging schemes.</li> </ul>	<b>Description of Measure</b>	<p>Pricing measures to manage road use include:</p> <ul style="list-style-type: none"> <li>■ Fixed location tolling - commonly associated with the delivery of major infrastructure such as a bridge or tunnel;</li> <li>■ Road based tolling – usually associated with sections of motorway;</li> <li>■ Road user charging variations by time of day;</li> <li>■ Distance based tolling; and</li> <li>■ Cordon based road user charging, e.g. city centre congestion charging.</li> </ul>	<b>LSMATS Opportunities</b>	<p>As it currently stands, L-SMATS does not include any specific measures for road user charging.</p> <p>However, over the duration of the Strategy, subject to changes in national policy, road user charging approaches may be considered if deemed appropriate. These may depend upon a number of factors that could include;</p> <ul style="list-style-type: none"> <li>- A mechanism to provide a revenue stream for sustainable transport measures;</li> <li>- A measure to reduce the environmental impact of road-based travel;</li> <li>- Improve local road traffic conditions; and</li> <li>- To ensure the successful delivery of alternative modes.</li> </ul>
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### 3.6.2 STDM-02 HGV Management Strategies

<p><b>HGV Management Strategies</b></p> <p>Heavy Good Vehicles (HGVs) and freight represent a key economic driver moving goods throughout the LSMA and nationwide.</p> <p>However, HGVs due to their size can have significant impacts on the safety of pedestrian and cyclists and traffic operations, in particular within urban environments and hence need to be carefully managed.</p>	<p><b>Description of Measure</b></p> <p>HGV management techniques typically involve the removal of HGV routes from where they are least appropriate (such as busy city centres and neighbourhoods) to more appropriate routes including the strategic road network.</p> <p>Many cities including Dublin, restrict the movement of HGVs to routes outside of the city centre including the purpose-built, Dublin Port Tunnel. Instead, there are designated 'Lorry Routes' that HGV drivers must stick to. These can be on a permanent basis or a time-limited basis to avoid peak times when pedestrians, cyclists and public transport users are likely to be using the route.</p>	<p><b>LSMATS Opportunities</b></p> <p>A potential future restriction of HGVs from Limerick City Centre will improve the environment for pedestrians and cyclists and improve safety, while the regulation of delivery times can improve traffic operations.</p> <p>HGV management measures could potentially include:</p> <ul style="list-style-type: none"> <li>▪ HGV restrictions within Limerick City Centre – particularly for lorries where the city centre is not the desired destination.</li> <li>▪ Mobility management planning at key freight locations such as the Port of Foynes and Shannon Airport, to reduce the HGV impact during peak periods.</li> <li>▪ Delivery restrictions within urban areas to reduce HGV impact on urban centres during peak periods.</li> </ul> <p>Where road user charging on strategic traffic routes such as the Shannon Tunnel is considered appropriate, HGVs should not be charged, in a manner similar to the Dublin Port Tunnel.</p>
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### 3.6.3 STDM-03 Strategic Road Corridor Demand Management Strategies

<p><b>Strategic Road Corridor DMS</b></p>	<p>Corridor-based demand management strategies can be effective in ensuring the efficient operation of the strategic road network.</p>	<p><b>Description of Measure</b></p> <p>Corridor-based strategies can combine different demand management approaches and generally aim to make the best use of Intelligent Transport Systems such as:</p> <ul style="list-style-type: none"> <li>▪ Variable Speed Limits;</li> <li>▪ Incident Detection Systems;</li> <li>▪ Variable Message Signs; and</li> <li>▪ Ramp Metering on National Routes.</li> </ul> <p>The appropriateness of each measure depends greatly on the context of the route and what the desired outcome is. For example, a National Road may be likely to have more of a movement function than an inner city street and the above measures may be appropriate to improve the safety of the corridor.</p>	<p><b>LSMATS Opportunities</b></p> <p>Strategic Road Demand Management Studies may be undertaken and implemented as part of L-SMATS along appropriate corridors identified through traffic monitoring over the lifetime of the Strategy.</p>
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### 3.7 Technology for Sustainable Transport

The Technology for Sustainable Transport supporting measures comprise:

- TST-01 Mobility as a Service (MaaS) / Transport as a Service (TaaS).
- TST-02 Smarter Mobility
- TST-03 Dynamic Parking Systems or Virtual Loading Bay Systems
- TST-04 Autonomous Vehicles

#### 3.7.1 TST-01 Mobility as a Service

<b>Mobility as a Service</b>	<p>Mobility as a Service (MaaS) is sometimes referred to as Access-Not-Ownership or Transport as a Service.</p> <p>MaaS is a concept usually applied as an alternative to owning a private car to support urban living.</p>	<b>Description of Measure</b>	<p>MaaS typically involves the use of technology to support a mobility system encompassing public transport, cycle hire schemes, car clubs and taxis and mobility hubs.</p> <p>MaaS systems can also include smartphone apps that provide accurate distances, times and routes for walking and cycling trips and up-to-date Real Time Information and Countdown for public transit (such as CityMapper).</p> <p>Transport services can typically be paid on a subscription basis or on a Pay-As-You-Go basis like the Leap card.</p>	<b>LSMATS Opportunities</b>	<p>The opportunity presented by MaaS will support the use of reduced-parking, car clubs, ride-sharing, public transport and bike sharing schemes, particularly in denser, more compact areas where such measures are more likely to be successful such as Limerick City and Metropolitan town centres.</p> <p>As MaaS -based technology in Ireland improves, there is also the opportunity to incorporate this in large workplaces such as local government and lifescience companies across the L-SMA.</p> <p>MaaS will also be a useful tool in land use planning to support car-free or low-car developments near public transport hubs and provide access to a car without owning one when needed.</p>
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### 3.7.1 TST-02 Intelligent Transport Systems (ITS)

<p><b>Smarter Mobility</b></p>	<p>Intelligent Transport Systems (ITS) represents the evolution of traffic management from a static unresponsive activity to a dynamic responsive activity that can adapt to the ever-changing traffic conditions as they are presented in real time.</p> <p>This is facilitated through the rapid collation and analysis of performance data which allows for swift informed decision making.</p>	<p><b>Description of Measure</b></p> <p>Smart Mobility is supported by the application of Intelligent Transport Systems (ITS). Measures could include:</p> <ul style="list-style-type: none"> <li>▪ Expanding the Urban Traffic Control;</li> <li>▪ Application of Variable Speed Limits;</li> <li>▪ Installation of a Bus Priority Signalling System;</li> <li>▪ Cycle head start signals at junctions.</li> <li>▪ Use of dynamic parking systems (see below) ; and</li> <li>▪ Smart delivery and servicing systems including pre-booking of delivery bays.</li> </ul>	<p><b>LSMATS Opportunities</b></p> <p>The application of Intelligent Transport Systems (ITS) to the transport network in Limerick will increase the efficiency of its operation.</p> <p>The application of Bus Priority (and/or cycle head start) traffic signals may be used to provide sustainable transport priority and safety through known bottlenecks across arterial routes and link roads in the L-SMA region.</p> <p>These electronic-based or SMART systems can be investigated further during the lifetime of the Strategy as the technology progresses</p>
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### 3.7.2 TST-03 Dynamic Parking Systems or Virtual Loading Bay Systems

<p><b>Dynamic Parking Systems or Virtual Loading Bay Systems</b></p> <p>To support a more efficient use of kerbside space, urban areas in Europe have begun trialling smart technology including dynamic on-street parking models and virtual loading bays, recouping costs by charging for vehicles to use this service.</p>	<p><b>Description of Measure</b></p> <p>Dynamic Parking Systems help users to find, purchase and book available parking spaces in the nearby area with the use of an app. This reduces congestion by eliminating the need to search for available spaces and in effect, acts as a demand management technique as spaces must be paid for.</p> <p>Many car club operators, such as the Autolib system in Paris, operate on this basis by booking ahead for a Electric Vehicle charging point enabled parking space.</p> <p>In a similar vein, Virtual Loading Bay systems allow kerb space to be utilised in areas where other traffic restrictions are in place , typically off-peak times where impact on congestion is less pronounced. Search traffic and emisisions are reduced.</p>	<p><b>LSMATS Opportunities</b></p> <p>The opportunities for the L-SMA stem from the potential to reduce the emisisions from vehicles but also to minimise conflict for competing demands for limited road space and to help to reduce search traffic and local congestion.</p> <p>These electronic-based systems can be investigated further during the lifetime of the Strategy as the technology progresses.</p>
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**3.7.3 TST-04 Autonomous Vehicles**

<p><b>Autonomous Vehicles</b></p> <p>Autonomous Vehicles (AVs) or driverless cars, use technology to reduce or even to eliminate the need of a human driver.</p> <p>This technology could potentially improve the safety of overall traffic conditions and, if regulated appropriately, could result in a more efficient vehicle movement on roads and highways.</p>	<p><b>Description of Measure</b></p> <p>AVs may potentially provide an opportunity to improve safety, with cars programmed to obey traffic regulations and speed limits and geofencing preventing them from entering certain spaces.</p> <p>Driverless cars could potentially free up kerbside space as the demand for on-street residential and long stay parking is no longer needed.</p>	<p><b>LSMATS Opportunities</b></p> <p>Though outside of the scope of the draft Strategy, both the NTA and Local Authorities will need to assess and monitor benefits or otherwise, offered by shared use AVs that are likely to present themselves during the Strategy timeframe.</p> <p>However, autonomous vehicles are not considered as a substitute for walking, cycling and high-capacity public transport. There are a number of outstanding legislative, legal and technical issues in relation to autonomous vehicles and their impact on active travel and public transport</p> <p>Future assessment of the benefits (or otherwise) will need to measure their relevance against over-arching objectives to promote more active travel, provide equitable transport and to reduce congestion, pollution and street clutter.</p>
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