Maidstone Transport Model

Local Plan Option Testing

Model Characteristics

- Original base model developed by Jacobs in 2007
- Strategic VISUM model
  - Aims to provide an indicative representation of reality for a 'typical' day (e.g. during school term time and no major incidents on the network)
  - Multi-modal assessment (excluding peds & cyclists)
  - Assesses traffic demand and distribution on model network
  - Not intended to asses finer detail of individual junctions
- Model input data updated to reflect 2014 traffic conditions
- Updated base model performance sense-checked against DfT criteria
- Nationally accepted method of providing supporting evidence to Local Plan development processes.

Model Characteristics – Key Outputs

- Weekday AM and PM peak periods modelled
- Travel demand
  - total vehicle movements within modelled area
- Overall network performance
  - Total travel distance (vehicle km)
  - Total travel time (vehicle hours)

Forecast Scenarios

1. 2031 Do Minimum (DM) — 17,381 homes
   - Original Housing & employment allocations
   - Maidstone Gyratory scheme only
2. 2031 Do Something 1 (DS1) – *presented to JTB Dec '14* — 17,381 homes
   - Original Housing & employment allocations
   - Package of transport improvements
     - Highway capacity improvements
     - Leeds – Langley link road
3. 2031 Do Something 2 (DS2) — 17,381 homes
   - Original Housing & employment allocations
   - Package of transport improvements
     - Highway capacity improvements
     - Public transport improvements
     - Increased walking and cycling
     - Increased parking costs
4. 2031 Do Something 3 (DS3) — 16,247 homes (distribution adjusted)
   - Revised housing allocation/distribution
   - Package of transport improvements
     - Highway capacity improvements
     - Leeds – Langley link road
     - Public transport improvements
     - Increased parking costs

Forecast Scenarios

Transport Interventions

2031 Do Something 1	2031 Do Something 2	2031 Do Something 3
Bridge gyratory	Bridge gyratory	Bridge gyratory
Highway capacity improvements (identified at JTB workshop)	Highway capacity improvements (identified at JTB workshop + M20 J7, A20/New Cut & Hermitage Ln ped signals)	Highway capacity improvements (identified at JTB workshop + M20 J7, A20/New Cut & Hermitage Ln ped signals)
Leeds – Langley Link Road		Leeds – Langley Link Road
	Increased bus frequency on radial routes (every 7 mins)	Increased bus frequency on radial routes (every 10 mins)
	Increased town centre parking costs (50% at public CPs) + No change in bus fares	Increased town centre parking costs (50% at public CPs) + No change in bus fares
	New bus routes (Notcutts – bus station & circular route to hospital from town centre)	
	Additional P&R site at Linton Corner	
	Walking & cycling mode shares increased by approx. 8.5%	
	Car occupancy increased (from 1.23 to 1.29)	

Overall Network Performance

- **AM peak** - maximum travel distance and travel time
- **2031 DM** – worst case impact in travel time
- **2031 DS1** - increase in demand on the network results in over 20% increase in travel distance, over 30% increase in vehicle hours
- **2031 DS2** - reduced vehicle trips = reduced pressure on network
- **2031 DS3** - lower housing = reduced vehicle trips = reduced pressure on network

AM Peak	2014	2031 DM	2031 DS1	2031 DS2	2031 DS3
Travel Distance (veh km)	122,000	144,500	146,700	126,900	135,500
% difference vs 2014		18%	+20%	+4%	+11%
Travel Time (veh hours)	8,300	11,400	10,800	8,500	8,800
% difference vs 2014		38%	+30%	+3%	+7%

PM Peak	2014	2031 DM	2031 DS1	2031 DS2	2031 DS3
Travel Distance (veh km)	113,400	137,500	140,200	125,700	136,500
% difference vs 2014		21%	+24%	+11%	+20%
Travel Time (veh hours)	7,000	10,000	9,500	8,100	8,600
% difference vs 2014		42%	+35%	+15%	+22%

DS2 Transport Strategy Considerations

- Would represent a significant behavioural change in terms of transport for the Borough
  - Very few comparable examples elsewhere in UK
  - High levels of car ownership
  - Sustainable & public transport provision/perception/usage
- Challenging to deliver:
  - Cost of delivery/financial viability?
  - Would require car travel to be dis-incentivised/existing road space to dedicated to sustainable travel modes
  - Sufficient political will for short – medium term 'pain'?
  - Optimistic targets for walking/cycling mode shift
  - Reliance on private organisations (e.g. bus operators)
  - No guarantees of success
- Aspirational targets only – no specific proposals identified as to how targets will be achieved

DS3 Analysis – higher housing target (AM Peak)

- Approximation of DS3 performance with higher housing target
- Indicative DS3a* scenario shows minor increase in vehicle demand vs DS3 (+200 vehicles)
- Indicative DS3a* scenario shows minor increase in total travel time vs DS3 (+300 hours)
- DS3a* estimated to operate significantly better than DS1 and slightly worse than DS2

	2014	2031 DM	2031 DS1	2031 DS2	2031 DS3	2031 DS3a*
Vehicle Trips	35,500	41,500	41,600	37,700	38,600	38,800
Difference vs 2014		6,000	6,100	2,200	3,100	3,300
% difference vs 2014		+17%	+17%	+6%	+9%	+9%

	2014	2031 DM	2031 DS1	2031 DS2	2031 DS3	2031 DS3a*
Travel Time (veh hours)	8,300	11,400	10,800	8,500	8,800	9,100
Difference vs 2014		3,100	2,500	200	500	800
% difference vs 2014		38%	+30%	+3%	+7%	+10%

*estimated scenario only – not based on detailed model test

DS3 Transport Strategy Considerations

- Delivery of major new infrastructure (Leeds/Langley Link Road)
  - Cost of delivery
  - Further investigation of cost/benefit required
  - Planning/environmental risks
- Reliance on private organisations (e.g. bus operators)

Transport Strategy Impacts (AM Peak)

- Approximation of the impact of individual transport measures*
- Small % of travel time savings due to additional P&R and increased car occupancy level
- Increased bus frequency and increased parking costs should be considered in combination
- Approx. 30% of time saving due to increased parking costs
- Approx. 10% of time saving due to Leeds/Langley Link Road
- Highway capacity improvements has biggest impact

Transport Measure	Estimated Impact on Travel Time*
Increased Walking/Cycling	16%
Additional Park & Ride	5%
Increased Parking Costs	30%
Increased Bus Frequencies	1%
Highway Improvements	35%
Leeds/Langley Link Road	10%
Increased Car Occupancy	3%

*estimated impact only – some measures are interrelated

Thank you

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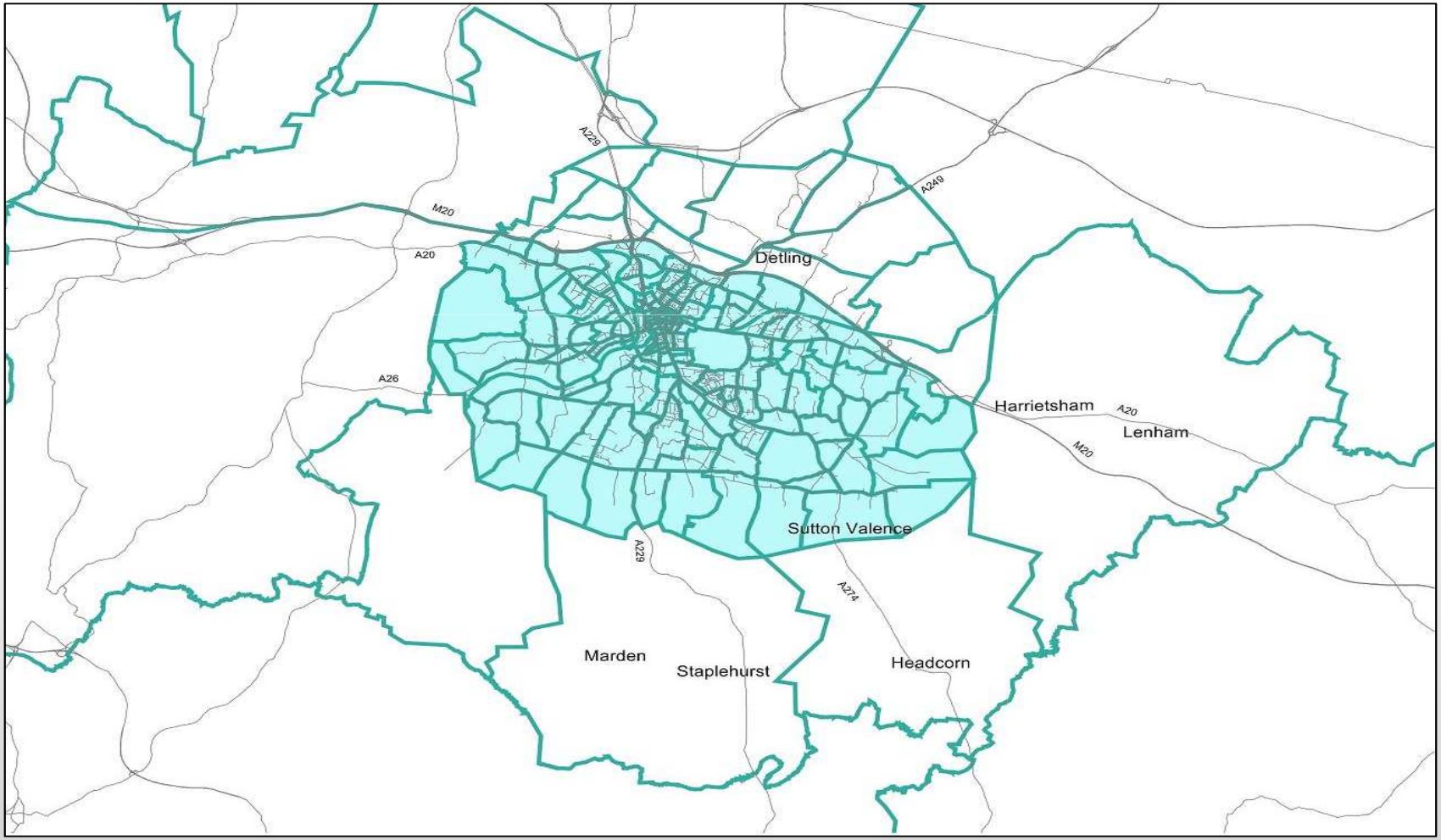
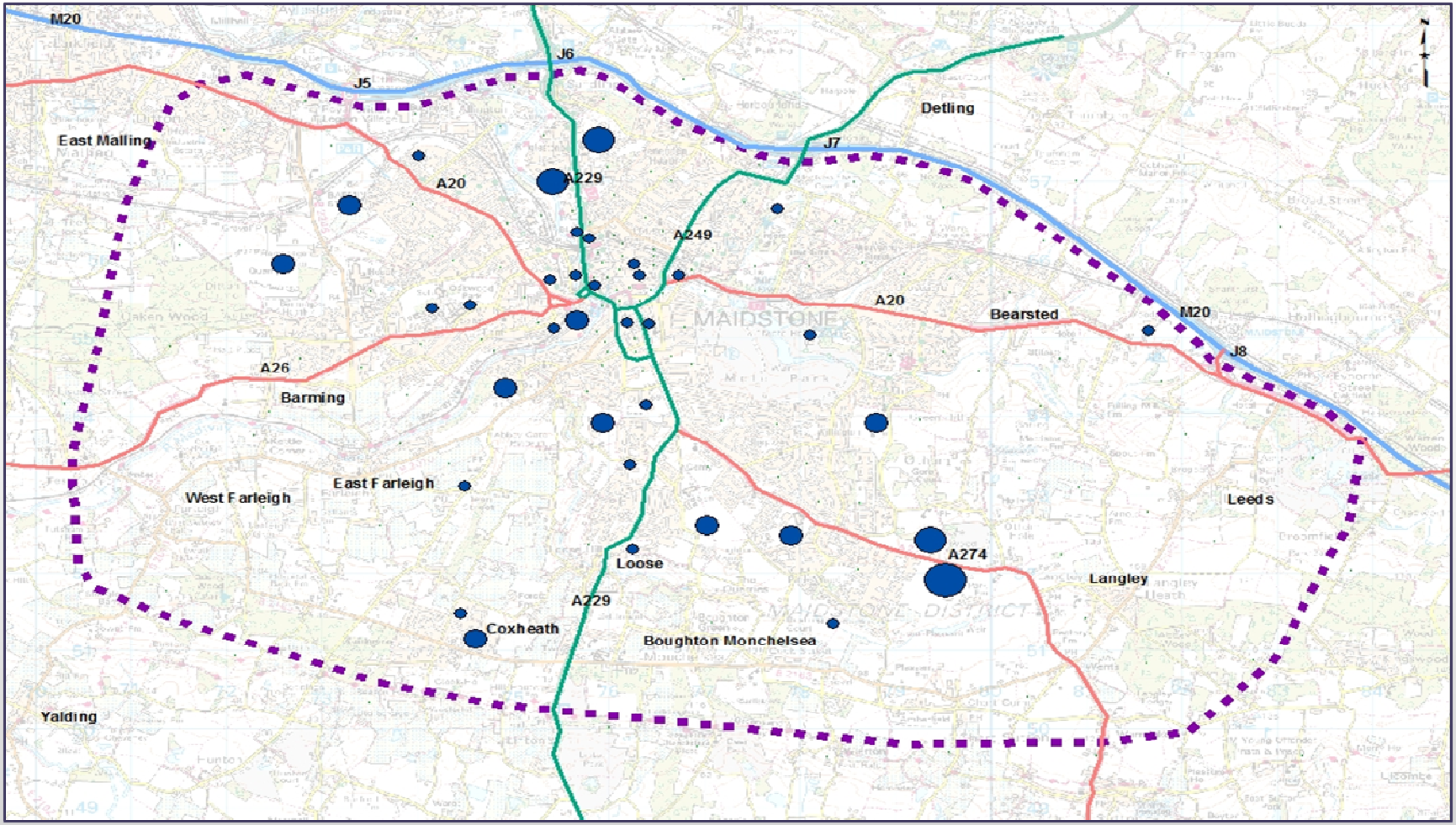
Model Characteristics

Wider model area



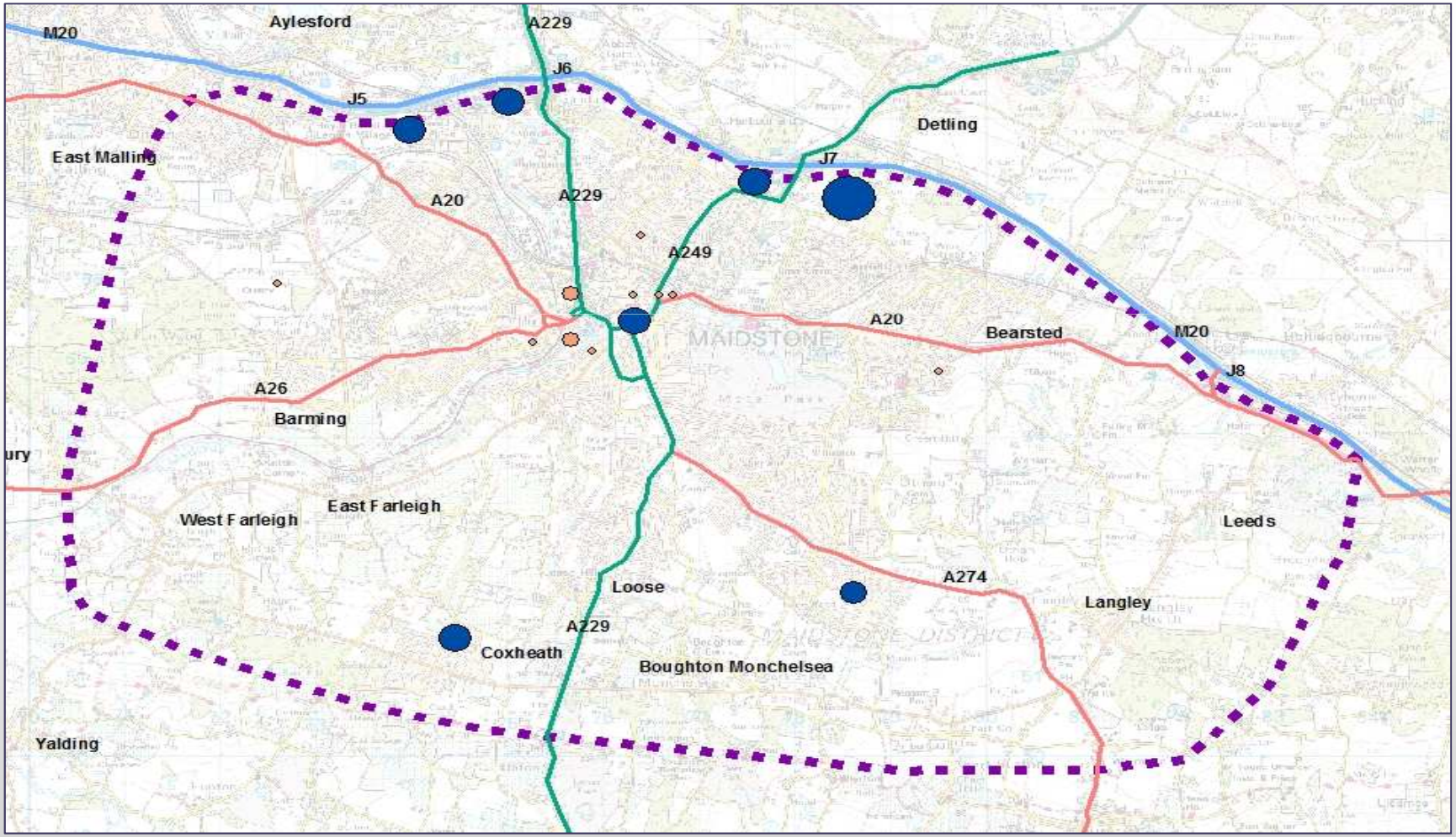
Forecast Scenarios

Housing locations (Urban Area)



Forecast Scenarios

Employment locations (Urban Area)



Travel Demand

- **AM peak busiest -** highest number of people and vehicle movements
- **2031 DM** – higher housing target results in over 6,000 extra vehicles on the network by 2031
- **2031 DS1** – higher housing target = same demand as 2031 DM scenario
- **2031 DS2** – higher housing target offset by more walk & cycle trips and improved public transport – up to 2,800 extra vehicle movements on the network by 2031
- **2031 DS3** – lower housing target (redistributed) with improved public transport – 3,100 to 4,000 extra vehicle movements on the network by 2031

AM Peak

	2014	2031 DM	2031 DS1	2031 DS2	2031 DS3
Person Trips	50,300	58,600	58,600	56,600	57,800
		+17%	+17%	+12%	+15%
Vehicle Trips	35,500	41,500	41,600	37,700	38,600
		+17%	+17%	+6%	+9%

PM Peak

	2014	2031 DM	2031 DS1	2031 DS2	2031 DS3
Person Trips	44,900	52,800	52,800	50,800	52,000
		+18%	+18%	+13%	+16%
Vehicle Trips	32,000	38,000	38,100	34,800	36,000
		+19%	+19%	+9%	+10%

A229 & A274 Impacts

- Recognised as key congestion 'hot spots' on the network
- Traffic flows on A229 & A274 will increase significantly without transport intervention(s)
- Link capacity does not consider influence of junctions which are most common cause of delay
- Traffic demand currently exceeds link capacity. Will significantly worsen by 2031
- Implementation of Leeds / Langley Link Rd reduces impact on these routes

A229/A274 (North of Wheatsheaf jct)

AM Peak	2014	2031 DM	2031 DS1	2031 DS2	2031 DS3
2-way Traffic Flow	2,600	3,390	3,160	2,970	2,900
% difference vs 2014		+30%	+21%	+14%	+11%
Link Volume / Capacity*	112%	144%	133%	114%	114%

Impact of Leeds / Langley Link Rd (DM vs DS1)

Reduction in 2-way Traffic Flow			
	A274 Sutton Rd	Willington St (S)	A229 Loose Rd (N of Wheatsheaf)
AM Peak	27%	27%	9%
PM Peak	12%	22%	4%

*Link capacity based on DMRB TA79/99 guidance