Report **HFAS Report 1746**

Client **A6MARR Project Board**

Project **A6 To Manchester Airport Relief Road**

Subject **Design Freeze 7 Forecasting Report**

This Report describes the derivation of the scheme traffic forecasts used for the appraisal of the A6 to Manchester Airport Relief Road. The forecasts produced are for an assumed opening year of 2017 and for a design year of 2032, assuming three potential growth and highway infrastructure scenarios.

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060913	Atkins	R Kimber (v1.0 – Draft for comment)

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Executive Summary

Overview

1. Transport for Greater Manchester (TfGM) Highways Forecasting and Analytical Services (HFAS) was appointed by the A6MARR Project Board to develop WebTAG compliant traffic models for the appraisal of scheme options for the proposed A6 to Manchester Airport Relief Road. The development of the base demand and traffic assignment models was carried out in partnership with MVA Consultancy.

2. This report describes the derivation of SATURN model scheme traffic forecasts used for the appraisal of the proposed scheme. The results reported reflect the Design Freeze 7 version of the proposed scheme.

Traffic Forecasting

3. The Do-Minimum networks included schemes that will be brought forward in the Southern part of Greater Manchester and Northern Cheshire primarily as part of the National Infrastructure Plan, the Greater Manchester Transport Fund, or as part of the on-going development of Manchester Airport.

4. The resulting Do-Minimum networks were used for the detailed examination of scheme impacts and for the cost-benefit analysis reported later in this report, but they were also supplied to consultant MVA for the representation of highway supply in the scheme specific variable demand model (VDM).

5. Do-Something networks (for the Preferred scheme) were built from the Do-Minimum networks and differed only in the respect that they had the A6 to Manchester Airport Relief Road scheme and associated mitigation measures coded into them.

Demand Forecasting

6. Demand forecasts were derived using a version of the Greater Manchester Strategy Planning Model (GMSPM2), a land use / transport interaction model covering the Greater Manchester area in detail and areas beyond in less detail. The work was carried out by MVA Consultancy, who provided HFAS with VDM demand forecasts for each of the two forecast years.

7. The methodology used to derive the Core forecasts involved:

- extracting population and employment forecasts from the work undertaken to assess the transport impacts of the Greater Manchester Local Development Frameworks;
- replacing the forecasts for Cheshire East, High Peak, Manchester and Stockport with revised forecasts based on planning data;

- incorporating forecasts for passenger and employee growth at Manchester Airport agreed with Manchester Airport Group (MAG);
- constraining the population and employment growth forecasts to the overall growth level implied by NTEM 6.2 at the district level within Greater Manchester and at the county level beyond; and
- applying the External Forecasting Model to produce forecasts of the future year travel demand for input to VDM from the population and employment forecasts.

8. Public transport fares were assumed to rise at 1% per annum above the growth in retail price index (RPI) between 2009 and the forecast years. This is in accordance with the DfT's guidance on changes in public transport fares (TAG Unit 3.15.4) and is based on regulated rail fares (TAG Unit 5.2.2).

9. Core scenario Do-Minimum forecasts showed that:

- Do-Minimum growth from the base to the forecast year input matrices reflected TEMPRO growth factors (10% for car and -4% for public transport at 2017);
- There is less growth forecast within the A6MARR Area of Influence(AOI) (6% at 2017 and 13% at 2032 for car) as there is relatively less development compared to other parts of Greater Manchester, most notably the Regional Centre;
- In the VDM output matrices, longer distance car trips are forecast to increase (in particular AOI to/from the Buffer/External area) and shorter trips (within AOI/Greater Manchester) to decrease relative to the input matrices, reflecting the relatively modest increase in vehicle operating costs over time due to improvements in vehicle efficiency relative to larger increases in value of time; and
- Forecast changes in mode share and average trip length are marginal between the 2009 base year and the 2017 and 2032 Do-Minimum forecasts; mode share for car within the whole model increases by 2% from the base to 2017 and by 5% to 2032.

10. Forecast year demand matrices for the SATURN model were supplied by MVA based on the VDM runs. Do-Minimum matrices were built using the GMTU program SPMFAC, which is an interface program to incorporate demand forecasts from the GMSPM (in this case the VDM) into the GM-SATURN model (or its derivatives). This program applied VDM growth factors to the 2009 validated base A6MARR SATURN matrices to produce 1084 zone forecast year matrices.

11. This procedure was repeated for each of the five user classes to build both the 2017 and 2032 forecast year trip matrices.

12. Do-Something matrices were built by incorporating forecast Do-Minimum to Do-Something demand changes into the Do-Minimum trip matrices for each of the five user-classes. The resulting growth indicated that the variable demand effects resulting from the preferred scheme were very small across the Design Freeze 7(DF7) SATURN model.

Forecast Year Assignments

13. Forecast year assignments of the A6MARR SATURN model were run, optimising signals throughout the model in the Do-Minimum assignments and then carrying forward those changes to the Do-Something assignments. Further optimisation of signals on and in the vicinity of the A6 to Manchester Airport Relief Road scheme was then carried out on the Do-Something assignments.

14. The Design Manual for Roads and Bridges (DMRB) states that 'convergence is the key to robust economic appraisal' because, with a poorly converged base and/or test network, it is impossible to distinguish scheme effects from assignment 'noise'. Consequently, particular efforts were made to ensure that the networks were as highly converged as possible.

15. The DMRB criteria for an acceptable level of network convergence are that:

- the Delta statistic should be less than 1% on the final assignment
- at least 90% of links should have a flow that changes by less than 5% on the final 4 iterations.

16. The convergence criteria was based on % Gap and all assignments achieved levels of less than 0.074 and the corresponding % flows was greater than 98% in all scenarios, the Delta statistic was less than 0.058% in all scenarios.

17. The network statistics demonstrate a decrease in the amount of time spent in over capacity queues, travel time and travel distance in each time period for the Do-Something scenario compared to the Do-Minimum scenario in both 2017 and 2032. This is reflected in the overall network average speed, which increases and the total number of vehicles queued at the end of the modelled hour, which generally decreases slightly between the Do-Minimum and the Do-Something.

18. These statistics demonstrate that there is an overall improvement in network performance in both test scenarios when compared against the Do-Minimum. In particular, the decrease in time spent in over-capacity queues.

19. In the wider area of influence, the number of junctions forecast to operate overcapacity reduces with the introduction of A6MARR particularly in the areas directly to the North of the scheme in Wythenshawe and Heald Green.

20. The re-assignment impacts of the A6 to Manchester Airport Relief Road scheme have been evaluated using screenlines across the area of influence and plots showing the changes in actual flow as a result of the scheme. The outputs show that the A6 Buxton Road, A34 Handforth Bypass, A555 MAELR/A6MARR and the M56 (south of junction 6) are forecast to have significant increases in flow. The local road network particularly to the North of the scheme is forecast to have a decrease in flow particularly on the A6 North of its junction

with A6MARR, B5166 Styal Road and the M56/M60 to the North of M56 Junction 6 (morning peak).

21. The journey times on the rest of the routes are forecast to remain broadly neutral or decrease. However, with A6MARR in place some journey times are forecast to increase for example on the A6 Buxton Road (High Lane to Heaton Moor) up to approximately 3 minutes in 2032. Journey times on the A523 Macclesfield Road (Prestbury to Hazel Grove) are forecast to increase in the Northbound direction in the interpeak by approximately two minutes and decrease by one to two minutes in the morning and interpeak in the Southbound direction.

1. Introduction

1.1 In summer 2012, Transport for Greater Manchester Highways Forecasting and Analytical Services (TfGM HFAS) was commissioned by the A6MARR Project Board (Cheshire East Council, Manchester City Council and Stockport Council) to develop traffic models for the appraisal of the proposed A6 to Manchester Airport Relief Road.

1.2 The development of the base demand and traffic assignment models was carried out in partnership with MVA Consultancy, with Atkins Transportation managing the modelling work on behalf of the client.

1.3 The report summarise the work undertaken to produce the traffic forecasts for scheme appraisal. It has seven main sections:

- Introduction;
- Description of the A6 to Manchester Airport Relief Road Scheme;
- Development of the forecast year highway networks;
- Demand forecasting;
- Forecast year scenarios;
- A6MARR traffic impacts.

2. The Manchester Airport to A6 Relief Road

Scheme Description of the proposed preferred scheme

Overview

2.1 The Proposed Preferred Scheme comprises a new dual carriageway connecting the A6 to Manchester Airport. The scheme travels adjacent to Bramhall, Cheadle Hulme, Hazel Grove, Handforth, Poynton and Wythenshawe District Centres and Gatley and Heald Green Local Centres. (**Figure 2.1**)

2.2 The new road is approximately 10 kilometres long, of dual 2-lane carriageway standard and would include seven new junctions and four improved junctions. It also incorporates a further 4 kilometres of existing A555 dual carriageway to the south of Bramhall (the central section of the scheme). There are four rail crossings in the new sections including the Hazel Grove to Buxton Line, West Coast Main Line (Stockport to Stoke), Styal Line and the Styal Line Northern Airport Spur. A pedestrian and cycle route is proposed for the whole length of the scheme, including retrofitting it to the 4 kilometre existing section of A555.

2.3 Additional footpath and bridleway provision as well as that above will also be provided along parts of the scheme and it is proposed to upgrade a number of existing public rights of way from footpaths to bridleways to improve linkages into the existing networks. **Appendix 1** contains a map of the proposed scheme and the associated public rights of way network changes.

Road Cross-Section

2.4 Each carriageway will measure 7.3m wide. East and westbound traffic will be separated by a hard standing central reservation measuring between 1.8m and 3.9m across with a concrete central barrier as the schemes speed limit is mainly 50mph. Between Styal Road and the tie in to Ringway Road West, the central reservation will be kerbed and vary in width between 3.0m and 5.4m and will not feature a central barrier as a result of the speed limit being 40mph.

2.5 Between the A6 and Styal Road there will be a soft verge on either side of the carriageway. The shared use cycleway to the north of the relief road and footway will be separated from the carriageway by the soft verge. There will be another soft verge on the outside of the shared cycleway and footway.

2.6 Between Styal Road and the tie in to Ringway Road West, the shared cyclepath and footpath will be adjacent to the highway. A soft verge will be created on the outside of the shared cycleway and footway with soft verge present on the opposite side of the road.

Main Alignment

A6 to A555

2.7 The new road starts in the east from a traffic signalled T-junction with a 1 kilometre realigned section of the A6 Buxton Road on pasture and Highway Agency land.

2.8 From the new A6 T-junction, the Relief Road goes west and passes under the existing Buxton Road which is taken over the main alignment on a new bridge for the use of buses, cycles and pedestrians. The main alignment then goes under the Hazel Grove to Buxton railway line and continues west avoiding houses along Old Mill Lane to the north.

2.9 A Bridleway quality bridge will be provided to divert the Public Rights of Way (PRoW) and farm vehicles across the road at near Old Mill Lane.

2.10 The route passes between Norbury Brook and residential property in Ashbourne Road and Darley Road. At Macclesfield Road an at-grade signalised cross roads arrangement is proposed allowing all traffic movements with Toucan facilities for cyclists and pedestrians.

2.11 From Macclesfield Road the route continues west and runs to the north of Norbury Brook and associated woods and south of the residential streets of Sheldon Road and Longnor Road before it crosses Norbury Brook via a bridge at Mill Hill Hollow. A Bridleway quality bridge will be provided to divert the Public Rights of Way (PRoW) and farm vehicles across the road at Hill Green. The main alignment then passes in cutting under Woodford Road, which will be raised in the vicinity of the Relief Road, and then climbs on embankment over the West Coast Mainline (WCML) Railway line.

2.12 A new at-grade signalised roundabout junction will provide access to the Woodford/Bramhall Oil Storage Depot and a new link providing access to Chester Road. This junction will also incorporate Pegasus facilities for equestrians, pedestrians and cyclists.

2.13 At the A5102 Woodford Road the existing roundabout joining to the A555 will be replaced by a new grade separated junction (Half Diamond – west facing slip roads). The main alignment would pass through cutting under Woodford Road. The junction configuration at Woodford Road will be signalised and incorporate Toucan facilities for pedestrians and cyclists.

A555

2.14 A pedestrian and cycle track will be created adjacent to the existing A555, and where the A555 crosses over the A34 there will be junction adaptations to facilitate and manage the anticipated traffic flows. The updated junction will be fully signalised and provide Toucan cycle crossing facilities for pedestrians and cyclists. The existing A555 extends as far as the B5358, Wilmslow Road.

2.15 At the A555 / A34 junction the existing roundabout will be upgraded with widened carriageways and traffic signal controls. This will include the introduction of controlled crossing facilities for pedestrians and cyclists. North of this junction, at the junction of the A34 and Stanley Road, again the existing roundabout will be upgraded to traffic signal control as well as providing increased lane capacity. Toucan crossing facilities for pedestrians and cyclists will be integrated into the traffic signal controls at both junctions.

A555 to Ringway Road

2.16 The existing A555 alignment will be continued west under the existing grade separated dumb-bell junction linking to the B5358 (Wilmslow Road), where new west facing slips will be constructed.

2.17 Between the B5358 Wilmslow Road, and B5186 Styal Road, the road passes through Styal golf course and agricultural land. A Bridleway quality bridge will be provided to divert the Public Rights of Way (PRoW) across the road at Yew Tree Farm. The relief road then passes over Styal railway line, which is in existing deep cutting, and then between the airport southern rail spur and Moss Nook electricity substation.

2.18 At Styal Road, an at-grade signalised cross road arrangement incorporating Toucan facilities, for pedestrians and cyclists, is to be constructed requiring extensions to the existing road over rail bridge over the northern airport spur. From Styal Road west, the Relief Road runs parallel to the airport rail spur where it will terminate as it merges with the existing Ringway Road/Ringway Road West junction west of Shadowmoss Road. Between Shadowmoss Road and the proposed main alignment, Ringway Road would be stopped up and a new layout arrangement with Shadowmoss Road constructed.

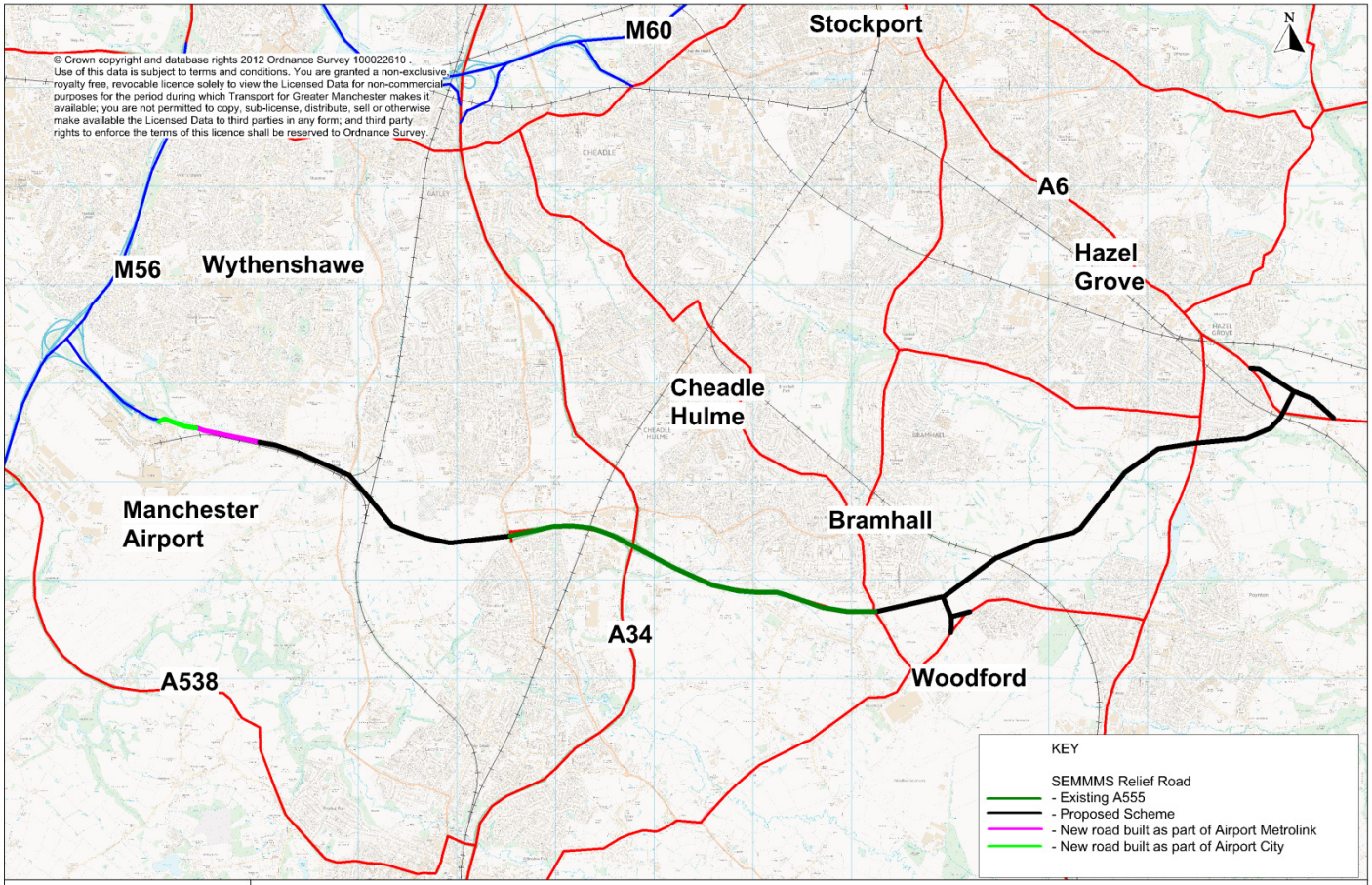
Mitigation Measures

2.19 It is recognised that building the A6 to Manchester Airport Relief Road will have an impact on the adjacent existing road network and that on some routes or locations mitigation measures will be required. The mitigation measures assumed in this tranche of modelling include:

- In Handforth, measures such that they result in a reduction in speed to 16Kph on Wilmslow Road in Handforth Town Centre and to 32Kph on Dean Road between Wilmslow Road and Dean Row Road;
- Stanley Green/Coppice Way –selective widening; and
- In Wythenshawe/Woodhouse Park, measures to achieve speed reductions to 25Kph in the area bounded by Simonsway to the North, Shadowmoss to the East, Manchester Airport to the South and the M56 to the West.

Complementary Measures

2.20 Complementary highway measures at Poynton, High Lane, Heald Green and Hazel Grove are under consideration but have not been included in the modelling of the proposed scheme.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A6
M56
Wythenshawe
Hazel Grove
Cheadle Hulme
Manchester Airport
Bramhall
A34
A538
Woodford
KEY
SEMMMS Relief Road
- Existing A555
- Proposed Scheme
- New road built as part of Airport Metrolink
- New road built as part of Airport City
Transport for Greater Manchester
2 Piccadilly Place, Manchester, M1 3BG
SEMMMS (A6 to Manchester Airport) Relief Road - Approximate Alignment
Drawn By : davidn
Scale : NTS
Date : August 2013
GMTU Report 1746, Figure 2.1

3. Development of Forecast Year Highway Networks

3.1 The Do-Minimum networks for 2017 and 2032 were derived from the 2009 base year SEMMMS8 network. The starting network therefore contained a representation of the network structure in the base year together with traffic signal data provided by the GM traffic signals unit, Greater Manchester Urban Traffic Control (GMUTC). Further information on the content and construction of the base year networks can be found in the SEMMMS8 LMVR.

3.2 Atkins made contact with the relevant local authorities, the Highways Agency and Manchester Airport in order to ascertain which highway schemes should be included in the Do-Minimum networks at 2017 and 2032. A package of schemes deemed to be "committed" was added to the base year network to create the new network for 2017 and 2032. To be included in this package, a scheme had to meet one or more of the following criteria:

- Scheme completed since 2009;
- Scheme construction in progress;
- Scheme funding allocated;
- Scheme is part of the Highways Agency programme; and
- Scheme likely to be completed by the forecast year(s).

3.3 HFAS subsequently coded these schemes into the validated base year SATURN assignment networks and provided them to MVA for inclusion in the Variable Demand Model (VDM).

3.4 **Table 3.1** lists highway schemes identified that are either within the Core Area of Influence or outside the Area of Influence but could affect or be affected by the A6 to Manchester Airport Relief Road Scheme in each of the forecast years and development scenario. Scheme locations are shown in **Figure 3.1**.

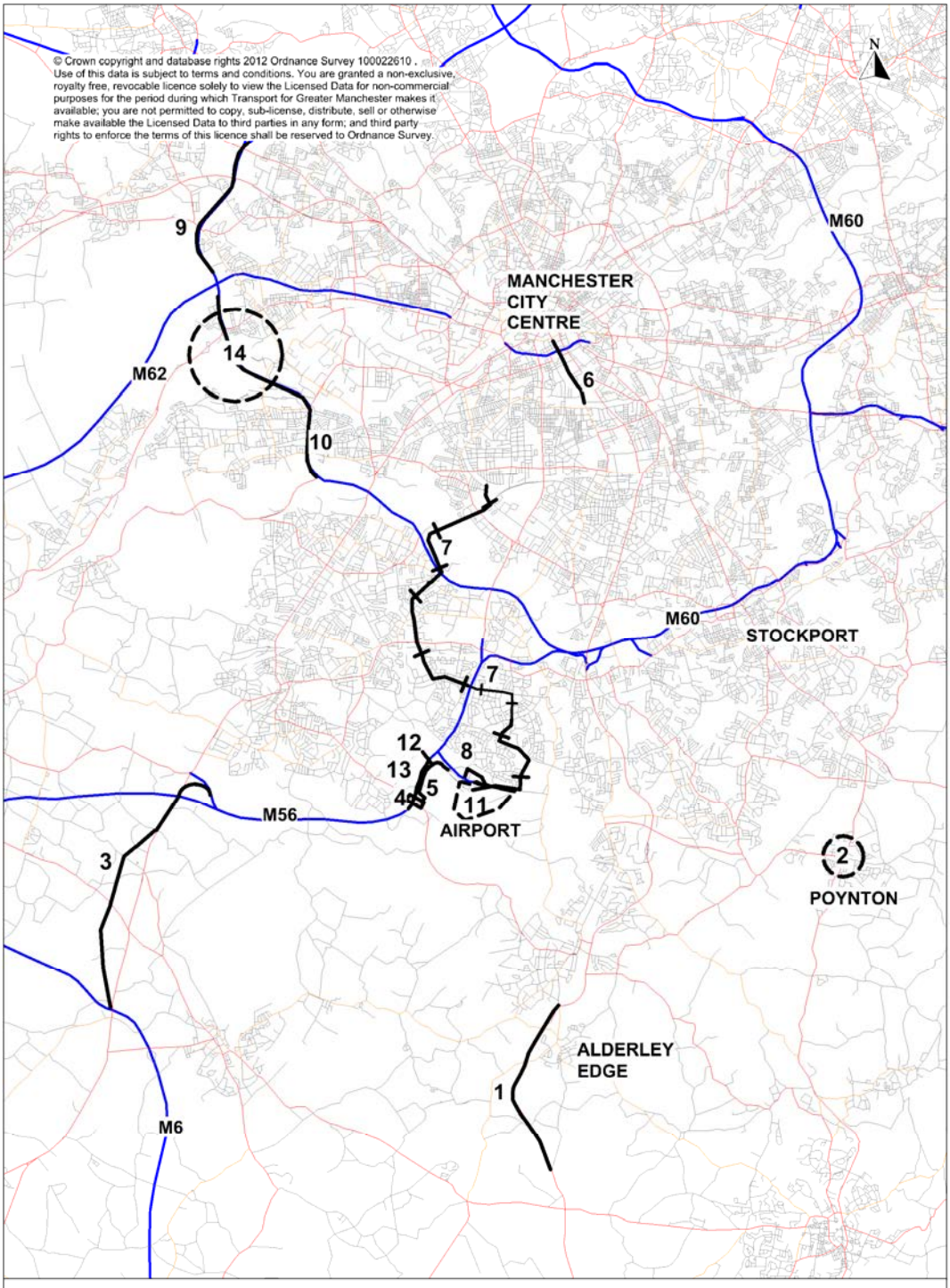
3.5 Besides adding these schemes, the traffic signal timings in the networks were "optimised" after convergence of the initial traffic assignment, and then subjected to a further traffic assignment convergence; automatic SATURN procedures were used to adjust the green times and offset times to minimise delays. This was done to reflect the adjustment of signals that inevitably occurs as traffic flows change over time, as well as the continuing rollout of demand-responsive control mechanisms such as SCOOT and MOVA.

3.6 Bus service and frequency data were left unaltered from 2009 because there was no information available on future changes. While a number of Quality Bus Corridor (QBC) routes are being implemented or planned in GM, in many cases the QBC measures are still in development and are insufficiently well specified to incorporate them in the model.

Table 3.1: A6MARR Do-Minimum Highway Scheme Assumptions

Highway Scheme	Status	Core	
		2017	2032
Alderley Edge Bypass (1)	Complete	✓	✓
Poynton Village Centre Enhancements (2)	Complete	✓	✓
A556 Knutsford to Bowdon Improvement (3)	NIP Scheme	✓	✓
Manchester Airport Blue Works (M56 Junction 6) (4)	Triggered by Airport passenger throughput [1]	✓	✓
Manchester Airport Yellow Works (Runger Lane) (5)	Triggered by Airport passenger throughput[1]	✓	✓
Cross City Bus Package (Oxford Road/Wilmslow Road) (6)	NIP Scheme	✓	✓
Metrolink Phase 3B (Chorlton - Manchester Airport) (7)	Under Construction	✓	✓
Airport City Infrastructure (8)	Allocated Funding	✓	✓
M60 Junction 12 to 15 Widening (9)	NIP Scheme	✓	✓
M60 Junction 8 to 12 Managed Motorway Scheme (10)	NIP Scheme	✓	✓
Manchester Airport Demand Management (11)	MAG Ground Transport Plan	✓	✓
Davenport Green Access Roads (12)	Development related	-	-
Manchester Airport Red Works (M56 Junction 5 to 6) (13)	Triggered by Airport passenger throughput[1]	-	✓
Western Gateway Infrastructure Scheme (Full WGIS) (14)	Privately Funded[2]	-	✓

Note:
Numbers in brackets refer to Figure 3.1
[1] Scheme to be provided/funded by Manchester Airport.
[2] Promoted by Peel as part of Port Salford development; funded largely by Peel with contribution from Regional Growth Fund
NIP = National Infrastructure Package



Do-Minimum Highway Scheme Assumptions

Transport for Greater Manchester 2 Piccadilly Place, Manchester, M1 3BG	Drawn By : davidn	Date : February 2012
	Scale : NTS	Report 1746, Figure 3.1

4. Demand Forecasting

4.1 Demand forecasts were derived using the Variable Demand Model (VDM). This is a version of the Greater Manchester Strategy Planning Model (GMSPM2), a land use / transport interaction model covering the Greater Manchester area in detail and areas beyond in less detail. The work was undertaken by MVA Consultancy, who provided TfGM HFAS with VDM demand forecasts for each of the two forecast years. MVA's report on the forecasting is included as **Appendix 1** to this document but the main points from the forecasting are summarised in this section.

4.2 Outputs from the A6MARR VDM were provided for the anticipated scheme opening year (2017) and its design year (2032).

Future Year Growth Assumptions

4.3 Assumptions on population and employment growth used to derive the Core forecasts came from a variety of sources, namely :

- The relevant planning departments in High Peak, Cheshire East, Manchester, Stockport, Trafford for specific developments included in their Local Development Frameworks;
- Manchester Airport Group (MAG) for passenger and employee growth and development at and around Manchester Airport;
- Local Development Framework datasets for developments elsewhere in Greater Manchester;
- The National Trip End Model (NTEM) dataset 6.2 forecasts; and
- The National Transport Model forecasts (for freight traffic).

4.4 The methodology used to derive the Core forecasts involved:

- extracting population and employment forecasts from the work undertaken to assess the transport impacts of the Greater Manchester Local Development Frameworks
- replacing the GM LDF forecasts for Manchester, Stockport and Trafford with revised forecasts based on the District planning data;
- overwriting NTEM forecasts for High Peak and Cheshire East with revised forecasts based on local planning data;
- constraining the population and employment growth forecasts to the overall growth level implied by NTEM 6.2 at the district level within Greater Manchester the pre-2009 district level for Cheshire East and at the county level elsewhere; and
- applying the External Forecasting Model to produce forecasts of the future year travel demand for input to VDM from the population and employment forecasts.

4.5 Freight growth was applied uniformly across the whole A6MARR VDM using data from the National Transport Model 2009 forecasts. This resulted in no difference in freight growth between the three scenarios.

Manchester Airport

4.6 Manchester Airport is a significant trip attractor within the Area of Influence (AofI) of A6MARR. Situated at the western end of the scheme future growth in passenger and employee travel would be expected to have a significant impact on scheme appraisal. HFAS and Atkins therefore met with representatives of MAG to understand their view on future changes to travel demand at the Airport. HFAS produced a note (**Appendix 2**) documenting the assumptions which would be included in the forecasts, and these were agreed with MAG through further liaison.

4.7 The zoning system at Manchester Airport developed for the SEMMMS8 SATURN and PT-TRIPS assignment models were highly disaggregate in order to improve accuracy of network loading in the assignment models. MVA considered this level of aggregation inappropriate for demand response modelling as air travellers' response to changing Airport access costs is best thought of in terms of the whole journey from home to the check-in desk, rather than to a particular car park or public transport terminus. For this reason a single zone was used within the demand model to represent demand to/from Manchester Airport terminals (see **Figure 4.1**).

4.8 Further, special treatment was given to passenger and employee trips to/from Manchester Airport in VDM. These trips were allocated to a separate set of demand segments, in order that different choice responses could be imposed on this demand from those used across the rest of the model. Choice response associated with these Airport demand segments has been restricted to mode choice, as distributional and time of day responses to changing access travel cost are unlikely to impact on passengers and employees travelling to an Airport. For example air passengers have a very restricted set of airport choices, and time of day choice is strongly influenced by flight schedules.

4.9 Separating travel to/from Manchester Airport from the other demand segments facilitated the application of differential growth to this demand, from that applied to the rest of the model. Forecasts of passenger numbers were obtained from the UK Air Passenger Forecasts (central scenario). These forecasts are shown in **Table 4.1**.

4.10 Interpolation of these forecasts gave rise to a forecast of passenger demand of 18.6 million passengers per annum (mppa) in 2009. Appropriate growth factors were subsequently derived for growth in passengers, and hence passenger surface access trips, from 2009 to 2017 and 2009 to 2032.

4.11 Growth in all person trips to and from Manchester Airport was assumed to increase by the same ratio as that of passengers. This assumption implies that the number of employees at the airport would increase in the same proportion as air patronage. MAG have reviewed these assumptions and agreed that they are reasonable.

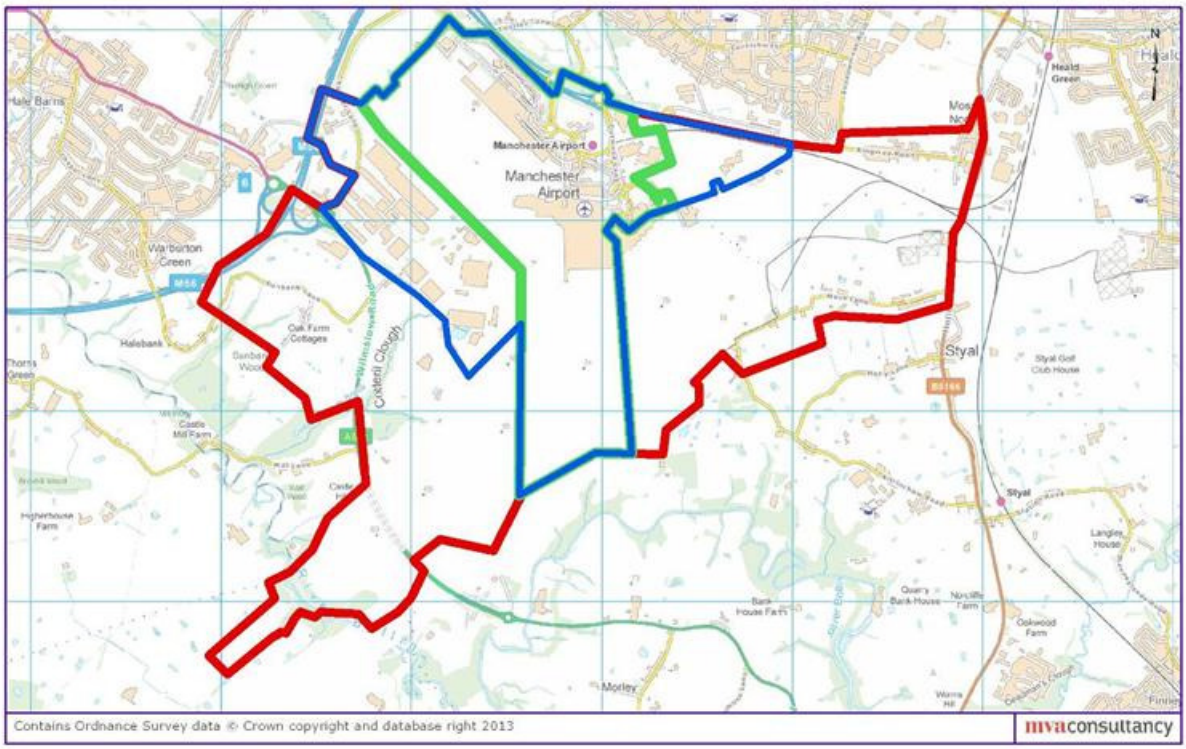


Figure 4.1 Manchester Airport Boundaries: Zones bounded by the RED line are included in the separate Airport demand segments. The BLUE line defines the demand management area and the GREEN line defines the terminal zones for which demand has been aggregated to a single zone and a mode split model is applied.

Table 4.1 Growth in air passengers at Manchester Airport

Year	mppa	Index
2009	18.6	100
2017 (interpolated value)	23.1	124
2020	25.0	---
2030	35.0	---
2032 (interpolated value)	37.4	201

Source: UK Aviation Forecasts, Department for Transport, August 2011

Supply Assumptions

4.12 The highway schemes included in each forecast year for each scenario were identified by the A6MARR Project Board, as previously discussed in Chapter 3 and summarised in **Table 3.1** of this report. Additionally, a number of key public transport schemes were included in each scenario

based on the likelihood of their delivery in each year. These public transport schemes are summarised in **Table 4.2**.

Table 4.2 A6MARR VDM Public Transport Scheme Specification

Highway Scheme	Status	Core	
		2017	2032
Metrolink: Chorlton - Manchester Airport	Under Construction	✓	✓
Metrolink: Droylsden to Ashton	Under Construction	✓	✓
Metrolink: Chorlton to East Didsbury	Under Construction	✓	✓
Leigh-Salford-Manchester Busway	Under Construction	✓	✓
Metrolink Second City Crossing	Approved Route; TWAO application -2012	✓	✓
Altrincham Interchange	Planning application approved	✓	✓
Elements of Cross City Bus Package	Planning application approved	✓	✓
Note:			
NIP = National Infrastructure Package			

4.13 The modelled scenario includes those schemes which are near certain or more than likely to come to fruition by 2017 or 2032. However, the park and ride schemes and funding contributions to stations are not included in the scenario definition as no scheme specifications were available.

4.14 Following the discussions with MAG, the Metrolink extension to Manchester Airport was assumed more than likely for both the opening and design years. Completion of this scheme is a high priority for Manchester Airport, is a key element in the Airports Ground Transport Plan and construction is currently ongoing.

4.15 Hence, the PT schemes included in the opening and design years are:

- Metrolink: Chorlton to East Didsbury;
- Metrolink: Droylsden to Ashton;
- Metrolink: Airport and 2CC;

- Leigh-Salford-Manchester Busway;
- Altrincham Interchang; and
- Elements of Cross City Bus Package

4.16 Public transport fares have been assumed to rise at 1% per annum above the growth in RPI between 2009 and 2017 and 2032. This is in line with the Department for Transports' guidance on changes in public transport fares, and is based on increases in regulated rail fares (TAG 3.15.4, 5.2.2).

4.17 It is assumed that the current ticketing options available to passengers of all modes are those that would be available in the future, as is implicitly assumed in the fare tables.

4.18 Values of time for input to the demand and assignment models have been derived using data from TAG 3.5.6 for the base year, 2017 and 2032.

4.19 Vehicle operating costs for input to the demand and assignment models have been derived using data from TAG 3.5.6 for the base year, 2017 and 2032.

A6MARR Variable Demand Model Tests Run

4.20 As a result of the three growth scenarios and the with and without scheme tests, and two forecast years, demand forecasts for 5 tests were created, as summarised in **Table 4.3**.

Table 4.3 A6MARR VDM Tests Run

Scenario	Test	Year
Base	Base	2009
Core	Do-Minimum	2017
		2032
	Preferred Scheme	2017
		2032

4.21 For presentation purposes outputs have been collated to allow presentation on a 4x4 sector system and a 16x16 sector system. The 4x4 system is the A6MARR Area of Influence, Rest of Greater Manchester, Buffer and External areas of the model. The sixteen sector system is shown as **Figure 4.2**. These sectors are referred to in the summary of results that follows.

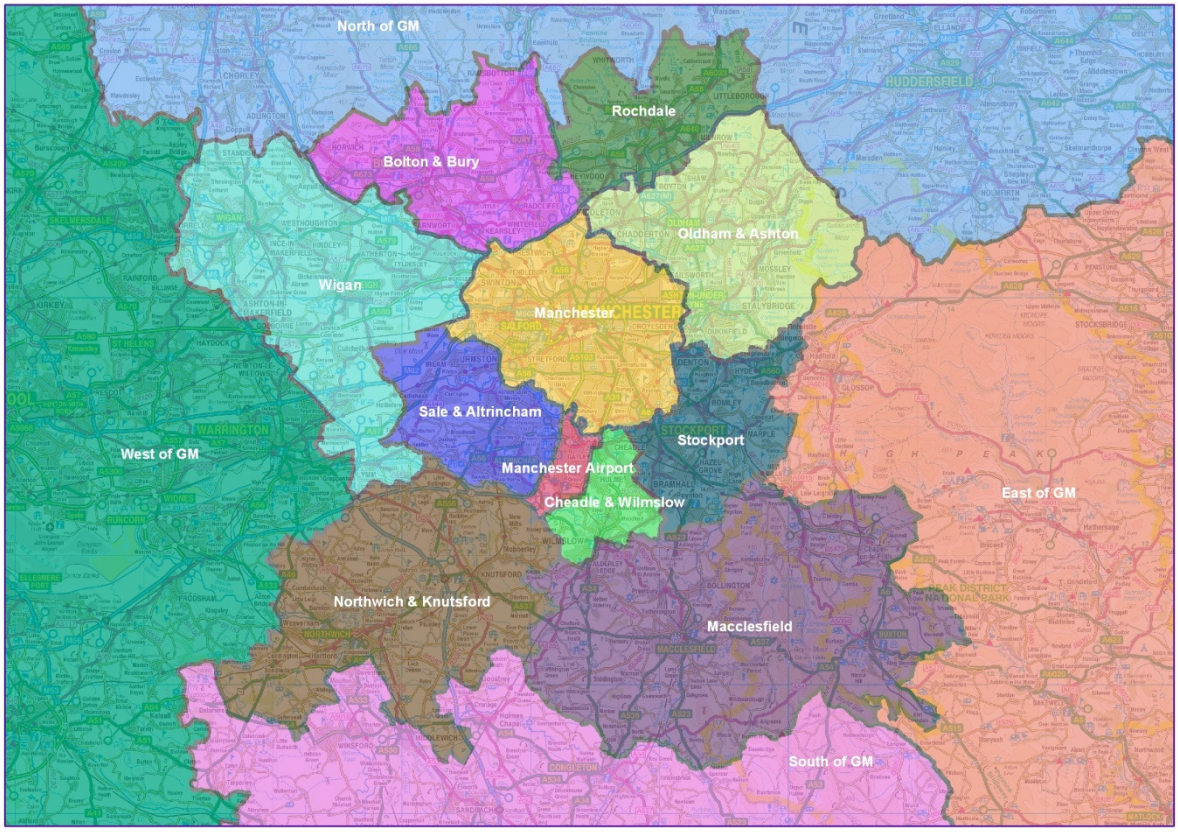


Figure 4.2 – 16 Sector System

Core Scenario Do-Minimum VDM Forecasts

4.22 Under the Core scenario Do-Minimum growth from the base to the forecast year input matrices reflected TEMPRO growth factors (10% for car and -4% for public transport at 2017). There is less growth within the A6MARR AOI (7% at 2017 and 17% at 2032 for car) as there is relatively less development compared to other parts of Greater Manchester, most notably the Regional Centre.

4.23 The Core Do-Minimum output matrices show an increase in longer distance car trips (in particular AOI to/from the Buffer/External area) and a decrease in shorter trips (within AOI/Greater Manchester) relative to the input matrices. This reflects the relatively modest increase in vehicle operating costs over time due to improvements in vehicle efficiency relative to larger increases in value of time.

4.24 The changes in mode share and average trip length are marginal between the 2009 base year and the 2017 and 2032 Do-Minimum forecasts. Mode share for car within the whole model increases by 2% from the base to 2017 and by 4% to 2032.

Core Scenario Preferred Scheme VDM Forecasts

4.25 As one would expect the scheme produces negligible changes in demand relative to the respective do minimum when viewed on the basis of the 4x4 sector system. There are small increases in car demand from the AofI to the buffer area at the expense of PT.

4.26 Distributional effects of the scheme can be seen by looking at the 16x16 sector changes from the do minimum. There are modest reductions in car trips on some sector pairs (<4%) where trips are redistributed as a result of the scheme. The largest percentage increases can be seen on the following sector pairs:

- Manchester Airport – East of GM (10% at 2017 and 11% at 2032);
- East of GM – Manchester Airport (11% at 2017 and 11% at 2032);
- Cheadle & Wilmslow - East of GM (24% at 2017 and 20% at 2032);
- East of GM – Cheadle & Wilmslow (22% at 2017 and 19% at 2032);
- West of GM – Stockport (13% at 2017 and 13% at 2032);
- Stockport – West of GM (12% at 2017 and 13% at 2032);
- Knutsford & Northwich – East of GM (16% at 2017 and 12% at 2032); and
- East of GM – Knutsford & Northwich (13% at 2017 and 10% at 2032).

4.27 As can be seen from the sector map these are all movements that cross the AofI, which will benefit through improved journey time as a result of the scheme. In addition to the sector pairs listed above, there are also some significant absolute increases in car trips (albeit with smaller percentage increases) on movements within the AoI which will make use of the scheme (e.g. Stockport to Manchester Airport, Cheadle/Wilmslow to Sale/Altrincham).

4.28 As one would expect the changes in mode share and average trip length are marginal between the 2017 and 2032 do minimum and preferred scheme forecasts respectively.

4.29 In summary, the changes in 16x16 sector to sector car trip matrices for the scheme are in the appropriate geographical locations and are of a sensible order. The most significant sector to sector increases identified above are slightly (2-3% points) larger than those reported in the previous version of this note for the DF6 forecasts.

5. Forecast Year Scenarios

5.1 This section of the report summarises the production of the forecast year scenarios for the preferred scheme and the lower cost alternative. It describes:

- assumptions about the progress of proposed developments in the vicinity of the scheme
- generalised costs used in the assignment process
- the strategy used for assigning forecast year networks (Do-Minimum and Do-Something); and
- the levels of convergence achieved for all assignments.

Development Assumptions

5.2 The data collection process involved engaging with the various stakeholders to introduce the uncertainty log concept and the nature of the data which we required to enable the uncertainty logs to be compiled. The stakeholder parties included;

- Cheshire East Council
- High Peak Borough Council
- Transport for Greater Manchester (TfGM)
- Highways Agency (HA)
- Manchester Airport Group
- Manchester City Council
- Stockport Metropolitan Council; and
- Trafford Council.

5.3 Information was collected for developments which were likely to be implemented by the opening and design years of 2017 and 2032 respectively. The information received was reviewed and where necessary, alterations were undertaken and, or additional information requested, to ensure the most up to date data was collated in a format appropriate for the purposes of the uncertainty log and alternative scenario creation.

5.4 As the number of development sites is extensive and covering five districts they have not been detailed in this report but are reported in detail in Atkins uncertainty log which is available on request.

5.5 As previously stated, Demand forecasts were derived using the Variable Demand Model (VDM). The work was undertaken by MVA Consultancy, who provided TfGM HFAS with VDM demand forecasts for each of the two forecast years.

5.6 **Table 5.1** and **Table 5.2** summarise total pcu tripends in the 2017 and 2032 forecast year Do-Minimum and Do-Something matrices for each of the scenarios.

Table 5.1: A6MARR Forecasts - Matrix Totals - 2017				
Time Period	**User Class**	**Do-Minimum Core**	**Do-Something Core**	**Do-Something Minus Do-Minimum**
		Grand Totals	**Grand Totals**	**Difference**
AM Peak Hour	**Car Commute**	69,155	69,373	**218**
	Car Employers Business	10,566	10,633	**67**
	Car other	81,953	82,192	**238**
	LGVs	14,510	14,511	**1**
	OGVs	7,341	7,339	**-2**
	Total	183,526	184,049	**523**
Average Inter Peak Hour	**Car Commute**	15,832	15,867	**35**
	Car Employers Business	12,189	12,236	**47**
	Car other	91,559	91,717	**158**
	LGVs	14,116	14,120	**4**
	OGVs	8,426	8,430	**4**
	Total	142,121	142,370	**249**
PM Peak Hour	**Car Commute**	58,635	58,798	**163**
	Car Employers Business	10,212	10,259	**47**
	Car other	91,199	91,428	**229**
	LGVs	12,157	12,159	**2**
	OGVs	3,653	3,665	**12**
	Total	175,856	176,310	**454**

Table 5.2: A6MARR Forecasts - Matrix Totals - 2032				
Time Period	**User Class**	**Do-Minimum Core**	**Do-Something Core**	**Do-Something Minus Do-Minimum**
		Grand Totals	**Grand Totals**	**Difference**
AM Peak Hour	**Car Commute**	75,689	76,017	**329**
	Car Employers Business	10,932	10,975	**43**
	Car other	93,976	94,276	**299**
	LGVs	20,240	20,242	**2**
	OGVs	8,183	8,196	**14**
	Total	209,019	209,706	**687**
Average Inter Peak Hour	**Car Commute**	17,896	17,962	**66**
	Car Employers Business	13,181	13,230	**49**
	Car other	106,392	106,645	**253**
	LGVs	19,680	19,676	**-4**
	OGVs	9,530	9,534	**4**
	Total	166,679	167,047	**368**
PM Peak Hour	**Car Commute**	64,418	64,685	**267**
	Car Employers Business	10,749	10,780	**32**
	Car other	104,834	105,209	**375**
	LGVs	16,861	16,857	**-4**
	OGVs	4,088	4,089	**1**
	Total	200,949	201,620	**671**

Generalised Cost Parameters

5.7 The generalised cost parameters used in the assignment process are derived using an Excel spreadsheet prepared by MVA for the TIF study. They are consistent with data taken from TAG Unit 3.5.6 (April 2011).

5.8 User inputs to the spreadsheet consist of:

- Average network speed, used in the calculation of vehicle operating costs; and
- Proportions of distance travelled by each of three car-based user classes (i.e. commute, employers business and other) as output from a five user class assignment; these are used in the calculation of the cost parameters for the all-car user class (i.e. as a weight).

5.9 All other inputs (e.g. values of time, fuel consumption parameters and fuel costs, fuel price growth rates etc) were taken directly from the appropriate section of WebTAG.

5.10 The 2017 and 2032 values of time (pence per minute – PPM) and distance (pence per kilometre – PPK) as output from the spreadsheet and used in the assignments are shown in **Table 5.3** below.

Table 5.3 Generalised Cost Parameters Used in the Forecast Assignments

Period	User Class	2017		2032	
		PPM	PPK	PPM	PPK
AM Peak Hour	Commuting Car	10.94	5.65	13.05	4.16
	Employer's Business Car	49.52	11.72	61.97	10.48
	Other Car	15.14	5.65	17.53	4.16
	LGV	19.42	12.07	24.38	11.79
	OGV	16.85	41.30	21.25	42.86
Inter-Peak Hour	Commuting Car	10.94	5.30	13.05	3.90
	Employer's Business Car	49.52	10.85	61.97	9.69
	Other Car	15.14	5.30	17.53	3.90
	LGV	19.42	11.67	24.38	11.39
	OGV	16.85	37.47	21.25	38.89
PM Peak Hour	Commuting Car	10.94	5.65	13.05	4.16
	Employer's Business Car	49.52	11.72	61.97	10.48
	Other Car	15.14	5.65	17.53	4.16
	LGV	19.42	12.07	24.38	11.79
	OGV	16.85	41.30	21.25	42.86

Forecast Year Assignments

5.11 Forecast year assignments of the A6MARR SATURN model were run differently for Do-Minimum and Do-Something networks. Do-Minimum tests were assigned in the following way:

- assign Do-Minimum network with corresponding Do-Minimum matrix
- optimise traffic signal green splits and offsets across the full modelled area; and
- re-assign incorporating the optimised traffic signal settings.

5.12 Do-Something tests by contrast, were assigned in the following way:

- incorporate optimised traffic signal settings from the Do-Minimum network at common junctions across the full modelled area
- assign updated network with corresponding Do-Something matrix
- optimise traffic signal green splits and offsets on and in the A6MARR area of influence; and
- re-assign incorporating the optimised traffic signal settings.

5.13 The full model assignments were then cordoned before economic appraisal of the schemes was undertaken. This was done:

- to speed up model run times while fine-tuning scheme performance (for example testing different traffic signal green splits and staging arrangements)
- to improve run times for the economic appraisal programs TUBA and COBA; and
- to reduce the possibility of including user benefits accruing in areas remote from the scheme as a result of assignment 'noise'.

5.14 The design drawings for A6MARR Design Freeze 7 are contained in **Appendix 3**

Forecast Year Assignment Convergence

5.15 The Design Manual for Roads and Bridges (DMRB) states that 'convergence is the key to robust economic appraisal' because, with a poorly converged base and/or test network, it is impossible to distinguish scheme effects from assignment 'noise'. Consequently, particular efforts were made to ensure that the networks were as highly converged as possible.

5.16 The DMRB criteria for an acceptable level of network convergence are that:

- the Delta statistic should be less than 1% on the final assignment; and
- at least 90% of links should have a flow that changes by less than 5% on the final 4 iterations.

5.17 For this work, we adopted a tighter convergence criteria than required by DMRB, requiring the perecentage Gap to be less than 0.08. **Table 5.4** summarises the convergence statistics for all scenarios and shows that all model assignments are extremely well converged.

Table 5.4: A6MARR DF7 Convergence Statistics

Scenario	Year	Test	AM Peak Hour					Average Inter-Peak Hour					PM Peak Hour				
			Delta	% Gap for Iteration		% Flows for Iteration		Delta	% Gap for Iteration		% Flows for Iteration		Delta	% Gap for Iteration		% Flows for Iteration	
				N	N-4	N	N-4		N	N-4	N	N-4		N	N-4	N	N-4
Core	2017	Do-Min	0.025	0.029	0.037	98.49	98.62	0.00054	0.015	0.012	99.11	99.03	0.029	0.058	0.057	96.58	94.64
		Do-Som	0.023	0.032	0.031	99.32	97.8	0.00076	0.009	0.013	98.6	98.36	0.03	0.041	0.043	97.33	94.66
	2032	Do-Min	0.021	0.049	0.022	98.45	98.45	0.0089	0.011	0.013	98.67	99.31	0.042	0.073	0.074	98.27	97.25
		Do-Som	0.019	0.04	0.039	99.08	99.08	0.010	0.014	0.014	99.16	98.69	0.049	0.057	0.056	97.62	97.17

6. A6MARR Traffic Impacts

6.1 This section of the report summarises the main traffic impacts of the Core A6 to Manchester Airport Relief Road scheme, in terms of:

- impact on overall network performance
- broad re-assignment impacts
- changes in journey times.

Junction Operation

6.2 All junctions along the proposed scheme have been assessed at various stage of the design process both within the SATURN model and in junction models such as LINSIG. This work has indicated that the junctions will operate within capacity in the opening year of 2017. Detailed assessments will be repeated following completion of the public consultation process and reflecting any consequent change in scheme design.

Overall Network Performance

6.3 **Table 6.1** summarises the network performance statistics for the Do-Minimum (DM) and Do-Something (DS) scenarios. Briefly, these statistics are aggregated over the whole modelled area (for the modelled peak-hour and the period after the peak-hour to allow the completion of any trips delayed by queues or congestion) and represent the following:

- **Over-Capacity Queues** – this is the time spent in queues resulting from turning movements in excess of capacity, resulting in the build-up of a permanent queue that is unable to clear in a single signal cycle;
- **Total Travel Time** – this is the sum of the time spent in transient and over-capacity queues plus the link cruise time;
- **Travel Distance** – this is the total distance travelled by all vehicles during the modelled hour; and
- **Average Speed** – this is simply the total distance divided by the total travel time.

6.4 The statistics shown in **Table 6.1** demonstrate a decrease in the amount of time spent in over capacity queues and travel in each time period in the DS scenario compared to the DM scenario in both 2017 and 2032. This is reflected in the overall network average speed, which increases and the total number of vehicles queued at the end of the modelled hour, which decreases slightly between the DM and the DS.

These statistics demonstrate that there is an overall improvement in network performance in both test scenarios when compared against the Do-Minimum. In particular, the decrease in time spent in over-capacity queues.

Table 6.1: A6MARR DF7 SATURN Model – Network Simulation Summary Statistics											
Year	Network Data	AM			IP			PM			
		DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	DM	DS	Diff (DS-DM)	
Core											
2017	Over capacity queuing (pcu hours)	2,010	1,704	-306	65	62	-3	1,345	1,079	-266	
	Total travel time (pcu hours / hour)	36,276	35,927	-349	21,376	21,446	70	35,057	34,808	-249	
	Total travel distance (km / hr)	1,249,802	1,274,976	25,174	939,109	953,493	14,384	1,247,030	1,271,246	24,216	
	Average network speed (km/hr)	34.5	35.5	1.0	43.9	44.5	0.6	35.6	36.5	0.9	
2032	Permanent queuing (pcus)	4,485	3,919	-566	409	337	-72	3,520	3,000	-520	
	Total travel time (pcu hours per hour)	45,367	45,120	-247	27,207	27,201	-6	44,280	43,880	-400	
	Total distance travelled (km per hr)	1,389,510	1,425,046	35,536	1,111,998	1,133,355	21,357	1,389,452	1,422,233	32,781	
	Average network speed (km/hr)	30.6	31.6	1.0	40.9	41.7	0.8	31.4	32.4	1.0	

6.5 **Tables 6.2** to **6.3** below summarise the performance of major junctions in the A6MARR area of influence at 2017 and 2032 for the morning and evening peak hours. Again, the performance figures are based on the worst turn at each junction, i.e. If a junction has a single turn in excess of 100% it is placed in the VCR>100% category. It should be noted that the figures quoted for the Do-Something scenario include junctions along the scheme.

Table 6.2 – Junction Performance in the A6MARR Area of Influence in 2017

Junction Control	Morning Peak Hour				Evening Peak Hour			
	Do-Minimum		Do-Something		Do-Minimum		Do-Something	
	At Capacity	Over Capacity	At Capacity	Over Capacity	At Capacity	Over Capacity	At Capacity	Over Capacity
	V/C = 85 -100%	V/C > 100%	V/C = 85 -100%	V/C > 100%	V/C = 85 -100%	V/C > 100%	V/C = 85 -100%	V/C > 100%
Signals	58	26	42	23	51	24	45	14
Roundabouts	10	6	7	3	7	5	8	3
Total	**100**		**75**		**87**		**70**	

6.6 **Table 6.2** shows that in 2017 the introduction of the A6MARR scheme is forecast to result in a reduction in the number of junctions (both signalised and roundabouts) with a turn that is operating at overcapacity (VC >100%) from 32 to 26 and for junctions operating at capacity (VC 85-100%) from 68 to 49 in the morning peak hour. In the evening peak hour, the number of junctions with a turn that is operating at overcapacity (VC >100%) is forecast to fall from 29 to 17 and for junctions operating at capacity (VC 85-100%) from 58 to 53.

Table 6.3 – Junction Performance in the A6MARR Area of Influence in 2032

Junction Control	Morning Peak Hour				Evening Peak Hour			
	Do-Minimum		Do-Something		Do-Minimum		Do-Something	
	At Capacity	Over Capacity	At Capacity	Over Capacity	At Capacity	Over Capacity	At Capacity	Over Capacity
	V/C = 85 -100%	V/C > 100%	V/C = 85 -100%	V/C > 100%	V/C = 85 -100%	V/C > 100%	V/C = 85 -100%	V/C > 100%
Signals	65	47	50	46	69	42	68	38
Roundabouts	6	12	7	7	3	14	4	8
Total	**130**		**110**		**128**		**118**	

6.7 **Table 6.3** shows that in 2032 the introduction of the A6 to Manchester Airport Relief Road scheme is forecast to result in a reduction in the number of junctions (both signalised and roundabouts) with a turn that is operating at overcapacity (VC >100%) from 59 to 53 and for junctions operating at capacity (VC 85-100%) from 71 to 57 in the morning peak hour. In the evening peak hour, the number of junctions with a turn that is operating at overcapacity (VC >100%) is forecast to fall from 56 to 46 and for junctions operating at capacity (VC 85-100%) these remain neutral at 72.

Scheme Re-Assignment Impacts

6.8 The analysis of the traffic impacts of the A6 to Manchester Airport Relief Road scheme is based on an analysis of traffic flows crossing five screenlines across the study area. The screenlines are illustrated in **Figure 6.1.**

Screenline 1 North of Scheme Screenline to intercept North-South traffic movements through in the Northern area of influence. It extends from the M56 between Junctions 4 and 5 in the East to the A5102 Woodford Road in the West.

Screenline 2 South of Scheme Screenline to intercept North-South traffic movements through the Southern area of influence. It extends from Disley in the East to Wilmslow in the West.

Screenline 3 East of M56 Screenline to intercept North-South traffic movements through the Western area of influence. It extends from the A538 Wilmslow Road in the South to the M60 in the North.

Screenline 4 East of A34 Screenline to intercept North-South traffic movements through the central area of influence. It extends from the A560 Stockport Road in the North to the A5102 Woodford Road in the South.

Screenline 5 High Peak to Bredbury Screenline to intercept East-West traffic movements through the central area of influence. It extends from the A560 Stockport Road East in the North to A6 Buxton Road in the South.

6.9 **Tables 6.4 to 6.8** summarise 2017 and 2032 actual flows (in pcus) on all links crossing Screenlines 1 to 5 respectively in the Do-Minimum and Do-Something scenarios.

6.10 **Table 6.4** shows that in the Northbound direction flows are forecast to increase on the A34 Handforth Bypass in all time periods at 2017 and 2032. The remaining links are forecast to remain broadly neutral or to reduce particularly on the B5358 Wilmslow Road in the morning peak in both forecast years and on Finney Lane, Shadowmoss Lane and Styal Road in all time periods in both forecast years.

6.11 In the Southbound direction, flows are forecast to significantly increase on the A34 Handforth Bypass in all time periods at 2017 and 2032 with the exception of the 2032 evening peak which is forecast to have a slight reduction in flow. Flows are forecast to increase on Gil Bent Road in the morning and evening peak and on Shadowmoss Road particularly in the evening peak. The flows are forecast to remain broadly neutral or decrease particularly on Finney Lane, St Ann's Road and the B5166 Styal Road. Overall, the forecast change in flow across the screenline in either direction ranges from -1% to -8% in any one time period and forecast year.

6.12 **Table 6.5** shows that in both directions flows are forecast to significantly increase on the A6 Buxton Road in Disley for all time periods in 2017 and 2032.The A34 Wilmslow Bypass is forecast to have increases in traffic particularly in 2017 and the B5166 Manchester Road in the 2032 morning and interpeak Southbound direction. The remaining links are forecast to remain broadly neutral or to reduce particularly on the A5102 Hough Lane, Lees Lane and the A523 Macclesfield

Road in the majority of time periods at 2017 and 2032. Overall, the forecast change in flow across the screenline in either direction ranges from 0% to +7% in any one time period and forecast year.

6.13 **Table 6.6** shows that in the both directions flows are forecast to significantly increase on the M56 Spur with the maximum increase of 1005 pcus in the Eastbound direction in the 2017 evening peak and on Runger Lane in all time periods and scenarios with the exception of the 2032 Morning peak Westbound The remaining links are forecast to remain broadly neutral or to reduce particularly on the M56-M60 link where traffic is forecast to decrease by up to 250 pcus. Overall, the forecast change in flow across the screenline in either direction ranges from +2% to +4% in any one time period and forecast year.

6.14 **Table 6.7** shows that in the Eastbound direction flows are forecast to significantly increase on the A555 MAELR and decrease on the A5102 Woodford Road and Councillor Lane. In the Westbound direction, flows are forecast to significantly increase on the A555 MAELR in all time periods and scenarios and on B5094 Stanley Road in the morning and evening peak. Overall, the forecast change in flow across the screenline in either direction ranges from +9% to +28% in any one time period and forecast year.

6.15 **Table 6.8** shows that in the both directions flows are forecast to significantly increase on the A6 Buxton Road with a decrease in forecast flow particularly on Windlehurst Road in 2032. Overall, the forecast change in flow across the screenline in either direction ranges from 0% to +6% in any one time period and forecast year.

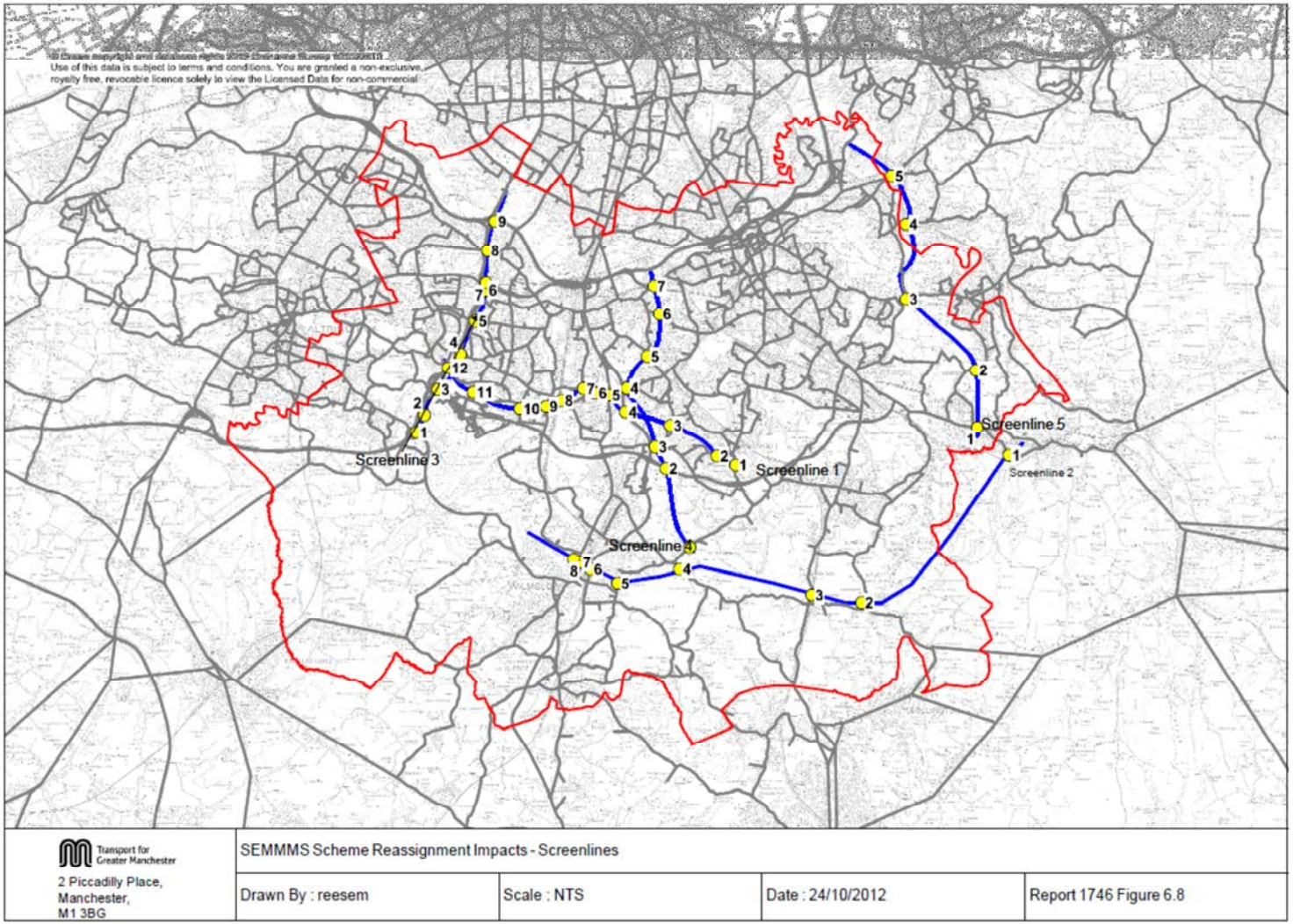

Use of this data is subject to terms and conditions. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial
Screenline 3
Screenline 1
Screenline 4
Screenline 5
Screenline 2
Transport for Greater Manchester
2 Piccadilly Place, Manchester, M1 3BG
SEMMMS Scheme Reassignment Impacts - Screenlines
Drawn By : reesem
Scale : NTS
Date : 24/10/2012
Report 1746 Figure 6.8

Table 6.4: A6MARR Screenline 1 North of A6MARR Screenline - Crossing Flows in pcu's

Crossing Links	Time Period	Northbound								Southbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A5102 Woodford Road	AM	631	609	-22	-4%	592	603	11	2%	1102	829	-273	-25%	1246	1082	-164	-13%
2. Moss Lane		147	136	-11	-8%	120	114	-7	-6%	321	213	-108	-34%	351	380	29	8%
3. Gil Bent Road		594	459	-135	-23%	654	413	-241	-37%	620	775	155	25%	549	861	312	57%
4. A34 Handforth Bypass		2368	2834	465	20%	2393	3073	680	28%	2366	2613	247	10%	2449	2726	276	11%
5. B5358 Wilmslow Road		960	741	-218	-23%	1172	851	-321	-27%	702	451	-251	-36%	797	543	-254	-32%
6. Finney Lane East		689	582	-107	-16%	650	561	-89	-14%	778	490	-289	-37%	1025	665	-360	-35%
7. St Anns Road North		461	404	-57	-12%	341	410	69	20%	381	264	-117	-31%	570	295	-275	-48%
8. Finney Lane West		1207	731	-476	-39%	1454	1050	-404	-28%	797	529	-268	-34%	527	568	41	8%
9. B5166 Styal Road		718	712	-6	-1%	899	855	-44	-5%	1046	802	-244	-23%	1055	910	-145	-14%
10. Shadowmoss Road		414	92	-323	-78%	484	130	-354	-73%	146	111	-35	-24%	131	138	6	5%
11. Selstead Road		335	342	7	2%	406	448	42	10%	276	234	-42	-15%	805	573	-232	-29%
12. M56		5896	5808	-88	-1%	6669	6407	-261	-4%	6616	6352	-264	-4%	7439	7313	-126	-2%
Total		**14421**	**13450**	**-971**	**-7%**	**15833**	**14914**	**-919**	**-6%**	**15151**	**13663**	**-1489**	**-10%**	**16945**	**16054**	**-891**	**-5%**
1. A5102 Woodford Road	IP	526	601	75	14%	727	684	-43	-6%	509	439	-69	-14%	825	690	-135	-16%
2. Moss Lane		241	264	23	10%	253	239	-15	-6%	232	208	-24	-10%	266	222	-44	-17%
3. Gil Bent Road		341	307	-34	-10%	367	350	-18	-5%	408	373	-34	-8%	519	459	-60	-12%
4. A34 Handforth Bypass		1890	2043	152	8%	2216	2522	306	14%	1978	1989	11	1%	2243	2417	173	8%
5. B5358 Wilmslow Road		632	693	60	10%	732	778	46	6%	492	609	117	24%	636	676	40	6%
6. Finney Lane East		672	493	-179	-27%	747	582	-165	-22%	578	473	-104	-18%	573	463	-110	-19%
7. St Anns Road North		193	204	11	6%	149	194	44	30%	269	206	-63	-24%	356	216	-141	-39%
8. Finney Lane West		854	453	-401	-47%	969	476	-494	-51%	862	467	-395	-46%	908	562	-346	-38%
9. B5166 Styal Road		645	560	-85	-13%	840	753	-87	-10%	609	520	-89	-15%	885	631	-254	-29%
10. Shadowmoss Road		154	36	-117	-76%	253	57	-196	-77%	127	40	-87	-69%	88	73	-14	-16%
11. Selstead Road		167	146	-21	-13%	258	246	-12	-5%	120	124	3	3%	331	278	-52	-16%
12. M56		5184	5064	-120	-2%	6322	6096	-227	-4%	4985	4978	-7	0%	6070	5951	-119	-2%
Total		**11499**	**10864**	**-635**	**-6%**	**13835**	**12975**	**-860**	**-6%**	**11169**	**10427**	**-742**	**-7%**	**13699**	**12637**	**-1062**	**-8%**

Table 6.4 Continued: A6MARR Screenline 1 North of A6MARR Screenline - Crossing Flows in pcu's

Crossing Links	Time Period	Northbound								Southbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A5102 Woodford Road	PM	686	878	191	28%	831	978	147	18%	730	597	-133	-18%	876	807	-69	-8%
2. Moss Lane		278	293	16	6%	271	282	10	4%	482	206	-276	-57%	528	239	-289	-55%
3. Gil Bent Road		486	371	-115	-24%	561	586	24	4%	416	594	178	43%	479	751	272	57%
4. A34 Handforth Bypass		2345	2781	436	19%	2529	2928	399	16%	2875	2838	-36	-1%	2903	2754	-149	-5%
5. B5358 Wilmslow Road		780	734	-45	-6%	775	737	-38	-5%	878	738	-140	-16%	722	1087	365	51%
6. Finney Lane East		874	588	-286	-33%	673	647	-25	-4%	658	526	-132	-20%	686	559	-128	-19%
7. St Anns Road North		239	241	2	1%	285	260	-25	-9%	480	215	-265	-55%	626	221	-405	-65%
8. Finney Lane West		911	505	-406	-45%	974	607	-366	-38%	982	740	-242	-25%	799	905	106	13%
9. B5166 Styal Road		1090	770	-321	-29%	1058	1048	-10	-1%	1037	823	-214	-21%	1400	946	-454	-32%
10. Shadowmoss Road		229	128	-101	-44%	356	165	-191	-54%	101	149	48	47%	108	221	113	104%
11. Selstead Road		465	448	-17	-4%	548	574	26	5%	235	225	-10	-4%	611	496	-115	-19%
12. M56		6165	6066	-100	-2%	7519	7418	-101	-1%	6388	6452	65	1%	6779	6898	118	2%
Total		**14548**	**13803**	**-746**	**-5%**	**16380**	**16230**	**-150**	**-1%**	**15263**	**14104**	**-1158**	**-8%**	**16518**	**15884**	**-635**	**-4%**

Table 6.5 A6MARR Screenline 2 South of A6MARR - Crossing Flows in pcu's

Crossing Links	Time Period	Northbound								Southbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A6 Market Street	AM	118	75	-43	-37%	56	63	7	13%	116	121	5	4%	75	65	-10	-13%
2. A6 Buxton Road		669	984	315	47%	882	1061	179	20%	576	759	184	32%	735	916	181	25%
3. Roundy Lane		10	9	0	-3%	16	23	7	42%	17	28	11	66%	40	32	-8	-21%
4. A523 London Road		677	851	174	26%	716	941	225	31%	870	886	16	2%	986	1022	36	4%
5. Lees Lane		1148	1006	-143	-12%	1210	1117	-93	-8%	912	1027	114	13%	1050	1020	-29	-3%
6. A5102 Hough Lane		509	351	-158	-31%	611	428	-183	-30%	718	596	-122	-17%	976	990	14	1%
7. A34 Wilmslow Bypass		1457	1795	338	23%	1587	1891	304	19%	2091	2121	30	1%	2049	1909	-140	-7%
8. B5166 Manchester Road		909	792	-116	-13%	1043	927	-116	-11%	574	673	98	17%	473	844	370	78%
9. Cliff Road		2	2	0	-1%	2	2	0	0%	593	416	-177	-30%	636	665	29	5%
Total		**5499**	**5866**	**367**	**7%**	**6123**	**6453**	**330**	**5%**	**6467**	**6626**	**158**	**2%**	**7019**	**7463**	**444**	**6%**
1. A6 Market Street	IP	150	150	0	0%	134	1	-134	-99%	238	335	97	41%	189	164	-24	-13%
2. A6 Buxton Road		492	620	128	26%	537	915	378	70%	391	516	125	32%	571	871	300	53%
3. Roundy Lane		12	11	-1	-7%	12	11	-1	-7%	10	8	-2	-17%	9	12	3	30%
4. A523 London Road		488	446	-42	-9%	686	640	-46	-7%	531	538	6	1%	774	906	133	17%
5. Lees Lane		630	623	-6	-1%	917	788	-129	-14%	602	618	16	3%	680	611	-68	-10%
6. A5102 Hough Lane		372	174	-197	-53%	469	240	-230	-49%	241	136	-104	-43%	374	159	-215	-57%
7. A34 Wilmslow Bypass		1538	1834	296	19%	1549	2021	471	30%	1627	1510	-117	-7%	1853	1910	57	3%
8. B5166 Manchester Road		607	466	-140	-23%	853	664	-189	-22%	475	551	76	16%	489	524	35	7%
9. Cliff Road		2	2	0	0%	2	2	0	0%	101	66	-35	-35%	260	209	-50	-19%
Total		**4291**	**4327**	**36**	**1%**	**5160**	**5281**	**121**	**2%**	**4215**	**4278**	**63**	**1%**	**5198**	**5368**	**170**	**3%**

Table 6.5 Continued: A6MARR Screenline 2 South of A6MARR - Crossing Flows in pcu's

Crossing Links	Time Period	Eastbound								Westbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A6 Market Street	PM	59	27	-32	-54%	56	67	12	21%	136	82	-54	-40%	119	74	-45	-38%
2. A6 Buxton Road		507	807	300	59%	630	709	79	12%	789	999	210	27%	919	1164	246	27%
3. Roundy Lane		129	108	-21	-16%	262	123	-138	-53%	8	7	-1	-15%	11	21	10	89%
4. A523 London Road		739	803	64	9%	734	884	150	20%	714	810	96	13%	836	873	37	4%
5. Lees Lane		1162	914	-248	-21%	1188	1126	-61	-5%	891	853	-38	-4%	948	1113	165	17%
6. A5102 Hough Lane		859	687	-171	-20%	1071	912	-159	-15%	330	265	-64	-19%	481	341	-140	-29%
7. A34 Wilmslow Bypass		1943	2086	143	7%	1832	2125	293	16%	1951	2015	64	3%	1756	1981	225	13%
8. B5166 Manchester Road		943	1116	173	18%	1032	1204	173	17%	519	457	-62	-12%	656	560	-96	-15%
9. Cliff Road		2	2	0	8%	2	3	1	32%	491	323	-168	-34%	696	467	-229	-33%
Total		**6342**	**6549**	**208**	**3%**	**6807**	**7154**	**348**	**5%**	**5828**	**5810**	**-18**	**0%**	**6422**	**6594**	**172**	**3%**

Table 6.6: A6MARR Screenline 3 East of M56 - Crossing Flows in pcu's

Crossing Links	Time Period	Eastbound								Westbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A538 Wilmslow Road	AM	1287	1289	2	0%	1581	1512	-69	-4%	1396	1433	37	3%	1659	1827	169	10%
2. Runger Lane		549	660	111	20%	695	797	103	15%	301	367	67	22%	398	390	-8	-2%
3. M56 Spur		3296	3742	446	14%	4131	4855	724	18%	2033	2988	955	47%	2785	3591	806	29%
4. Simonsway		1144	1176	31	3%	1142	1231	90	8%	1112	969	-143	-13%	1161	1107	-54	-5%
5. Hollyhedge Road		960	935	-25	-3%	1095	1093	-3	0%	764	677	-87	-11%	949	913	-36	-4%
6. M56-M60 Link		2828	2618	-210	-7%	3085	2867	-218	-7%	3179	2927	-251	-8%	3029	2926	-102	-3%
7. A560 Altrincham Road		1400	1428	28	2%	1430	1465	35	2%	1400	1369	-31	-2%	1438	1448	9	1%
8. B5167 Palatine Road		1152	1147	-5	0%	1109	1059	-51	-5%	885	874	-12	-1%	1088	1093	6	1%
9. M60		4234	4109	-124	-3%	4717	4679	-39	-1%	7159	7251	92	1%	7957	8043	86	1%
Total		**16850**	**17104**	**254**	**2%**	**18985**	**19557**	**572**	**3%**	**18228**	**18855**	**627**	**3%**	**20464**	**21338**	**874**	**4%**
1. A538 Wilmslow Road	IP	626	560	-67	-11%	800	719	-81	-10%	1266	1296	29	2%	1603	1576	-27	-2%
2. Runger Lane		282	317	35	12%	382	458	76	20%	273	337	65	24%	369	433	64	17%
3. M56 Spur		1895	2370	475	25%	2656	3257	601	23%	1730	2138	408	24%	2510	2962	452	18%
4. Simonsway		850	805	-45	-5%	883	871	-12	-1%	1015	884	-131	-13%	1059	925	-134	-13%
5. Hollyhedge Road		593	586	-7	-1%	747	708	-39	-5%	513	542	29	6%	683	678	-5	-1%
6. M56-M60 Link		2488	2397	-91	-4%	3033	2820	-213	-7%	2409	2322	-87	-4%	2807	2692	-116	-4%
7. A560 Altrincham Road		1168	1162	-6	0%	1315	1316	1	0%	1149	1119	-29	-3%	1300	1284	-16	-1%
8. B5167 Palatine Road		869	866	-4	0%	1039	1003	-36	-3%	949	984	35	4%	1040	1047	7	1%
9. M60		3079	3051	-28	-1%	3642	3624	-18	0%	4909	4998	89	2%	5942	6007	65	1%
Total		**11851**	**12114**	**263**	**2%**	**14498**	**14777**	**279**	**2%**	**14213**	**14621**	**408**	**3%**	**17313**	**17604**	**291**	**2%**

Table 6.6 Continued: A6MARR Screenline 3 East of M56 - Crossing Flows in pcu's

Crossing Links	Time Period	Eastbound								Westbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A538 Wilmslow Road	PM	728	681	-48	-7%	809	788	-21	-3%	2126	1993	-133	-6%	2667	2738	71	3%
2. Runger Lane		465	558	93	20%	459	489	30	7%	434	494	60	14%	654	710	56	9%
3. M56 Spur		2070	3074	1005	49%	2485	3366	881	35%	2522	3242	720	29%	3615	4179	563	16%
4. Simonsway		944	998	54	6%	1035	1055	19	2%	1244	1124	-120	-10%	1221	1181	-40	-3%
5. Hollyhedge Road		872	885	13	2%	1022	1119	97	9%	830	935	105	13%	947	946	-1	0%
6. M56-M60 Link		2480	2334	-145	-6%	2952	2735	-218	-7%	2778	2654	-124	-4%	2983	2844	-139	-5%
7. A560 Altrincham Road		1122	963	-159	-14%	1217	1087	-130	-11%	1258	1179	-79	-6%	1307	1223	-85	-6%
8. B5167 Palatine Road		1220	1272	52	4%	1293	1320	26	2%	961	905	-56	-6%	1012	958	-54	-5%
9. M60		4648	4403	-245	-5%	5229	5033	-196	-4%	6634	6833	199	3%	7314	7504	191	3%
Total		**14549**	**15169**	**619**	**4%**	**16501**	**16991**	**490**	**3%**	**18787**	**19360**	**573**	**3%**	**21721**	**22284**	**563**	**3%**

Table 6.7 A6MARR Screenline 4 East of A34 - Crossing Flows in pcu's

Crossing Links	Time Period	Eastbound								Westbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A5102 Woodford Road	AM	876	522	-354	-40%	983	808	-175	-18%	854	717	-137	-16%	1091	1151	60	5%
2. A55 MAELR		689	2158	1470	213%	704	2502	1798	255%	1497	3006	1509	101%	1554	3357	1804	116%
3. B5094 Stanley Road		1069	800	-269	-25%	961	766	-195	-20%	1495	1558	63	4%	1387	1644	257	19%
4. Etchells Road		533	604	71	13%	490	617	127	26%	800	746	-54	-7%	876	881	5	1%
5. A5149 Cheadle Road		585	628	43	7%	561	635	74	13%	764	680	-84	-11%	997	774	-223	-22%
6. Councillor Lane		592	545	-47	-8%	816	706	-110	-13%	604	495	-110	-18%	700	581	-119	-17%
7. A560 Stockport Road		1267	1429	162	13%	1406	1521	115	8%	1911	1880	-31	-2%	1929	1986	58	3%
Total		**5610**	**6686**	**1076**	**19%**	**5921**	**7556**	**1635**	**28%**	**7926**	**9082**	**1156**	**15%**	**8533**	**10375**	**1842**	**22%**
1. A5102 Woodford Road	IP	465	291	-174	-37%	935	473	-463	-49%	318	302	-16	-5%	565	438	-127	-22%
2. A55 MAELR		865	1856	992	115%	1044	2455	1412	135%	870	1495	625	72%	1261	2058	797	63%
3. B5094 Stanley Road		704	698	-6	-1%	750	721	-29	-4%	799	844	45	6%	963	928	-34	-4%
4. Etchells Road		581	556	-25	-4%	604	568	-37	-6%	592	553	-40	-7%	637	602	-35	-5%
5. A5149 Cheadle Road		426	344	-83	-19%	457	428	-29	-6%	474	433	-40	-9%	507	522	15	3%
6. Councillor Lane		457	422	-35	-8%	545	477	-67	-12%	310	321	12	4%	390	388	-2	0%
7. A560 Stockport Road		1158	1112	-47	-4%	1396	1401	5	0%	1496	1409	-87	-6%	1705	1639	-66	-4%
Total		**4656**	**5280**	**624**	**13%**	**5732**	**6523**	**791**	**14%**	**4860**	**5357**	**497**	**10%**	**6027**	**6575**	**548**	**9%**
1. A5102 Woodford Road	PM	1301	824	-477	-37%	1540	1263	-277	-18%	532	470	-62	-12%	848	777	-71	-8%
2. A55 MAELR		1126	3159	2033	181%	1396	3552	2157	155%	1225	1933	708	58%	1370	1939	568	41%
3. B5094 Stanley Road		1474	1005	-469	-32%	1519	1085	-434	-29%	847	1024	177	21%	989	1324	335	34%
4. Etchells Road		737	761	25	3%	805	741	-64	-8%	641	581	-60	-9%	635	597	-38	-6%
5. A5149 Cheadle Road		620	708	88	14%	631	704	73	12%	604	527	-77	-13%	735	576	-159	-22%
6. Councillor Lane		799	610	-189	-24%	833	705	-128	-15%	386	383	-3	-1%	489	473	-16	-3%
7. A560 Stockport Road		1413	1462	50	4%	1424	1446	22	2%	1797	1832	35	2%	1938	1995	57	3%
Total		**7469**	**8529**	**1060**	**14%**	**8148**	**9496**	**1348**	**17%**	**6033**	**6750**	**718**	**12%**	**7004**	**7681**	**677**	**10%**

Table 6.8 A6MARR Screenline 5 High Peak to Bredbury - Crossing Flows in pcu's

Crossing Links	Time Period	Eastbound								Westbound							
		2017				2032				2017				2032			
		DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff	DM	DS	Diff	% Diff
1. A6 Buxton Road	AM	986	1139	153	15%	1120	1239	119	11%	918	1131	214	23%	1065	1097	33	3%
2. Windlehurst Road		347	403	56	16%	527	444	-83	-16%	541	467	-74	-14%	547	554	7	1%
3. A626 Stockport Road		725	686	-40	-5%	842	896	55	6%	1092	1215	123	11%	1317	1325	7	1%
4. Otterspool Road		829	845	15	2%	922	975	52	6%	823	786	-38	-5%	962	964	2	0%
5. B6104 Stockport Road		730	842	112	15%	893	1059	166	19%	815	854	39	5%	791	846	55	7%
6. A560 Stockport Road East		492	419	-74	-15%	733	627	-106	-14%	700	691	-10	-1%	775	781	6	1%
Total		**4111**	**4334**	**223**	**5%**	**5037**	**5241**	**203**	**4%**	**4890**	**5144**	**254**	**5%**	**5458**	**5567**	**110**	**2%**
1. A6 Buxton Road	IP	830	1035	206	25%	976	1226	250	26%	818	935	117	14%	869	1099	230	26%
2. Windlehurst Road		225	257	32	14%	274	296	22	8%	215	192	-23	-11%	240	216	-24	-10%
3. A626 Stockport Road		861	846	-15	-2%	1037	1070	33	3%	816	881	65	8%	1086	1148	61	6%
4. Otterspool Road		713	694	-19	-3%	842	822	-20	-2%	833	811	-22	-3%	1011	976	-35	-3%
5. B6104 Stockport Road		660	657	-3	-1%	719	721	2	0%	618	626	8	1%	732	740	8	1%
6. A560 Stockport Road East		626	634	7	1%	781	782	1	0%	724	700	-25	-3%	850	849	-1	0%
Total		**3916**	**4122**	**206**	**5%**	**4630**	**4917**	**287**	**6%**	**4024**	**4144**	**120**	**3%**	**4789**	**5028**	**239**	**5%**
1. A6 Buxton Road	PM	1135	1263	128	11%	1249	1408	158	13%	805	1046	241	30%	912	885	-27	-3%
2. Windlehurst Road		443	410	-34	-8%	465	446	-19	-4%	187	200	13	7%	353	306	-47	-13%
3. A626 Stockport Road		1403	1352	-51	-4%	1495	1495	0	0%	1170	1112	-58	-5%	1158	1212	54	5%
4. Otterspool Road		756	714	-43	-6%	1001	937	-64	-6%	1073	1010	-63	-6%	1134	1143	9	1%
5. B6104 Stockport Road		1004	1154	150	15%	1117	1146	29	3%	587	613	27	5%	643	669	26	4%
6. A560 Stockport Road East		1238	1119	-119	-10%	1140	1244	105	9%	832	802	-29	-4%	960	938	-21	-2%
Total		**5979**	**6011**	**31**	**1%**	**6467**	**6676**	**209**	**3%**	**4653**	**4784**	**131**	**3%**	**5160**	**5154**	**-6**	**0%**

Flow Differences

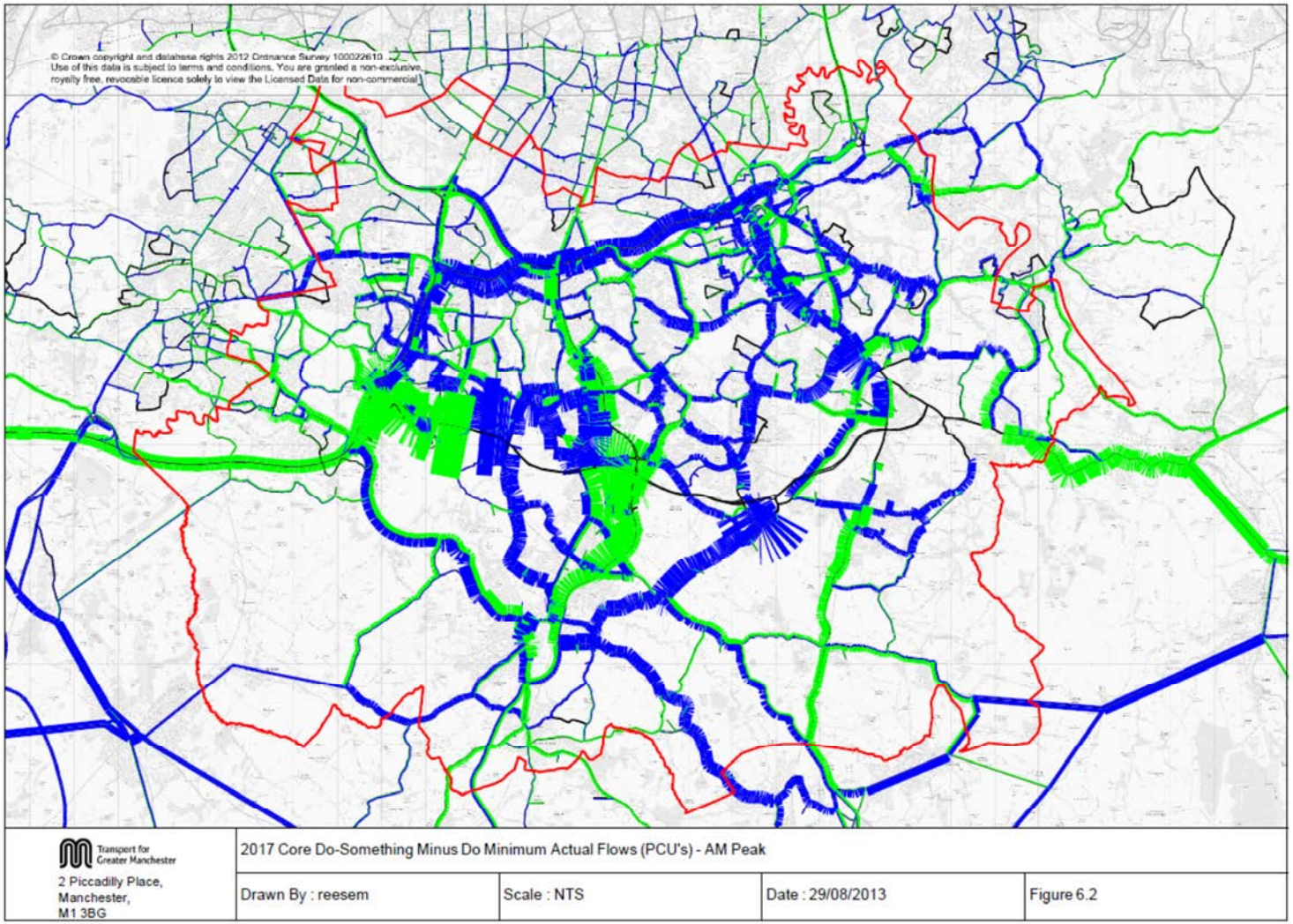
6.16 **Figures 6.2 to 6.7** show forecast changes in flow between the Do-Minimum and the Do-Something and scenario for the 2017 and 2032 morning, interpeak and evening peak hours in the A6MARR area of influence. The plots show flow differences represented by variable width bands, where the width of the band is proportional to the magnitude of the change. Increases in actual flows are shown in green and decreases in blue.

6.17 As expected, the most significant forecast increases in flow in the A6MARR area of influence as a result of the scheme are on:

- A6 Buxton Road (South of its junction with A6MARR)
- A555 MAELR
- M56 South of Junction 5 and M56 Spur
- A34 Handforth/Wilmslow Bypass Up to the M60.
- A523 Macclesfield Road

6.18 The most significant forecast decreases in flow occur on the local road network in the Heald Green and Wythenshawe area and Bramhall to the North of the scheme. Other routes with significant decreases in flow as a result of the scheme include:

- M60 and M56 (North of Junction 5)
- A5102 Woodford Road
- A538 Wilmslow Road
- A6 North of its junction with A6MARR
- Bramhall Moor Lane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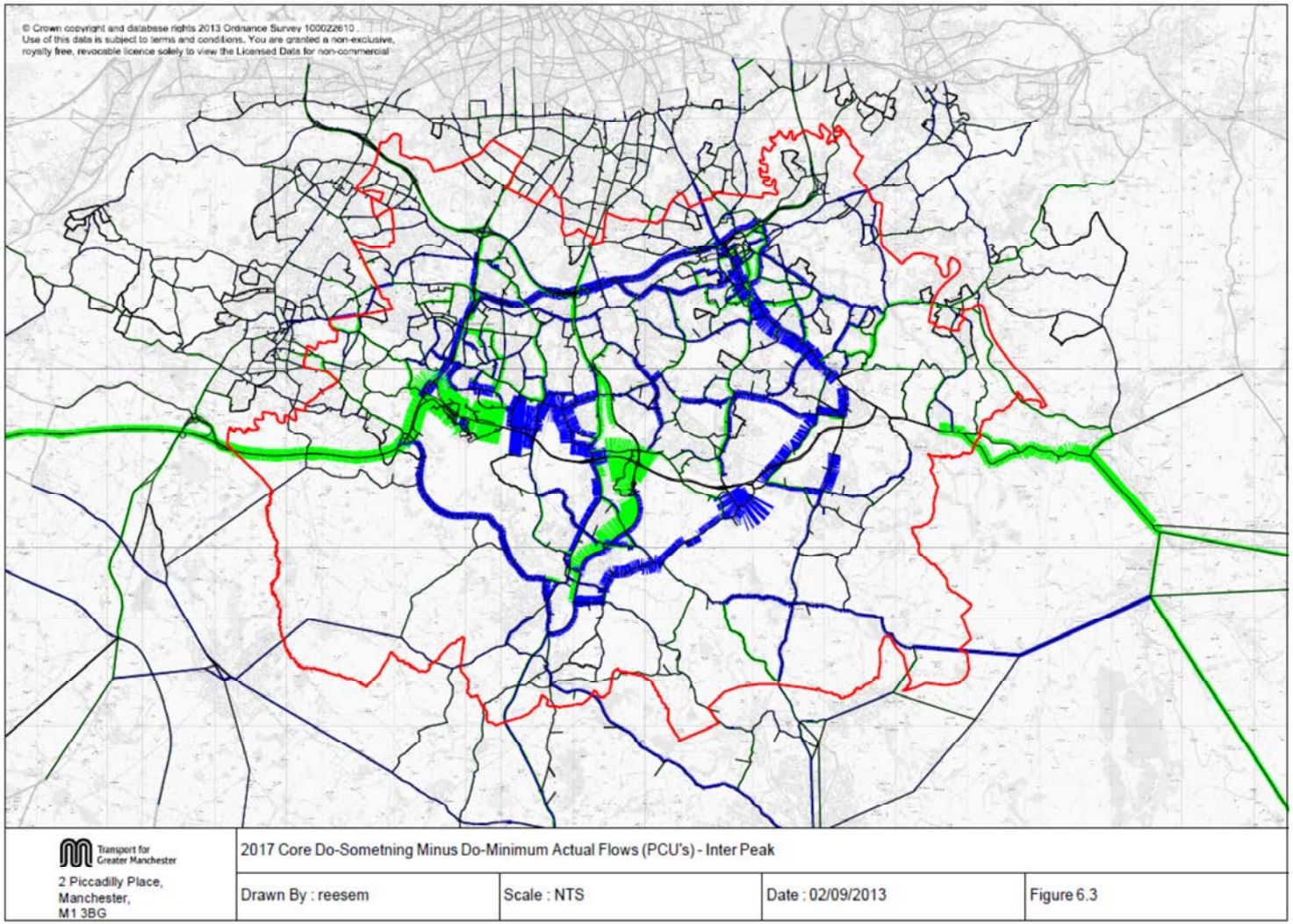
Transport for Greater Manchester
2 Piccadilly Place, Manchester, M1 3BG
2017 Core Do-Something Minus Do Minimum Actual Flows (PCU's) - AM Peak
Drawn By : reesem
Scale : NTS
Date : 29/08/2013
Figure 6.2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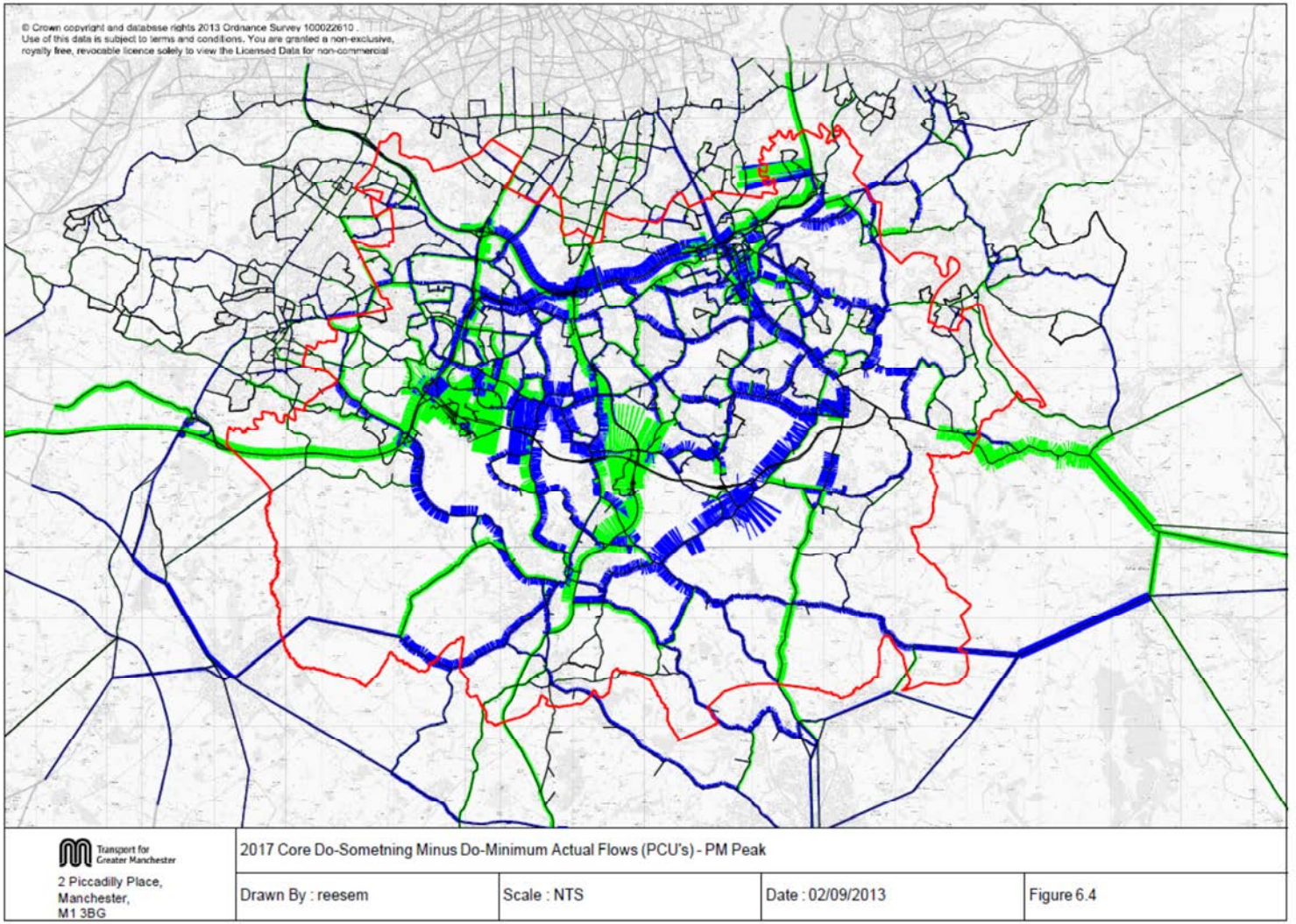
2017 Core Do-Sometning Minus Do-Minimum Actual Flows (PCU's) - Inter Peak
Drawn By : reesem
Scale : NTS
Date : 02/09/2013
Figure 6.3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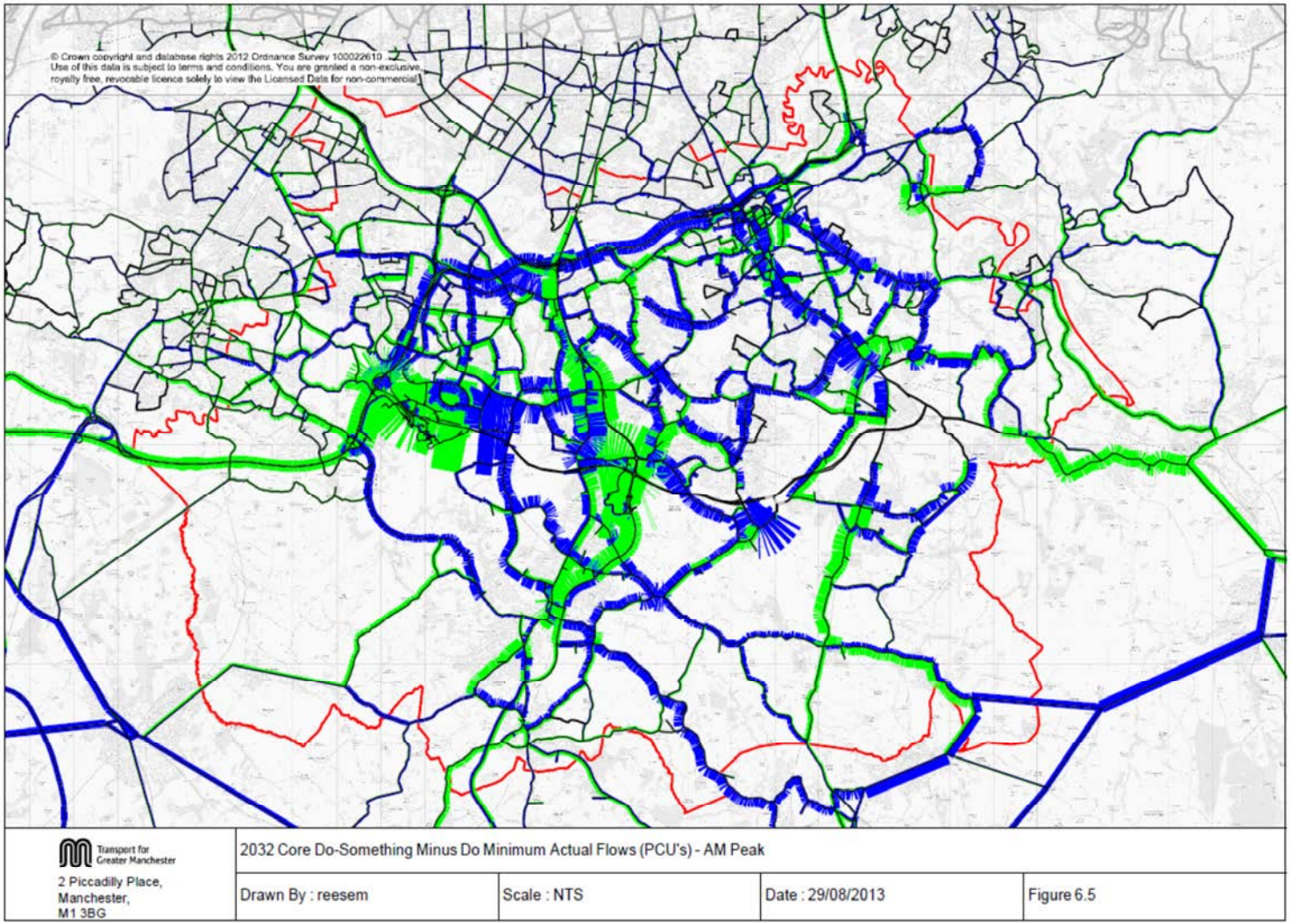
Drawn By : reesem
Scale : NTS
Date : 02/09/2013
Figure 6.4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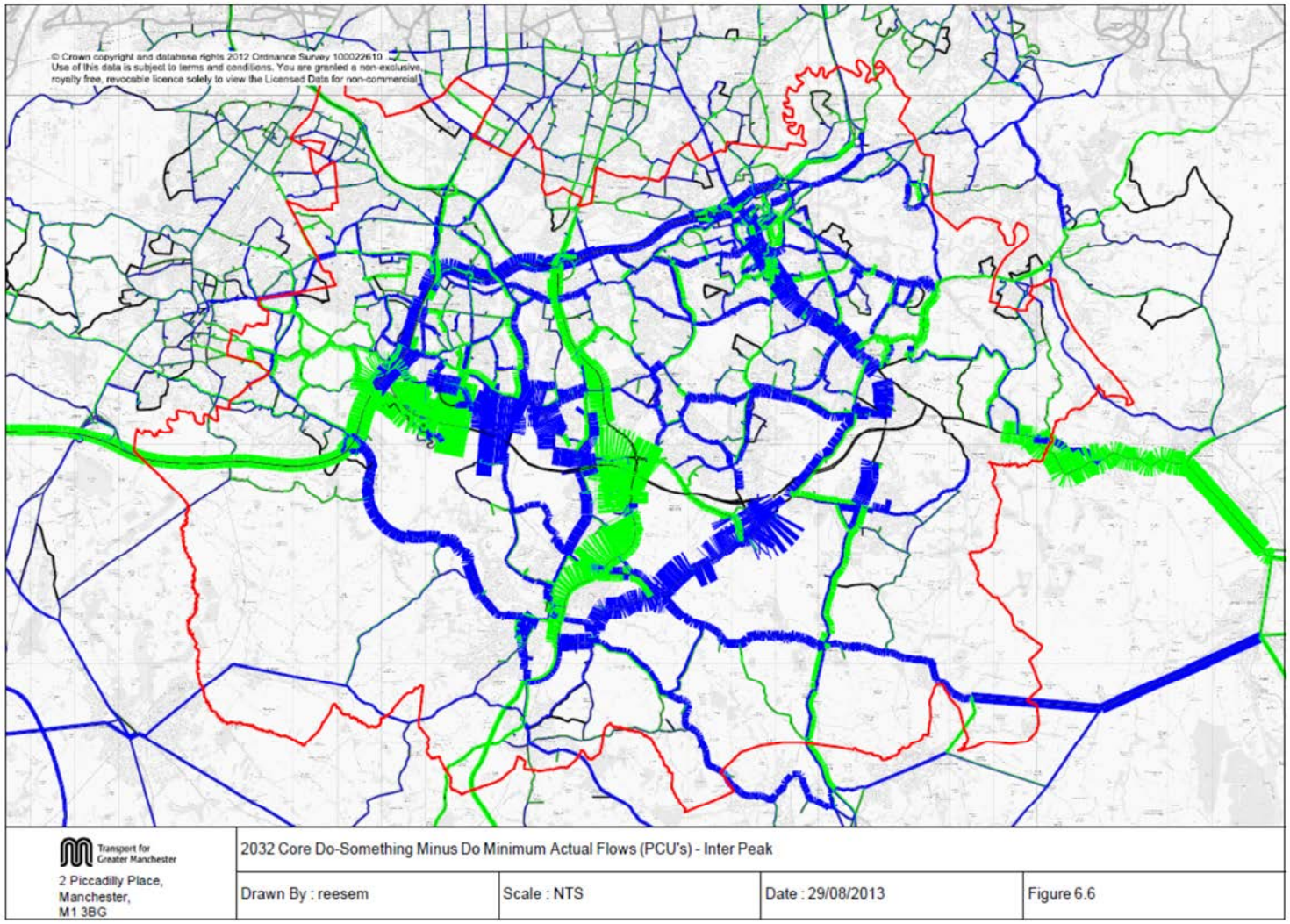
2032 Core Do-Something Minus Do Minimum Actual Flows (PCU's) - AM Peak
Drawn By : reesem
Scale : NTS
Date : 29/08/2013
Figure 6.5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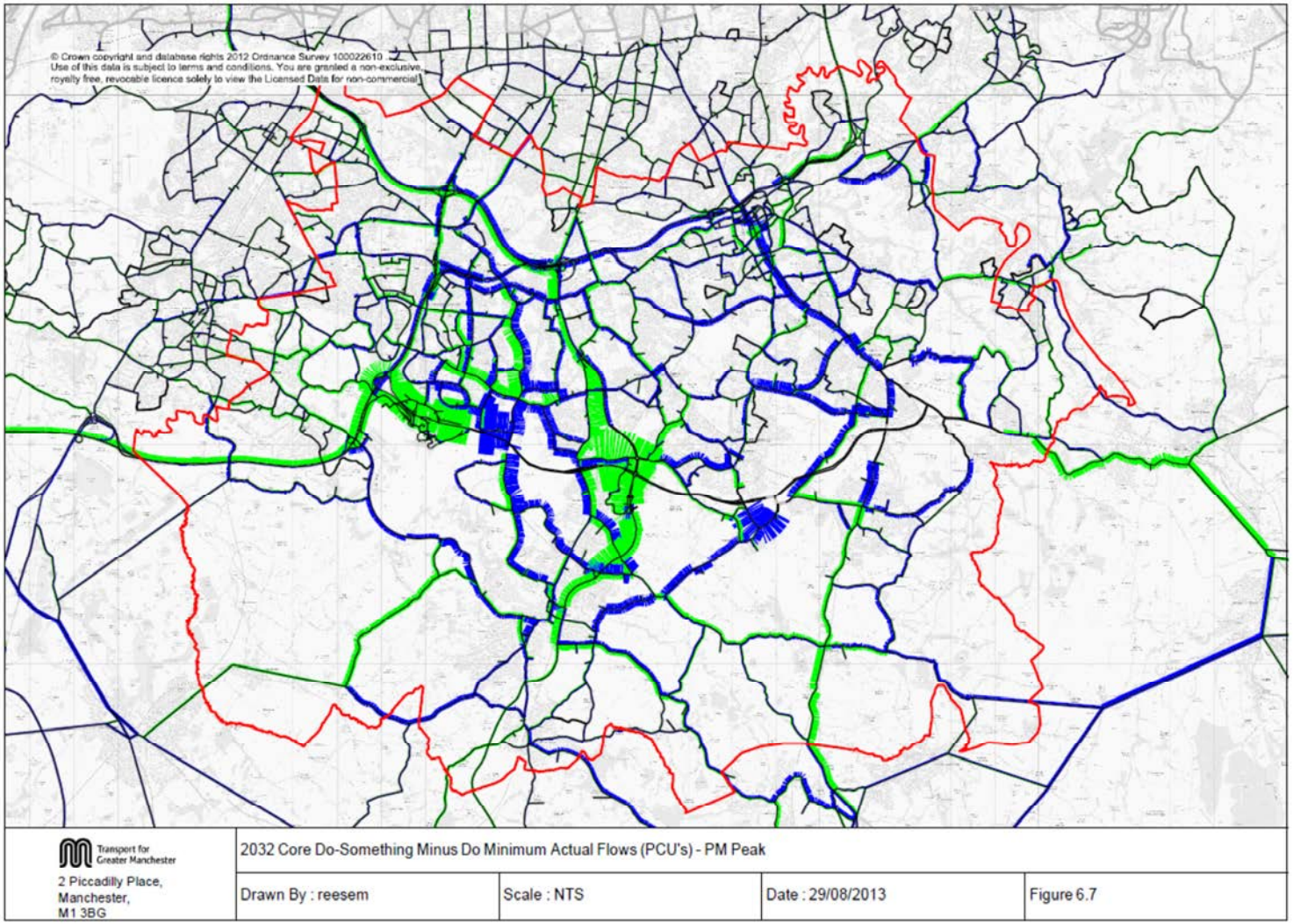
2032 Core Do-Something Minus Do Minimum Actual Flows (PCU's) - Inter Peak
Drawn By : reesem
Scale : NTS
Date : 29/08/2013
Figure 6.6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2032 Core Do-Something Minus Do Minimum Actual Flows (PCU's) - PM Peak
Drawn By : reesem
Scale : NTS
Date : 29/08/2013
Figure 6.7

Journey Time Impacts

6.19 **Table 6.9** lists the journey time routes in the area of influence of the A6 to Manchester Airport Relief Road scheme and illustrated in **Figure 6.8.** The journey time data from the AM, IP and PM peak-hour 2017 and 2032 Core Do-Minimum and Do-Something for fifteen routes in each direction are summarised in **Table 6.10** and **Table 6.11** for 2017 and 2032 respectively. Differences in travel time (Do-Minimum to Do-Something) greater than plus 60 seconds are highlighted in red and greater than minus 60 seconds in green

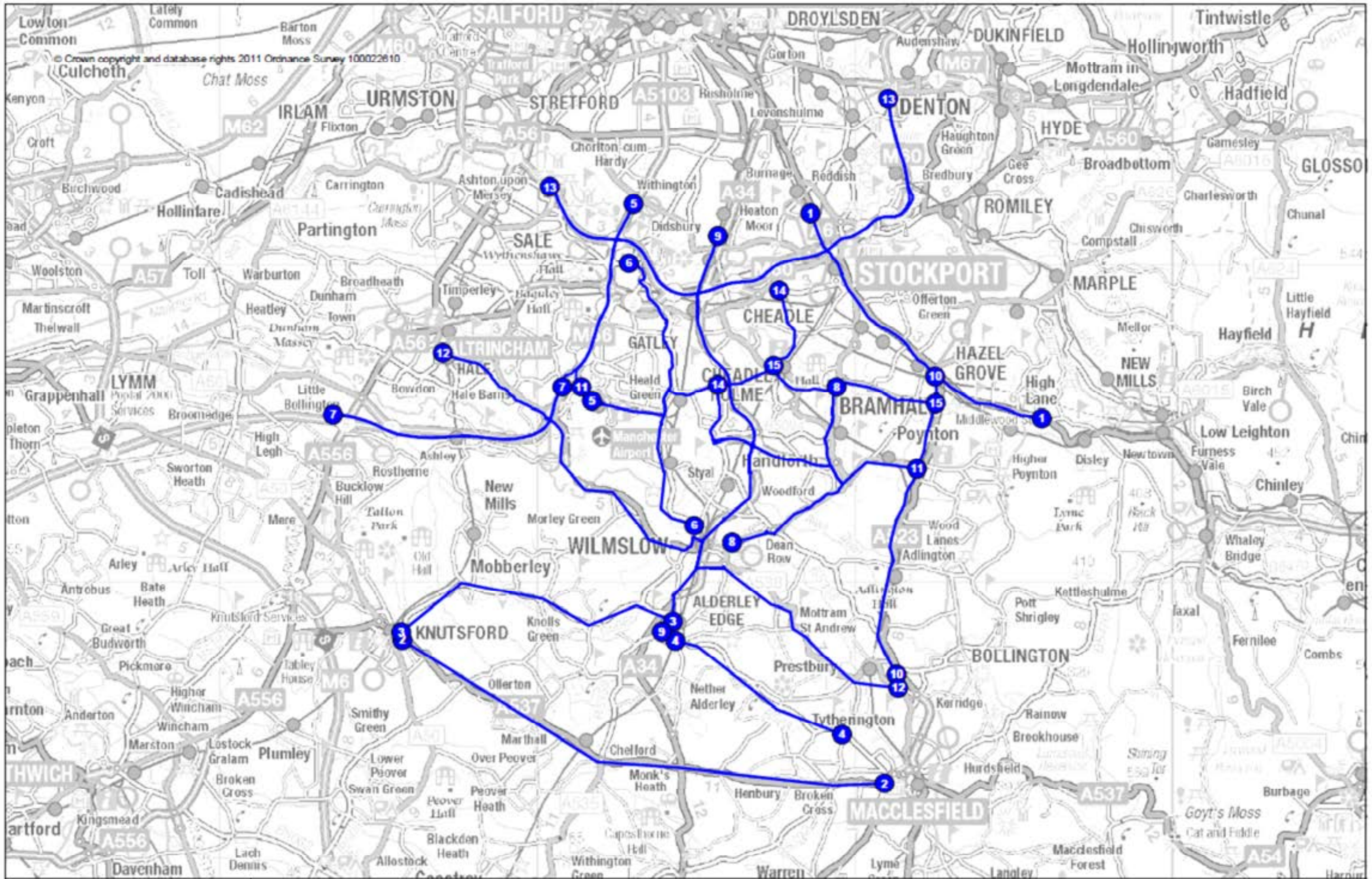
6.20 The tables indicate that with A6MARR in place journey times are forecast to increase in both directions on the A6 Buxton Road (High Lane to Heaton Moor) up to approximately 5-6 minutes in 2032.

6.21 Journey times on the A523 Macclesfield Road (Prestbury to Hazel Grove) are forecast to increase in the Northbound direction in the morning and interpeak by approximately two minutes and one to minute in the interpeak and evening peak in the Southbound direction.

6.22 The journey times on the rest of the routes are forecast to remain broadly neutral or decrease. The maximum forecast decreases in journey times occur on:

- A5102 Bramhall to Wilmslow -2 minutes 54 seconds (2032 AM Peak)
- Alderley Edge to A34 East Didsbury – 2 minutes 30 seconds (2032 PM Peak)
- A555 MAELR Manchester Airport to Poynton – 8 minutes 18 seconds (2032 PM Peak)
- A5143/9 Hazel Grove to Cheadle Hulme – 6 minutes 18 seconds (2032 AM Peak)
- Cheadle Heath to Heald Green – 3 minutes 24seconds(2032 AM Peak)
- A5143 Cheadle Hulme to Hazel Grove – 3 minutes 30 seconds (2032 PM Peak)
- Hazel Grove to A5143 Cheadle Hulme – 6 minutes 18 seconds (2032 AM Peak).

Table 6.9 Journey Time Route Descriptions			
Route No.	**Description**	**Direction**	**Route Length (Modelled km)**
1	A6 High Lane to Heaton Moor	NW	8.7
	A6 Heaton Moor to High Lane	SE	8.7
2	A537 Knutsford to Macclesfield	E	16.4
	A537 Macclesfield to Knutsford	W	16.4
3	B5085 Knutsford to Alderley Edge	E	10.2
	B5085 Alderley Edge to Knutsford	W	10.2
4	B5087 Macclesfield to Alderley Edge	NW	6.6
	B5087 Alderley Edge to Macclesfield	SE	6.6
5	M56 Manchester Airport to West Didsbury	N	7.3
	M56 West Didsbury to Manchester Airport	S	6.8
6	B5166 Wilmslow to Northenden	N	10
	B5166 Northenden to Wilmslow	S	10
7	M56 J8 to J5	E	8.3
	M56 J5 to J8	W	8.3
8	A5102 Wilmslow to Bramhall	NE	7.6
	A5102 Bramhall to Wilmslow	SW	7.6
9	A34 Alderley Edge to East Didsbury	N	14.5
	A34 East Didsbury to Alderley Edge	S	14.4
10	A523 Prestbury to Hazel Grove	N	10
	A523 Hazel Grove to Prestbury	S	10
11	A555 MAELR Poynton to Manchester Airport	W	13.9
	A555 MAELR Manchester Airport to Poynton	E	13.7
12	A538 Prestbury to Hale	NW	22
	A538 Hale to Prestbury	SE	22.2
13	M60 J6 to J24	AC	17
	M60 J24 to J6	CW	17
14	Heald Green to Cheadle Heath	NE	5.2
	Cheadle Heath to Heald Green	SW	5.2
15	A5149/3 Cheadle Hulme to Hazel Grove	E	5.8
	A5143/9 Hazel Grove to Cheadle Hulme	W	5.8



Transport for Greater Manchester 2 Piccadilly Place, Manchester, M1 3BG	SEMMMS7C Journey Time Routes			
	Drawn By : Michael A	Scale : NTS	Date : September 2011	Report 1746 Figure : 6.8

Table 6.10: 2017 Forecast Journey Times

Route	Distance	AM Peak			Inter Peak			PM Peak		
		Do-Minimum Time (minutes)	Do-Something Time (minutes)	Difference (minutes)	Do-Minimum Time (minutes)	Do-Something Time (minutes)	Difference (minutes)	Do-Minimum Time (minutes)	Do-Something Time (minutes)	Difference (minutes)
1	8.7	27.0	27.0	-0.1	21.8	23.7	1.8	24.9	25.5	0.6
	8.7	25.5	26.0	0.6	22.3	22.5	0.2	27.7	28.5	0.8
2	16.4	21.1	20.9	-0.2	19.9	19.9	0.0	20.4	20.3	-0.1
	16.4	20.5	20.3	-0.2	19.9	19.9	0.0	20.7	20.6	-0.1
3	10.2	14.7	14.6	-0.1	12.7	12.6	-0.1	13.8	13.6	-0.2
	10.2	13.9	13.8	-0.1	12.7	12.7	0.0	14.1	14.0	-0.1
4	6.6	6.9	6.9	0.0	6.5	6.5	0.0	6.8	6.8	0.0
	6.6	6.8	6.8	0.0	6.4	6.4	0.0	6.8	6.8	0.0
5	7.3	7.3	7.3	0.0	6.2	6.2	0.0	7.8	7.7	0.0
	6.8	7.3	7.5	0.1	6.0	6.2	0.1	7.4	7.6	0.3
6	10	16.3	17.4	1.2	14.2	15.3	1.0	16.5	17.9	1.4
	10	18.2	17.6	-0.6	13.3	14.4	1.0	15.4	16.6	1.2
7	8.3	7.5	7.8	0.4	4.7	4.8	0.1	5.9	6.2	0.3
	8.3	7.0	7.3	0.4	5.4	5.5	0.1	9.7	10.2	0.4
8	7.6	11.2	11.3	0.0	9.4	9.8	0.4	11.7	11.4	-0.3
	7.6	11.3	10.9	-0.4	9.3	9.4	0.1	10.9	10.8	-0.1
9	14.5	24.8	23.3	-1.5	16.0	15.8	-0.2	23.6	22.2	-1.3
	14.4	25.3	23.7	-1.6	15.2	15.5	0.2	22.0	20.4	-1.6
10	10	16.4	16.2	-0.2	13.4	14.3	0.9	18.8	18.3	-0.5
	10	19.5	18.3	-1.2	13.0	13.2	0.1	14.2	14.7	0.4
11	13.9	23.6	22.2	-1.4	17.6	18.4	0.8	20.3	21.1	0.8
	13.7	22.4	20.5	-2.0	17.5	18.0	0.5	24.0	21.1	-2.9
12	22	36.5	35.5	-1.0	29.6	29.0	-0.6	33.0	32.0	-1.0
	22.2	37.1	34.6	-2.6	30.3	29.8	-0.5	35.4	33.5	-1.9
13	17	16.9	16.2	-0.7	13.1	13.0	-0.1	18.6	19.0	0.4
	17	17.3	16.9	-0.3	12.9	12.8	-0.1	15.7	15.7	0.0
14	5.2	15.2	14.1	-1.1	9.9	10.0	0.1	12.4	12.4	0.0
	5.2	14.1	12.5	-1.6	11.2	11.0	-0.2	13.8	13.1	-0.7
15	5.8	12.8	12.2	-0.6	10.2	10.0	-0.2	13.1	11.8	-1.3
	5.8	17.6	13.1	-4.4	10.0	9.9	-0.1	12.8	12.2	-0.6

Table 6.11: 2032 Forecast Journey Times

Route	Distance	AM Peak			Inter Peak			PM Peak		
		Do-Minimum Time (minutes)	Do-Something Time (minutes)	Difference (minutes)	Do-Minimum Time (minutes)	Do-Something Time (minutes)	Difference (minutes)	Do-Minimum Time (minutes)	Do-Something Time (minutes)	Difference (minutes)
1	8.7	29.9	29.1	-0.8	23.0	24.4	1.4	26.9	26.7	-0.2
	8.7	26.2	29.3	3.1	21.5	23.3	1.9	30.4	31.4	1.0
2	16.4	23.5	23.0	-0.5	20.7	20.6	-0.1	22.4	22.1	-0.3
	16.4	22.9	22.3	-0.5	20.5	20.5	0.0	22.4	22.3	-0.1
3	10.2	16.0	15.7	-0.3	13.0	13.0	0.0	14.5	14.6	0.1
	10.2	14.7	14.7	-0.1	12.9	12.8	0.0	14.7	14.7	0.0
4	6.6	6.9	6.9	0.0	6.5	6.5	0.0	6.9	6.9	0.0
	6.6	6.8	6.8	0.0	6.4	6.4	0.0	6.8	6.8	0.0
5	7.3	8.0	7.9	0.0	6.9	6.8	-0.1	9.6	9.5	-0.1
	6.8	8.3	8.6	0.3	6.7	6.8	0.1	7.9	8.1	0.2
6	10	17.1	18.3	1.1	14.9	15.8	1.0	20.1	18.9	-1.3
	10	22.5	20.4	-2.1	13.6	14.6	1.0	17.1	17.9	0.8
7	8.3	9.5	10.3	0.8	5.4	5.7	0.2	7.1	7.6	0.6
	8.3	8.2	9.4	1.2	6.2	6.4	0.2	13.6	13.8	0.2
8	7.6	12.6	13.1	0.5	9.6	10.8	1.2	14.8	12.6	-2.2
	7.6	14.0	11.2	-2.9	10.0	9.5	-0.5	13.3	11.6	-1.7
9	14.5	27.8	26.2	-1.6	18.6	17.8	-0.8	29.0	26.4	-2.5
	14.4	31.3	29.6	-1.8	17.2	16.7	-0.5	26.4	24.6	-1.8
10	10	19.4	19.8	0.3	13.8	15.7	1.9	21.8	21.4	-0.3
	10	23.3	21.1	-2.2	14.4	13.7	-0.7	15.8	16.8	1.0
11	13.9	25.2	24.2	-1.0	18.2	19.0	0.8	21.7	21.7	0.0
	13.7	27.1	22.6	-4.5	18.7	19.1	0.4	31.6	23.3	-8.3
12	22	38.6	38.3	-0.3	31.1	30.4	-0.8	35.7	33.1	-2.6
	22.2	41.2	38.4	-2.9	31.6	30.8	-0.7	40.6	37.3	-3.3
13	17	21.3	20.3	-1.0	15.7	15.4	-0.3	23.6	23.7	0.1
	17	20.3	20.2	-0.1	14.8	14.6	-0.2	17.9	18.0	0.1
14	5.2	16.7	15.4	-1.4	10.3	10.3	0.0	13.3	13.5	0.1
	5.2	16.4	13.1	-3.4	11.7	11.2	-0.5	14.9	13.6	-1.3
15	5.8	15.7	12.6	-3.1	11.3	10.3	-1.0	15.9	12.4	-3.5