A LIGHT RAIL METRO FOR MALTA

TOWARDS A TRULY MULTI-MODAL TRANSPORT SYSTEM

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This document proposes a radical shift that will make that happen.

We are proposing a shift to Light Rail Metro, a public transport system that ensures fast movement of large numbers of people in little time, and on time. It will be efficient and reliable, and will become the transport mode of choice, shifting our dependence on private cars to public transport. In parallel, we are also proposing a shift to multi-modal transport, where different modes of transport connect easily with each other to make it even easier for people to move around.

We believe that the shift to the Light Rail Metro will lead to a radical change in the way we move around in our country and mark a quantum leap forward towards a better quality of life.

We are under no illusion that this project is a quick-fix solution. It will not happen overnight. But it is a realistic option that can be implemented in a reasonable period of time, and that is financially feasible. Most importantly, it is the first, truly long-term vision to attack and overcome the gridlock that is stifling our mobility.

Metro is an investment in our future and that of our children. This will be one of the main priorities of a new Nationalist Government.

We will immediately embark on building this alternative public transport system, delivering the first phase in our first mandate.

Let us get our mobility back. And let us do it together.

Simon Busuttil
Leader of the Nationalist Party
Ours is a beautiful country. We boast a remarkably rich and dense network of magnificent walled towns, quiet rural villages, areas of natural beauty, bustling shopping districts and business centres, seaside localities and residential zones of every type.

Getting from one of these areas to another, however, has all too often become a lengthy and frustrating endeavour. How many meetings begin late with an apology from someone who was held up in traffic? How many appointments missed, lectures delayed, plans derailed, because it simply took too long for someone to get there?

Our transport system is letting us down, and it is costing us dearly in many ways. There has been insufficient planning and investment over many years, and urgent action is clearly needed. We are not currently getting that action, and valuable time is being wasted as the problem gets worse with every day that passes.

With no illusions about this current starting point, we need to have the courage to reimagine transport in Malta. We believe that a future transport system is possible for our country, one where the private car is only one of a range of attractive alternatives for getting from one place to another; where cycling and walking have been properly catered for and made safe and more pleasant; where people use public transport because it is quicker and more efficient, perhaps because it allows them to chat or catch up with the news on their way to work; where our public squares are no longer chaotic, grimy car parks but once again places of gathering and community.

This can only become a reality if we get to work. Our approach cannot be only based on fines, bans and prohibitions – it must be about creating real options and alternatives for people.

We will be bold in conception, smart in our planning and resource allocation, and clinical in our implementation. This document aims to complement the good technical work that has already been done in the Transport Master Plan, and to build on our document ‘Reducing Traffic Congestion - Short Term Measures’. We propose the introduction of a new mode of transport for the islands – a Light Rail Metro service that is clean, green, quiet and fast, and that can rapidly carry large numbers of people comfortably along heavily used routes.

We cannot afford any more mistakes. We need to plan this next phase in Malta’s transport system not in terms of the electoral cycle, but of the needs of our own and future generations. We will implement a whole raft of short and medium term measures within the first legislature to take the islands towards a truly multimodal transport system.

We look forward to building this future together.

Marthese Portelli
Shadow Minister for Transport
A BETTER QUALITY OF LIFE THROUGH IMPROVED ACCESSIBILITY

The recent Nationalist Party policy document “A Better Quality of Life for You” puts forward a raft of measures and actions with one primary aim: the improvement of the quality of life of each and every citizen through the protection and enhancement of our natural and built environment.

The document identified the need to better plan and manage our mobility needs as an integral part of our vision. Transport is now widely recognised as one of the major challenges facing the country in the twenty-first century. Rapid development and population growth without adequate planning and investment mean that traveling within Malta and Gozo has become a frustrating, time-consuming and costly affair. Our roads have become clogged, our air smells of exhaust fumes, and many of our urban centres are simply overwhelmed by traffic, degraded to the point that people have begun to avoid them instead of seeking them out.

In light of all this, promoting ‘livability’ should be a fundamental principle that guides our urban and transport planning. We are committed to a long-term plan for a truly multi-modal transport system that will address these problems.

Multi-modality is the key to regaining control of our transport system and a high quality public transport infrastructure is a key enabler of the changes we need to make. In addition to an enhanced ability to attract more people, and therefore more commerce, locations
that are serviced by high quality public transport infrastructure have the potential to support sustainable urban development. Urban plans and their provisions for public transport must be at the forefront of any effort to increase the quality of life of residents and visitors.

We must create interconnected networks of transport modes that together allow access and a variety of options to different users. We do not start from scratch: we have a rich road network, and a bus system that, while often under-utilised, includes a dense network of bus stops. These must be supplemented by improved provision for cyclists and pedestrians, enhanced ferry links and a Light Rail Metro service along heavily used routes.

Building on good work that has already been done, this document describes our vision for an efficient and clean multi-modal transport system that will increase accessibility, reduce social exclusion, encourage modal shift, improve environmental and public health, and promote economic development through the creation of more attractive urban environments.

The 1992 Structure Plan for the Maltese Islands recognised and encouraged the need to integrate land use and transport planning.

For example, the location of shopping activities should not exclude those without access to cars, and access to shops should be encouraged through a mix of modes (walking, cycling, private car and bus) to ensure equity. The planning of such locations and the provision of high quality transport infrastructures to support them are therefore critical. The same goes for educational activities, employment, leisure and so on.

Formal, modern planning in Malta was instituted in the early 90s with the setting up of the then Planning Authority. Development planning is today guided by the wholly inadequate Strategic Plan for Environment and Development (SPED) approved in 2015, which fails to establish any form of long-term vision for the country and which also fails to give any detailed or meaningful direction to land-based planning. Simply put, the SPED is a haphazard, self-serving and short-sighted approach to development and environmental protection, and is far too vague in terms of both principles and vision.

Calls for the revision of the Local Plans, which are outdated and which have in many instances been superseded, have remained unheeded for a number of years, with the result that today they are neither relevant nor effective in controlling, or even guiding, planning and development. In addition, the lax application of schemes such as Commuted Parking Payment Scheme (CPPS) and Urban Improvement Fund (UIF) hindered the securing of set objectives, with regards to a holistic parking strategy. This has led to an erosion of the effectiveness of long-term spatial planning and, as a consequence, of transport planning.

2.1 IDENTIFYING MAIN ACTIVITY ZONES

The key to successful transport planning is the identification of current and planned activity zones and the characteristics of the population as it interacts with these activities.

The Transport Strategy and Master Plan outlines a long-term approach to national transport planning,
and this document complements this plan by providing proposals for a Light Rail Metro service meant to support further modal shift through the provision of effective public transport infrastructure.

In many ways Malta functions like a city-state, with specific land uses grouped in clusters, for example industrial estates (and other employment nodes), centralised essential services such as hospital and university, and the dispersed location of shopping and entertainment clusters (e.g. primary town centres, shopping centres, recreational centres). Each town centre within the urban agglomeration provides for a variable level of services in the form of shops, administrative offices, banks and so on.

All these activities and areas, wherever clustered, require effective transport infrastructure for their sustainability. In town centres, safe and well-designed pedestrian walkways encourage residents to walk to shops which are close by. Public transport infrastructure which links main shopping centres to main line services and town centres allows for a decreased dependence on private cars, while at the same time increasing inclusion for those who do not have access to the car.

Malta has a number of primary town centres which over the years became dominant in their ability to attract a high density of shops and activities, and in the number of services they offer. These include Valletta, Sliema, Hamrun, Mosta, Birkirkara, Naxxar, Paola, Fgura and Rabat in Gozo, and are sites that accommodate both commercial and residential functions. Strengthening the sustainability and success of these town centres ensures that a high number of inhabitants have access to basic services within a relatively close distance, usually walking distance, from their home.

In addition to these centres there are employment centres such as the above-mentioned primary town centres, industrial estates and areas earmarked for high-density employment activities (e.g. Mrieħel). Linking these areas to high density residence centres in the most efficient way must be a central objective of our transport planning.

### 2.2 CURRENT TRANSPORT SYSTEMS

The current transport system is based on a complex and dense system of roads (over 2,400km, one of the densest networks in the world with 762km of roads in every 100km² of land area) for private car traffic and commercial vehicles, a network of scheduled public buses, non-scheduled private buses and minibuses, taxis, horse-drawn carriages, sea ferries in the Marsamxett and Grand Harbour areas, and a very limited cycle network, primarily outside the urban area. A limited and poor quality network of walkways and pedestrian crossings support those performing their journeys on foot.

The road network around the urban area is heavily congested, and this congestion affects also the current non-segregated public transport system that subsequently suffers from delays, with the resultant effects on reliability and quality of service.

The situation is also critical in town and village centres which are plagued by parked cars along streets either too narrow to accommodate both traffic and parking, or too wide and poorly designed. Problems associated

with road safety and accessibility of our village streets are all too common now, with walkways that are either non-existent, too narrow, sub-standard, badly maintained or ill-designed; such walkways often have the effect of pushing the pedestrian off the street whilst attempting to achieve unfettered, and often unsafe, passage for motor vehicles.

This growth in car dependence has led to increased air and noise pollution, a higher number of accidents and road deaths, and unhealthy urban environments, with negative consequences on human health (e.g. obesity, mental health and air pollution related concerns).

The impacts of our current transport system have been documented in various studies conducted by the University of Malta and its academics from the departments of Geography, Economics, Health and Medicine, Architecture and the Built Environment.

A call for policies and measures to encourage modal shift towards healthier and more efficient transport systems stems from the 2004 White Paper on Sustainable Land Transport, the 2008 Public Transport policy document and the more recent Transport Master Plan. Despite these, there have only been a few measures that have had a significant and documented impact on modal shift². The Floriana Park and Ride, the Controlled Vehicular Access System in Valletta and pedestrianisation efforts in Valletta have been partially undermined by ineffective decisions on land use and transport.

2.3 IDENTIFYING THE GAPS
The urgent need to reduce car dependence and encourage modal shift requires a set of proposals to manage demand and to provide an effective public transport infrastructure.

Gaps in our transport systems are attributed to:
- the lack of proper management and enforcement on the road network;
- poor design of our urban environments pushing people to drive;
- the lack of a holistic parking strategy; and
- the lack of effective public transport, which suffers from lack of priority over the car.

Effective public transport is a key enabler of this change. This document identifies the introduction of a Light Rail Metro service in the islands as an effective measure to reduce dependence on the motor car for medium to long distance travel.

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The problem of increasing traffic and congestion and limited road space in cities is not a new one and since the 1980s several Western European countries have invested in light rail infrastructure because of its potential for sustainable mobility.

France has been particularly successful at implementing such systems (e.g. Nantes in 1985 and Grenoble in 1987). The so-called Grenoble effect became popular because it included the revitalisation of city centres with pedestrianised areas and aesthetic streetscapes, thus linking future urban development and the concept of livability in cities. Light rail technology is today closely associated with making cities more livable and sustainable.

The success of French, and to a certain extent German cities, has been linked to a policy that not only aimed at introducing light rail but also at spurring urban renewal – the goal of which is to improve the quality of urban space. Strasbourg saw a significant increase in pedestrian flows, and in Montpellier 50% of public transport users shifted to light rail within just one year of opening.

Olesen (2014) found that the success or failure of light rail is highly dependent on factors such as policy packaging, integration with existing networks, and frequency of integration in urban areas. All successful systems show a high integration with existing networks, and with the central location of stops and junctions in densely populated areas from which demand may be supported. All successful systems were also part of wider policies that promoted the light rail alternative and achieved the proper organisation and integration of public transport and other transport services.

The proposed Light Rail Metro service for Malta is seen as an important instrument for the renewal and revitalisation of spatial and social structures. This link between transport and spatial development means that important investments generating traffic should only be made if efficient public transport is provided.

The success of light rail in many European cities is linked to policies that integrate urban land use and transport under one goal, that of urban sustainability.

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3.1 SYSTEM CHARACTERISTICS
Malta has an extensive public bus network (2,600km), and a very high density of bus stop infrastructure (over 3,000 bus stops), which make the service geographically very accessible. This is a great opportunity and a good foundation to extend the level of service towards improved access to bus stops (safe walkways and easy access), improved bus stop facilities (only 22% of bus stops have shelter and only 4.5% of bus stops have real time information), improved timing and punctuality and subsequently improved reliability. The services carried 19,000 passengers during peak hour in 2014.

The proposal for the Light Rail Metro service builds on this foundation and aims to supplement, support and, along some routes of high demand eventually replace some bus services. Areas with current and projected high densities of population or industrial/commercial activities would benefit from a segregated, fast and efficient public transport service which reduces travel time and increases accessibility.

After considering various options, a Light Rail Metro service operating predominantly at street level, but going underground wherever necessary, has been identified as the optimal system to provide this service based on a number of considerations:

- Light rail is cleaner (no exhaust fumes) and quieter than buses or cars.
- It is less expensive to implement than other rail systems and therefore the investment is more manageable.
- It integrates well with urban form and has been shown to stimulate urban regeneration.
- Latest technologies allow for wireless systems to be installed in part or all of the network.

Building on the interface between our public transport network and major land uses and activities, the light rail system would be developed to link major centres. It would have the following characteristics:

- A segregated track, in which rails are laid within the road surface. The track may be crossed by pedestrians and other road users but is not normally shared with other road vehicles.
- The carriages will provide low-floor access.
- The proposed carriages vary in length and width configurations, the largest being typically 20m long and 2.5m wide.
- The Malta/Gozo route would pass through the proposed 12 km Malta/Gozo sub-seabed tunnel.

The current public transport system will complement the Metro system, and through more dedicated corridors, will be a vital supporting infrastructure.

3.2 LINES
The Metro should cater for all major urban centres and link Malta to Gozo. It is recognised, however, that this is a long term vision, and that in order to achieve financial and environmental sustainability, it must be phased in progressively so that it can cater for the highest expected demands in the near future, while subsequently generating new demand in line with our vision of economic and land use development. The following lines have been identified.

**LINE 1: VALLETTA – MSIDA – SLIEMA – ST JULIAN’S**
This corridor has the highest density of public transport users in the public transport system. This is primarily due to a very high population density, thriving shopping and employment centres and a high density of tourist accommodation and services. This corridor records the highest levels of interactions and the highest share of public transport trips.
It covers an approximate length of 14km linking Valletta to the shopping area of Sliema, and could extend to the Park and Ride facilities in Pembroke. This service would benefit residents, shoppers, commuters to and from the capital city, tourists and visitors.

**LINE 2: VALLETTA – BIRKIRKARA – TA’ QALI – MOSTA – NAXXAR**

This corridor covers the areas with high residential potential and links them to Valletta. It covers an extensive route of 26km and in itself will require phasing. There is the potential to link it to established shopping centres, public services (e.g. health centre in Mosta) and potentially to a Park and Ride at Ta’ Qali which could service a substantial amount of traffic from the North.


This ambitious route seeks to address some of the concerns and connections required in the South. The vital connection to the airport, in turn linking all other towns serviced by the system, through potentially one interchange in Valletta, is a critical infrastructural element. The connection to primary town centres in the South, such as Paola and Fgura, and to growing residential areas such as Żabbar and Marsascala, will greatly strengthen the mobility options and opportunities for people in these areas. The National Household Travel Survey of 2010 already shows a strong movement between these towns in the South Harbour and Southern Regions of the island.

The route would be 25km long and could also be potentially phased. The strengths of this route include the potential for regeneration of both Fgura and Paola commercial centres, increase in economic returns for the commercial community and, on the other hand, increased accessibility for the residential populations of these areas.

**LINE 4: ST JULIAN’S – ĊIRKEWWA – MĠARR (GOZO) – VICTORIA (GOZO)**

This final phase is probably the most ambitious. It would not only connect the populations of the North of the island to the central business districts, but would physically connect the territories of the islands of Malta and Gozo for the first time. The route is 38km long and includes the 12km tunnel between Malta and Gozo as currently proposed. Needless to say, if the Light Rail Metro is to connect Malta and Gozo, it would need to use the same tunnel infrastructure.

Although this is the most difficult of routes to design and cost, the plans for extending the national infrastructure to Gozo has a social and economic dimension that cannot be ignored. Studies will determine the optimal solution for connecting Gozo to this network and to the significant opportunities related to greater connectivity and accessibility for the two islands.

### 3.3 COST

A preliminary costing of the project was undertaken at this early stage of visioning of the proposed Metro service. It is evident that more studies are required to fulfil all obligations related to planning permission including environmental impact assessment and strategic environmental assessment, cost-benefit analysis and detailed designs and phasing.

Based on these service characteristics an estimate of the cost was established. See Figure 1.

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**FIGURE 1. CONSTRUCTION AND OPERATIONAL COST PER PHASE**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Construction Cost (in millions)</th>
<th>Annual Operational Cost* (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1: Valletta – Msida – Sliema – St Julian’s</td>
<td>€425</td>
<td>€10</td>
</tr>
<tr>
<td>Line 2: Valletta – Birkirkara – Ta’ Qali – Mosta – Naxxar</td>
<td>€625</td>
<td>€14</td>
</tr>
<tr>
<td>Line 3: Valletta – Paola – Airport – Fgura – Cottonerma – Zabbar – Marsascala</td>
<td>€595</td>
<td>€10</td>
</tr>
<tr>
<td>Line 4: St Julian’s – Ċirkewwa – Mġarr (Gozo) – Victoria (Gozo)</td>
<td>€700*</td>
<td>€22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>€2,345</strong></td>
<td><strong>€56</strong></td>
</tr>
</tbody>
</table>

* excluding depreciation ** excluding €300 million for the Malta-Gozo tunnel
Through a desktop exercise, using figures from established operations across Europe, we were able to estimate an approximate cost of the proposed system. Our analysis indicates that the costs would amount to €2.3 billion, excluding the cost of the Malta-Gozo tunnel, and are based on the following characteristics:

- Route lengths as described in Section 3.2
- Operating hours between 0600-0000 every day
- Frequency varying from 5 minutes in peak hour on the Valletta – Msida – Sliema – St Julian’s route, to 15 minutes on the other routes during peak and off-peak times
- Varying speeds depending on the number of stops envisaged
- A range of carriages for each route.

A full cost-benefit analysis of the various phases will determine the true costs of the proposed Light Rail Metro service in terms of the above-mentioned costs and the benefits accrued through improved accessibility, reduced congestion, economic growth, better quality of life and improved health.

### 3.4 FINANCING OF PROPOSED INFRASTRUCTURE

A portfolio of financial instruments are being evaluated as potential sources of financing for the proposed €2.3 billion capital expenditure. The Public-Private-Partnership model has been flagged as a potential vehicle to implement the proposed vision. The tracks and the related road infrastructure are considered to be public infrastructure, having the two important characteristics of non-rivalry and non-exclusivity, as a clear manifestation of public goods. As a matter of fact, it is estimated that close to 90% of the proposed investment will be financed by financial instruments rendered available to the State, thanks to its hard-earned reality of being a member state of the European Union. A fully-fledged Cost-Benefit Analysis will be prepared by the Maltese authorities to seek potential EU funding from the European Union, namely via the Cohesion Policy (2014-2020) and TEN-T funding mechanisms.

EU funding will be employed as part of a holistic effort to improve mobility in Malta, connectivity with the airport, and therefore in mitigating Malta’s prime natural barrier of being an island state. Furthermore, preferential facilities will be sought from other European and local agencies, such as the European Investment Bank and the Malta Development Bank, respectively.

Private sector investment will be sought to finance approximately 10% of the proposed capital expenditure over time. The investment will be in acquiring the moving vehicles of the proposed system and in constructing the Central Depot, where the operator will be expected to undertake the necessary maintenance. The same infrastructure will be required to shelter the vehicles when the latter are not in operation, especially during the night.
The potential of light rail to bring about regeneration and additional benefits linked to livability further support the case for the development of the system. And even though they are much harder to estimate, the expected financial, social and environmental effects of such projects influence the decisions that need to be taken as to whether to introduce them.

Below is a preliminary consideration of some of the effects that the introduction of such a system is likely to have.

4.1 ECONOMIC

The 2015 study conducted by the Institute for Climate Change and Sustainable Development at the University of Malta reported a total of €274 million in 2012 in external costs coming from our transport system which is predominantly dependent on car travel. The study looked at the cost of congestion (€117.9 million), accidents (€83.9 million), air and noise pollution (€25.3 million) and climate change adaptation (€46.8 million). This cost amounts to 4% of Malta’s GDP. The report goes on to predict the growth in external costs to €317 million by 2020 and €322 million by 2030. This is a considerable burden on the economy.

The study also looked at the implications of measures that could begin to reverse this dependence. The most significant measures were related to the improvement in public transport services and a 20% modal shift from the car. This would see costs decrease to €187.8 million in 2020 and €189.5 million in 2030. This is a significant decrease in costs should an effective public transport system, such as Metro, be implemented.

4.2 SOCIAL

The social implications on increased accessibility by public transport are primarily related to:
- reduced traffic congestion and significant recovery of time otherwise wasted in traffic congestion;
- reduced car dependence and increased mobility for non-motorists;
- increased social inclusion and access to opportunity, including time for family and leisure;
- more active mobility (walking and cycling);
- an infrastructure able to cope with future challenges (e.g. ageing population and vulnerable road users); and
- more convivial societies, increased social capital and better quality of life.

4.3 HEALTH

In 2008, 64.3% of the adult population in Malta was classified as overweight, and 28.8% as obese.

The situation is even more critical among young people, and according to the World Health Organisation, Malta has been recording the highest levels of obesity among children since 2002.

One significant contributor to obesity is car dependence, even for short distances. Research also shows that children that walk to school are less likely to suffer from mental health problems (depression, aggression/hostility, psychosomatic symptoms) and anxiety. Efforts to encourage active travel can only be made if infrastructure is upgraded and attractive alternatives are offered.

A 2015 report from the European Environment Agency quantified the impact of air pollution on health. In Malta over 220 premature deaths were attributed to air pollution in 2012 alone. The economic cost of such deaths amounts to €550 million, or the equivalent of 8% of the GDP. These figures are projected to increase if action is not taken to reduce harmful emissions in our cities.

In addition to this, Eurostat reported that the share of people in Malta who report being exposed to pollution is more than twice the EU average, with more than 40% of the population complaining about air quality compared to the European average of 15%. In 2011, about 20% of the EU-28 population reported perceived exposure to noise pollution, while the corresponding figure for Malta was as high as 30%.

One of Malta’s top contributors to air pollution is traffic. Whilst efforts have been undertaken in the energy sector to reduce air pollution, very little has been done to curtail the emissions from cars. The health impacts of Particulate Matter (fine dust), Nitrogen Oxides (NOx), Sulphur Dioxide (SO₂), Volatile Organic Compounds (VOC), Carbon Monoxide (CO), and Total Hydrocarbons (THC) are well documented in the medical literature. Studies show that the economic cost of air and noise pollution in 2012 from passenger cars and commercial vehicles amounted to over €25 million.

It is therefore clear that any efforts to increase mobility options and reduce the current dependence on car traffic will significantly benefit our health.

### 4.4 Environment

Research tells us that there are strong links between transport, health and environment. Whilst we have seen some of the implications of improving public transport and reducing car use on health, it is also significant to appreciate the burden of transport on environmental health.

Three main considerations with respect to the environment are:

- climate change and our obligations to contribute to its mitigation and adaption;
- land resources and landscape protection; and
- the quality of the environment in our urban areas.

#### 4.4.1 Climate Change

Greenhouse gas emissions in Malta have increased by over 57% since 1990, mainly as a direct result of the increase in traffic. Levels of particulate matter (PM10) have been exceeded since they started being recorded in 2004. It is recognised that the major sources of PM10 in Malta are the construction industry, power generation and transport.

Malta was one of the first EU Member Countries to ratify the Paris Treaty, which obliges Member States to reduce toxic gas emissions by 40% by the year 2030 as compared to emissions in 1990, and to

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reduce these further by between 80% and 90% by mid-century. Unfortunately, however, Malta is the only EU Member State which is not on track to achieve its targets in all three areas of the EU's Climate and Energy 2020 directive, namely on greenhouse gas emission reductions, renewables and energy efficiency, as reported in the 2016 edition of the European Environment Agency (EEA) Trends and Projections in Europe report. It is the first time ever that a Member State has fallen behind in all three areas of analysis. This is unacceptable.

It should also be noted that preliminary studies published by the University of Malta show worrying trends with regard to infrastructure security during climate change related extreme weather events, and in the likely scenario that there is a rise in sea level. Over-reliance on the car is not sustainable, and strategically planned alternative infrastructures will reduce potential disruption and improve the resilience of our transport systems

A policy towards shifting the transport system from an overly car-dependent one to one that is supported by an effective public transport system contributes not only to a reduction in CO₂ emissions, but sees Malta adapting to climate change impacts by designing systems that are less prone to potential disruption and more resilient in the face of increasing risk and environmental change.

4.4.2 LAND RESOURCES AND LANDSCAPE PROTECTION

Malta has limited land and space resources. The protection of natural landscapes is fundamental for the well-being of its present and future inhabitants. There is much debate about protecting the Outside the Development Zones (ODZ) from further development, but very little appreciation of the impact on land resources of increasing the capacity (widening) of our roads.

Complex junctions like the ones being implemented in Kappara and Marsa take up substantial amounts of land. Whilst for some junctions this is necessary to remove bottlenecks, better land use planning, provision of effective public transport and the provision of infrastructure for active walking can reduce the need for further road infrastructure and the loss of further land.

4.4.3 QUALITY OF THE ENVIRONMENT IN OUR URBAN AREAS

Another often-neglected impact of transport on land resources is the use of open spaces within the urban areas. These include roads, public gardens and off-street parking areas. The landscapes of our urban environments are different depending on the time and context within which they were built. So by comparison, a town or village core was built to support primarily walking with narrow sinuous roads all leading to the main church square. The church square therefore provided an important public open space for community development. Today these are primarily car parking areas with little or no space for people. This is different to dense town centres such as Hamrun and Sliema with very little open space, and even more different to the newer areas built with wide roads to accommodate first and foremost the car.

One commonality between these areas is that nowadays we hardly see any green or walkable spaces. Even in towns such as Santa Luċija where planners designated open spaces in between buildings primarily for recreation, these have been turned into car parking areas. In Attard, roads were designed wider to accommodate both parking and traffic flow (and speed).

These various practices have contributed to the “uglification” of our urban environments and landscapes.

A re-conceptualisation of the role and purpose of the street and open spaces, linked to efficient and reliable public transport and active travel provides an opportunity to give people back safe, healthy environments based on increased accessibility from where they live to where they want to go.

In addition to the short-term measures already published by the Nationalist Party on Reducing Traffic Congestion in 2016, this section identifies critical infrastructure and additional measures to support the implementation of the Light Rail Metro.

5.1 Supporting Infrastructure: The Concept of Multi-modality

In order to achieve the aim of reducing car dependence and encourage a shift from the private car a number of coordinated measures need to be implemented. Effective public transport is a critical prerequisite for the success of any measure aimed at managing car use. We believe that a shift in mentality can only come about through incentives and measures that show that one can actually move around more quickly if one leaves the car at home. Providing effective alternatives is the first step in this direction.

Currently the infrastructures that support sustainable mobility, i.e. public transport and walking and cycling infrastructures, are not effective in terms of delivering attractive and efficient alternatives to the private car. On the one hand, the current bus service is not fast or reliable, and on the other hand walking and cycling are not sufficiently safe because of lack of appropriate infrastructure.

Key to reducing car dependence is to provide as many efficient options of travel as possible. These need to support each other and work together to support mobility and provide access. The concept of multi-modality therefore comes to play.

Multi-modality allows individuals to combine different modes to undertake their journeys, with well-planned connections between the modes. The obvious example in Malta is the Park and Ride concept where a car, a van and walking are used to arrive at a destination.

This concept needs to be extended to support the Metro. Unlike buses which provide frequent stops, a rapid transport system provides stops at strategic locations, close to commercial centres, major land uses and activities that attract large numbers of people continuously. In order to maximise the benefits of the light rail services, access to these stops should be prioritised for buses, pedestrians and cyclists that wish to divide their journey between one mode and another. Stops therefore should be easily accessible on foot and by bicycle, and be able to interchange easily with buses that act as feeder services.

This concept of multi-modality encourages individuals to plan their travels, and to engage in some multi-tasking activity along the way, for example, getting exercise whilst walking, or reading or catching up with emails in the light rail carriage or on the bus. The value of travel time therefore increases since time wasted in congestion is replaced by less, yet more productive time on foot or on public transport.

A detailed infrastructure plan and roll out should therefore move forward in parallel with the development of the system. As has happened in many European and other cities that have adopted this approach, appreciation will grow for the better, cleaner and healthier environment which a reduced dependence on car traffic brings about.
5.2 MOVEMENT OF GOODS
Although many ideas have been suggested to remove heavy vehicles and commercial trucks from the road during certain hours of the day, it is unrealistic to remove an important user of roads due to car congestion, especially without proper knowledge of the potential economic impact.

Whilst car drivers may be encouraged to opt for alternative modes, heavy goods vehicles and commercial vehicles supply the economy and most of the activities in cities. Their complete removal is not possible in a growing economy.

Malta has a poor record of managing logistics and freight movements around the islands. Delivery trucks and the movement of heavy vehicles in all areas and on almost all roads have significant impact on the performance of the road network.

Alongside planning for an effective public transport system there is the need for a Sustainable Urban Logistics Plan which identifies the current situation with regard to movement and delivery of goods, and plans for efficient use of road space and time resources to manage freight.

5.3 MOBILITY AS A SERVICE (MAAS)
New and attractive services are developing to support mobility. Widespread smartphone ownership and ubiquitous connectivity are the foundation for many of the new mobility services such as taxi hailing (e.g. eCabs, Gett), car pooling (e.g. Bumalift), ride sharing (e.g. Uber, Lyft), peer-to-peer car renting (e.g. Getaround), and car sharing (e.g. Zipcar).

The University of Malta has already produced a prototype for a Shared Demand Responsive Transport Service which looks at the development of a mid-range shared van service that offers rides to and from the Msida Campus⁹. Such a demand responsive service may be applied to elderly and persons with special needs, in order to make sure that these are able to participate and engage in the opportunities available to them.

Similar services should be encouraged and promoted to increase the mix of modes available for travel. These services will also be considered as potential support infrastructure to public transport services (e.g. last mile services and special services).

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⁹ Camilleri, M., Muscat, A., Attard, M. (2016) A shared demand responsive transport service for the University of Malta. Institute for Climate Change and Sustainable Development, University of Malta, Msida, Malta.