

# **New housing in Peacehaven & Newhaven: Impacts on the A259 west of Peacehaven and on Newhaven ring road, and consequences for housing numbers.**

**East Sussex County Council September 2012**

## **Introduction**

The County Council's transport policies and strategies for both Newhaven and Peacehaven include a focus on improvements to, and use of, public transport to meet existing and future person transport demands on the A259 corridor to Brighton, including those arising from new developments.

Current traffic demands at both the A259 west of Peacehaven and Newhaven Ring Road give rise to concerns about the ability of those parts of the highway network to accommodate demand increases, particularly those arising from new development.

This note examines the relationships between transport demand, transport capacity and new housing in Peacehaven and Newhaven. The note relies on the Newhaven Transport Study (computer-based SATURN modelling completed in 2011<sup>1</sup>), further modelling work using the Newhaven SATURN model ('2012 Newhaven modelling'<sup>2</sup>), and other manual modelling processes.

All work reported in this note was carried out to inform the Highway Authority's advice to Lewes District Council in the preparation of the District Council's and the South Downs National Park Authority's Core Strategy. This note replaces a previous note 'Traffic Associated with Housing in Peacehaven' (11/10/11), and also the conclusions at paragraphs 2.18, 2.19 and 2.20 of the 'County Council Position Statement in relation to Transport' published in September 2011.

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<sup>1</sup> Carried out by Mott MacDonald for Lewes District Council using the East Sussex County Council Newhaven SATURN model (updated to 2010), and reported in 'Newhaven Transport Study, July 2011'

<sup>2</sup> Carried out by Mott MacDonald for Mayer Brown on behalf of the promoters of Newhaven Heights, using the 2010 updated East Sussex County Council Newhaven SATURN model.

## **A259 West of Peacehaven**

### ***Background***

The total transport capacity (i.e. person movement capacity) of the A259 from Peacehaven to Brighton includes the contribution of extensive bus priority measures (both directions between Brighton and Telscombe Cliffs). Following the implementation of those measures in 2008/9, the person capacity of the bus system is more determined by bus route service levels and routeing than by infrastructure capacity limitations.

Key transport demand movements on A259 west of Peacehaven are westbound (towards Brighton direction) in AM peak, and eastbound (from Brighton direction) in the PM peak. Within East Sussex, the AM peak is the more important in terms of the ability of the A259 to accommodate current and potential newly generated traffic.

In Brighton & Hove, the constraints at Rottingdean crossroads also impact on the PM peak. Brighton & Hove City Council have no proposals to improve Rottingdean crossroads, and queuing and delays there will continue to be a feature in the future unless further substantial shifts from car to bus are achieved. The existing bus lanes on the west and east approaches to the junction will continue to give an advantage to buses over general traffic.

This section of this note explores the ability of the A259 west of Peacehaven within East Sussex (from Telscombe Cliffs Way, Telscombe Cliffs to Longridge Avenue, Saltdean) to accommodate future potential AM peak traffic demands without an unacceptable deterioration in general operating conditions.

### ***Current demands***

The current Annual Average Daily Traffic (AADT<sup>3</sup>) on A259 at Telscombe Cliffs is 20310 vehicles/day 2-way. 2-way Peak hour weekday flow is typically 1/12 of AADT (in this instance =  $1/12 \times 20310 = 1693$ ) with 60% in the major flow direction (in this instance =  $1693 \times 60\% = 1015$  vehicles / hour).

### ***Link Capacity***

Using DMRB<sup>4</sup>, highway link capacity of the A259 west of Peacehaven within East Sussex is about 1285 vehs / hr 1-way in the highest flow direction.

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<sup>3</sup> AADT = Total annual flow divided by number of days in year

<sup>4</sup> Design Manual for Roads and Bridges – Volume 5, Section 2, Part 2, TA 79/99 - (based on average of UAP2/3 road types and 6.75-7.3m width representing the general characteristics of this section of the A259).

### ***Reserve capacity ('headroom')***

The difference between current flow and link capacity in the major flow direction in the AM peak is therefore about 270 vehicles / hour (i.e. 1285-1015), with a current link volume:capacity ratio of about 80% (i.e. 1015/1285).

This maximum link reserve capacity of 20% could be taken up by new housing (committed or potential) in Peacehaven and Newhaven, and by growth in existing trips.

Housing commitments used in this note are as included in the Newhaven SATURN modelling work; i.e. 279 in Peacehaven (including 228 east and west of Sports Park) and 405 in Newhaven (including 331 at Newhaven Marina). Using the relevant trip rates presented at the end of this section, those housing commitments would translate into about 60 additional vehicle trips towards Brighton on the A259 west of Telscombe Cliffs. Work carried out prior to the implementation of the corridor bus priority measures showed that most traffic on this part of the A259 was associated with Peacehaven or Newhaven. Therefore growth in traffic due to development growth elsewhere would not be significant and is discounted. For trips associated with existing development in Peacehaven and Newhaven, TEMPRO fuel and income factors indicate a 'natural' traffic growth over the next 15 years of about 7.5%, equivalent to about 75 additional vehicle trips in the AM Peak hour towards Brighton on the A259 west of Telscombe Cliffs based on the current flow of 1015.

Total 'natural' and committed growth therefore equals 135 (60+75) vehicles / hour, i.e. about half of the maximum link reserve capacity available, resulting in a future link flow:capacity ratio on this part of the A259 of about 90%, and a maximum link reserve capacity of 10%, or 135 vehicles per hour.

Junction capacity at Telscombe Cliffs Way and Longridge Avenue on this section of the A259 will be a more stringent constraint than links would be on corridor capacity, with Telscombe Cliffs Way being the more important of the two. Other work has indicated that, whilst currently operating near capacity, some improvement to operations at this key junction appears possible, but not to the extent that 100% of link capacity can be employed without excessive delays. It is considered that links will have to operate to no more than 95% of capacity to allow for the junctions to operate satisfactorily. This equates to a headroom for additional westbound traffic in the AM peak on the A259 west of Peacehaven, arising from new potential housing (i.e. not currently committed) in the two towns of about 70 vehicles /hour.

### ***Implications for new housing numbers***

New houses generate new person and vehicle trips. Vehicle trip rates used in

the Mott MacDonald Newhaven Transport Study for the Peacehaven / Newhaven area are as shown in the following extract from that Study's Final Report:

Table 2.3: Trip Rates

Development Class	Development Type	Category	Unit	AM Peak (0800- 0900)		PM Peak (1700- 1800)	
				Vehicle Trip Rates		Vehicle Trip Rates	
				In	Out	In	Out
A1	Retail	Food superstore	Per 100m <sup>2</sup>	4.411	3.248	6.685	6.905
	Retail	Non-food	Per 100m <sup>2</sup>	0.235	0.105	0.847	0.877
A3	Hotel / food / drink	Pub / restaurant	Per 100m <sup>2</sup>	0.000	0.000	8.000	4.889
B1	Employment	Business park (up to 10,000sqm)	Per 100m <sup>2</sup>	2.087	0.288	0.288	1.750
B2	Employment	Industrial estate (up to 16,966 sqm)	Per 100m <sup>2</sup>	0.993	0.363	0.191	0.842
B8	Employment	Commercial warehousing	Per 100m <sup>2</sup>	0.117	0.069	0.058	0.117
C1	Hotel / food / drink	Hotels	Per bed	0.241	0.230	0.226	0.195
C2	Residential	Private housing	Per dwelling	0.173	0.504	0.375	0.222
	Residential	Affordable housing	Per dwelling	0.122	0.245	0.469	0.286
	Residential	Private flats	Per dwelling	0.061	0.221	0.187	0.088
	Residential	Affordable flats	Per dwelling	0.073	0.154	0.163	0.105
D1	Education	University/College	Per 100m <sup>2</sup>	2.463	0.823	0.831	1.071
D2	Leisure	Leisure Parks	Per 100m <sup>2</sup>	0.566	0.475	2.581	1.434
	Leisure	Sports and Leisure Centres	Per 100m <sup>2</sup>	0.599	0.369	1.691	1.106

Source: TRICS version 2011(a) v6.7.1

Assuming a new housing mix of 33% affordable (with 50% houses and 50% flats) and 67% private (with 75% houses and 25% flats), the overall composition of new housing would be:

Private houses      67% x 75% = 50%  
 Private flats        67% x 25% = 17%  
 Affordable houses   33% x 50% = 16.5%  
 Affordable flats     33% x 50% = 16.5%

Composite AM Peak vehicle trip rates for that mix of housing are therefore (hourly vehicle trips / dwelling):

In      0.124  
 Out     0.355  
 2-way 0.479

Some trips would be purely local within Peacehaven or Newhaven and would not therefore impact on the A259 west of Telscombe Cliffs. The National Travel Survey 2010 (NTS) shows that across the whole country 20% of all trips, and 6% of car trips, are under 1 mile, and about 23% of car trips are under 2 miles. The NTS also shows that average trip length increases as the home location becomes less urban, with small/medium urban areas (such as Peacehaven and Newhaven) being about the national average.

The A259 is about 2 miles in length through each of Peacehaven and Newhaven; most development lies within about 1 mile of the A259. The average local vehicle trip distance would therefore be about 1.5 miles. Based on the above NTS data, this equates to about 15% of all vehicle trips in each town being purely local (i.e. within the town).

Longer distance vehicle trip rates (i.e. trips with an external origin or destination) would therefore be:

In	$0.124 \times 0.85 = 0.105$
Out	$0.355 \times 0.85 = 0.302$
2-way	$0.479 \times 0.85 = 0.407$

For longer distance trips, the 2001 Census Journey-to-Work (JTW) data has been used to estimate whether or not trips would use the A259 west of Peacehaven. The distribution of workplaces for out-commuters in the two towns are:

Peacehaven	55% to Brighton & Hove 3% to West Sussex (Adur + Worthing) 7% to West Sussex (other) 1% to Surrey 34% to other destinations
Newhaven	30% to Brighton & Hove 3% to West Sussex (Adur + Worthing) 9% to West Sussex (other) 1% to Surrey 57% to other destinations

For JTW vehicle trips from Peacehaven, all those to Brighton & Hove and to all parts of West Sussex and Surrey will travel west on A259 in the morning. In view of the more readily available alternative routes (via A26 / C7 / A27) for traffic originating in Newhaven, assume that only 50% of all vehicular trips from Newhaven to Brighton & Hove and to West Sussex (Adur + Worthing), will travel west on A259.

Therefore the key longer distance AM peak vehicle trip rates by new housing in Peacehaven and Newhaven (i.e. leading to additional traffic demand towards Brighton on A259 west of Peacehaven) would be:

Peacehaven	$0.302 \times 66\%$	=	0.199
Newhaven	$0.302 \times 33\% \times 50\%$	=	0.050

These are average vehicular trip rates for average inter-modal accessibility. Given the existing Brighton to Telscombe Cliffs bus priority corridor, the frequencies of bus services through and to the towns, and the scale of commuter parking restrictions in Brighton, a 'betterment' (reduction) in those vehicle trip rates of at least 20% could be expected<sup>5</sup>. Adjusted AM peak vehicle trip rates would therefore be:

<sup>5</sup> Typical vehicle trip rates for sites with average inter-modal accessibility are accompanied by typically less than 10% of total person trips by bus. Advice from Brighton & Hove Buses based on their own observations is that, at Longridge Avenue, following completion and 'bedding in' of the bus priority measures and service enhancements, their current share of total person trips towards Brighton in the

Peacehaven	$0.199 \times 80\% = 0.159$
Newhaven	$0.050 \times 80\% = 0.040$

The available traffic 'headroom' has been established at 70 vehicles/hour. Combinations of housing numbers in each town resulting in the same impact on A259 west of Peacehaven are set by the formula:

$$70 = (0.159 \times P) + (0.040 \times N)$$

where P and N are the number of new housing units (excluding current commitments) in Peacehaven and Newhaven respectively.

- e.g.
- 0 units in Peacehaven, 1750 units in Newhaven
  - 160 units in Peacehaven, 1114 units in Newhaven
  - 193 units in Peacehaven<sup>6</sup>, 983 units in Newhaven
  - 300 units in Peacehaven, 558 units in Newhaven
  - 343 units in Peacehaven, 385<sup>7</sup> units in Newhaven
  - 350 units in Peacehaven, 358 units in Newhaven
  - 440 units in Peacehaven, 0 units in Newhaven

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AM peak is at least 30% and has most recently been measured by them as about 45%, suggesting 'betterments' of between 20% and 35%.

<sup>6</sup> 193 = the likely small sites housing contribution in Peacehaven within the plan period (most recent advice from LDC)

<sup>7</sup> 385 = the likely small sites housing contribution in Newhaven within the plan period (most recent advice from LDC)

## Newhaven Ring Road

### ***Background***

The Newhaven Transport Study concluded that capacity issues on the Ring Road would heavily influence the amount of new development acceptable in the town. Subsequent further modelling work using the Newhaven SATURN model ('2012 Newhaven modelling'<sup>8</sup>) has identified that the Ring Road could potentially accommodate the traffic demands of up to 700 units at Meeching Quarry / Newhaven Heights subject to:

- mitigation (signals) at the South Way / South Road junction;
- further improvements elsewhere on the Ring Road (unidentified but considered to be potentially deliverable); and
- effective measures to maximise bus use, particularly for those trips using the A259 corridor towards Brighton, where promotion of enhancements aimed at encouraging other potential users to transfer from car to bus could 'free-up' some highway capacity to accommodate new traffic from this site ('Trip Banking').

### ***Implications for new housing numbers***

Assumptions in the 2012 Newhaven modelling regarding total new development throughout Newhaven and Peacehaven were:

- Commitments (405 housing units in Newhaven and 279 in Peacehaven, together with employment commitments in both towns – N.B. the Newhaven housing commitments do not include the 125 local plan allocation for Meeching Quarry);
- 700 units at Newhaven Heights;
- 300 units at Eastside together with 6000m<sup>2</sup> A1 retail floorspace and 3000m<sup>2</sup> B1 floorspace (at that stage this was a proposed development without planning permission and therefore not a commitment);
- 600 units at Peacehaven;
- 'Natural' growth associated with all internal and external areas, as defined by appropriate use of TEMPRO.

Development in Peacehaven will generate some trips that will travel east and impact on the Ring Road. The earlier SATURN work identified an impact ratio of about 4:1, i.e. 4 units in Peacehaven would be equivalent to 1 unit in Newhaven, in terms of impact on Newhaven Ring Road. The equivalent number of additional new units in Newhaven in the above assessment work was therefore  $600/4 = 150$ .

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<sup>8</sup> Carried out by Mott MacDonald for Mayer Brown on behalf of the promoters of Newhaven Heights.

The recent planning permission for Eastside includes only 190 housing units compared to the 300 assumed in the 2012 Newhaven modelling. The remaining 110 units therefore represent an additional equivalent number of new units elsewhere in the town.

The 2012 Newhaven modelling therefore effectively considered the impacts of a total 'Newhaven equivalent' quantum of new housing development (i.e. excluding existing commitments and assuming zero in Peacehaven other than existing commitments) of

$$700 + (600/4) + (300-190) = 960 \text{ units.}$$

Combinations of housing numbers in each town resulting in the same impact on Newhaven Ring Road are therefore set by the formula:

$$960 - (0.25 \times P) = N$$

where P and N are the number of new housing units (excluding current commitments) in Peacehaven and Newhaven respectively

e.g. 0 units in Peacehaven, 960 at Newhaven

160 units at Peacehaven, 920 at Newhaven

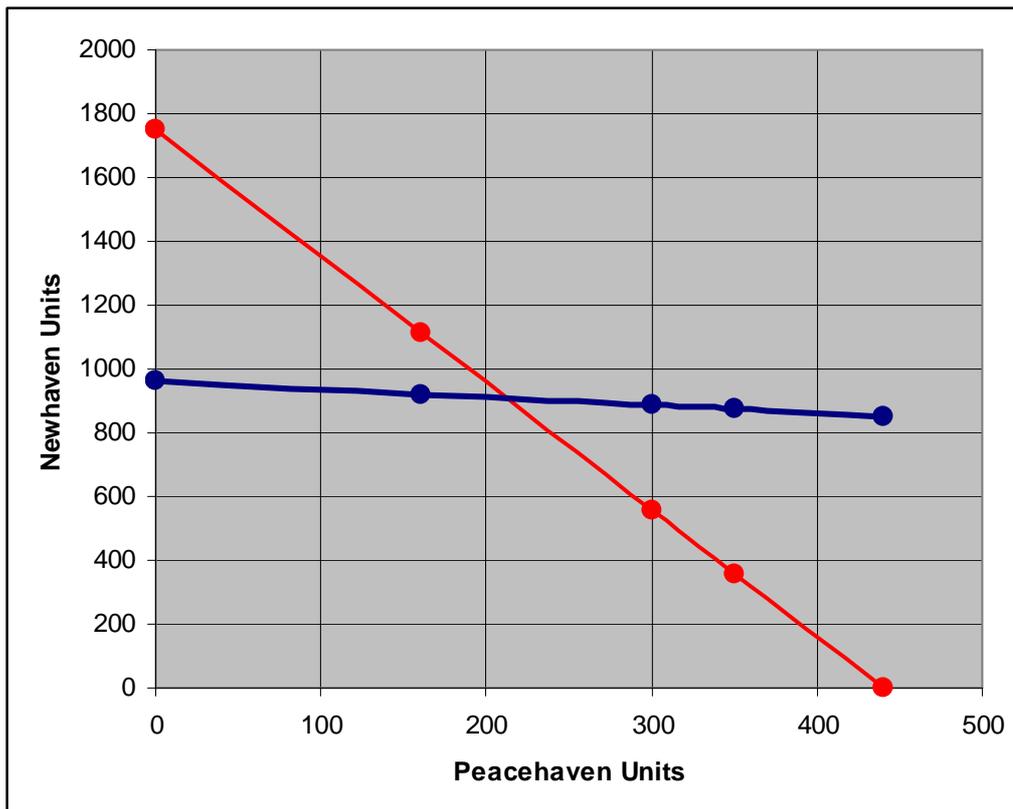
300 units at Peacehaven, 885 at Newhaven

350 units at Peacehaven, 873 at Newhaven

440 units at Peacehaven, 850 at Newhaven

## Combination Assessment

The two relationships overlap as shown in the following plot. When interpreting the plot, it is important to remember that the number of units is defined as new housing, whether from strategic or small scale sites, in excess of current commitments (current housing commitments are 405 housing units in Newhaven and 279 in Peacehaven – note that the Newhaven housing commitments do not include the Local Plan allocation of 125 units at Meeching Quarry).



**RED** based on capacity of A259 west of Peacehaven  
**BLUE** based on capacity of Newhaven Ring Road

The **RED** relationship, related to capacity on A259 west of Peacehaven, is much more sensitive to change in the number of units in either town, but particularly in Peacehaven itself, than the **BLUE** relationship based on capacity at Newhaven Ring Road.

The formulae intersect at about 220 units in Peacehaven / 905 units in Newhaven. Above 220 units in Peacehaven, the acceptable number of units in Newhaven is set by the **RED** line, i.e. is dependent on capacity issues on A259 west of Peacehaven and not on the Newhaven Ring Road. Below 220 units in Peacehaven, the acceptable number of units in Newhaven is set by the **BLUE** line, i.e. is dependent on capacity issues at Newhaven Ring Road and not on the A259 west of Peacehaven. The critical acceptable area for housing number combinations (total of strategic and small scale sites) is

anywhere within the lower left quadrilateral (bound by the vertical and horizontal axes, the left part of the blue line, and the right part of the red line).

Resultant maximum new housing in Newhaven is 960 (with zero in Peacehaven on strategic or small scale sites), and in Peacehaven is 440 (with zero in Newhaven on strategic and small scale sites).

Recent advice from Lewes DC is that the small sites housing contribution could be 385 in Newhaven and 193 in Peacehaven. Taking that into account, maximum new strategic housing in the two towns can be calculated thus:

Peacehaven			WITH	Newhaven			
Total	Small	Strategic		Total	Small	Strategic	
440	193	247		0	0	0	<b>RED</b>
343	193	150		385	385	0	<b>RED</b>
300	193	107		558	385	173	<b>RED</b>
193	193	0		920	385	535	<b>BLUE</b>
0	0	0		960	385	575	<b>BLUE</b>

The key to unlocking any further potential for new housing in either town lies in the promotion of robust effective enhancements to the existing public transport service levels and infrastructure in the A259 corridor, thereby increasing the share of total person demands by bus for the whole area, not just the new developments themselves.

This recommended level of development would also be contingent on a number of infrastructure improvements being delivered – improvements to the operation of Telscombe Cliffs Way junction and the Sutton Avenue roundabout, improvements to junctions around the Newhaven ring road specifically including the South Way / South Road junction, and the infrastructure elements of bus services enhancement along the A259 as well as within Peacehaven linking to the coast road. Any specific allocation to large sites would also have to demonstrate overall sustainable accessibility.

However, should further compelling evidence relating to the ability to achieve higher and realistic levels of public transport patronage come forward from developers as well as a commitment from the developers and local bus operator to providing a more frequent bus service serving the Peacehaven hinterland and the potential strategic allocations in Peacehaven & Newhaven, then the County Council would be happy to reconsider its current advice based on the above work that 300-350 additional homes in Peacehaven, together with 600-400 respectively in Newhaven (in addition to Eastside) would represent the most appropriate balance of development in the area.