

## Diamond Transport Modelling Work – July 2012

### Scenarios

Table 1: Summary of Housing Allocations for Scenarios 11, 12a, 12b and 13.

Scenario	SHLAA & Urban Capacity Sites	Site										Total
		A	C	D	E	G	P	Q	R	S	T	
11	2,730	700	2,000			210	180	400	200	230	150	6,800
12a	2,730	700	2,000	1,200		210	180	400	200	230	150	8,000
12b	2,730	700	2,000			210	180	1,800	200	230	150	8,000
13	2,985	700	2,000		180		180	400	200			6,645

### Scenario 11

#### Flow Difference AM & PM PEAK

When compared to the 'no development scenario' the greatest flow increases can be seen along:

- Coopers Green Lane
- Hatfield Ave
- A1001 Comet Way \* partly due to re-routing to avoid congestion on A1(M)
- A6129 Stanborough Rd \* partly due to re-routing to avoid congestion on A1(M)
- A414 North Orbital Rd \* partly due to re-routing to avoid congestion on A1(M)
- A414 Hertford Rd \* partly due to re-routing to avoid congestion on A1(M)

PM peak shows similar trend to this, however there is an increase in trips using the A1 (M) south of Junction 2 and the over-bridge coming off at Junction 4.

#### Flow/ Capacity Map AM & PM PEAK

As a result of development at site C (N Hatfield) the following roads are expected to operate close to or above capacity:

- Coopers Green Lane
- Hatfield Ave

As a result of development at sites A (Panshanger) and Q (East Herts) the following roads are expected to show significant increases in stress:

- A414 Hertford Rd
- Herts Lane

- Panshanger Lane
- B195 Bichall Lane

As a result of development at site G (Welham Green) the following roads are expected to show significant increases in stress:

- Dixons Hill Rd
- A1000 Great North Rd

The PM Peak shows a similar trend to AM peak although there are less links with a significant increase in stress levels.

## **Scenario 12a**

### **Flow Difference AM & PM PEAK**

The flow difference plot shows a similar trend to that seen in scenario 11, but with increased flows due to the introduction of site D (NW Hatfield).

As a result there are significantly higher flows than scenario 11 along:

- Coopers Green Lane
- Hatfield Ave

There are also higher flows along the A414 North Orbital Rd and the A1081 between A414 and junc 22 of M25.

Higher number of northbound trips on the A1 (M) north of junc 6 towards Stevenage and Bedford compared to scenario 11.

In the PM PEAK traffic flows on the A414 North Orbital Rd show a higher increase than those on the A1M – suggests increased congestion on A1(M) leading to re-routing.

### **Flow/ Capacity Map AM & PM PEAK**

The flow/ capacity map is similar to scenario 11, although, additionally it indicates that the A1000 Chequers is now expected to be operating at 95% or above of its capacity due to additional traffic from site D (W Hatfield).

## **Scenario 12b**

### **Flow Difference AM & PM PEAK**

Due to additional dwellings at site Q (E Herts) there is a significant increase in traffic levels on the B158 towards the A1000 compared to scenario 11. – Indicates congestion on A1M.

As a result of traffic from site Q (E Herts) there are also increases on the:

- A414
- B195
- Heronswood Rd
- Howlands
- Panshanger Lane

High proportion of traffic uses Bridge Rd and Digswell Rd rather than the A1000 Bessemer Rd – Indicates congestion.

This is not the case for the PM peak showing no congestion along the A1000 Bessemer Rd.

Higher traffic levels on the A414 North Orbital Rd and on A1M north of Junc 6 (similar to 12a)

PM peak shows the same trends as AM peak albeit with trips made in the reverse direction.

### **Flow/ Capacity Map AM PM PEAK**

Similar to Scenario 12a the A1000 Chequers is expected to operate close to or above capacity in 2031.

The extra trips made from site Q (E Herts) in scenario 12b compared to scenario 11 has also increased stress on the B195 Birchall Lane and Cole Green Lane and these links are also expected to be operating close to or above capacity in 2031 due to additional trips from site Q.

The PM peak shows an increase in stress levels along the whole of the B195 between A1000 and A414 and section of the B1000 between Hens Lane and Panshanger Lane junctions in scenario 12b compared to scenario 11 – these links will be operating very close to or above capacity in 2031.

### **Scenario 13**

#### **Flow Difference AM & PM PEAK**

Same patterns as scenario 11, except that a number of links to the south and east have reduced differences compared to 11.

This is also true of the PM peak, however this also shows an added increase in traffic levels along the M25 from junction 23 to 22 compared to scenario 11, which corresponds to people using the A414 to avoid the A1(M)

## Flow/ Capacity Map AM & PM PEAK

Same patterns for AM and PM peak.

The A1000 Great North Rd between the Dixons Hill Rd and Bell Lane juncs is expected to be operating at or close to capacity in 2031 even without development **site G (Welham Green)**.

### Summary

- Traffic flows/ road capacity – measured in terms of speed is best for 13 and worst for 12a.
- Traffic flows/ road capacity – measured in terms of additional PCU km and additional PCU hours is best for 11 (with marginally lower outputs for 13) and worst for 12a.
- 12a expected to produce worse results than 12b

### Junction Analysis

Several instances where development trips identified through junctions is zero – this is due to the fact that these junctions are already heavily congested in 2031.

**Scenario 11:** Biggest impact on junction 4 of the A1(M), followed by Junction 6 – due to close proximity to sites A (Panshanger), C (N Hatfield) and Q (E Herts).

**Scenario's 12a & 12b:** Slightly higher junc flows than scenario 11. In addition to the impacts of the additional development traffic on junctions 4 and 6 there is a significant impact on the junction flows at junction 1 of the A1(M) in scenario 12a – this is due to an increase in traffic from site D (N Hatfield).

**Scenario 13:** Very similar to scenario 11, but with small increases at Junction 1 of the A1(M) and Junction 22 of the M25, and small decreases at other junctions.

Assessment of turning movements:

Turning movements, AM peak period:

- A1 (Junc 1)/ M25 (Junc 23) – M25 WB (on slip) – stress 1.01
- A1 (Junc 2) – NB (Through) – stress 0.80
- A1 (Junc 3) – SB (off Slip) – stress 0.99
- A1 (Junc 3) – NB (on slip) – stress 1.04
- M25 (Junc 22) – EB (off slip) – stress 0.83
- M25 (Junc 22) – WB (off slip) – stress 0.81

Turning movements, PM peak period:

- A1 (Junc 2) – NB (through) – stress 0.92
- A1 (Junc 3) – SB (off slip) – stress 0.87
- A1 (Junc 3) – NB (on slip) – stress 1.06
- A1 (Junc 3) – NB (through) – stress 0.85
- A1 (Junc 4) – NB (off slip) – stress 0.81

## Summary

**Table 4: Junction Flows by Scenario and Junction (Average of AM and PM Peak Periods)**

	A1(M) J1	A1(M) J2	A1(M) J3	A1(M) J4	A1(M) J5	A1(M) J6	M25 J22
<b>Scenario 11</b>	215	118	42	475	126	366	85
<b>Scenario 12a</b>	314	155	56	498	146	408	122
<b>Scenario 12b</b>	223	123	43	522	126	434	89
<b>Scenario 13</b>	251	115	40	491	126	366	112

**Table 23: Junction Flows by Scenario and Junction (Average of AM and PM Peak Periods)**

	A1(M) J1	A1(M) J2	A1(M) J3	A1(M) J4	A1(M) J5	A1(M) J6	M25 J22	Total
Scenario 8	652	264	87	532	167	366	226	2,294
Scenario 9	698	281	75	763	228	428	240	2,713
Scenario 10	708	287	78	784	226	493	244	2,820
Scenario 8 (Updated)	449	183	65	514	168	366	168	1,915
Scenario 9 (Updated)	465	198	67	747	228	428	183	2,317
Scenario 10 (Updated)	463	194	63	741	226	493	187	2,366