

# Saltash Transport Strategy Development

Appendix C – Methodology

May 2017

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CORNWALL COUNCIL

## **CORNWALL TOWNS MODELS – APPLICATION OF MODE SHIFT**

### **Technical Note 01**

**1ST JUNE 2012**

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#### **1. Background**

This technical note details the methodology to be used to apply a mode shift factor to car based trips as a result of the introduction of sustainable transport strategy measures.

The key measures to be included are as follows:

- Improved cycling and walking infrastructure
- Improved bus service provision and frequency, Real Time Passenger Information, improved waiting facilities
- Improved rail provision and frequency and station improvements
- Travel Planning/Smarter choices

A consistent approach for all the small towns has been developed based on empirical evidence from a number of sources. The towns for which this process applies are as follows:

- Bude/Stratton
- Falmouth/Penryn
- Newquay
- Launceston
- Liskeard
- Penzance
- Saltash
- Hayle/St Ives
- St Austell
- Bodmin
- Camborne, Pool, Redruth

#### **2. Evidence Base**

The following documents/studies have been used to provide figures for mode shift:

- Department for Transport Cycle Demonstration Towns
- Department for Transport Sustainable Towns Study
- Department for Transport WebTAG Unit 3.10.6 (Draft)

The latter two take into account the application of work place and school travel planning measures; the general conclusion is that with proper application of a range of travel plan measures (e.g. Public Transport information, provision of cycle facilities at work places) along with supporting infrastructure a figure of around 8-12% mode shift from the car can be achieved. The figures used for the towns are likely to be in this region, but specific sustainable transport measures for some towns will need to be

taken into account and may allow for greater modal shift. More detail of specific town measures is provided later in this note.

WebTAG 3.10.6 discusses the application of ‘soft’ and ‘hard’ measures in developing smarter choices. The ‘hard’ measures would in many circumstances be modelled within a multi-modal model and ‘soft’ measures would need to be considered outside of the modelling. The issue of induced traffic must also be borne in mind.

In the absence of a multi-modal model at the level of modelling undertaken to inform the core strategy in this case a simplified method is most appropriate, which leads to a mode shift in the order of the figures discussed in the WebTAG guidance document.

### 3. Application

Based on the evidence collected from the documents stated above it is proposed that a matrix type approach be taken, where a high, medium or low level of mode shift is applied depending on the level of sustainable travel options available.

The level of mode shift will be applied at different levels within the trip matrices to zone types as follows:

1. New development zones – where it seen that there is a greater opportunity to influence the mode choice patterns of residents
2. Existing internal zones within the towns
3. External zones – where only PT options will be available for mode shift (under the assumption that walk / cycle improvements would not affect longer distance trips)

These will be applied on a town by town basis as described in Section 4.

The mode shift factors will only be applied to the car level of the matrix (Level 1), as it would not be expected to apply to LGV and HGV trips.

The proposed level of mode shift is shown below:

Mode	High	Medium	Low
Cycle/Walking	25%	20%	15%
Bus	65%	50%	35%

*NB. The Figures represent the expected mode increase*

For cycling/walking, a medium level of mode shift will be used for all internal trips in all towns for the new development zones and low for existing zones. Where the town is one of the cycle demonstration towns, the level will be increased one step.

For internal bus trips, where there are clear proposals to increase the level and frequency of service a high level of mode shift will be used for new development zones and a medium level for existing development zones.

Where there are proposals to improve inter-urban bus or rail services, a medium level of mode shift will be applied to the relevant/effected external zones. Where applicable, case evidence from Cornwall will be utilised (e.g. Falmouth Branch Line, Bus Service 41 in Falmouth) to support the level of mode shift used, although these will need to be considered on a case by case basis as it is understood that service 41 patronage increased as a result of University student using it in greater number and this may be a unique case to this particular service that is not applicable elsewhere.

The initial mode split will be taken from the census journey to work data at ward level. The mode splits by ward are shown in Appendix 1. The above process will be applied to the existing mode splits, to produce an increase in mode split by each of the above modes. It is assumed that all these will transfer from car, so hence, the calculated person trips switching will all be taken away from the car

matrix, with car occupancy taken into account. The car occupancy figure used will be 1.6, which is consistent with the factor used in producing the trip levels for the forecast matrices.

#### 4. Mode Shift by Town

The mode shift used for each of the towns (with the exception of CPR and Bodmin) is described below.

##### A. Bude/Stratton

**Cycle/Walking** – A factor of 20% (medium) was applied to the new development zones and 15% (low) for existing development zones. Bude is a compact town, so there will be some opportunity to influence travel behaviour to get this level of shift.

**Bus – Internal Zones** – The proposals for improvements to the town services indicate that the western part of the town will, in the future, have an improved level of service. Due to the compact nature of the town, it is expected that the improved service provision will capture most zones to the west and majority to the north of the model area, therefore a factor of 35% (medium) increase in bus usage has been applied to internal trips for the new development zones and 35% (medium) for existing zones.

**Bus – External Trips** – Due to the limited number of bus services offered to those who live outside of Bude/Stratton, bus usage for external zones a factor of 0% has been used.

##### B. Falmouth/Penryn

**Cycling / Walking** – A factor of 25% (high) will be applied to the new development zones and 20% (medium) to the existing development zones. Falmouth is a cycle demonstration town so there will be greater scope to obtain this level of shift.

**Bus – External Trips** – It is expected that there will be improvements in bus services to other urban centres which are likely to result in increase in bus travel. Therefore a factor of 50% (medium) has been applied to trips to/from this external zone.

**Bus – Internal Zones** – The proposals for improvements to the town services indicate that the entire town will, in the future, have an improved level of service. Due to the compact nature of the town it is expected that the improved service provision will capture all zones within the model area, therefore a factor of 65% (high) increase in bus usage will be applied to internal trips for the new development zones and 50% (medium) for existing zones.

**Park and Ride** – A park and ride service for Falmouth is predicted to attract 8% of trips travelling to Falmouth Town Centre.

**Rail** – Increased rail capacity (an additional carriage) between Falmouth and Truro has been estimated to lead to a 50% mode increase in rail use between Falmouth and Truro.

##### C. Newquay

**Cycle/Walking** – A factor of 25% (high) was applied to the new development zones and 20% (medium) to the existing internal zones. Whilst there are no set proposals, Newquay is a compact town, so there will good opportunity to influence travel behaviour to attain this level of shift.

**Bus – Internal Zones** – The proposals for improvements to the town services indicate that all of the town will, in the future, have an improved level of service. Due to the compact nature of the town, it is expected that the improved service provision will capture all zones within the model area, therefore a factor of 65% (high) increase in bus usage has been applied to internal trips for the new development zones and 50% (medium) for existing zones.

**Bus – External Trips** – It is expected that there will be improvements to bus services towards Truro, therefore a factor of 65% has been applied to the bus mode share on the A3075 link into the model area. Trips to other urban centres such as St Austell are also likely to see improvements (although not

as regular) and increased bus travel, therefore a factor of 50% (medium) has been applied to trips to/from the other external zones.

#### D. Launceston.

**Cycle/Walking:** Launceston's topography does not lend itself well to cycling and walking. There may be greater scope to the south of the town where the development zones are concentrated and it is generally a bit flatter, hence factor of 20% (medium) was applied to the new development zones and 15% (low) to the existing zones. There is little scope for improvements on any other external corridor, therefore no other factor was applied.

**Bus – External Trips:** It is expected that there will be improvements in bus services to other urban centres which are likely to result in increase in bus travel. Therefore a factor of 50% (medium) has been applied to trips to/from this external zone.

**Bus – Internal Zones:** The proposals for improvements to the town services indicate that all of the town will, in the future, have an improved level of service. Due to the compact nature of the town, it is expected that the improved service provision will capture all zones within the model area; therefore a factor of 65% (high) increase in bus usage has been applied to internal trips for the new development zones and for existing zones.

#### E. Liskeard

**Cycle/Walking –** A list of proposed sustainable measures in terms of cycling/walking has been provided by Cornwall Council, including footpath along Charter Way and cycling/pedestrian link from development cell L4 along Lake lane going under Charter Way to residential area. It also includes more cycle parking in town, crossing point across St Clear Road by Tregay lane and provide cycle lane along Greenbank Road. Increase in pedestrian and cycle trips results in a reduction in short distance car trips. Therefore a factor of 20% and 25% has been applied to internal zones and development zone respectively.

**Bus –** The proposals for improvements to the town services (increase to every 30 minutes frequency from hourly service) indicate that all of the town will, in the future, have an improved level of service. Due to the compact nature of the town, it is expected that the improved service provision will capture all zones within the model area, especially development area; therefore a factor of 50% increase in bus usage has been applied to existing trips, 65% for the new development zones.

**Rail –** Half hourly all day service to Plymouth and a new rail link to Looe will be promoted to maximize travel by train. However, the railway stations are located at the south of Liskeard, out of the town, which results in limited reduction of car trips. A factor of 35% increase in rail usage has been applied to certain internal zones.

#### F. Penzance

**Cycle/Walking –** A factor of 20% (medium) was applied to the new development zones and 15% (low) to the existing development zones. Penzance is a compact town, so there will be some opportunity to influence travel behaviour to get this level of shift.

**Bus – Internal Zones –** The proposals for improvements to the town services indicate that all of the town will, in the future, have an improved level of service. Due to the compact nature of the town, it is expected that the improved service provision will capture all zones within the model area, therefore a factor of 65% (high) increase in bus usage has been applied to internal trips for the new development zones and 50% (medium) for existing zones.

**Bus – External Trips –** It is expected that there will be improvements in eastbound services to other urban centres which are likely to result in increase in bus travel on the A30 corridor. Therefore a factor of 50% (medium) has been applied to trips to/from this external zone. There is little scope for improvements on any other external corridor, therefore no other factor will be applied.

Park and Ride – A park and ride service for Penzance will lead to a mode shift of 10% to internal zones.

Rail – An increased rail service between Penzance and Truro (half hourly) will lead to a 50% mode shift to internal zones.

#### G. Saltash

Cycle/Walking – A list of proposed sustainable measures in terms of cycling/walking has been provided by Cornwall Council, including walking improvement schemes at Callington Road, Salt Mill, Carkeel to the Tamar Valley industrial estates, a pedestrian overbridge linking the new development cells, improved walking and cycling routes from the new developments into the town centre and provision of cycle racks. An increase in pedestrian and cycle trips results in a reduction in short distance car trips. Potential barriers to increased cycling and walking are the topography of the town and severance between the proposed development sites and the rest of the town. Therefore a factor of 20% increase in cycle/walking usage has been applied to both internal zones and development zones.

Bus – The proposals for improvements include increased bus service frequency to Bodmin and Liskeard, St Columb Major, Callington and Launceston (from hourly to half-hourly). Due to the compact nature of the town, it is expected that the improved service provision will capture all zones within the model area, especially development area; therefore a factor of 50% increase in bus usage has been applied to existing trips, 65% for the new development zones.

Rail – A half hourly all day service between Plymouth and Exeter and an upgraded Saltash Station (including parking) will be promoted to maximise travel by train. A factor of 35% increase in rail usage has been applied to certain internal zones.

#### H. Hayle/St Ives

For Hayle, the following mode shift was used:

Cycle / Walking – A factor of 20% (medium) was applied to the new development zones and 15% (low) to the existing development zones. Hayle and St. Ives is a compact town, so there will be some opportunity to influence travel behaviour to get this level of shift.

Bus – Internal Zones – It is envisaged that the improvements to bus services across Cornwall will impact upon the bus usage. There is also expected to be a new hourly service to St. Erth to serve the West Cornwall Transport Interchange. Due to the compact nature of the town, it is expected that the improved service provision will capture all zones within the model area, therefore a factor of 35% (low) increase in bus usage has been applied to internal trips for the new development zones and internal zones.

Bus – External Trips – It is expected that there will be improvements in bus services across the wider Cornwall area as a result of the Cornwall Bus Vision. Therefore a factor of 50% (medium) has been applied to trips to external trips.

Rail – a half hourly all day service between Plymouth and Penzance will be promoted to maximize travel by train. A factor of 35% increase in rail usage has been applied to certain internal zones.

For St Ives, the following mode shift was used:

**Cycle/Walking** – A factor of 20% (medium) was applied to the new development zones and internal zones. St Ives is a compact town, so there will be some opportunity to influence travel behaviour to get this level of shift.

**Bus – Internal Zones** – It is envisaged that the improvements to bus services across Cornwall will impact upon the bus usage. It is understood that there will be no improvements to local bus services in St Ives. Due to the compact nature of the town, it is expected that the improved service provision will capture all zones within the model area, therefore a factor of 35% (low) increase in bus usage has been applied to internal trips for the new development zones and internal zones.

**Bus – External Trips** – It is expected that there will be improvements in bus services across Cornwall as a result of the Cornwall Bus Vision. Therefore a factor of 50% (medium) has been applied to trips to external trips.

**Rail** – To benefit from the increased mainline frequency, a clock-face 15 minute service will be operated on the St. Ives branch line. A factor of 35% increase in rail usage has been applied to certain internal zones.

#### I. St Austell

**Cycle / Walking** – A factor of 25% (medium) was applied to the existing development zones. Factors were not applied to new development, as much of this is part of the proposed eco-communities, and hence sustainable travel is incorporated within the trip rates used for these development sites.

**Bus** – The proposals for improvements to the town services indicate that St Austell will, in the future, have an improved level of service. Due to the compact nature of the town it is expected that the improved service provision will capture all zones within the model area, therefore a 50% (medium) increase in bus usage will be applied to internal trips for the for existing zones. Again, mode shift from the new developments are accounted for by the trip rates used for these sites.

**APPENDIX 1 - MODE SPLIT BY WARD**

(Source: 2001 Journey to Work Census Data)

		% by Car or van	% by train	% by bus	% by bike	% by walking
	Ward Numbers					
<b>Penzance</b>						
Lescudjack and Ponsandane	1	53.6	0.7	5.4	3.8	36.5
Treneere	2	47.6	1	6.1	4.2	41.1
Town centre north	3	50.8	0.7	4.3	2.9	41.3
Central ward east	4	41.1	1.4	5.7	2.6	49.3
Central ward west	5	58.3	0.9	3.9	4.1	32.9
Town centre central	6	39.1	1.1	4.5	3.7	51.6
Promenade ward east	7	45.3	1.2	3.1	3.6	46.9
Promenade ward west	8	64.8	0	4.7	3.6	26.9
Newlyn west	9	72.4	1	4.7	2.3	19.6
Newlyn east	10	52.5	1.4	14.8	3.2	28.1
<b>Ludgvan</b>						
Crowlas and Longrock	11	75.7	0.6	8.9	3.3	11.5
<b>Madron</b>						
Madron and Zennor	12	78.2	0.8	5.8	3.6	11.5
Heamoer west and Gulval	13	73.9	1.3	3.1	2.6	19.1
Heamoer central	14	63	1.5	6.3	4.3	24.9
<b>St Ives</b>						
St Ives north west	15	58.7	0.7	5	1.4	34.2
St Ives west	16	50.7	1.4	4.1	1.4	42.4
St Ives town centre and island	17	40.9	1.8	3.2	0.6	53.5
St Ives south east	18	69.8	0.7	3.7	1.6	24.2
Carbis bay north	19	73.7	1.5	6.9	1	16.9
<b>Hayle</b>						
Hayle north west and Phillack	20	69.2	0.7	5.5	4	20.6
Hayle east and Copperhouse	21	78.4	0.6	5.4	3.2	12.4
Hayle south and High lanes	22	66.8	0.9	7.2	3.9	21.3
Hayle souh west	23	77.1	1.3	5.9	2.2	13.5
Conner Downs west and Angarrack	24	85	0.7	3.7	3.9	6.7
<b>St Gluvais</b>						
Poosanooth and St Gluvias	25	90.2	0	3.4	1.2	5.2
<b>Mabe</b>						
	26	86.9	1	2.3	1.8	7.9
<b>Budock</b>						
	27	86.5	1.1	2.4	2.4	7.5
<b>Penryn</b>						
Penryn north west	28	76.9	3.8	5.3	2.3	11.6
Penryn east	29	75.1	1.5	6.8	2.2	14.3
Penryn south	30	58.7	2.5	10.9	3.1	24.7
Penryn south west	31	76.3	1.1	4.1	2.2	16.3
<b>Falmouth</b>						
Trescobeas ward north	32	66.4	1	5.2	3.3	24.1
Trescobeas ward south	33	73.3	1.9	2.8	2.1	19.9
Penwerris ward north	34	63.8	0.9	7.8	2.1	25.4
Penwerris ward east	35	59	2.5	4.7	2	31.8
Penwerris ward central	36	61.9	1.2	2	3.2	31.8
Penwerries ward south west	37	59	1.9	5.1	1.1	32.9
Arwenack ward north east	38	56.6	3.1	4.6	2.7	33.1
Arwenack ward north west	39	65.5	3.1	1.2	2.2	28
Arwenack ward south east	40	60.2	2.2	3.6	0.8	33.2
Arwenack ward south west	41	64.1	5.5	1.7	1.7	26.9
Boslowick ward north	42	77.2	1.7	3.4	2.2	15.5
Boslowick ward east central	43	69.3	4	3.7	4	18.9
Boslowick ward west central	44	79.9	1.6	5.4	2.9	10.2
Boslowick ward south	45	82.3	1	4.5	3.1	9.2
<b>Launceston</b>						
Launceston north east	46	75.9	0	2.6	1.6	20
Launceston north west	47	74.5	0	0.8	0.9	23.8
Launceston central	48	57	0	1	1.2	40.8
Launceston south east	49	66.9	0	0	2.1	30.9



Launceston south west	50	71.8	0	1.4	2.2	24.5
Tregadillet	51	89.6	0	1.1	1.6	7.7
Lawhitton, Lewannick and South Petherwin	52	92.5	0	0.5	1.5	5.5

<b>Liskeard</b>						
Liskeard north ward east	53	77.9	1.9	1.5	1.4	17.2
Liskeard north ward west	54	72.8	1.9	1.7	0.9	22.7
Liskerad north ward central	55	62.7	0.9	2.8	1.6	31.9
Liskeard south ward east	56	57.5	2.7	1.8	1.3	36.7
Liskeard south ward north west	57	64.5	3.1	2	2.3	28.2
Liskeard south ward south west	58	75.5	5.1	1.4	1.8	16.3

<b>Bude</b>						
Bude north	59	50.4	0	1.8	3.9	43.8
Bude east	60	63.8	0	1	3.9	31.2
Bude south west	61	73.2	0	0.6	3.4	22.8
Stratton	62	74.3	0	1.5	3.6	20.7
Poughill and Flexbury east	63	81.2	0.8	0.8	2.8	14.4
Flexbury west	64	68.3	0	0.6	4	27.1

<b>Saltash</b>						
Saltash Pill ward east	65	68.9	1.9	11	2.1	16.4
Saltash Pill ward west	66	75.6	1	6.4	4.3	12.7
Saltash Burraton ward south east	67	73.8	0.6	7.5	4.8	13.3
Saltash Burraton ward south west	68	67.2	0	10.2	2.6	20.1
Saltash Essa ward east	69	76.1	2.2	7.9	1.7	12.1
Saltash Essa ward north west	70	67.5	0.7	9.2	2.7	19.9
Saltash Essa ward south west	71	70.9	0.7	11.9	3.1	13.4
Saltash St Stephens ward south east	72	74.6	0.5	9.4	3	12.5
Saltash St Stephens ward south and Trehan	73	79.7	0	8.9	3.5	7.9
Latchbrook south	74	79.8	0.5	8.3	4.2	7.2
Latchbrook north and Carkeel	75	84.4	0	6	3.4	6.3

<b>Newquay</b>						
Newquay Gannel ward north east	76	51.8	0.6	2.2	1.7	43.8
Newquay Gannel ward north west	77	58.3	0.6	1.4	2.4	37.3
Newquay Gannel ward south east	78	75.7	0	1.5	3.6	19.3
Newquay Gannel ward south west and Crantock	79	82.8	0.7	4.7	2.8	9
Newquay Edgecumbe north ward north	80	68.8	0	1.7	4	25.6
Newquay Edgecumbe north ward south east	81	86.2	0	1	2.5	10.3
Newquay Edgecumbe south ward east	82	76.3	0	4	2.8	16.9
Newquay Edgecumbe south ward west	83	61	0	2.4	2.6	34
Newquay Edgecumbe south ward central	84	76.3	0	3.3	1.4	19
Rialton ward Newquay west and Tregurrian	85	78.5	0	2.2	3.1	16.2
Rialton ward Newquay east	86	66.9	0	10.6	3.3	19.1
St Columb Minor and Lane	87	74.6	0	7.3	3.7	14.4