

# **THE PERFORMANCE OF PARK AND RIDE WITHIN THE CONTEXT OF A CHANGING TRANSPORT INFRASTRUCTURE: THE CASE OF MALTA**

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## **ABSTRACT**

In recent years Park and Ride (P&R) facilities have been increasingly introduced by local authorities as an alternative for or in addition to parking supply in the city centre. In the case of Malta, P&R was introduced as part of a strategy to increase accessibility to the capital city, Valletta. Since its introduction in 2006, the Government introduced a road pricing scheme, reformed the public transport service and changed the charging structure of the P&R service. This paper aims to give an overview of the development and implementation of P&R and understand aspects of its use within the changing context of transport in the island (city) state. The paper uses data from surveys carried out annually in December between 2006 and 2011 to a sample of P&R users. The study is also supported by archival and observational data collected over the years by the author. Results show how P&R was a popular and successful measure which increased parking supply but unfortunately also contributed to modal shift from public to private transport. Despite this, P&R was a critical support infrastructure to the introduction of road pricing in Valletta in 2007. An analysis of trip purpose and trip attraction is also undertaken, with P&R attracting mostly shoppers and with patrons increasingly coming from the north of the island. A subsequent change was experienced with the introduction of a fee in July 2011 and the reform in the public transport service. As P&R schemes increase and become important support infrastructures for cities, their understanding become relevant to policy makers considering their applicability in policy packages or as stand alone projects. This paper contributes to the growing literature in P&R as popular measures to intercept city traffic and reduce air pollution.

*Keywords: Park and Ride, Malta*

## **1.0 INTRODUCTION**

Park and Ride (P&R) schemes are one of the latest elements of parking policy across Europe and have been implemented widely around the world as part of transport demand management measures and policies aimed at enhancing economic structures within cities, through improved access, whilst attempting to achieve environmental benefits from reduced car traffic to the city centres. Apart from economic and environmental objectives, P&R schemes aim at reducing congestion in city centres, reducing road and parking costs, providing transport options and reducing travel expenses, increasing public transport use and reducing the need for further road and parking infrastructure in and around city centres (Parkhurst, 2000). Social objectives of P&R have also been identified as improving road safety, less driving stress on visitors to the centre and increasing livability of streets through reduced traffic (VTPI, 2010).

The most common model of P&R refer to bus based systems where a dedicated car park (terminal) containing several hundred spaces and located on the edge of the host city is accessible from various routes and serviced by dedicated frequent bus services to the city centre (Meek et al., 2011). The concept dates back to Bernard Mees, who in 1932 published a book on possible ways to solve congestion (Dijk and Montalvo, 2011). The first P&R sites were built in the US in the 1950s and the UK followed with experimental sites in the 1960s. According to Cairns (1997) the first schemes were considered a failure. Despite this, P&R implementation continued and during the 1980s and 1990s in the UK, the goals of such systems were to boost economic activity in urban areas by increasing parking capacity whilst reducing overall levels of traffic in the centre (see for example DoE, 1990). Karamychev and van Reeve (2011) suggest that P&R alleviate not only congestion but also other external effects of travel by car by encouraging people to use public transport for part of their trip. One might even suggest that this can have a long term effect of promoting public transport and P&R users could be more amiable to switching modes than regular car users. Other effects include the increased turnover of available road space which would stimulate economic activity, increasing cost recovery and public transport ridership if incorporated in public transport systems and the overall saleability of P&R as a sustainable transport measure Karamychev and van Reeve (2011).

However, there has been heavy criticism of the so-called beneficial effects of P&R. Parkhurst (1995; 2000) identified four unintended effects of P&R including a modal shift from public transport to private car, lack of evidence of decongestion, generation of new car trips and increased car dependence. Despite this Dijk and Montalvo (2011) claim that P&R facilities are today a key element of the sustainability packages of many urban areas in Europe.

This paper presents an overview of the development and implementation of P&R in the island state of Malta and investigates aspects of P&R user behaviour over the period 2006-2011. The objective is to understand aspects of P&R use within the changing context of land transport in the island and map out the future role of P&R within the increasing need for travel demand management. P&R user surveys carried out between the period 2006 and

2011 are used to support the research. The paper is structured as follows with Section 2 describing the methodology adopted for this study, Section 3 presenting an overview of the development and implementation of P&R in Malta, Section 4 discussing the results of the user surveys with regard to travel behaviour and use of P&R facilities in the case of the P&R for Valletta, and Section 6 providing some conclusions and future role for P&R.

## 2.0 METHODOLOGY

The research is based primarily on questionnaires to P&R users collected over the period 2006 and 2011. Every year in December (the month registering the highest number of patrons) a sample of users were asked a number of close ended questions about their current and previous travel behaviour and their perception of the P&R service offered. The sample was collected randomly through on-site, face to face questionnaires administered during different times of day and different days of the week. Overall a good gender balance was achieved throughout the surveys as well as a good representation of different age groups using the P&R (Table I). A potential bias identified in the methodology refers to the fact that the surveys were carried out during the month of December when shopping is a common trip purpose due to Christmas and school holidays. The fact that the surveys followed a similar methodology for the same period every year still makes the results relevant for the purposes of understanding the use of P&R over time. Furthermore, the introduction of a fee in July 2011 is significant and important to include in this study since the original plans developed by Government included a fee for P&R. It took however four years for charges to be implemented, following what could be considered a successful P&R scheme.

Table I – Description of sample collected over the study period 2006-2011 at the P&R in Floriana.

	2006	2007	2008	2009	2010	2011
<b>Gender</b>						
Male	51%	49%	47%	48%	46%	45%
Female	49%	51%	53%	52%	54%	55%
<b>Age</b>						
15-25	18%	23%	23%	21%	20%	19%
26-35	26%	29%	28%	21%	25%	31%
36-45	22%	22%	24%	20%	22%	24%
46-55	15%	14%	15%	14%	19%	13%
56-65	14%	10%	9%	8%	9%	8%
65+	5%	3%	1%	17%	4%	6%

In the questionnaire to users specific reference was made to modal choice prior to the introduction of the P&R and other indicators of travel behaviour adopted by the users. The questionnaire required users to name their origin and destination, trip purpose and mode. They were also asked to describe their use of P&R and rate the quality of service (even though this falls outside the scope of this paper and is not reported here). Government policy documents related to the implementation of the project were also used in this research. The study is based on an in-depth understanding by the author who played a major role in the process of designing and implementing P&R schemes in Malta. Direct involvement and personal observation therefore support this research. The author was involved in the team of experts appointed by a special Cabinet Committee of the Maltese Government dealing with National Projects and tasked with writing the policy, designing the scheme and subsequently implementing what would be later termed the Valletta projects, including the first P&R scheme in Floriana, just outside Valletta. This position of 'insider' (Burgess, 1984) held by the author allowed for a natural interaction with individuals involved in the project.

### **3.0 DEVELOPMENT AND IMPLEMENTATION OF P&R IN MALTA**

Malta is an island state and has been a member of the European Union since 2004. It is one of the smallest states in Europe but has the highest population density and ranks among the highest in terms of the levels of motorisation in the world. In order to appreciate the context of this paper however it is important to appreciate the relatively small size of the island, set centrally in the Mediterranean Sea between Sicily and Tunisia. The main island of Malta is 27.3km long and 14.5km wide (246km<sup>2</sup>). The other two main islands are Gozo (67km<sup>2</sup>) and Comino (6km<sup>2</sup>). Comino is virtually uninhabited however Malta and Gozo between them have a resident population of just over 400,000 and host on average 1 million visitors each year (National Statistics Office, 2010).

Malta has limited land and space resources and increasing mobility pressures resulting from car dependence. The number of motor vehicles on the island totalled 304,705 at the end of 2010, 76% of which were private vehicles (National Statistics Office, 2011). The provision of infrastructure by Government grew alongside the growth in the vehicle population, reflecting a predict-and-provide policy framework for over 30 years between the 1980s and the early 2000s.

The walled city of Valletta today serves as the main administrative and commercial centre for the islands. It is also a daytime city, with an average daytime population of over 55,000 but with a night time (resident) population of just under 7,000. Apart from its residential function, there are commercial and other activities that attract visitors at night including restaurants, cinemas, bars, the National Theatre and conference centre. In the 1960s, the Government introduced the requirement for a special police licence (Government of Malta, 1960) which in the mid-90s became a fixed annual charge of €46 (Government of Malta, 2001) for access

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into Valletta. This fee was paid with the annual road licence renewal and motorists were given a licence disc to attach to the car windscreen which displayed a 'V'. This was subsequently changed to a pay per use road charging scheme described further on.

The concept of P&R in Malta was first proposed in the 1992 Structure Plan for the Maltese Islands, the first development planning tool to be established in the islands following its independence in 1964. The Structure Plan listed a specific policy (PTR10) which stated "*the Planning Authority will ensure that the question of the introduction of a park and ride system for Valletta is further investigated during the preparation of the Valletta Local Plan*" (Planning Services Division, 1992). Subsequently the Grand Harbour Local Plan approved in April 2002 (MEPA, 2002) identified an area policy (Policy GF20) specifically dealing with the development of a P&R within Crown Works and Horn Works Ditch in the outer fortifications of Floriana (Figure 1). By that time Valletta was already under severe stress from increased car traffic, illegal parking, pollution, congestion and noise.

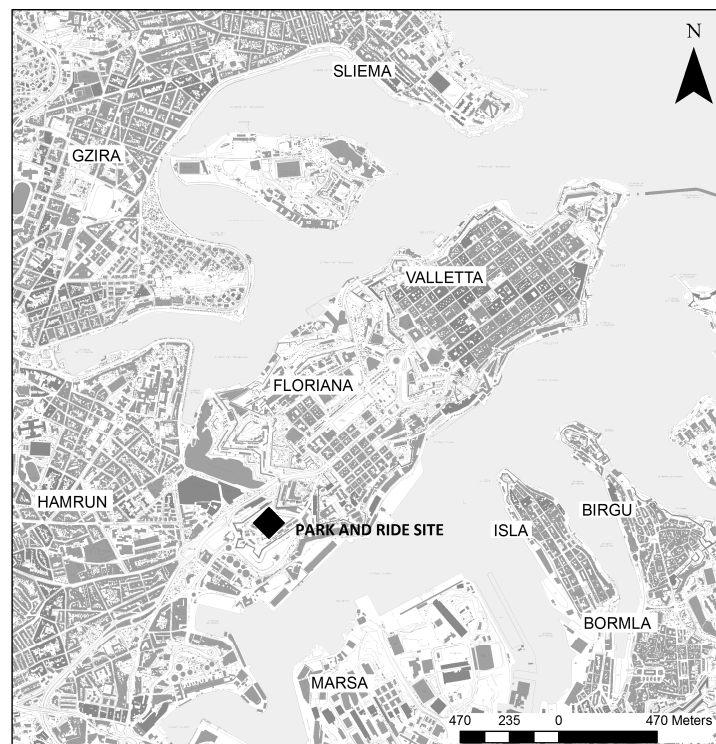


Figure 1 – The location of the P&R site outside Valletta and Floriana. Drawn by author.

However, it was only in 2004, with the setting up of a Cabinet Committee on National Projects that P&R was targeted for implementation. Early on in the Committee discussions, concerns arose over its feasibility if the project would be implemented on its own. The Cabinet Committee was made up primarily of the four Ministers responsible for (i) Information, Technology and Investment, (ii) Resources and Infrastructure, (iii) Urban Development and Roads, (iv) Environment and Rural Affairs and the then Parliamentary Secretary for Finance. In order to investigate the possible integration of the P&R within a

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wider strategy to increase accessibility to Valletta, a team of experts were appointed. The strategy was aimed at reducing congestion, improving the overall environment of Valletta and stimulating the regeneration of the city's residential and commercial areas.

In 2005 the Cabinet Committee published a consultation document called Valletta and Floriana: A strategy to improve access (Cabinet Committee for National Project, 2005). The document included the views of the major stakeholders in accepting the problems of the city and its suburb, Floriana and proposed a number of projects. The stakeholders were the local councils, national authorities, merchant associations, local associations and general trade unions. Consultation was held at various levels on a number of projects which included:

- a Park and Ride Scheme in Floriana
- extension of the pedestrian area in Valletta's commercial centre
- a system for controlling access and parking in Valletta and Floriana by implementing an effective road user charging scheme (replacing the V-licence); and
- a number of smaller initiatives to provide alternative transport modes (electric minicabs, sea ferries).

After a year of public consultation the four Ministers presented their final decisions which included the implementation of a free P&R scheme in Floriana and the introduction of a road pricing scheme, later called the Controlled Vehicular Access system (CVA) that would replace the V-licence in Valletta only. For more information about the CVA, Attard and Ison (2010) discuss the system in detail and identify the factors that lead to the successful implementation of the road pricing scheme.

In the months following the Minister's decisions work commenced on the upgrading of the facility and the junctions leading to the P&R site. The site required cleaning, resurfacing and the construction of a small administrative building, whilst three junctions in Floriana had to be redesigned and constructed to improve access to the area. For the first time the concept of bus only priority at a signalled junction was introduced in a contra-flow design whereby buses are allowed to go against traffic to allow for more efficiency. Lighting and security gates were also introduced to protect the area and provide security for patrons.

Once the infrastructural works were completed the P&R started operations. On Monday 6<sup>th</sup> November 2006 the P&R opened its doors to its first customers and by the third day the number of users had increased exponentially. From just 20, the number of passengers using the bus to ride into Valletta at 9:15am on the first day went up to 65 by the third day. Up until July 2011 the use of the free P&R remained high and relatively constant. P&R bus usage surveys conducted by the authorities between the period 2006 and 2009 show how activity increased towards Christmas and declined during summer (Figure 2). This reflects the attraction of Valletta as a commercial centre during the holiday season and the location of most public service offices in and around the city which work on half days during the summer period. A major milestone can also be identified with the start of the CVA and extension of the pedestrian area in the centre in May 2007 where many commuters were required to

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change their travel behaviour due to the increased cost and reduced physical space where to park in the city centre.

The patterns of use of the P&R site, especially with respect to peaks towards Christmas reinforce the Government's goal to support the economic vitality of the Valletta commercial centre after years of decline due to inaccessibility (Cabinet Committee for National Projects, 2005). This objective, which runs counter to those of reducing car use, was also identified by Banister and Berechman (2000). Their rationale was that new trips are good for business yet they result in more traffic.

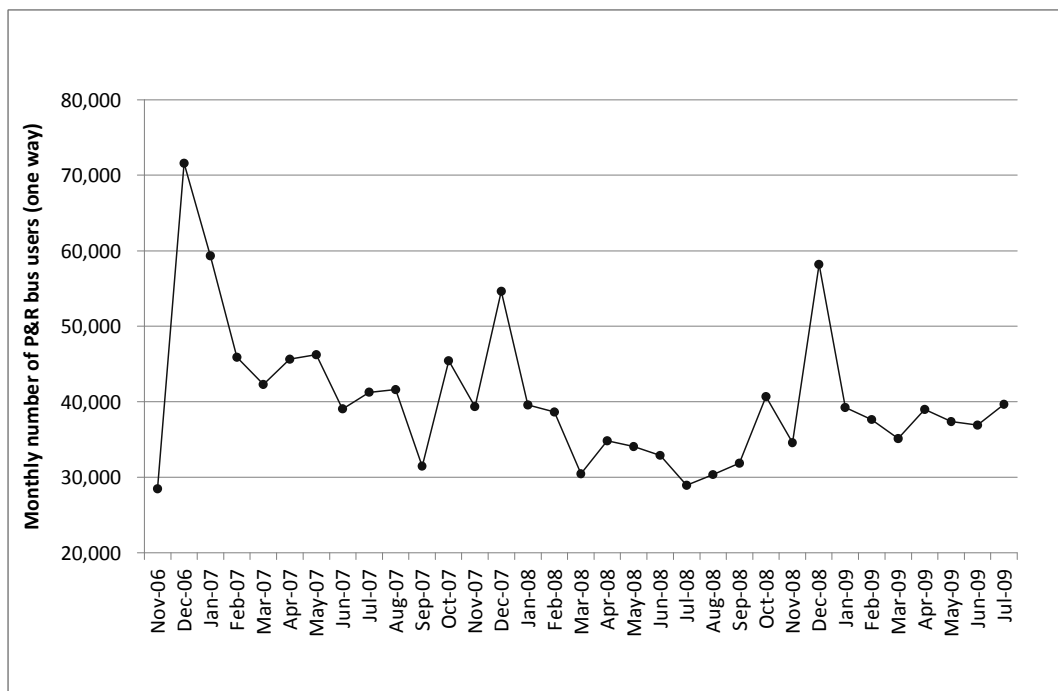


Figure 2 – P&R bus usage (one-way) for the period Nov 2006 and Jul 2009. Source: Transport Malta, 2009.

Looking at the actual car traffic behaviour, surveys carried out in April 2008 and February 2009 show an increase in the number of cars parked in the site (Figure 3). The increase in the number of parked cars (car occupancy) and the decline in the number of P&R bus users (Figure 2) could be attributed to parking spilling off neighbouring offices since the P&R service was free up until 2011. Observations carried out during the surveys also showed very little car sharing with most vehicles carrying no passengers (Transport Malta, 2009).

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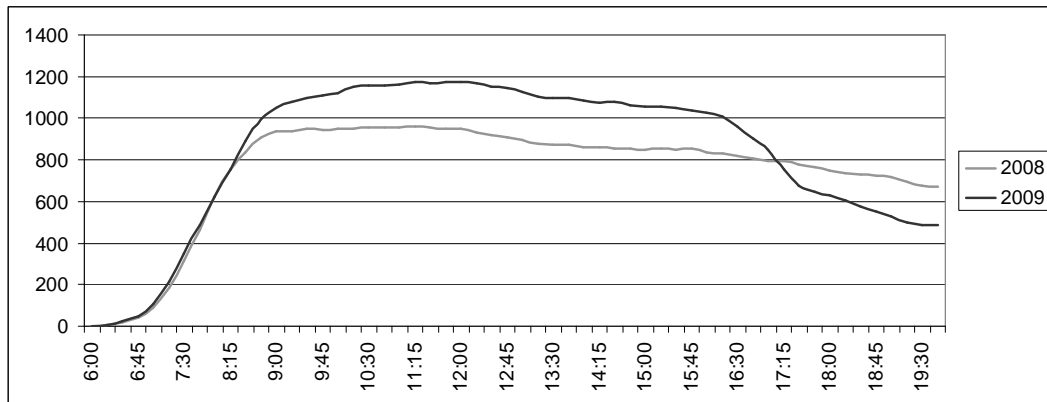


Figure 3 – Daily car occupancy of the P&R site for 2008 and 2009. Source: Transport Malta, 2009.

The fact that the P&R service was provided for free up until July 2011 raised also concern over the financial sustainability of the project. It was also a common concern amongst parliamentarians who often requested information from Government, through parliamentary questions about the costs which were incurred due to the free service offered at the P&R. Table II shows the infrastructural and operating costs paid by Government over the period 2005 to 2010.

Table II – Infrastructural and operating costs (in Euros) of the Valletta P&R. Source: Government of Malta, 2010.

	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Infrastructure Costs</b>	173,195	749,501	300,601	174,906	158,099	2,993
<b>Operating Costs</b>	-	64,473	581,866	661,846	650,512	519,432

P&R services however did not remain free. It was envisaged that as part of the public transport reform initiated by the Government in 2008, P&R services would be at a charge and would be extended to two other sites on the island. The Government published its intentions to extend P&R during the first consultation event for the public transport reform in December 2008 providing one site servicing the north (Pembroke P&R) and one servicing the south (Marsa P&R). For more detail about the public transport reform see Attard (2012). Subsequently the three P&R sites were included as concessions in the tender for the provision of public transport services in Malta. This meant that the new public transport operator had to integrate the P&R services within the wider network of bus services offered and introduce a fee. The new public transport services started operating in July 2011 and no data has yet been released on the use of the P&R sites by the new Operator ARRIVA. Informal conversations with the public transport operator and own observations point towards low usage of the outlying P&R sites (Pembroke and Marsa). In this case further research would have to be carried out, also testing the hypothesis of Parkhurst (2000) in which he stated that urban fringe bus-based P&R are better described as a policy of car traffic redistribution than a policy of car traffic reduction. Press articles have appeared locally



arguing against the charges imposed in the case of the Valletta P&R and subsequently the lack of use of the same P&R (Xuereb, 2011; Galea Debono, 2011). No other such articles have been published in the case of the two new P&R sites.

The next section will highlight changes that occurred in the behaviour of P&R users over time with a view of observing performance from the perspective of modal shift, trip attraction and trip purpose, and seek to understand the potential role of P&R as a transport demand management measure in the future of Malta's transport system.

## **4.0 ASPECTS OF P&R USER BEHAVIOUR**

Survey questionnaires were distributed to P&R users during every Christmas period for the years 2006 up until 2011. Over 400 questionnaires were collected every year until 2010 but only half the sample was collected in 2011. Logistical issues such as limited access to the P&R site following its 'privatisation'<sup>1</sup> restricted the sample that could have been surveyed during December 2011. The 2006 to 2009 sample represented 1 per cent of the monthly average number of P&R bus users for the month of December, when turnover is highest. P&R usage statistics following the change in operator in July 2011 was not made available and therefore gauging the sample representation of the 2011 dataset is more difficult. It was felt however that the 2011 data should be included to show the changes in P&R use following the changes from a public to a private operator and the introduction of a charge. The following sections will present some of the results of these questionnaires.

### **4.1 Trip Attraction**

In 2006 users were asked whether they would have made the trip to Valletta if the P&R was not provided. Just over 11% stated that they would not have done the trip to Valletta without the P&R service. Out of these new trips to the city centre 53% were for the purpose of shopping, supporting the positive turnover claimed by Valletta businesses in the Christmas of 2006 (Busuttil, 2006; Anon, 2007).

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<sup>1</sup> Privatisation here refers to the hand over of the P&R site and operations by Government to the new public transport operator following the award of tender for the running of public transport services in Malta.

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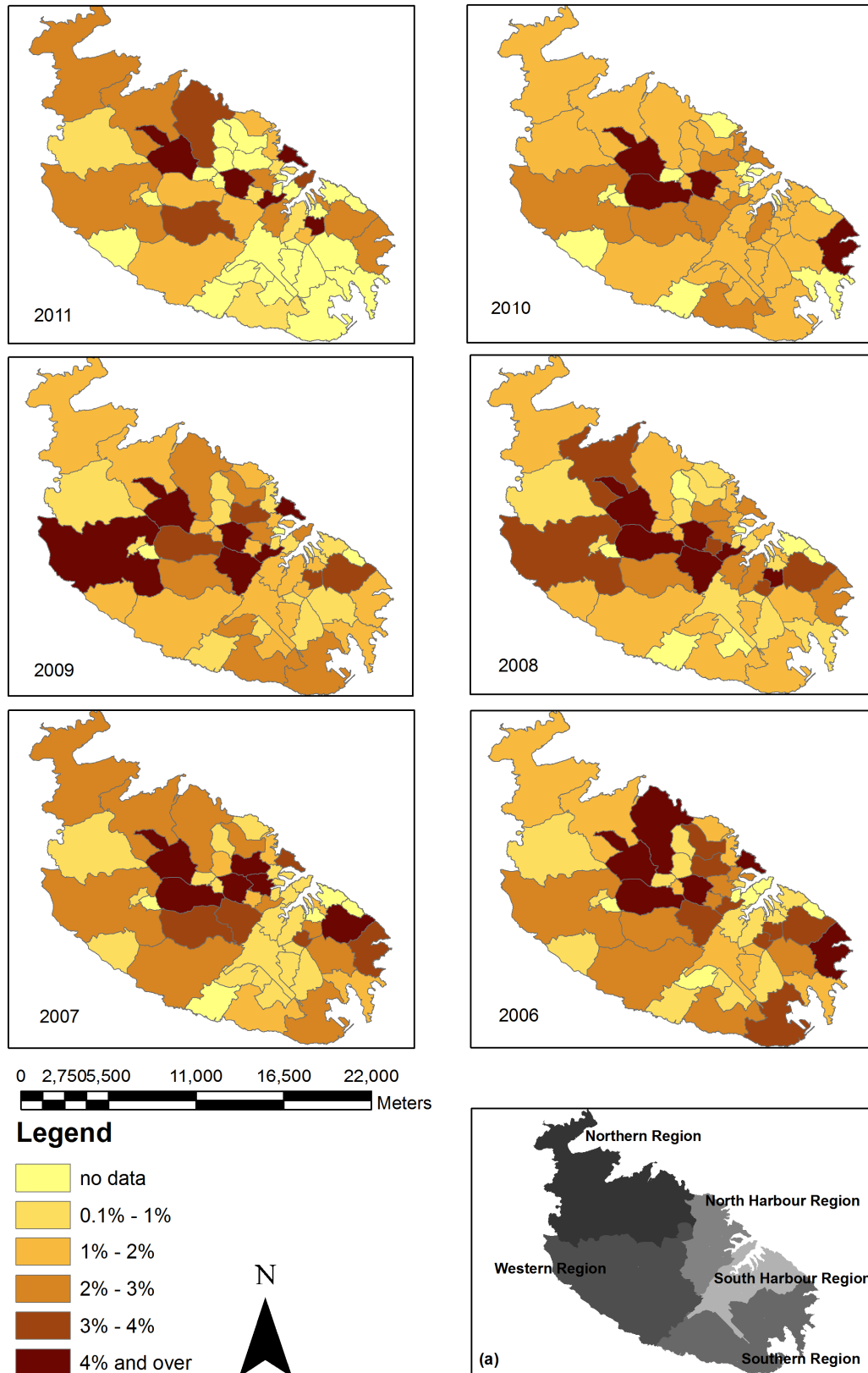


Figure 4. Percentage distribution of locality of residence of P&R users between the period 2006-2011 and including detail on the island's regions (a).

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The trip attraction pattern of the P&R site in Floriana changes little over the study period. Figure 4 shows the changes over the years at locality level. These reflect the areas with highest population densities as well as localities that have a high car ownership in Malta (National Statistics Office, 2010). At a regional level the calculation of percentage change of kms travelled between the period 2006-2011 show that the South Harbour Region experienced an increase of 5% in kms travelled, the Northern Region experienced a decline of 3%, the Central and North Harbour Regions experienced a decline of 6% and the Southern Region experienced the most loss with 8% decline in the number of kms travelled (see detail (a) in Figure 4 for the regional boundaries). These figures refer to the total distance travelled by surveyed users and therefore it includes the relatively smaller sample collected in 2011.

In order to establish the potential P&R attraction with a charge, users were also asked if they would make use of P&R services if a charge was introduced. The results for the 2006-2010 surveys show that well over 50% would still use P&R (Figure 5). In the 2011 users were asked whether their use of the P&R had changed following the introduction of a charge and an overwhelmingly 62% said no, 31% said yes and 7% did not know. However there is evidence of popular resistance to the introduction of the charge and until usage figures are published for P&R services following the events of July 2011, it is very difficult to assess the overall impact.

Despite this, the trends are helpful to channel the efforts in infrastructure building and maintenance for the roads leading to the P&R, as well as the potential effects that other proposed P&R sites in other parts of the island might have on the road network in the future. It is evident at this point that the current P&R in Floriana has attracted users from most parts of the island, a pattern which would reflect the high attraction value of Valletta on a national scale.

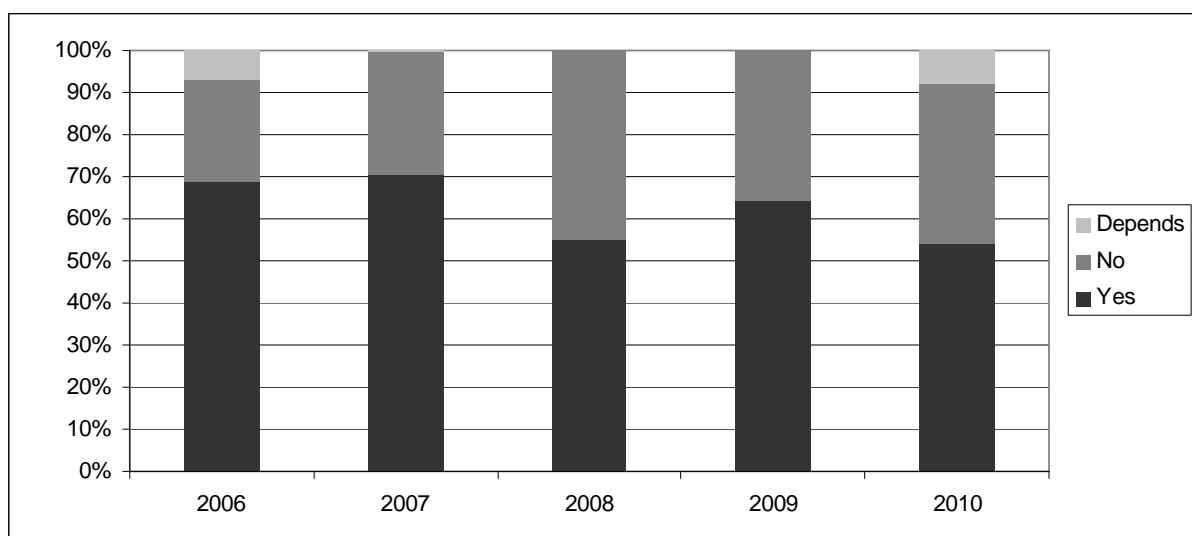


Figure 5. User preference as to their use of P&R services following the introduction of a charge. Data for the period 2006-2010.

## 4.2 Trip Mode

A significant aspect of P&R operations and their success is measured through the identification of trip mode or modal share of P&R users. In identifying the usage one finds that on average 96% of all P&R bus users arrived at the P&R by car (with an average of 21% being car passengers). The relatively high number of the P&R bus users that arrived on foot (0.7% in 2006 rising to 3.5% in 2009) was due to the fact that the P&R service, including the bus ride were free and therefore residents and workers of the surrounding area used the P&R bus to get to the city centre without having to pay the public transport fare. This was not only a cheaper alternative but also more convenient since the minibus was able to navigate its way and access the centre of the city (unlike the scheduled bus service terminus which was located outside the city walls).

On the other hand Figure 6 shows the mode of transport used to travel into Valletta prior to the introduction of P&R. Here unfortunately we see an increasing number of public transport (bus) users switching to P&R, with 14.9% in 2006 to 33.9% in 2009 and increasing to 34.7% by 2011. This indicates that the P&R service is increasingly attracting bus users rather than car users. This might also suggest that the P&R service in its current operation is attracting more car trips, even though there have been no specific traffic surveys on the island's network to support claims of increased congestion due specifically to P&R services in Valletta.

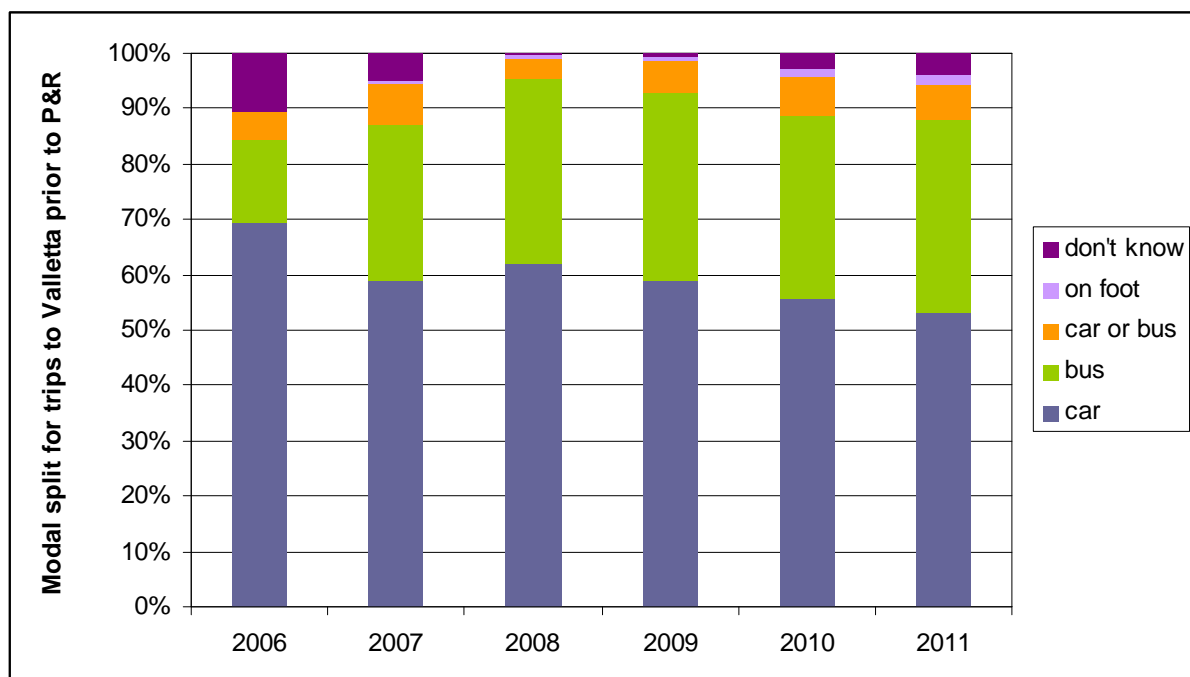


Figure 6. User modal split for trips to Valletta carried out prior to the introduction of P&R between the period 2006 and 2011.

In an intervention at a local conference in Valletta in 2010 the Transport Minister indicated that the operational framework of the P&R and the CVA were attracting more car trips to the City. He was quoted saying the CVA and P&R are 'too cheap' and are attracting too many cars to the city (Schembri, 2010). In his article Schembri (2010) quotes the Minister saying that "25,000 vehicles used to have access to Valletta through the V-licence before 2007 and now at least 50,000 vehicles on average are visiting Valletta annually. This is a reflection of the pricing structure put in place in the peninsula." This speech was maybe pre-empting the changes to the charging structure of the P&R which would change later in 2011.

In addition to this, the P&R users were also asked to state whether they had access to Valletta by private car by holding a V-licence prior to the introduction of the CVA. An average of 70% of the P&R bus users claimed they did not have a V-licence to enter Valletta prior to 2007. This could indicate that 70% of P&R users are new car drivers to the city and might support the earlier evidence of bus abstraction following the introduction of P&R. On the other hand an average of 21% used to pay the V-licence prior to the use of P&R. This indicates the level of abstraction of cars from the city centre (where there was the obligation to pay for the V-licence). In between this shift of cars and subsequently the introduction of CVA and pedestrianisation, traffic on the main road of Floriana (St Anne Street) leading to the city centre reduced by 30% in August 2007, when compared to a traffic survey undertaken in 2004 in the same street (Vella, 2008).

### **4.3 Trip Purpose**

The main trip purpose of P&R users travelling to Valletta remained shopping throughout the surveyed years. This is mirrored in the results of the recent National Household Travel Survey conducted by Transport Malta, the national transport regulatory authority, where the main purpose of travelling to Valletta by car was shopping (Transport Malta, 2011). It is worth nothing however that following the introduction of the charge in 2011 shopping trips reduced considerably. The number of work trips declined up until 2010 and started reappearing in 2011 as regular users of the P&R facility (Figure 7). The 2010 National Household Travel Survey showed that a large proportion of work related trips to Valletta are carried out by bus from a number of localities. These changes in travel behaviour were influenced by a number of factors which happened over a relatively long period of time. These include the increasingly limited parking available in the City brought about by the city's urban design and morphology, the pedestrianisation project and the CVA in 2007, the major redevelopment projects in various parts of Valletta initiated in 2010 and the noticeable increase in traffic and congestion in the inner harbour region which has in its own right deterred some car users.

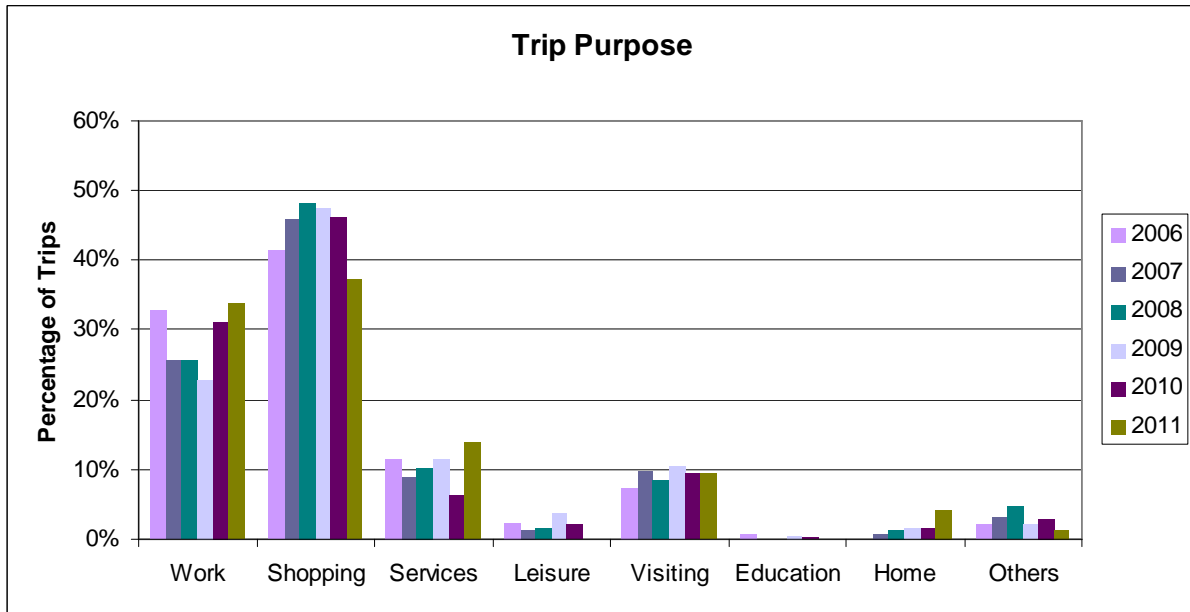


Figure 7. Trip Purpose for using P&R.

## 5.0 CONCLUSIONS

According to Meek (2008) *P&R has had a somewhat confused position in transport policy which has led to misunderstanding of both what it is capable of achieving and its unintended impacts*. This is potentially true also for the case of Malta. The idea of P&R way back in 1992 and 2002 mirrored policy popular in the UK at the time, in which P&R was seen as a solution to congestion, reduction in car use and the related pollution. It was only in 2005 that the UK Department for Transport revisited its views on P&R (DfT, 2005). By the time P&R was implemented in 2006, policy makers in Malta recognized the need to introduce such a measure alongside other, more restrictive measures aimed at balancing the ‘carrot’ effect produced by the supply of additional parking at the P&R.

The initial trends registered by the P&R in Valletta are mixed. An overwhelming attraction of the P&R in the first year of operation brought new trips to the city from various locations from around the island. Whilst there is evidence of public transport abstraction (as suggested by Meek et al., 2008), a relatively significant number of cars previously driving all the way through the centre have been diverted to the P&R. Once again, the reasons for such abstraction might be due to the complementary restrictive measures in the city centre. In this case it is evident that the P&R was popular as it provided motorists an additional choice with considerable time and cost savings when compared to the option of driving to the centre and cruising for parking. This was further supported by the provision of the service for free and with a dedicated, frequent bus service which was maintained for the first four years.

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This level of service continued up until 2010 during which a number of changes occurred in the provision of infrastructure for the car in and around the city. Some of these changes were planned and part of a strategy, such as the road pricing scheme, the closure of roads for pedestrianisation and later on for regeneration projects, however others such as the subsequent reform in the public transport system which started in 2008 with the election of a new government and a new transport minister, meant a considerable change in the way P&R schemes were perceived and were going to be delivered by Government. The introduction of a fee, long overdue and necessary in order to ensure sustainability and the integration of the previously dedicated bus service into the public transport network of services were considerable changes that affected the level and quality of service. However, until public transport patronage and P&R usage data are actually published by the new public transport operator this effect will be very difficult to quantify.

Furthermore the public transport reform also brought into effect a change in the framework within which P&R schemes are implemented in the island. With the introduction of the two new sites further away from the city centre and aimed at servicing various parts of the island's urban agglomeration, Government has moved away from the traditional definition of P&R to one which is more targeted towards a supporting infrastructure to the existing public transport system. The success of this shift will be interesting to study further, especially in view of the observed levels of use of the new P&R sites. Aspects related to operation, demand, integration with the scheduled public transport services, pricing and geographic location could potentially all have a significant impact on the future role of P&R in Malta.

It is evident that P&R has now a significant role in Malta's transport policy and infrastructure. The scheme in Valletta has certainly demonstrated a level of resilience and has now become embedded as one of the population's travel options to the city. People's reliance on the service availability will make it hard for any Government to remove it. Its economic benefits and additional parking provision in an area plagued by lack of parking and a tight urban morphology will ensure its popularity with politicians and users of the city.

In conclusions, P&R has a role in demand management for cities and urban areas as pressures for land in busy commercial centres increase. This study alongside others published on this subject, have shown that although some positive outcomes are recorded for P&R, there is no one model that fits all. The future of P&R lies in the ability of politicians and policy makers to design effective strategies involving a number of carrots and sticks. These measures however should be flexible enough and able to absorb changes in the urban environments in the medium to long term.

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