



**Isle of Man**  
Government  
*Reilrys Ellan Vannin*

# The Isle of Man Strategic Plan Review

## Supporting Evidence

### Paper 3: Future housing requirements and recommended Policy change

How the housing needs of the Island will be met over the Plan period 2011 to 2026 (based on the 2011 Census, the Isle of Man Population Projections and the Residential Land Availability Study)

Planning Policy Team  
Strategy, Policy and Performance  
16<sup>th</sup> January 2015



## Contents

1.0	Introduction and Purpose of Paper.....	4
2.0	Supporting Evidence Papers 1 and 2 .....	5
3.0	Implications of the 2011 Census and the Isle of Man Population Projections 2011 on the broad housing needs for the Isle of Man .....	6
3.1	The 2011 Census .....	6
3.1.2	Table 1: Key Census data on households.....	6
3.2	Scenarios for household size.....	6
3.2.2	Table 2: Scenarios for future household change.....	6
3.3	Summary of Scenarios (based on the detailed analysis contained within Paper 1) .	7
3.3.1	Table 3(a) Scenario A .....	7
3.3.2	Table 3(b) Scenario B.....	7
3.3.3	Table 3(c) Scenario C .....	7
3.3.5	Table 4: Additional household numbers in 2026 compared to 2011 using 3 different Scenarios for household size.....	7
4.0	Allowing for a 'Vacancy Factor' when assessing future housing need.....	8
4.1.1	Table 5: Projections for additional households in 2026 (using Scenarios A, B and C) taking into account a vacancy factor .....	8
5.0	What is the best Scenario to use for predicting household change on the Isle of Man between 2011 and 2026? .....	8
6.0	Housing provision across the Isle of Man since 2001.....	9
7.0	The all-Island housing figure and spatial distribution figures for housing across the Isle of Man.....	10
7.1.1	Table 6: Housing distribution set out in Housing Policy 3, the Isle of Man Strategic Plan 2007.....	10
8.0	The findings of the RLAS Study and Updates (including approvals for new dwellings, the number of new homes built, lapsed approvals and residential land availability)12	
8.5.1	Table 7: The extent to which valid and anticipated approvals have matched the spatial distribution set out in the Isle of Man Strategic Plan 2007 .....	13
9.0	Residential land availability on the Isle of Man .....	14
9.1.1	Table 8: Residential land availability on the Isle of Man 2011 according to RLAS Update 4 .....	14
10.0	Looking ahead to 2026 - Planning for population growth and household change ....	15
10.2	Adjusting the baseline date of the Plan period from '2001' to '2011' .....	15
11.0	Housing needs of the Isle of Man between 2011 and 2026.....	16
11.2.1	Table 9: Key figures needed to calculate the all-Island housing number and Area distributions.....	16
11.3.1	Table 10: Housing needs of the Isle of Man between 2011 and 2026 .....	17

11.4.1 Table 11: Adjusted housing requirements for the Island based on a revised Plan period and ongoing monitoring requirements .....	17
12.0 Housing distribution on the Isle of Man 2011 to 2026 .....	18
12.2.1 Table 12: Approaches for the spatial distribution of housing .....	18
12.4 How the spatial distribution for Approach 3 was calculated .....	19
12.5.1 Table 13: Approvals 2001 - 2013 split by location in the settlement hierarchy .....	19
12.6.1 Table 14: Proposed breakdown of dwellings for the North, East, South and West based on each settlement type being allocated the same proportion of units .....	20
12.7 Table 15: Spatial Distribution Approaches.....	20
13.0 Area Profiles – North, South, East and West .....	22
13.1 The North.....	22
13.2 The South.....	23
13.3 The East.....	24
13.4 The West.....	25
14.0 Transport implications of the proposed changes to Strategic Policy 11, Housing Policy 1 and Housing Policy 3.....	26
15.0 Summary of Area Profiles and Traffic Data .....	29
16.0 Overall Conclusions .....	30
17.0 Recommended Policies for the Draft Isle of Man Strategic Plan 2015 .....	31
Proposed Strategic Policy 11 .....	31
Proposed Housing Policy 1 .....	31
Proposed Housing Policy 3.....	31
Appendix 1: Island Spatial Strategy Key Diagram, Isle of Man Strategic Plan 2007	
Appendix 2: Transport Implications of the Isle of Man Strategic Plan 2007 – Report by JMP Consulting	
Appendix 3: Tables to show traffic growth data applied to the whole strategic route network and the primary strategic network based upon existing distribution of traffic flow on these routes	
Appendix 4: Tables to show traffic growth data applied to the local strategic route network based upon the likely geographic location where the new properties will be built	

# The Isle of Man Strategic Plan Review

---

## **Paper 3: Future housing requirements and recommended Policy change**

How the housing needs of the Island will be met over the Plan period 2011 to 2026 (based on the 2011 Census, the Isle of Man Population Projections and the RLAS Updates)

### **1.0 Introduction and Purpose of Paper**

1.1 The Isle of Man Strategic Plan 2007 contained the following Policy:

“The housing needs of the Island will be met by making provision for sufficient development opportunities to enable 6000 additional dwellings (net of demolitions), and including those created by conversion, to be built over the Plan period 2001 to 2016.”

(Strategic Policy 11 and Housing Policy 1)

1.2 The Strategic Plan Review aims to update this Policy in light of the recent Census and also identify how any new, all-Island housing requirement figure should be spatially distributed across the Isle of Man (Housing Policy 3).

1.3 This Paper (**Paper 3**) is the final paper in a set of three which together support the final figures and approach included in the Draft Isle of Man Strategic Plan 2015. It examines the evidence relating to housing demand and supply on the Island and recommends the final figures for inclusion in revised Policies: Strategic Policy 11, Housing Policy 1 and Housing Policy 3 in the Draft Isle of Man Strategic Plan 2015. The 2011 Census, the Isle of Man Population Projections 2011, the Residential Land Availability Study Updates (RLAS) as well as evidence on the transport implications of the revised Strategic Plan housing numbers on the strategic highway network, have all been vital in calculating and supporting the revised figures. All of these data sources provide the background evidence which underpins the policy recommendations made by the Department.

1.4 The policy recommendations set out in this Paper are in line with the Mid-Term Report from the Council of Ministers on the Agenda for Change. This recognises that in order to satisfy the Island’s housing requirements, there will need to be an increase in the number of homes provided.<sup>1</sup>

---

<sup>1</sup> Securing a Sustainable Future for our Island: A Mid-Term Report from the Council of Ministers on the Agenda for Change – November 2014 (extract taken from the National Outcomes, page 12). This was a follow up Report to Agenda for Change – Balance the Budget, Protect the Vulnerable, Grow the Economy – GD0066, Isle of Man Government 2012 .

## 2.0 Supporting Evidence Papers 1 and 2

- 2.1 **Paper 1** concentrates on housing demand. It examines the 2011 Census and the Isle of Man Population Projections produced following that Census. Paper 1 sets out the Department's intention to change the lifetime of the Isle of Man Strategic Plan from '2001 to 2016' (as it is currently) to '2011 to 2026' (a Plan period of 15 years). Paper 1 examines the implications of the new Census figures on the Island's population and anticipates household numbers up to 2026 based on revised population projections. Clearly there will be the ability for Government to refine the population projections following the interim Census in 2016 and the full Census in 2021 and the Department is committed to the monitoring of any changes carefully. The Department judges that the 2011 Population Projections allow for sufficient certainty in terms of policy direction up to 2026 and there is no benefit now in attempting to meet the projected population figures beyond this date.
- 2.1.2 Part of the methodology in working out future housing needs is to look at household size. Paper 1 highlights the complexities associated with predicting future household size and also sets out a case for including a 'vacancy factor', which makes an allowance for empty properties when examining housing demand.
- 2.2 **Paper 2** concentrates on housing supply. It examines the findings of the Residential Land Availability Study 2007 and subsequent Updates (which monitor planning approvals and residential land availability) covering a data period 2001 to 2013, drawing out as part of this, planning approval data between 2011 and 2013. The Department proposes that the lifetime of the Draft Isle of Man Strategic Plan 2015 should run from 2011 up to 2026 (a Plan period of 15 years) and therefore monitoring approvals from 2011 (which is intended to be the new baseline) is considered important.
- 2.2.1 Paper 2 also includes an assessment of land currently zoned for residential development on extant development plans and summarises the amount and location of that land which remains available for housing.

### 3.0 Implications of the 2011 Census and the Isle of Man Population Projections 2011 on the broad housing needs for the Isle of Man

#### 3.1 The 2011 Census

3.1.1 Paper 1 set out a number of key figures from the 2011 Census:

##### 3.1.2 Table 1: Key Census data on households

2011 Census Data	Figure
Resident population <sup>2</sup>	84,497
Residents living in private households <sup>3</sup>	83,026
Number of households	35,599
Average household size	2.33

#### 3.2 Scenarios for household size

3.2.1 Paper 1 also set out 3 Scenarios for how household size may change in the future.

##### 3.2.2 Table 2: Scenarios for future household change

<b>Scenario A</b>	Shows the impact of a reduction of household size by 0.01 per year (the assumption set out in the Isle of Man Strategic Plan 2007).
<b>Scenario B</b>	Shows the impact of household size remaining constant at 2011 levels (2.33). This assumes 2.33 people per dwelling for the duration of the plan period 2011 - 2026.
<b>Scenario C</b>	Shows a gradual reduction in household size (0.04 every 10 years). This is based on the actual reduction in household size between 2001 and 2011.

<sup>2</sup> Defined in the Census 2011 as "Isle of Man residents present on Census night plus residents absent from the Island on Census night."

<sup>3</sup> Defined in the Census 2011 as "A household comprises of either one person living alone or a group of persons (who may or may not be related) living at the same address with common housekeeping which includes, for example, sharing one meal a day together. The statistics presented on resident households exclude persons in communal establishments."

### 3.3 Summary of Scenarios (based on the detailed analysis contained within Paper 1)

#### 3.3.1 Table 3(a) Scenario A

<b>Scenario A</b>	<b>2011</b>	<b>2026</b>
Number of households	35,599	42,155
Average household size	2.33	2.18
Difference between 2011 household figure and projected household figure		<b>6556</b>

#### 3.3.2 Table 3(b) Scenario B

<b>Scenario B</b>	<b>2011</b>	<b>2026</b>
Number of households	35,599	39,441
Average household size	2.33	2.33
Difference between 2011 household figure and projected household figure		<b>3842</b>

#### 3.3.3 Table 3(c) Scenario C

<b>Scenario C</b>	<b>2011</b>	<b>2026</b>
Number of Households	35,599	40,484
Average household size	2.33	2.27
Difference between 2011 household figure and projected household figure		<b>4885</b>

3.3.4 The household figures derived from the 3 different Scenarios are set out below. Each Scenario provides for a different number of households.

#### 3.3.5 Table 4: Additional household numbers in 2026 compared to 2011 using 3 different Scenarios for household size

Under <b>Scenario A</b> , there will be <b>6556</b> more households in 2026 than in 2011
Under <b>Scenario B</b> , there will be <b>3842</b> more households in 2026 than in 2011
Under <b>Scenario C</b> , there will be <b>4885</b> more households in 2026 than in 2011

## 4.0 Allowing for a 'Vacancy Factor' when assessing future housing need

4.1 The issue of using a 'vacancy factor' or rate was discussed in detail in Paper 1. It concluded that there was sufficient justification to continue to use a vacancy factor and that it should remain at a level of 4%. The Department judges that it is appropriate to add such a vacancy figure onto the demand side of the housing numbers. This was undertaken for the Isle of Man Strategic Plan 2007 and is considered to be a straightforward approach and should be continued. The use of a vacancy factor will increase the additional household numbers for all three Scenarios (see Table 5 below).

### 4.1.1 Table 5: Projections for additional households in 2026 (using Scenarios A, B and C) taking into account a vacancy factor

Scenario Option	Additional households (2011 to 2026)	Vacancy factor (4%)	Additional households plus vacancy factor (2011 to 2026)
Scenario A	6556	262	6818
Scenario B	3842	154	3996
Scenario C	4885	195	5080

## 5.0 What is the best Scenario to use for predicting household change on the Isle of Man between 2011 and 2026?

5.1 **Scenario A** follows the same assumption for the change in household size as set out in the Isle of Man Strategic Plan 2007 (a drop of 0.01 per year until 2016). There is evidence now that this assumed rate was too high and household changes did not perform in the way predicted. Analysis of past Census data reveals that household size has indeed been falling since 1971, with the largest decline from 1991-1996. Since 1996, the decline has been more gradual and even slower than the 0.01 reduction per annum that was assumed in the Isle of Man Strategic Plan 2007.

5.2 Given that the evidence gathered from the 2011 Census suggests that a fall of 0.01 per annum is inaccurate and not reflective of household size in reality, Scenario A is **not** considered to be the best approach for estimating household size in the future. It could potentially result in an overestimate of the number of dwellings needed and therefore the amount of development land that is required by 2026.

5.3 **Scenario B** assumes a constant household size of 2.33 which is what household size was reported to be in the 2011 Census. Given that there is evidence to suggest that household size is generally falling (household size fell from 2.65 in 1971 to 2.33 in 2011), using



Scenario B carries the risk that the number of new residential units required could be underestimated. A failure to take a fall in household size into account could result in there being too few new homes being built. Whilst the use of a constant figure may offer the advantage of allowing for short term fluctuations, it is judged more appropriate to react to known trends rather than to keep household size static. Therefore, Scenario B is **not** considered to be the best approach for estimating housing need and the subsequent level of development land required by 2026.

5.4 **Scenario C** shows a gradual reduction in household size (best described as a fall of 0.04 over a 10 year period). This is based on the change in the known household size from 2001 to 2011 revealed by the 2011 Census. As this is based on actual historical data, this Scenario is more realistic than the either Scenario A or Scenario B and could avoid a significant under or over estimate of housing demand.

5.5 Given the above assessments, **Scenario C** is considered the best option when seeking to predict the number of households on the Island in the future. It is thus the best Scenario for working out the housing needs of the Isle of Man up to 2026 and should be used to help calculate the revised broad housing figures in the Draft Isle of Man Strategic Plan.

5.6 Before examining how the assumptions in Scenario C will affect future housing requirements, it is worth looking at historical housing data.

## 6.0 Housing provision across the Isle of Man since 2001

6.1 Paper 2 set out statistics on residential planning approvals and reports on residential land availability across the Isle of Man. It examined the full data set currently available i.e. 2001 to 2013. Given the proposed new baseline for the Plan of 2011 (which ties in with the 2011 Census), it is important to reflect on the 10 year period between the 2001 and 2011 Census years. In focusing on this timeframe, the evidence reveals that over the 10.5 year period between January 2001 and June 2011, 492 dwellings were, on average, approved every year once amendments were taken into account.<sup>4</sup> Over the same timeframe an average of 426 new dwellings were built every year. It should be noted however, that the number of approvals dropped considerably after July 2007 compared to the early part of the 2000s. In total, 4469 new homes were built on the Island between January 2001 and June 2011. The number and location of these homes has been influenced by a number of factors:

- i. The all-Island housing need figure and spatial distribution figures for the 4 Areas of the Island set out in the Isle of Man Strategic Plan 2007 (Strategic Policy 11, Housing Policy 1 and Housing Policy 3);
- ii. The availability of land zoned for residential development which has affected where and when development has taken place;
- iii. The quality of the land zoned for residential development and the ease to which it can be developed;

---

<sup>4</sup> Table 1 in Paper 2 supplements the RLAS work undertaken to date by adjusting the data collection periods to include only approvals which remained valid.

- iv. Economic conditions and their impact on the housing market and developer confidence (including that of government), all of which may affect decisions about whether or not to make a planning application; and
- v. The progress of new Area Plans – this may have impacted upon decisions about pursuing applications on existing sites or waiting for potential new land releases.

6.2 Some of the more significant influences on housing provision are explored in the following sections.

## **7.0 The all-Island housing figure and spatial distribution figures for housing across the Isle of Man**

7.1 In the Isle of Man Strategic Plan 2007, the distribution of the broad, all-Island housing requirement of 6000 dwellings was set out in Housing Policy 3. The final figures identified for each Area are set out in Table 6 below.<sup>5</sup>

**7.1.1 Table 6: Housing distribution set out in Housing Policy 3, the Isle of Man Strategic Plan 2007**

<b>Area</b>	<b>Spatial distribution set out in the Isle of Man Strategic Plan 2007</b>	<b>% of total</b>
North	1,200	20%
South	1,300	21.7%
East	2,500	41.7%
West	1,000	16.7%
<b>Total</b>	<b>6,000</b>	<b>100%</b>

7.2 The spatial distribution of development generally was guided by the Island Spatial Strategy which is set out in Chapter 5 of the Isle of Man Strategic Plan 2007. This section of the Plan identifies those settlements which would be suitable for additional development and is set out in the form of a settlement hierarchy (see Island Spatial Strategy Key Diagram set out in Appendix 1).

7.3 Douglas is seen as the Main Centre with Onchan, Castletown, Port Erin, Peel and Ramsey identified as Service Centres. Below these are a number of Service Villages which are Union Mills, Ballasalla, Port St Mary, Foxdale, St Johns, Kirk Michael, Jurby, Andreas and Laxey. Finally the smaller settlements of Strang, Crosby, Glen Vine, Newtown, Ballabeg, Colby, Ballafesson, Dalby, Glen Maye, Ballaugh, Sulby, Bride, Glen Mona and Baldrine are identified as Villages. No other settlements are identified although the Isle of Man Strategic Plan 2007 does give the direction that the Area Plans should assess smaller groups of houses in the countryside to see if they can accommodate any additional growth.

<sup>5</sup> The 4 'Areas' for Development Plan purposes are defined in the Island Spatial Strategy (Chapter 5 of the Isle of Man Strategic Plan, 2007). It is the intention that an Area Plan will be produced for each of these Areas.

7.4 Chapter 8 (Housing) of the Isle of Man Strategic Plan 2007 also sets out guidance on the distribution of housing and how built development should be contained within the existing settlements. It provides a number of reasons why this is seen as imperative to the sustainable development of the Island.

7.5 Paragraph 8.5.1 states that:

“...there should be a general policy of containment of built development rather than dispersal and where development should be contained within specific areas within the Island rather than scattered randomly within it. In particular,

- (a) containment produces greater efficiency and sustainability in terms of the provision of essential infrastructure (power, drainage, roads, schools, water and other utilities);
- (b) containment minimises the visual intrusion of development in undeveloped areas, thus protecting the significant and unique beauty of the unspoiled areas of the Island and maintaining the majority of the Island for the benefit of agricultural production and nature conservation;
- (c) the promotion of development in individual villages and towns promotes the interaction of those who live and work there thus promoting the social qualities of life and the provision of social facilities (shops, public houses, cinemas, sporting facilities etc) in an economical and efficient form; and
- (d) containment supports the principle of an efficient and effective public transport system whereby access to the system is easily afforded to the majority of the population thus reducing reliance on the private motor vehicle, supporting the reduction of the use of finite fuel resources and reducing the potential for pollution and congestion.”

7.6 To date, only the Area Plan for the South has allocated sites based on the spatial distribution figure set out in the Isle of Man Strategic Plan 2007; for the South this figure was 1300. The settlement hierarchy however, will form the basis of the spatial distribution of development in all of the remaining Area Plans. In addition, the distribution figures set out in Housing Policy 3 have, and will continue to be, part of the consideration when applications for new dwellings are being determined.

7.7 Other than in exceptional circumstances, all new development land should be located within or adjacent to a settlement identified in the settlement hierarchy. It is not the Department’s intention to alter the settlement hierarchy as part of this Review. However, the character of each settlement and that of the Area in which they are located, have been key considerations in the formulation of the spatial distribution breakdown of the 2011 – 2026, all-Island housing requirement figure.

7.8 It is pertinent to note that the recent Mid-Term Report on the Agenda for Change states that one of the National Outcomes in the new National Performance Framework is that “we

live in well-designed, sustainable places where we are able to access the amenities and services we need.”<sup>6</sup>

## **8.0 The findings of the RLAS Study and Updates (including approvals for new dwellings, the number of new homes built, lapsed approvals and residential land availability)**

- 8.1 Between 2001 and 2011 the data collected from the RLAS (over 10.5 years) showed that 4,469 dwellings had been built or were under construction. This equates to an average annual build rate of around 426 dwellings per annum. The number of approvals fluctuated from year to year and across the decade as a whole, with the majority of approvals being granted in the early part of the decade.
- 8.2 The number of new dwellings built between 2001 and 2011 equates to about 75% of the overall 6,000 housing requirement set out in the Isle of Man Strategic Plan 2007 which has a plan period of 2001 to 2016. As measured from July 2011, there are 4.5 years of this plan period left to run.
- 8.3 From July 2011 to June 2013, an additional 403 dwellings were built or were under construction representing an average build rate of approximately 200 new dwellings per annum. This compares to 743 dwellings that were built between July 2009 and June 2011 (an average of 372 new dwellings per annum). This comparison demonstrates the fall in the numbers of new dwellings being built annually. The RLAS evidence shows that there has been quite a dramatic fall in the number of approvals being granted in recent years which may be explained, in part, by a reduction in the number of applications being submitted for new dwellings. Whilst the overall quantity of land available for residential development in 2013 was around 148 hectares, many of the allocated sites had not come forward for development. Reasons for this include:
- land owners may be reluctant to bring forward sites for development;
  - site constraints becoming apparent or which were challenging to overcome;
  - planning approvals which have been granted but have not been taken up. For example in the North between 2001 and 2013, 1287 new dwellings were granted planning approval but 299 of these approvals lapsed (23%). If this was to be viewed as being representative of demand, demand in the North could be said to be low compared to the East (lapse rate of 10%), South (lapse rate of 9%) and West (lapse rate of 5%);
  - available and deliverable sites only recently coming forward (e.g. in the Area Plan for the South);
  - the economic climate and its effect on the housing market and developer behaviour; and

---

<sup>6</sup> Securing a Sustainable Future for our Island: A mid-term report from the Council of Ministers on the Agenda for Change - November 2014 (taken from the National Outcomes, page 12 which are linked to the new National Performance Framework).

- anticipated new land allocations in forthcoming Area Plans such as the Area Plan for the East; developers may be holding back on the preparation of planning applications on existing allocated or brownfield sites within existing settlements.

8.4 Despite the fall in development rates in the past few years, the overall number of homes built between 2001 and 2013 equates to 81% of the overall housing numbers required for the plan period '2001 to 2016' with 2.5 years of the original 15 year plan period left to run. This means that the development that has taken place to date would appear to be below the identified 6000 homes needed to meet the Island's housing needs up to 2016 (as set out in the Isle of Man Strategic Plan, 2007).

8.5 In terms of the extent to which valid and anticipated approvals (in the form of projected conversions and windfalls) have matched the spatial distribution set out in the Isle of Man Strategic Plan 2007 (set out in Table 6 above), the findings of RLAS Update 6 (2001 to 2013) are shown in Table 7 below.<sup>7</sup>

**8.5.1 Table 7: The extent to which valid and anticipated approvals have matched the spatial distribution set out in the Isle of Man Strategic Plan 2007**

Area	Spatial distribution of new dwellings set out in the Isle of Man Strategic Plan 2007	Valid and anticipated planning approvals for new dwellings 2001 to 2016	The likelihood of the spatial requirement being met?
North	1,200	1,016	Under by 184 dwellings or 15%
South	1,300	945	Under by 355 dwellings or 27%
East	2,500	2,700	Over by 200 dwellings or 8%
West	1,000	1,126	Over by 126 dwellings or 12.6%
<b>Total</b>	<b>6,000</b>	<b>5,787</b>	<b>Under by 213 or 3.5%</b>

8.6 The above table and Paragraph 8.3 show that the overall all-Island housing requirement figure (in terms of approvals) has not yet been met. In addition, the identified distribution figures for the North and South (in terms of planning approvals) have also not yet been met whilst the figures for the East and West have exceeded the requirement. It is important to note that:

- As at June 2013, 87% (4872) of valid approvals (5620) had been taken up i.e. dwellings built or under construction;
- The figures include projection figures for the number of units which may be provided through windfalls and conversions up to 2016;
- Housing provision in the South will be helped by allocations in the Area Plan for the South 2012 which replaces all existing land allocations on the 1982 Development Plan and a number of Local Plans in the South;
- The North figures show that the identified need of 1200 new dwellings would not be met by 2016 (housing in the North would be 15% under the identified requirement);

<sup>7</sup> [http://www.gov.im/media/1138505/rla\\_update\\_6\\_2001-2013\\_-\\_inc\\_tables.pdf](http://www.gov.im/media/1138505/rla_update_6_2001-2013_-_inc_tables.pdf)

- v. In the East, the number of approvals would be greater than the 2500 requirement by 200 units or 8%. Applications had a low lapse rate of 10% and given the lack of development land in the East at 9% of the Island-wide total (see Table 8 below) the level of planning approvals indicate a high demand for housing. As at 2013, the East had not yet exceeded the original spatial requirement of 2500 in terms of actual builds which stood at 2234;
- vi. In the West, again the lapse rate was low (5%). The number of units approved and anticipated by 2016 would exceed the identified spatial distribution figure of 1000. A number of relatively large sites in Peel have been developed in the West since 2001, and the approval of such schemes has strongly influenced the figures. As at 2013, new homes started or completed amounted to 1055 units which was 55 over the requirement of 1000; and finally
- vii. The housing need requirement figures identified in the 2007 Isle of Man Strategic Plan as updated by the 2015 Draft Plan are not intended to be 'maximum' figures. It is important to note that the number of actual new dwellings constructed may differ from the number of dwellings approved. It is the responsibility of the Area Plans to ensure sufficient housing opportunities are identified and the planning application process to take into account of such statutory development plans and all other guidance and material considerations that may be relevant when assessing applications against identified housing numbers in the Isle of Man Strategic Plan.

## 9.0 Residential land availability on the Isle of Man

9.1 The RLAS Update 4 reported that the Island had 150 hectares of land available for residential development in 2011 spread across all 4 Areas of the Island. This amount had decreased slightly by 2013 to 148 hectares suggesting that some sites had come forward for development. Land availability increased in the South between 2011 and 2013 (shown in Update 6) as a result of a change in the residential allocations in the Area Plan. The Plan both allocated new sites and removed others that had been zoned for considerable time but which had not come forward for development and were unlikely to do so in the near future. These changes would also have contributed to the overall change in residential land availability between 2011 and 2013.

### 9.1.1 Table 8: Residential land availability on the Isle of Man 2011 according to RLAS Update 4

Area	Residential land availability- June 2011 (hectares)	% of Island- wide total
North	60.7 ha	40%
South	34.8 ha	23%
East	12.8 ha	9%
West	41.5 ha	28%
<b>Total</b>	<b>149.8 ha</b>	<b>100%</b>

## **10.0 Looking ahead to 2026 - Planning for population growth and household change**

10.1 The 2011 Census has clearly revealed that the resident population and number of private households on the Island are growing. The requirement for 6000 new homes by 2016 which was based on the 2006 Census is now out of date and needs to be adjusted. It is also the case that the spatial distribution of any new housing needs to be carefully reconsidered and adjusted. Planning for such changes will enable the Area Plans that are produced in the future to ensure the right opportunities are provided in the right places to meet housing need.

### **10.2 Adjusting the baseline date of the Plan period from '2001' to '2011'**

10.2.1 The Isle of Man Strategic Plan 2007 used the data revealed by the 2001 Census as the baseline data point for the preparation of the Plan. This meant that the number of additional dwellings required was calculated using the actual household numbers in the 2001 projected forward to 2016 to work out the growth in households. This produced the housing need figures identified in Strategic Policy 11 and Housing Policies 1 and 3. All Area Plans produced rely on these key figures to facilitate the release of land for housing and therefore need to be kept up to date.

10.2.2 Even though the Isle of Man Strategic Plan 2007 took a number of years to complete, the baseline for calculating the housing requirement figure remained as 2001 for accounting purposes. Thus the Department was fully aware that on approval of the Plan a proportion of the 6000 dwellings required from 2001 to 2016 had already been built with a further proportion having already received planning approval but not yet commenced.

10.2.3 This simply illustrates that development has and is likely to be continuous. Evidence produced as part of this Review has shown that development rates fluctuate year on year for various reasons but as a general rule, there will always be some form of housing development taking place whether this be on undeveloped allocated sites, as part of renewal projects within existing settlements or as conversions or subdivision of existing properties.

10.2.4 The availability of the 2011 Population Projections has been an essential tool for the Department in adjusting the plan period. It not only looks at probable changes in the future but also allows for an understanding of the past. Such detailed analysis allows an appreciation of how the provision of new dwellings in recent years measured up against housing need projections.

10.2.5 The Department is now proposing to move the baseline for the Isle of Man Strategic Plan from '2001' to '2011'. This recognises both the updated Census of 2011 and that the Island has delivered a significant proportion of the 2001 to 2016 housing requirement figure.

10.2.6 As in the monitoring of the original 2007 Plan, which took into account dwellings approved and built between 2001 and 2006, the monitoring of the revised Plan will also include any dwellings approved and built after 2011. As already stated, the Department will continue

to monitor approval and completion data to ensure that new housing is being delivered and that appropriate opportunities to meet requirements are being provided through the Area Plans.

10.2.7 It is the intention to retain the base date for the RLAS work at 2001 so that there will be a continuous 'running' total for planning approval data. This will allow the database to continue to be relevant to the needs of Planning Policy and Development Management as well as other users. However, it is intended that there will be a new approach allowing the monitoring of planning approvals, new dwellings and residential land availability from 2011.

10.2.8 The important point to note is that moving the baseline for the revised Plan will not hinder the ongoing provision of new housing on the Island. Readjustments to the Plan Period may be necessary again as new Census data becomes available. Through the monitoring of changes on the ground there will always be the ability to understand how such approvals and new dwellings are meeting the long term housing requirements.

## 11.0 Housing needs of the Isle of Man between 2011 and 2026

11.1 The aim of the current Strategic Plan Review is to update Strategic Policy 11, Housing Policy 1 and Housing Policy 3. As indicated in Section 5.0 in Paper 1, there are a number of key figures needed in order to calculate the all-Island number and Area distributions. These are:

- the number of residents living in private households as at the 2011 Census date and projection data for private households up to 2026;
- average household size as at the 2011 Census data and projections for household size up to 2026;
- an assumption for a vacancy factor (%); and
- a spatial distribution figure for each Area of the Island (i.e. a % of the total housing figure to be allocated to each Area).

11.2 From the evidence gathered as part of this Review, this information is now known and is set out in Table 9 below.

### 11.2.1 Table 9: Key figures needed to calculate the all-Island housing number and Area distributions

Key figures needed to calculate the all-Island housing number and Area distributions	Known and Projected figures
Number of residents living in private households (2011 Census)	83,026 (known)
Projection data for the number of residents living in private households (2026)	91,898 (projection)
Average household size (2011 Census date)	2.33 (known)
Projections for household size (2026)	2.27 (projection)



Number of households (2011 Census)	35,599 (known)
Projections for number of households (2026)	40,484 (projection)
An assumption for a vacancy factor (%)	4 (projection)
A spatial distribution figure for each Area	See Section 12

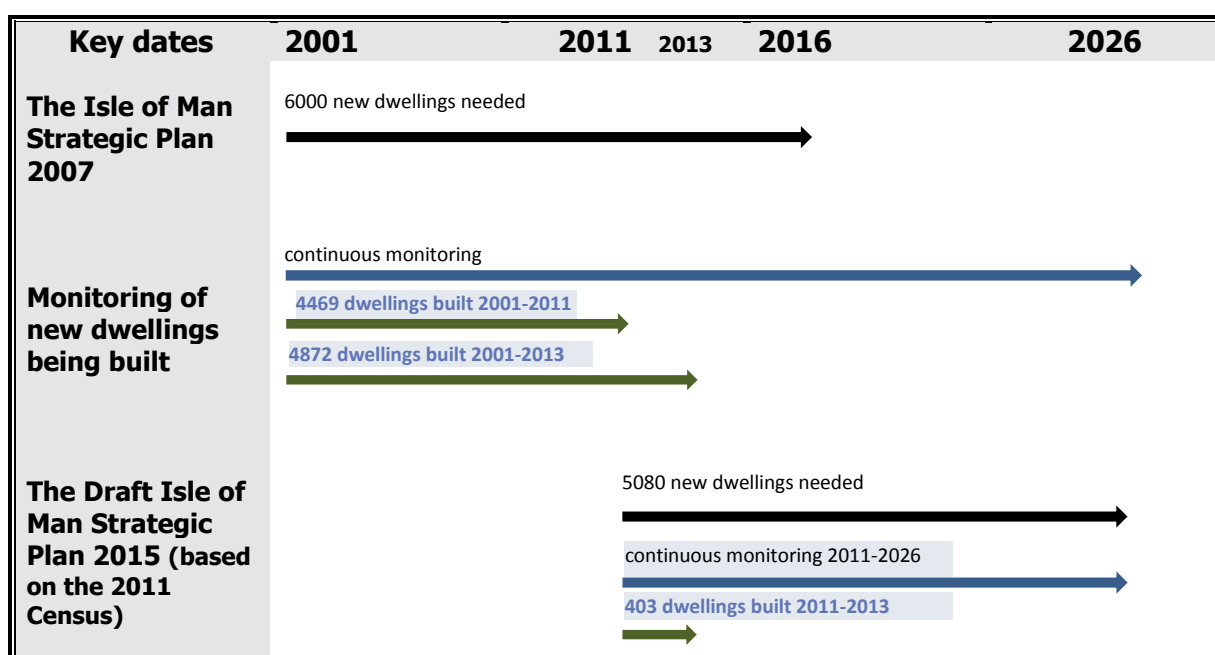
11.3 From the above data, the revised figures for Strategic Policy 11 and Housing Policy 1 can be identified. Table 10 shows the housing needs of the Isle of Man between 2011 and 2026 using Scenario C projections for household size.

### 11.3.1 Table 10: Housing needs of the Isle of Man between 2011 and 2026

	Additional households 2011 to 2026 (Scenario C)	Vacancy factor allowance (4%)	Additional households plus vacancy factor	Broad housing need requirement figure 2011 to 2026
<b>Total</b>	4885 (40,484 - 35,599)	195 (4 ÷ 100 x 4885)	5080 (4885 + 195)	<b>5080</b>

11.4 The implications of changing the plan period baseline from '2001' to '2011' and how the new housing need requirement figure is to be monitored is shown in Table 11 below:

### 11.4.1 Table 11: Adjusted housing requirements for the Island based on a revised Plan period and ongoing monitoring requirements



## 12.0 Housing distribution on the Isle of Man 2011 to 2026

12.1 By examining household projections and accounting for a vacancy factor, it has been determined that in order to meet the housing requirements of the population between 2011 and 2026 there is a need to provide opportunities for 5080 additional dwellings. This overall final figure needs to be distributed across the four Areas of the Island so that appropriate opportunities for development can be put forward in the various Area Plans.

12.2 The Department has taken into account the settlement hierarchy and the towns and villages this relates to, in order to demonstrate its commitment to the focus of new development in and around the existing settlements in line with the Island Spatial Strategy (the settlement hierarchy does not form part of the current review). By identifying the spatial distribution of the all-Island housing need figure, this will allow an update of Housing Policy 3. It is important that there is a clear methodology to explain the way in which the housing distribution for the Island has been calculated. This will make for a sound evidence base underpinning the Plan and will also be of benefit for future Reviews. There are a number of ways that the overall figure could be split across the 4 Areas – see Table 12.

### 12.2.1 Table 12: Approaches for the spatial distribution of housing

Approach	Broad Methodology
<b>Approach 1</b>	Distribute the all-Island figure equally across the North, South East and West. This approach, while simple, would make no allowance for: the spatial characteristics of each Area, past development patterns or availability of land.
<b>Approach 2</b>	Distribute the all-Island figure in line with the proportional breakdown as set out in the Isle of Man Strategic Plan 2007. This would be straightforward but would assume circumstances were unchanged. This approach would make no assessment of: the current spatial characteristics of each Area, past development patterns or the availability of land.
<b>Approach 3</b>	<p>Distribute the all-Island figure based on analysis of past planning approvals. This would apply a generic 'need' figure based on past approval rates for the settlements identified in the Island settlement hierarchy and would represent a 'bottom up' approach. RLAS Update 6 shows that 33% of residential approvals took place in the Main Service Centre; 41% in the Service Centres, 15% in the Service Villages and 11% in the Villages. Approach 3 would use this breakdown to allocate settlement figures in the period 2011 to 2026. All settlements within the same classification would be given the same allocation and then added together to give an overall Area figure.</p> <p>This approach would be based on a relatively simple mathematical equation but it would not (without adjustment) distinguish between settlements within the same classification i.e. there would be no judgement about whether individual settlements could accommodate further growth or not.</p> <p>This is further explained in Section 12.4 below.</p>

<b>Approach 4</b>	Distribute the number based purely on available and potential development land. This would help focus development in those locations most able to accommodate additional growth. This approach doesn't take into account any issue with existing sites (there may be clear reasons why they haven't come forward for development), and there is uncertainty with relying on 'potential sites' which haven't been fully appraised. With this approach there is also a need to accept that some settlements whilst having the theoretical ability to expand may not be the most sustainable choice when compared to other settlements.
-------------------	--

12.3 Following consideration of the above Approaches 1 to 4, the Department judged that Approach 3 was most appropriate. As part of this decision was the recognition and appreciation of: the settlement pattern and the potential of those settlements for additional growth, proximity to the nearest major employment centres and services and relationship with, and impact on, the strategic highway network. Figures for all of the Approaches are tabulated below. Table 15 compares the spatial distribution figures for the Areas based on the different Approaches and compares them with the current spatial distribution in the Isle of Man Strategic Plan 2007. The following Section and Tables 13 and 14 explain how the breakdown for Approach 3 was reached.

#### **12.4 How the spatial distribution for Approach 3 was calculated**

12.5 Table 12 sets out 4 different Approaches for working out the spatial distribution of the all-Island housing need figure. To further explain Approach 3, this would allocate: 33% of the overall housing requirement to the Main Centre (Douglas); 41% to the 5 Service Centres; 15% to the 9 Service Villages; and 11% to the 14 Villages (see Table 13).

##### **12.5.1 Table 13: Approvals 2001 - 2013 split by location in the settlement hierarchy**

	<b>Total approvals 2001-2013 divided up by settlement type</b>	<b>% of total approvals by settlement type</b>
Main Settlement	1829	33%
Service Centre	2312	41%
Service Village	834	15%
Village	615	11%
<b>Total</b>	<b>5620</b>	<b>100%</b>

12.6 The data in Table 13 above allows further analysis (see Table 14):

**12.6.1 Table 14: Proposed breakdown of dwellings for the North, East, South and West based on each settlement type being allocated the same proportion of units**

Area	Area Character	Number of dwellings per settlement type*	Total	% for Approach 3
North	1 Service Centre	417	747	15%
	2 Service Villages	170		
	4 Villages	160		
South	2 Service Centres	834	1124	22%
	2 Service Villages	170		
	3 Villages	120		
East	Main Centre	1676	2462	48%
	1 Service Centre	416		
	2 Service Villages	170		
	5 Villages	200		
West	1 Service Centre	417	752	15%
	3 Service Villages	255		
	2 Villages	80		
<b>Total</b>	<b>29 Settlements</b>	<b>5085</b>	<b>5085</b>	<b>100</b>

\* Main Centre = 1676, Service Centre = 417, Service Village = 85, Village = 40 (Nb. All numbers rounded)

**12.7 Table 15: Spatial Distribution Approaches**

Spatial distribution approach 2001 to 2016 (15 year period)			Spatial distribution approach 2011 to 2026 (15 year period)			
Current spatial approach			Approach 1	Approach 2	Approach 3	Approach 4
Area	Spatial distribution 2001 to 2016 <i>Isle of Man Strategic Plan 2007</i>	Spatial distribution 2001 to 2016 <i>Isle of Man Strategic Plan 2007</i>	Divide total equally between 4 Areas	Divide in line with the Isle of Man Strategic Plan 2007	Divide on the basis of past development levels	Divide on the basis of available and potential residential development land
<b>North</b>	1200	20%	1270 (25%)	1016 (20%)	762 (15%)	1067 (21%)
<b>East</b>	2500	41.67%	1270 (25%)	2117 (41.67%)	2438 (48%)	2032 (40%)
<b>South</b>	1300	21.67%	1270 (25%)	1100 (21.67%)	1118 (22%)	1473 (29%)
<b>West</b>	1000	16.67%	1270 (25%)	847 (16.67%)	762 (15%)	508 (10%)
<b>Total</b>	<b>6000</b>	<b>100%</b>	<b>5080</b>	<b>5080</b>	<b>5080</b>	<b>5080</b>

12.8 Table 15 illustrates how the various Approaches would translate into an Area based spatial distribution between 2011 and 2026. With the exception of Approach 1, which allocates all Areas with the same allocation, all of the other Approaches would see the East receiving

the highest proportion of the overall figure, followed by the South. The West and North were always the Areas with the least (or joint least) proportion of the overall need figure.

- 12.9 Whilst Approach 4 identifies actual figures based on a simple calculation, the Department is aware that when it comes to housing distribution across the Island, it is important to consider a range of factors. This will ensure that the commitment in the Isle of Man Strategic Plan 2007 - to encourage and facilitate the sustainable development of the Island - is acknowledged and followed. The continued aim of the Isle of Man Strategic Plan 2015 is to locate development in the most sustainable locations, close to services and facilities, which offer choice in terms of transport (other than the private car) and which even reduce the need for travel or enable journey lengths to be reduced.
- 12.10 The other factors which need to be considered have been set out in the Area Profile Tables on the next few pages. Each Profile represents an assessment of the 'identified settlements' that are located within each of the Areas, including the level of service provision within these settlements and the journey times from each of these settlements to the Employment Centres identified in the Island Spatial Strategy.<sup>8</sup>
- 12.11 In addition, each of the settlements has been investigated as part of a desk top study to ascertain the level of development potential within and immediately adjacent to them. This study does not replace or replicate the process of the Area Plans but merely serves to investigate and provide evidence that there is, theoretically, sufficient land to accommodate the predicted levels of population and household growth and that this growth can be accommodated in line with the principles of the Island Spatial Strategy as set out in the Isle of Man Strategic Plan 2007.
- 12.12 All of the settlement analysis has been used to support the breakdown of the Island's overall housing requirement. It takes into account the general aims for spatial distribution of housing around the Island and how the 4 different Areas are made up in terms of spatial character and development opportunities.

---

<sup>8</sup> Isle of Man Strategic Plan 2007, Chapter 5

## 13.0 Area Profiles – North, South, East and West

### 13.1 The North

#### Key spatial and area characteristics

<b>The North</b>			
<b>Overall Resident Population</b>	13,746		
<b>Population in Private Households</b>	13,389		
<b>Number of Households</b>	5,908		
<b>Overall spatial character</b>	Dominated by 1 Service Centre		
<b>General spatial character</b>	1 Service Centre	2 Service Villages	4 Villages
<b>Settlement spatial character</b>	Ramsey - Major Employment Area Principal Gateway (Port)	Jurby Andreas  Jurby is a Major Employment Area.	Bride Sulby Ballaugh Glen Mona
<b>Service Provision</b>	Full Range in Ramsey, more limited elsewhere		
<b>Highway Links</b>	Strategic Links  Ramsey to Laxey along the Coast Ramsey to Douglas over the Mountain Road Ramsey to Kirk Michael, passing through Ballaugh and Sulby		Secondary Links  Ramsey to Jurby Ramsey to Bride Ramsey to Andreas
<b>Peak journey times to Douglas</b>	By car - Between 35 minutes (from Ramsey & Sulby) and 50 minutes (from Bride) Longer if Mountain Road closed		By public transport – Between 40 minutes (from Glen Mona) and 85 minutes (from Andreas). No availability from Bride
<b>Peak journey times from northern settlements (excl. Ramsey) to Employment Areas</b>	Private car to Ramsey: Between 10 and 20 minutes  Public transport to Ramsey: Between 10 and 45 minutes		Private car to Jurby: Between 10 and 30 minutes  Public transport to Jurby: between 20 and 105 minutes.
<b>Residential Land availability</b>	Existing: 61 ha Ranking in terms of available land - 1st  <b>North</b> , South, West, East	Future potential of 7 settlements 3 = <i>good</i> 1 = <i>limited</i> 3 = <i>very limited</i>	Ranking in terms of potential growth: 3rd  East, South, <b>North</b> , West
<b>Ranking: potential and available residential land</b>	Ranking 3rd East, South, <b>North</b> , West		
<b>Employment land availability</b>	Ranking 3rd East, South, <b>North</b> , West		
<b>Conclusion:</b> After taking into account the land available for residential development both now and in the future and considering the employment land availability, the Department judges that there is sufficient evidence to support the decision to allocate the spatial distribution of housing based on past development trends i.e. 15% of the Island total to the North or 762 dwellings. It is judged sensible to round this number up to <b>770</b> .			

## 13.2 The South

### Key spatial and area characteristics

<b>The South</b>			
<b>Overall Resident Population</b>		14,341	
<b>Population in Private Households</b>		14,171	
<b>Number of Households</b>		6,254	
<b>Overall spatial character</b>	The South does not have one dominant town or village. There is a network of towns and villages spread across the Area		
<b>General spatial character</b>	2 Service Centres	2 Service Villages	3 Villages
<b>Settlement spatial character</b>	Port Erin Castletown  Both are recognised as small commercial / leisure ports	Port St Mary Ballasalla  Major Employment Area focused on the Airport, which is also recognised as a Major Gateway. Port St Mary is a small commercial / leisure port	Ballafesson Colby Ballabeg
<b>Service Provision</b>	Port Erin and Castletown offer a wide range of services. Castletown is home to both Castle Rushen High School and the Southern Swimming Pool		
<b>Highway Links</b>	<b>Strategic Links:</b>  Castletown to Douglas (via Ballasalla) Port Erin to Foxdale Gansey to Port St Mary  Transport Proposal 1 in the Area Plan for the South 2012 makes provision for the construction of the Ballasalla Bypass (an Urban Distributor Road) between Glashen Hill and Balthane Corner.		<b>Secondary Links:</b>  The remaining settlements are connected by Secondary Links
<b>Peak journey times to Douglas</b>	By car – Between 20 minutes (Ballasalla) and 40 minutes (Port Erin, Port St Mary & Ballafesson)		By public transport – Between 25 minutes (Ballasalla) and 65 minutes (Port St Mary)
<b>Peak journey times from all southern settlements to Employment Area</b>	Private car to the Airport: Between 5 and 20 minutes. Public transport to the Airport: Between 5 and 45 minutes		
<b>Residential Land availability</b>	Existing: 35 ha Ranking in terms of available land: 2nd  North, <b>South</b> , West, East  The Area Plan for the South 2012 makes a commitment to re-examine the potential of Castletown to provide further opportunities for residential development (page 6)	Future potential of 7 settlements:  4 = <i>good/abundant</i> 3 = <i>very limited</i>	Ranking in terms of potential growth: 2nd  East, <b>South</b> , North, West
<b>Ranking: potential and available residential land</b>	Ranking 2nd : East, <b>South</b> , North, West		
<b>Employment land availability</b>	Ranking 2nd : East, <b>South</b> , North, West		
<b>Conclusion:</b> After taking into account the land available for residential development both now and in the future and considering the employment land availability, the Department judges that there is sufficient evidence to support the decision to allocate the spatial distribution of housing based on past development trends i.e. 22% of the Island total to the South or 1118 dwellings. It is judged sensible to round this number to <b>1120</b> .			

### 13.3 The East

#### Key spatial and area characteristics

The East				
<b>Overall Resident Population</b>		47,037		
<b>Population in Private Households</b>		46,190		
<b>Number of Households</b>		19,550		
<b>Overall spatial character</b>	The East comprises some of the Island's major settlements. Douglas is the Main Centre.			
<b>General spatial character</b>	1 Main Service Centre	1 Service Centre	2 Service Villages	5 Villages
<b>Settlement spatial character</b>	Douglas	Onchan	Laxey Union Mills	Crosby Baldrine Glen Vine Newtown Strang
<b>Service Provision</b>	Douglas provides the main employment, retail and leisure opportunities on the Island. Douglas is an identified Gateway to the Island, a Major Employment Area and a Major Port. Douglas is well provided for in terms of service provision. Services are limited in the 5 Villages.			
<b>Highway Links</b>	Strategic Links: All settlements but the Strang are connected to Douglas via Strategic Links, although there is a close physical relationship between the Strang and Union Mills. Secondary Link between Douglas and the West (Foxdale)			
<b>Peak journey times to Douglas</b>	By car – Between 10 minutes (Onchan & Newtown) and 20 minutes (Laxey & Crosby)		By public transport – Between 15 minutes (Onchan & Newtown) and 30 minutes (Laxey)	
<b>Peak journey times from eastern settlements to Employment Areas</b>	Private car to Douglas: Between 10 and 20 minutes. Public transport to Douglas: Between 15 and 30 minutes.			
<b>Residential Land availability</b>	Existing: 14.3 ha Ranking in terms of available land – 4th  North, South, West, <b>East</b>	Future potential of 9 settlements:  4 = <i>good/abundant</i> 1 = <i>limited</i> 4 = <i>very limited</i>	Ranking in terms of potential growth - 1st  <b>East</b> , South, North, West	
The Department is committed to undertaking the Area Plan for the East following the review of the Isle of Man Strategic Plan. This will potentially see the release of land for both residential and employment purposes as well as for the provision of services (e.g. for education purposes).				
<b>Ranking: potential and available residential land</b>	Ranking 1 <sup>st</sup> : <b>East</b> , South, North, West			
<b>Employment land availability</b>	Ranking 1 <sup>st</sup> : <b>East</b> , South, North, West			
<b>Conclusion:</b>	After taking into account the land available for residential development both now and in the future and considering the employment land availability, the Department judges that there is sufficient evidence to support the decision to allocate the spatial distribution of housing based on past development trends i.e. 48% of the Island total to the East or 2438 dwellings. It is judged sensible to round this number to <b>2440</b> .			



## 13.4 The West

### Key spatial and area characteristics

<b>The West</b>			
<b>Overall Resident Population</b>		9,373	
<b>Population in Private Households</b>		9,276	
<b>Number of Households</b>		3,887	
<b>Overall spatial character</b>	The West is characterised by the Service Centre of Peel and a number of smaller lower order settlement		
<b>General spatial character</b>	1 Service Centre	3 Service Villages	2 Villages
<b>Settlement spatial character</b>	Peel Peel is a Gateway and a small commercial/leisure Port.	Kirk Michael Foxdale St Johns	Glen Maye Dalby
<b>Service Provision</b>	Peel offers a full range of services. Kirk Michael, St Johns and Foxdale have fewer services to offer and Glen Maye and Dalby have limited service provision.		
<b>Highway Links</b>	Strategic Links: Peel to Douglas via St Johns Kirk Michael to St Johns and Foxdale		Secondary Links: Peel to Kirk Michael Peel to Glen Maye and Dalby Dalby to Foxdale
<b>Peak journey times to Douglas</b>	By car – Between 25 minutes (St Johns & Foxdale) and 40 minutes (Kirk Michael, Glen Maye and Dalby)		By public transport - Between 30 minutes (St Johns and Foxdale) and 60 minutes (Kirk Michael). No service from Glen Maye and Dalby
<b>Peak journey times from eastern settlements to Employment Areas</b>	Private car to Douglas: Between 25 and 40 minutes. Public transport to Douglas: Between 30 and 60 minutes. No public transport available from Glen Maye and Dalby that would get people to Douglas within the peak times.		
<b>Residential Land availability</b>	Existing: 35.2 ha Ranking in terms of available land – 3rd  North, South, <b>West</b> , East	Future potential of 6 settlements :  <i>2 = limited</i> <i>4 = very limited</i>	Ranking in terms of potential growth 4 <sup>th</sup>  East, South, North, <b>West</b>
<b>Ranking: potential and available residential land</b>	Ranking 4 <sup>th</sup> : East, South, North, <b>West</b>		
<b>Employment land availability</b>	Ranking 4 <sup>th</sup> : East, South, North, <b>West</b>		
<b>Conclusion:</b> After taking into account the land available for residential development both now and in the future and considering the employment land availability, the Department judges that there is sufficient evidence to support the decision to allocate the spatial distribution of housing based on past development trends i.e. 15% of the Island total to the West or 765 dwellings. It is judged sensible to round this number to <b>770</b> .			

13.5 The above Profile Tables for the North, South, East and West identify the spatial distribution of the all-Island housing needs up to 2026. The Tables refer to the strategic highway network and journey times to the nearest Employment Centres. It is important to fully consider the implications of the revised housing projections on the Strategic Links identified in the Isle of Man Strategic Plan 2007 to measure current traffic flows and expected traffic growth up to 2026. The following Section (14.0) explains the background to the work undertaken to identify the transport implications of the Isle of Man Strategic Plan 2007 and assesses the impact of the predicted increase in traffic flow on the Strategic Highway Network up to 2026.

#### **14.0 Transport implications of the proposed changes to Strategic Policy 11, Housing Policy 1 and Housing Policy 3**

14.1 In April 2007 JMP Consulting produced a report which outlined the transport implications associated with the Department of Local Government and the Environment's Isle of Man Strategic Plan (see Appendix 2). This document assessed the capacity of the following Strategic Links:

- A1 Douglas to Peel
- A2 Douglas to Laxey
- A2 Laxey to Ramsey
- A3 Castletown to St Johns
- A3/A4 Peel to Ramsey
- A5 Douglas to Ballasalla
- A5 Ballasalla to Castletown
- A5 Castletown to Port St Mary and Port Erin
- A18 Douglas to Ramsey

14.2 The Report predicted a general increase in traffic of 6.8% and 9%. This traffic growth was attributed to the Isle of Man Strategic Plan 2007 housing allocations from 2006 to 2016. This would result in an overall increase in traffic growth of 15.8% by 2016. In addition, a route assessment on each of the roads was undertaken and this identified congestion usually, though not exclusively, arose at road junctions rather than on the links. The average capacity of a one lane in each direction single carriageway road is typically 3,600 vehicles per hour and significant congestion typically occurs when the traffic flow exceeds 85% of this capacity. The report concluded:

- i. Link flows on the strategic links included within the study area were less than 3,060 vehicles per hour in each direction at the time of the report and for 2016 once the anticipated increase in traffic flow had been applied to the strategic links.
- ii. The Quarterbridge (A1/A2/A5 junction west of Douglas) and Governors Hill (A2/A18 junction in Onchan) were identified as the only two locations on the defined strategic links at which traffic flows are presently regularly greater than 85% of capacity.

14.3 This Report and its findings were accepted by the independent Planning Inspector at the Public Inquiry into the Isle of Man Strategic Plan 2007. The Department of Local

Government and the Environment Isle of Man Strategic Plan Order was approved by Tynwald in 2007. Chapter 11 (Transport, Infrastructure and Utilities) on pages 93 to 99 of this Plan provides the following information on traffic growth up to 2016:

14.4 Paragraph 11.1.11 states: "Taking account of the proposed level and location of new development in the Strategic Plan the (JMP) study concluded the following junctions would suffer more congestion:

- Quarterbridge
- Mountain Road/Governors Road
- Glencrutchery Road/Victoria Road
- A5/A7 junction Ballasalla
- Parliament Square Ramsey"

14.5 The congestion in Ballasalla and particularly the A5/A7 junction was an important consideration within the development of the Area Plan for the South. Traffic assessments undertaken between 2005 and 2010 identified traffic flows through this village did not support the requirement to construct the A5 Ballasalla By-pass during the term of this Area Plan (2012 to 2016). In fact, the 2010 traffic surveys reported a decrease in traffic flow between 2005 and 2010 rather than the increases predicted within the Isle of Man Strategic Plan 2007. This information was accepted by the independent Planning Inspector at the Public Inquiry into the Area Plan for the South and resulted in the Ballasalla By-pass improvement scheme becoming a development lead project, rather than a highway scheme required to prevent the A5/A7 junction exceeding its capacity within the term of the Area Plan. The Area Plan for the South was approved by Tynwald in 2012.

14.6 The Department of Infrastructure is seeking to update the Isle of Man Strategic Plan and the Department's Policy, Performance and Strategy Division have undertaken further traffic surveys on the Strategic Links identified within the JMP Consulting report to ascertain the current traffic flows and the traffic growth from 2006 to 2026. Two types of assessment were undertaken:

- The first assessment calculated the likely traffic growth using the existing peak hour traffic flows and the number of existing properties to calculate an average trip rate for each existing property. This "AVERAGE" trip rate was then applied to the revised Isle of Man Strategic Plan projections for new properties likely to receive planning consent and be constructed prior to 2026.
- The second assessment calculated the likely traffic growth using a theoretical generation of 0.7 trips per property within the peak traffic period. This "0.7 TRIP" rate was then applied to the revised Isle of Man Strategic Plan projections for new properties likely to receive planning consent and be constructed prior to 2026.

14.7 These two methods of assessment were then used to assess the capacity on the strategic network in 2026 using the following assessments:

1. The first assessment applies the traffic growth to the whole strategic route network and the primary strategic network based upon existing distribution of traffic flow on these routes. This traffic data is contained within Appendix 3.
2. The second assessment applies the traffic growth to the local strategic route network based upon the likely geographic location where the new properties will be built. This traffic data is contained within Appendix 4.

14.8 It should be noted in both assessments the new properties which will be built within the 2011 to 2026 period are applied to the Department's 2013 traffic data to ensure a worst case scenario is used. The evaluation of the data these assessments produce indicates the following:

- i. The traffic growth forecasted within the Department of Local Government and the Environment's Isle of Man Strategic Plan Order approved by Tynwald in 2007 has not occurred;
- ii. The strategic links are and should continue to operate within their 3,060 vehicles per hour capacity for the duration of the revised Strategic Plan (up to 2026);
- iii. The Ballacraigne to Ramsey strategic link is operating within a 1110 vehicles per hour capacity for a narrow 6.75 metre wide Urban All Purpose 3 road in accordance with TA 79/99<sup>9</sup> for all the types of assessment in 2026. This standard represents a sensitivity test which highlights there is no requirement to undertake further traffic congestion investigation work in rural village locations such as Kirk Michael;
- iv. The Castletown to Ballasalla and Ballasalla to Douglas links are operating outside the 1110 vehicles per hour capacity for a narrow 6.75 metre wide Urban All Purpose 3 road in accordance with TA 79/99 in 2026 in all the "TRIP" rate assessments and when traffic growth is applied based upon the likely geographical location of new property development. This standard represents a sensitivity test which highlights the requirement for traffic congestion investigation work in Ballasalla in 2026;
- v. The Quarterbridge and Governors Hill junctions continue to operate at greater than 85% capacity and the increased traffic flows predicted in all the assessments will increase congestion at these locations; and
- vi. Traffic flows at the Parliament Square junction in Ramsey, Ballacraigne junction, and Main Road junction at Onchan are all set to increase by 2026 which will increase congestion at these locations.

14.9 To assess the impact of the predicted increase in traffic flow at these strategic junctions at Parliament Square in Ramsey, Ballacraigne, and Main Road in Onchan the Department has undertaken an assessment of the average annual daily traffic (AADT) flows on each of the strategic links. This assessment uses a similar methodology to that highlighted above to predict the traffic growth and to distribute this growth across the strategic road network. This information is contained within Appendix 4 and uses a theoretical value of five trips

---

<sup>9</sup> TA 79/99 - The United Kingdom Design Manual of Road and Bridge Works – Traffic Capacity of Urban Roads.

per property per day alongside an average trip calculation based upon existing traffic data to predict the growth in traffic by 2026.

- 14.10 An evaluation of this data indicates the increase in traffic flow at Parliament Street in Ramsey can be accommodated by the minor improvement works to increase capacity at this location in 2009. However, the Ballacraigne and Onchan Main Road traffic signals will require further assessment during the development of the Area Plans for the West and East of the Island respectively to ensure these junctions do not become subject to a high level of congestion.

## 15.0 Summary of Area Profiles and Traffic Data

15.1 The data set out in the Area Profile tables indicates that there are differences in the make-up of each of the Areas and the desirability to accommodate future growth requirements in each of them. It is acknowledged that whilst some settlements may offer sustainable opportunities for further development, other settlements may have little or no sustainable sites. More detailed work in the Area Plans will be able to determine the best spread of housing across specific Areas.

15.2 Given that Douglas is set to remain as the Main Centre, the Department considers that it is sensible to reflect this status in the distribution of the housing requirement figure.

15.3 The Transport Assessment confirms that the Strategic Links should continue to operate within their capacity for the duration of the revised Plan period. In terms of the impact on strategic junctions, it was identified that further assessment will be necessary for the Onchan Main Road and Ballacraigne junctions, as part of the Area Plans for both the East and the West.

15.4 In summary, the Department is satisfied that the proposed allocation of 5100 new housing units between 2011 and 2026 can be built on the Island in line with the existing Island Spatial Strategy and without significant strain on the Strategic Highway Links. Whilst it is recognised that additional assessment of certain junctions will be necessary in the future, the Department supports the housing distribution across the Island on the following basis:

<b>Area</b>	<b>Spatial distribution</b>
North	770
South	1120
East	2440
West	770
<b>Total</b>	<b>5100</b>

## 16.0 Overall Conclusions

- 16.1 Assumptions have had to be made about the average size of future households on the Isle of Man. Taking into account a range of factors and assessing various possibilities, the Department supported a scenario for household change which would see a gradual reduction in household size. This scenario applied the same household size fall rate that happened between 2001 and 2011, as evidenced by the 2011 Census data. The Department concluded that the chosen scenario would lead to the need for around **4885** additional new houses from 2011 to 2026.
- 16.2 The Department also concluded that a vacancy factor should be applied and that this should be calculated at 4% of the need derived from the Census data (i.e. the 4885). The vacancy factor remains unchanged from the Isle of Man Strategic Plan 2007, and has been tested against the national vacancy rates in other jurisdictions. The application of a 4% vacancy rate figure would increase the housing need figure from 4885 to **5080** between 2011 and 2026.
- 16.3 The Department judged that a clearer methodology for informing the spatial distribution of housing on the Island was necessary. This methodology looked at a range of Approaches and took into account the settlement character across the 4 Areas. The final spatial distribution of the all-Island housing need figure was based on past development trends with full awareness of the services in each settlement, highway matters, the potential for further growth and likely housing demand.
- 16.4 The spatial distribution figures for each Area were rounded up and this made the final figure **5100**. This is not to be treated as a maximum or a minimum number but a broad reflection of the overall national housing requirement which should be monitored and planned for accordingly.
- 16.5 The revised Isle of Man Strategic Plan housing figures for the North, East, South and West will be the figures against which residential land allocations in the various Area Plans will be measured.
- 16.6 All of these conclusions have enabled the Department to propose the following revised Isle of Man Strategic Plan Policies set out below.

## 17.0 Recommended Policies for the Draft Isle of Man Strategic Plan 2015

### **Proposed Strategic Policy 11**

The housing needs of the Island will be met by making provision for sufficient development opportunities to enable 5100 additional dwellings (net of demolitions), and including those created by conversion, to be built over the Plan period 2011-2026.

### **Proposed Housing Policy 1**

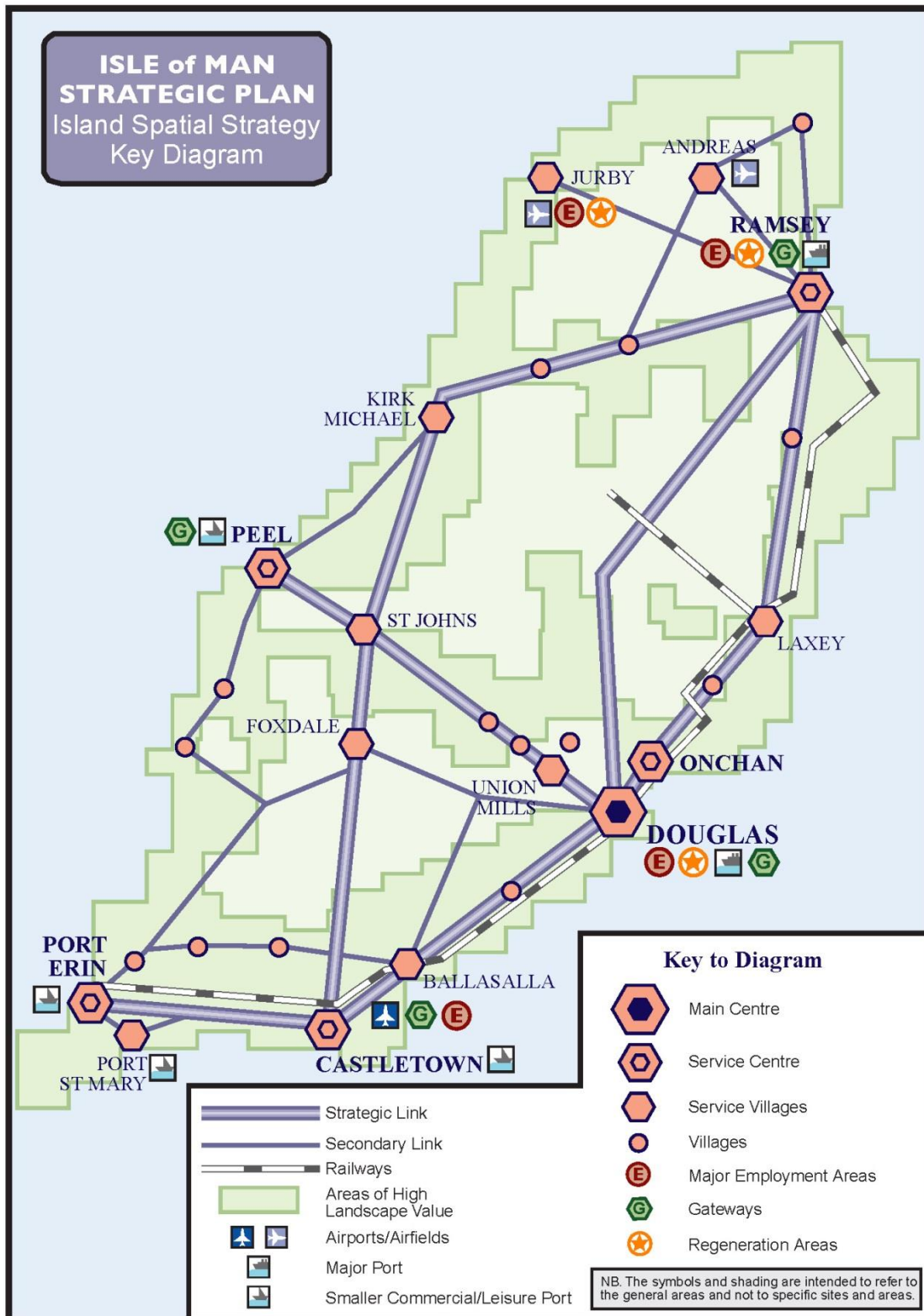
The housing needs of the Island will be met by making provision for sufficient development opportunities to enable 5100 additional dwellings (net of demolitions), and including those created by conversion, to be built over the Plan period 2011-2026.

### **Proposed Housing Policy 3**

The Island's housing need of 5100 additional dwellings between 2011 and 2026 is to be met by a spatial distribution of housing across the North, South, East and West as follows:

- North                    770
- South                    1120
- East                      2440
- West                      770
- All-Island               5100

# Appendix 1: Island Spatial Strategy Key Diagram, Isle of Man Strategic Plan 2007





**Appendix 2: Transport Implications of the Isle of Man Strategic Plan 2007 –  
Report by JMP Consulting**

---

# Transport Implications of the Isle of Man Strategic Plan

## Report



---

# Transport Implications of the Isle of Man Strategic Plan

## Report

### JMP CONSULTING

CENTRUM HOUSE, QUEEN STREET  
GLASGOW G1 3DX

T 0141 221 4030 F 0141 221 4050 E [glasgow@jmp.co.uk](mailto:glasgow@jmp.co.uk) W [www.jmp.co.uk](http://www.jmp.co.uk)

Job no.	Prepared by	Verified	Approved by	Status	Issue no.	Date
<b>A075005</b>	<b>IA</b>	<b>TS</b>	<b>TS</b>	<b>Final</b>	<b>2</b>	<b>24 Apr 07</b>

Belfast Brighton Bristol Glasgow Edinburgh Leeds Lichfield Liverpool London Manchester Newcastle



# Transport Implications of the Isle of Man Strategic Plan

## Report

### Contents Amendment Record

This document has been issued and amended as follows:

Status/Revision	Issue Number	Date	Approved By
Draft	1	5 Oct 06	TS
Final	2	24 Apr 07	TS

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
	Background	1
	Report Structure	1
<b>2</b>	<b>Study Methodology and Assumptions</b>	<b>2</b>
	Overview	2
	Traffic flow forecasting	3
	Identification of problem sites	5
	Reporting of findings	6
<b>3</b>	<b>Link Summary Tables</b>	<b>7</b>
<b>4</b>	<b>Summary of Findings</b>	<b>31</b>

## Tables and Figures

<b>Figure 1: Strategic Links</b>	<b>2</b>
<b>Table A1: Isle of Man Zonal Population Growth</b>	<b>3</b>
<b>Table A2: Journey Purpose for Car Drivers</b>	<b>4</b>
<b>Table A3: Growth in Trip Rates Due to Strategic Plan (2006-2016)</b>	<b>4</b>
<b>Table A4: Housing Growth Assumptions Adopted in Junction Analysis</b>	<b>5</b>
<b>Figure B1: Suitability of Junction Type by Traffic Flow</b>	<b>11</b>

## Appendices

### **Appendix A**

Traffic growth assumptions

### **Appendix B**

Junction traffic flow and capacity assumptions

# 1 Introduction

## Background

- 1.1 JMP were commissioned by the Isle of Man Government Department of Local Government and the Environment (DLGE) to assess the transport impacts of the development proposals contained in the island's Strategic Plan.
- 1.2 The Strategic Plan<sup>1</sup> estimates that around 6,000 new houses will be required between 2001 and 2016. This level of housing is required in order to meet anticipated population growth and reduction in the average number of people residing in each household. The Plan assumptions indicate population growth of 12% and growth in the number of households of 19% during this period. This level of housing and population growth will generate additional journeys on the local and strategic transport networks on the island.
- 1.3 The objectives of this study are to:
- Identify the main strategic links between communities on the island;
  - Describe the current status of these links (condition, capacity, pinch points, congestion, etc); and
  - Forecast the expected impacts of the housing developments proposed in the Plan on the performance of these links.
- 1.4 In particular, focus has been given in order to understand which of the strategic links can accommodate an increase in traffic levels without undue delay or congestion problems, and on which parts of which links problems can be foreseen.
- 1.5 It should be recognised that the appraisal presented in this report is intended to give an island-wide overview of the likely impacts of the proposed development in order to aid the decision making process surrounding the Strategic Plan. It is not intended to be a substitute for a detailed assessment of the impacts of individual developments, which could potentially create transport problems at specific locations that cannot currently be foreseen.

## Report Structure

- 1.6 Chapter 2 of this report summarises the method undertaken to complete the study and is accompanied by Appendix A which sets out the key assumptions made.
- 1.7 Chapter 3 provides the link assessment tables and Chapter 4 a brief summary of the findings.

---

<sup>1</sup> Within this document, the "Strategic Plan" refers to the Isle of Man Strategic Plan: Towards a Sustainable Island, modified draft written statement (DLGE, November 2004) and updated population and household projections which have been incorporated into the 2007 modified draft written statement.

## 2 Study Methodology and Assumptions

### Overview

#### Defining strategic links

- 2.1 The strategic links to be studied in the work were defined by the DLGE in conjunction with the Department of Transport (DOT). They were taken to be the main routes linking the island's communities, making reference to the DOT's route hierarchy.
- 2.2 Additionally, detailed discussions were held with the DOT to ensure that the strategic links include all those that presently, or may in future, suffer from significant congestion.
- 2.3 The agreed list of strategic links is:
- A1 Douglas – Peel
  - A2 Douglas – Laxey
  - A2 Laxey – Ramsey
  - A3 Castletown – St Johns
  - A3/A4 Peel – Ramsey
  - A5 Douglas – Ballasalla
  - A5 Ballasalla – Castletown
  - A5 Castletown – Port St Mary – Port Erin
  - A18 Douglas – Ramsey.
- 2.4 These links are shown indicatively in Figure 1.

**Figure 1: Strategic Links**



- 2.5 It was further agreed with the DOT that no other links connecting the island's communities are likely to have any significant congestion problems arising from the effects of the Strategic Plan.

#### Link reviews

- 2.6 Each strategic link was reviewed during site visits by JMP staff. The purposes of these visits were to ascertain the topographical and carriageway characteristics of the road links, identify locations at which congestion does or could arise and to understand the causes of this congestion.

#### Stakeholder discussions

- 2.7 Detailed discussions with representatives of the Highways Department of the DOT were undertaken about each of the corridors. These discussions reviewed:
- Current traffic flow and locations of congestion;
  - Locations at which congestion does not presently occur but which could be significantly affected by a relatively small increase in flow; and
  - Locations with particular road safety problems.

- 2.8 The findings of these discussions are included within the outputs from this study as appropriate.

#### Data collation

- 2.9 We have collated data on traffic flows from the DOT (which have nine permanent automatic traffic counters on the island's main routes) and from various previous studies undertaken for them which included traffic counts.

- 2.10 Additionally, the Isle of Man Police provided us with their statistics on the number and location of vehicle crashes on the strategic links.

#### Desktop analysis and review

- 2.11 A desktop review of traffic flows and analysis of potential problem sites was then completed, as described in more detail below.

- 2.12 Assessment of the effects is largely qualitative in nature, supplemented by the use of existing traffic flow information, where available, and indicative junction assessments. Note that neither new data collection nor route assignment traffic modelling has been undertaken as part of this work. This report therefore relies on a number of assumptions of the traffic growth on, and capacity of, the strategic links. These assumptions are listed within this report.

### Traffic flow forecasting

- 2.13 The focus of this study was to forecast future traffic levels on the strategic links and to use these to understand at which locations significant levels of congestion or delay could be anticipated.

- 2.14 Traffic growth in the period 2001 – 2016 (the period of influence of the Strategic Plan) will arise from two factors:
- Increasing car ownership and willingness to use cars amongst the existing population; and
  - Increasing population and numbers of households.

- 2.15 It is only the latter of these that is influenced by the Strategic Plan. The former is assumed to occur even if the Plan allowed no new development.



effect is thus considered to be the “do-minimum” scenario for traffic growth. It is then the difference between this 2016 do-minimum forecast and the total traffic level including the effects of the Plan that forms the impact of the Plan allocations.

- 2.16 Within this section, we outline the method used to forecast the magnitude of these effects and how we have reviewed the impacts at specific locations on the strategic links.
- 2.17 Note that, while the Strategic Plan covers the period 2001 – 2016, traffic observations and flow data were available for 2006. Thus, forecasts of traffic growth have focussed on the 2006 – 2016 period.

#### Increasing car ownership and use

- 2.18 No Isle of Man-specific forecasts of increasing car ownership or use are available. Although some historic trend information on traffic flows is available for some of the island’s roads, it is not possible to disaggregate the total observed growth in order to understand how much of this is as a result of increasing car ownership and use, as opposed to population growth or new developments. UK average forecasts have therefore been employed.
- 2.19 These suggest that the number of cars per household will increase from 1.08 in 2006 to 1.13 in 2016, growth of 4.6%<sup>2</sup>. Furthermore, each car is likely to be used more on average, with a suggested 0.21% increase in mileage per vehicle per annum<sup>3</sup>, or 2.1% over a 10-year period.
- 2.20 This gives an estimated cumulative total do-minimum traffic growth of 6.8% from 2006 to 2016. We assume that this do-minimum growth will apply equally on each strategic link on the network.

#### Transport demand increase due to Strategic Plan

- 2.21 The Strategic Plan allocations suggest that the number of households on the Isle of Man will increase by around 19% between 2001 and 2016. Population will grow at a lower rate, of around 12%, as the average number of people residing per household is expected to fall in the same period.
- 2.22 The Plan also defines where the growth in housing should occur, distributed between four areas of the island. This suggests that proportional growth in housing (and hence population) will not be the same across all parts of the island, and our method has accounted for this spatial distribution. It is also cognisant of the location of opportunities on the island; specifically that Douglas will remain the provider of some services to all of the island’s population, wherever they reside.
- 2.23 Our method has defined the traffic growth effects of the development allocations of the Strategic Plan, but suitably disaggregated to account for the differential growth rates between strategic links.
- 2.24 However, some of the development allocations of the Plan have already been taken up, and hence their traffic growth effects already apparent in 2006 observations. Furthermore, the housing growth between 2001 and 2006 has not necessarily taken place proportionately between the four Plan areas (the west area has seen a larger proportion of its total Plan allocation already occur, whereas the north has seen little housing growth since 2001). These factors

<sup>2</sup> Source: Table 12 of National Road Traffic Forecasts (Great Britain) 1997

<sup>3</sup> Interpolated from 4.4% increase between 1996 and 2016 as forecast in 2NRTF Working Paper No. 2: Car Use: Modelling and Forecasting (1997)

have all been taken into account in our traffic growth forecasts and full details of the assumptions made are contained in Appendix A.

- 2.25 Overall, we estimate that the Strategic Plan housing allocations will generate an average increase in traffic across the island of around 9% over and above the do-minimum case in the period 2006 – 2016.
- 2.26 This growth will not occur equally in all parts of the island, however, and growth in the number of journeys generated in each of the four zones of the Strategic Plan is estimated to be:
- North: 12%;
  - South: 13%;
  - East: 5%;
  - West: 17%.

### Identification of problem sites

- 2.27 The primary purpose of the analysis undertaken was to identify those locations at which traffic congestion problems would occur, or be exacerbated, if the development proposed by the Strategic Plan were to take place.
- 2.28 Congestion usually, though not exclusively, arises at road junctions rather than on links. The average capacity of a one lane in each direction single carriageway road is typically 3,600 vehicles per hour. Link flows on the strategic links included within this study are well within this upper limit and as such we do not consider that the capacity of the links themselves is likely to be a problem with regard to traffic flow. Our focus was to identify each junction or other pinchpoint at which congestion does, or could possibly, arise then to model the future traffic levels.
- 2.29 These sites were identified through consultation with the DOT and on-site observations. We are confident that every location at which traffic congestion could be a problem on the strategic links has been identified, though it should be noted that we have focussed on the inter-urban links and have not considered junctions within town centres.
- 2.30 At every relevant site, existing traffic flows have been estimated, making use of relevant traffic count information, extrapolated where necessary when no counts at or adjacent to the site is available. Do-minimum and with-Plan growth have then been applied as appropriate to the location of the site. Where detailed models of junctions are available, these have been utilised to forecast the effects of the growth. Where they are not, we have used industry standard capacity forecasting techniques to ascertain whether congestion is likely to occur.
- 2.31 The assumptions made for the forecasts for each site are given in Appendix B.
- 2.32 Note that all forecasts are based on traffic flows at peak times, but in typical weeks. Thus we have modelled the anticipated congestion at busy times of day (most commonly the morning and evening peak periods on weekdays) but not during special events. Congestion over and above the forecasts shown may be observed at certain times, notably during TT and Manx Grand Prix events.
- 2.33 It is an industry standard assumption that traffic networks typically operate without significant congestion when traffic flows are less than around 85% of capacity. As flow then increases, congestion and delay worsens and once flows reach capacity long delays can be expected.

- 2.34 At present, it is our view (and that of the DOT) that there are only two locations on the defined strategic links at which traffic flows are presently regularly greater than 85% of capacity: at Quarterbridge (the A1/A2/A5 junction west of Douglas) and in Onchan (at the A2/A18 junction).

### Reporting of findings

- 2.35 Key information on the forecast traffic effects of the Strategic Plan on each strategic link is contained, along with other relevant data, on link summary tables. These are contained in Chapter 3 of this report.

## 3 Link Summary Tables

- 3.1 The tables below detail the key information and impacts of the Strategic Plan on the key transport links, listed in the same order as presented in Chapter 2.

## A1 Douglas – Peel

### Route overview

Route designation	A1
Key settlements on route	Union Mills, Crosby, St John's
Description of route	The Douglas – Peel route follows the natural valley containing the rivers Neb and Dhoo. Total route length is around 17km. The route has dense frontage access within the settlements that it passes but, even outside these, has frequent accesses to many dwellings and businesses.
Description of traffic flow	Traffic flow at the west end of the route is usually observed to be relatively low. Flows increase east of St John's and peak on the approach to Douglas. The eastern part of the route is observed to have a relatively high level of traffic flow throughout the daytime period. Quarterbridge roundabout is located at the eastern end of this corridor and is generally regarded as the most congested junction on the island. Flows are highly tidal (much higher flow towards Douglas in the AM, and away from there in the PM).
Speed Limit	De-restricted speed limit except for 30mph zones through settlements
Key junctions / traffic pinchpoints	Quarterbridge (A1/A5 junction) – double-mini roundabout Ballacraigne (A1/A3 junction) – signalised junction

### Traffic characteristics[1]

	Westbound	Eastbound
Daily Traffic Flow	5,800	5,800
AM Peak Hour Flow (0800 – 0900)	309	756
PM Peak Hour Flow (1700 – 1800)	734	337
Speed Limit	No limit	No limit
85% Speed	46mph	47mph

[1] Recorded at ATC at Ballafreer House, Main Road, Marown (Mon 27th June – Mon 4th July 05)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	1%
Cars	92%
Short vehicle with trailer	<1%
2 Axle Rigid	5%
Other heavy vehicle	1%

### Public transport provision

Bus Service Numbers	5, 5A, 6, 6B
Peak frequency	2 per hour
Inter peak frequency	2 per hour

### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	7
Serious injury	27
Slight injury	92
Damage only	211
Comments	The section from Quarterbridge to Ballacraire is part of the TT route. The Isle of Man Police did not highlight any specific safety concerns affecting the route.

### Key junctions/traffic pinchpoints

#### Ballacraire

Location	A1/A3 junction	
Junction type	Four-arm signal controlled	
Description of current traffic effects	Some occasional queuing at peak periods. Larger queues during special events.	
Existing reserve capacity at peak times	AM	70%
	PM	41%
Schemes considered to increase capacity	None, though adjustment of signal timings may be able to release more capacity	
Estimated do-minimum traffic growth to 2016	6.8%	
Do-minimum reserve capacity in 2016	AM	68%
	PM	37%
Estimated additional traffic growth to 2016 from Strategic Plan	18%	
Reserve capacity in 2016 with Strategic Plan	AM	63%
	PM	27%
Description of congestion effects	It is not anticipated that traffic growth arising from the development content of the Strategic Plan will cause excessive delays at the Ballacraire signalised junction.	
Other relevant information	The DOT has highlighted that congestion is presently experienced at this junction during special events. Traffic growth arising from the Strategic Plan is likely to exacerbate this problem. Adjustment of existing signal timings may be able to release further traffic capacity.	

<b>Quarterbridge</b>	
Location	A1/A5 junction
Junction type	Four arm double mini roundabout
Description of current traffic effects	Extensive queuing during the AM and PM peak periods and during the weekend. The main queues in the AM peak are on Peel Road north and New Castletown Road. The main queue during the PM peak is on Quarterbridge Road. The queues on Peel Road north and New Castletown Road frequently extend to 1.5km.
Schemes considered to increase capacity	A scheme to replace the double mini-roundabout with a single larger roundabout is currently under consideration by the DOT.
Estimated do-minimum traffic growth to 2016	6.8%
Estimated additional traffic growth to 2016 from Strategic Plan	18%
Description of Congestion Effects	A traffic model of Quarterbridge has been constructed by JMP as part of a previous study. Development of this model is detailed in the 'Quarterbridge Traffic Study' report issued by JMP to the DOT in August 2006. This model was updated with the background traffic growth estimates developed for this study and traffic growth arising from the Strategic Plan. Results from the model suggest that queuing at the junction will increase significantly with the addition of do-minimum traffic growth to 2016 and to an even greater extent with the growth arising from the Strategic Plan. The congestion will increase both in severity at peak times and for the length of the day that it will occur: the model estimates that do-minimum growth will increase the duration of severe queuing at this junction by about 45 minutes in each peak, while the Strategic Plan growth will further increase this duration by at least an additional 45 minutes. Furthermore, the Strategic Plan will generate significant queuing on Quarterbridge Road in the AM peak and on Peel Road north and New Castletown Road in the PM peak, effects that will not be particularly severe with only do-minimum growth.
Other relevant information	Results from the traffic model indicate that the potential improvement scheme to replace the mini-roundabouts with a single larger roundabout would be able to accommodate traffic associated with the Strategic Plan. Even with the Strategic Plan traffic in 2016, this scheme provides a level of operation that is better than that of the existing situation.

### Overall assessment

Significant levels of congestion occur at the eastern end of this corridor at present; this congestion being focused at the Quarterbridge roundabout. Do-minimum traffic growth to 2016 will lead to significant increases in delay at this location, while the effects of the Strategic Plan would be to generate even further difficulties. Traffic modelling suggests that a proposed improvement scheme at the Quarterbridge roundabout could provide an improvement over current operation at the junction even with the addition of traffic associated with the Strategic Plan. No other locations on the corridor are likely to suffer from significant regular congestion as a result of the Strategic Plan.

## A2 Douglas - Laxey

### Route overview

Route designation	A2
Key settlements on route	Onchan, Baldrine, Laxey
Description of route	The A2 is bounded by the Electric Railway line between the A2/A11 junction and Baldrine and for part of the route between Baldrine and Laxey. The route has several steep gradients, no useable shoulder and relatively tight turns, this restricts visibility in places. There is residential frontage on this route through Baldrine.
Description of traffic flow	Traffic flow on the rural sections of this route is relatively light when compared with other strategic links on the Island. Passing opportunities are restricted by the gradients and visibility on the route which reduces traffic speed but does not generate congestion. Traffic flows are observed to be higher within Onchan and congestion occurs frequently at the A2/A18 junction there.
Speed Limit	De-restricted speed limit on this route except for 30mph zones through the settlements on route.
Key junctions / traffic pinchpoints	Mountain Road/Governors Road (assessment presented in A18 Douglas - Ramsey corridor) Glencrutchery Road/Victoria Road (assessment presented in A18 Douglas - Ramsey corridor)

### Traffic characteristics[1]

	Northbound	Southbound
Daily Traffic Flow	2,662	2,732
AM Peak Hour Flow (0800 – 0900)	118	420
PM Peak Hour Flow (1700 – 1800)	359	150
Speed Limit	30mph	30mph
85% Speed	36mph	35mph

[1] Recorded at ATC at Main Road, Baldrine (Mon 21st November – Mon 28th November 05)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	1%
Cars	93%
Short vehicle with trailer	<1%
2 Axle Rigid	5%
Other heavy vehicle	<1%



#### Public transport provision

Bus Service Numbers	3, 13, 27
Peak frequency	2 per hour
Inter peak frequency	Hourly

#### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	0
Serious injury	15
Slight injury	42
Damage only	97
Comments	The Isle of Man Police highlighted the village of Baldrine as an area of concern with regard to safety but noted that the area is subject to a speed limit of 30mph.

#### Overall assessment

This route serves traffic from relatively few settlements, all with small populations. As such, traffic flow on this route is relatively light and gives rise to little congestion on the rural parts of the route. Delay to traffic on the route can however occur as a result of a lack of passing opportunities. Traffic congestion is a problem in Onchan and will worsen with the effects of the Strategic Plan. This is quantified in the assessment of the A18 Douglas - Ramsey corridor. Apart from at that location, traffic growth associated with the strategic plan would not give rise to significant impacts on this route.

## A2 Laxey - Ramsey

### Route overview

Route designation	A2
Key settlements on route	Laxey
Description of route	This route provides a direct link between Laxey and Ramsey and does not serve any other sizeable settlements. Visibility on this route is relatively poor in places due to steep gradients and the curvature of the road as well as the walls and vegetation adjacent to the road. The geometric parameters influence the maximum speed of vehicles as well as passing opportunities. On street parking, bus stops, pedestrian crossings and dense frontage access all occur through Laxey.
Description of traffic flow	Traffic flow on this route is relatively light when compared with other strategic links on the Island. Passing opportunities are restricted by the gradients and visibility on the route. The B1 through Old Laxey is used as a short cut in order to avoid travelling the full length of the A2 through the village. This traffic can cause annoyance to residents on the B1.
Speed Limit	De-restricted speed limit on this route except for 30mph zones through Laxey.
Key junctions / traffic pinchpoints	Parliament Square - Ramsey (assessment presented in A3 Peel - Ramsey corridor)

### Traffic characteristics[1]

	Northbound	Southbound
Daily Traffic Flow	1,104	986
AM Peak Hour Flow (0800 – 0900)	79	99
PM Peak Hour Flow (1700 – 1800)	101	93
Speed Limit	De-restricted	De-restricted
85% Speed	38mph	42mph

1] Recorded at ATC at Glen Mona, Maughold (Mon 26th September – Mon 3rd October 05)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	2%
Cars	89%
Short vehicle with trailer	1%
2 Axle Rigid	8%
Other heavy vehicle	1%

### Public transport provision

Bus Service Numbers	3
Peak frequency	Hourly
Inter peak frequency	Hourly

### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	2
Serious injury	9
Slight injury	38
Damage only	100
Comments	The Isle of Man Police highlighted the Dhoon/Bulgham and Hibernia crossroads as areas of concern with regard to the occurrence of serious injury and fatal collisions.

### Overall assessment

This route serves traffic from relatively few settlements, all with small populations. As such, traffic flow on this route is relatively light and gives rise to little congestion except during evening peak times at Parliament Square in Ramsey. Delay to traffic on the route can however occur as a result of a lack of passing opportunities. Traffic growth associated with the Strategic Plan will not give rise to significant impacts on most parts of this route. However, at the Parliament Square junction in Ramsey, the effects of the Strategic Plan may be sufficient to generate congestion in the morning peak period where it would not otherwise occur. The analysis of the A3/A4 Peel - Ramsey corridor presents this assessment in detail.

## A3 Castletown - St Johns

### Route overview

Route designation	A3
Key settlements on route	Foxdale, Lower Foxdale
Description of route	Long sections of straight road, however, passing opportunities are limited in places by gradient and volume of traffic. There are a variety of on-street activities through Foxdale and Lower Foxdale including parking, bus stops and access points. The Billown circuit incorporates the A3 in its route between Castletown and the Cross Fourways junction (A3/A7 junction).
Description of traffic flow	The geometric characteristics of the road and the volume of traffic limits overtaking opportunities in places. However, traffic flow is not heavy enough to cause congestion at the junctions. There is some delay to vehicles in Foxdale and Lower Foxdale due to the interaction between parked cars and traffic and the steep gradients.
Speed Limit	De-restricted speed limit on this route except through settlements and their vicinity. The speed limit is restricted to 50mph and then 40mph through Ballamodha, Foxdale and Lower Foxdale.
Key junctions / traffic pinchpoints	A3/A24 priority junction A3/A7 crossroads junction Ballacraigne junction (assessment presented in A1 Douglas - Peel corridor) A3/A5 junction (assessment presented in A5 Castletown - Port Erin corridor)

### Traffic characteristics[1]

	Northbound	Southbound
Daily Traffic Flow	1,323	1,392
AM Peak Hour Flow (0800 – 0900)	88	214
PM Peak Hour Flow (1700 – 1800)	161	90
Speed Limit	40mph	40mph
85% Speed	51mph	50mph

[1] Recorded at ATC at Ballamodha Straight, Malew (Mon 6th March – Mon 13th March 06)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	1%
Cars	91%
Short vehicle with trailer	<1%
2 Axle Rigid	6%
Other heavy vehicle	2%

### Public transport provision

Bus Service Numbers	4, 8
Peak frequency	2 per hour
Inter peak frequency	Hourly

### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	2
Serious injury	19
Slight injury	38
Damage only	71
Comments	The Isle of Man Police Department highlighted that the Ballamodha area had been a concern with regard to accidents. However, remedial safety measures have been implemented and the area is under observation.

### Key junctions/traffic pinchpoints

#### A3/A24 priority junction

Location	A3/A24
Type of Junction	Three arm priority junction
Description of Congestion Effects	On site observations during the AM and PM peak periods did not highlight any congestion problems at this junction and no problems were identified by the DOT. The traffic flows at the ATC at Ballamodha are very light and do not indicate any reason for congestion at this junction. Traffic growth in the southern area of the Island arising from the housing allocations in the Strategic Plan is estimated at 13%. Applying this growth rate to the ATC at Ballamodha would result in an extra 39 vehicles during the AM peak and 33 vehicles during the PM peak. This level of traffic growth would not give rise to any significant congestion problems at the junction.

#### A3/A7 priority junction

Location	A3/A7
Type of Junction	Four arm crossroads junction
Description of Congestion Effects	Assessment as for the A3/A24 junction.

### Overall assessment

At present the A3 between Castletown and St Johns operates without significant congestion. However, on site observations suggest that vehicles experience some minimal delay when travelling through Foxdale and Lower Foxdale due to on street parking and steep gradients. Traffic growth arising from the Strategic Plan would not cause any significant impacts on this corridor due to the relatively low level of flow in the existing situation.

## A3/A4 Peel - Ramsey

### Route overview

Route designation	A3/A4
Key settlements on route	Kirk Michael, Ballaugh, Sulby
Description of route	Passing places are limited between St Johns and Kirk Michael due to curvature and gradient (visibility) in road. There are relatively few access points on this stretch of the A3 on the Kirk Michael – Ramsey section. There are a mixture of on-street uses through the various settlements on this route, this includes bus stops, signalised pedestrian crossings, parking and direct frontage access. There are intermittent residential and agricultural access points on this part of the route as well as a number of priority junctions with a number of minor routes.
Description of traffic flow	The flow is relatively light throughout the day including the peak periods. Traffic experiences some delay when travelling through the settlements on route, however, this is not excessive. There is relatively little delay at the junctions on this route, though traffic flows appear relatively high at Parliament Square in Ramsey and congestion is experienced there in the evening peak period.
Speed Limit	De-restricted speed limit except for 30mph zones through the settlements on route.
Key junctions / traffic pinchpoints	Parliament Square - Ramsey A3/A4 Priority Junction, Kirk Michael

### Traffic characteristics[1]

	Westbound	Eastbound
Daily Traffic Flow	2,350	2,187
AM Peak Hour Flow (0800 – 0900)	181	157
PM Peak Hour Flow (1700 – 1800)	210	214
Speed Limit	No limit	No limit
85% Speed	51mph	41mph

[1] Recorded at ATC at Ballacobb, Ballaugh (Mon 3rd July – Mon 10th July 06)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	2%
Cars	86%
Short vehicle with trailer	1%
2 Axle Rigid	8%
Other heavy vehicle	3%

### Public transport provision

Bus Service Numbers	5, 5A, 6, 6B
Peak frequency	Hourly
Inter peak frequency	Every 2 hours

### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	7
Serious injury	41
Slight injury	117
Damage only	186
Comments	The section of the A3 from Kirk Michael to Ramsey is part of the TT route. The Isle of Man Police highlighted the following areas of concern with regard to serious and fatal accidents; Ballig Bridge, Sarah's Cottage, Handleys Corner, Barregarroo cross roads and the approach to Ballaugh village.

### Key junctions/traffic pinchpoints

#### Parliament Square Ramsey

Location	A3/A9 Ramsey	
Junction type	Signalised Crossroads (Parliament Square One Way)	
Description of current traffic effects	Congestion observed on Queen's Pier Road in evening peak period.	
Existing reserve capacity at peak times	AM	22%
	PM	27%
Schemes considered to increase capacity	The DOT are assessing proposals to segregate right turning traffic off Queen's Pier Road and Bowring Road to increase capacity.	
Estimated do-minimum traffic growth to 2016	6.8%	
Do-minimum reserve capacity in 2016	AM	18%
	PM	24%
Estimated additional traffic growth to 2016 from Strategic Plan	12.0%	
Reserve capacity in 2016 with Strategic Plan	AM	12%
	PM	18%
Description of future traffic effects	It is likely that, were a scheme to increase capacity not introduced, do-minimum traffic growth will exacerbate evening peak congestion and generate some congestion during the morning peak period by 2016. However, the traffic effects of the Strategic Plan will be to exacerbate this problem, to a point where congestion is a regular occurrence in both peaks.	
Other relevant information	This analysis assumed that a pedestrian phase was called on each cycle in peak times	

<b>A3/A4 Priority Junction</b>		
Location	A3/A4 junction, Kirk Michael	
Junction type	Three arm priority junction	
Description of current traffic effects	Minimal congestion usually observed	
Schemes considered to increase capacity	A committed scheme will convert the existing priority junction to a roundabout.	
Estimated do-minimum traffic growth to 2016	6.8%	
Estimated additional traffic growth to 2016 from Strategic Plan	14.5%	
Major Road AADT	Existing	6,900
	2016 do-minimum	7,400
	2016 with Strategic Plan	8,400
Minor Road AADT	Existing	1,100
	2016 do-minimum	1,200
	2016 with Strategic Plan	1,400
Assessment	IHT and DMRB guidelines indicate that a ghost island priority junction would be the theoretically preferred layout for this junction. As highlighted above, proposals currently exist to convert this junction to a roundabout, this form of junction would exceed the theoretical junction standard recommended by the IHT and DMRB.	
Description of future traffic effects	The roundabout junction is expected to operate without congestion or significant delay with Strategic Plan traffic.	
Other relevant information	N/A	

### Overall Assessment

At present, there is minimal congestion on the corridor between Peel and Ramsey. The junction assessments carried out for this route indicate that traffic growth arising from the proposals in the Strategic Plan will not have a significant impact on most parts of this corridor. This is in part due to the proposed scheme to provide a roundabout layout at the A3/A4 junction in Kirk Michael. However, the Strategic Plan could lead to traffic congestion becoming a regular occurrence in both peaks at the Parliament Square junction in Ramsey, albeit that the DOT are considering a scheme that could increase capacity and hence mitigate at least some of this congestion.



## A5 Douglas - Ballasalla

### Route overview

Route designation	A5
Key settlements on route	Ballasalla
Description of route	The A5 provides a strategic link between the south of the Island and Douglas. Many of the Island's employment, retail, education and leisure are concentrated in Douglas, while strategic off-Island links are provided by Ronaldsway airport to the north of Castletown and the Sea Terminal in Douglas. The A5 is developed to a high standard between Douglas and Ballasalla and has climbing lanes at Richmond Hill and near to Santon, although tight corners slow traffic in two locations. Consideration is currently being given to the implementation of a bypass for Ballasalla, the extension of the climbing lane on Richmond Hill and improvements to the Spring Valley roundabout. There are several priority junctions and access points on the route. There are a variety of on-street activities through Ballasalla including pedestrian crossings, bus stops and frontage access.
Description of traffic flow	There is a relatively high traffic flow on this route due to the strategic locations that it provides access to. Traffic is relatively free flowing, however the volume of traffic limits overtaking opportunities during the periods of highest flow. Junctions on the route do not cause excessive delay.
Speed Limit	50mph speed limit between Douglas and Ballasalla. 30mph speed limit through Ballasalla
Key junctions / traffic pinchpoints	A5/A24 Spring Valley roundabout Quarterbridge (assessment presented in A1 Douglas - Peel corridor) A5/A7 mini roundabout - Ballasalla

### Traffic characteristics[1]

	Westbound	Eastbound
Daily Traffic Flow	6,746	7,079
AM Peak Hour Flow (0800 – 0900)	No Data	1040
PM Peak Hour Flow (1700 – 1800)	869	No Data
Speed Limit	50mph	50mph
85% Speed	55mph	50mph

[1] Recorded at ATC at Richmond Hill, Douglas (By bus stop) Mon 24th April to Mon 1st May 06

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	1%
Cars	91%
Short vehicle with trailer	<1%
2 Axle Rigid	5%
Other heavy vehicle	1%

### Public transport provision

Bus Service Numbers	1, 2
Peak frequency	2 per hour
Inter peak frequency	2 per hour

### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	6
Serious injury	24
Slight injury	104
Damage only	232
Comments	The Isle of Man Police highlighted the Ballaglonney/Fairy Bridge/Blackboards area as the main safety concern on this route.

### Key junctions/traffic pinchpoints

#### A5/A24 Spring Valley Roundabout

Location	A5/A24 junction, Spring Valley	
Junction type	Four arm roundabout	
Description of current traffic effects	Minimal congestion usually observed	
Estimated do-minimum traffic growth to 2016	6.8%	
Estimated additional traffic growth to 2016 from Strategic Plan	23.0%	
Major Road AADT	Existing	13,400
	2016 do-minimum	14,300
	2016 with Strategic Plan	17,400
Minor Road AADT	Existing	7,100
	2016 do-minimum	7,500
	2016 with Strategic Plan	9,200
Assessment	IHT and DMRB guidelines indicate that a roundabout would be the theoretically preferred layout for this junction in each of the three scenarios. This corresponds with the current layout of the junction.	
Description of future traffic effects	Traffic flow through this junction will increase with the proposals outlined in the Strategic Plan though this is unlikely to lead to significant congestion problem. Refer, however, to the notes below.	
Other relevant information	There are proposals for major new developments on Cooil Road north that would significantly increase traffic flows at this junction. The DOT is working with the developer to identify what capacity enhancements are required at the junction to mitigate these effects. We recommend that this assessment takes appropriate cognisance of the transport effects of the Strategic Plan.	

<b>A5/A7 mini-roundabout</b>		
Location	A5/A7 mini-roundabout Ballasalla	
Junction type	Three arm mini-roundabout	
Description of current traffic effects	Some congestion observed during the peak periods	
Schemes considered to increase capacity	Ballasalla bypass is being considered, but is not a committed scheme	
Estimated do-minimum traffic growth to 2016	6.8%	
Estimated additional traffic growth to 2016 from Strategic Plan	13.0%	
Major Road AADT	Existing	15,800
	2016 do-minimum	16,900
	2016 with Strategic Plan	18,100
Minor Road AADT	Existing	3,900
	2016 do-minimum	4,100
	2016 with Strategic Plan	4,400
Assessment	IHT and DMRB guidelines indicate that a priority junction with single lane dualling would be the theoretically preferred layout for this junction.	
Description of future traffic effects	It is expected that the traffic flow increases arising from the Strategic Plan would lead to an increase in congestion at this junction. The implementation of a bypass around Ballasalla would have a significant influence on the traffic flows at this junction and is anticipated to reduce them to a level at which congestion is not a problem.	
Other relevant information	N/A	

### Overall Assessment

At present the A5 corridor between Ballasalla and Douglas operates with little congestion except some minor delay at the mini-roundabout in Ballasalla and significant congestion at the Quarterbridge roundabout on the edge of Douglas. The potential Ballasalla bypass would have a large influence on the level of mitigation measures potentially required in the village, though if this scheme is not implemented the level of congestion in Ballasalla will increase as a result of the Strategic Plan. The Cool Road development could require mitigation measures to avoid congestion at the Spring Valley roundabout, but if the development does not occur congestion is not expected to arise as a result of the Strategic Plan. The Strategic Plan will have a significant impact on congestion levels at Quarterbridge (the effects of this are shown in the A1 Douglas - Peel assessment).

## A5 Ballasalla - Castletown

### Route overview

Route designation	A5
Key settlements on route	None
Description of route	This is a relatively short route of around 2km in length. However, this route is of strategic importance on the Island as it serves Ronaldsway airport. This route also provides access to King William's College. This route is constructed to a high standard and contains the only section of dual-carriageway on the Island, albeit that most of the route length is single carriageway.
Description of traffic flow	Traffic is relatively free flowing throughout the day, the airport access roundabout is not observed to cause delay to traffic.
Speed Limit	30mph speed limit
Key junctions / traffic pinchpoints	Mini roundabout - Ballasalla (assessment presented in A5 Douglas - Ballasalla corridor)

### Traffic characteristics[1]

	Northbound	Southbound
Daily Traffic Flow	5,067	5,039
AM Peak Hour Flow (0800 – 0900)	664	315
PM Peak Hour Flow (1700 – 1800)	359	684
Speed Limit	30mph	30mph
85% Speed	Unknown	Unknown

[1] Recorded at ATC at Douglas Road, Castletown (Mon 3rd July – Sun 9th July 00)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	2%
Cars	90%
Short vehicle with trailer	6%
2 Axle Rigid	2%
Other heavy vehicle	<1%

#### Public transport provision

Bus Service Numbers	1, 2, 8
Peak frequency	2 per hour
Inter peak frequency	2 per hour

#### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	0
Serious injury	3
Slight injury	12
Damage only	48
Comments	The Isle of Man Police Department did not highlight any specific safety concerns regarding this route.

#### Overall assessment

At present the A3 between Castletown and Ballasalla operates without significant congestion. Traffic growth arising from the Strategic Plan will not cause significant delay to occur on this route as base traffic volumes are relatively low.

## A5 Castletown – Port St Mary/Port Erin

### Route overview

Route designation	A5
Key settlements on route	Castletown, Port Erin
Description of route	The route has dense residential frontage through Castletown, Gansey, on approach to the Four Roads roundabout and through Port Erin. There are a variety of on street uses through Castletown and approaching Port Erin including on-street parking, signalised pedestrian crossings, bus stops and a level crossing for the Steam Railway. Pelican crossings exist at the approaches to the Four Roads roundabout (A5/A29 junction). Ramsay Junior School is located on the A5 east of the Four Roads roundabout and is served by a Safer Routes to School scheme on the A5. Visibility on the route is restricted by walls to either side of the road and a rolling gradient.
Description of traffic flow	Traffic on this route is largely free flowing between Castletown and Port Erin. Traffic flow is impeded in places by pedestrian crossings and parked vehicles, but congestion is not observed.
Speed Limit	De-restricted speed limit on this route except for 30mph zones through the settlements on route and a 50 mph section on the Castletown bypass.
Key junctions / traffic pinchpoints	A5/A3 – Signal Controlled Crossroads A5/A36 – Four Roads Roundabout

### Traffic characteristics[1]

	Westbound	Eastbound
Daily Traffic Flow	4,084	4,084
AM Peak Hour Flow (0800 – 0900)	166	524
PM Peak Hour Flow (1700 – 1800)	549	205
Speed Limit	No limit	No limit
85% Speed	49mph	50mph

[1] Recorded at ATC at Shore Road, Outside Limekilns Farm (Mon 2nd to Sun 8th August 04)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	2%
Cars	92%
Short vehicle with trailer	<1%
2 Axle Rigid	4%
Other heavy vehicle	<1%

### Public transport provision

Bus Service Numbers	2, 2A, 8
Peak frequency	3 per hour
Inter peak frequency	2 per hour

### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	1
Serious injury	10
Slight injury	33
Damage only	145
Comments	The Isle of Man Police identified the area of Kentraugh as a concern with regard to serious injury accidents. Engineering improvement schemes have been completed and are currently subject to review.

### Key junctions/traffic pinchpoints

#### A5/A3 Signal Controlled Crossroads

Location	A5/A3 Castletown	
Junction type	Four arm signalised crossroads	
Description of current traffic effects	Light congestion was observed at this junction during the peak times on site visits, largely due to inefficient signal operation.	
Existing reserve capacity at peak times	AM	47%
	PM	38%
Schemes considered to increase capacity	None identified	
Estimated do-minimum traffic growth to 2016	6.8%	
Do-minimum reserve capacity in 2016	AM	44%
	PM	34%
Estimated additional traffic growth to 2016 from Strategic Plan	13.0%	
Reserve capacity in 2016 with Strategic Plan	AM	37%
	PM	26%
Description of future traffic effects	The capacity calculations undertaken in order to identify the impacts of the Strategic Plan indicate that there will still be a relatively high level of reserve capacity at this junction with the household allocation contained therein. It should be noted that the capacity calculation suggests the possibility of congestion on some arms of the junction. However, it is anticipated that the vehicle activated signals at the junction could prevent this congestion from occurring as there is significant reserve capacity at the junction as a whole.	
Other relevant information	N/A	

<b>Four Roads Roundabout</b>		
Location	A5/A36 junction, east of Port Erin	
Junction type	Four arm roundabout	
Description of current traffic effects	No congestion usually observed	
Estimated do-minimum traffic growth to 2016	6.8%	
Estimated additional traffic growth to 2016 from Strategic Plan	13.0%	
Major Road AADT	Existing	5,200
	2016 do-minimum	5,500
	2016 with Strategic Plan	6,200
Minor Road AADT	Existing	4,100
	2016 do-minimum	4,400
	2016 with Strategic Plan	4,900
Assessment	IHT and DMRB guidelines indicate that a ghost island priority junction would be the theoretically preferred layout for this junction. As the junction is currently subject to signal control it exceeds the preferred design as suggested by the IHT and DMRB.	
Description of future traffic effects	The junction is expected to operate without congestion of significant delay with Strategic Plan traffic	
Other relevant information	N/A	

#### Overall assessment

On site observations indicate that there is little congestion on this route during the peak periods and throughout the rest of the day. The capacity calculations indicate that the main junctions of this route will continue to operate within capacity in the future year scenarios, albeit that amendments to signals at the A5/A3 crossroads may be needed to avoid congestion occurring. Therefore, we consider that traffic growth associated with the Strategic Plan will not have a significant effect on this corridor.



## A18 Douglas - Ramsey

### Route overview

Route designation	A18
Key settlements on route	Onchan
Description of route	The A18 Mountain Road provides a direct link between Ramsay and the Douglas conurbation. The A18 is approximately 16 km long, single carriageway with one lane in each direction and has no settlements on the route. Steep gradients feature in several locations but there are frequent passing opportunities due to the good forward visibility. The majority of this route is on the TT course and has no speed limit.
Description of traffic flow	This route is relatively free flowing as there are few junctions. However, traffic congestion is experienced on the A18 as it enters Onchan, at the Mountain Road/Governors Road junction in particular.
Speed Limit	De-restricted speed limit on this route except for 30mph zones through Onchan.
Key junctions / traffic pinchpoints	Mountain Road/Governors Road Glencrutchery Road/Victoria Road

### Traffic characteristics[1]

	Northbound	Southbound
Daily Traffic Flow	2,884	3,058
AM Peak Hour Flow (0800 – 0900)	214	632
PM Peak Hour Flow (1700 – 1800)	516	160
Speed Limit	No Limit	No Limit
85% Speed	54 mph	57 mph

[1] Recorded at Windy Corner, Onchan (Mon 17th July – Mon 24th July 06)

### Traffic composition at ATC

Vehicle type	Proportion of vehicle type
Motorcycles	4%
Cars	90%
Short vehicle with trailer	1%
2 Axle Rigid	5%
Other heavy vehicle	1%

### Public transport provision

Bus Service Numbers	X3
Frequency	3 services per day

### Safety characteristics (2002-2006)

Accident Type	Number of occurrences
Fatal	11
Serious injury	77
Slight injury	148
Damage only	240
Comments	The Isle of Man police highlighted that this road is one of the worst on the Island for serious and fatal injury collisions and that the number of accidents increases significantly during the TT period. Safety improvements have been completed at Windy Corner and at Brandish Corner.

### Key junctions/traffic pinchpoints

#### Mountain Road/Governors Road

Location	A2/A18, Onchan
Junction type	Three arm mini-roundabout
Description of current traffic effects	Significant congestion is observed at this junction during the peak periods
Schemes considered to increase capacity	The DOT currently has a 2 phase program for improving the Mountain Road/Governor's Road and Glencrutchery Road/Victoria Road junctions programmed for construction in the 2008/9 and 2009/10 financial years
Estimated do-minimum traffic growth to 2016	6.8%
Estimated additional traffic growth to 2016 from Strategic Plan	12.0%
Major Road AADT	Existing 10,900 2016 do-minimum 11,700 2016 with Strategic Plan 13,000
Minor Road AADT	Existing 4,300 2016 do-minimum 4,600 2016 with Strategic Plan 5,100
Description of future traffic effects	This junction already suffers from congestion at peak times. Any growth in traffic levels will exacerbate both the severity of the congestion and the length of the day for which it occurs. The Strategic Plan will therefore worsen congestion over and above do-minimum growth, although the DOT scheme should lead to congestion mitigation.
Other relevant information	This junction is on the TT route and any proposals to improve capacity would need to consider this.

<b>Glencrutchery Road/Victoria Road</b>		
Location	A2, Onchan	
Junction type	Three arm mini-roundabout	
Description of current traffic effects	Significant congestion is observed at this junction during the peak periods	
Schemes considered to increase capacity	The DOT currently has a 2 phase program for improving the Mountain Road/Governor's Road and Glencrutchery Road/Victoria Road junctions programmed for construction in the 2008/9 and 2009/10 financial years	
Estimated do-minimum traffic growth to 2016	6.8%	
Estimated additional traffic growth to 2016 from Strategic Plan	12.0%	
Major Road AADT	Existing	12,200
	2016 do-minimum	13,000
	2016 with Strategic Plan	14,500
Minor Road AADT	Existing	3,800
	2016 do-minimum	4,100
	2016 with Strategic Plan	4,500
Description of future traffic effects	This junction already suffers from congestion at peak times. Any growth in traffic levels will exacerbate both the severity of the congestion and the length of the day for which it occurs. The Strategic Plan will therefore worsen congestion over and above do-minimum growth, although the DOT scheme should lead to congestion mitigation.	
Other relevant information	This junction is on the TT route and any proposals to improve capacity would need to consider this.	

### Overall Assessment

For most of its length, traffic on this link flows freely and the Strategic Plan would not affect this. However, Onchan is currently one of the most congested locations on the island and the mini-roundabouts on the A2 are the main sources of delay in the locality. Traffic growth arising from the Strategic Plan would place further pressure on these junctions and lead to an increase in delay. However, we anticipate that the schemes being considered by the DOT will alleviate at least some of the congestion that arises.

## 4 Summary of Findings

- 4.1 In this report, we have assessed the transport implications of the Isle of Man strategic plan for congestion and delay levels on the recognised strategic links between communities.
- 4.2 We have estimated that do-minimum growth would increase traffic levels by nearly 7% between 2006 and 2016, even if no new development takes place. Across the island as a whole, the housing growth anticipated by the Strategic Plan will increase traffic by a further 9%, although because of the spatial distribution of development, growth rates will differ widely in different parts of the island.
- 4.3 Through consideration of background knowledge of the island and the assessment detailed in this report, it is possible to categorise the various junctions on the strategic links according to current and estimated levels of congestion.
- 4.4 The following junctions currently experience traffic congestion on a regular basis and will suffer worse problems due to traffic growth arising from the Strategic Plan:
- Quarterbridge;
  - Mountain Road/Governors Road;
  - Glencrutchery Road/Victoria Road;
  - Parliament Square, Ramsey.
- 4.5 It should be noted, however, that the DOT are considering schemes that may be able to reduce congestion for each of these locations.
- 4.6 The A5/A7 mini-roundabout junction in Ballasalla junctions does not currently experience significant levels of congestion. Unless a scheme to reduce traffic flow at this location was put in place, do-minimum traffic growth will tend to increase delays occurring here, but it is anticipated that it may become congested on a more regular basis as a result of the effects of the Strategic Plan.
- 4.7 The remaining parts of the strategic links will not experience significant congestion as a result of traffic growth arising from the development proposals in the Strategic Plan.
- 4.8 It follows from the assessment of the junctions listed that parts of the following strategic links already suffer from congestion that the Strategic Plan will exacerbate:
- A1 Douglas – Peel;
  - A2 Douglas – Laxey;
  - A2 Laxey – Ramsey;
  - A3/A4 Peel – Ramsey;
  - A5 Douglas – Ballasalla;
  - A18 Douglas – Ramsey.
- 4.9 The following links do not presently regularly suffer from congestion and may not as a result of do-minimum traffic growth, but will (in certain locations) as a result of the Strategic Plan without mitigation measures being put in place:

- A5 Douglas – Ballasalla;
- A5 Castletown – Ballasalla.

4.10 It is important to note that detailed appraisal of junctions on all these corridors may still be required as individual development planning applications are submitted. Furthermore, the levels of congestion experienced on each of the corridors and at specific junctions will be influenced by transport infrastructure schemes that develop independently of the Strategic Plan.

# Appendix A

## Traffic growth assumptions

## Future Year Traffic Flows

A.1. Chapter 2 of this report outlines that traffic growth on the Isle of Man is anticipated to arise from a combination of:

- increasing car ownership and willingness to use cars amongst the existing population; and
- increasing population and numbers of households.

A.2. A do-minimum scenario (i.e. without housing growth) is also defined in Chapter 2, estimating that this will account for a 6.8% increase in traffic between 2006 and 2016.

A.3. In this section, the traffic growth forecast of the Strategic Plan is estimated.

### Growth Due to Strategic Plan

A.4. The Strategic Plan allocates new development by zone, and the proportional increase in numbers of houses is not the same in each zone. Therefore, in order to estimate the potential traffic increase that may arise from the Strategic Plan on specific links it is necessary to first calculate housing and population growth to 2016 by zone.

A.5. The Strategic Plan allocations suggest that the total number of households on the Isle of Man will increase by around 19% between 2001 and 2016. Population will grow at a lower rate, of around 12%, as the average number of people residing per household is expected to fall in the same period.

A.6. It is important to note that some of the development allocations of the Plan have already been taken up, and hence their traffic growth effects are already apparent in current (2006) observations. Therefore, a base year for traffic flows of 2006 has been selected for this study. Consequently it is necessary to estimate traffic growth arising from the Strategic Plan for the ten year period between 2006 and 2016.

A.7. Furthermore, the housing growth between 2001 and 2006 has not taken place proportionately between the four Plan.

A.8. Table A1 indicates the level of traffic growth that is forecast to arise in each of the four zones from the Strategic Plan for the period 2001 to 2016 and 2006 to 2016. Existing population and average household sizes taken from the Strategic Plan were used to calculate the number of current households per region. Population at 2016 was estimated adding the number of planned households as contained in the Strategic Plan to the existing stock. This number was then multiplied by the forecast average household size in 2016 in order to estimate total population.

A.9. A further stage is required in order to estimate the population and household growth between 2006 and 2016 only. Underpinning this stage of the process was the assumption that the housing growth that occurred between 2001 and 2006 did not occur evenly across the Island. The estimated housing growth by region was obtained from the DLGE. The estimated housing growth was used to estimate the population growth that occurred between 2001 and 2006. Estimated population and growth between 2001 and 2006 was subtracted from the 2016 figure in order to show the proportion of the planned growth in the Strategic Plan that is yet to occur.

A.10. The estimate of population for 2006 was divided by the estimate of average household size for this year (as estimated by the Strategic Plan) in order to predict the total number of households. The estimate of households for 2006 was subtracted from that given in the Strategic Plan for 2016.

A.11. Population and average household sizes for 2001 were obtained from the Isle of Man census. The average household size and forecast housing growth between 2001 and 2016 were obtained from the Strategic Plan.

**Table A1: Isle of Man Zonal Population Growth**

	North	South	East	West	All island	
2001 – 2016 Growth	Population 2001 [Census]	11,700	14,000	42,000	7,500	75,200
	Persons per household 2001 [Census]	2.42	2.42	2.42	2.42	2.42
	Hence households 2001	4,835	5,785	17,355	3,099	31,074
	Planned growth in households 2001 – 2016 [SP]	1,200	1,300	2,500	1,000	6,000
	Hence households 2016	6,035	7,085	19,855	4,099	37,074
	Proportional growth in households 2001 – 2016	25%	22%	14%	32%	19%
	Persons per household 2016 [SP]	2.27	2.27	2.27	2.27	2.27
	Hence population 2016	13,699	16,083	45,072	9,305	84,159
	Proportional population growth 2001 - 2016	17%	15%	7%	24%	12%
	All island population 2001					75,200
All island population 2006 [SP]					78,753	
2006 – 2016 Growth	Distribution of population growth 2001 – 2006 [No. of planning consents granted in this period, DLGE]	22%	15%	46%	17%	100%
	Hence population growth	782	533	1,634	604	3,553
	Population 2001 [Census]	11,700	14,000	42,000	7,500	75,200
	Hence population 2006	12,482	14,533	43,634	8,104	78,753
	Proportional population growth 2001 - 2006	7%	4%	4%	8%	5%
	Proportional population growth 2001 - 2016	17%	15%	7%	24%	12%
	Hence proportional population growth 2006 - 2016	10%	11%	3%	15%	7%
	Persons per household 2006 [SP]	2.37	2.37	2.37	2.37	2.37
	Number of households 2006	5,267	6,132	18,411	3,419	33,229
	Number of households 2016	6,035	7,085	19,855	4,099	37,074
Proportional growth in households 2006 - 2016	15%	16%	8%	20%	12%	

Note: Data sources given in [parentheses]. SP = Strategic Plan

- A.12. Given that the proportional growth in population is less than that for the number of houses, it is important to understand whether demand for travel is more likely to increase according to population or number of households. Table A2 indicates the assumptions made as to whether the volume of a particular trip type is more likely to rise with growth in housing or population.
- A.13. Trip purpose data for the Isle of Man was not available, therefore Scottish Household Survey data was used in order to obtain information on the proportion of all journeys made for specific trip purposes. Data has been used according to the proportions of journeys undertaken by car drivers; the most appropriate to forecast traffic growth.



**Table A2: Journey Purpose for Car Drivers**

Journey Purpose	Proportion of All Journeys	Demand is Assumed to be Proportional To
Commuting	33%	Population
Business	14%	Population
Education	2%	Population
Shopping	16%	No. of Households
Health (including visiting)	2%	Population
Personal business	6%	Population
Visiting friends relatives	8%	No. of Households
Sport/leisure	9%	No. of Households
Escort	7%	Population
Other	3%	Population

Note: Source of proportion of journey purpose data by car driver, Scottish Household Survey.

- A.14. The trip purpose data contained within Table A2 has been utilised in conjunction with the estimates of housing and population growth in order to forecast the traffic growth that may arise from the Strategic Plan.
- A.15. Table A3 indicates the overall increase in traffic between 2006 and 2016 resulting from the Strategic Plan by zone. Increases in specific trip types were calculated in order to estimate the overall trip growth. These growth percentages were then factored by the split of trip purposes as shown in Table A3 in order to give trip increases by journey purpose. These individual increases were then combined in order to give overall growth.

**Table A3: Growth in Trip Rates Due to Strategic Plan (2006-2016)**

Trip rate growth 2006 - 2016		North	South	East	West	All island
Proportional population growth 2006 - 2016		10%	11%	3%	15%	7%
Proportional growth in households 2006 - 2016		15%	16%	8%	20%	12%
						5%
Trip rate growth by journey purpose	10%	11%	3%	15%	7%	5%
	10%	11%	3%	15%	7%	5%
	10%	11%	3%	15%	7%	10%
	15%	16%	8%	20%	12%	5%
	10%	11%	3%	15%	7%	5%
	10%	11%	3%	15%	7%	10%
	15%	16%	8%	20%	12%	10%
	15%	16%	8%	20%	12%	5%
	10%	11%	3%	15%	7%	5%
Hence total traffic increase 2006 - 2016 due to Strategic Plan housing allocations over and above do-minum growth		10%	11%	3%	15%	7%

### Application of Strategic Plan Growth to Corridors

- A.16. Table A4 indicates how the trip rate increases forecast for the four main areas highlighted in the Strategic Plan have been applied to the junctions under assessment in this study. It was anticipated that traffic growth at particular junctions would be most closely linked to population and housing growth in nearby areas, but cognisant of the fact that Douglas will remain the primary trip attractor on the island. Trip rate growth estimated to arise from the Strategic Plan was applied to junctions on that basis.
- A.17. Where traffic growth at a junction is predicted to arise from more than one geographical area, an average of the growth rates calculated for these areas has been applied. These averages were not weighted by relative population growth, proximity to the junction or any other factor.
- A.18. However, the four regions highlighted in the Strategic Plan have been disaggregated where it was felt that traffic flows at a junction would be sensitive to population and household growth within a particular parish (as some parishes are anticipated to have particularly high levels of housing growth). These junctions are indicated by Table A4. Trip rate increases for the individual parishes were calculated using the same methodology that was applied to the four regions highlighted in the Strategic Plan.
- A.19. For the A1/A2/A5 Quarterbridge junction, a more detailed approach was taken because of the anticipated scale of local development and the high levels of congestion observed. A total growth forecast was estimated, before being allocated to the four arms of the junction as indicated in Table A4.

**Table A4: Housing Growth Assumptions Adopted in Junction Analysis**

Junction	Traffic Growth assumed to be according to Geographical Area	Traffic Growth Arising from Strategic Plan <sup>4</sup>
A3/A9 Parliament Square- Ramsey	North	12%
A3/A4 Kirk Michael	North, West	14.5%
A1/A3 Ballacraine	West	17%
A5/A3 Castletown	South	13%
A5/A36 Four Roads	South	13%
A24/A5 Spring Valley	South, Santon Parish, Bradden Parish	21%
A5/A7 Ballasalla	South	13%
A2 Glencrutchery Rd/Victoria Rd	North	12%
A18/A2 Mountain Rd/Governors Rd	North	12%
Quarterbridge-overall		18%
Peel Road north	West, Marown Parish, Braddan Parish	29%
New Castletown Road	South, Santon Parish, Braddan Parish	26%
Peel Road south	Douglas Parish, Onchan Parish, Braddan Parish	5%
Quarterbridge Road	Douglas Parish, Onchan Parish, Braddan Parish	5%

<sup>4</sup> Over and above do-minimum growth

## Appendix B

Junction traffic flow and  
capacity assumptions

## Existing Traffic Flows at Key Junctions

- B.1. This section defines how estimates of existing traffic flows at key junctions were made.
- B.2. Surveyed turn counts for the peak hours in the existing situation were available for the following junctions, the year of survey is indicated in brackets:
- A1/A5 Quarterbridge (2005)
  - A2 Glencrutchery Road/Victoria Road, Onchan (2001)
  - A18/A2 Mountain Road/Governors Road, Onchan (2001)
  - A3/A9 Parliament Square, Ramsey (2005)
  - A5/A24 Spring Valley roundabout (2005)
  - A5/A7 mini-roundabout, Ballasalla (2005)
  - A3/A4 priority junction, Kirk Michael (2004)
- B.3. Given their relatively recent status, all these counts were taken to be a reasonable indication of current conditions, with the exception of those at Onchan. These traffic flows were factored with NRTF<sup>5</sup> central growth figures in order to provide an estimate of 2006 traffic flows.
- A1/A3 Ballacrairie Junction**
- B.4. Automatic Traffic Count (ATC) data, collected in 2006, was available on the immediate approaches to the Ballacrairie junction, however, turning count data was not available for the junction. As such, it was necessary to estimate the proportion of turning traffic. ATC data gives the number of vehicles passing a particular point on the road network in a given time period. For this study, ATC data from the weekday AM (08:00-09:00) and PM (17:00-18:00) peak periods was used. The estimate of turning traffic at Ballacrairie was influenced by the following assumptions:
- Douglas is the main attractor of trips on the Island
  - The majority of traffic travelling between the north and Peel will use the A4 in preference to the A3/A1 as the A4 provides a shorter route
  - The majority of traffic travelling between the south and Peel will use the A30 in preference to the A3/A1 as the A30 provides a shorter route
  - A proportion of traffic travelling from the south to Douglas on the A3 will use the A24 rather than the A3/A1 as the A24 provides a shorter route
- B.5. The estimate of turning traffic is contained within Table B1.

**Table B1: Ballacrairie Turning Flows**

		To			
		North	South	East	West
From	North	-	20%	70%	10%
	South	65%	-	25%	10%
	East	33%	33%	-	33%
	West	10%	10%	80%	-

<sup>5</sup> National Road Traffic Forecasts

### A3/A5 Castletown Bypass/Malew Road Signal Crossroads Junction

- B.6. The only detailed traffic data available during the preparation of this study in the vicinity of this junction was from the ATC at the A5 Shore Road. It has been assumed that 100% of the traffic flow at the ATC on the A5 reaches the junction, with no leakage, hence that the flow into the junction on the A5 eastbound approach is the same as that at the ATC. The ATC count in each direction in the AM peak is almost exactly mirrored in the opposite direction during the PM peak, this is indicative of a high proportion of commuting traffic in the overall flow.
- B.7. Following on from this assumption, the flow on the Alexandra Road (A5 East) approach to the junction is assumed to mirror that on the Castletown Bypass (A5 West) approach to the junction. The A5 route is assumed to carry a far greater level of traffic than that on the Malew Street and Malew Road approaches to the junction. This is supported by observation of the relative green times allocated to the arms of this junction. The A5 is assumed to carry 80% of traffic, evenly distributed on both arms, with Malew Road and Malew Street carrying 10% each.

### A5/A36 Four Roads Roundabout

- B.8. Traffic data from the A5 ATC on Shore Road also provided the only quantified data for the Four Roads roundabout and has been extrapolated in order to identify base traffic flows at this junction.
- B.9. When travelling westbound on the A5, the shortest route to Port St Mary is via Gansey rather than travelling through the A5/A36 junction. The westbound traffic flow on the A5 has been factored according to the relative populations of Port Erin and Port St Mary in order to account for this. Port St Mary makes up approximately 37% of the population of the area and therefore it was assumed that 37% of traffic would leave the A5 prior to reaching the A5/A36 junction. Therefore the westbound flow entering the junction is assumed to be equal to 63% of the traffic at the ATC on the A5.
- B.10. Conversely, it was assumed that of the eastbound traffic at the A5 ATC, 37% would be from Port St Mary and would not have travelled through the A5/A36 junction. Therefore, it was assumed that the volume of traffic travelling eastbound through the junction would be equivalent to 63% of the eastbound flow at the A5 ATC.
- B.11. It has been assumed that traffic commuting to the north and east from Port St Mary and Port Erin will split equally between the A5 (eastern arm) and the A36 (northern arm), therefore, the A36 is assumed to have the same traffic flow as the A5.
- B.12. The flow on the southern arm of the A5/A36 junction is assumed to be 37% of that at the A5 ATC. The derivation of this traffic flow is based on the assumption that an equal number of drivers travelling to the north and east from Port St Mary will do so via the A5 and the A36/A7. Therefore, the traffic flow on the southern arm of the A5/A36 junction is equal to the proportion of the traffic flow at the A5 ATC assumed to come from Port St Mary.
- B.13. Traffic on the western arm of the junction is assumed to be 63% of the traffic flow measured at the A5 ATC. This equates to the proportion of the local population residing in Port Erin.

### A3 Corridor Junctions

- B.14. Qualitative appraisals of the A3/A7 Cross Fourways junction and the A3/A24 priority junction in Foxdale were undertaken as part of this study. Turning counts were not estimated for these junctions as it was transparent from the analysis that neither of these locations will suffer from congestion problems in 2016 even with Strategic Plan development growth.

## Capacity Appraisal – Signal Junctions

B.15. There were two main inputs to the capacity calculation at signal junctions, these are the saturation flows of the approaches to the junction and the traffic flows. The method used to estimate saturation flows is given below, the derivation of traffic flows has been described above.

### Calculation of Junction Saturation Flows

B.16. A common measure of link capacity at a signalised junction is the concept of saturation flows. The saturation flow is the maximum flow-rate that can be sustained by traffic from a queue on the approach used by the stream and depends mainly upon:

- the number and width of entry and exit lanes available to that stream and the effects of parked vehicles, bus stops etc on lane width
- the proportion of turning traffic and the radius of turn
- the gradient of approach

B.17. Saturation flows for the signal junctions included within this study were estimated as an input to the calculation of reserve capacity at these junctions.

B.18. A formula to predict saturation flows is given in the Transport Research Laboratory (TRL) Research Report 67:

$$S = (S_o - 140dn) / (1 + 1.5f/r)$$

$$\text{where } S_o = 2080 - 42dG + 100.(w - 3.25)$$

and dG is gradient, r is radius, w is width, f is proportion of turning traffic and dn is coefficient for nearside/offside lane

B.19. This formula has been used to predict saturation flows for all approaches to the signal junctions that were appraised within this study.

### Junction Capacity Calculation

B.20. The main aim of the appraisal of the traffic signal junctions was to assess the available reserve capacity in the existing, do-minimum and with Strategic Plan scenarios.

B.21. Data on existing signal specifications at the junctions were provided by the DOT. These signal specifications were used as the basis for the capacity calculation in all scenarios and were assumed not to alter for the future years or for the addition of background traffic growth or development trip generation. It is therefore important to note that the performance of the junctions in future years at some junctions could potentially be improved by optimising signal timings in response to changes in traffic flows.

B.22. The following equation was utilised in order to estimate the capacity of the traffic signal junctions on the strategic routes:

$$c = s \times g$$

Where:

c = link capacity

s = saturation flow

g = proportion of cycle time that is available 'green time' for that link

B.23. The reserve capacity is calculated through the following equation:

$$\text{Reserve capacity} = 1 - f/c$$

Where:

f = flow

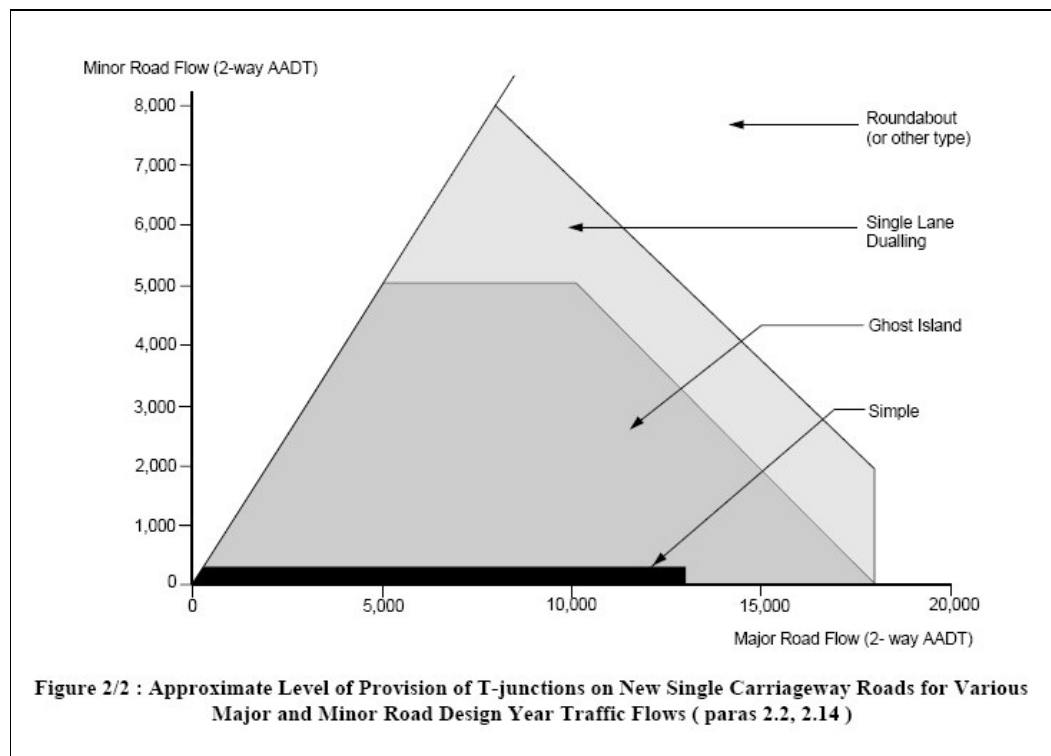
c = link capacity

- B.24. The following assumptions were made when estimating the capacity of the traffic signal junctions:
- The ratio of green time for each arm of signal junctions was based on the maximum green time available to that arm at vehicle activated junctions
  - 'Flat' traffic profiles were assumed during the peak hours, this means that there is an even spread of traffic throughout the hour
  - The give way effects of opposing turning flows on capacity were not estimated
  - Any pedestrian phase is called every cycle (to give a 'worst case' estimate of traffic capacity)
  - The average reserve capacity at the junctions is given as the average of the reserve capacity of the individual approaches.
- B.25. 'Transport In the Urban Environment' (IHT 1997) states that a flow/capacity ratio of 85% (i.e. reserve capacity of 15%) is a commonly accepted industry design standard. Delay and congestion at a junction is generally observed to be limited if reserve capacity is greater than 15% but rise as flows exceed this level. This threshold has been utilised within this study in order to predict whether a junction will experience unacceptable levels of delay.

## Capacity Appraisal – Roundabout and Priority Junctions

- B.26. A different approach has been applied in order to assess the impact of the Strategic Plan on roundabouts and priority junctions. This involves estimating the traffic flows on the approaches to the junction and assessing this against Design Manual for Roads and Bridges (DMRB, UK Department for Transport) guidelines for estimating the preferred junction layout in any location. The DMRB is the industry standard set of regulations and guidelines governing the design and operation of road networks in the UK and other countries.
- B.27. A guide to the magnitudes of major and minor traffic flows that can be accommodated by particular types of junction, on a single carriageway, is provided within the DMRB.
- B.28. The relevant diagram from this publication indicating theoretically preferred junction layouts by traffic flow is shown in Figure B1. The threshold indicated by this diagram has been applied within this study in order to determine the preferred layout of specific junctions in the existing situation, the do-minimum situation and with the Strategic Plan growth at each of the identified locations at which delays could occur.
- B.29. The findings of the appropriateness of each junction type and the likelihood of it enabling the free flow of traffic with Strategic Plan growth is given in the Link Assessment Tables of this report.

**Figure B1: Suitability of Junction Type by Traffic Flow**



Source: DMRB TD 42



---

CENTRUM HOUSE, 38 QUEEN STREET, GLASGOW G1 3DX  
T 0141 221 4030 F 0141 221 4050  
E glasgow@jmp.co.uk W www.jmp.co.uk

CBC HOUSE, 24 CANNING STREET, EDINBURGH, EH3 8EG  
T 0131 272 2705 F 0131 272 2805  
E edinburgh@jmp.co.uk W www.jmp.co.uk

FLOOR 2, 66 QUEEN SQUARE, BRISTOL BS1 4J  
T 01179 876216 F 01179 876217  
E bristol@jmp.co.uk W www.jmp.co.uk

3RD FLOOR, CATHEDRAL BUILDINGS, DEAN STREET, NEWCASTLE UPON TYNE NE1 1PG  
T 0191 261 2261 F 0191 261 1122  
E newcastle@jmp.co.uk W www.jmp.co.uk

SCOTTISH AMICABLE BUILDING, 11 DONEGALL SQUARE SOUTH, BELFAST BT1 5JE  
T 02890 434646 F 02890 434647  
E belfast@jmp.co.uk W www.jmp.co.uk

MINERVA HOUSE, EAST PARADE, LEEDS LS1 5PS  
T 0113 244 4347 F 0113 242 3753  
E leeds@jmp.co.uk W www.jmp.co.uk

BLACKFRIARS HOUSE, PARSONAGE, MANCHESTER M3 2JA  
T 0161 831 5600 F 0161 831 5601  
E manchester@jmp.co.uk W www.jmp.co.uk

CASTLE CHAMBERS, 43 CASTLE STREET, LIVERPOOL L2 9SH  
T 0151 231 6140 F 0151 231 6141  
E liverpool@jmp.co.uk W www.jmp.co.uk

LATCHFORD HOUSE, SHENSTONE BUSINESS PARK, LYNN LANE, SHENSTONE, LICHFIELD, STAFFORDSHIRE WS14 0SB  
T 01543 444437 F 01543 444438  
E lichfield@jmp.co.uk W www.jmp.co.uk

AUDREY HOUSE, 16-20 ELY PLACE, LONDON, EC1N 6SN  
T 020 7388 5331 F 020 7387 0078  
E london@jmp.co.uk W www.jmp.co.uk

THE LANTERNS, LANTERNS COURT, MILLHARBOUR, LONDON E14 9TU  
T 020 7515 5579 F 020 7538 2946  
E docklands@jmp.co.uk W www.jmp.co.uk

7TH FLOOR, TOWER POINT 44, NORTH ROAD, BRIGHTON BN1 1YR  
T 01273 666380 F 01273 666381  
E brighton@jmp.co.uk W www.jmp.co.uk

**Appendix 3: Tables to show traffic growth data applied to the whole strategic route network and the primary strategic network based upon existing distribution of traffic flow on these routes**

<b>Whole Strategic Route Network Existing Property Distribution</b>	<b>2005/6/7 AM</b>	<b>2005/6/7 PM</b>	<b>2013 AM</b>	<b>2013 PM</b>	<b>2026 AM Average</b>	<b>2026 PM Average</b>	<b>2026 AM 0.7 Trip</b>	<b>2026 PM 0.7 Trip</b>
A1 Douglas to Ballacraigne Lane	330	677	335	833	380	945	481	1204
A1 Ballacraigne to Douglas Lane	760	413	729	463	827	525	1047	669
Carriageway Total	1090	1090	1064	1296	1207	1471	1528	1873
A1 Ballacraigne to Peel Lane	139	310	242	355	275	403	347	513
A1 Peel to Ballacraigne Lane	263	158	320	185	363	210	459	267
Carriageway Total	402	468	562	540	638	613	807	781
A2 Douglas to Laxey Lane	140	380	167	368	189	418	240	532
A2 Laxey to Douglas Lane	442	160	377	188	428	213	541	272
Carriageway Total	582	540	544	556	617	631	781	804
A2 Laxey to Ramsey Lane	68	147	85	120	96	136	122	173
A2 Ramsey to Laxey Lane	72	96	115	75	130	85	165	108
Carriageway Total	140	243	200	195	227	221	287	282
A3 Castletown to Ballacraigne Lane	105	173	100	192	113	218	144	278
A3 Ballacraigne to Castletown Lane	219	111	158	119	179	135	227	172
Carriageway Total	324	284	258	311	293	353	370	450
A3 Ballacraigne to Ramsey Lane	100	302	100	271	113	308	144	392
A3 Ramsey to Ballacraigne Lane	268	112	242	96	275	109	347	139
Carriageway Total	368	414	342	367	388	416	491	530
A4 Peel to Kirk Michael Lane	60	96	62	72	70	82	89	104
A4 Kirk Michael to Peel Lane	137	80	85	65	96	74	122	94
Carriageway Total	197	176	147	137	167	155	211	198
A5 Douglas to Ballasalla Lane	479	881	380	818	431	928	546	1182
A5 Ballasalla to Douglas Lane	1017	508	906	543	1028	616	1301	785
Carriageway Total	1496	1389	1286	1361	1459	1544	1846	1967
A5 Ballasalla to Castletown Lane	717	737	614	533	697	605	881	770
A5 Castletown to Ballasalla Lane	747	625	708	572	803	649	1016	827
Carriageway Total	1464	1362	1322	1105	1500	1254	1898	1597
A5 Castletown to Port St Mary/Port Erin Lane	215	505	245	504	278	572	352	728
A5 Port St Mary/Port Erin to Castletown Lane	573	170	653	197	741	224	937	285
Carriageway Total	788	675	898	701	1019	795	1289	1013
A18 Douglas to Ramsey Lane	230	517	188	673	213	764	270	973
A18 Ramsey to Douglas Lane	592	167	775	198	879	225	1113	286
Carriageway Total	822	684	963	871	1093	988	1383	1259
A7 Port Erin to Ballasalla Lane	397	117	361	137	410	155	518	198
A7 Ballasalla to Port Erin Lane	122	284	120	290	136	329	172	419
Carriageway Total	519	401	481	427	546	485	691	617
A27 Glen Maye to Peel Lane	105	47	94	46	107	52	135	66
A27 Peel to Glen Maye Lane	46	107	34	102	39	116	49	147
Carriageway Total	151	154	128	148	145	168	184	214
<b>Total</b>	<b>8343</b>	<b>7880</b>	<b>8195</b>	<b>8015</b>	<b>9299</b>	<b>9095</b>	<b>11765</b>	<b>11585</b>
33,390 to 37,859 Properties 2006-11	9460	8935						
37,859 to 42,959 Properties 2011-26			9299	9095				
0.7 Trips per new property 2006-11	11471	11008						
0.7 Trips per new property 2011-26	15041	14578	11765	11585				

Primary Strategic Route Network Existing Property Distribution	2005/6/7 AM	2005/6/7 PM	2013 AM	2013 PM	2026 AM	2026 PM	2026 AM	2026 PM
					Average	Average	0.7 Trip	0.7 Trip
A1 Douglas to Ballacraigne Lane	330	677	335	833	380	945	548	1392
A1 Ballacraigne to Douglas Lane	760	413	729	463	827	525	1193	774
Carriageway Total	1090	1090	1064	1296	1207	1471	1741	2165
A2 Douglas to Laxey Lane	140	380	167	368	189	418	273	615
A2 Laxey to Douglas Lane	442	160	377	188	428	213	617	314
Carriageway Total	582	540	544	556	617	631	890	929
A3 Ballacraigne to Ramsey Lane	100	302	100	271	113	308	164	453
A3 Ramsey to Ballacraigne Lane	268	112	242	96	275	109	396	160
Carriageway Total	368	414	342	367	388	416	559	613
A5 Ballasalla to Castletown Lane	717	737	614	533	697	605	1004	890
A5 Castletown to Ballasalla Lane	747	625	708	572	803	649	1158	956
Carriageway Total	1464	1362	1322	1105	1500	1254	2163	1846
A5 Castletown to Port St Mary/Port Erin Lane	215	505	245	504	278	572	401	842
A5 Port St Mary/Port Erin to Castletown Lane	573	170	653	197	741	224	1068	329
Carriageway Total	788	675	898	701	1019	795	1469	1171
A18 Douglas to Ramsey Lane	230	517	188	673	213	764	308	1124
A18 Ramsey to Douglas Lane	592	167	775	198	879	225	1268	331
Carriageway Total	822	684	963	871	1093	988	1575	1455
A7 Port Erin to Ballasalla Lane	397	117	361	137	410	155	591	229
A7 Ballasalla to Port Erin Lane	122	284	120	290	136	329	196	484
Carriageway Total	519	401	481	427	546	485	787	713
Total	5633	5166	5614	5323	6370	6040	9184	8893
33,390 to 37,859 Properties 2006-11	6387	5857						
37,859 to 42,959 Properties 2011-26			6370	6040				
0.7 Trips per new property 2006-11	8761	8294						
0.7 Trips per new property 2011-26	12331	11864	9184	8893				

<b>WEST 770 Properties Distributed on to the Links to Other Geographic Areas</b>	<b>2005/6/7 AM</b>	<b>2005/6/7 PM</b>	<b>2013 AM</b>	<b>2013 PM</b>	<b>2026 AM Average</b>	<b>2026 PM Average</b>	<b>2026 AM 0.7 Trip</b>	<b>2026 PM 0.7 Trip</b>
<b>A1 Douglas to Ballacraigne Lane</b>	330	677	335	833	395	983	428	1032
<b>A1 Ballacraigne to Douglas Lane</b>	760	413	729	463	860	546	932	573
	<b>1090</b>	<b>1090</b>	<b>1064</b>	<b>1296</b>	<b>1255</b>	<b>1529</b>	<b>1360</b>	<b>1605</b>
<i>A1 Ballacraigne to Peel Lane</i>	139	310	242	355	286	419	309	440
<i>A1 Peel to Ballacraigne Lane</i>	263	158	320	185	378	218	409	229
	<b>402</b>	<b>468</b>	<b>562</b>	<b>540</b>	<b>663</b>	<b>637</b>	<b>718</b>	<b>669</b>
<b>A3 Ballacraigne to Ramsey Lane</b>	100	302	100	271	118	320	128	336
<b>A3 Ramsey to Ballacraigne Lane</b>	268	112	242	96	286	113	309	119
	<b>368</b>	<b>414</b>	<b>342</b>	<b>367</b>	<b>403</b>	<b>433</b>	<b>437</b>	<b>455</b>
<b>A4 Peel to Kirk Michael Lane</b>	60	96	62	72	73	85	79	89
<b>A4 Kirk Michael to Peel Lane</b>	137	80	85	65	100	77	109	81
	<b>197</b>	<b>176</b>	<b>147</b>	<b>137</b>	<b>173</b>	<b>162</b>	<b>188</b>	<b>170</b>
<b>A27 Glen Maye to Peel Lane</b>	105	47	94	46	111	54	120	57
<b>A27 Peel to Glen Maye Lane</b>	46	107	34	102	40	120	43	126
	<b>151</b>	<b>154</b>	<b>128</b>	<b>148</b>	<b>151</b>	<b>175</b>	<b>164</b>	<b>183</b>
<b>A3 Castletown to Ballacraigne Lane</b>	105	173	100	192	118	227	128	238
<b>A3 Ballacraigne to Castletown Lane</b>	219	111	158	119	186	140	202	147
	<b>324</b>	<b>284</b>	<b>258</b>	<b>311</b>	<b>304</b>	<b>367</b>	<b>330</b>	<b>385</b>
Total Excluding italics	2130	2118	1939	2259	2288	2665	2478	2798
3,389 to 4,283 Properties 2006-11	2692	2677						
4,283 to 5,053 Properties 2011-26			2288	2665				
0.7 Trips per new property 2006-11	2756	2744						
0.7 Trips per new property 2011-26	3295	3283	2478	2798				

<b>North 770 Properties Distributed on to the Links to Other Geographic Areas</b>	<b>2005/6/7 AM</b>	<b>2005/6/7 PM</b>	<b>2013 AM</b>	<b>2013 PM</b>	<b>2026 AM Average</b>	<b>2026 PM Average</b>	<b>2026 AM 0.7 Trip</b>	<b>2026 PM 0.7 Trip</b>
<b>A2 Douglas to Laxey Lane</b>	140	380	167	368	187	413	212	471
<b>A2 Laxey to Douglas Lane</b>	442	160	377	188	423	211	479	240
	<b>582</b>	<b>540</b>	<b>544</b>	<b>556</b>	<b>610</b>	<b>623</b>	<b>691</b>	<b>711</b>
<i>A2 Laxey to Ramsey Lane</i>	68	147	85	120	95	135	108	153
<i>A2 Ramsey to Laxey Lane</i>	72	96	115	75	129	84	146	96
	<b>140</b>	<b>243</b>	<b>200</b>	<b>195</b>	<b>224</b>	<b>219</b>	<b>254</b>	<b>249</b>
<b>A18 Douglas to Ramsey Lane</b>	230	517	188	673	211	754	239	861
<b>A18 Ramsey to Douglas Lane</b>	592	167	775	198	869	222	984	253
	<b>822</b>	<b>684</b>	<b>963</b>	<b>871</b>	<b>1080</b>	<b>976</b>	<b>1223</b>	<b>1114</b>
<b>A3 Ballacraigne to Ramsey Lane</b>	100	302	100	271	112	304	127	347
<b>A3 Ramsey to Ballacraigne Lane</b>	268	112	242	96	271	108	307	123
	<b>368</b>	<b>414</b>	<b>342</b>	<b>367</b>	<b>383</b>	<b>411</b>	<b>434</b>	<b>469</b>
<b>A4 Peel to Kirk Michael Lane</b>	60	96	62	72	70	81	79	92
<b>A4 Kirk Michael to Peel Lane</b>	137	80	85	65	95	73	108	83
	<b>197</b>	<b>176</b>	<b>147</b>	<b>137</b>	<b>165</b>	<b>154</b>	<b>187</b>	<b>175</b>
<i>A3 Castletown to Ballacraigne Lane</i>	105	173	100	192	112	215	127	246
<i>A3 Ballacraigne to Castletown Lane</i>	219	111	158	119	177	133	201	152
	<b>324</b>	<b>284</b>	<b>258</b>	<b>311</b>	<b>289</b>	<b>349</b>	<b>328</b>	<b>398</b>
Total Excluding italics	1969	1814	1996	1931	2238	2165	2535	2470
5,577 to 6,360 Properties 2006-11	2245	2069						
6,360 to 7,130 Properties 2011-26			2238	2165				
0.7 Trips per new property 2006-11	2517	2362						
0.7 Trips per new property 2011-26	3056	2901	2535	2470				

<b>SOUTH 1120 Properties Distributed to the Links to Other Geographic Areas</b>	<b>2005/6/7 AM</b>	<b>2005/6/7 PM</b>	<b>2013 AM</b>	<b>2013 PM</b>	<b>2026 AM Average</b>	<b>2026 PM Average</b>	<b>2026 AM 0.7 Trip</b>	<b>2026 PM 0.7 Trip</b>
<b>A5 Douglas to Ballasalla Lane</b>	479	881	380	818	443	954	502	1088
<b>A5 Ballasalla to Douglas Lane</b>	1017	508	906	543	1056	633	1197	722
	<b>1496</b>	<b>1389</b>	<b>1286</b>	<b>1361</b>	<b>1499</b>	<b>1587</b>	<b>1699</b>	<b>1811</b>
<b>A3 Castletown to Ballacraigne Lane</b>	105	173	100	192	117	224	132	255
<b>A3 Ballacraigne to Castletown Lane</b>	219	111	158	119	184	139	209	158
	<b>324</b>	<b>284</b>	<b>258</b>	<b>311</b>	<b>301</b>	<b>363</b>	<b>341</b>	<b>414</b>
<i>A3 Ballacraigne to Ramsey Lane</i>	100	302	100	271	117	316	132	361
<i>A3 Ramsey to Ballacraigne Lane</i>	268	112	242	96	282	112	320	128
	<b>368</b>	<b>414</b>	<b>342</b>	<b>367</b>	<b>399</b>	<b>428</b>	<b>452</b>	<b>488</b>
<i>A5 Ballasalla to Castletown Lane</i>	717	737	614	533	716	621	811	709
<i>A5 Castletown to Ballasalla Lane</i>	747	625	708	572	826	667	935	761
	<b>1464</b>	<b>1362</b>	<b>1322</b>	<b>1105</b>	<b>1541</b>	<b>1288</b>	<b>1746</b>	<b>1470</b>
<b>A5 Castletown to Port St Mary/Port Erin</b>	215	505	245	504	286	588	324	671
<b>A5 Port St Mary/Port Erin to Castletown</b>	573	170	653	197	761	230	863	262
	<b>788</b>	<b>675</b>	<b>898</b>	<b>701</b>	<b>1047</b>	<b>817</b>	<b>1186</b>	<b>933</b>
<i>A7 Port Erin to Ballasalla Lane</i>	397	117	361	137	421	160	477	182
<i>A7 Ballasalla to Port Erin Lane</i>	122	284	120	290	140	338	159	386
	<b>519</b>	<b>401</b>	<b>481</b>	<b>427</b>	<b>561</b>	<b>498</b>	<b>635</b>	<b>568</b>
<i>A1 Ballacraigne to Peel Lane</i>	139	310	242	355	282	414	320	472
<i>A1 Peel to Ballacraigne Lane</i>	263	158	320	185	373	216	423	246
	<b>402</b>	<b>468</b>	<b>562</b>	<b>540</b>	<b>655</b>	<b>630</b>	<b>742</b>	<b>718</b>
Total Excluding italic	2608	2348	2442	2373	2847	2767	3226	3157
6,040 to 6,747 Properties 2006-11	2913	2623						
6,747 to 7,867 Properties 2011-26			2847	2767				
0.7 Trips per new property 2006-11	3103	2843						
0.7 Trips per new property 2011-26	3887	3627	3226	3157				

<b>East 2,440 Properties Distributed to the Links to Other Geographic Areas</b>	<b>2005/6/7 AM</b>	<b>2005/6/7 PM</b>	<b>2013 AM</b>	<b>2013 PM</b>	<b>2026 AM Average</b>	<b>2026 PM Average</b>	<b>2026 AM 0.7 Trip</b>	<b>2026 PM 0.7 Trip</b>
<b>A1 Douglas to Ballacraigne Lane</b>	330	677	335	833	375	932	483	1181
<b>A1 Ballacraigne to Douglas Lane</b>	760	413	729	463	816	518	1052	657
	<b>1090</b>	<b>1090</b>	<b>1064</b>	<b>1296</b>	<b>1191</b>	<b>1450</b>	<b>1535</b>	<b>1838</b>
<i>A1 Ballacraigne to Peel Lane</i>	139	310	242	355	271	397	349	503
<i>A1 Peel to Ballacraigne Lane</i>	263	158	320	185	358	207	462	262
	<b>402</b>	<b>468</b>	<b>562</b>	<b>540</b>	<b>629</b>	<b>604</b>	<b>811</b>	<b>766</b>
<b>A2 Douglas to Laxey Lane</b>	140	380	167	368	187	412	241	522
<b>A2 Laxey to Douglas Lane</b>	442	160	377	188	422	210	544	267
	<b>582</b>	<b>540</b>	<b>544</b>	<b>556</b>	<b>609</b>	<b>622</b>	<b>785</b>	<b>789</b>
<i>A2 Laxey to Ramsey Lane</i>	68	147	85	120	95	134	123	170
<i>A2 Ramsey to Laxey Lane</i>	72	96	115	75	129	84	166	106
	<b>140</b>	<b>243</b>	<b>200</b>	<b>195</b>	<b>224</b>	<b>218</b>	<b>289</b>	<b>277</b>
<b>A5 Douglas to Ballasalla Lane</b>	479	881	380	818	425	916	548	1160
<b>A5 Ballasalla to Douglas Lane</b>	1017	508	906	543	1014	608	1307	770
	<b>1496</b>	<b>1389</b>	<b>1286</b>	<b>1361</b>	<b>1439</b>	<b>1523</b>	<b>1855</b>	<b>1930</b>
<i>A5 Ballasalla to Castletown Lane</i>	717	737	614	533	687	597	886	756
<i>A5 Castletown to Ballasalla Lane</i>	747	625	708	572	792	640	1022	811
	<b>1464</b>	<b>1362</b>	<b>1322</b>	<b>1105</b>	<b>1480</b>	<b>1237</b>	<b>1907</b>	<b>1567</b>
<i>A7 Port Erin to Ballasalla Lane</i>	397	117	361	137	404	153	521	194
<i>A7 Ballasalla to Port Erin Lane</i>	122	284	120	290	134	325	173	411
	<b>519</b>	<b>401</b>	<b>481</b>	<b>427</b>	<b>538</b>	<b>478</b>	<b>694</b>	<b>606</b>
<b>A18 Douglas to Ramsey Lane</b>	230	517	188	673	210	753	271	954
<b>A18 Ramsey to Douglas Lane</b>	592	167	775	198	867	222	1118	281
	<b>822</b>	<b>684</b>	<b>963</b>	<b>871</b>	<b>1078</b>	<b>975</b>	<b>1389</b>	<b>1235</b>
Total Excluding italic	3990	3703	3857	4084	4317	4571	5565	5792
18,384 to 20,469 Properties 2006-11	4443	4123						
20,469 to 22,909 Properties 2011-26			4317	4571				
0.7 Trips per new property 2006-11	5450	5163						
0.7 Trips per new property 2011-26	7158	6871	5565	5792				

<b>Strategic Routes Geographical Property Location</b>	<b>2005/6/7 AM</b>	<b>2005/6/7 PM</b>	<b>2013 AM</b>	<b>2013 PM</b>	<b>2026 AM Average</b>	<b>2026 PM Average</b>	<b>2026 AM 0.7 Trip</b>	<b>2026 PM 0.7 Trip</b>
A1 Douglas to Ballacraigne Lane	330	677	335	833	435	1082	576	1380
A1 Ballacraigne to Douglas Lane	760	413	729	463	947	601	1254	767
Carriageway Total	<b>1090</b>	<b>1090</b>	<b>1064</b>	<b>1296</b>	<b>1382</b>	<b>1683</b>	<b>1831</b>	<b>2147</b>
A1 Ballacraigne to Peel Lane	139	310	242	355	355	520	494	705
A1 Peel to Ballacraigne Lane	263	158	320	185	469	271	653	368
Carriageway Total	<b>402</b>	<b>468</b>	<b>562</b>	<b>540</b>	<b>823</b>	<b>791</b>	<b>1148</b>	<b>1073</b>
A2 Douglas to Laxey Lane	140	380	167	368	207	456	286	625
A2 Laxey to Douglas Lane	442	160	377	188	468	233	646	319
Carriageway Total	<b>582</b>	<b>540</b>	<b>544</b>	<b>556</b>	<b>675</b>	<b>690</b>	<b>932</b>	<b>944</b>
A2 Laxey to Ramsey Lane	68	147	85	120	105	149	146	204
A2 Ramsey to Laxey Lane	72	96	115	75	143	93	197	127
Carriageway Total	<b>140</b>	<b>243</b>	<b>200</b>	<b>195</b>	<b>248</b>	<b>242</b>	<b>343</b>	<b>331</b>
A3 Castletown to Ballacraigne Lane	105	173	100	192	147	282	187	355
A3 Ballacraigne to Castletown Lane	219	111	158	119	232	175	295	220
Carriageway Total	<b>324</b>	<b>284</b>	<b>258</b>	<b>311</b>	<b>378</b>	<b>456</b>	<b>482</b>	<b>575</b>
A3 Ballacraigne to Ramsey Lane	100	302	100	271	147	398	187	501
A3 Ramsey to Ballacraigne Lane	268	112	242	96	355	141	452	177
Carriageway Total	<b>368</b>	<b>414</b>	<b>342</b>	<b>367</b>	<b>502</b>	<b>538</b>	<b>639</b>	<b>678</b>
A4 Peel to Kirk Michael Lane	60	96	62	72	81	94	96	109
A4 Kirk Michael to Peel Lane	137	80	85	65	111	85	132	99
Carriageway Total	<b>197</b>	<b>176</b>	<b>147</b>	<b>137</b>	<b>191</b>	<b>178</b>	<b>228</b>	<b>208</b>
A5 Douglas to Ballasalla Lane	479	881	380	818	488	1051	670	1430
A5 Ballasalla to Douglas Lane	1017	508	906	543	1164	698	1598	949
Carriageway Total	<b>1496</b>	<b>1389</b>	<b>1286</b>	<b>1361</b>	<b>1653</b>	<b>1749</b>	<b>2268</b>	<b>2380</b>
A5 Ballasalla to Castletown Lane	717	737	614	533	789	685	1083	932
A5 Castletown to Ballasalla Lane	747	625	708	572	910	735	1249	1000
Carriageway Total	<b>1464</b>	<b>1362</b>	<b>1322</b>	<b>1105</b>	<b>1699</b>	<b>1420</b>	<b>2332</b>	<b>1932</b>
A5 Castletown to Port St Mary/Port Erin Lane	215	505	245	504	421	160	477	182
A5 Port St Mary/Port Erin to Castletown Lane	573	170	653	197	140	338	159	386
Carriageway Total	<b>788</b>	<b>675</b>	<b>898</b>	<b>701</b>	<b>561</b>	<b>498</b>	<b>635</b>	<b>568</b>
A18 Douglas to Ramsey Lane	230	517	188	673	233	835	322	1142
A18 Ramsey to Douglas Lane	592	167	775	198	961	246	1327	336
Carriageway Total	<b>822</b>	<b>684</b>	<b>963</b>	<b>871</b>	<b>1194</b>	<b>1080</b>	<b>1649</b>	<b>1478</b>
A7 Port Erin to Ballasalla Lane	397	117	361	137	464	176	637	240
A7 Ballasalla to Port Erin Lane	122	284	120	290	154	373	212	507
Carriageway Total	<b>519</b>	<b>401</b>	<b>481</b>	<b>427</b>	<b>618</b>	<b>549</b>	<b>848</b>	<b>747</b>
A27 Glen Maye to Peel Lane	105	47	94	46	111	54	120	57
A27 Peel to Glen Maye Lane	46	107	34	102	40	120	43	126
Carriageway Total	<b>151</b>	<b>154</b>	<b>128</b>	<b>148</b>	<b>151</b>	<b>175</b>	<b>164</b>	<b>183</b>
<b>Total</b>	<b>8343</b>	<b>7880</b>	<b>8195</b>	<b>8015</b>	<b>10076</b>	<b>10050</b>	<b>13499</b>	<b>13244</b>

**Appendix 4: Tables to show traffic growth data applied to the local strategic route network based upon the likely geographic location where the new properties will be built**



<b>Whole Strategic Route Network Existing Property Distribution</b>	<b>2013 AADT</b>	<b>2026 AADT Average</b>	<b>2026 AADT Five Trips</b>
A1 Douglas to Ballacraigne Lane	6884	7811	9165
A1 Ballacraigne to Douglas Lane	6610	7500	8800
Carriageway Total	<b>13494</b>	<b>15312</b>	<b>17965</b>
A1 Ballacraigne to Peel Lane	2957	3355	3937
A1 Peel to Ballacraigne Lane	2733	3101	3639
Carriageway Total	<b>5690</b>	<b>6457</b>	<b>7575</b>
A2 Douglas to Laxey Lane	2778	3152	3699
A2 Laxey to Douglas Lane	2759	3131	3673
Carriageway Total	<b>5537</b>	<b>6283</b>	<b>7372</b>
A2 Laxey to Ramsey Lane	1188	1348	1582
A2 Ramsey to Laxey Lane	1057	1199	1407
Carriageway Total	<b>2245</b>	<b>2547</b>	<b>2989</b>
A3 Castletown to Ballacraigne Lane	1381	1567	1839
A3 Ballacraigne to Castletown Lane	1395	1583	1857
Carriageway Total	<b>2776</b>	<b>3150</b>	<b>3696</b>
A3 Ballacraigne to Ramsey Lane	1690	1918	2250
A3 Ramsey to Ballacraigne Lane	1580	1793	2104
Carriageway Total	<b>3270</b>	<b>3711</b>	<b>4354</b>
A4 Peel to Kirk Michael Lane	824	935	1097
A4 Kirk Michael to Peel Lane	668	758	889
Carriageway Total	<b>1492</b>	<b>1693</b>	<b>1986</b>
A5 Douglas to Ballasalla Lane	5856	6645	7796
A5 Ballasalla to Douglas Lane	6107	6930	8131
Carriageway Total	<b>11963</b>	<b>13575</b>	<b>15927</b>
A5 Ballasalla to Castletown Lane	5373	6097	7153
A5 Castletown to Ballasalla Lane	5551	6299	7390
Carriageway Total	<b>10924</b>	<b>12396</b>	<b>14544</b>
A5 Castletown to Port St Mary/Port Erin Lane	3845	4363	5119
A5 Port St Mary/Port Erin to Castletown Lane	3646	4137	4854
Carriageway Total	<b>7491</b>	<b>8500</b>	<b>9973</b>
A18 Douglas to Ramsey Lane	3138	3561	4178
A18 Ramsey to Douglas Lane	3158	3583	4204
Carriageway Total	<b>6296</b>	<b>7144</b>	<b>8382</b>
A7 Port Erin to Ballasalla Lane	2026	2299	2697
A7 Ballasalla to Port Erin Lane	1962	2226	2612
Carriageway Total	<b>3988</b>	<b>4525</b>	<b>5309</b>
A27 Glen Maye to Peel Lane	903	1025	1202
A27 Peel to Glen Maye Lane	887	1006	1181
Carriageway Total	<b>1790</b>	<b>2031</b>	<b>2383</b>
<b>Total</b>	<b>76956</b>	<b>87323</b>	<b>102456</b>
33,390 to 37,859 Properties 2006-11			
37,859 to 42,959 Properties 2011-26	87323		
5 Trips per new property 2006-11			
5 Trips per new property 2011-26	102456		

<b>Primary Strategic Route Network Existing Property Distribution</b>	<b>2013 AADT</b>	<b>2026 AADT Average</b>	<b>2026 AADT Five Trips</b>
A1 Douglas to Ballacraigne Lane	6884	7830	10393
A1 Ballacraigne to Douglas Lane	6610	7518	9980
Carriageway Total	<b>13494</b>	<b>15347</b>	<b>20373</b>
A2 Douglas to Laxey Lane	2778	3160	4194
A2 Laxey to Douglas Lane	2759	3138	4166
Carriageway Total	<b>5537</b>	<b>6298</b>	<b>8360</b>
A3 Ballacraigne to Ramsey Lane	1690	1922	2552
A3 Ramsey to Ballacraigne Lane	1580	1797	2385
Carriageway Total	<b>3270</b>	<b>3719</b>	<b>4937</b>
A5 Ballasalla to Castletown Lane	5373	6111	8112
A5 Castletown to Ballasalla Lane	5551	6313	8381
Carriageway Total	<b>10924</b>	<b>12424</b>	<b>16493</b>
A5 Castletown to Port St Mary/Port Erin Lane	3845	4373	5805
A5 Port St Mary/Port Erin to Castletown Lane	3646	4147	5505
Carriageway Total	<b>7491</b>	<b>8520</b>	<b>11310</b>
A18 Douglas to Ramsey Lane	3138	3569	4738
A18 Ramsey to Douglas Lane	3158	3592	4768
Carriageway Total	<b>6296</b>	<b>7161</b>	<b>9506</b>
A7 Port Erin to Ballasalla Lane	2026	2304	3059
A7 Ballasalla to Port Erin Lane	1962	2231	2962
Carriageway Total	<b>3988</b>	<b>4536</b>	<b>6021</b>
<b>Total</b>	<b>51000</b>	<b>58005</b>	<b>77000</b>
33,390 to 37,859 Properties 2006-11			
37,859 to 43,059 Properties 2011-26	58005		
5 Trips per new property 2006-11			
5 Trips per new property 2011-26	77000		

<b>WEST 770 Properties Distributed on to the Links to Other Geographic Areas</b>	<b>2013 AADT</b>	<b>2026 AADT Prorata</b>	<b>2026 AADT Five Trips</b>
<b>A1 Douglas to Ballacraigne Lane</b>	6884	8122	8045
<b>A1 Ballacraigne to Douglas Lane</b>	6610	7798	7725
	<b>13494</b>	<b>15920</b>	<b>15770</b>
<i>A1 Ballacraigne to Peel Lane</i>	2957	3489	3456
<i>A1 Peel to Ballacraigne Lane</i>	2733	3224	3194
	<b>5690</b>	<b>6713</b>	<b>6650</b>
<b>A3 Ballacraigne to Ramsey Lane</b>	1690	1994	1975
<b>A3 Ramsey to Ballacraigne Lane</b>	1580	1864	1847
	<b>3270</b>	<b>3858</b>	<b>3822</b>
<b>A4 Peel to Kirk Michael Lane</b>	824	972	963
<b>A4 Kirk Michael to Peel Lane</b>	668	788	781
	<b>1492</b>	<b>1760</b>	<b>1744</b>
<b>A27 Glen Maye to Peel Lane</b>	903	1065	1055
<b>A27 Peel to Glen Maye Lane</b>	887	1046	1037
	<b>1790</b>	<b>2112</b>	<b>2092</b>
<b>A3 Castletown to Ballacraigne Lane</b>	1381	1629	1614
<b>A3 Ballacraigne to Castletown Lane</b>	1395	1646	1630
	<b>2776</b>	<b>3275</b>	<b>3244</b>
Total Excluding italics	22822	26925	26672
3,389 to 4,283 Properties 2006-11			
4,283 to 5,053 Properties 2011-26	26925		
5 Trips per new property 2006-11			
5 Trips per new property 2011-26	26672		

<b>North 770 Properties Distributed on to the Links to Other Geographic Areas</b>	<b>2013 AADT</b>	<b>2026 AADT Prorata</b>	<b>2026 AADT Five Trips</b>
<b>A2 Douglas to Laxey Lane</b>	2778	3114	3422
<b>A2 Laxey to Douglas Lane</b>	2759	3093	3399
	<b>5537</b>	<b>6207</b>	<b>6822</b>
<i>A2 Laxey to Ramsey Lane</i>	1188	1332	1464
<i>A2 Ramsey to Laxey Lane</i>	1057	1185	1302
	<b>2245</b>	<b>2517</b>	<b>2766</b>
<b>A18 Douglas to Ramsey Lane</b>	3138	3518	3866
<b>A18 Ramsey to Douglas Lane</b>	3158	3540	3891
	<b>6296</b>	<b>7058</b>	<b>7757</b>
<b>A3 Ballacraigne to Ramsey Lane</b>	1690	1895	2082
<b>A3 Ramsey to Ballacraigne Lane</b>	1580	1771	1947
	<b>3270</b>	<b>3666</b>	<b>4029</b>
<b>A4 Peel to Kirk Michael Lane</b>	824	924	1015
<b>A4 Kirk Michael to Peel Lane</b>	668	749	823
	<b>1492</b>	<b>1673</b>	<b>1838</b>
<i>A3 Castletown to Ballacraigne Lane</i>	1381	1548	1701
<i>A3 Ballacraigne to Castletown Lane</i>	1395	1564	1719
	<b>2776</b>	<b>3112</b>	<b>3420</b>
Total Excluding italics	16595	18604	20445
5,577 to 6,360 Properties 2006-11			
6,360 to 7,130 Properties 2011-26	18604		
5 Trips per new property 2006-11			
5 Trips per new property 2011-26	20445		

<b>SOUTH 1120 Properties Distributed to the Links to Other Geographic Areas</b>	<b>2013 AADT</b>	<b>2026 AADT Prorata</b>	<b>2026 AADT Five Trips</b>
<b>A5 Douglas to Ballasalla Lane</b>	5856	6828	7331
<b>A5 Ballasalla to Douglas Lane</b>	6107	7121	7645
	<b>11963</b>	<b>13949</b>	<b>14977</b>
<b>A3 Castletown to Ballacraigne Lane</b>	1381	1610	1729
<b>A3 Ballacraigne to Castletown Lane</b>	1395	1627	1746
	<b>2776</b>	<b>3237</b>	<b>3475</b>
<i>A3 Ballacraigne to Ramsey Lane</i>	1690	1971	2116
<i>A3 Ramsey to Ballacraigne Lane</i>	1580	1842	1978
	<b>3270</b>	<b>3813</b>	<b>4094</b>
<i>A5 Ballasalla to Castletown Lane</i>	5373	6265	6727
<i>A5 Castletown to Ballasalla Lane</i>	5551	6472	6949
	<b>10924</b>	<b>12737</b>	<b>13676</b>
<b>A5 Castletown to Port St Mary/Port Erin</b>	3845	4483	4814
<b>A5 Port St Mary/Port Erin to Castletown</b>	3646	4251	4564
	<b>7491</b>	<b>8735</b>	<b>9378</b>
<i>A7 Port Erin to Ballasalla Lane</i>	2026	2362	2536
<i>A7 Ballasalla to Port Erin Lane</i>	1962	2288	2456
	<b>3988</b>	<b>4650</b>	<b>4993</b>
<i>A1 Ballacraigne to Peel Lane</i>	2957	3448	3702
<i>A1 Peel to Ballacraigne Lane</i>	2733	3187	3421
	<b>5690</b>	<b>6635</b>	<b>7123</b>
Total Excluding italic	22230	25920	27830
6,040 to 6,747 Properties 2006-11			
6,747 to 7,867 Properties 2011-26	25920		
5 Trips per new property 2006-11			
5 Trips per new property 2011-26	27830		

<b>East 2,440 Properties Distributed to the Links to Other Geographic Areas</b>	<b>2013 AADT</b>	<b>2026 AADT Prorata</b>	<b>2026 AADT Five Trips</b>
<b>A1 Douglas to Ballacraigne Lane</b>	6884	7705	9136
<b>A1 Ballacraigne to Douglas Lane</b>	6610	7398	8773
	<b>13494</b>	<b>15103</b>	<b>17909</b>
<i>A1 Ballacraigne to Peel Lane</i>	2957	3309	3924
<i>A1 Peel to Ballacraigne Lane</i>	2733	3059	3627
	<b>5690</b>	<b>6368</b>	<b>7552</b>
<b>A2 Douglas to Laxey Lane</b>	2778	3109	3687
<b>A2 Laxey to Douglas Lane</b>	2759	3088	3662
	<b>5537</b>	<b>6197</b>	<b>7349</b>
<i>A2 Laxey to Ramsey Lane</i>	1188	1330	1577
<i>A2 Ramsey to Laxey Lane</i>	1057	1183	1403
	<b>2245</b>	<b>2513</b>	<b>2979</b>
<b>A5 Douglas to Ballasalla Lane</b>	5856	6554	7772
<b>A5 Ballasalla to Douglas Lane</b>	6107	6835	8105
	<b>11963</b>	<b>13389</b>	<b>15877</b>
<i>A5 Ballasalla to Castletown Lane</i>	5373	6013	7131
<i>A5 Castletown to Ballasalla Lane</i>	5551	6213	7367
	<b>10924</b>	<b>12226</b>	<b>14498</b>
<i>A7 Port Erin to Ballasalla Lane</i>	2026	2268	2689
<i>A7 Ballasalla to Port Erin Lane</i>	1962	2196	2604
	<b>3988</b>	<b>4463</b>	<b>5293</b>
<b>A18 Douglas to Ramsey Lane</b>	3138	3512	4165
<b>A18 Ramsey to Douglas Lane</b>	3158	3534	4191
	<b>6296</b>	<b>7047</b>	<b>8356</b>
Total Excluding italic	37290	41735	49490
18,384 to 20,469 Properties 2006-11			
20,469 to 22,909 Properties 2011-26	41735		
5 Trips per new property 2006-11			
5 Trips per new property 2011-26	49490		

<b>Strategic Routes Geographical Property Location</b>	<b>2013 AADT</b>	<b>2026 AADT Prorata</b>	<b>2026 AADT Five Trips</b>
A1 Douglas to Ballacraigne Lane	6884	8942	10298
A1 Ballacraigne to Douglas Lane	6610	8586	9888
Carriageway Total	<b>13494</b>	<b>17529</b>	<b>20185</b>
A1 Ballacraigne to Peel Lane	2957	4332	5168
A1 Peel to Ballacraigne Lane	2733	4004	4777
Carriageway Total	<b>5690</b>	<b>8336</b>	<b>9945</b>
A2 Douglas to Laxey Lane	2778	3445	4331
A2 Laxey to Douglas Lane	2759	3422	4302
Carriageway Total	<b>5537</b>	<b>6867</b>	<b>8633</b>
A2 Laxey to Ramsey Lane	1188	1473	1852
A2 Ramsey to Laxey Lane	1057	1311	1648
Carriageway Total	<b>2245</b>	<b>2784</b>	<b>3500</b>
A3 Castletown to Ballacraigne Lane	1381	2026	2282
A3 Ballacraigne to Castletown Lane	1395	2046	2305
Carriageway Total	<b>2776</b>	<b>4072</b>	<b>4588</b>
A3 Ballacraigne to Ramsey Lane	1690	2479	2793
A3 Ramsey to Ballacraigne Lane	1580	2318	2611
Carriageway Total	<b>3270</b>	<b>4797</b>	<b>5404</b>
A4 Peel to Kirk Michael Lane	824	1072	1154
A4 Kirk Michael to Peel Lane	668	869	936
Carriageway Total	<b>1492</b>	<b>1941</b>	<b>2090</b>
A5 Douglas to Ballasalla Lane	5856	7526	9247
A5 Ballasalla to Douglas Lane	6107	7849	9643
Carriageway Total	<b>11963</b>	<b>15375</b>	<b>18891</b>
A5 Ballasalla to Castletown Lane	5373	6905	8484
A5 Castletown to Ballasalla Lane	5551	7134	8765
Carriageway Total	<b>10924</b>	<b>14040</b>	<b>17250</b>
A5 Castletown to Port St Mary/Port Erin Lane	3845	2362	2536
A5 Port St Mary/Port Erin to Castletown Lane	3646	2288	2456
Carriageway Total	<b>7491</b>	<b>4650</b>	<b>4993</b>
A18 Douglas to Ramsey Lane	3138	3892	4893
A18 Ramsey to Douglas Lane	3158	3917	4924
Carriageway Total	<b>6296</b>	<b>7809</b>	<b>9816</b>
A7 Port Erin to Ballasalla Lane	2026	2604	3199
A7 Ballasalla to Port Erin Lane	1962	2522	3098
Carriageway Total	<b>3988</b>	<b>5125</b>	<b>6297</b>
A27 Glen Maye to Peel Lane	903	1065	1055
A27 Peel to Glen Maye Lane	887	1046	1037
Carriageway Total	<b>1790</b>	<b>2112</b>	<b>2092</b>
<b>Total</b>	<b>76956</b>	<b>95436</b>	<b>113684</b>