M2.1 Maidenhill, Newton Mearns

Transport Assessment

May 2014

Prepared for:

Maidenhill, Newton Mearns

Prepared by:

Transport Planning Ltd
Forsyth House
93 George Street
Edinburgh
EH2 3ES

www.tranplanworld.co.uk

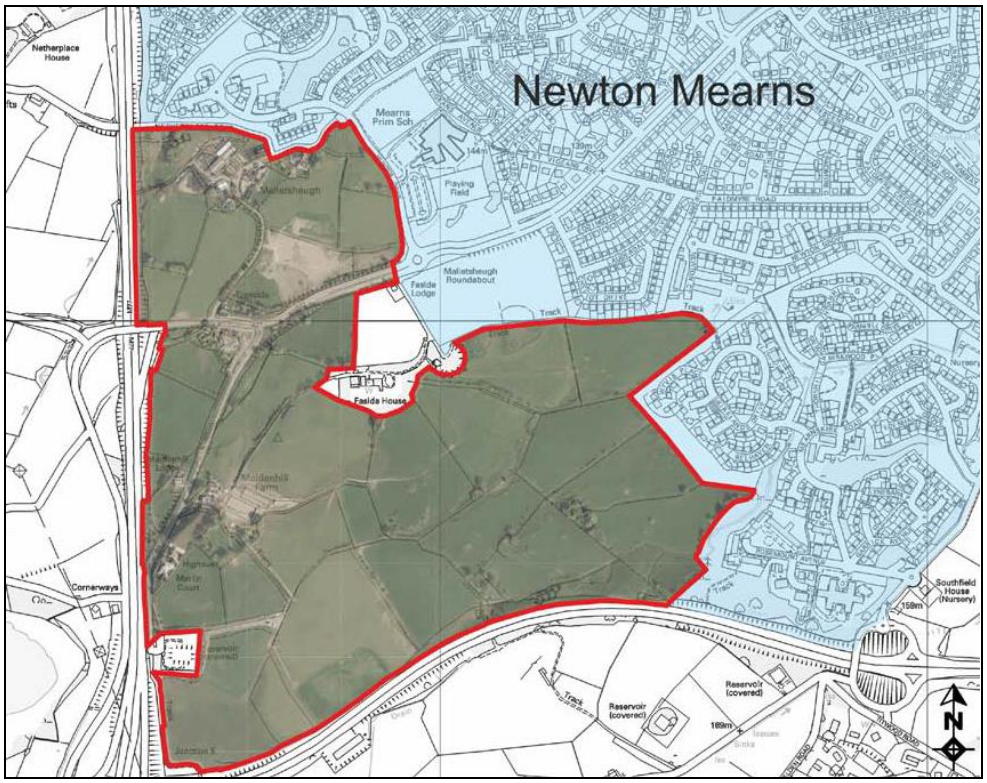
Content Page

1. INTRODUCTION

Background

1.1 Transport Planning Ltd has been appointed to prepare a Transport Assessment to examine travel and transport matters at the Maidenhill site area (denoted M2.1 in the emerging East Renfrewshire Council (ERC) Local Development Plan (LDP)).

1.2 The M2.1 area is illustrated in Map 1 of the emerging Development Framework document prepared for the site as reproduced below.



Extract from Development Framework – Map 1

1.3 The site is bounded on the north partly by existing development at Malletsheugh, Ayr Road (the A77) runs across part of the site area and the site reaches south to the A726, Glasgow Southern Orbital route (GSO).

1.4 A site location plan illustrating the broader area is included as Figure 1 in Appendix A.

1.5 Para 4.5.4 of the emerging LDP notes the following in relation to the development area:-

"In addition the master plan will have to address the following requirements:

• Integration of Maidenhill/Malletsheugh as a sustainable urban expansion with Newton Mearns accommodating:

o Mixed housing comprising a range of house types and tenures including affordable;

o A high quality environment that will attract a variety of employment generating uses including high tech businesses and the potential for live/work units to assist with the creation of a dynamic and competitive local economy, boost local job and improve inward investment opportunities;

o Neighbourhood scale retail;

o Community/leisure facilities (including allotments and a potential site for a religious facility) and

o Education facilities - On site provision of 2 primary schools (non-denominational & denominational) and associated pre-five provision required as an early priority. Capacity can be managed within other schools subject to provision of appropriate development contributions.

• Approximately 1060 homes to be phased 450 homes by 2025 and 610 homes post 2025;

• Provision for a sustainable transport strategy comprising:

o Public transport upgrades;

o Upgrades to Aurs Road, Barrhead to Crookfur Road / M77 link road; and

o Investigate improvements to connectivity between Barrhead and Newton Mearns including the 'Balgray Link' route.

• Enhancement of the Dams to Darnley Country Park by improving access, tourism activity and by encouraging appropriate commercial and leisure activity on key sites.

Report content

1.6 This report adopts text from the emerging Development Framework for the site, comments on off-site linkages for all modes, suggests access solutions for the area and examines these potential site access points and their likely future operation based on the residential component of the masterplan proposals (i.e. approximately 1060 homes – for onerous testing purposes 1100 have been assumed for this report).

1.7 It is envisaged that circa 260 dwellings could be provided on the site areas to the north of Ayr Road, with the balance being provided on the bulk of the site between the A77 and the GSO. This report tests that scenario although final numbers may vary.

1.8 Following this introduction the remainder of the report will consider the following:

- development framework, emerging masterplan and non-car modes: focusses on the role of the development framework and emerging transport themes;
- existing road network: describes the existing road infrastructure in and around the site;
- generation and distribution of the proposed development: discusses the traffic generation and distribution of trips associated with the scheme;
- traffic impact of the proposed development; and
- other matters, summary and conclusions.

2. DEVELOPMENT FRAMEWORK, EMERGING MASTERPLAN AND NON CAR MODES

Development Framework

2.1 A Development Framework (DF) has been prepared to help guide the form of development at the M2.1 site.

2.2 The DF notes on page 28 *"To inform the masterplan developments, it will be essential that a strategic Transport Assessment is undertaken to guide the preferred access solution to all sites, identify the effect on trip generation and congestion and identify any mitigation measures required on existing roads and junctions. There may well be a development contribution required to address any identified issues. The Transport Assessment is being undertaken with the final report expected in February 2014 and this will inform the access solution for the master plans."*

2.3 This Transport Assessment seeks to achieve the requirement laid out on page 28 of the DF and it also borrows text from the DF *(in italics in the sections that follow)* and reports on emerging and ongoing actions to help demonstrate that masterplanning matters are being progressed in line with the DF.

2.4 Transport specific information in the DF commences on Page 80 of that document.

Pedestrians and Cyclists

2.5 Figure 9 of the DF (reproduced below) indicates the general connection points that development of path networks, and connections with existing paths, should enable residents of the new community to reach.

2.6 The masterplan strategy will be developed taking account of these connections, which dovetail closely with the core path network available in the area.

2.7 Broadly, path connections should be available to enable residents of the new M2.1 area to reach Malletsheugh Road; Ayr Road and Hunter Drive.

2.8 Connections should also be formed with Langrig Road to the northeast plus the ability to provide informal recreational pathing under the GSO (using an existing accommodation works underpass) to enable an onward connection with Fenwick Road to the south also exists.

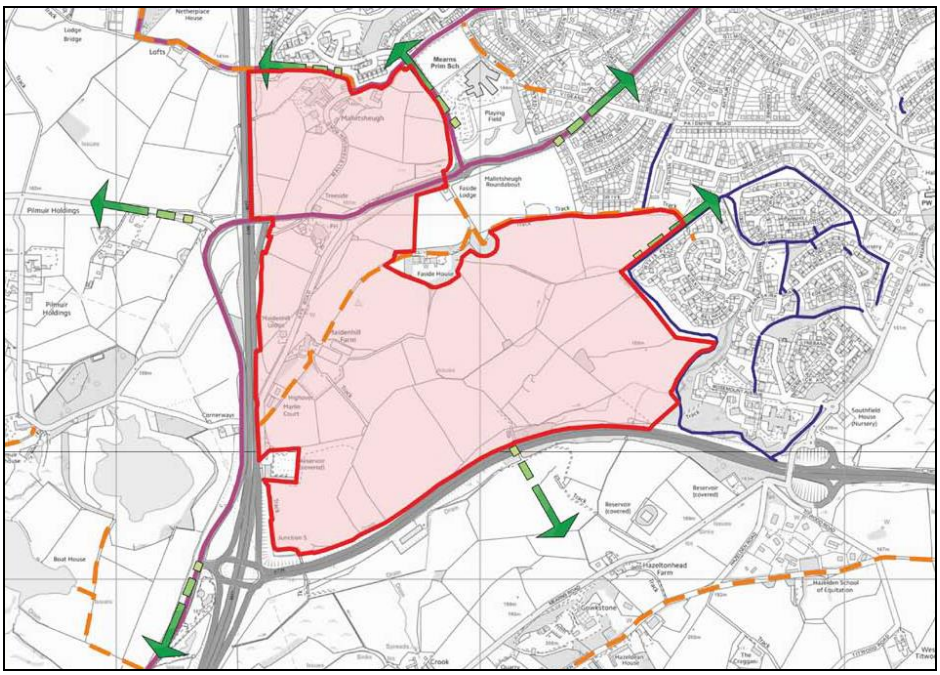


Figure 9 of DF

Existing underpass

Langrig Road

Existing core paths

2.9 Core paths C13, C17 and C18 lie within the M2.1 area. The masterplan will illustrate how these paths will be connected to internal paths to ensure access is provided through and from the site.

2.10 A copy of the Core Paths Plan is included at Appendix A.

Public Transport accessibility

2.11 The DF notes that access for buses into the southern part of the expansion area must be provided. The Transport Assessment must demonstrate how the expansion will achieve such provision.

2.12 The first step in achieving this is to identify solutions for access that would enable buses to enter and leave the site either on a through route or a loop basis with none to minimal cul-de-sac running.

2.13 Two alternatives exist to achieve this. The first of these involves development of a four arm roundabout on the Ayr Road frontage close to (and east of) the Ivy Indian (Malletsheugh Inn). As well as tying in the existing three roads in that general location (i.e. A77 east / A77 west and old Ayr Road), a fourth link can be provided thereby enabling a loop system to be considered for the key internal road layout in the southern site.

2.14 The second alternative involves a connection onto the southeast corner of the GSO terminal roundabout and the associated use of the westmost accommodation works underpass, possibly on a shuttle signal controlled bus gate only basis.

2.15 Indicative illustrations of both these layouts are provided in Appendix F.

2.16 The DF requires that the housing layout should be designed to ensure that, wherever practicable, no house should be more than 400m from a bus stop. Masterplanning of the site and the eventual detailed layouts will take account of this parameter.

2.17 In addition to site penetration for bus services, discussions have begun with Strathclyde Partnership for Transport (SPfT) over the prospect of park and ride provision within the shaded area laid out in Figure 10 of the DF, which is reproduced below.

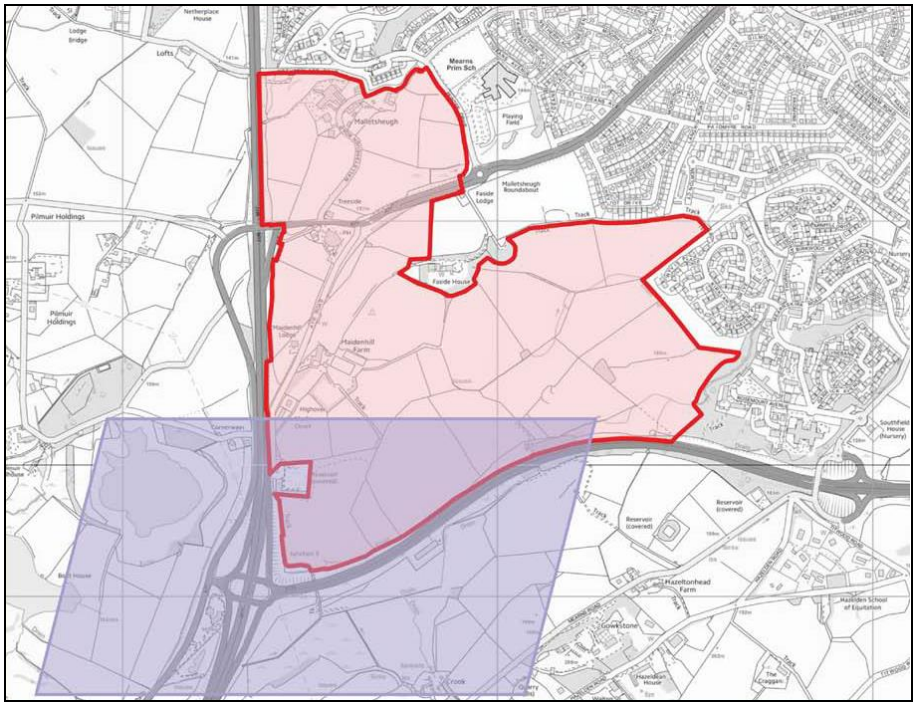


Figure 10 of DF

2.18 The DF also requires that the proposed phasing of bus penetration into the site must be laid out in the Transport Assessment. Phasing of bus services is hinted at elsewhere in the DF at page 43 where it is noted that the sustainable transport solution *"may require a subsidised bus route for 3 years following the completion of the 100th house".*

2.19 The phasing of the wider development remains unknown at this early stage and the phasing of bus services would sensibly follow that of the housing being provided, however, it might be anticipated that the sites to the north of Ayr Road and around the Ivy Indian (Malletsheugh Inn) will experience earlier housing completions as the larger bulk of the site (and this is not guaranteed and makes assumptions in relation to topics beyond the scope of a Transport Assessment) appears to require greater infrastructure provision to commence development.

2.20 These 'front' sites have access to existing bus services though further development on these sites could usefully benefit from enhancements to existing services.

2.21 A contributions mechanism towards supported bus services in the early stages of development would ensure that each 'roof' contributes its equitable share and we would therefore conclude that the development of a funding stream on housing completions, associated with an understanding of development (and therefore road) phasing and ongoing dialogue with ERC and SPfT is therefore appropriate to deal with the future phasing of bus services.

2.22 The DF also notes that *"The Transport Assessment should report on existing rail service provision and the existing capacity of both trains and platforms…."*

2.23 Patterton park and ride remains underused at present and offers opportunities for rail based park and ride. However, reporting and assessment of the capacity of rail / platform lengths etc. should, we consider, be subject to a separate paper that can be assembled closer to the time that dwellings would be provided as changes in rolling stock / timetabled rail provision etc. could render such reporting now obsolete.

2.24 Additionally, we are aware that the M2.2 site (Barrhead South) is examining the possibility of an additional rail halt in that general area and understanding progress with this would be essential to understanding its impact on the stations at Patterton and Whitecraigs.

New pedestrian and cyclist spine routes

2.25 The DF, at page 86, notes that *"To ensure easy access* [principally across Ayr Road] *the developer will provide new pedestrian and cycle road crossings at appropriate locations to be identified in the Transport Assessment."*

2.26 An existing crossing point just to the east of the old Ayr Road / Ayr Road junction is available with dropped kerbs permitting crossing of the road. This link is used by existing residents in the Hunter Drive area to reach the Ivy Indian.

Existing dropped kerb crossing

2.27 This desire line will remain (though it is likely to be relocated a short distance to the east) and as can be seen in the photograph, it also provides a link between the cycle lanes that are marked on Ayr Road (part of the National Cycle Network).

2.28 It is therefore appropriate that a signal controlled toucan crossing point be implemented on the stretch of the A77 west of the Hunter Drive roundabout, at a location to be determined following further consideration of emerging road layouts.

Main site access routes

2.29 The DF identifies that *"Vehicular access to the site must be examined from the strip areas shown in Figure 11."* Figure 11 is reproduced below.

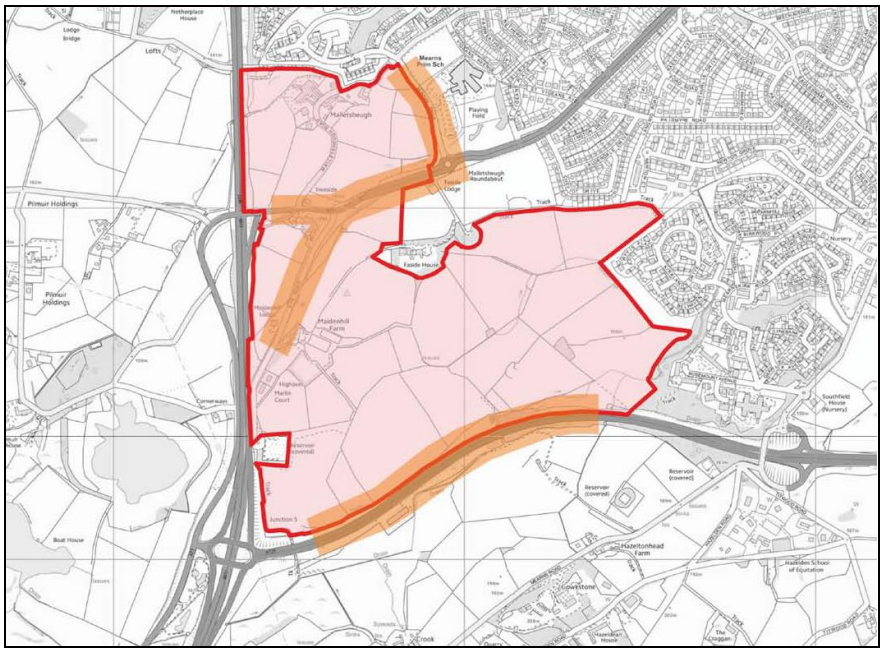


Figure 11 of DF

2.30 The DF notes that:-

- These strip areas permit consideration of a possible junction on the GSO – most likely capitalising on an existing underpass.
- Access points on Ayr Road, most likely in the form of roundabouts, should also be examined.
- Subject to capacity testing, it may also be possible for the existing junction at the Ivy Indian (formerly the Malletsheugh Inn) to remain as presently configured.
- Hunter Drive affords an access opportunity to the northern part of the site (though any selection of access here must respect the existing school).
- For the southern site area, a minimum of two access/egress points must be provided and the requirement for the second access to be operational will be triggered after the construction of the 300th unit.

2.31 Information on emerging access solutions is contained later in this report.

3. EXISTING ROAD NETWORK AND OTHER BACKGROUND

Introduction

3.1 This chapter contains details of the surrounding road network in the vicinity of the application site.

Existing road network

A77

3.2 The wider M2.1 site is crossed in part by the A77 Ayr Road, which lies within the 40mph speed limit in the vicinity of the site.

3.3 The A77 affords onward northbound connections towards Mearns Cross, Giffnock and Glasgow.

3.4 More local to the site area, the old alignment of the A77 (Ayr Road) lies to the west of the site and provides a direct linkage onto the A77 immediately east of the old Malletsheugh Inn.

3.5 Heading southwest from the site the A77 affords connection with the M77 which is the main route for trips to Kilmarnock and Glasgow. The GSO linking towards East Kilbride and the M74 can also be reached.

3.6 The A77 close to Mearns Cross is relatively lightly trafficked even at peak times.

3.7 The extract from the permanent counter database included overleaf illustrates peak AM northbound flow of 662 vehicles and peak PM southbound flow of 731 vehicles (two way flows are around 1200 at peak times) - the notional capacity of an urban traffic lane is some 1400 vehicles per hour and of a two lane road it is therefore some 2800 vehicles per hour.

3.8 At the location of this counter, at peak times, this part of the network is therefore operating at around 40% of its practical capacity.

M77 and GSO

3.9 The M77 forms a motorway connection between Glasgow and Kilmarnock. Northwards from the M2.1 site, the M77 (in keeping with other motorway approaches to cities throughout Scotland) experiences peak time weekday congestion. The counter database indicates traffic volumes of 2936 trips in the morning peak hour towards Glasgow (north of Junction 4) (Counter ref Site NTC00276; M77 868N M at 07860).

3.10 Peak AM flow southbound at the same location (Counter NTC00277) is 1889.

3.11 The Glasgow Southern Orbital route (GSO) is operated by Connect Roads and it forms a connection between East Kilbride and the M77. The GSO also has permanent counters installed with peak time traffic flow of around 1300 vehicles in a single direction – around 40% of running capacity of two lanes.

SITE	JTC00253
LOCATION	A77 Newton Mearns
X	254070
Y	655955
Direction 1	N
Direction 2	S
Average Daily Flow	8346
Average Daily August Flow	10437
AM Peak Hour Flow	662
PM Peak Hour Flow	731
Further Data	Historical Data for this Site

Extract from counter database – A77 north of Mearns Cross

Local routes

3.12 Local roads that cross or bound the site area include:-

- Malletsheugh Road – a single carriageway road subject to the national speed limit, rural in character and with varying alignment that emerges at its southern end onto Ayr Road a short distance west of the Ivy Indian (Malletsheugh Inn);

- Ayr Road (old alignment) – this single carriageway road travels southwards, east of the Ivy Indian (Malletsheugh Inn) and is now stopped up at its southern end; and

- Hunter Drive – a residential road affording northwards access into the existing developed area of Malletsheugh from an existing roundabout on Ayr Road. Hunter Drive is subject to a 30mph speed limit although traffic using the route can be observed to travel slower than this owing to the alignment and calming that exists.

Malletsheugh Road

Hunter Drive

Ayr Road A77

Old Ayr Road alignment

Scope of study area and existing traffic conditions

3.13 Residential developments typically generate the largest amount of traffic during the weekday AM and PM peak periods. Following consultation with East Renfrewshire Council (ERC) roads, agreement was reached that the weekday AM and PM peaks should be considered.

3.14 Initial discussion with ERC indicated the scope of the study should include consideration of the following junctions:

- M77/ GSO (A726) terminal roundabout (4 arms);
- A77/ link from terminal roundabout priority;
- A77/ Malletsheugh Road (towards the B769 Dodside Road) priority (west of the M77 overbridge);
- A77/ Malletsheugh Road (towards Netherplace Road) priority (east of the M77 overbridge);
- A77 Ayr Road/ Hunter Drive roundabout;
- Hunter Drive/ Mallots View priority (for calculating residential trip rates);
- A77 Ayr Road/ St Vigeans Avenue/ Paidmyre Road crossroads;
- Ayr Road/ Barrhead Road/ Gilmourton Crescent traffic signals (Mearns Cross);
- A77 Ayr Road/ Eaglesham Road traffic signals (Mearns Cross);
- Barrhead Road/ Westacres Road (west) priority;
- Barrhead Road/ Westacres Road (east) priority;
- B769 Aurs Road/ B769 Stewarton Road/ Barrhead Road roundabout;
- Eaglesham Road/ Paidmyre Crescent (east) priority;
- Mearns Road/ Eaglesham Road priority;
- B769 Stewarton Road/ Capelrig Road/ Patterton Park & Ride car park roundabout;
- B769 Stewarton Road/ Crookfur Road/ Link Road to M77 roundabout; and
- Link Road/ Waitrose and Retail Park/ M77 junction 4 off and on slips/ Hotel roundabout.

3.15 In addition to the above, M77 Automatic Traffic Counter information was also to be obtained for the purposes of carrying out merge, diverge and percentage impact calculations.

3.16 Classified junction surveys at all junction locations noted in paragraph 3.14 have been carried out.

3.17 The junctions noted above have had development traffic assigned to them (this is explained later in the report) and percentage impact calculations made which has resulted in a few of these junctions falling under the threshold for formal testing.

3.18 The weekday AM and weekday PM peak periods have been extracted from these junction surveys. The weekday AM network peak hour period for the Ayr Road corridor was found to occur between 0800 and 0900 with the weekday PM peak hour found to occur between 1715 and 1815.

3.19 The relative importance in the network of the GSO terminal roundabout meant that the junction peak was extracted for that location. The junction peak was found to be (AM) 0730 to 0830 and (PM) 1645 to 1745.

3.20 The turning movements at the junctions within the study area during these two peak hours are shown in Diagrams 1a&b respectively (Appendix B). The 2013 traffic count data was fully classified by vehicle type, with HGVs and PCVs shown in Diagrams 2a&b (Appendix B). This has allowed the count data to be converted into standard Passenger Car Units (PCU's) for the purposes of assessment as shown in Diagrams 3a&b (Appendix B).

Years of assessment and traffic growth

3.21 The DF notes at page 85 that *"Assessment of potential trip generation from the M2.1 area will require submission of a full Transport Assessment (TA), consistent with 'Transport Assessment Guidance'."*

3.22 The Government publication 'Transport Assessment Guidance' notes at para 2.9 the following:-

- The assessment years will be year of opening or completion for developments with short construction periods (say up to 2 years), and year of opening (or first full year) plus year of completion for developments which are phased over 3 or more years.

- No future year transport growth will be applied beyond year of opening or first year of assessment. The assumption is that any growth prior to opening year should apply since nothing is being done as a consequence of the development to influence this, but that beyond that time the emphasis should be on the applicant/developer addressing the impacts of their additional transport movements and ensuring that measures are in place to deal with those specific impacts.

3.23 The practical consequence of that advice is that traffic growth will be applied to surveyed background flow up until the year of opening of the development and then development traffic will be added to that to establish the traffic profile for junction testing for the complete development.

3.24 The only circumstances that would warrant interim capacity testing would be if junction upgrades were proposed to be developed on a phased basis and that is not presently the case at the M2.1 site.

3.25 Assessment years will therefore be '2015' (year of opening) and 'year of completion' (i.e. no specific calendar year but 2015 traffic plus development traffic).

Traffic growth

3.26 Traffic growth is linked to the economy and an element of this is directly attributable to the likelihood of future development within the surrounding area. Due to the nature of the adjacent area, the National Road Traffic Forecasts (NRTF) 'Low' growth factor, obtained from the Department of the Environment, Transport and the Regions, is considered appropriate and will be used to predict future background traffic levels on the local road network for the future year of opening. The 'low' growth factor between the years of 2013 and 2015 corresponds to an overall growth factor of approximately 1.023% and this will be applied to the 2013 flows to give 2015 predicted traffic flows. A breakdown of the NRTF estimate used is shown in Table 3.1 below.

Table 3.1 – NRTF 'Low' Growth Estimates

Growth Period	Percentage Increase
2013 – 2015 (2 Years Growth)	1.023%

Committed developments

3.27 ERC confirmed during previous discussions that there are no committed developments that should be considered within the Transport Assessment.

Other scoping matters

3.28 A meeting to discuss scoping of this report was held with ERC and Transport Scotland on 5th November 2013. Several other meetings to discuss the content of the report have also been held with ERC (and SPfT). The key outcomes of these meetings that have fed into this reporting are:-

- Use of an actual residential area survey to assess likely trip rates for the new area.
- 5% of two way flow acting as a threshold on network extents for capacity testing.
- The extent of the surveyed network.
- Information on bus patterns and possible park and ride provision.

3.29 These facets of scoping have fed into this report and are commented on as required.

Summary

3.30 The extent of the study area has been agreed with ERC. The principal road infrastructure in the vicinity of the application has been presented.

3.31 The 2013 base traffic flows have been projected to 2015 design year flows using NRTF factors.

3.32 The 2015 weekday AM and PM projected traffic flows are shown in Diagrams 4a&b (Appendix B).

4. GENERATION AND DISTRIBUTION OF THE PROPOSED DEVELOPMENT

Introduction

4.1 Discussion on the volume and distribution of the traffic likely to be generated by the proposed residential development, and likely to impact on the study network, is presented in this Chapter.

4.2 Two approaches have been used to estimate vehicular trips from the proposed residential development. Firstly, the people trip approach has been used which provides an estimation of the level of trip generation to and from the development by a range of travel modes, while secondly a traffic survey of the residential area served by Mallots View has been carried out.

People trip generation

People trip modal split

4.3 It is useful to understand the existing travel to work habits of the residents of Newton Mearns to allow a modal split to be determined for new residential developments. Using the SCROL website, the "travel to work and place of study" modal splits have been extracted for Scotland, the East Renfrewshire Council area and also the "Electoral" ward that the application site falls within, the Mearns ward, and these are shown in Table 4.1 below.

Table 4.1 – Modal Split for Journey to Work Trips

Travel Mode	Scotland	East Renfrewshire Council	Mearns Ward
Walk	23.39%	14.57%	9.86%
Cycle	1.34%	0.45%	0.19%
Bus	16.53%	14.5%	15.67%
Rail	3.33%	8.19%	4.13%
Car	42.4%	48.12%	52.79%
Car Passenger	12.1%	13.55%	16.84%
Other	0.91%	0.62%	0.51%

4.4 The modal splits for Scotland, East Renfrewshire Council and Mearns electoral ward are shown in more detail within Appendix C.

4.5 Travel by bus modal split for the Mearns ward is similar to the whole of the East Renfrewshire Council area and also Scotland wide, although it is clear that less people walk and slightly more drive (and although rail travel is less than the EREC percentage, it is greater than the Scotland equivalent).

4.6 It is considered appropriate for the Mearns modal splits to be used to predict the people trips associated with the proposed residential development.

4.7 An interrogation of the TRICS database for Land Use '03 – Residential' and Categories 'A Housing Privately Owned' and 'M – Mixed Private/ Non-Private

Housing' multi-modal sites has also resulted in the people trip rates as shown in Table 4.2 below.

Table 4.2 – People Trip Rates					
Time Period	**Land Use**	**Range (No. of Units)**	**People Trip Rates**		
			Arrive	**Depart**	**Total**
Weekday AM Peak (0800-0900)	Houses Privately Owned	206 to 437	0.186	0.833	1.019
Weekday AM Peak (0800-0900)	Mixed Private/ Non-Private Housing	253 to 500	0.139	0.648	0.787
Weekday PM Peak (1700-1800)	Houses Privately Owned	206 to 437	0.536	0.312	0.848
Weekday PM Peak (1700-1800)	Mixed Private/ Non-Private Housing	253 to 500	0.470	0.207	0.677

4.8 Full TRICS output for the 'Residential – Housing Privately Owned' and 'Residential – Mixed Private/ Non-Private Housing' multi-modal total people weekday trip rates is included within Appendix D.

Estimation of generated people trips

4.9 The predicted people trips at the proposed residential development during the weekday AM and PM peak hours, using the modal split in Table 4.1, in conjunction with the people trip rates in Table 4.2 for "Houses Privately Owned" are shown in Table 4.3.

Table 4.3 – Proposed People Trips						
Travel Mode	**Weekday AM Peak (0800-0900)**			**Weekday PM Peak (1700-1800)**		
	Arrive	**Depart**	**Total**	**Arrive**	**Depart**	**Total**
Walk	20	90	111	58	34	92
Cycle	0	2	2	1	1	2
Bus	32	144	176	92	54	146
Train	8	38	46	24	14	39
Car Driver	108	484	592	311	181	492
Car Passenger	34	154	189	99	58	157
Other	1	5	6	3	2	5

4.10 The predicted people trips to the proposed residential development during the weekday AM and PM peak hours, using the modal split in Table 4.1, in conjunction with the people trip rates in Table 4.2 for "Mixed Private/ Non-Private Housing" are shown in Table 4.4.

Table 4.4 – Proposed People Trips						
Travel Mode	Weekday AM Peak (0800-0900)			Weekday PM Peak (1700-1800)		
	Arrive	Depart	Total	Arrive	Depart	Total
Walk	15	70	85	51	22	73
Cycle	0	1	2	1	0	1
Bus	24	112	136	81	36	117
Train	6	29	36	21	9	31
Car Driver	81	376	457	273	120	393
Car Passenger	26	120	146	87	38	125
Other	1	4	4	3	1	4

4.11 Table 4.3 shows that a total of 592 vehicular trips (two-way) are predicted during the weekday AM peak hour and 492 during the weekday PM peak hour, whilst table 4.4 shows that a total of 457 vehicular trips (two-way) are predicted during the weekday AM peak hour and 393 during the weekday PM peak hour.

Residential area traffic survey

4.12 In addition to the people trip approach laid out above, the traffic survey of Mallots View has allowed vehicular trip rates to be established for the 156 privately owned residential properties accessed via Mallots View, as shown in Table 4.5 below.

Table 4.5 – Vehicular Trip Rates Based on Traffic Surveys						
Travel Mode	Weekday AM Peak (0800-0900)			Weekday PM Peak (1700-1800)		
	Arrive	Depart	Total	Arrive	Depart	Total
Car Driver (Mallots View)	0.122	0.365	0.487	0.423	0.173	0.596

Comparison of people trip and residential area traffic survey approaches

4.13 It can be seen in Table 4.6 below that using the people trip approach provides results slightly higher (all private housing) and slightly lower (mixed housing) than the surveyed vehicular trip rates from the existing residential area at Mallots View.

Table 4.6 – Vehicular Trip rate comparison						
Travel Mode	Weekday AM Peak (0800-0900)			Weekday PM Peak (1700-1800)		
	Arrive	Depart	Total	Arrive	Depart	Total
People trips – all private housing	0.098	0.440	0.538	0.283	0.165	0.448
Surveyed Veh Trip Rate	0.122	0.365	0.487	0.423	0.173	0.596
People Trips – mixed tenure	0.073	0.342	0.415	0.248	0.109	0.357

4.14 As the development proposal will consist of mixed tenure housing with a proportion of the units being for the affordable/ housing association market, then it is considered that using the surveyed vehicular trip rate data for junction assessment during the weekday AM and PM peak hours is robust.

Estimation of generated vehicular trips

4.15 The predicted vehicular trips at the proposed residential development during the weekday AM and PM peak hours, using the surveyed vehicle trip rates from Table 4.6, are shown in Table 4.7 below.

Table 4.7 – Proposed Vehicle Trips

Travel Mode	Weekday AM Peak (0800-0900)			Weekday PM Peak (1700-1800)		
	Arrive	Depart	Total	Arrive	Depart	Total
Car	134	402	536	465	190	655

4.16 Table 4.7 shows that a total of 536 vehicular trips (two-way) are predicted during the weekday AM peak hour and 655 during the weekday PM peak hour.

Trip distribution

4.17 The use of a gravity model methodology is considered appropriate for establishing a distribution pattern for assignment of new vehicular trips generated by residential development. An employment gravity model has been produced based on the "Workplace Population" data extracted from the 2001 National Census on the SCROL website for the anticipated catchment, which assumes up to a 60 minute drive time and includes electoral wards and settlements in East Ayrshire, East Dunbartonshire, East Renfrewshire, Falkirk, Fife, Glasgow City, Inverclyde, North Ayrshire, North Lanarkshire, Renfrewshire, South Lanarkshire, Stirling, West Dunbartonshire and West Lothian Council areas.

4.18 The route of each electoral ward/ settlement to and from the site is summarised in Table 4.8 below.

Table 4.8 – Distribution of Vehicular Trips

Electoral Ward/ Settlement	Route	%
Muirkirk, Falkirk Council, Kincardine, Glasgow East, Glasgow South East, North Lanarkshire, South Lanarkshire, Stirling, West Lothian	A726 GSO (East)	21.66
East Dunbartonshire, Glasgow North West, Glasgow North, Glasgow North East, Glasgow Central, Glasgow South West, Glasgow West, Inverclyde, North Lanarkshire, Renfrewshire, Strathblane, West Dunbartonshire	M77 (north)	36.92
East Ayrshire, North Ayrshire, South Ayrshire	M77 (south)	5.93
Crosshouse, Dunlop, Kilmaurs, Stewarton, Barrhead, Uplawmoor, Kilmacolm, Neith, Dalry, Kilbirnie	Malletsheugh Road (west)	1.56
Barrhead	Aurs Road	0.62
Mearns	Paidmyre Road	0.59
Greenfarm	Hunter Drive	0.95
Greenfarm	Barrhead Road	1.27
Thornliebank, Glasgow Central, Glasgow South West, Glasgow South	Stewarton Road	7.97
Giffnock, Crookfur, Broom, Glasgow Central, Glasgow South, Glasgow South East	A77 Ayr Road (north)	12.10
Clarkston & Busby, Kirkhill, Mearns, Waterfoot, Glasgow Central, Glasgow South East	Mearns Road (north)	10.28
Eaglesham	Mearns Road (south)	0.15

4.19 The full employment gravity model is included in Appendix E.

Design year projected traffic flows

4.20 The generated traffic flows for the proposed residential development during the weekday AM and weekday PM peak hours are shown in Diagrams 5.1a&b to 5.4a&b (Appendix B) for each land parcel, with Diagrams 6a&b (appendix B) showing the total generated traffic flows for up to 1,100 dwellings in the design test year.

4.21 The trips associated with the proposed residential development have also been added to the 2015 projected traffic flows to create design year total traffic flows for the weekday AM and PM peak periods. The total design year traffic flows are shown in Diagrams 7a&b (Appendix B).

Summary

4.22 The trip rates and distribution for the proposed development have been derived from use of Census data, TRICS information and actual surveyed traffic flows.

4.23 The total future year traffic flows, including the proposed development, have been predicted to allow detailed analysis to be undertaken where appropriate.

5. SITE ACCESS AND TRAFFIC IMPACT OF THE PROPOSED DEVELOPMENT

Introduction

5.1 This Chapter presents the capacity assessment of the junctions to be tested on the surrounding road network.

Junction analysis

5.2 The performance of the junctions has been measured using three standard outputs for ARCADY and PICADY - Ratio of Flow to Capacity (RFC), Maximum Queuing (Q) and Inclusive Queuing Delay (IQD), while for LINSIG the standard outputs are Degree of Saturation (DoS), Mean Maximum Queue (MMQ), Total Delay (Delay) and Practical Reserve Capacity (PRC).

5.3 Where possible, geometric parameters of the junctions were measured on-site, with the physical layouts confirmed by OS mapping. The sketches, showing the majority of the layouts of each junction tested in this section of the report (and also used to establish the other modelling parameters) are included at a scale of 1:500 or 1:1,000 in Appendix F.

5.4 The output files for the ARCADY 7.0, PICADY 5.0 and LINSIG assessments are included in electronic format within Appendix G.

5.5 The scenarios that have been tested are as follows:

1. 2013 weekday AM Peak surveyed
2. 2015 weekday AM Peak projected
3. Design year weekday AM Peak projected + proposed residential development
4. 2013 weekday PM Peak surveyed
5. 2015 weekday PM Peak projected
6. Design year weekday PM Peak projected + proposed residential development

Site access junctions

5.6 Alternative access junctions to enable vehicular access to the M2.1 site area have been prepared as follows (sketches in Appendix F):

- TP115/SK/200 – this illustrates a simple T access into the Mactaggart and Mickel area off Hunter Drive. The junction is located at a point on Hunter Drive where adequate sightlines in both directions can be made available.

- TP115/SK/201 – this illustrates a second, or alternative, access point into the Mactaggart and Mickel area again off Hunter Drive, this time located between the Mearns primary school access points.

- TP115/SK/202 – it is not presently possible to develop full leftward on exit sightline from the Malletsheugh Road / Ayr Road T junction. This sketch shows how the junction could be realigned slightly farther westwards to enable this parameter to be met. In the event passing speeds are lowered through urbanisation of the Ayr Road frontage, then the junction may be able to remain as presently located. This link affords access to Mr Pollok's land.

- TP115/SK/203 – sketch 203 shows how the Ivy Indian site area and the parcel of ground to the southwest could be simply accessed by two simple T junctions on the old Ayr Road alignment. This affords access to the Mathieson Melrose area. The development of these access points could occur prior to or concurrent with the construction of the roundabout shown in SK204. Later in this report, a capacity sensitivity test assesses the possibility of the existing old Ayr Road / Ayr Road junction remaining in its existing guise as a simple T.

  It should be noted, however, that if the old Ayr Road / Ayr Road junction were to remain in simple T format, then upon occupation of dwelling number 301 in the overall area to the south of Ayr Road, a second point of vehicular access would be required.

- TP115/SK/204 – this illustrates construction of a four leg roundabout on the Ayr Road frontage and this junction would permit two points of access to be provided into the bulk of the site area controlled by CALA and Taylor Wimpey. We are aware of the embankment in this area and T Lawrie Consulting Engineers have examined the constructability of this junction on behalf of CALA and Taylor Wimpey. Development of this access would permit public transport to serve the site on a loop basis.

  An alternative arrangement for the existing junction located outside the Ivy Indian would see a change of priority implemented such that the old Ayr Road continued southwards looping into the bulk of the site area controlled by CALA and Taylor Wimpey. Such an arrangement would then require the existing Ayr Road to 'give way' at a realigned T junction. This arrangement is shown in sketch TP115/SK/208.

  Sketches TP115/SK/209 and 210 then illustrate, firstly (SK209), how the old Ayr Road alignment could continue as it presently does heading southwards with a 'T' junction taken on its east side to serve the main Maidenhill site area whilst, secondly (SK210), the old Ayr Road alignment could be adjusted to leave its current alignment and sweep south-eastwards to form the 'main road' into the main site area, with the remaining spur of the old Road joining it at a new 'T'.

- TP115/SK/205 – this arrangement, which would see an additional arm being constructed onto the GSO terminal roundabout, closely mirrors that approved previously as part of a Motorway Services Approval. The ability to open up the area to the southeast of the junction for park and ride is actively being considered and it would then appear logical to use the nearby underpass, possibly in association with shuttle signals and a bus gate, to permit public transport access into the M2.1 site.

- TP115/SK/206 – finally, there is also the possibility of providing a left in / left out arrangement onto the GSO. This arrangement would be located symmetrically about the existing underpass located some 900m east of the GSO terminal junction. Alternatives to this layout would exist. The Transport Assessment does not test the capacity of this arrangement as its only impact would be on eastbound merge and diverge flow and the background traffic recorded on the GSO indicates that the arrangement could be provided in line with existing and projected traffic usage.

5.7 The approximate location of these access points is illustrated in Figure 3, Appendix A.

M77 Merges and Diverges

5.8 Traffic from the development has been assigned to the M77 such that a degree of traffic joins the M77 at junction 5 (the GSO junction) and a degree of traffic joins the M77 at junction 4.

5.9 This means that the greatest impact in terms of traffic volumes would be felt north of Junction 4.

5.10 Table 5.1 below summarises M77 traffic data either from surveys or from the permanent counter database and compares it to projected traffic volumes arising from the development.

Table 5.1 – M77 mainline, merge and diverge flow

Chart in Appendix H		Scenario	AM peak		PM peak		
			Counter Database (D) or Count (C)	Development	Counter Database (D) or Count (C)	Development	Percentage Impact
MD1 (AM)	MD2 (PM)	2015 north of J5 northbound (mainline) (merge)	2416 (D)	99	1815	47	3.5%
MD3 (AM)	MD4 (PM)	2015 north of J4 northbound (mainline) (merge)	2936 (D)	148	2167	70	4.3%
DD1 (AM)	DD2 (PM)	2015 north of J5 southbound (mainline) (diverge)	1645 (D)	33	2522	115	3.6%
DD3 (AM)	DD4 (PM)	2015 north of J4 southbound (mainline) (diverge)	1889 (D)	50	3210	172	4.4%
MD1 (AM)	MD2 (PM)	2015 J5 on ramp (merge)	380 (C)	99	692 (C)	47	13.6%
MD3 (AM)	MD4 (PM)	2015 J4 on ramp (merge)	604 (C)	49	392 (C)	23	7.3%
DD1 (AM)	DD2 (PM)	2015 J5 off ramp (diverge)	740 (C)	33	768 (C)	115	9.8%
DD3 (AM)	DD4 (PM)	2015 J4 off ramp (diverge)	359 (C)	17	1028 (C)	57	5.8%

5.11 This data has also been used to enable merge and diverge diagram checking and the relevant charts illustrating the check are included in Appendix H.

5.12 The diagrams illustrate that, save for the Junction 4 citybound merge, the existing merge and diverge arrangements are not impacted upon by development traffic. The development traffic impact at Junction 4 northbound during the AM peak period is projected to be 5% and when the two way impact is considered, the impact falls to below that figure. Para 3.28 indicates that the threshold over which assessment is required is 5%.

Traffic capacity calculations

Hunter Drive/ Malletsheugh land parcel north access priority junction

5.13 The indicative layout of this priority junction is shown in Sketch TP115/SK/200 (Appendix F). Table 5.2 below summarises the PICADY results for scenarios 3 and 6.

Table 5.2 – Summary of PICADY Analysis Results (Hunter Drive / Malletsheugh parcel south priority)

Scenario	Hunter Drive (south)			Site Access			Hunter Drive (north)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC (pcu)	Queue (min/ pcu)	Delay	RFC	Queue (pcu)	Delay (min/ pcu)	
3	-	-	-	0.134	0.15	0.14	0.004	0.00	0.08	0.02
6	-	-	-	0.061	0.06	0.13	0.016	0.02	0.10	0.01

5.14 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.134 and a 0 vehicle queue occurring on the site access approach.

Hunter Drive/ Malletsheugh land parcel south access priority junction

5.15 The indicative layout of this priority junction is shown in Sketch TP115/SK/201 (Appendix F). Table 5.3 below summarises the PICADY results for scenarios 3 and 6.

Table 5.3 – Summary of PICADY Analysis Results (Hunter Drive / Malletsheugh parcel south priority)

Scenario	Hunter Drive (south)			Site Access			Hunter Drive (north)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC (pcu)	Queue (min/ pcu)	Delay	RFC	Queue (pcu)	Delay (min/ pcu)	
3	-	-	-	0.134	0.15	0.14	0.004	0.00	0.08	0.02
6	-	-	-	0.061	0.06	0.13	0.016	0.02	0.10	0.01

5.16 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.134 and a 0 vehicle queue occurring on the site access approach.

Realigned Malletsheugh Road/ Ayr Road junction

5.17 The indicative layout of this priority junction is shown in Sketch TP115/SK/202 (Appendix F). Table 5.4 below summarises the PICADY results for scenarios 3 and 6.

Table 5.4 – Summary of PICADY Analysis Results (Malletsheugh Road / Ayr Road priority)

Scenario	Ayr Road (west)			Malletsheugh Road			Ayr Road (east)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC (pcu)	Queue (min/ pcu)	Delay	RFC	Queue (pcu)	Delay (min/ pcu)	
3	-	-	-	L 0.044 R 0.081	0.05 0.09	0.12 0.18	0.017	0.02	0.08	0.01
6	-	-	-	L 0.027 R 0.042	0.03 0.04	0.12 0.18	0.062	0.10	0.13	0.01

5.18 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.081 and a 0 vehicle queue occurring on the Malletsheugh Road right turn movement.

Ayr Road/ new development access four leg roundabout

5.19 The emerging layout of the Ayr Road/ new development access roundabout is shown in Sketch TP115/SK/204 (Appendix F). Table 5.5 below summarises the ARCADY results for scenarios 3 and 6.

Table 5.5 – Summary of ARCADY Analysis Results (Ayr Road/ new development access roundabout)

Scenario	Ayr Road (east)			Site Access			Old Ayr Road			Ayr Road (west)			
	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	
3	0.213	0.27	0.03	0.275	0.38	0.07	0.02	0.021	0.06	0.355	0.55	0.07	
6	0.220	0.28	0.03	0.123	0.14	0.06	0.009	0.01	0.05	0.455	0.83	0.08	

5.20 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.455 and 1 vehicle queue occurring on the Ayr Road (west) approach.

A77 Ayr Road/ Old Ayr Road priority

5.21 The existing layout of the A77 Ayr Road/ Old Ayr Road priority has been analysed and Table 5.6 below summarises the PICADY results for scenarios 3 and 6.

Table 5.6 – Summary of PICADY Analysis Results (A77 Ayr Road/ Old Ayr Road priority)

Scenario	A77 Ayr Road (east)			Old Ayr Road			A77 Ayr Road (west)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC	Queue (pcu)	Delay (min/ pcu)	RFC	Queue (pcu)	Delay (min/ pcu)	
3	-	-	-	0.769	3.09	0.36	0.148	0.32	0.16	0.11
6	-	-	-	0.379	0.60	0.19	0.516	1.57	0.20	0.08

5.22 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.769 and 3 vehicle queue occurring on the A77 Ayr Road (east) approach.

Ayr Road/ Hunter Drive roundabout

5.23 The existing layout of the Ayr Road/ Hunter Drive roundabout is shown in Sketch TP115/SK/101 (Appendix F). Table 5.7 below summarises the ARCADY results for scenarios 1 to 6.

Table 5.7 – Summary of ARCADY Analysis Results (Ayr Road/ Hunter Drive roundabout)										
Scenario	Ayr Road (west)			Hunter Drive			Ayr Road (east)			
	RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay	
		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)	
1	0.202	0.25	0.05	0.279	0.38	0.07	0.202	0.25	0.03	
2	0.208	0.26	0.05	0.285	0.40	0.07	0.208	0.26	0.03	
3	0.320	0.47	0.05	0.373	0.59	0.07	0.232	0.30	0.03	
4	0.188	0.23	0.04	0.114	0.13	0.06	0.135	0.16	0.03	
5	0.193	0.24	0.04	0.117	0.13	0.06	0.138	0.16	0.03	
6	0.266	0.36	0.05	0.191	0.24	0.07	0.214	0.27	0.03	

5.24 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.320 and no vehicle queue occurring on the Ayr Road (west) approach.

Mearns Cross

5.25 The existing layout of the Ayr Road/ Barrhead Road/ Gilmourton Crescent and Ayr Road/ Eaglesham Road linked traffic signal junctions is shown in Sketches TP115/SK/102 and 103 (Appendix F). Tables 5.8 and 5.9 below summarises the LINSIG results for scenarios 1 to 6.

Table 5.8 – Summary of LINSIG Analysis Results (Ayr Road/ Barrhead Road/ Gilmourton Crescent Traffic Signals)													
Scenario	Ayr Road (east)			Gilmourton Crescent			Ayr Road (west)			Barrhead Road			
	DoS	MMQ	Total Delay	DoS	MMQ	Total Delay	DoS	MMQ	Total Delay	DoS	MMQ	Total Delay	PRC
	(%)	(pcu)	(pcu/hr)	(%)	(pcu)	(pcu/hr)	(%)	(pcu)	(pcu/hr)	(%)	(pcu)	(pcu/hr)	(%)
1	LS 24.1	0.5	0.3	26.5	1.2	0.7	75.2	12.8	6.7	49.9	8.9	3.8	19.6
	R 72.9	8.6	3.7										
2	LS 24.7	0.6	0.3	26.5	1.2	0.7	76.9	13.4	6.9	51.1	9.1	3.9	17.1
	R 74.5	9.3	3.9										
3	LS 27.1	0.8	0.4	24.9	1.1	0.6	88.1	20.0	10.1	55.4	9.9	4.6	2.1
	R 84.8	13.3	5.5										
4	LS 16.8	0.8	0.2	6.6	0.8	0.4	54.7	8.8	6.4	65.1	13.9	5.7	38.2
	R 51.3	12.6	3.8										
5	LS 17.1	0.8	0.2	6.6	0.8	0.4	55.9	9.0	6.5	66.7	14.4	5.9	35.0
	R 52.5	12.9	3.9										
6	LS 21.1	2.0	0.4	4.4	0.7	0.3	69.3	16.8	8.7	78.1	17.9	8.0	15.3
	R 69.2	16.3	5.7										

Table 5.9 – Summary of LINSIG Analysis Results (Ayr Road/ Eaglesham Road Traffic Signals)										
Scenario	Ayr Road (east)			Eaglesham Road			Ayr Road (west)			PRC
	DoS	MMQ	Delay	DoS	MMQ	Delay	DoS	MMQ	Delay	
	(%)	(pcu)	(pcu/hr)	(%)	(pcu)	(pcu/hr)	(%)	(pcu)	(pcu/hr)	(%)
1	70.6	11.9	5.6	76.1	10.0	6.8	S 40.5 R 65.4	2.5 7.1	0.9 3.0	18.3
2	74.1	12.7	6.1	76.1	10.1	6.8	S 41.4 R 64.4	2.5 7.0	0.9 2.9	18.3
3	76.9	13.8	6.6	78.0	10.9	7.2	S 44.4 R 73.5	2.0 9.1	0.9 3.6	15.4
4	62.4	17.9	7.2	57.7	13.1	6.0	S 21.4 R 43.5	3.6 13.6	0.4 3.5	44.3
5	63.8	18.5	7.5	63.4	13.8	6.5	S 21.8 R 44.5	3.6 13.9	0.4 3.6	41.1
6	65.3	19.6	7.7	63.4	14.8	6.7	S 25.0 R 51.3	2.6 16.8	0.5 4.1	37.8

5.26 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum DoS of 88.1% and 20 vehicle queue occurring on the Ayr Road west approach.

5.27 However, the presence of the development traffic does bring this junction close to its 90% capacity threshold.

M77/ GSO terminal roundabout

5.28 The existing layout of the M77/ GSO terminal roundabout is shown in Sketch TP115/SK/104 (Appendix F). Table 5.10 below summarises the ARCADY results for scenarios 1 to 6.

Table 5.10 – Summary of ARCADY Analysis Results (M77/ GSO terminal roundabout)													
Scenario	M77 North (off slip)			GSO			M77 South (off slip)			Link Road			
	RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay	
		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)	
1	0.477	0.91	0.07	0.403	0.67	0.04	0.427	0.74	0.05	0.375	0.60	0.08	
2	0.495	0.98	0.07	0.410	0.69	0.04	0.433	0.76	0.05	0.378	0.61	0.08	
3	0.565	1.29	0.09	0.432	0.76	0.04	0.453	0.82	0.05	0.570	1.31	0.12	
4	0.387	0.63	0.05	0.546	1.20	0.05	0.365	0.57	0.05	0.228	0.29	0.07	
5	0.399	0.66	0.05	0.559	1.26	0.05	0.379	0.61	0.05	0.238	0.31	0.07	
6	0.474	0.90	0.06	0.631	1.70	0.06	0.462	0.85	0.07	0.338	0.51	0.08	

5.29 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.637 and 2 vehicle queue occurring on the GSO approach.

A77/ M77-GSO Roundabout Link Road priority junction

5.30 The indicative layout of this priority junction is shown in Sketch TP115/SK/105 (Appendix F). It was noted during site visits that the junction is controlled by a solid

'Stop' line and accompanying sign indicating substandard visibility – presumably rightwards on exit. This requires further discussion with ERC roads (perhaps including a site visit) to determine whether there is an improvement to visibility available at this location, following which updated analysis can be provided.

Barrhead Road/ Westacres Road (west) priority junction

5.31 The indicative layout of this priority junction is shown in Sketch TP115/SK/106 (Appendix F). Table 5.11 below summarises the PICADY results for scenarios 1 to 6.

Table 5.11 – Summary of PICADY Analysis Results (Barrhead Road/ Westacres Road (west) priority)

Scenario	Barrhead Road (east)			Westacres Road (west)			Barrhead Road (west)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC	Queue (pcu)	Delay (min/ pcu)	RFC	Queue (pcu)	Delay (min/ pcu)	
1	-	-	-	L 0.253 R 0.325	0.34 0.48	0.15 0.23	0.048	0.05	0.11	0.04
2	-	-	-	L 0.262 R 0.337	0.35 0.50	0.15 0.24	0.050	0.05	0.11	0.04
3	-	-	-	L 0.311 R 0.364	0.45 0.56	0.16 0.26	0.065	0.07	0.11	0.04
4	-	-	-	L 0.095 R 0.137	0.10 0.16	0.12 0.19	0.211	0.27	0.12	0.03
5	-	-	-	L 0.098 R 0.142	0.11 0.16	0.12 0.20	0.217	0.28	0.12	0.03
6	-	-	-	L 0.117 R 0.157	0.13 0.18	0.12 0.22	0.265	0.36	0.13	0.03

5.32 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.311 and a 1 vehicle queue occurring on the Westacres (west) left turn movement.

Barrhead Road/ Westacres Road (east) priority junction

5.33 The indicative layout of this priority junction is shown in Sketch TP115/SK/107 (Appendix F). Table 5.12 below summarises the PICADY results for scenarios 1 to 6.

Table 5.12 – Summary of PICADY Analysis Results (Barrhead Road/ Westacres Road (east) priority)										
Scenario	Barrhead Road (east)			Westacres Road (east)			Barrhead Road (west)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC	Queue (pcu)	Delay (min/ pcu)	RFC	Queue (pcu)	Delay (min/ pcu)	
1	-	-	-	L 0.322 R 0.353	0.49 0.53	0.15 0.23	0.123	0.14	0.11	0.04
2	-	-	-	L 0.345 R 0.369	0.52 0.57	0.16 0.29	0.125	0.14	0.11	0.04
3	-	-	-	L 0.408 R 0.372	0.68 0.58	0.17 0.30	0.142	0.16	0.12	0.05
4	-	-	-	L 0.092 R 0.186	0.10 0.23	0.13 0.20	0.155	0.18	0.12	0.02
5	-	-	-	L 0.095 R 0.192	0.10 0.24	0.13 0.20	0.160	0.19	0.12	0.03
6	-	-	-	L 0.116 R 0.210	0.13 0.26	0.13 0.22	0.210	0.26	0.13	0.03

5.34 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.408 and a 1 vehicle queue occurring on the Westacres (east) left turn movement.

Barrhead Road/ Aurs Road/ Stewarton Road roundabout

5.35 The existing layout of the Barrhead Road/ Aurs Road/ Stewarton Road roundabout is shown in Sketch TP115/SK/108 (Appendix F). Table 5.13 below summarises the ARCADY results for scenarios 1 to 6.

Table 5.13 – Summary of ARCADY Analysis Results (Barrhead Road/ Aurs Road/ Stewarton Road roundabout)										
Scenario	Barrhead Road			Aurs Road			Stewarton Road			
	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	
1	0.481	0.92	0.09	0.364	0.57	0.07	0.279	0.39	0.07	
2	0.493	0.97	0.09	0.373	0.59	0.07	0.287	0.40	0.07	
3	0.566	1.29	0.11	0.390	0.64	0.08	0.311	0.45	0.07	
4	0.283	0.39	0.06	0.295	0.42	0.06	0.342	0.52	0.07	
5	0.290	0.41	0.06	0.303	0.43	0.06	0.351	0.54	0.07	
6	0.322	0.47	0.07	0.312	0.45	0.07	0.434	0.76	0.08	

5.36 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.566 and 1 vehicle queue occurring on the Barrhead Road approach.

Ayr Road/ Paidmyre Road/ St. Vigeans Avenue priority junction

5.37 The indicative layout of this priority junction is shown in Sketch TP115/SK/109 (Appendix F). Table 5.14 below summarises the PICADY results for scenarios 1 to 6.

Table 5.14 – Summary of PICADY Analysis Results (Ayr Road/ Paidmyre Road/ St Vigeans Avenue priority)													
Scenario	Ayr Road (east)			Paidmyre Road			Ayr Road (west)			St Vigeans Avenue			Incl Queuing Delay
	RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay	
		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)		(pcu)	(min/ pcu)	
1	0.022	0.02	0.13	0.247	0.33	0.15	0.047	0.05	0.11	0.048	0.05	0.13	0.02
2	0.022	0.02	0.13	0.253	0.34	0.15	0.049	0.05	0.11	0.048	0.05	0.13	0.02
3	0.024	0.02	0.14	0.268	0.36	0.16	0.054	0.06	0.11	0.053	0.06	0.15	0.02
4	0.007	0.01	0.12	0.093	0.10	0.13	0.037	0.04	0.11	0.013	0.01	0.12	0.01
5	0.007	0.01	0.12	0.093	0.10	0.13	0.037	0.04	0.11	0.013	0.01	0.12	0.01
6	0.007	0.01	0.12	0.109	0.12	0.14	0.044	0.05	0.11	0.014	0.01	0.12	0.01

5.38 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.268 and 0 vehicle queue occurring on the Paidmyre Road approach.

Mearns Road/ Eaglesham Road priority junction

5.39 The indicative layout of this priority junction is shown in Sketch TP115/SK/110 (Appendix F). Table 5.15 below summarises the PICADY results for scenarios 1 to 6.

Table 5.15 – Summary of PICADY Analysis Results (Mearns Road/ Eaglesham Road priority)										
Scenario	Mearns Road (north)			Eaglesham Road			Mearns Road (south)			Incl Queuing Delay
	RFC	Queue	Delay	RFC	Queue	Delay	RFC	Queue	Delay	
		(pcu)	(min/ pcu)	(pcu)	(min/ pcu)			(pcu)	(min/ pcu)	
1	-	-	-	L 0.649 R 0.610	1.79 1.51	0.25 0.29	0.524	1.09	0.16	0.11
2	-	-	-	L 0.672 R 0.632	1.97 1.66	0.27 0.30	0.539	1.15	0.16	0.12
3	-	-	-	L 0.768 R 0.639	3.08 1.70	0.33 0.31	0.562	1.27	0.17	0.13
4	-	-	-	L 0.553 R 0.526	1.21 1.09	0.21 0.23	0.340	0.51	0.12	0.10
5	-	-	-	L 0.570 R 0.543	1.30 1.16	0.21 0.23	0.349	0.53	0.12	0.10
6	-	-	-	L 0.614 R 0.560	1.55 1.24	0.23 0.25	0.427	0.74	0.13	0.11

5.40 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.768 and a 3 vehicle queue occurring on the Eaglesham Road left turn lane.

A77/ Malletsheugh Road west priority junction

5.41 Table 5.16 below summarises the PICADY results for scenarios 1 to 6.

Table 5.16 – Summary of PICADY Analysis Results (A77/ Malletsheugh Road west priority)										
Scenario	A77 (south)			Malletsheugh Road (west)			A77 (north)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC (pcu)	Queue (min/ pcu)	Delay	RFC	Queue (pcu)	Delay (min/ pcu)	
1	-	-	-	0.367	0.57	0.19	0.033	0.04	0.10	0.03
2	-	-	-	0.378	0.60	0.20	0.033	0.04	0.10	0.03
3	-	-	-	0.435	0.76	0.23	0.064	0.11	0.11	0.03
4	-	-	-	0.189	0.23	0.15	0.048	0.07	0.13	0.02
5	-	-	-	0.192	0.24	0.15	0.048	0.07	0.13	0.02
6	-	-	-	0.252	0.33	0.19	0.066	0.11	0.14	0.02

5.42 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.435 and a 1 vehicle queue occurring on Malletsheugh Road west approach.

Eaglesham Road/ Paidmyre Crescent priority junction

5.43 Table 5.17 below summarises the PICADY results for scenarios 1 to 6.

Table 5.17 – Summary of PICADY Analysis Results (Eaglesham Road/ Paidmyre Crescent priority)										
Scenario	Eaglesham Rd (northwest)			Paidmyre Crescent			Eaglesham Rd (southeast)			Incl Queuing Delay
	RFC	Queue (pcu)	Delay (min/ pcu)	RFC (pcu)	Queue (min/ pcu)	Delay	RFC	Queue (pcu)	Delay (min/ pcu)	
1	-	-	-	0.186	0.23	0.19	0.000	0.00	0.00	0.01
2	-	-	-	0.192	0.24	0.20	0.000	0.00	0.00	0.01
3	-	-	-	0.198	0.24	0.20	0.000	0.00	0.00	0.01
4	-	-	-	0.086	0.09	0.17	0.014	0.02	0.08	0.01
5	-	-	-	0.090	0.10	0.17	0.014	0.02	0.08	0.01
6	-	-	-	0.094	0.10	0.18	0.014	0.02	0.08	0.01

5.44 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.198 and a 0 vehicle queue occurring on the Paidmyre Crescent approach.

B769 Stewarton Road/ Crookfur Road/ Link Road roundabout

5.45 Table 5.18 below summarises the ARCADY results for scenarios 1 to 6.

Table 5.18– Summary of ARCADY Analysis Results (B769 Stewarton Road/ Crookfur Road/ Link Road roundabout)													
Scenario	Stewarton Rd (north)			Crookfur Road			Stewarton Rd (south)			Link Road			
	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	
1	0.197	0.25	0.06	0.565	1.29	0.11	0.467	0.87	0.09	0.181	0.22	0.03	
2	0.203	0.25	0.06	0.580	1.37	0.11	0.481	0.92	0.10	0.187	0.23	0.03	
3	0.213	0.27	0.06	0.588	1.41	0.12	0.556	1.24	0.11	0.196	0.24	0.03	
4	0.410	0.69	0.12	0.417	0.71	0.09	0.281	0.39	0.07	0.468	0.88	0.04	
5	0.428	0.74	0.13	0.429	0.75	0.10	0.288	0.40	0.07	0.479	0.92	0.04	
6	0.501	0.99	0.15	0.454	0.83	0.11	0.322	0.47	0.07	0.506	1.02	0.05	

5.46 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.588 and 1 vehicle queue occurring on the Crookfur Road approach.

Business Park/ Crookfur Road/ Neighbourhood Centre/ M77 Slips roundabout

5.47 Table 5.19 below summarises the ARCADY results for scenarios 1 to 6.

Table 5.19 – Summary of ARCADY Analysis Results (Business Park/ Crookfur Road/ Neighbourhood Centre/ M77 Slips roundabout)													
Scenario	Business Park			Crookfur Road			Neighbourhood Centre			M77 Slips			
	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	RFC	Q (pcu)	Delay (min/ pcu)	
1	0.017	0.02	0.05	0.268	0.37	0.03	0.103	0.11	0.05	0.152	0.18	0.03	
2	0.017	0.02	0.05	0.274	0.38	0.03	0.106	0.12	0.05	0.155	0.18	0.03	
3	0.017	0.02	0.05	0.294	0.42	0.03	0.109	0.12	0.05	0.162	0.19	0.03	
4	0.031	0.03	0.10	0.225	0.29	0.03	0.237	0.31	0.05	0.468	0.88	0.05	
5	0.032	0.03	0.10	0.231	0.30	0.03	0.243	0.32	0.05	0.481	0.92	0.05	
6	0.034	0.03	0.11	0.240	0.32	0.03	0.246	0.32	0.05	0.507	1.02	0.05	

5.48 The assessment indicates that the junction operates satisfactorily during the weekday morning and evening peak periods with a maximum RFC of 0.507 and 1 vehicle queue occurring on the M77 Slips approach.

Summary

5.49 The analysis predicts that all junctions will continue to operate satisfactorily for the design year with the proposed residential development trips included, with the proviso that the development traffic at Mearns Cross will bring the signals close to their theoretical capacity. This is discussed further in section 6. Additionally, the GSO link road / A77 T junction requires further consideration.

6. OTHER MATTERS, SUMMARY AND CONCLUSIONS

Introduction

6.1 This chapter of the report discusses matters that remain to be covered plus it provides a summary and conclusions of the reporting contained herein.

Residential Travel Plan

Introduction

6.2 National policy guidance highlights the importance of Travel Plans in relation to consent being granted for new developments. It is proposed that a Residential Travel Plan will be developed, to be issued as part of the welcome package for each household within the development

6.3 This section of the report provides an outline of the potential objectives and implementation methods for a Residential Travel Plan. This framework should only be used as a preliminary outline of the likely contents of the Travel Plan. Specific details of the Travel Plan will be discussed with ERC prior to the occupation of the development.

6.4 The general objectives of a Residential Travel Plan can be summarised as follows

- To help address the needs of future residents to access a full range of facilities for work, education, health, leisure, shopping etc. by providing information on accessibility and alternative travel modes;
- To reduce the traffic generated by the development to a lower level of private car usage than would be predicted with a similar site without the inclusion of a Travel Plan;
- To promote healthier lifestyles and a sustainable vibrant local community; and
- To maximise the positive travel attributes of the location of the site through the use of good design principles that seek to increase permeability through the development for walking and cycling.

Implementation

6.5 To meet these objectives, the Travel Plan will be implemented through a range of measures including physical provision of linkages within and from the site together with the provision of a Residential Travel Pack.

Residential Travel Pack

6.6 A Residential Travel Pack is a package of measures designed to reduce the number and length of car trips generated by a development, which also supports more sustainable forms of travel.

6.7 The Residential Travel Pack will be contained within Welcome Packs issued to each new householder within the Maidenhill development. The information contained in

the Travel Pack will highlight the available alternatives to private car use to try and help residents make an informed decision about travel choices.

6.8 The key role of residential Travel Packs is to ensure that during the marketing and initial occupation of the development, new householders are made aware of sustainable travel opportunities in their area and are provided with accurate and up to date information to enable them to make an informed decision over their choice of travel mode.

6.9 The Travel Pack (which may be web based) is likely to contain the following information:

- Maps showing local pedestrian / cycle and public transport networks;
- Railway station information;
- Public transport routing and timetable information;
- Details of any car share clubs, cycle parking areas, local convenience retail and home shopping opportunities;
- Website links for local travel operators; and
- Contact details for local transport user groups.

Planning Advice Note 75 – Planning for Transport

6.10 Planning Advice Note 75 (PAN75) provides good practice guidance for planning authorities and developers with the aim of increasing awareness of how linkages between planning and transport can be managed. The document sets out various policies aimed at encouraging the provision of a wide range of travel modes to new developments, and provides a set of criteria for each travel mode.

6.11 The above strategies comply with the following extract from PAN 75, "For residential land use, travel plans may set out measures which will be used as an incentive to house purchasers to use non-car travel modes, but setting targets is generally not practical for this land use. Sustainability in housing should come through design in relation to walking, cycling and public transport networks."

Developer Contributions

6.12 The DF makes clear at pages 89 and 90 that developer contributions will be sought in relation to transport aspects of the wider development proposals.

6.13 The DF states that *"In order to enable development to proceed without undue delay, it is proposed that a system of developer contributions will be implemented."*

6.14 The Councils Supplementary Planning Guidance on Development Contributions notes at para 5.30 *"All development proposals will be required to provide for on-site transportation infrastructure. Where possible this requirement will be ensured through planning conditions. Developments, which have further implications in terms of a requirement for off-site transport infrastructure, will require a development contribution in order to mitigate these effects."*

6.15 Table 6.1 below notes these items identified thus far where developer contributions are likely to be payable. The eventual agreement related to the payment and level of these contributions is expected to form part of a Planning Agreement that will be required prior to the final grant of planning consent.

Table 6.1 – Initial Summary of Items likely to attract Developer Contributions	
Item	Indicative cost
Public transport support contributions (either a subsidised bus route for 3 years following the completion of the 100th house OR a sum payable on completion of the 300th unit OR some combination of these).	£600,000 on completion of the 300th unit or £200,000 on completion of 100, 200 and 300 units.
Park and Ride provision – assumed start of 100 spaces at £6000/space	£600,000
Possible improvements at GSO link road / A77 priority junction – as yet unspecified	£250,000
MOVA or SCOOT system of signal control at Mearns Cross	£80,000 estimate
Toucan Crossing on Ayr Road	£35,000 estimate
Path Upgrades Off Site	£25,000 estimate

Microprocessor Optimised Vehicle Actuation (MOVA)

6.16 What is proposed for the signal set at Mearns Cross is an upgrade to new equipment incorporating the Transport Research Laboratory's (TRL's) MOVA system. In general text for MOVA emanating from TRL themselves, it is said that:-

- *"MOVA is a product developed to overcome some of the problems associated with traditional Vehicle Actuated (VA) control. It is more responsive to traffic conditions and can lead to a significant increase in capacity at a junction."*
- *"MOVA has two modes of operation depending on the road conditions – these are*

congested and free flowing (un-congested). In free flowing mode the aim of MOVA is to disperse any queues which have built up on red, it then assesses the traffic flows approaching on each arm of the junction and calculates if extending the green would be beneficial. If it is beneficial then the green is extended and the calculations repeated. This continues until there is no benefit in extending the green and the signals move to the next stage."

- *"When the network is congested MOVA operates in capacity maximising mode. This assesses which approaches are overloaded and how efficient the green is being used and seeks to determine a set of signal timings which will maximise the throughput of the junction under the current conditions."*

6.17 Traffic Advisory Leaflet 3/97 notes that *"TRL/Department of Transport (DOT) trials have shown that MOVA reduces delays by an average of 13% compared to the earlier, vehicle actuated system."*

6.18 A more recent Traffic Advisory Note (1/09) on 'Compact MOVA' reports that *"The peaked-peak considers a level of demand that was high enough to assess very oversaturated conditions. (Statistically significant results are shown in bold)."*

6.19 The Note illustrates that in the peaked peak, benefits to vehicle delay of Compact MOVA over VA reached over 15% and the same table notes standard MOVA benefits of over 17%.

6.20 Traffic Advisory Note 1/09 also states *"MOVA is extremely effective at all types of isolated signal control junctions. It can also be applied effectively as 'linked' MOVA in small networks, especially signalised roundabouts. Not only is MOVA effective at minimising delay or maximising capacity (whichever is appropriate at the time)…."*

6.21 In any event, there is a clear benefit in traffic management to be had from the installation of the MOVA system.

6.22 Additionally, MOVA remains a standard requirement for new installations on the trunk road as illustrated in Design Manual for Roads and Bridges TD35.

6.23 The information available illustrates that installation / upgrading of the Mearns Cross signal set to incorporate MOVA would therefore offer capacity / delay benefits at least of the magnitude required to offset the proposed application.

Report Summary and Conclusions

6.24 This Transport Assessment has reported on foot, cycle and public transport opportunities at the M2.1 site at Maidenhill, East Renfrewshire.

6.25 The Development Framework has been referenced to advise on forward masterplanning actions to ensure these modes are fully accounted for as the masterplan areas develop.

6.26 The existing road network in the area has been extensively surveyed and has been described in the report.

6.27 Traffic patterns likely to arise from the development proposals have been estimated

and assigned to the surrounding network to enable junction testing.

6.28 Access options that would enable all parcels within M2.1 to be developed have been identified.

6.29 Many of the surrounding roads are lightly trafficked.

6.30 Capacity testing illustrates that, for the most part, the existing traffic network can cater for the development flows.

6.31 The percentage impact of the development – in line with nationally accepted guidance on these matters – restricts the network tested to those locations assessed in this report.

6.32 The report has identified the need for a residential travel pack to be developed.

6.33 The report has also identified a ‘first pass’ at those items likely to be funded through developer contributions.

6.34 Taken together, there are no traffic or transport related matters that suggest the Maidenhill M2.1 site cannot be developed for the intended use.

APPENDIX A

Maidenhill, East Renfrewshire

Site Location Plan

Key

A Site of Proposed Development.

	Maidenhill, East Renfrewshire	CALA + Taylor Wimpey	
	Site Location Plan	Drawing Number: TP115 Figure 1	Scale: NTS @ A3
		Drawn by: NW / Date: APR 2013	Checked by: AS

TRANSPORT PLANNING

Maidenhill, East Renfrewshire

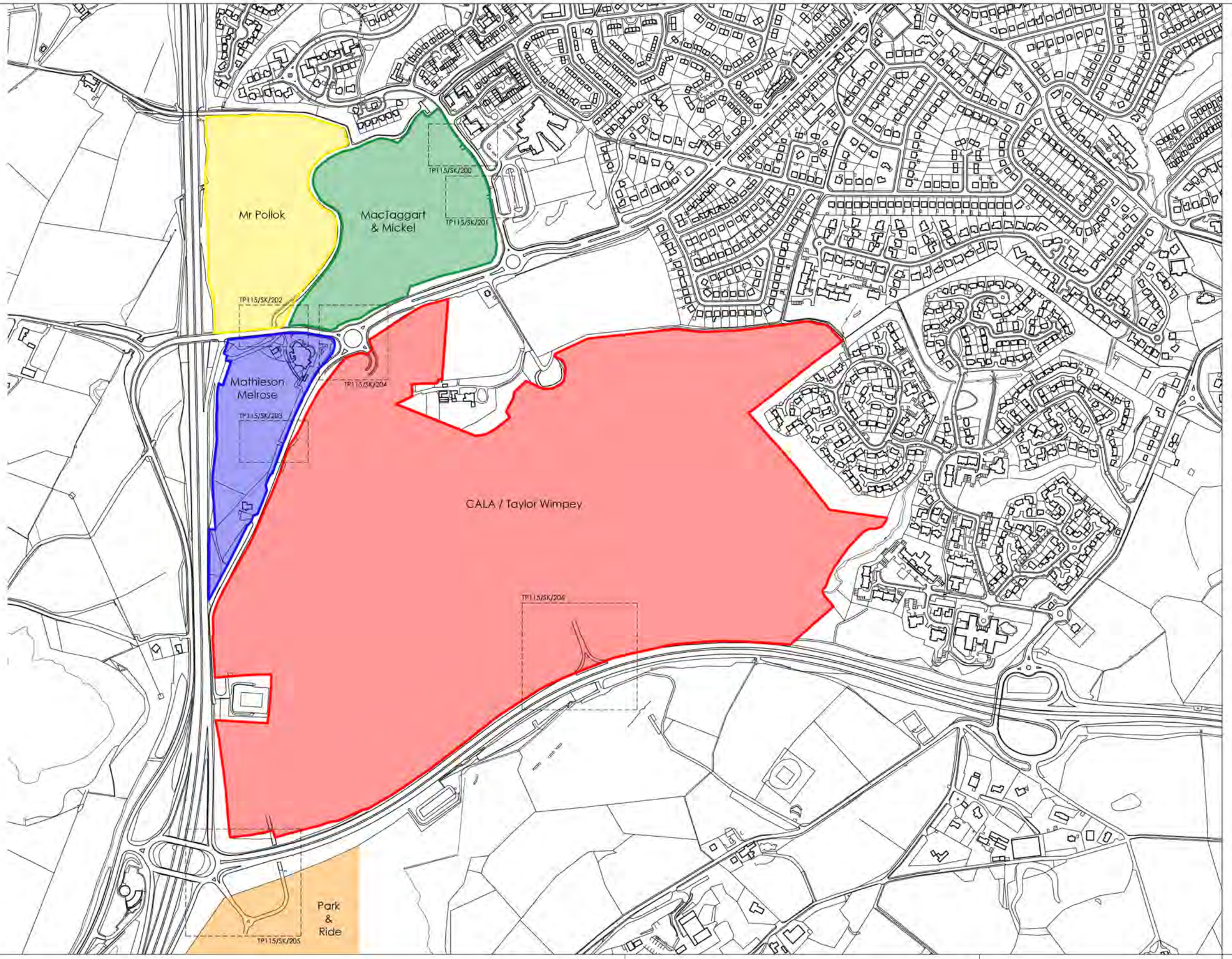
Wider Accessibility Plan

Key

- A Site of Proposed Development.
- B Mearns Primary School.
- C Mearns Castle High School.
- D Food Store.
- E Library.
- F GP Surgery.
- G Mearns Medical Centre.
- H Dental Surgery.
- J 'Mall in the Mearns' Public House.
- Core Path.
- Local Cycle Route.
- Bus Route/Stop.
- 400m Isochrone from Site.
- 800m Isochrone from Site.
- 1600m Isochrone from Site.

Maidenhill, East Renfrewshire	CALA + Taylor Wimpey		
Wider Accessibility Plan	Drawing Number: TP115 Figure 2		Scale: NTS @ A3
	Drawn by: NW	Date: APR 2013	Checked by: AS

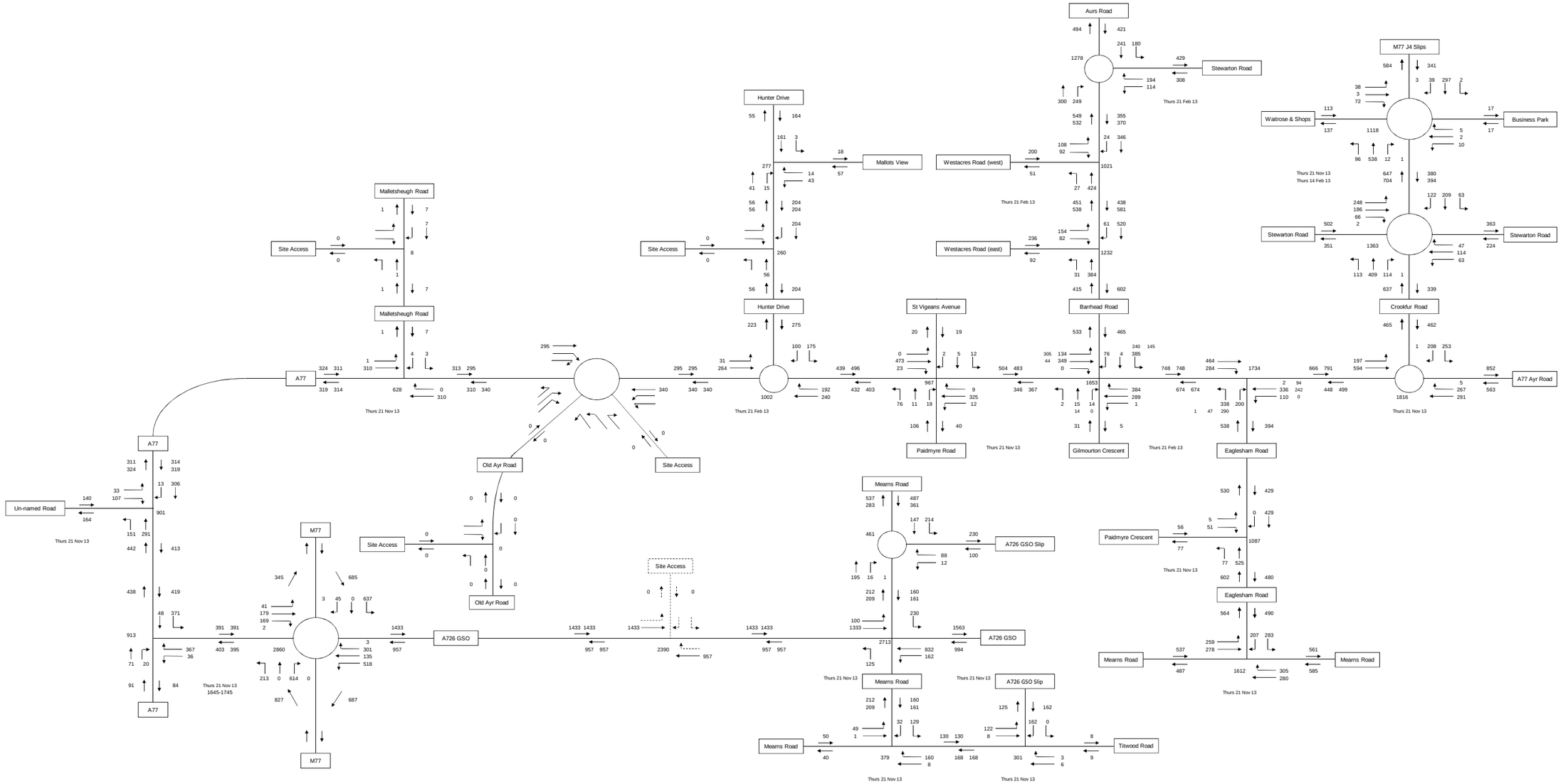
TRANSPORT PLANNING



Maidenhill, East Renfrewshire		Maidenhill Developers	
Possible Access Opportunities - M2.1 Site	Drawing Number: TP115 Figure 3		Scale: NTS @ A3
	Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING

APPENDIX B



TRANSPORT PLANNING

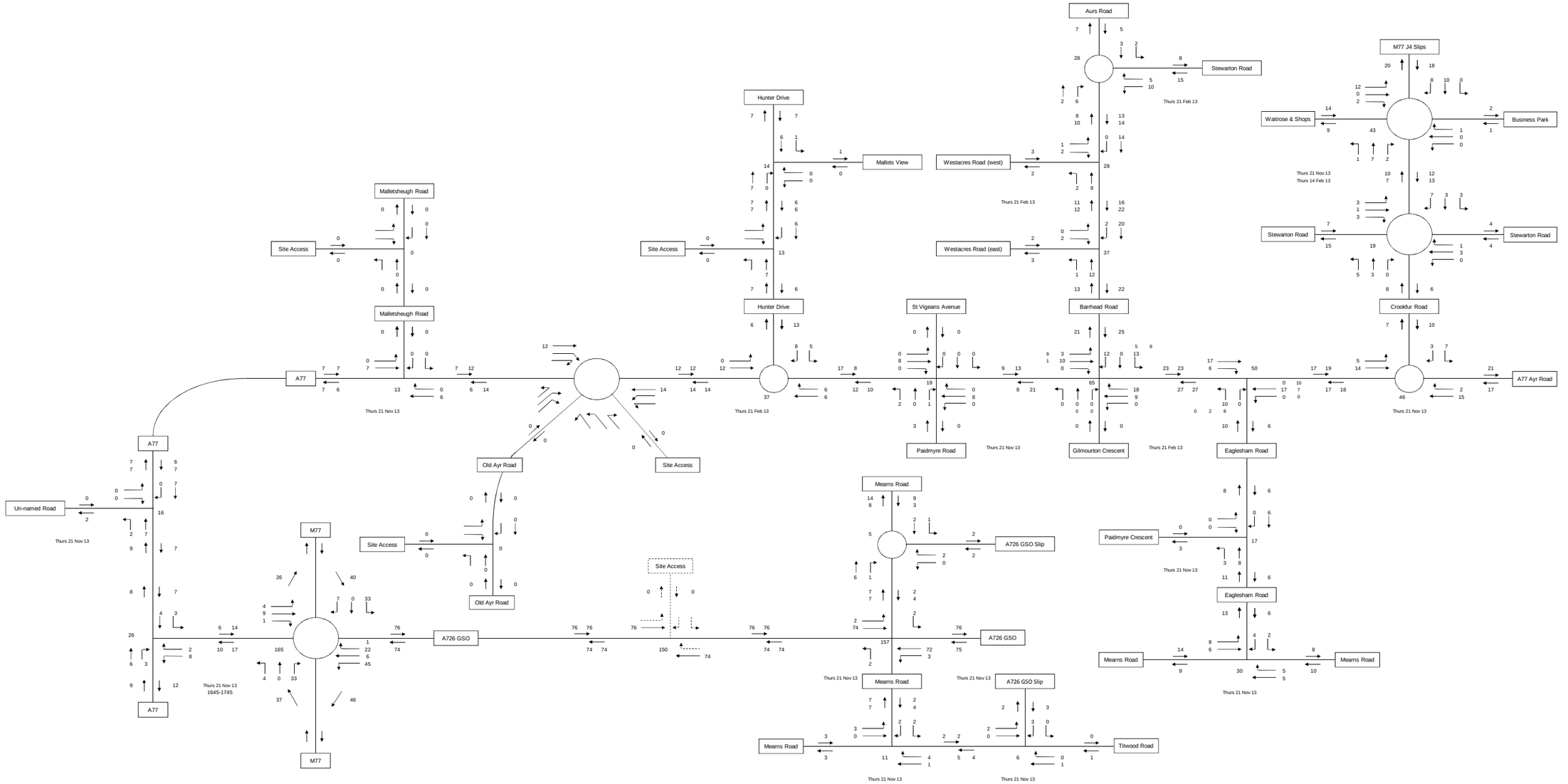
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

2013 Surveyed Traffic Flows (Vehs)
Weekday AM (0800-0900) Peak Hour

Diagram

1a



TRANSPORT PLANNING

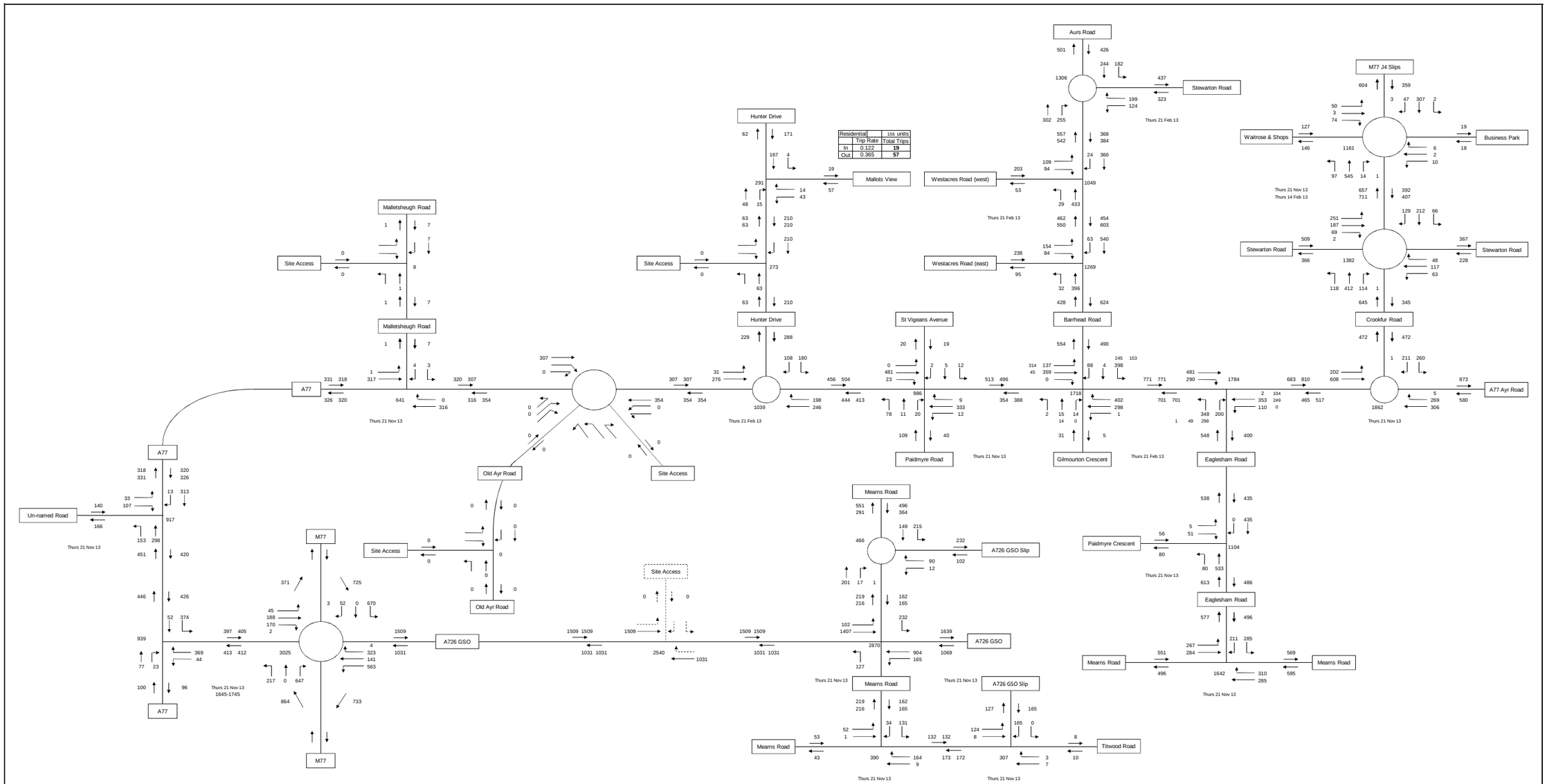
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

2013 Surveyed Traffic Flows (HGVs)
Weekday AM (0800-0900) Peak Hour

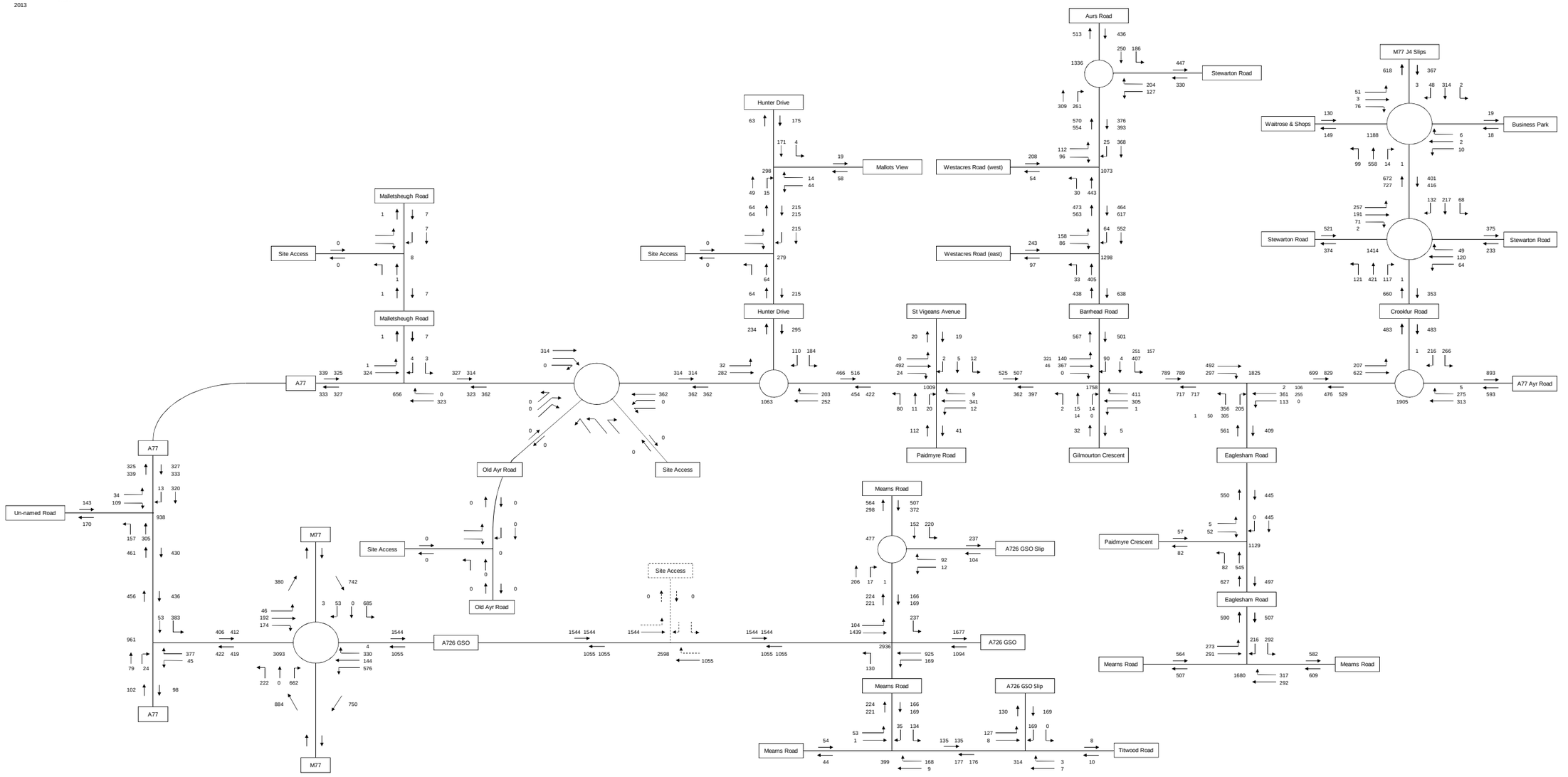
Diagram

2a



TRANSPORT PLANNING	TITLE	Diagram
	Maidenhill, Newton Mearns Proposed Residential Development 2013 Surveyed Traffic Flows (PCUs) Weekday AM (0800-0900) Peak Hour	**3a**

2015 1.023
2013



TRANSPORT PLANNING

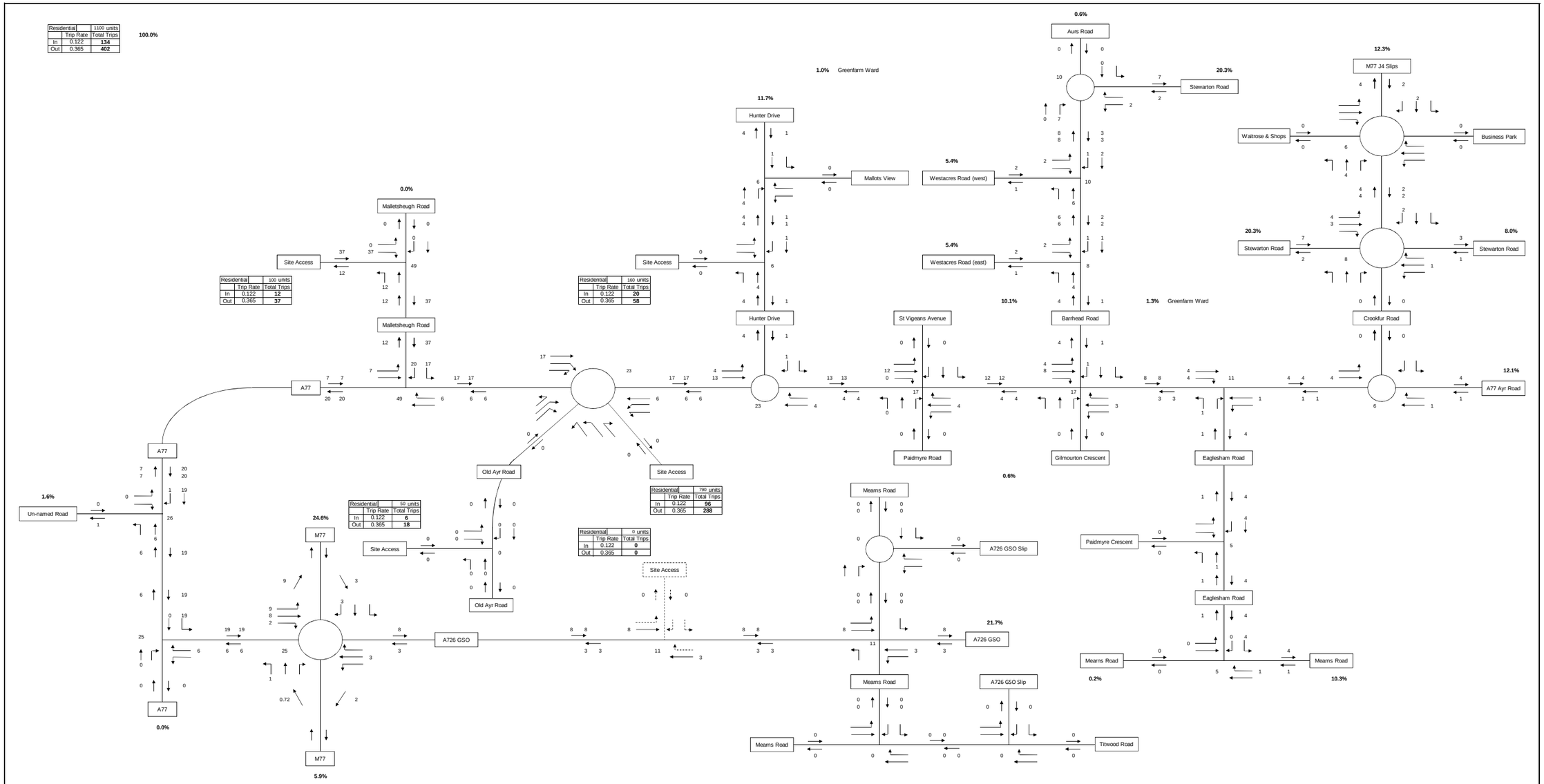
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

2015 Projected Traffic Flows (PCUs)
Weekday AM (0800-0900) Peak Hour

Diagram

4a



TRANSPORT PLANNING

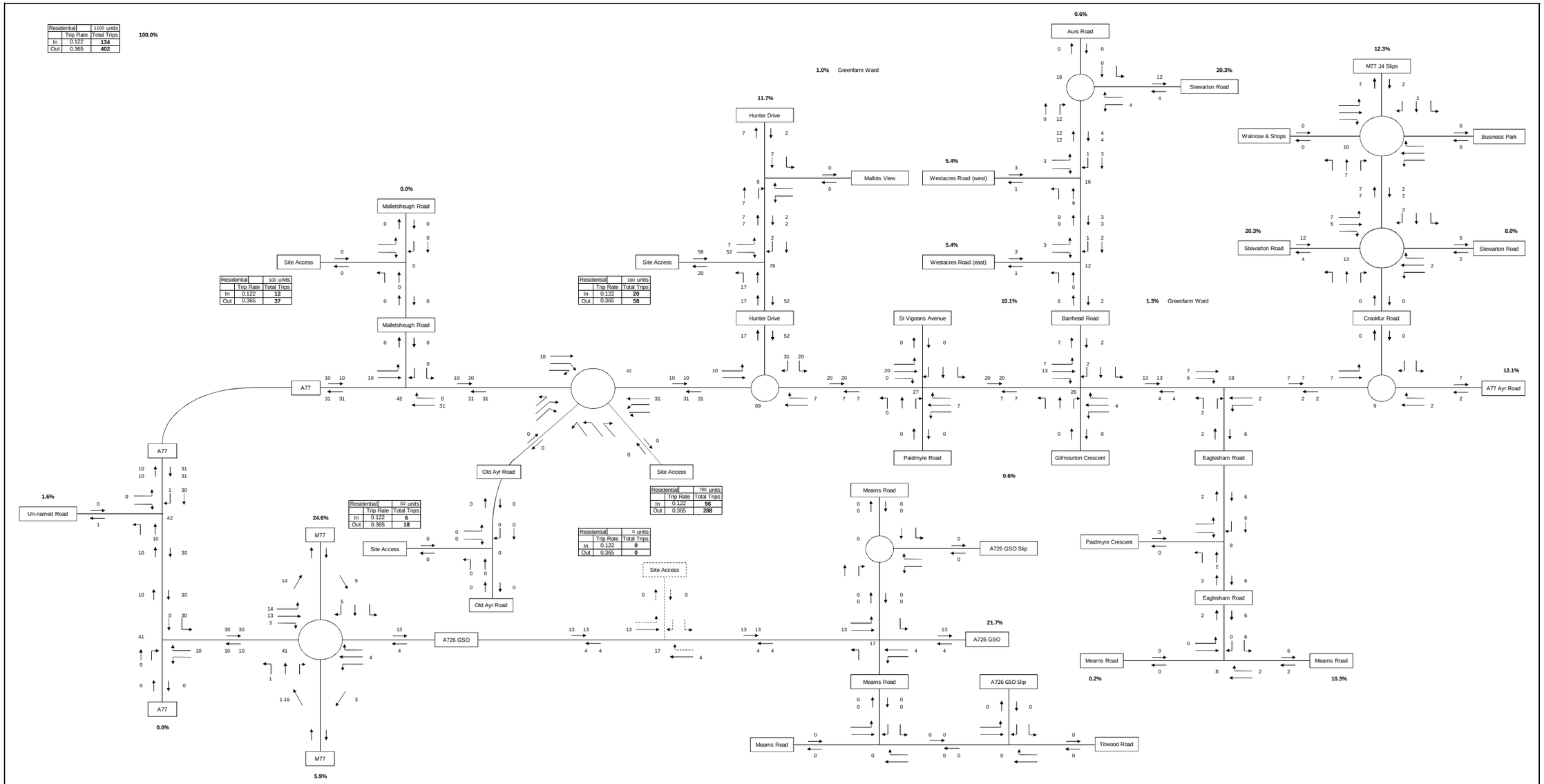
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from Malletsheugh Road Traffic Flows (Vehs)
Weekday AM (0800-0900) Peak Hour

Diagram

5.1a



TRANSPORT PLANNING

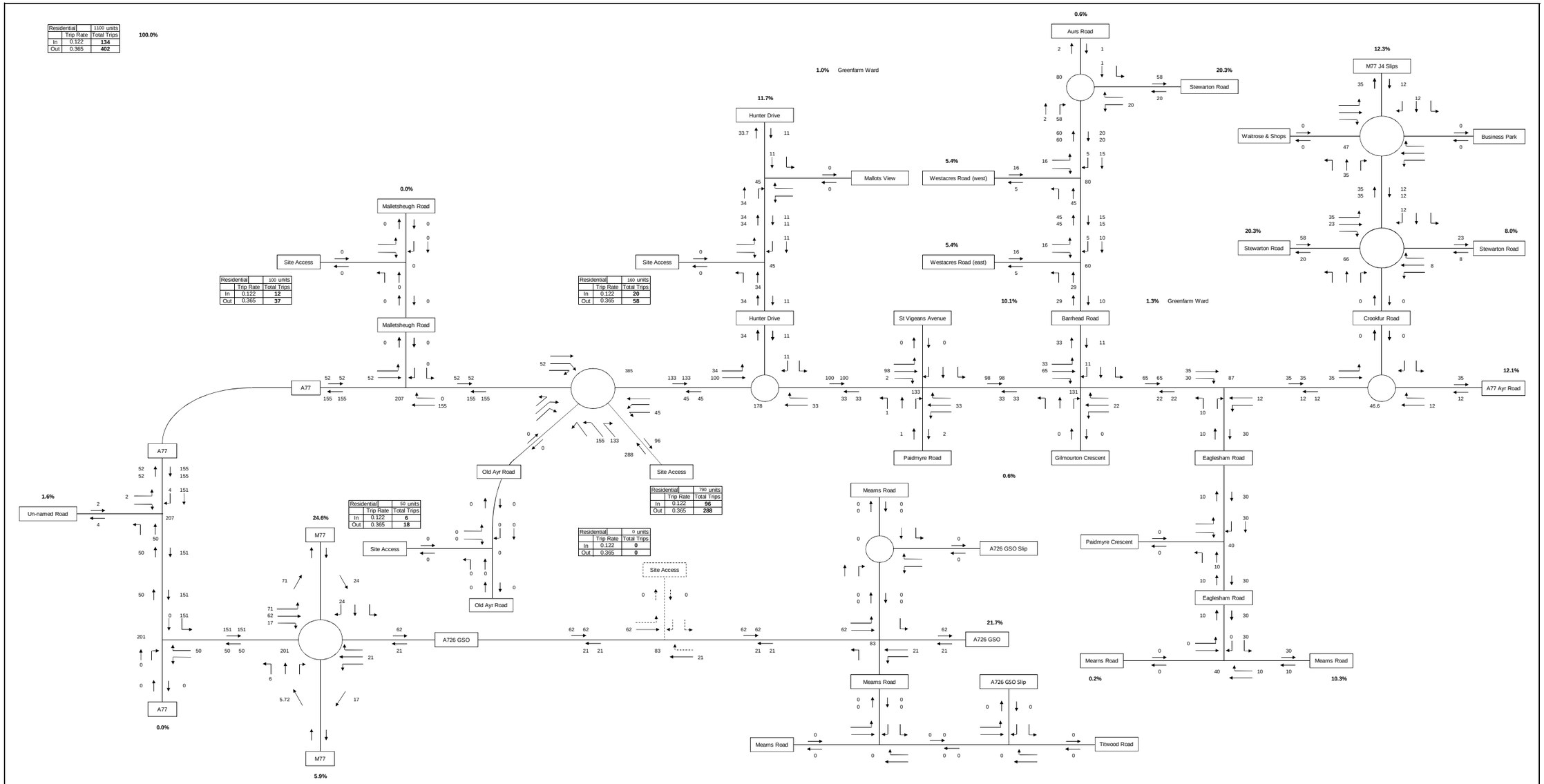
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from Hunter Drive Traffic Flows (Vehs)
Weekday AM (0800-0900) Peak Hour

Diagram

5.2a



TRANSPORT PLANNING

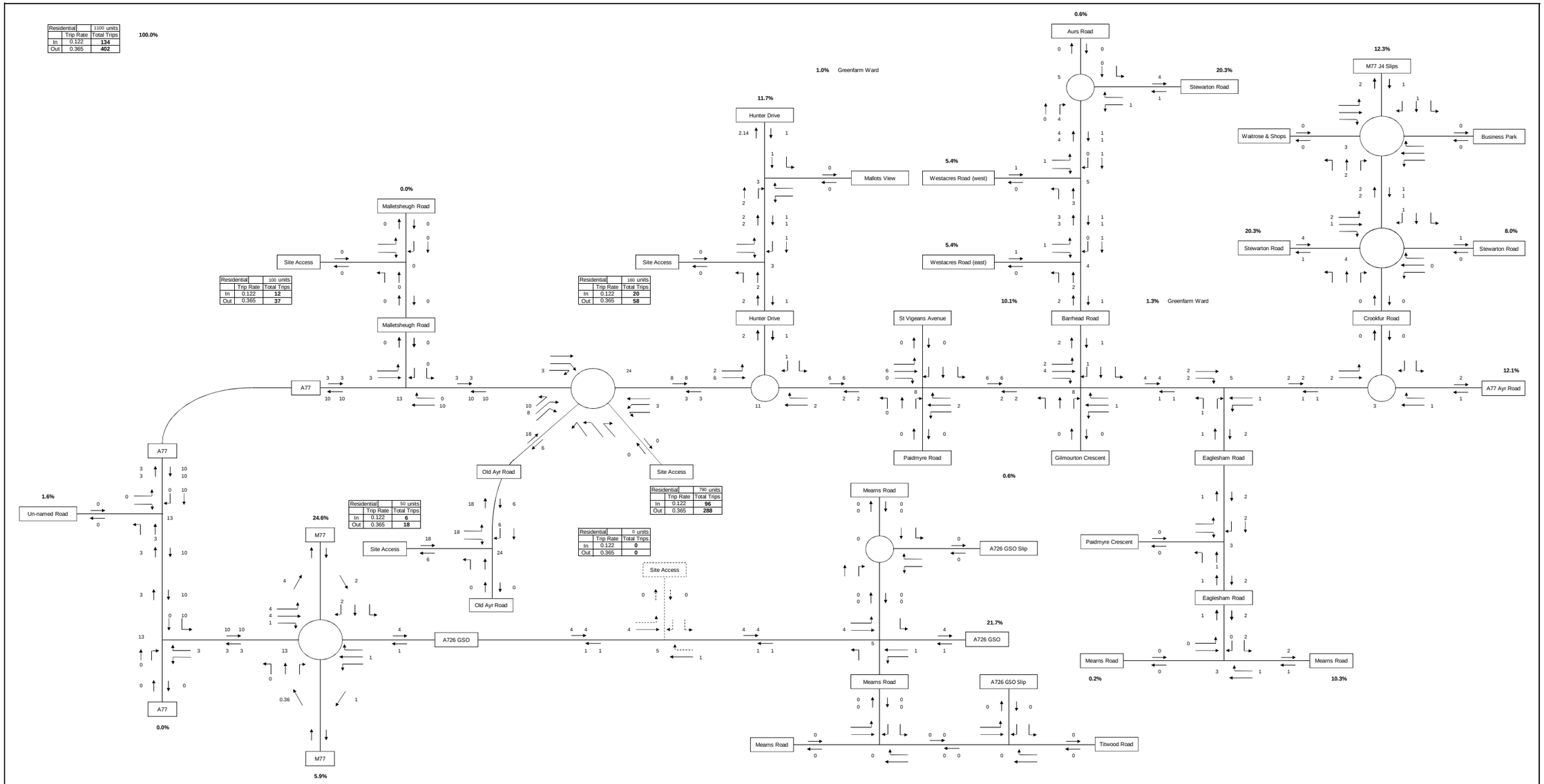
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from A77 Traffic Flows (Vehs)
Weekday AM (0800-0900) Peak Hour

Diagram

5.3a



TRANSPORT PLANNING

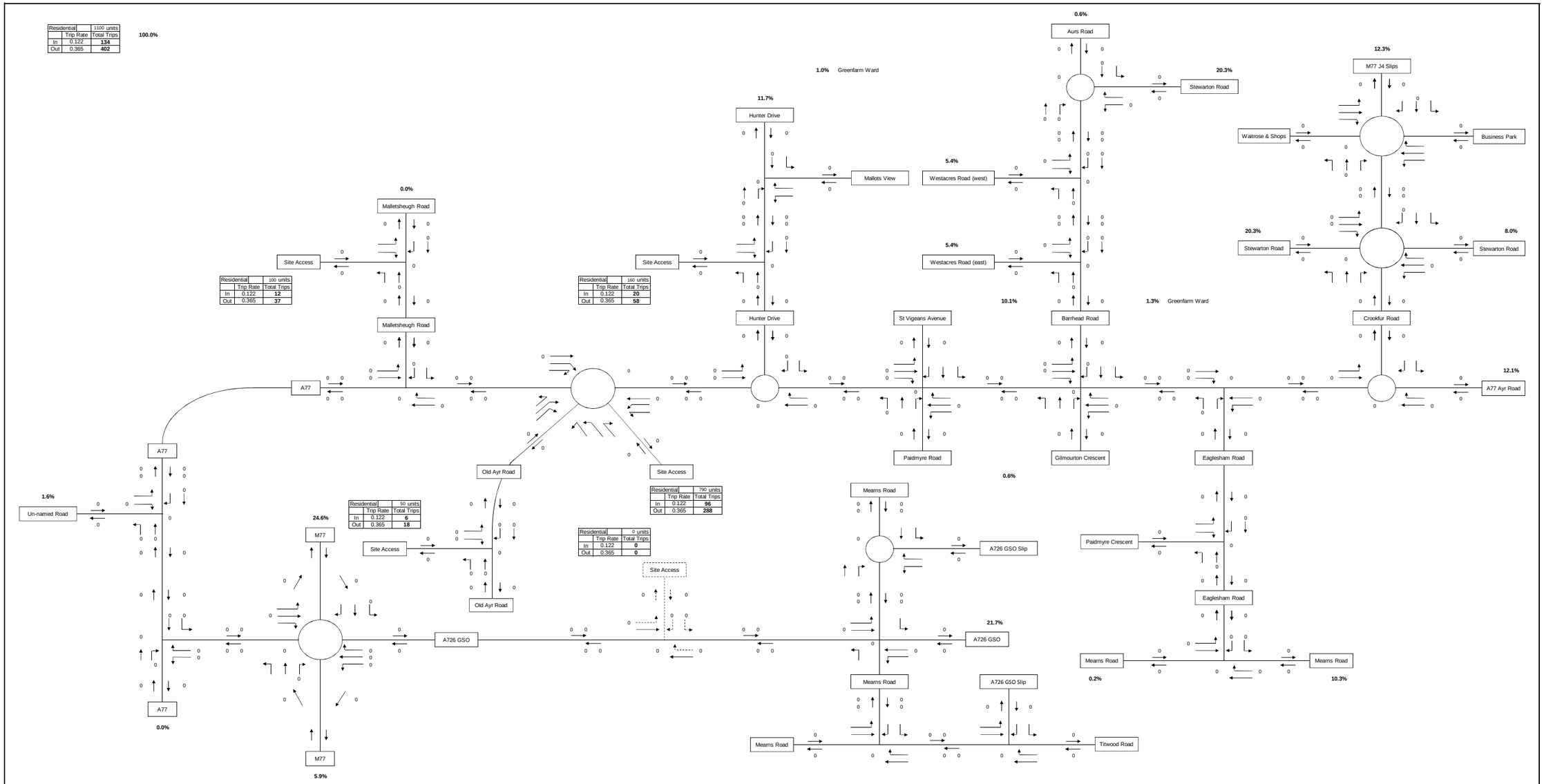
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from GSO Traffic Flows (Vehs)
Weekday AM (0800-0900) Peak Hour

Diagram

5.4a



TRANSPORT PLANNING

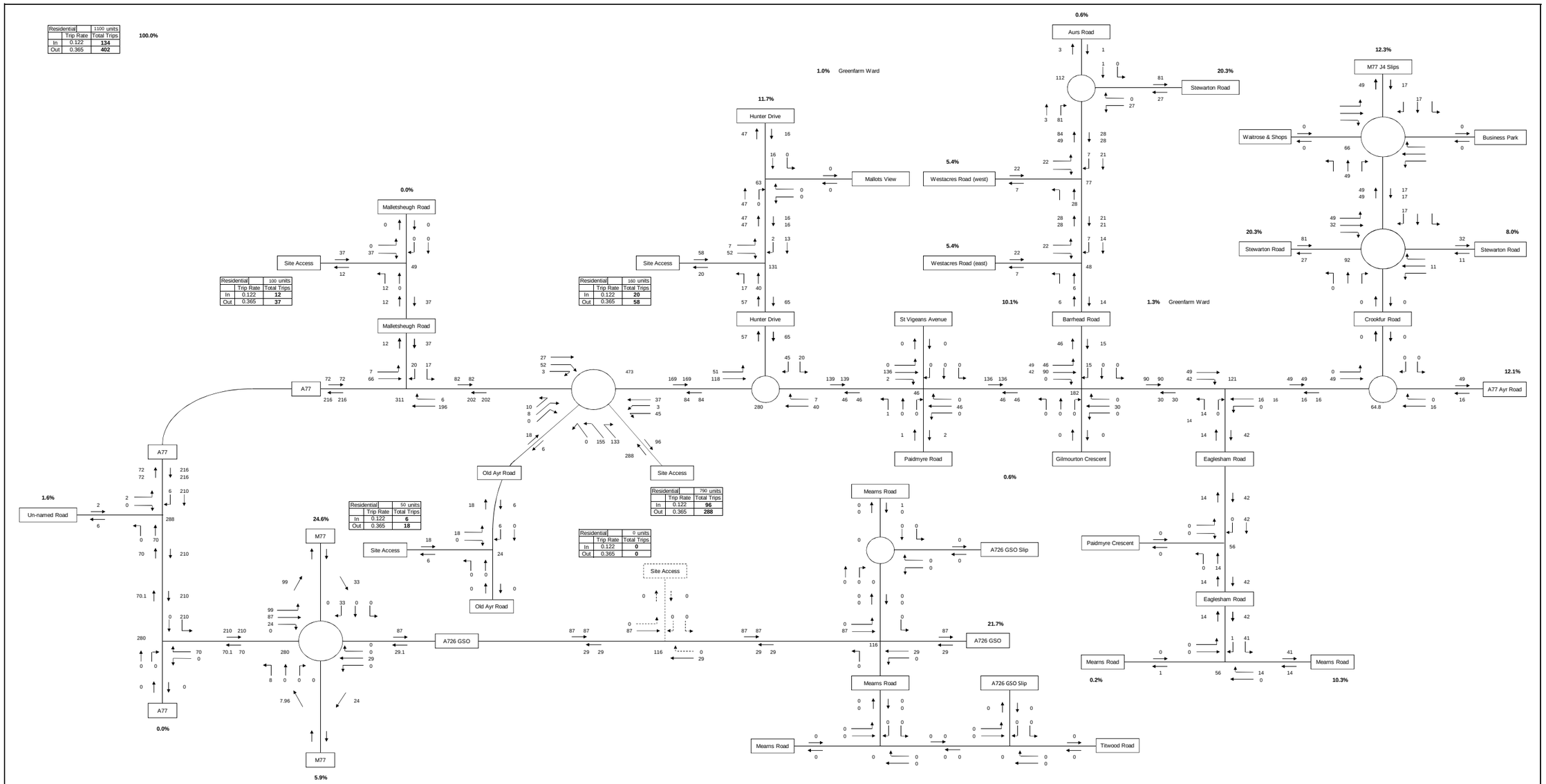
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Acccessed from GSO Traffic Flows (Vehs)
Weekday AM (0800-0900) Peak Hour

Diagram

5.5a



TRANSPORT PLANNING

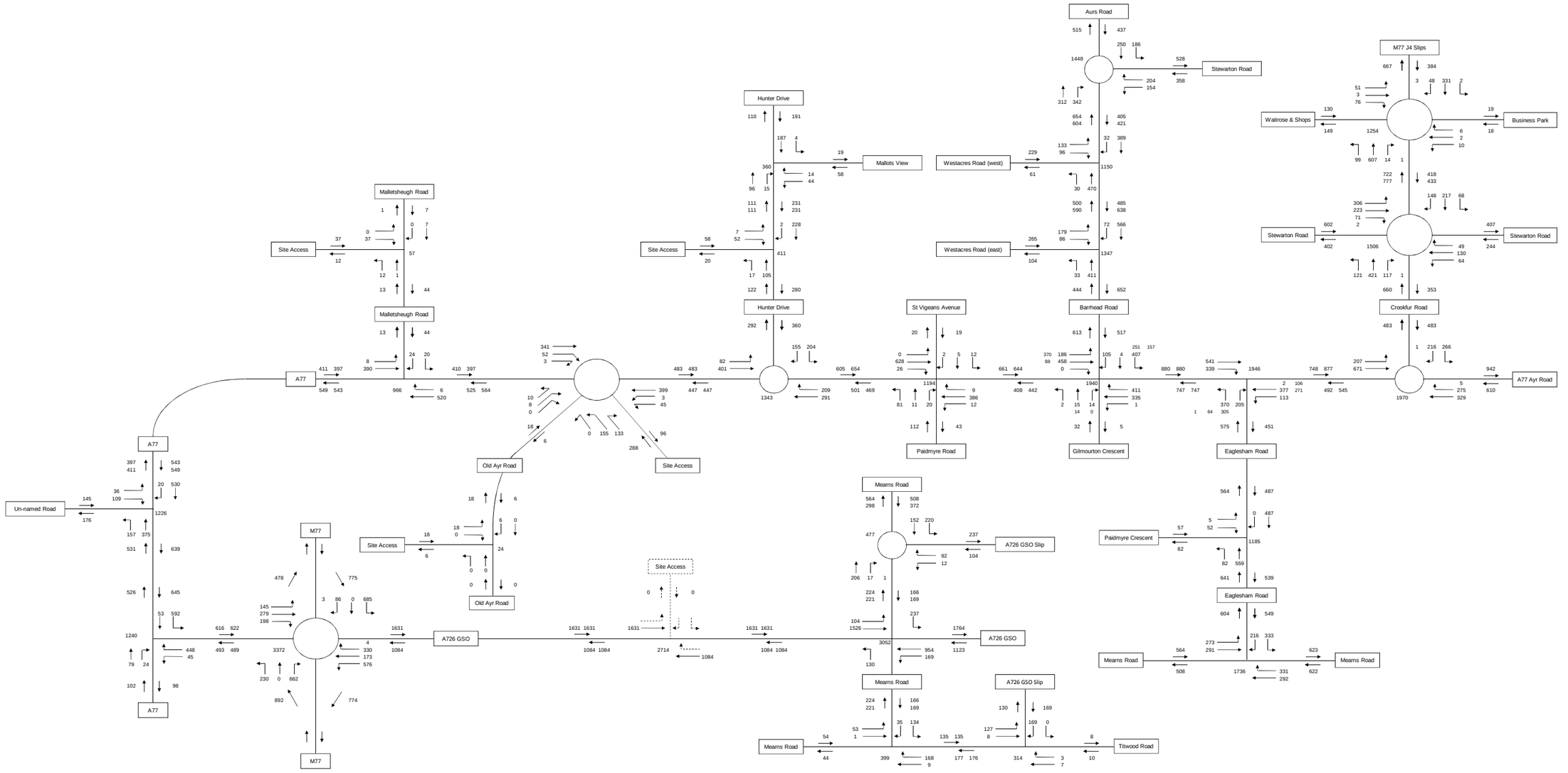
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

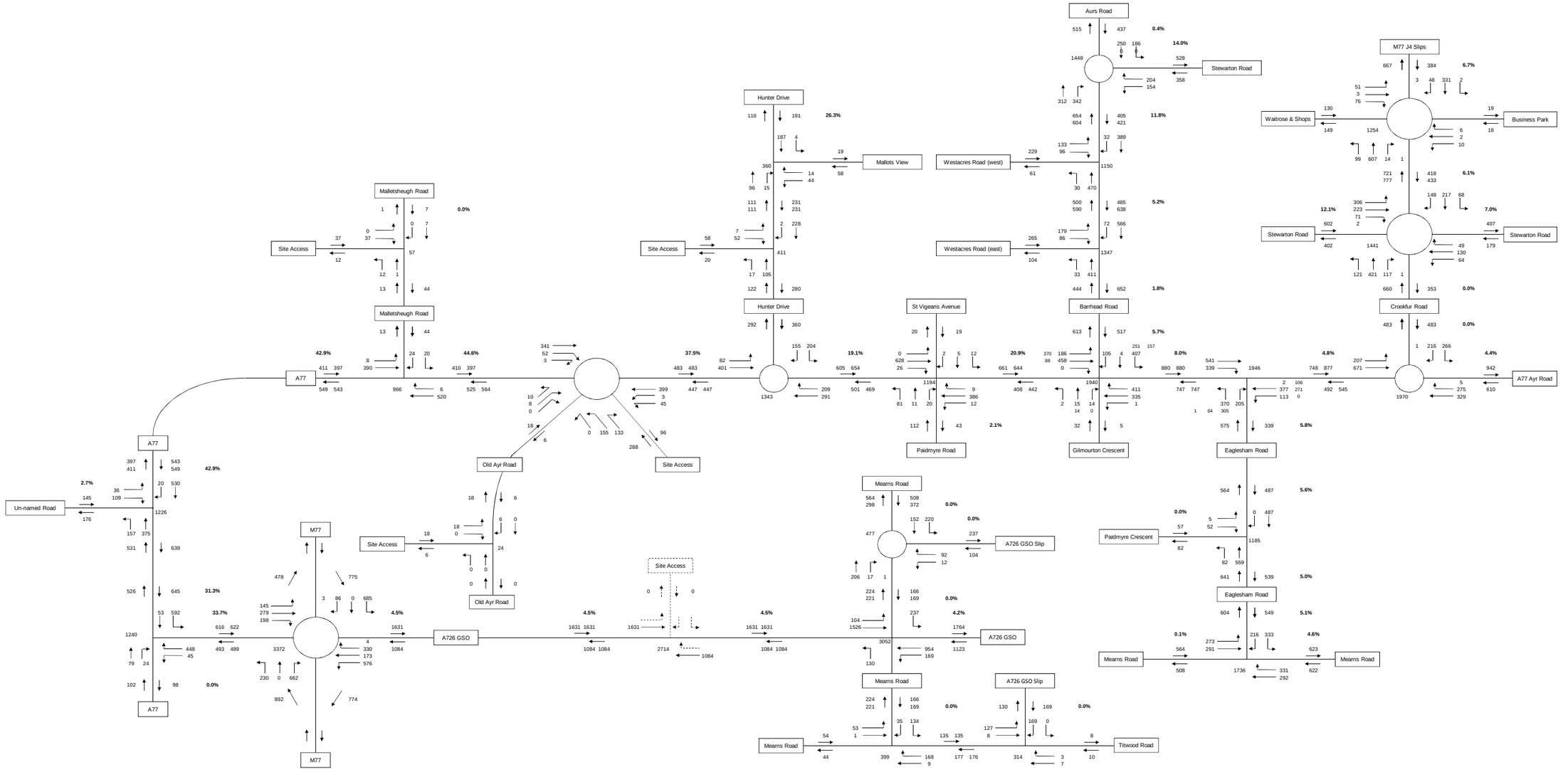
Total Residential Traffic Flows (Vehs)
Weekday AM (0800-0900) Peak Hour

Diagram

6a



TRANSPORT PLANNING	TITLE Maidenhill, Newton Mearns Proposed Residential Development Design Year Projected + Proposed Residential Development Traffic Flows (PCUs) Weekday AM (0800-0900) Peak Hour	Diagram **7a**



TRANSPORT PLANNING

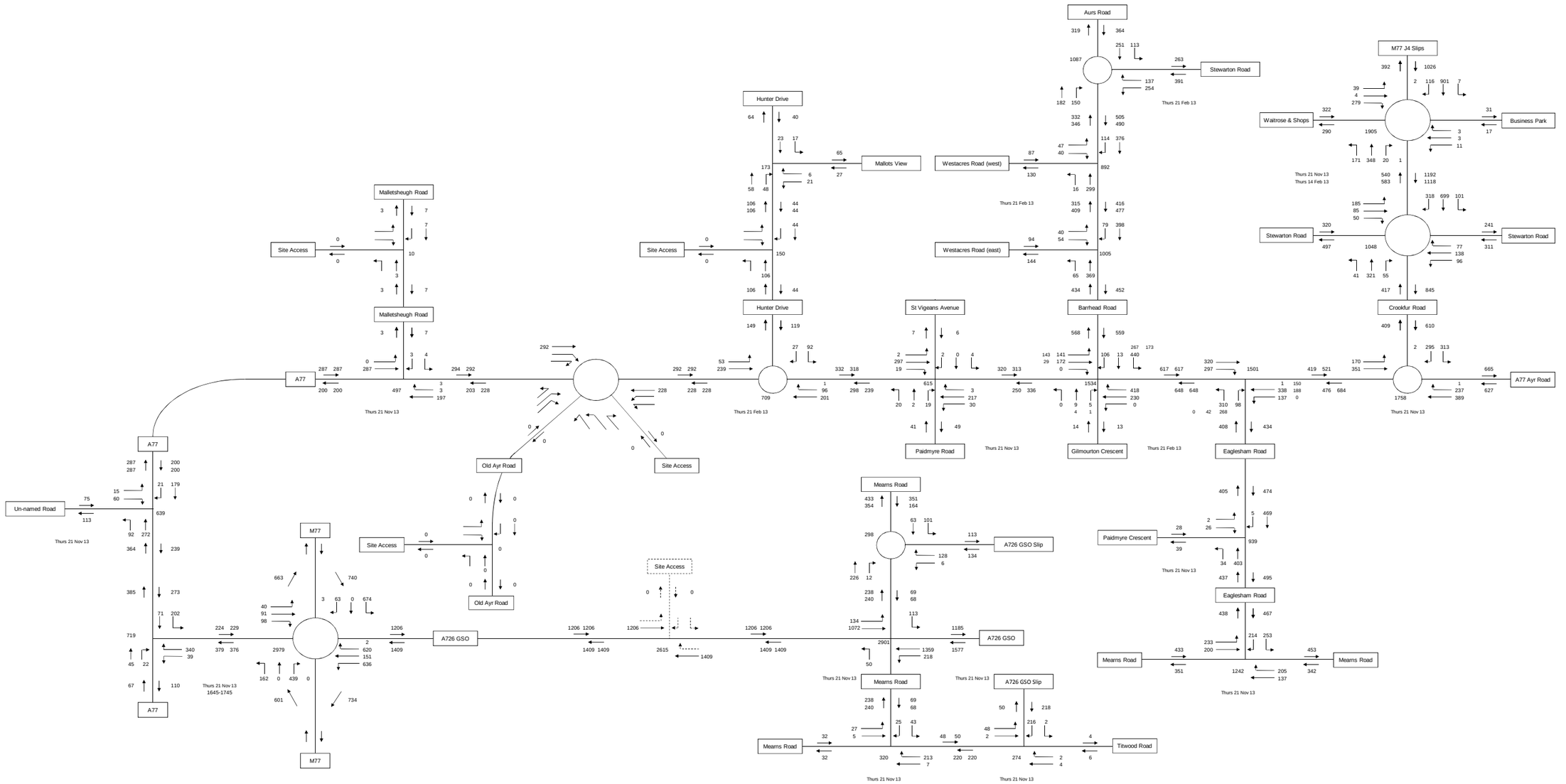
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Percentage Impact
Weekday AM (0800-0900) Peak Hour

Diagram

8a



TRANSPORT PLANNING

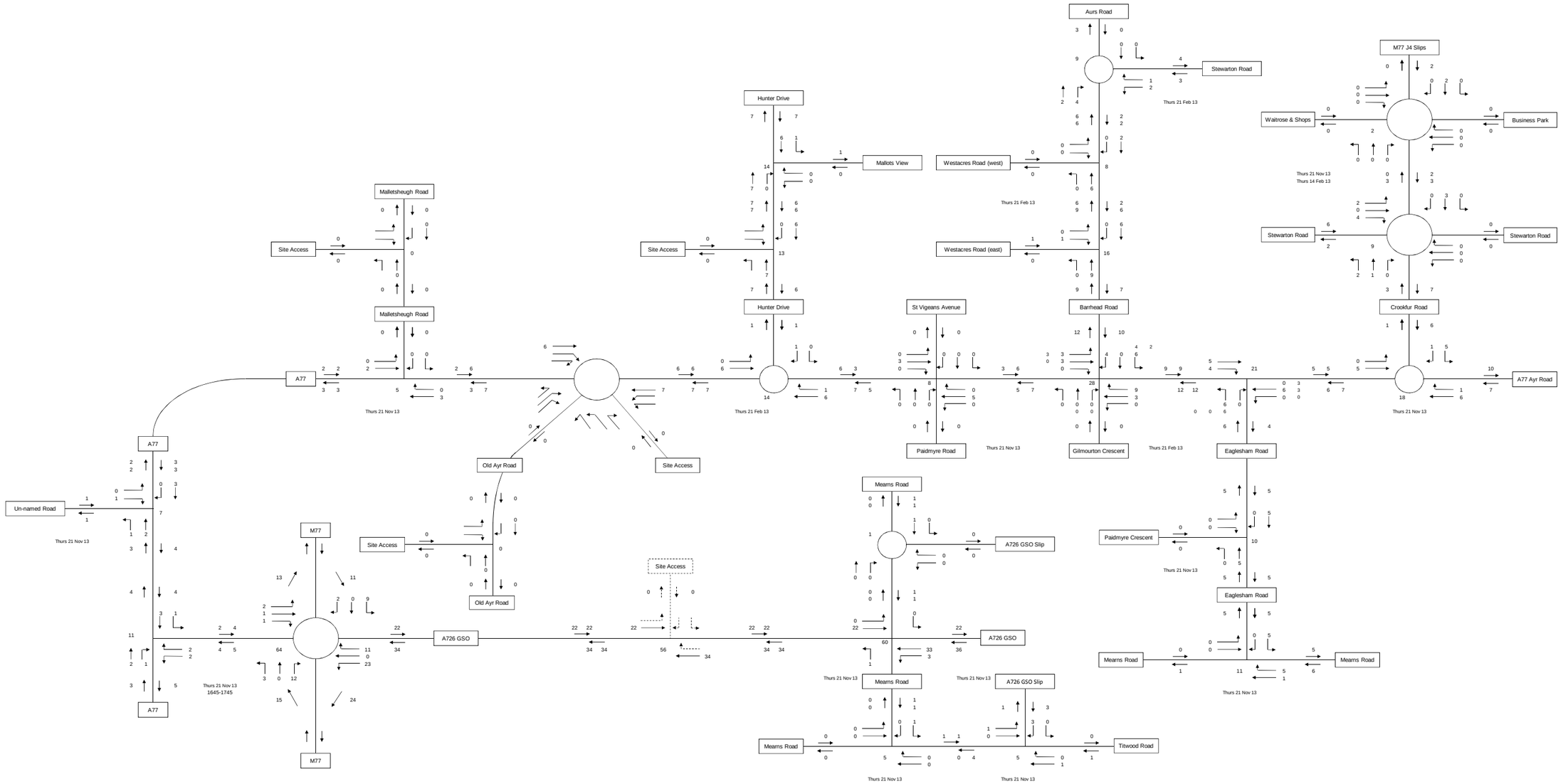
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

2013 Surveyed Traffic Flows (Vehs)
Weekday PM (1715-1815) Peak Hour

Diagram

1b



TRANSPORT PLANNING

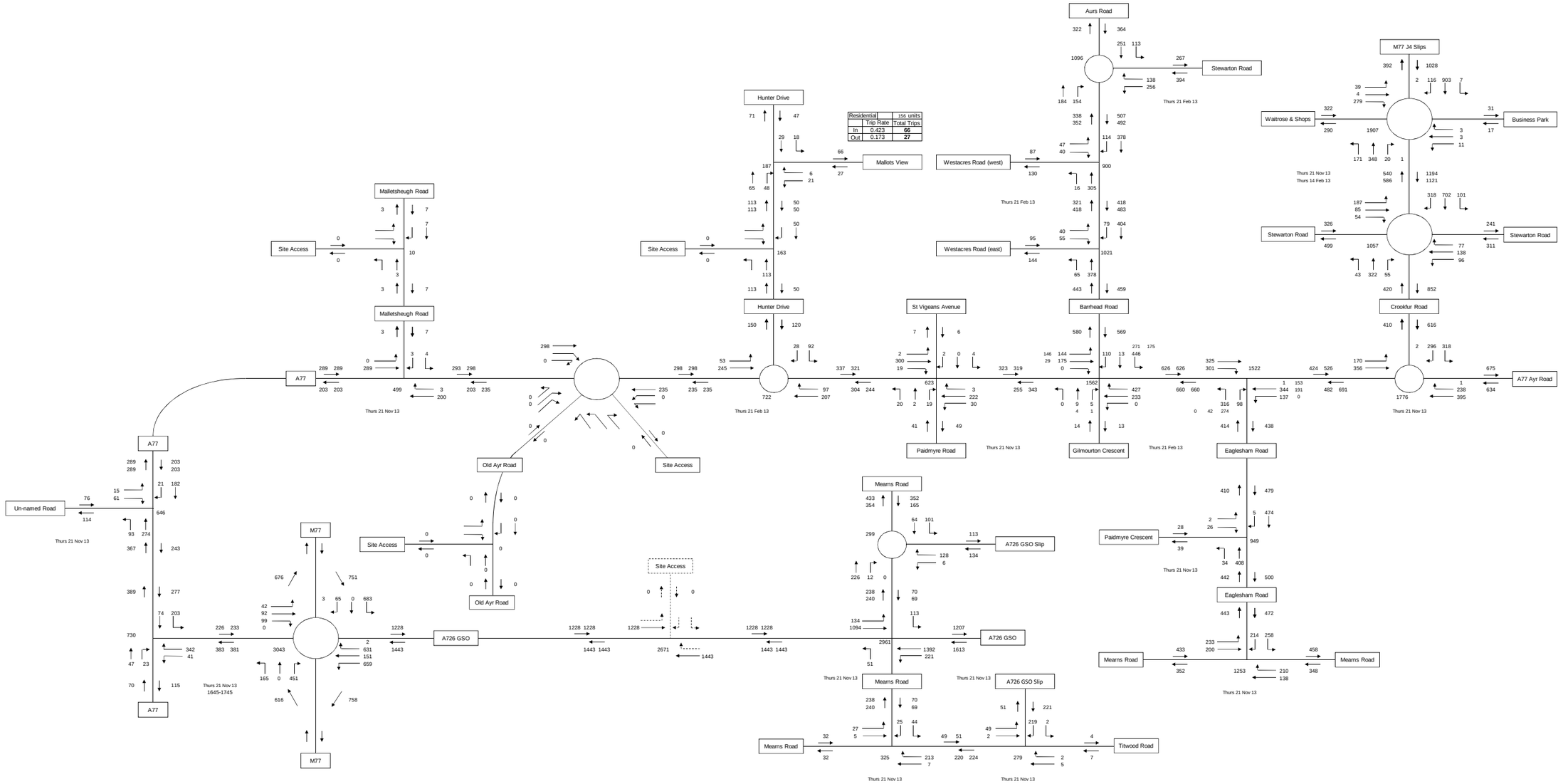
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

2013 Surveyed Traffic Flows (HGVs)
Weekday PM (1715-1815) Peak Hour

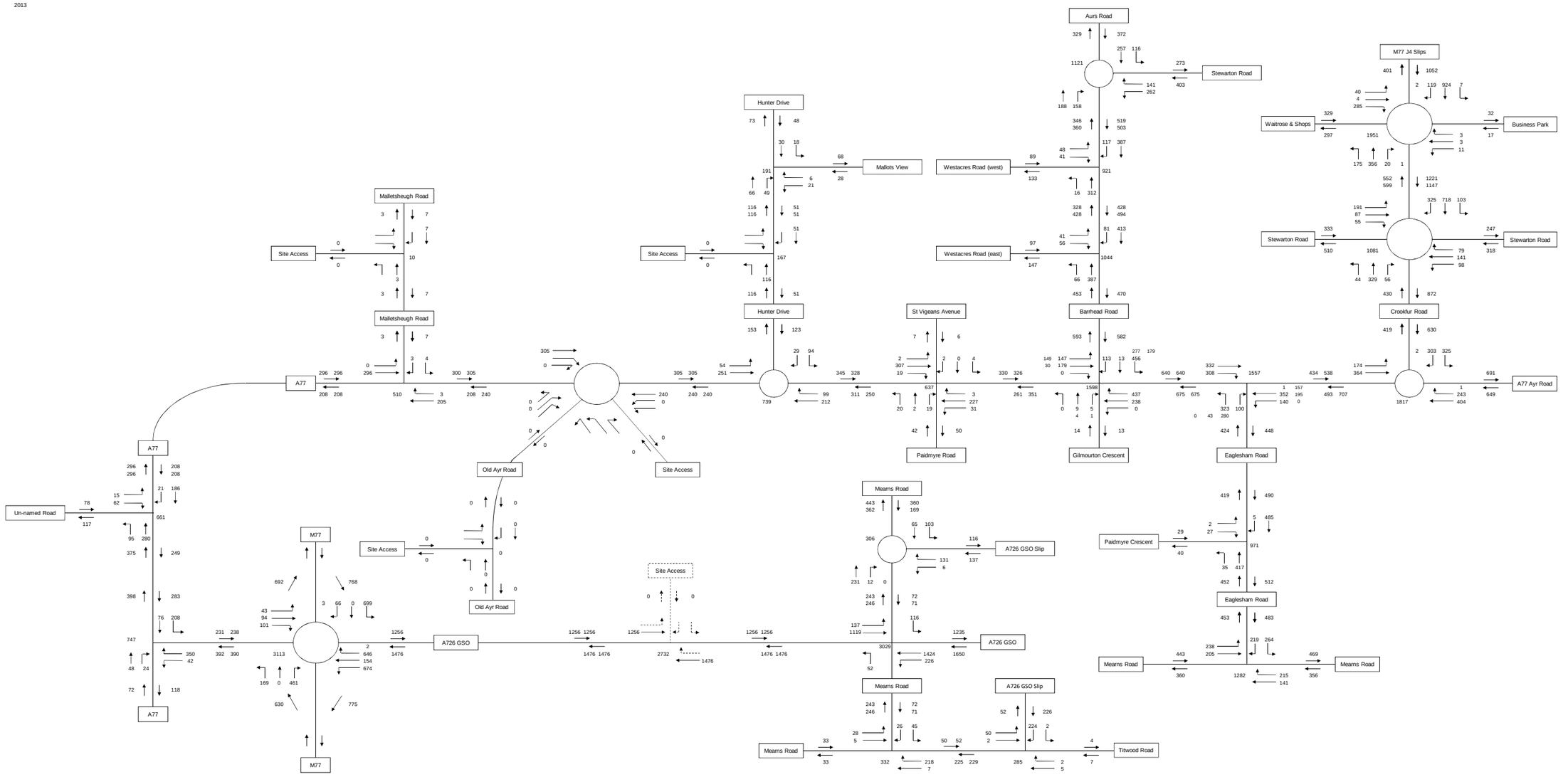
Diagram

2b



TRANSPORT PLANNING	TITLE	Diagram
	Maidenhill, Newton Mearns Proposed Residential Development 2013 Surveyed Traffic Flows (PCUs) Weekday PM (1715-1815) Peak Hour	**3b**

2015 1.023
2013



TRANSPORT PLANNING

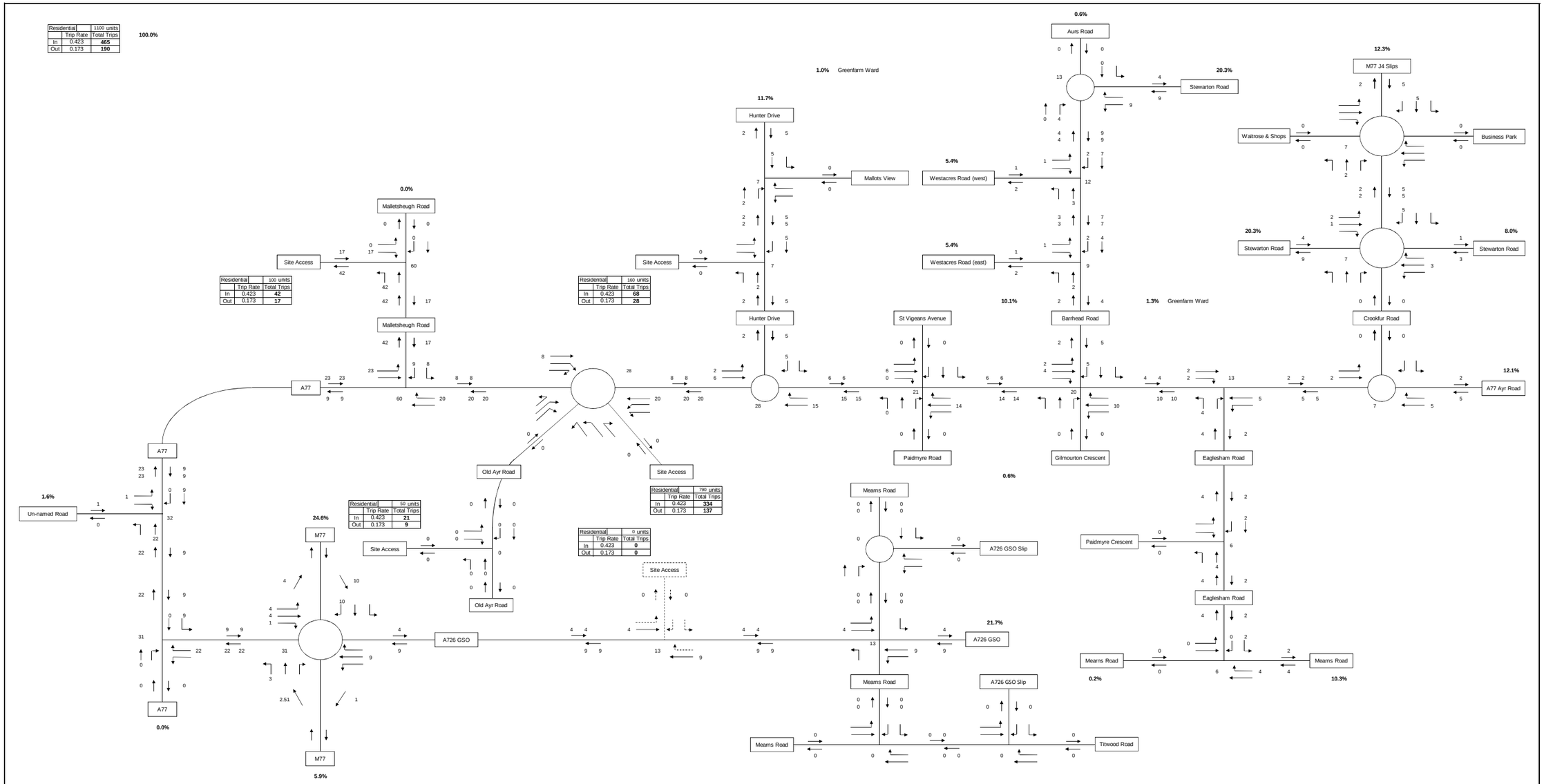
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

2015 Projected Traffic Flows (PCUs)
Weekday PM (1715-1815) Peak Hour

Diagram

4b



TRANSPORT PLANNING

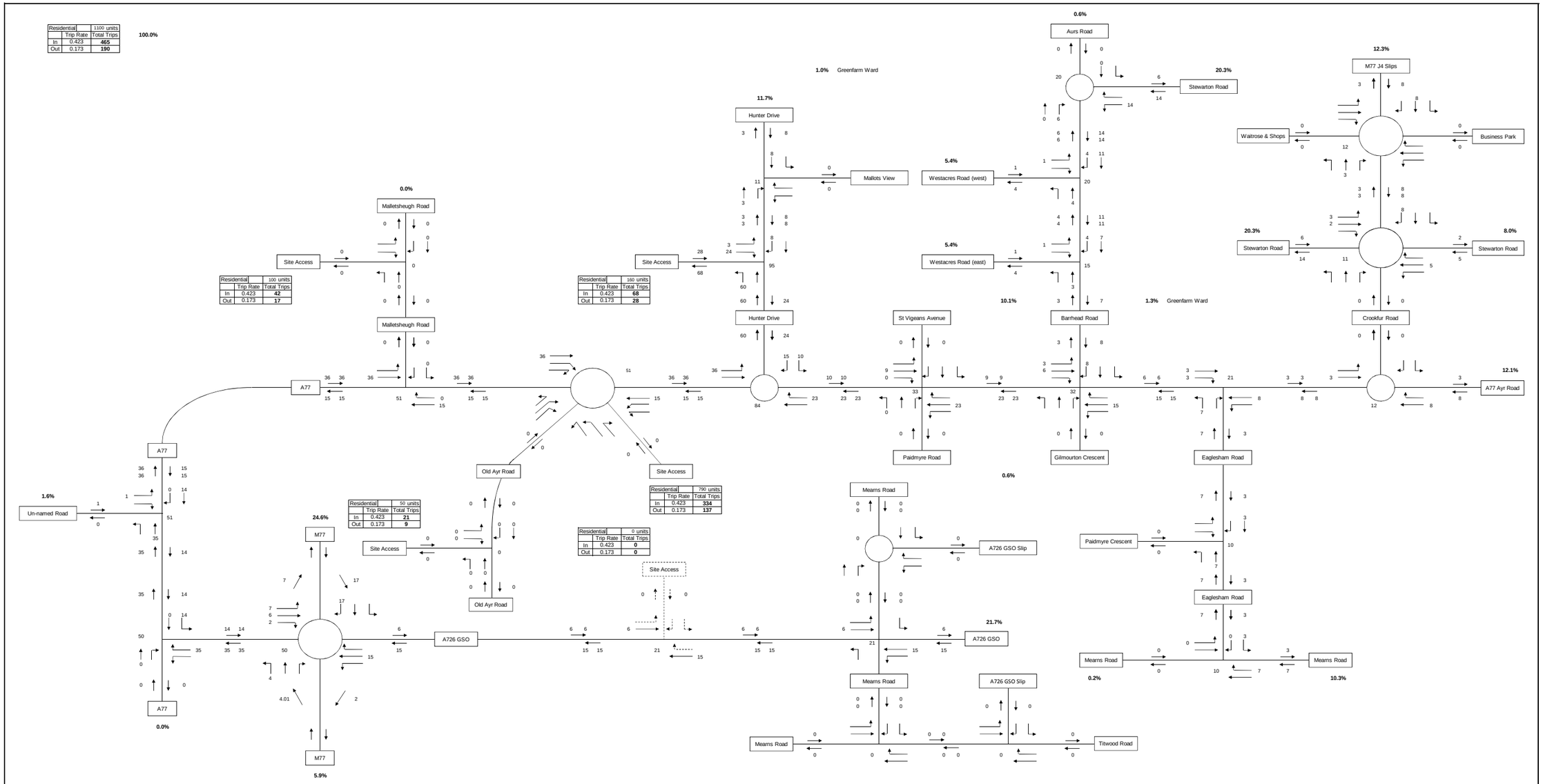
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from Malletsheugh Road Traffic Flows (Vehs)
Weekday PM (1615-1715) Peak Hour

Diagram

5.1b



TRANSPORT PLANNING

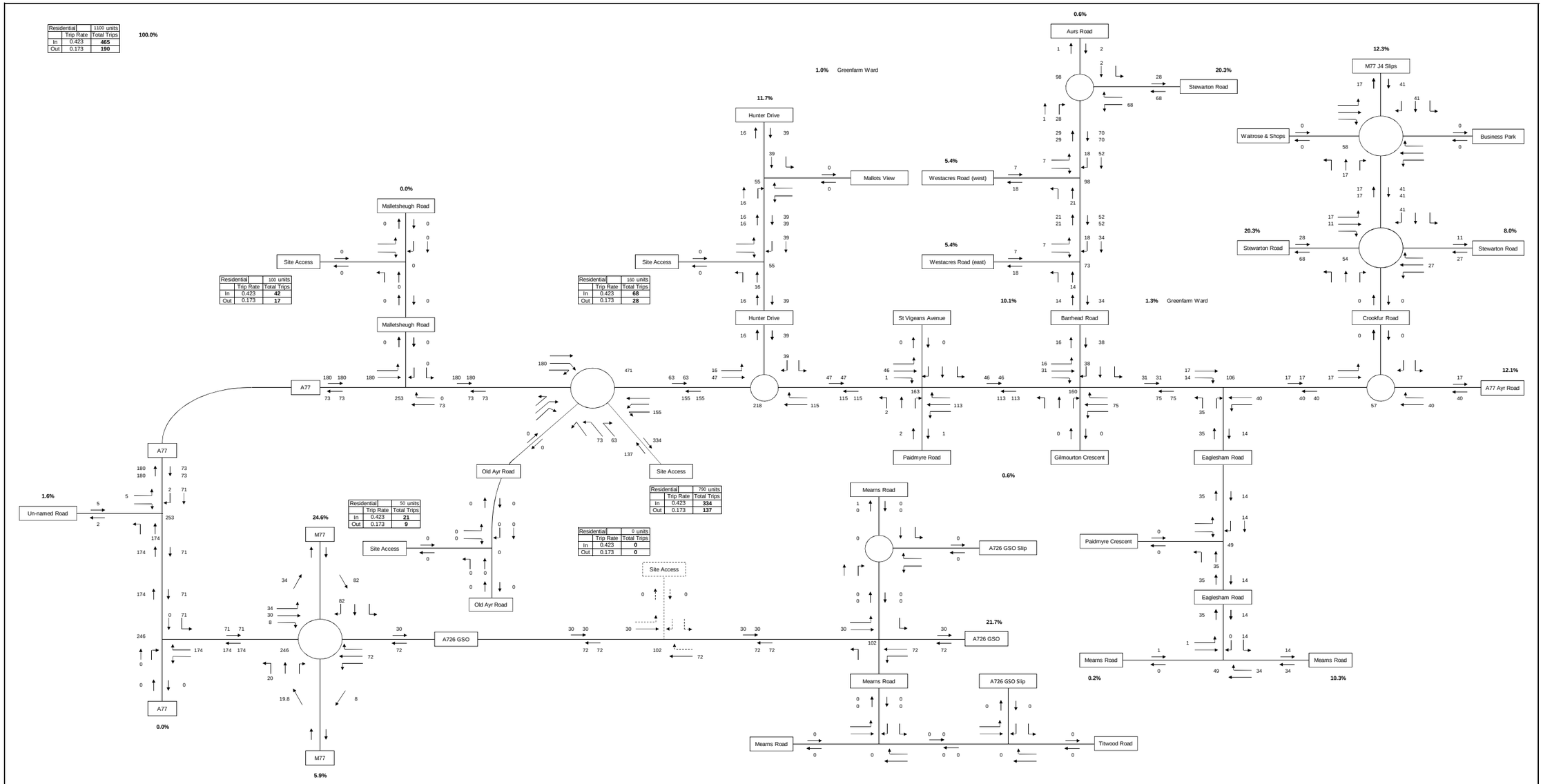
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from Hunter Drive Traffic Flows (Vehs)
Weekday PM (1615-1715) Peak Hour

Diagram

5.2b



TRANSPORT PLANNING

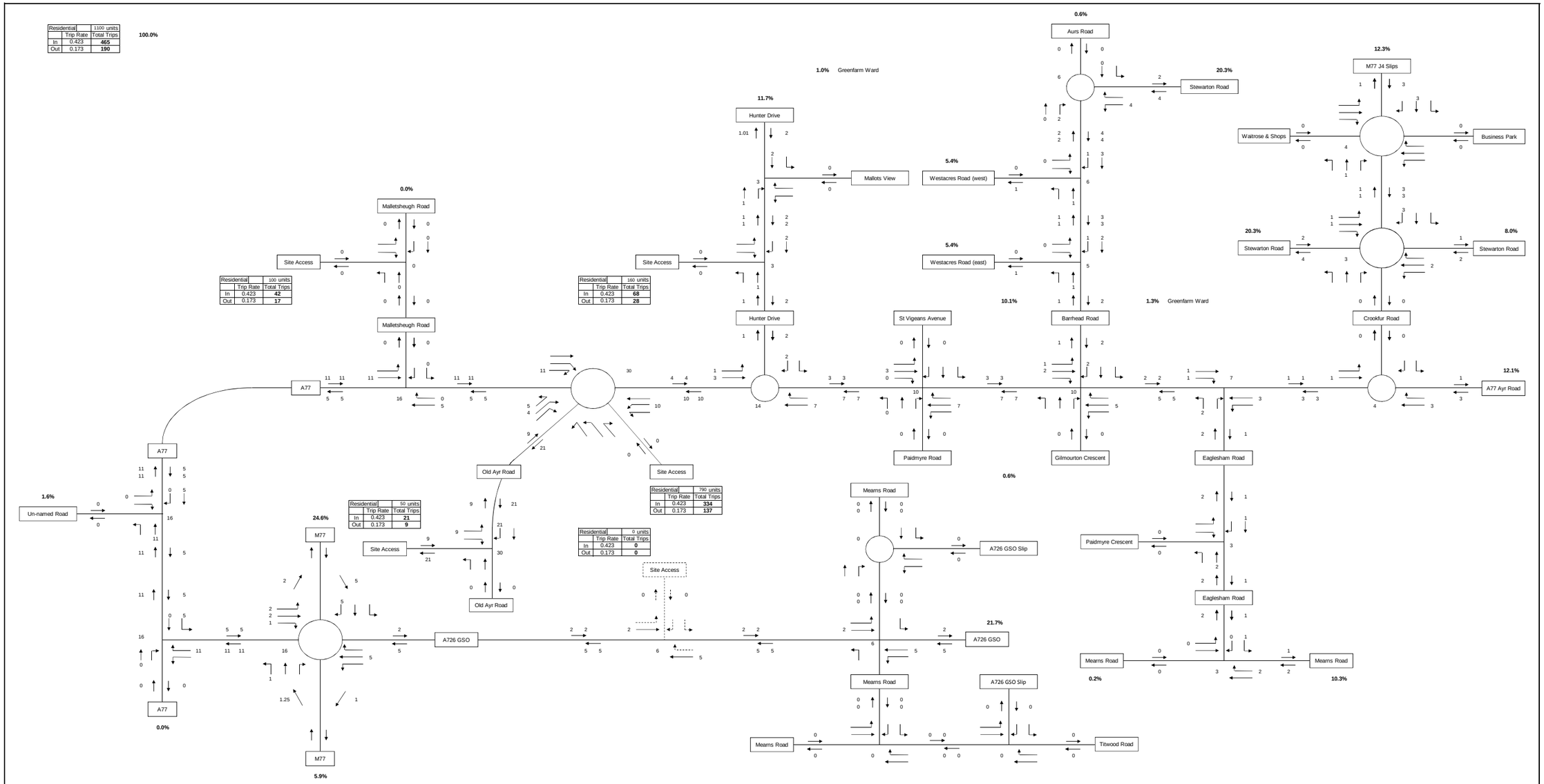
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from A77 Traffic Flows (Vehs)
Weekday PM (1615-1715) Peak Hour

Diagram

5.3b



TRANSPORT PLANNING

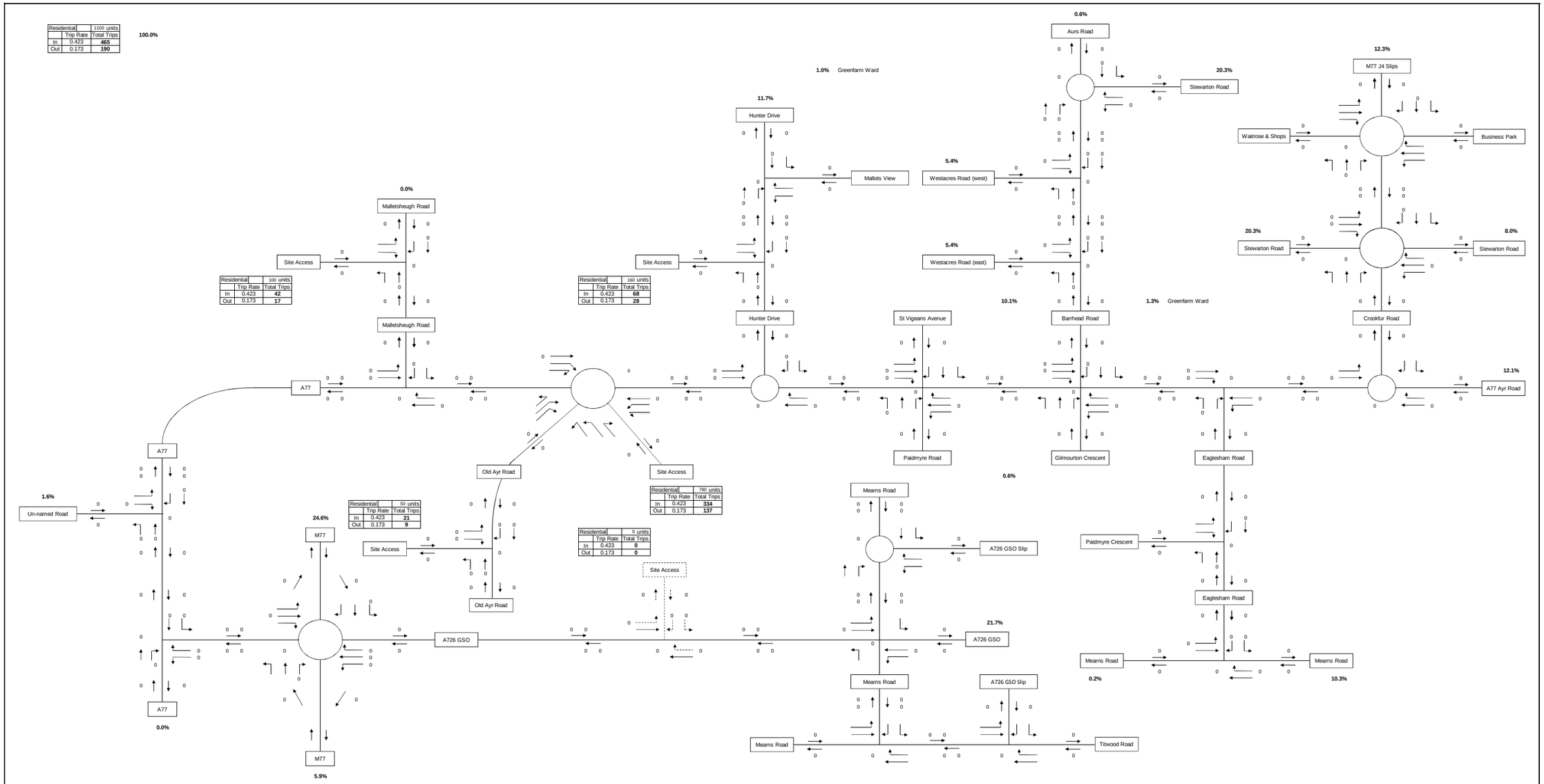
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Accessed from GSO Traffic Flows (Vehs)
Weekday PM (1615-1715) Peak Hour

Diagram

5.4b



TRANSPORT PLANNING

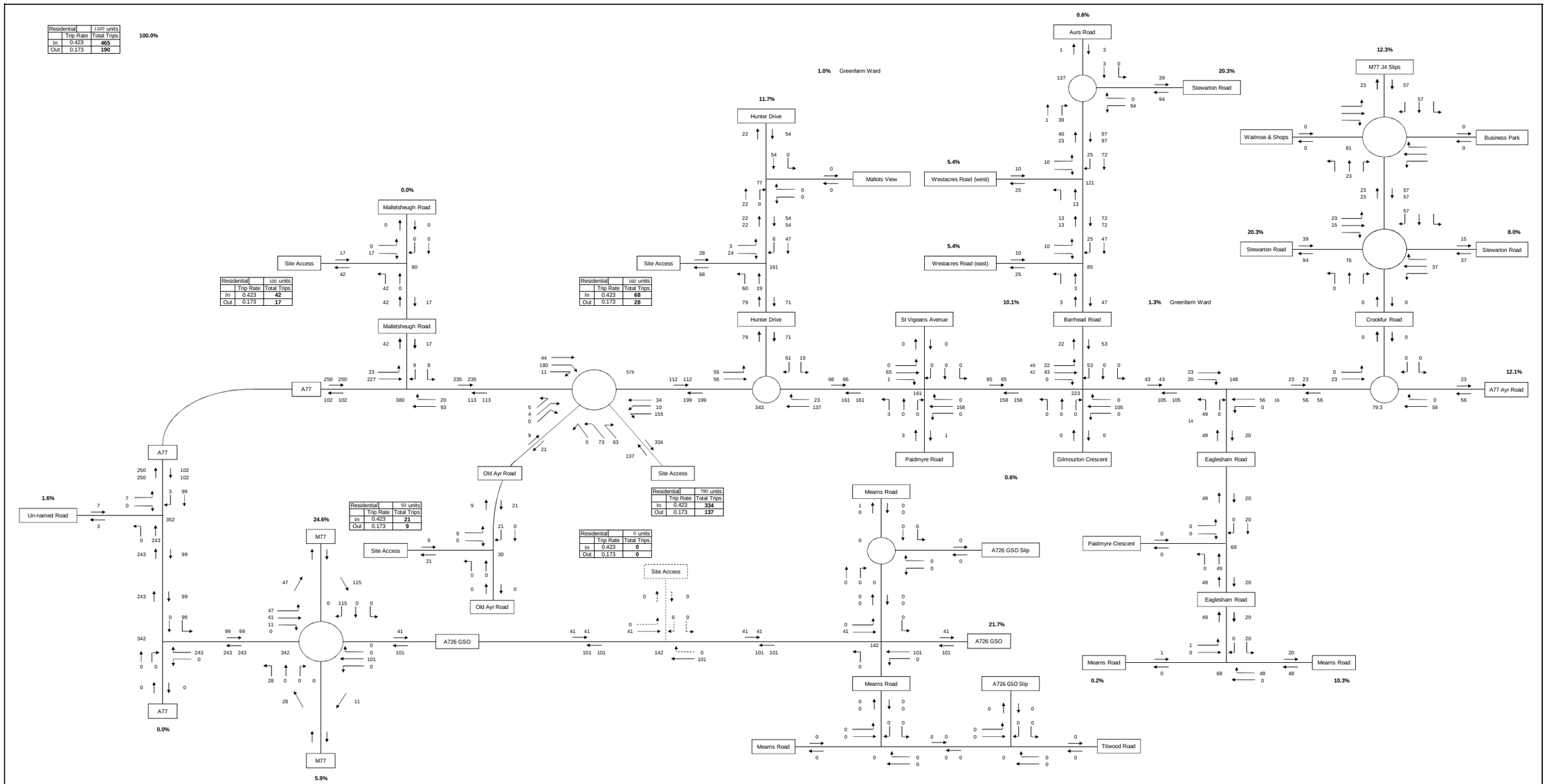
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Site Acccessed from GSO Traffic Flows (Vehs)
Weekday PM (1615-1715) Peak Hour

Diagram

5.5b



TRANSPORT PLANNING

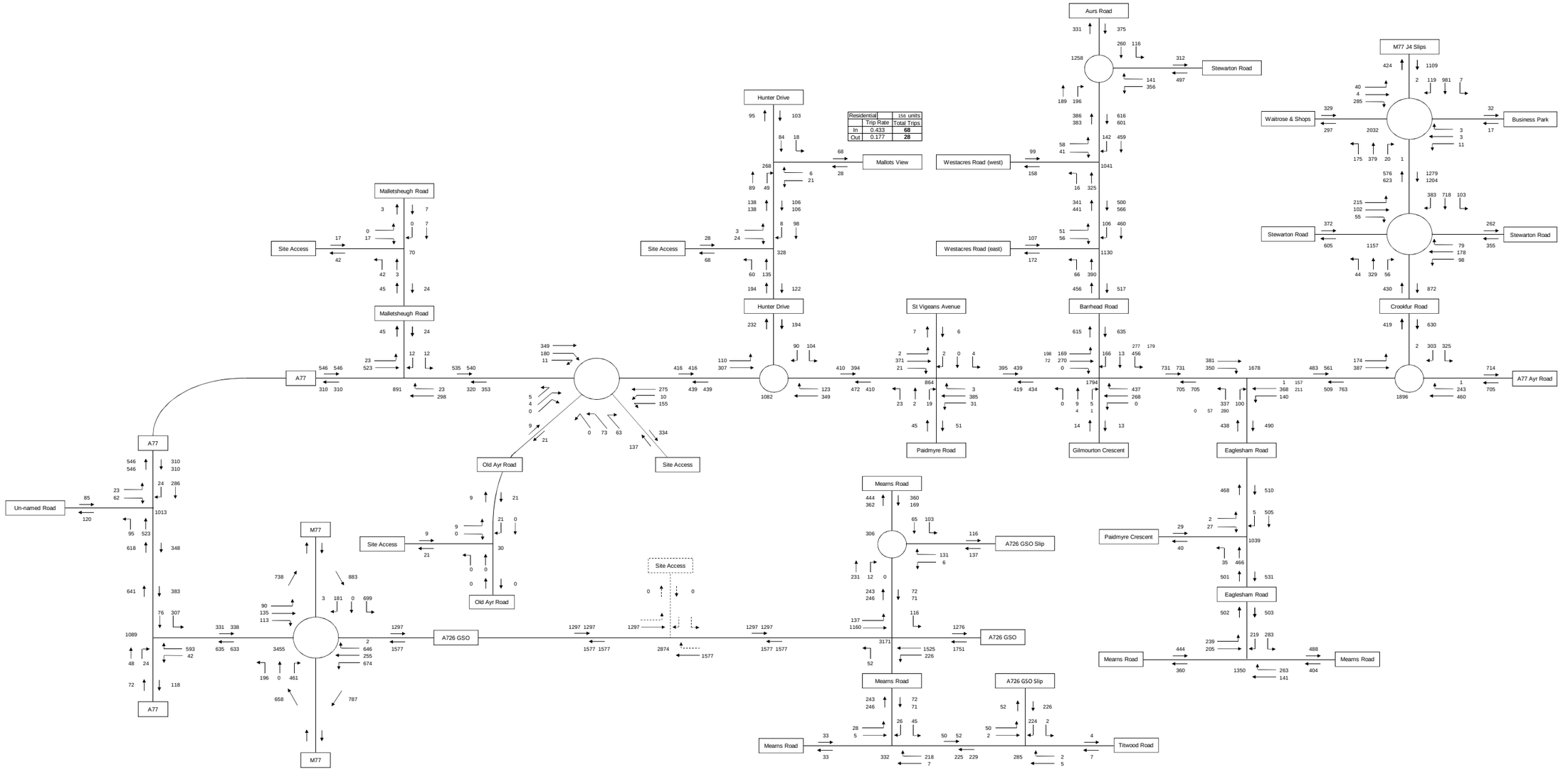
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Total Residential Traffic Flows (Vehs)
Weekday PM (1615-1715) Peak Hour

Diagram

6b



TRANSPORT PLANNING

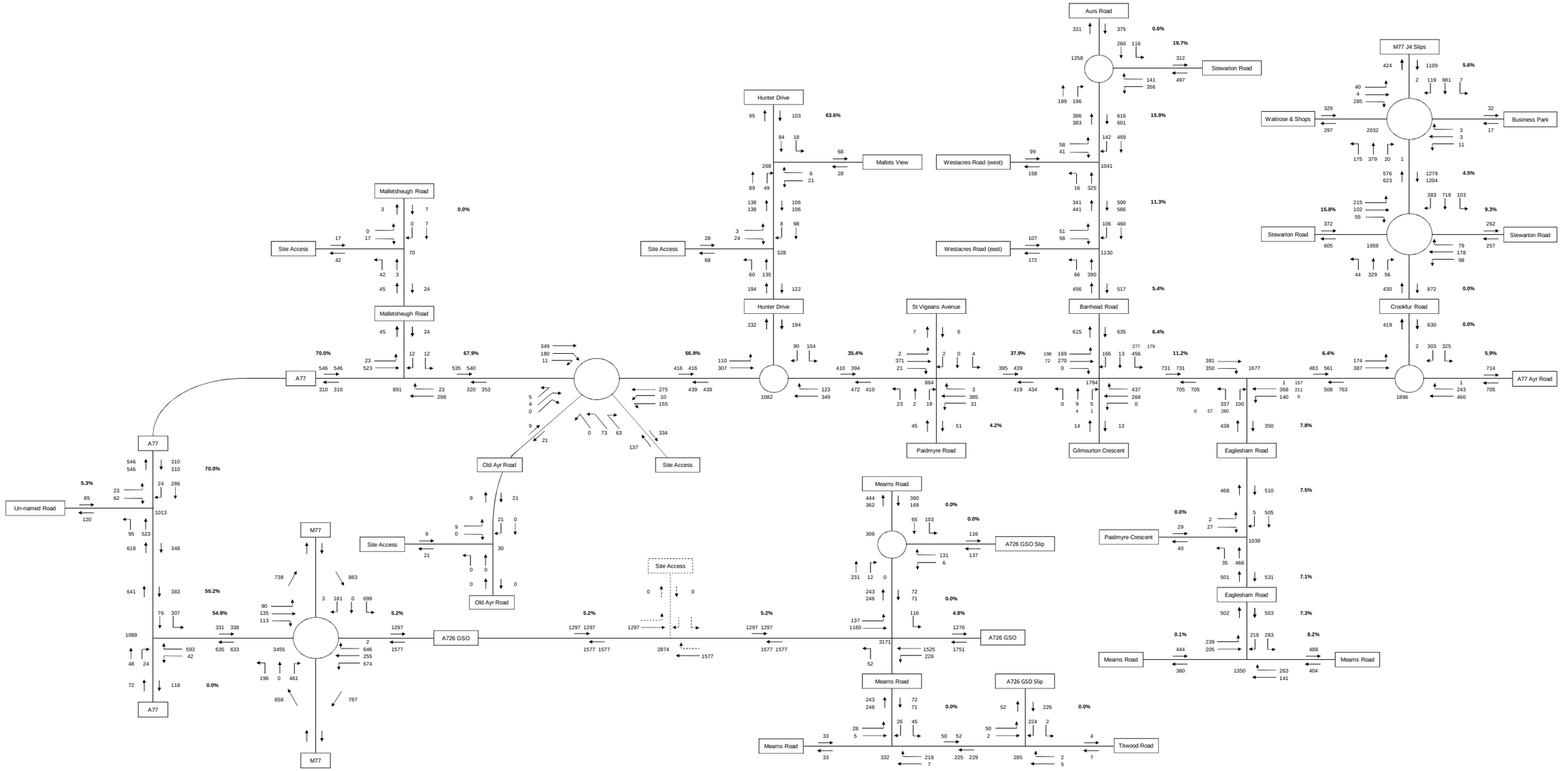
TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Design Year Projected + Proposed Residential Development Traffic Flows (PCUs)
Weekday PM (1715-1815) Peak Hour

Diagram

7b



TRANSPORT PLANNING

TITLE

Maidenhill, Newton Mearns
Proposed Residential Development

Percentage Impact
Weekday PM (1715-1815) Peak Hour

Diagram

8b

APPENDIX C

UV40 Method of travel to work or study - resident population (Scotland)
All people resident in area
Geographical level : Census Area Statistic Ward

	TOTAL 'NIGHT TIME' POPULATION	Not currently working or studying	Works or studies mainly at or from home	Underground, tube, metro or light rail	Train	Bus, minibus or coach	Taxi or minicab	Driving a car or van	Passenger in a car or van	Motorcycle, scooter or moped	Bicycle	On foot	Other
Scotland	5062011	1806005	189469	11465	90623	506832	29180	1258525	370970	12575	41117	717328	27922
				0.37	2.96	16.53	0.95	41.04	12.10	0.41	1.34	23.39	0.91
East Renfrewshire	89311	29102	3377	187	4468	8240	477	26693	7703	180	255	8279	350
				0.33	7.86	14.50	0.84	46.97	13.55	0.32	0.45	14.57	0.62
Mearns	4443	1690	188	11	95	402	39	1311	432	4	5	253	13
				0.43	3.70	15.67	1.52	51.11	16.84	0.16	0.19	9.86	0.51

Footnotes:

1 No fixed place: counted as if working or studying in the area and are classified according to the means of transport used.

2 'Working or studying' includes all people of any age who work or study mainly at or from home, at no fixed place or travel to a place of work or study.

APPENDIX D

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
06	WEST MIDLANDS		
	WO	WORCESTERSHIRE	1 days
08	NORTH WEST		
	MS	MERSEYSIDE	1 days
09	NORTH		
	TV	TEES VALLEY	1 days
13	MUNSTER		
	WA	WATERFORD	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 206 to 437 (units:)
Range Selected by User: 200 to 491 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 01/05/10

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	2 days
Tuesday	2 days
Thursday	4 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	8 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	2
Edge of Town	4
Neighbourhood Centre (PPS6 Local Centre)	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	6
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out

Filtering Stage 3 selection:

Use Class:

C3	8 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

10,001 to 15,000	1 days
15,001 to 20,000	2 days
20,001 to 25,000	2 days
25,001 to 50,000	3 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
75,001 to 100,000	2 days
125,001 to 250,000	3 days
250,001 to 500,000	1 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	8 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 DL-03-A-02 SEMI DETACHED DUBLIN
COLLINS AVENUE

DUBLIN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 437
Survey date: MONDAY 25/06/07 Survey Type: MANUAL

2 DL-03-A-03 TERRACED/SEMI-DET. DUBLIN
RAHENY ROAD
RAHENY
DUBLIN
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of dwellings: 206
Survey date: TUESDAY 20/04/10 Survey Type: MANUAL

3 EX-03-A-01 SEMI-DET. ESSEX
MILTON ROAD
CORRINGHAM
STANFORD-LE-HOPE
Edge of Town
Residential Zone
Total Number of dwellings: 237
Survey date: TUESDAY 13/05/08 Survey Type: MANUAL

4 MS-03-A-01 TERRACED MERSEYSIDE
PALACE FIELDS AVENUE

RUNCORN
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of dwellings: 372
Survey date: THURSDAY 06/10/05 Survey Type: MANUAL

5 SF-03-A-02 SEMI DET./TERRACED SUFFOLK
STOKE PARK DRIVE
MAIDENHALL
IPSWICH
Edge of Town
Residential Zone
Total Number of dwellings: 230
Survey date: THURSDAY 24/05/07 Survey Type: MANUAL

6 TV-03-A-01 HOUSES & FLATS TEES VALLEY
POWLETT ROAD

HARTLEPOOL
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 225
Survey date: THURSDAY 14/04/05 Survey Type: MANUAL

7 WA-03-A-02 DETACHED WATERFORD
MAYPARK LANE

WATERFORD
Edge of Town
Residential Zone
Total Number of dwellings: 290
Survey date: MONDAY 17/11/08 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 WO-03-A-06 DET./TERRACED WORCESTERSHIRE
ST GODWALDS ROAD
ASTON FIELDS
BROMSGROVE
Edge of Town
No Sub Category
Total Number of dwellings: 232
Survey date: THURSDAY 30/06/05 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	279	0.087	8	279	0.361	8	279	0.448
08:00 - 09:00	8	279	0.186	8	279	0.833	8	279	1.019
09:00 - 10:00	8	279	0.195	8	279	0.281	8	279	0.476
10:00 - 11:00	8	279	0.174	8	279	0.233	8	279	0.407
11:00 - 12:00	8	279	0.218	8	279	0.236	8	279	0.454
12:00 - 13:00	8	279	0.230	8	279	0.228	8	279	0.458
13:00 - 14:00	8	279	0.234	8	279	0.249	8	279	0.483
14:00 - 15:00	8	279	0.311	8	279	0.274	8	279	0.585
15:00 - 16:00	8	279	0.547	8	279	0.338	8	279	0.885
16:00 - 17:00	8	279	0.467	8	279	0.310	8	279	0.777
17:00 - 18:00	8	279	0.536	8	279	0.312	8	279	0.848
18:00 - 19:00	8	279	0.451	8	279	0.335	8	279	0.786
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.636			3.990			7.626

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	206 - 437 (units:)
Survey date date range:	01/01/05 - 01/05/10
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL TOTAL PEOPLE

Selected regions and areas:

02	SOUTH EAST		
	HC	HAMPSHIRE	2 days
	SC	SURREY	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Number of dwellings
Actual Range:	253 to 500 (units:)
Range Selected by User:	200 to 1000 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 11/12/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	1 days
Wednesday	1 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	1
Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	3
Village	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	4 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	1 days
15,001 to 20,000	1 days
20,001 to 25,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

125,001 to 250,000	4 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

1.1 to 1.5	3 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	3 days
No	1 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	HC-03-M-02	BLOCKS OF FLATS		HAMPSHIRE
	COOMBE WAY			
	FARNBOROUGH			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:		253	
	Survey date: MONDAY		26/11/12	Survey Type: MANUAL
2	HC-03-M-04	HOUSES & FLATS		HAMPSHIRE
	HUNTS POND ROAD			
	TITCHFIELD			
	NEAR FAREHAM			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:		282	
	Survey date: TUESDAY		11/12/12	Survey Type: MANUAL
3	SC-03-M-02	HOUSES & FLATS		SURREY
	DEEPCUT BRIDGE ROAD			
	DEEPCUT			
	NEAR FRIMLEY			
	Neighbourhood Centre (PPS6 Local Centre)			
	Village			
	Total Number of dwellings:		342	
	Survey date: WEDNESDAY		10/02/10	Survey Type: MANUAL
4	SC-03-M-03	HOUSES & FLATS		SURREY
	ST ANNE'S DRIVE			
	REDHILL			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:		500	
	Survey date: THURSDAY		08/09/11	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	344	0.101	4	344	0.378	4	344	0.479
08:00 - 09:00	4	344	0.139	4	344	0.648	4	344	0.787
09:00 - 10:00	4	344	0.163	4	344	0.219	4	344	0.382
10:00 - 11:00	4	344	0.143	4	344	0.171	4	344	0.314
11:00 - 12:00	4	344	0.139	4	344	0.177	4	344	0.316
12:00 - 13:00	4	344	0.189	4	344	0.182	4	344	0.371
13:00 - 14:00	4	344	0.206	4	344	0.193	4	344	0.399
14:00 - 15:00	4	344	0.195	4	344	0.232	4	344	0.427
15:00 - 16:00	4	344	0.391	4	344	0.203	4	344	0.594
16:00 - 17:00	4	344	0.375	4	344	0.235	4	344	0.610
17:00 - 18:00	4	344	0.470	4	344	0.207	4	344	0.677
18:00 - 19:00	4	344	0.384	4	344	0.198	4	344	0.582
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.895			3.043			5.938

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	253 - 500 (units:)
Survey date date range:	01/01/05 - 11/12/12
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

APPENDIX E

Overall Distribution

	Area/ Electoral Ward	2001 Workplace	Distance to Site	Population/ Distance	%	Direction from Site	Route to Site
	East Ayrshire						
	Auchinleck	1011	25	40.4	0.05%	South	M77 (south)
	Bellsbank	132	40	3.3	0.00%	South	M77 (south)
	Catrine	410	23	17.8	0.02%	South	M77 (south)
	Crosshouse	2806	15	187.1	0.24%	South West	M77 (south)/ Un-named Road
	Cumnock	3196	27	118.4	0.15%	South	M77 (south)
	Dalmellington and Burnton	469	40	11.7	0.02%	South	M77 (south)
	Dalrymple	191	31	6.2	0.01%	South West	M77 (south)
	Darvel	797	17	46.9	0.06%	South	M77 (south)
	Drongan	468	28	16.7	0.02%	South West	M77 (south)
	Dunlop	163	12	13.6	0.02%	West	M77 (south)/ Un-named Road
	Fenwick	180	9	20.0	0.03%	South West	M77 (south)
	Galston and Newmilns	2006	14	143.3	0.19%	South	M77 (south)
	Hurlford and Crookedholm	884	15	58.9	0.08%	South West	M77 (south)
	Kilmarnock	17455	13	1342.7	1.75%	South West	M77 (south)
	Kilmaurs	521	13	40.1	0.05%	South West	M77 (south)/ Un-named Road
	Logan	309	28	11.0	0.01%	South	M77 (south)
	Mauchline	701	21	33.4	0.04%	South	M77 (south)
	Muirkirk	230	29	7.9	0.01%	South East	A726 GSO (East)
	New Cumnock	551	33	16.7	0.02%	South	M77 (south)
	Ochiltree	90	26	3.5	0.00%	South	M77 (south)
	Patna	286	34	8.4	0.01%	South West	M77 (south)
	Stewarton	1249	10	124.9	0.16%	South West	Un-named Road
	East Dunbartonshire						
	Bearsden	4233	13	325.6	0.42%	North	M77 (north)
	Bishopbriggs	7891	12	657.6	0.86%	North	M77 (north)
	Kirkintilloch and Lenzie	7855	16	490.9	0.64%	North East	M77 (north)
	Lennoxtown	668	18	37.1	0.05%	North	M77 (north)
	Milngavie	4139	15	275.9	0.36%	North	M77 (north)
	Milton of Campsie	513	17	30.2	0.04%	North	M77 (north)
	Torrance	382	15	25.5	0.03%	North	M77 (north)
	Twechar	196	19	10.3	0.01%	North East	M77 (north)
	East Renfrewshire						
	Barrhead	3840	4	960.0	1.25%	North West	Un-named Road/ Aurs Road
	Clarkston and Busby	2407	4	601.8	0.78%	North East	Mearns Road (north)
	Eaglesham	449	4	112.3	0.15%	South East	Mearns Road (south)
	Giffnock	2714	4	678.5	0.88%	North	A77 Ayr Road (north)
	Neilston	794	5	158.8	0.21%	West	Un-named Road
	Newton Mearns						
7	Greenfarm	1464	1	1464.0	1.90%	North	Hunter Drive/ Barrhead Road
12	Crookfur	979	2	489.5	0.64%	North East	Barrhead Road/ A77 Ayr Road (north)
15	Broom	475	2	237.5	0.31%	East	A77 Ayr Road (north)
16	Kirkhill	658	2	329.0	0.43%	East	Mearns Road (north)
19	Mearns	911	1	911.0	1.18%	East	Paidmyre Road/ Mearns Road (north)
	Thornliebank	1825	3	608.3	0.79%	North	Stewarton Road
	Uplawmoor	99	8	12.4	0.02%	West	Un-named Road
	Waterfoot	119	3	39.7	0.05%	West	Mearns Road (north)
	Falkirk						
	Airth	188	34	5.5	0.01%	North East	A726 GSO (East)
	Avonbridge	103	31	3.3	0.00%	North East	A726 GSO (East)
	Banknock and Haggs	676	25	27.0	0.04%	North East	A726 GSO (East)
	Boness	3267	37	88.3	0.11%	North East	A726 GSO (East)
	Bonnybridge	4322	26	166.2	0.22%	North East	A726 GSO (East)
	California	79	32	2.5	0.00%	North East	A726 GSO (East)
	Falkirk	42285	30	1409.5	1.83%	North East	A726 GSO (East)
	Hallglen	324	30	10.8	0.01%	North East	A726 GSO (East)
	Shieldhill	249	31	8.0	0.01%	North East	A726 GSO (East)
	Slamannan	193	27	7.1	0.01%	North East	A726 GSO (East)
	Whitecross	89	36	2.5	0.00%	North East	A726 GSO (East)
	Fife						
	Kincardine	488	35	13.9	0.02%	North East	A726 GSO (East)
	Glasgow City						
17	Anderston	77078	8	9634.8	12.53%	North	M77 (north)/ Stewarton Road/ A77 Ayr Road (North)/ Mearns Road (north)
7	Anniesland	2883	11	262.1	0.34%	North	M77 (north)
24	Ashfield	2433	11	221.2	0.29%	North	M77 (north)
47	Baillieston	1665	13	128.1	0.17%	North East	A726 GSO (East)
42	Barlanark	1813	13	139.5	0.18%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
69	Battlefield	4167	6	694.5	0.90%	North	A77 Ayr Road (north)/ Mearns Road (north)
3	Blairdardie	1451	13	111.6	0.15%	North	M77 (north)
45	Braidfauld	2096	10	209.6	0.27%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
35	Bridgeton/Dalmarnock	2277	9	253.0	0.33%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
34	Calton	3559	9	395.4	0.51%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
58	Cardonald	1514	8	189.3	0.25%	North	M77 (north)
78	Carmunnock	1441	7	205.9	0.27%	North East	Mearns Road (north)
37	Carntyne	1476	11	134.2	0.17%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
63	Carnwadric	1313	4	328.3	0.43%	North	Stewarton Road (north)
77	Castlemilk	1626	7	232.3	0.30%	North East	Mearns Road (north)
73	Cathcart	2504	5	500.8	0.65%	North East	A77 Ayr Road (north)/ Mearns Road (north)
29	Cowlairs	4289	10	428.9	0.56%	North	M77 (north)
60	Crookston	984	6	164.0	0.21%	North	M77 (north)
62	Darnley	2336	4	584.0	0.76%	North	M77 (north)

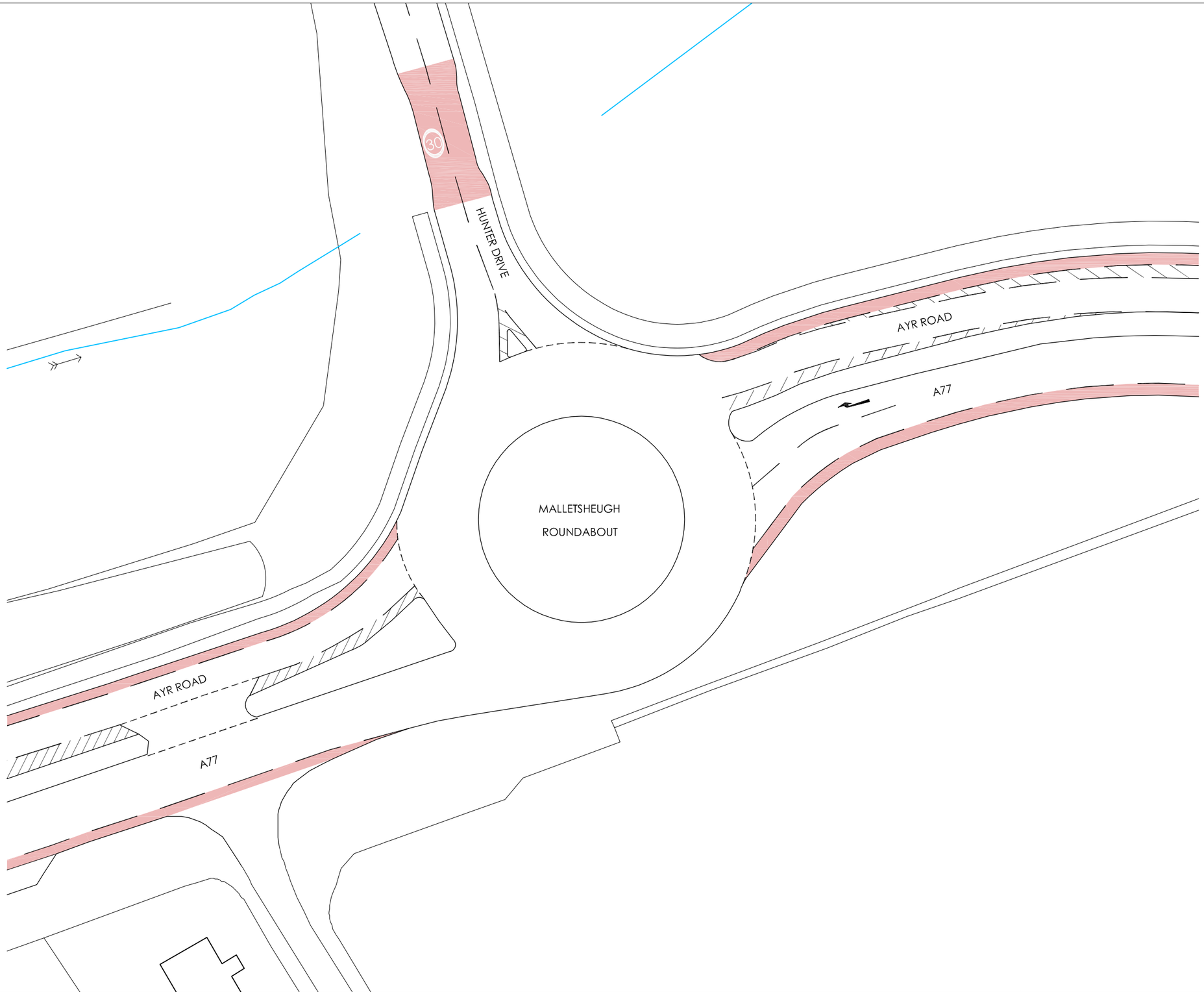
33	Dennistoun	1814	9	201.6	0.26%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
51	Drumoyne	8773	9	974.8	1.27%	North	Stewarton Road (north)
1	Drumry	1525	14	108.9	0.14%	North	M77 (north)
50	Easterhouse	1605	14	114.6	0.15%	North East	M77 (north)
25	Firhill	1953	9	217.0	0.28%	North	M77 (north)
48	Garrowhill	1417	13	109.0	0.14%	North East	A726 GSO (East)
39	Gartcraig	1979	15	131.9	0.17%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
49	Garthamlock	845	13	65.0	0.08%	North East	M77 (north)
79	Glenwood	925	8	115.6	0.15%	North East	Mearns Road (north)
52	Govan	4427	8	553.4	0.72%	North	Stewarton Road (north)
67	Govanhill	3425	6	570.8	0.74%	North East	A77 Ayr Road (north)/ Mearns Road (north)
41	Greenfield	1278	11	116.2	0.15%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
12	Hayburn	2164	10	216.4	0.28%	North	M77 (north)
14	Hillhead	4575	9	508.3	0.66%	North	M77 (north)
66	Hutchesontown	4168	7	595.4	0.77%	North East	A77 Ayr Road (north)/ Mearns Road (north)
13	Hyndland	1971	10	197.1	0.26%	North	M77 (north)
53	Ibrox	2880	8	360.0	0.47%	North	Stewarton Road (north)
8	Jordanhill	4914	11	446.7	0.58%	North	M77 (north)
9	Kelvindale	2010	11	182.7	0.24%	North	M77 (north)
16	Kelvingrove	12068	9	1340.9	1.74%	North	M77 (north)
26	Keppochhill	3772	10	377.2	0.49%	North	M77 (north)
76	King's Park	771	7	110.1	0.14%	North East	A77 Ayr Road (north)/ Mearns Road (north)
54	Kingston	9963	9	1107.0	1.44%	North	A77 Ayr Road (north)
4	Knightswood Park	653	12	54.4	0.07%	North	M77 (north)
5	Knightswood South	795	12	66.3	0.09%	North	M77 (north)
70	Langside	1526	5	305.2	0.40%	North East	A77 Ayr Road (north)
21	Maryhill	705	11	64.1	0.08%	North	M77 (north)
64	Maxwell Park	1583	6	263.8	0.34%	North	Stewarton Road (north)
27	Merchant City	28391	8	3548.9	4.62%	North	M77 (north)/ Stewarton Road/ A77 Ayr Road (North)/ Mearns Road (north)
32	Milnbank	2531	13	194.7	0.25%	North	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
23	Milton	1487	12	123.9	0.16%	North	M77 (north)
55	Mosspark	1645	7	235.0	0.31%	North	M77 (north)
74	Mount Florida	1698	6	283.0	0.37%	North	A77 Ayr Road (north)/ Mearns Road (north)
46	Mount Vernon	1847	12	153.9	0.20%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
72	Newlands	1125	5	225.0	0.29%	North East	A77 Ayr Road (north)
61	Nitshill	3619	5	723.8	0.94%	North	M77 (north)
56	North Cardonald	2726	8	340.8	0.44%	North	M77 (north)
19	North Kelvin	1514	10	151.4	0.20%	North	M77 (north)
36	Parkhead	5522	9	613.6	0.80%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
15	Partick	8894	10	889.4	1.16%	North	M77 (north)
57	Penilee	1920	8	240.0	0.31%	North	M77 (north)
59	Pollok	975	7	139.3	0.18%	North	M77 (north)
71	Pollokshaws	3526	5	705.2	0.92%	North	A77 Ayr Road (north)/ Stewarton Road (north)
65	Pollokshields East	2494	7	356.3	0.46%	North	A77 Ayr Road (north)
40	Queenslie	2518	12	209.8	0.27%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
38	Robroyston	1131	11	102.8	0.13%	North East	M77 (north)
28	Royston	2549	10	254.9	0.33%	North East	M77 (north)
10	Scotstoun	907	11	82.5	0.11%	North	M77 (north)
43	Shettleston	3866	11	351.5	0.46%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
30	Springburn	2735	11	248.6	0.32%	North	M77 (north)
68	Strathbungo	2160	6	360.0	0.47%	North East	A77 Ayr Road (north)
2	Summerhill	1391	14	99.4	0.13%	North	M77 (north)
22	Summerston	2292	12	191.0	0.25%	North	M77 (north)
44	Tollcross Park	1829	10	182.9	0.24%	North East	A726 GSO (East)/ M77 (north)/ Mearns Road (north)
75	Toryglen	2160	7	308.6	0.40%	North East	A77 Ayr Road (north)/ Mearns Road (north)
11	Victoria Park	5648	10	564.8	0.73%	North	M77 (north)
31	Wallacewell						
18	Woodlands						
20	Wyndford						
6	Yoker						
	Inverclyde						
	Greenock	27817	27	1030.3	1.34%	West	M77 (north)
	Inverkip	382	32	11.9	0.02%	West	M77 (north)
	Kilmacolm	671	18	37.3	0.05%	West	M77 (north)/ Un-named Road
	Wemyss Bay	226	34	6.6	0.01%	West	M77 (north)
	North Ayrshire						
	Ardrossan	7454	30	248.5	0.32%	West	M77 (south)
	Beith	1535	17	90.3	0.12%	West	Un-named Road
	Dalry	2004	19	105.5	0.14%	West	Un-named Road
	Fairlie	205	31	6.6	0.01%	West	M77 (south)
	Irvine	13606	18	755.9	0.98%	South West	M77 (south)
	Kilbirnie	1788	21	85.1	0.11%	West	Un-named Road
	Kilwinning	3694	19	194.4	0.25%	West	M77 (south)
	Largs	2457	34	72.3	0.09%	West	M77 (south)
	Skelmorlie	224	35	6.4	0.01%	West	M77 (south)
	Springside	144	16	9.0	0.01%	South West	M77 (south)
	West Kilbride	741	33	22.5	0.03%	West	M77 (south)
	North Lanarkshire						
	Airdrie	13529	19	712.1	0.93%	North East	A726 GSO (East)
	Allanton	124	28	4.4	0.01%	East	A726 GSO (East)
	Bellshill	14266	16	891.6	1.16%	North East	A726 GSO (East)
	Blackwood (Cumbernauld)	195	21	9.3	0.01%	North East	M77 (north)
	Caldercruix	219	24	9.1	0.01%	North East	A726 GSO (East)
	Chryston	909	15	60.6	0.08%	North East	M77 (north)
	Cleland	764	21	36.4	0.05%	East	A726 GSO (East)
	Coatbridge	12885	17	757.9	0.99%	North East	A726 GSO (East)

	Croy	75	21	3.6	0.00%	North East	M77 (north)
	Cumbernauld	17998	21	857.0	1.11%	North East	M77 (north)
	Gartcosh	162	16	10.1	0.01%	North East	M77 (north)
	Glenboig	205	18	11.4	0.01%	North East	M77 (north)
	Glenmavis	224	19	11.8	0.02%	North East	A726 GSO (East)
	Greengairs and Wattson	144	22	6.5	0.01%	North East	A726 GSO (East)
	Harthill	772	22	35.1	0.05%	North East	A726 GSO (East)
	Kilsyth	2651	21	126.2	0.16%	North East	M77 (north)
	Moodiesburn	1066	17	62.7	0.08%	North East	M77 (north)
	Motherwell	21366	17	1256.8	1.63%	East	A726 GSO (East)
	Overtown and Gowkthrapple	670	17	39.4	0.05%	East	A726 GSO (East)
	Plains	381	22	17.3	0.02%	North East	A726 GSO (East)
	Salsburgh	118	23	5.1	0.01%	North East	A726 GSO (East)
	Shotts	1717	26	66.0	0.09%	East	A726 GSO (East)
	Stepps	1229	13	94.5	0.12%	North East	M77 (north)
	Uddingston	4659	14	332.8	0.43%	North East	A726 GSO (East)
	Wishaw	6026	20	301.3	0.39%	East	A726 GSO (East)
	Renfrewshire						
	Bishopton	525	15	35.0	0.05%	North West	M77 (north)
	Bridge of Weir	2026	15	135.1	0.18%	North West	M77 (north)
	Erskine	8528	14	609.1	0.79%	North West	M77 (north)
	Houston	771	15	51.4	0.07%	North West	M77 (north)
	Johnstone	6167	11	560.6	0.73%	North West	M77 (north)
	Langbank	94	19	4.9	0.01%	North West	M77 (north)
	Linwood	1556	11	141.5	0.18%	North West	M77 (north)
	Lochwinnoch	1018	18	56.6	0.07%	West	M77 (north)
	Paisley	43446	8	5430.8	7.06%	North West	M77 (north)
	Renfrew	7189	10	718.9	0.93%	North	M77 (north)
	South Ayrshire						
	Annbank	52	25	2.1	0.00%	South West	M77 (south)
	Ayr and Prestwick	25676	26	987.5	1.28%	South West	M77 (south)
	Coylton	276	29	9.5	0.01%	South West	M77 (south)
	Dundonald	651	23	28.3	0.04%	South West	M77 (south)
	Loans	90	21	4.3	0.01%	South West	M77 (south)
	Maybole	1213	35	34.7	0.05%	South West	M77 (south)
	Monkton	144	21	6.9	0.01%	South West	M77 (south)
	Mossblown	220	25	8.8	0.01%	South West	M77 (south)
	Symington	134	19	7.1	0.01%	South West	M77 (south)
	Tarbolton	231	21	11.0	0.01%	South West	M77 (south)
	Troon	2941	23	127.9	0.17%	South West	M77 (south)
	South Lanarkshire						
	Blantyre and Hamilton	26060	14	1861.4	2.42%	East	A726 GSO (East)
	Carluke	2885	25	115.4	0.15%	East	A726 GSO (East)
	Carnwath	275	34	8.1	0.01%	East	A726 GSO (East)
	Carstairs	132	32	4.1	0.01%	East	A726 GSO (East)
	Carstairs Junction	93	33	2.8	0.00%	East	A726 GSO (East)
	Chapelton	79	13	6.1	0.01%	South East	A726 GSO (East)
	Coalburn	203	27	7.5	0.01%	South East	A726 GSO (East)
	Crossford (South Lanarkshire)	98	25	3.9	0.01%	East	A726 GSO (East)
	Douglas	376	33	11.4	0.01%	South East	A726 GSO (East)
	East Kilbride	33821	8	4227.6	5.50%	East	A726 GSO (East)
	Forth	312	32	9.8	0.01%	East	A726 GSO (East)
	Glassford	64	17	3.8	0.00%	East	A726 GSO (East)
	Kirkfieldbank	110	28	3.9	0.01%	South East	A726 GSO (East)
	Kirkmuirhill and Blackwood	481	23	20.9	0.03%	South East	A726 GSO (East)
	Lanark	3015	29	104.0	0.14%	East	A726 GSO (East)
	Larkhall	4277	19	225.1	0.29%	East	A726 GSO (East)
	Law	312	23	13.6	0.02%	East	A726 GSO (East)
	Lesmahagow	836	25	33.4	0.04%	South East	A726 GSO (East)
	Netherburn	68	22	3.1	0.00%	East	A726 GSO (East)
	Quarter	134	16	8.4	0.01%	East	A726 GSO (East)
	Rigside	85	33	2.6	0.00%	South East	A726 GSO (East)
	Stonehouse	980	20	49.0	0.06%	South East	A726 GSO (East)
	Strathaven	1756	16	109.8	0.14%	South East	A726 GSO (East)
	Stirling						
	Cowie	770	37	20.8	0.03%	North East	A726 GSO (East)
	Fallin	377	38	9.9	0.01%	North East	A726 GSO (East)
	Gargunnock	76	36	2.1	0.00%	North East	A726 GSO (East)
	Plean	216	32	6.8	0.01%	North East	A726 GSO (East)
	Stirling	25323	38	666.4	0.87%	North East	A726 GSO (East)
	Strathblane	322	21	15.3	0.02%	North	M77 (north)
	West Dunbartonshire						
	Clydebank	15602	14	1114.4	1.45%	West	M77 (north)
	Dumbarton	13204	20	660.2	0.86%	West	M77 (north)
	West Lothian						
	Armadale	1719	31	55.5	0.07%	North East	A726 GSO (East)
	Bathgate	5438	33	164.8	0.21%	North East	A726 GSO (East)
	Blackburn (West Lothian)	2492	33	75.5	0.10%	North East	A726 GSO (East)
	Blackridge	245	28	8.8	0.01%	North East	A726 GSO (East)
	Broxburn	5546	40	138.7	0.18%	North East	A726 GSO (East)
	Dechmont	103	38	2.7	0.00%	North East	A726 GSO (East)
	East Whitburn	106	31	3.4	0.00%	East	A726 GSO (East)
	Fauldhouse	623	30	20.8	0.03%	East	A726 GSO (East)
	Linlithgow	3368	38	88.6	0.12%	North East	A726 GSO (East)

	Livingston	32891	38	865.6	1.13%	East	A726 GSO (East)
	Longridge	122	32	3.8	0.00%	East	A726 GSO (East)
	Polbeth	347	40	8.7	0.01%	East	A726 GSO (East)
	Seafield	179	34	5.3	0.01%	East	A726 GSO (East)
	Stoneyburn and Addiebrownhill	463	34	13.6	0.02%	East	A726 GSO (East)
	Torphichen	79	34	2.3	0.00%	North East	A726 GSO (East)
	West Calder	638	36	17.7	0.02%	East	A726 GSO (East)
	Whitburn	2131	31	68.7	0.09%	East	A726 GSO (East)
				76895.7	100.00%		

	Area/ Electoral Ward	Route to Site	%
	Muirkirk, Falkirk Council, Kincardine, Glasgow East, Glasgow South East, North Lanarkshire, South Lanarkshire, Stirling, West Lothian	A726 GSO (East)	21.66%
	East Dunbartonshire, Glasgow North West, Glasgow North, Glasgow North East, Glasgow Central, Glasgow South West, Glasgow West, Inverclyde, North Lanarkshire, Renfrewshire, Strathblane, West Dunbartonshire	M77 (north)	36.92%
	East Ayrshire, North Ayrshire, South Ayrshire	M77 (south)	5.93%
	Crosshouse, Dunlop, Kilmaurs, Stewarton, Barrhead, Uplawmoor, Kilmacolm, Neith, Dalry, Kilbirnie	Malletsheugh Road (west)	1.56%
	Barrhead	Aurs Road	0.62%
	Mearns	Paidmyre Road	0.59%
	Greenfarm	Hunter Drive	0.95%
	Greenfarm	Barrhead Road	1.27%
	Thornliebank, Glasgow Central, Glasgow South West, Glasgow South	Stewarton Road	7.97%
	Giffnock, Crookfur, Broom, Glasgow Central, Glasgow South, Glasgow South East	A77 Ayr Road (north)	12.10%
	Clarkston & Busby, Kirkhill, Mearns, Waterfoot, Glasgow Central, Glasgow South East	Mearns Road (north)	10.28%
	Eaglesham	Mearns Road (south)	0.15%
			100.00%

APPENDIX F



N

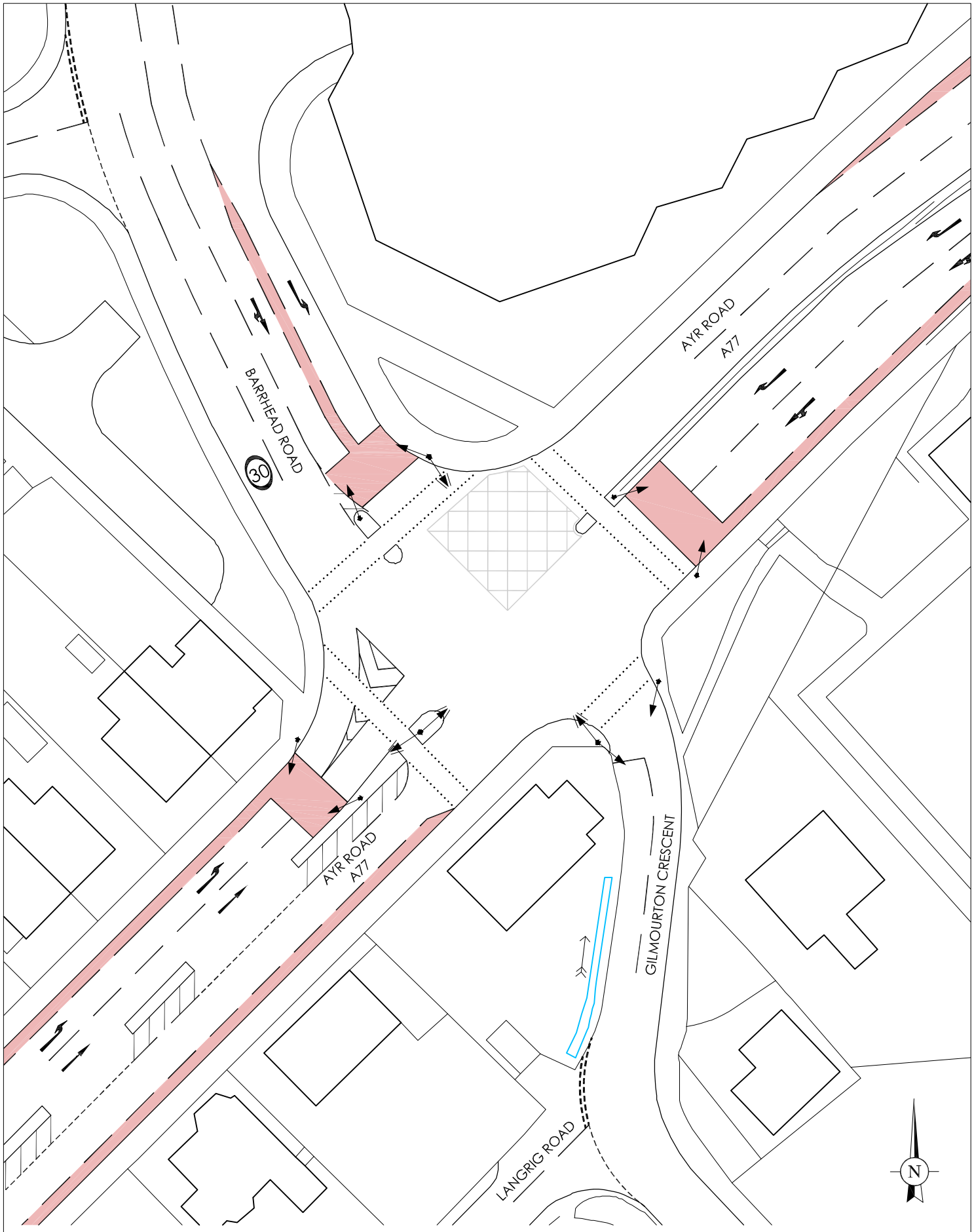
Maidenhill, East Renfrewshire

Ayr Road (A77) / Hunter Drive
Existing Roundabout
(Malletsheugh Roundabout)

Maidenhill Developers

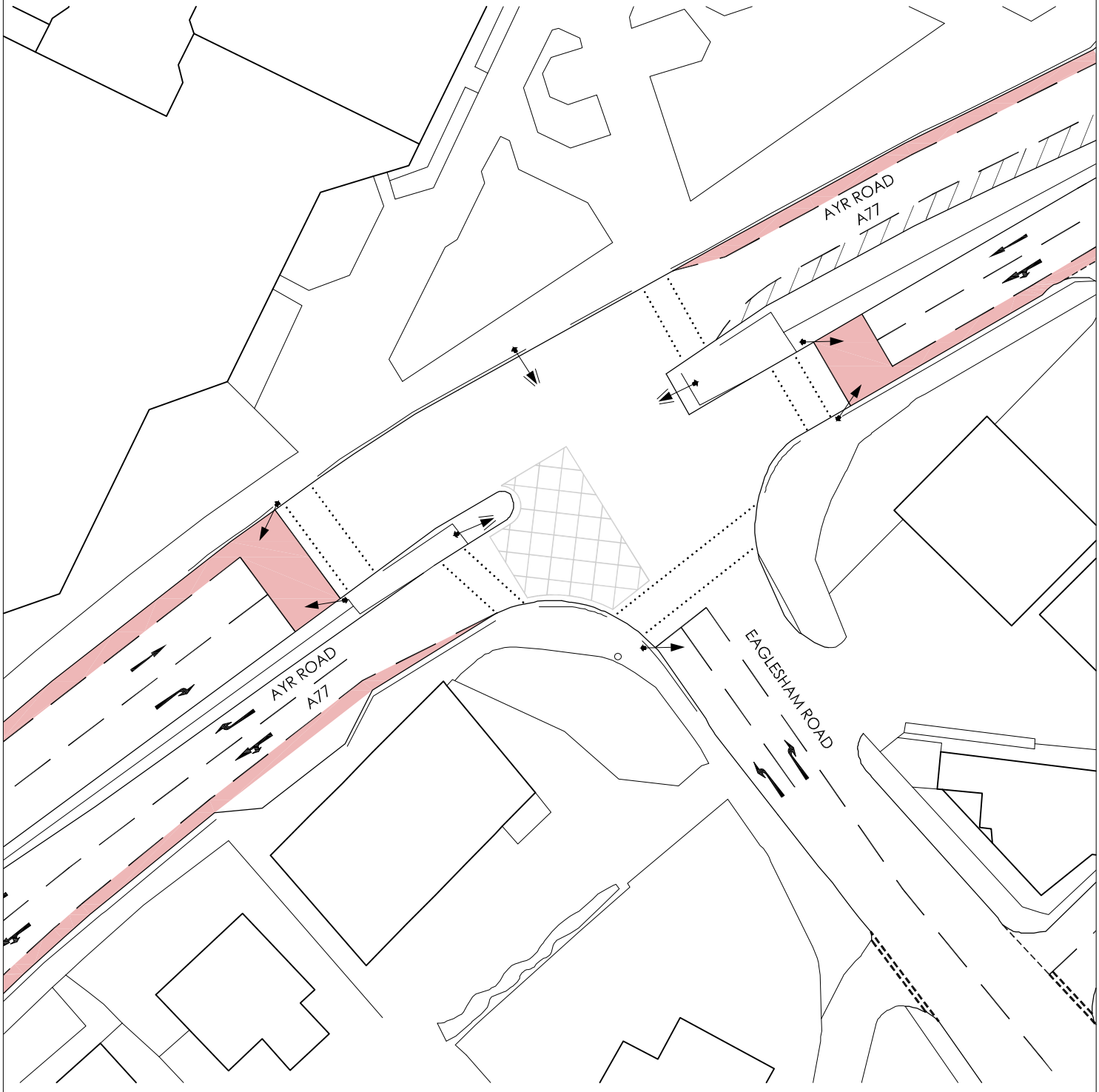
Drawing Number:		Scale:
TP115/SK/101		1:500 @ A3
Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING

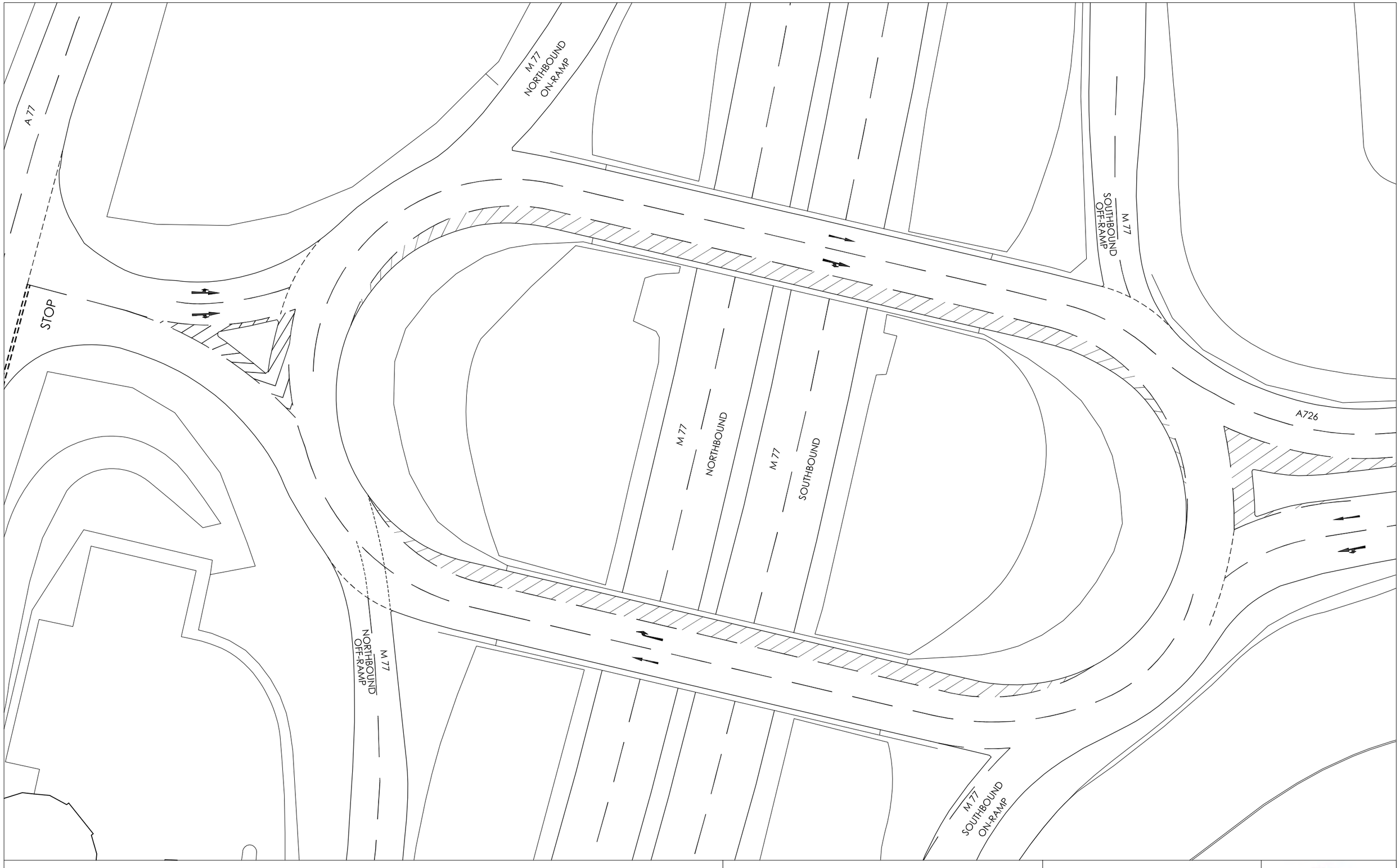


Maidenhill, East Renfrewshire	Maidenhill Developers		
Ayr Road (A77) / Barrhead Drive / Gilmourton Crescent Existing Signalled Junction	Drawing Number: TP115/SK/102		Scale: 1:500 @ A4
	Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



Maidenhill, East Renfrewshire	Maidenhill Developers	TRANSPORT PLANNING
Ayr Road (A77) / Eaglesham Road Existing Signalled Junction	Drawing Number: TP115/SK/103	Scale: 1:500 @ A4
	Drawn by: NW / Date: Jan 2014	Checked by: AS



N

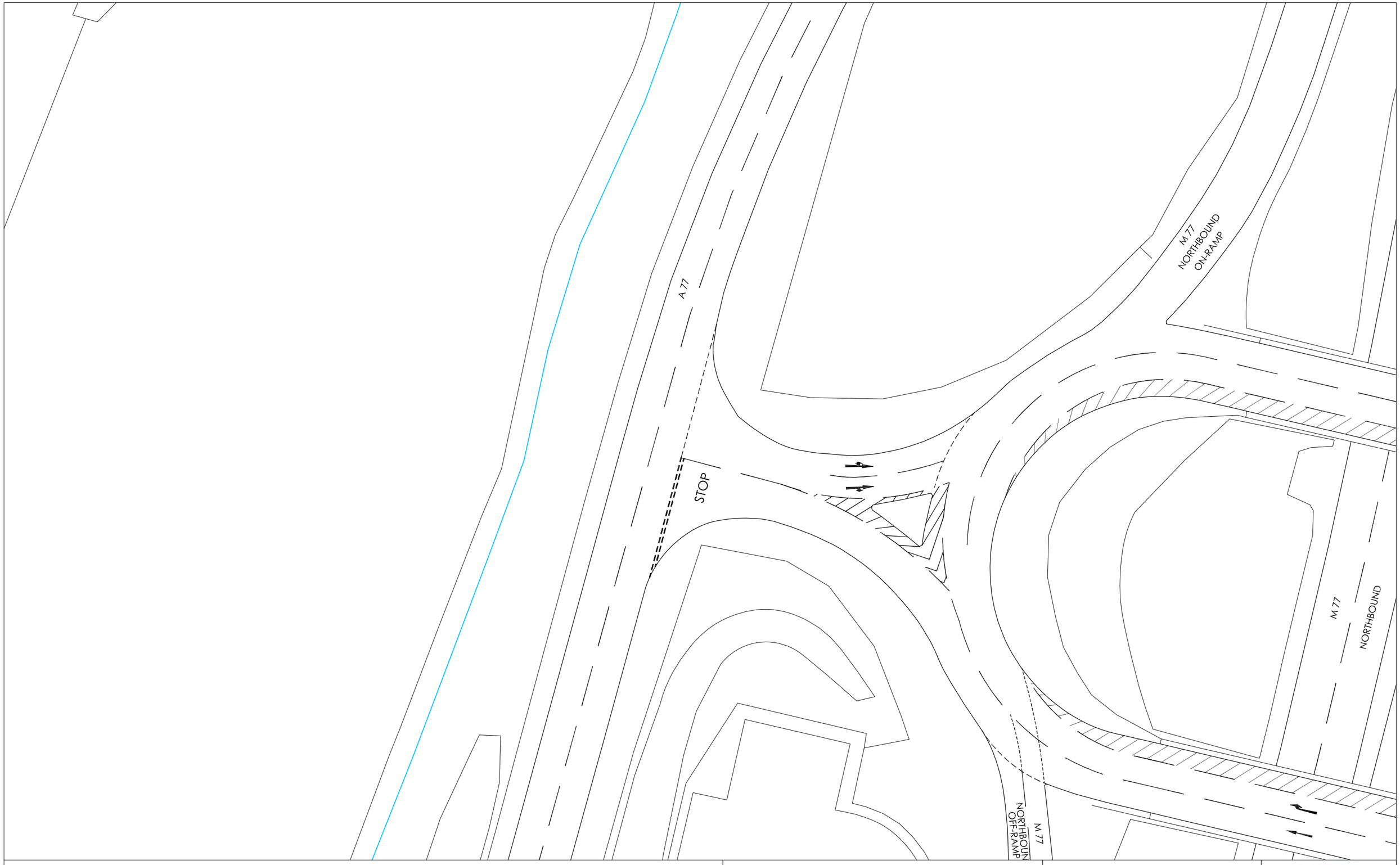
Maidenhill, East Renfrewshire

Maidenhill Developers

M77 Northbound Ramps / M77 Southbound Ramps / A726 Existing Roundabout Junction and A77 T-Junction

Drawing Number:		Scale:
TP115/SK/104		1:500 @ A3
Drawn by:	Date:	Checked by:
NW	Jan 2014	AS

TRANSPORT PLANNING



N

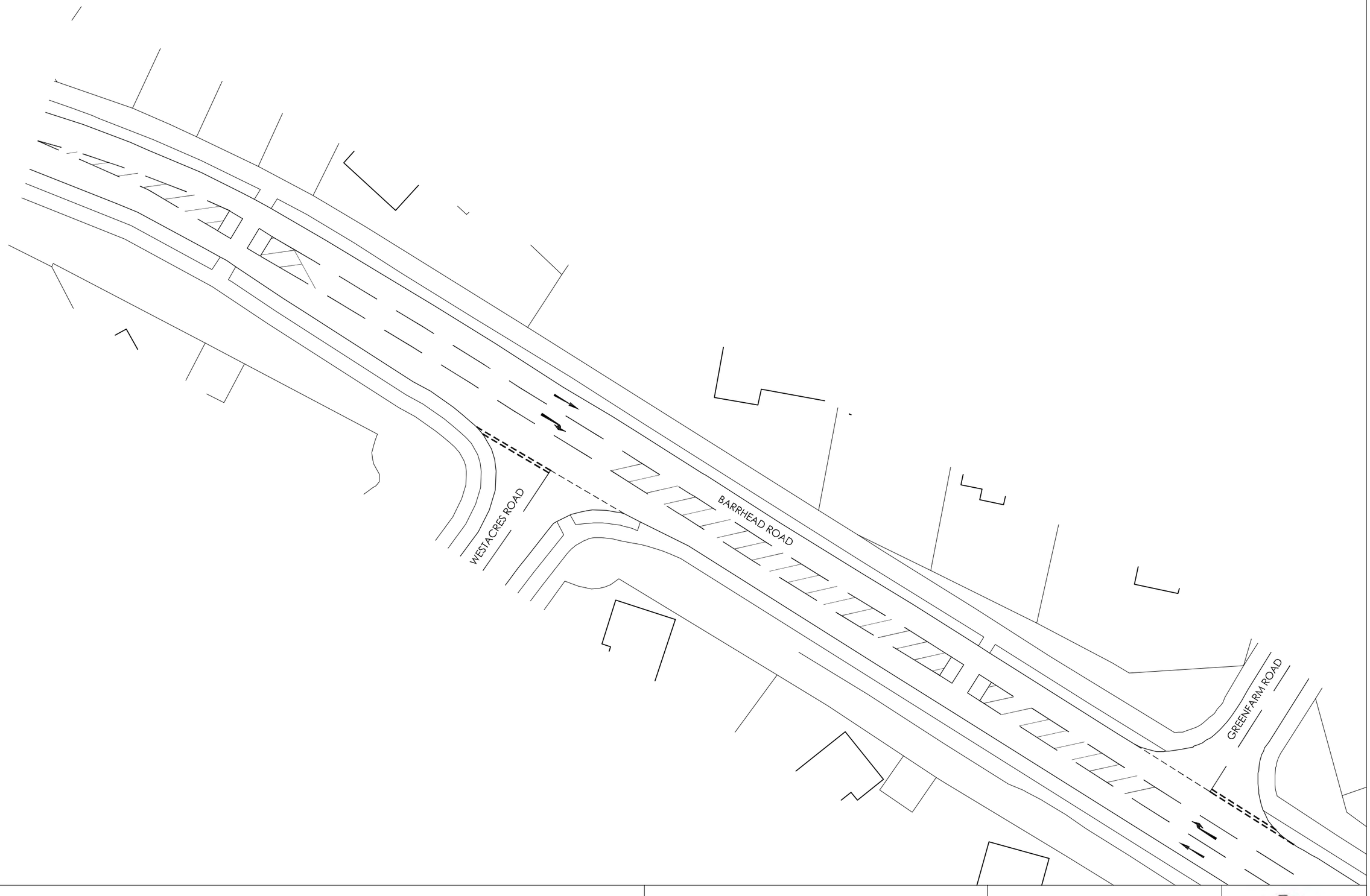
Maidenhill, East Renfrewshire

A77 / GSO Roundabout Spur
Existing T-Junction

Maidenhill Developers

Drawing Number:	Scale:
TP115/SK/105	1:500 @ A3
Drawn by: NW	Date: Jan 2014
Checked by: AS	

TRANSPORT PLANNING



N

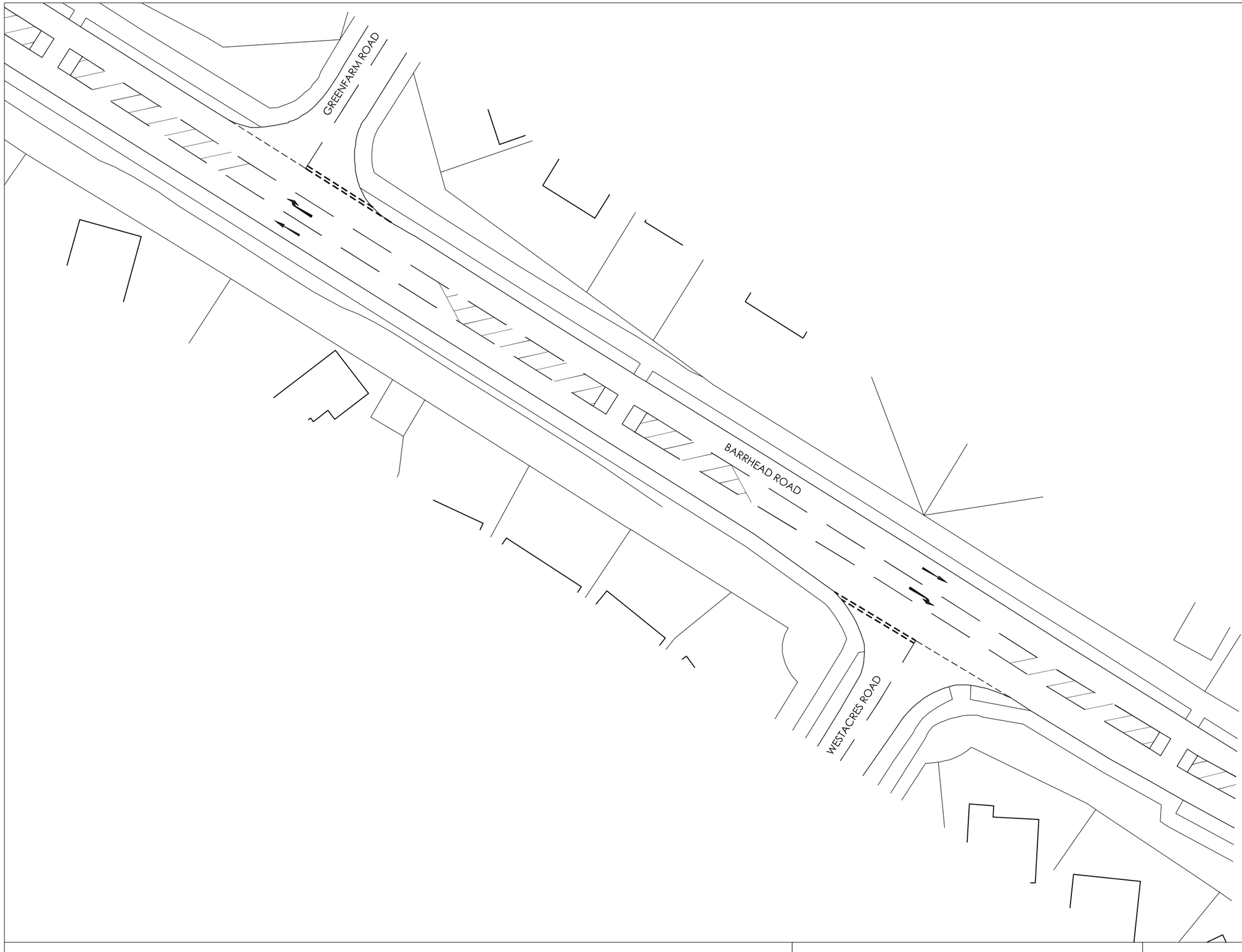
Maidenhill, East Renfrewshire

Maidenhill Developers

Westacres Road / Barrhead Road (West)
Existing Priority T-Junction

Drawing Number:		Scale:
TP115/SK/106		1:500 @ A3
Drawn by:	Date:	Checked by:
NW	Jan 2014	AS

TRANSPORT PLANNING



N

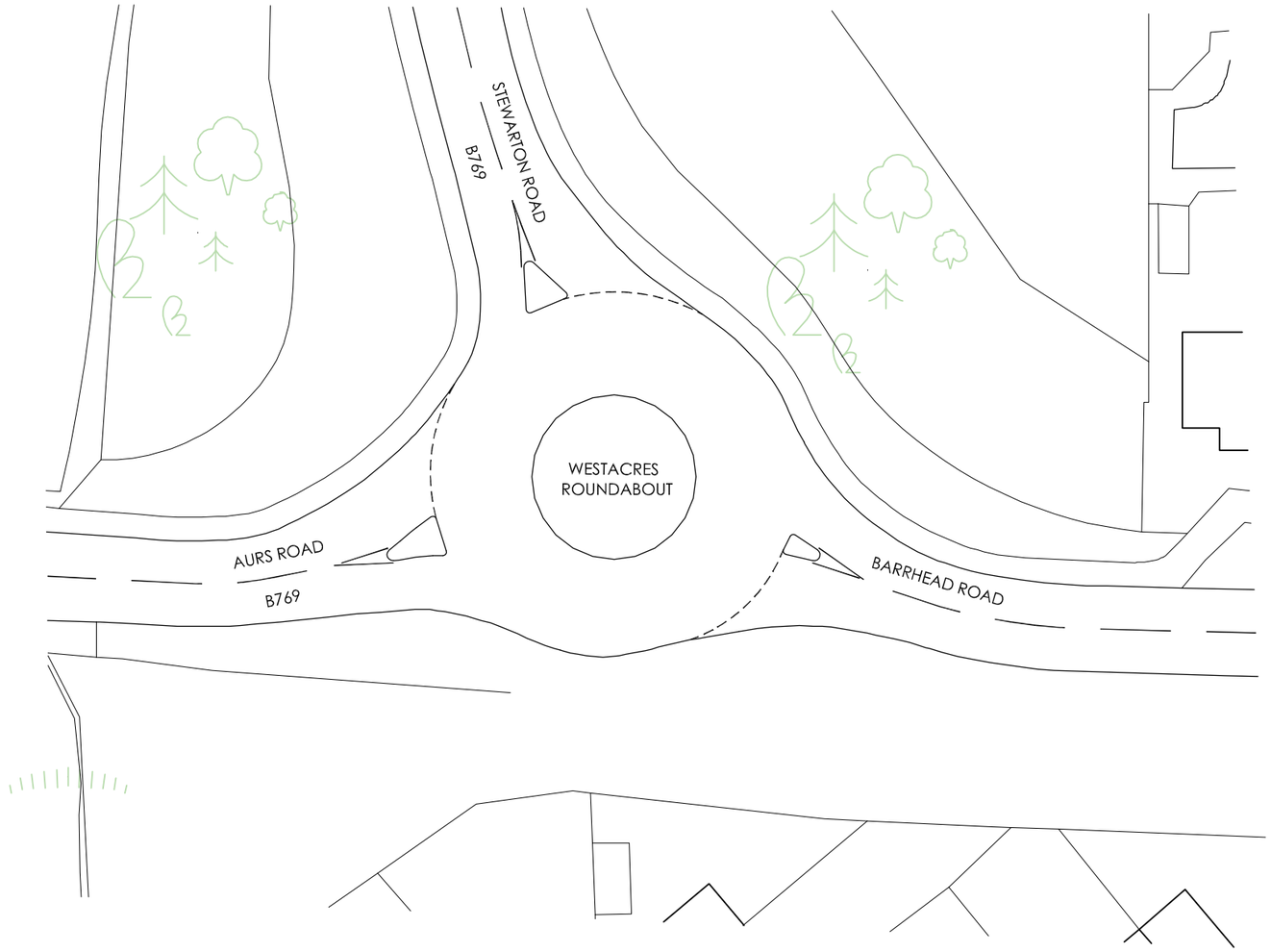
Maidenhill, East Renfrewshire

Maidenhill Developers

Westacres Road / Barrhead Road (East)
Existing Priority T-Junction

Drawing Number:		Scale:
TP115/SK/107		1:500 @ A3
Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



N

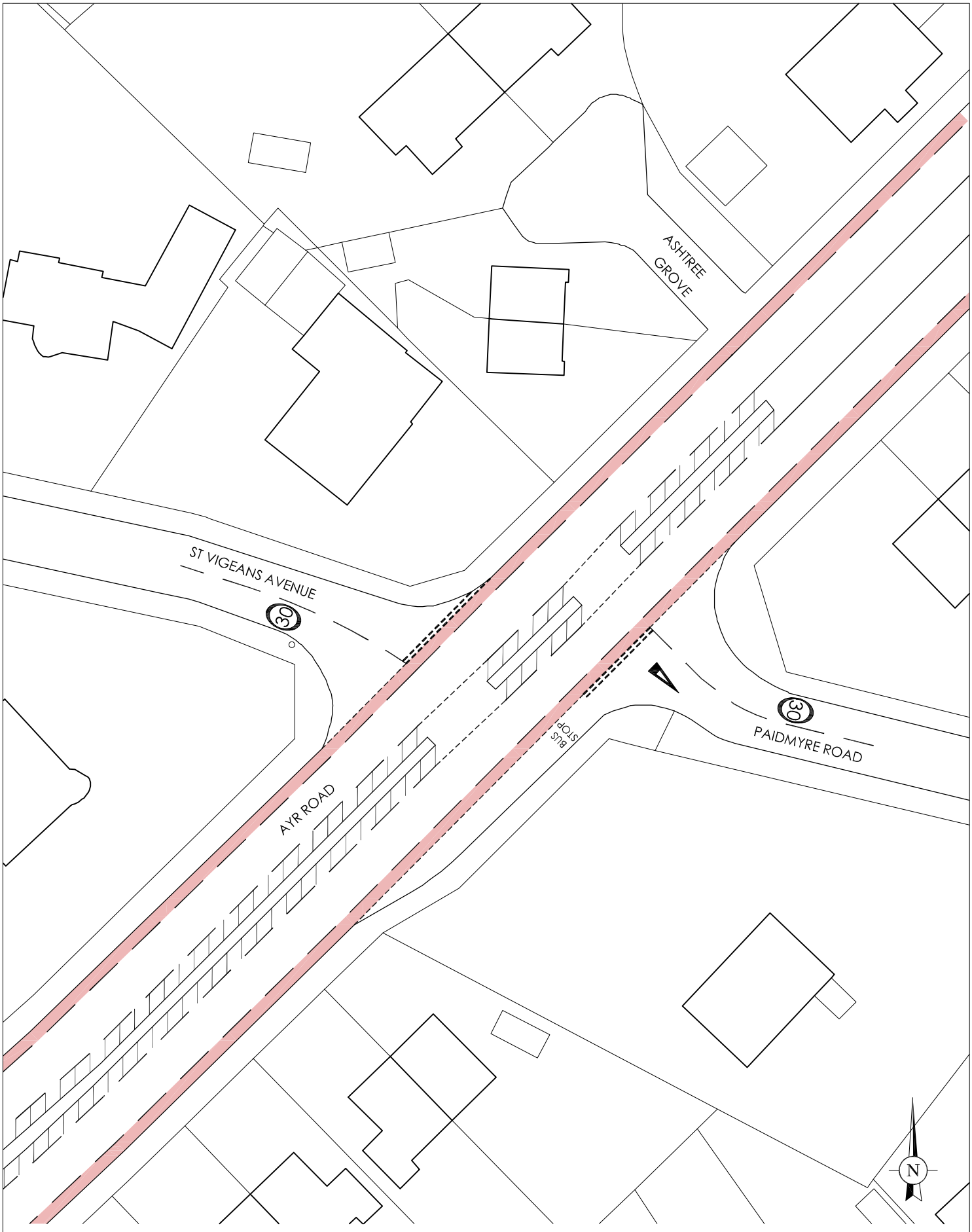
Maidenhill, East Renfrewshire

Barrhead Road / Stewarton Road (B769) / Aurs Road (B769) Existing 3-Arm Roundabout (Westacres Roundabout)

Maidenhill Developers

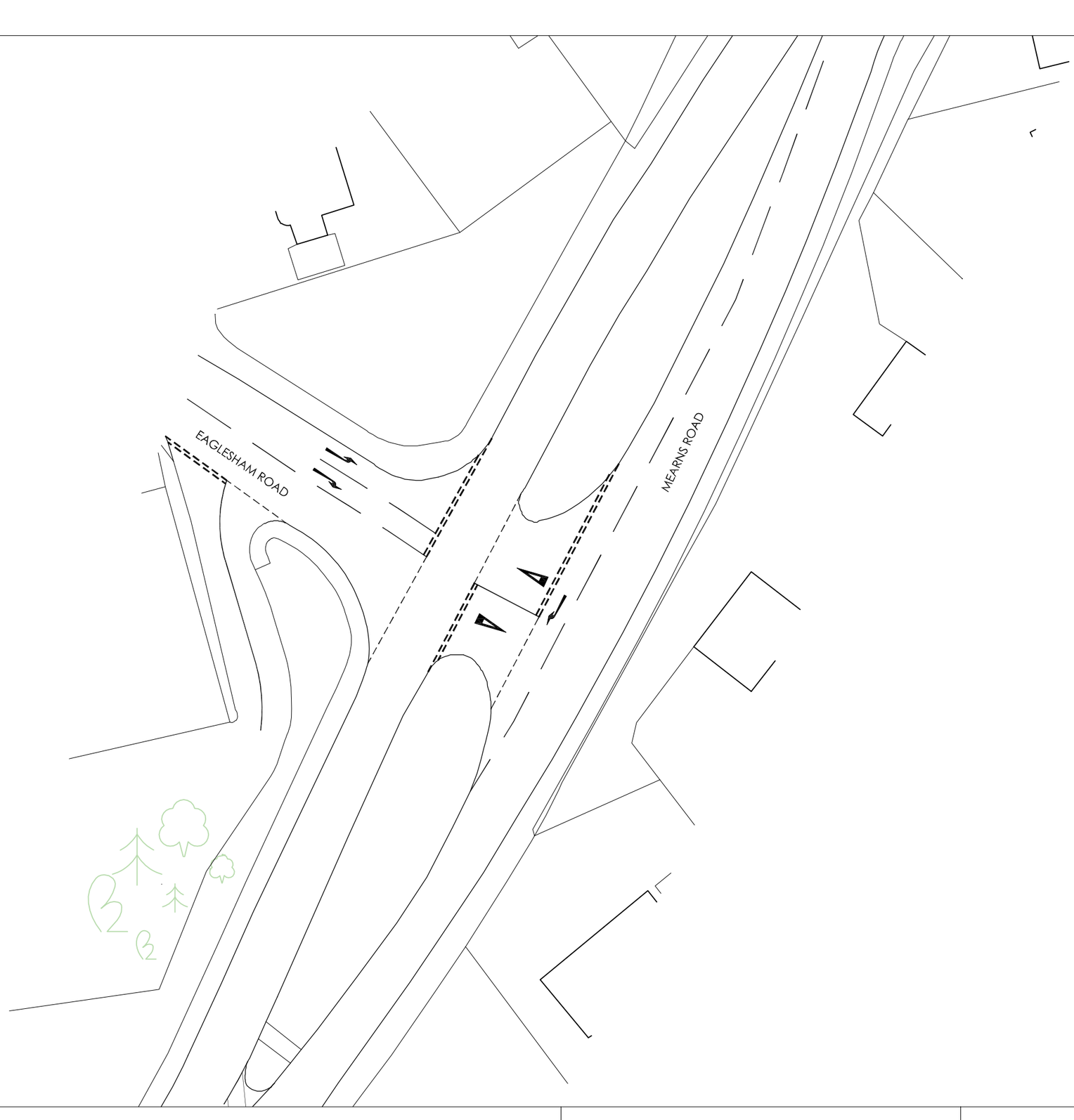
Drawing Number:		Scale:
TP115/SK/108		1:500 @ A3
Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



Maidenhill, East Renfrewshire	Maidenhill Developers		
Ayr Road / St Vigeans Ave / Paidmyre Road Existing Crossroad Junction	Drawing Number: TP115/SK/109		Scale: 1:500 @ A4
	Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



N

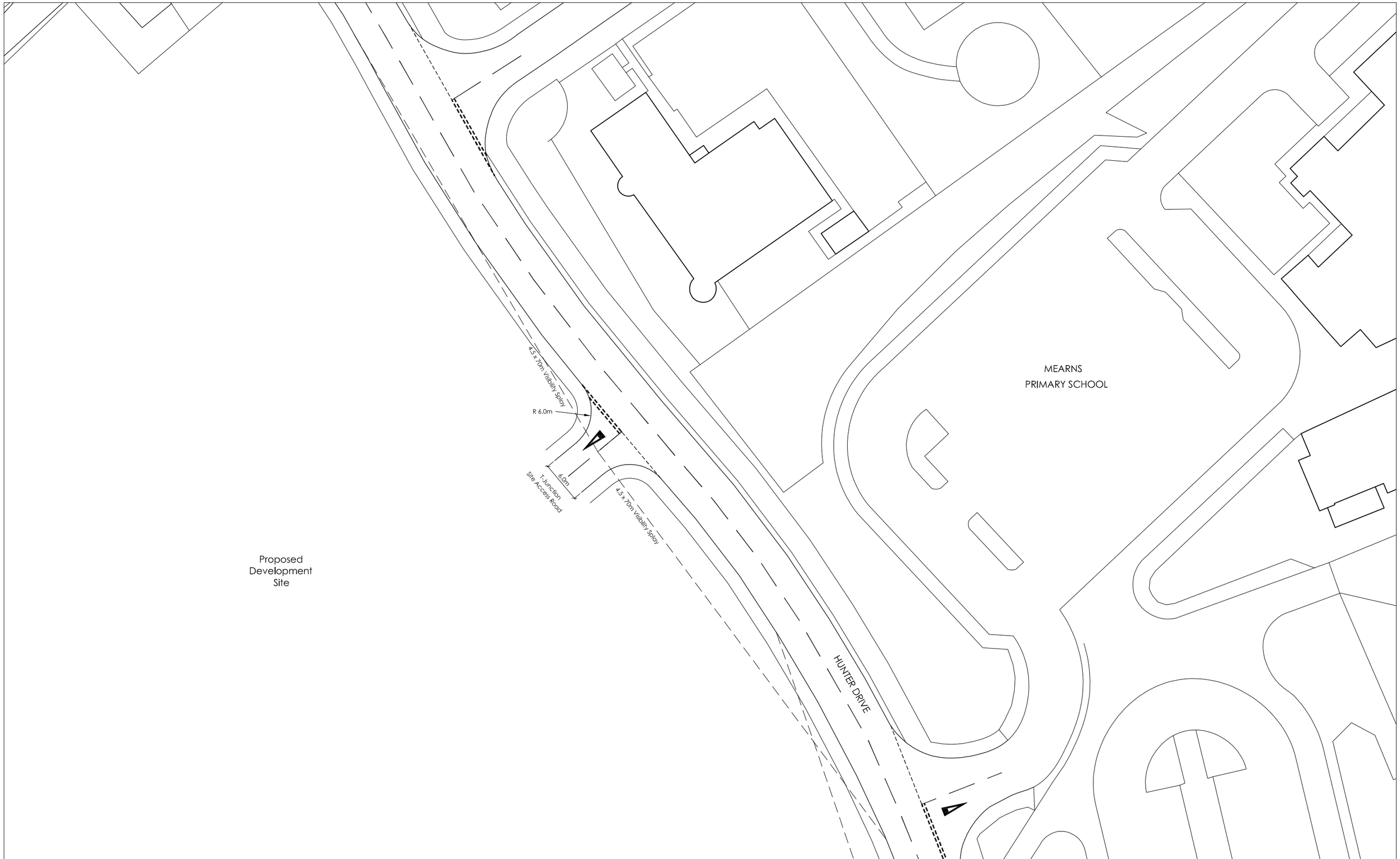
Maidenhill, East Renfrewshire

Maidenhill Developers

Eaglesham Road / Mearns Road
Existing Junction

Drawing Number:		Scale:
TP115/SK/110		1:500 @ A3
Drawn by:	Date:	Checked by:
NW	Jan 2014	AS

TRANSPORT PLANNING



Maidenhill, East Renfrewshire

Site Access Option
Hunter Drive Simple T-Junction

Maidenhill Developers

Drawing Number:		Scale:
TP115/SK/200		1:500 @ A3
Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING

HUNTER DRIVE

4.5 x 70m Visibility Splay

R 6.0m

T-Junction
Site Access Road

6.0m

4.5 x 70m Visibility Splay

Proposed
Development
Site

N

Maidenhill, East Renfrewshire	Maidenhill Developers	
Site Access Option Hunter Drive Simple T-Junction	Drawing Number: TP115/SK/201	Scale: 1:500 @ A3
	Drawn by: NW / Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING

Maidenhill, East Renfrewshire

Maidenhill Developers

Site Access Option - Malletsheugh Road
Simple T-Junction

Drawing Number: TP115/SK/202		Scale: 1:1000 @ A3
Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING

A77 ROAD

T-Junction Site Access

R 6.0m

6.0m

4.5 x 70m Visibility Splay

A78 ROAD

Potential Development Site

T-Junction Site Access

R 6.0m

6.0m

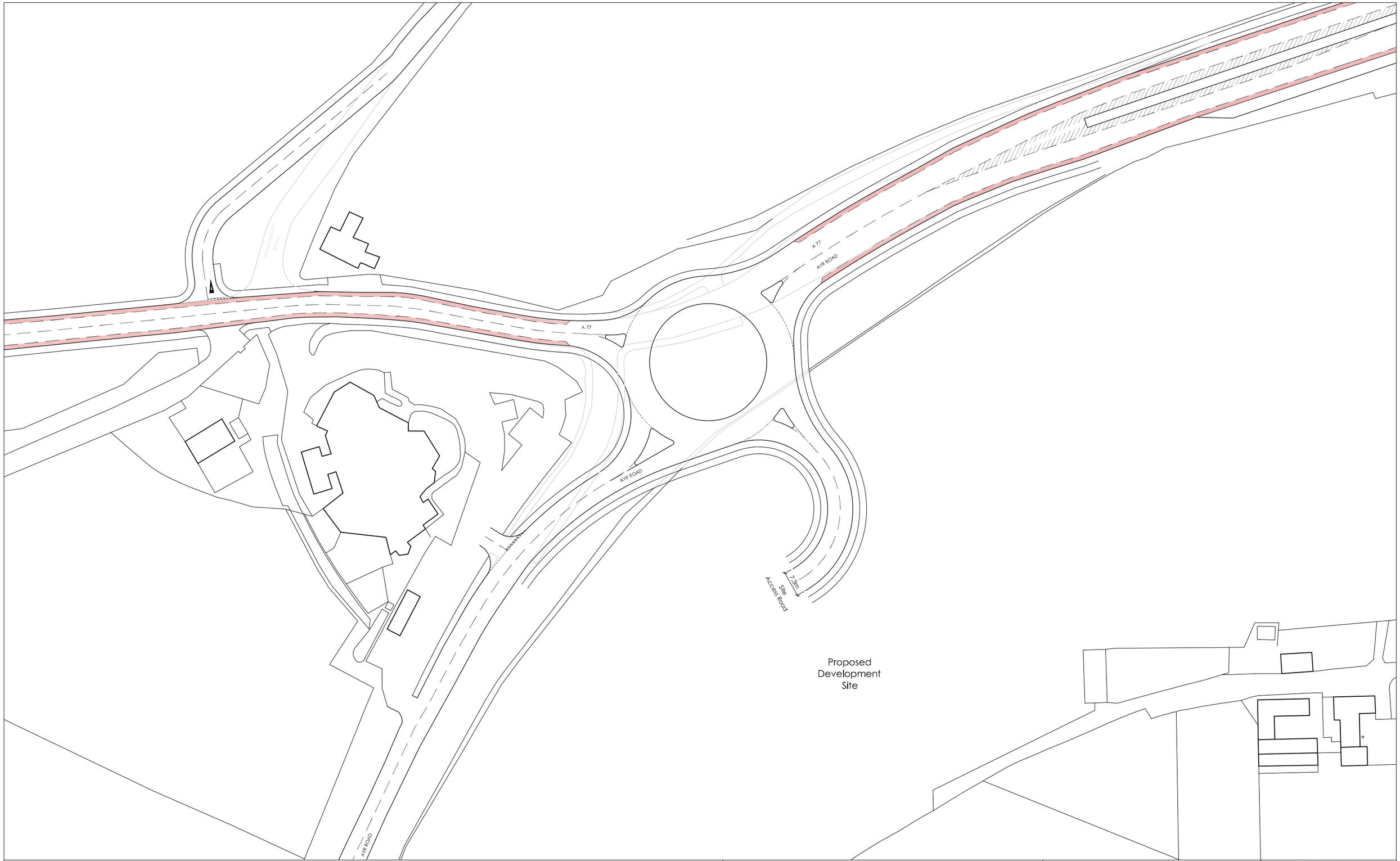
4.5 x 70m Visibility Splay

4.5 x 70m Visibility Splay

N

Maidenhill, East Renfrewshire	Maidenhill Developers		
Site Access Options - Ayr Road Simple T-Junctions into Restaurant and Potential Development Site	Drawing Number: TP115/SK/203		Scale: 1:1000 @ A3
	Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



N

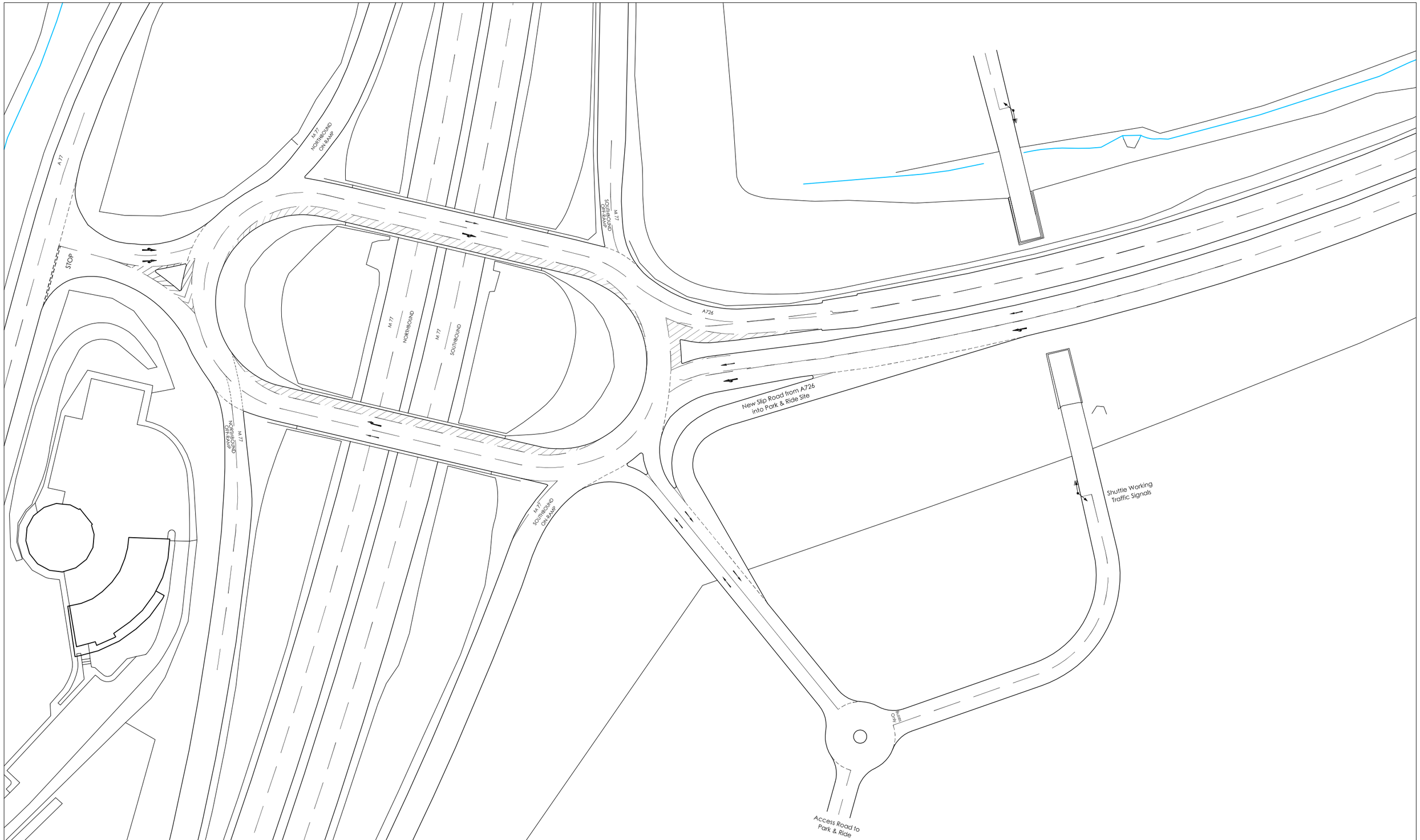
Maidenhill, East Renfrewshire

Site Access Option
Ayr Road / A77 Roundabout

Maidenhill Developers

Drawing Number:		Scale:
TP115/SK/204		1:1000 @ A3
Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



N

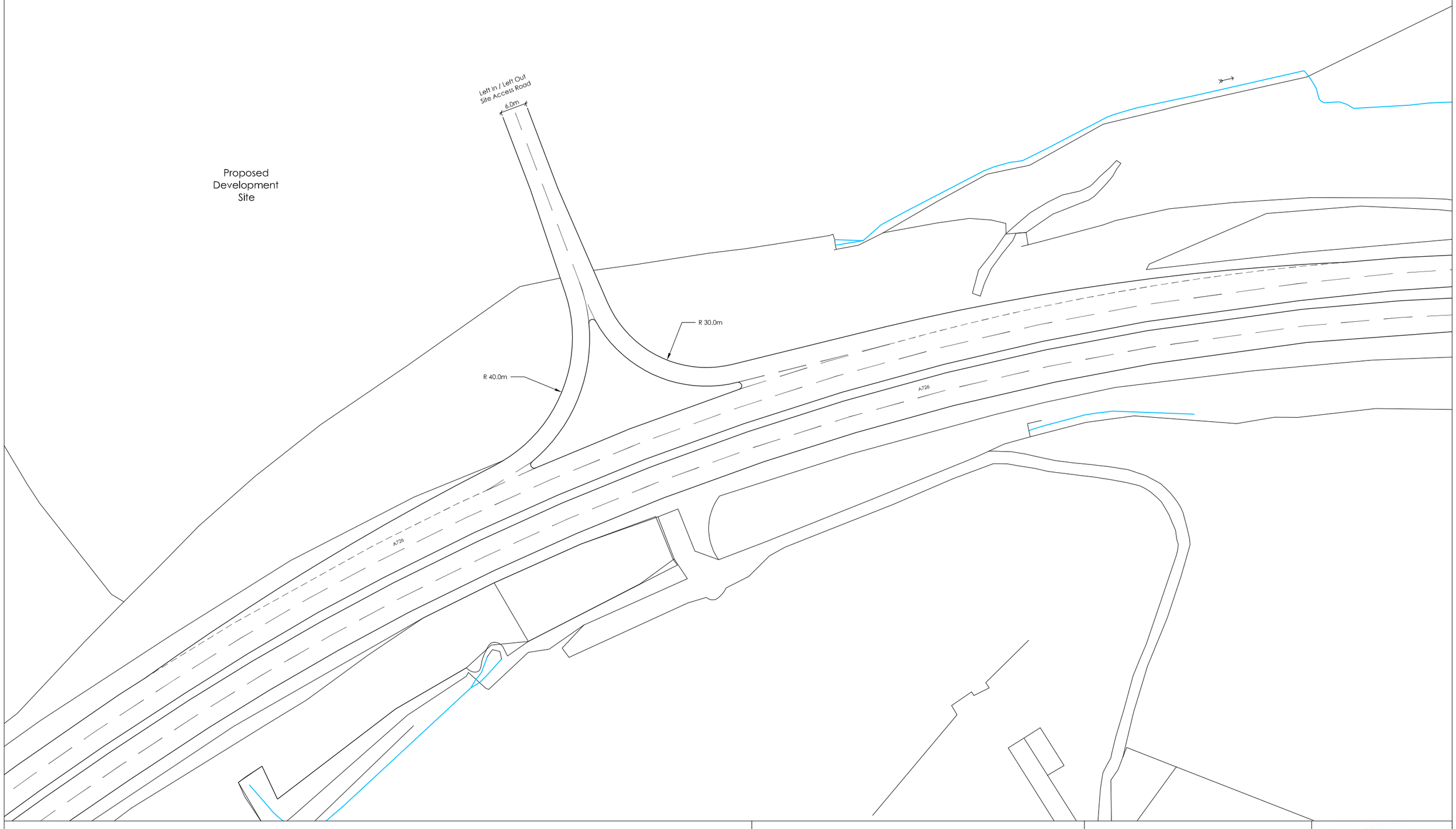
Maidenhill, East Renfrewshire

Site Access Option
Existing Roundabout Modifications for
Park & Ride and Bus Shuttle

Maidenhill Developers

Drawing Number:		Scale:
TP115/SK/205		1:1000 @ A3
Drawn by: NW	Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



N

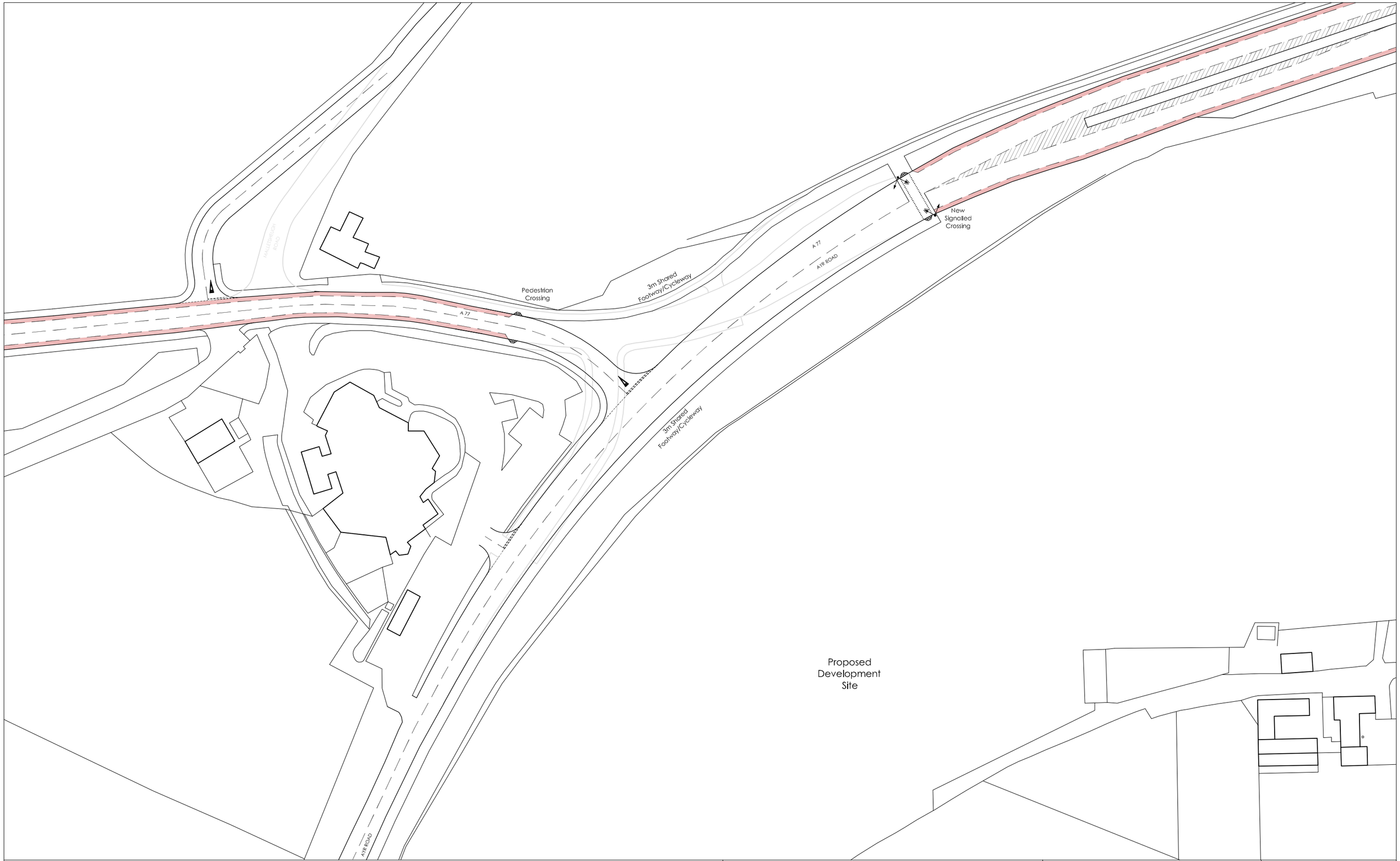
Maidenhill, East Renfrewshire

Site Access Option
Left In / Left Out to/from the A726

Maidenhill Developers

Drawing Number:	Scale:
TP115/SK/206	1:1000 @ A3
Drawn by: NW / Date: Jan 2014	Checked by: AS

TRANSPORT PLANNING



N

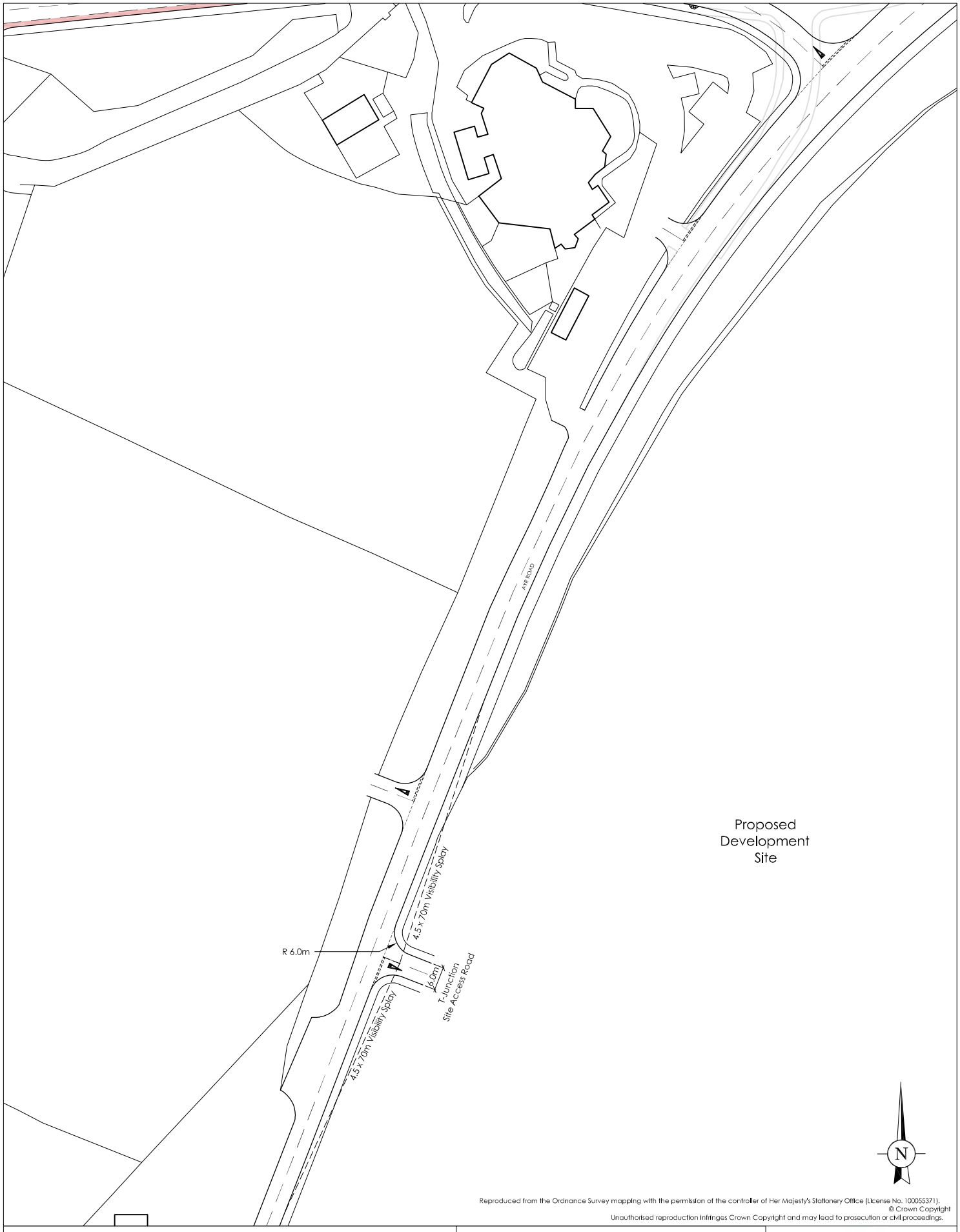
Maidenhill, East Renfrewshire

Site Access Option
Ayr Road / A77 Revised Priority

Maidenhill Developers

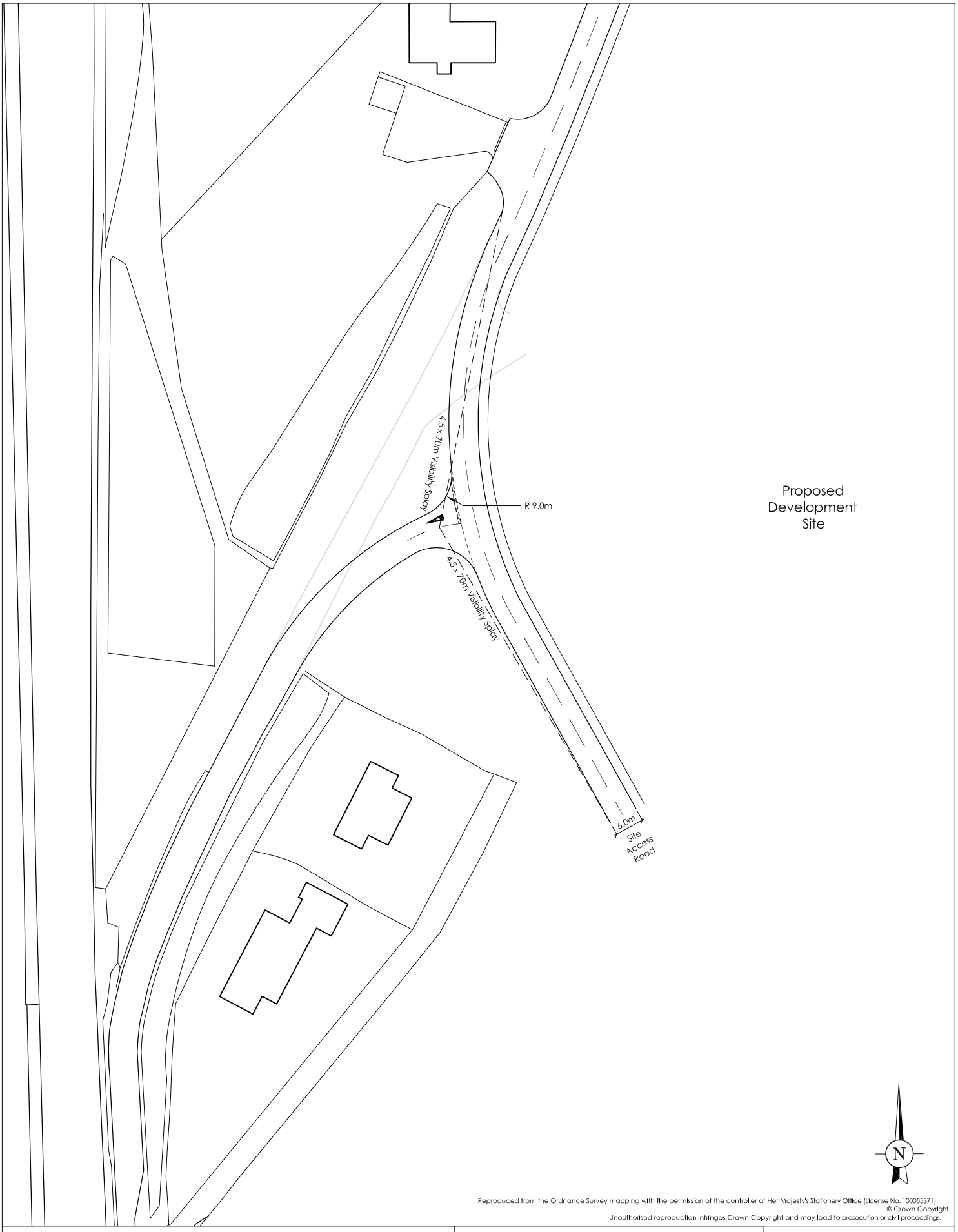
Drawing Number:		Scale:
TP115/SK/208		1:1000 @ A3
Drawn by: NW	Date: Mar 2014	Checked by: AS

TRANSPORT PLANNING



Maidenhill, East Renfrewshire	Maidenhill Developers		
Site Access Option Ayr Road (A77) Simple T-Junction	Drawing Number: TP115/SK/209		Scale: 1:1250 @ A4
	Drawn by: NW	Date: May 2014	Checked by: AS

TRANSPORT PLANNING

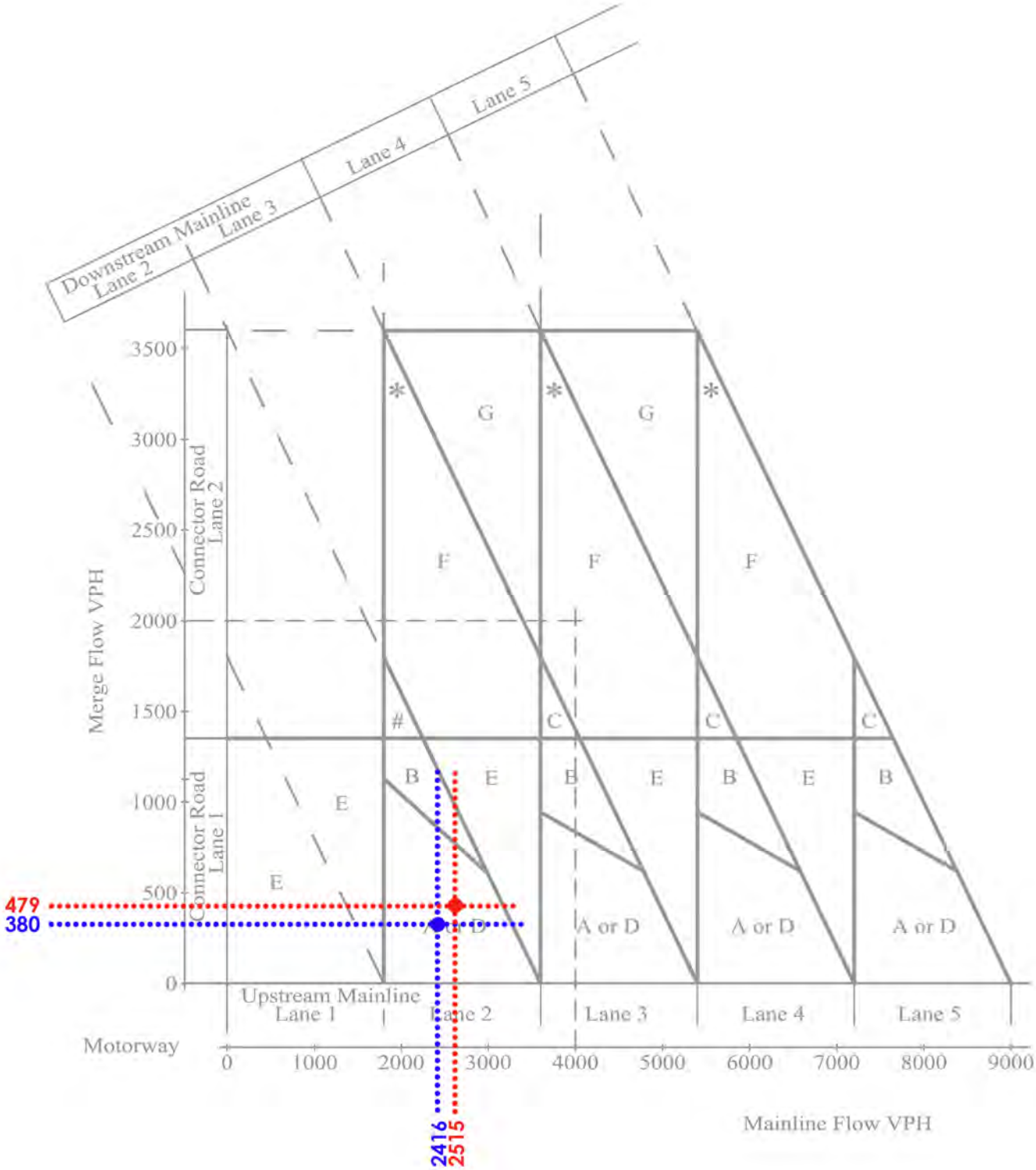


Maidenhill, East Renfrewshire	Maidenhill Developers		
Site Access Option Ayr Road (A77) Re-routed into Site	Drawing Number: TP115/SK/210		Scale: 1:1000 @ A4
	Drawn by: NW	Date: May 2014	Checked by: AS

TRANSPORT PLANNING

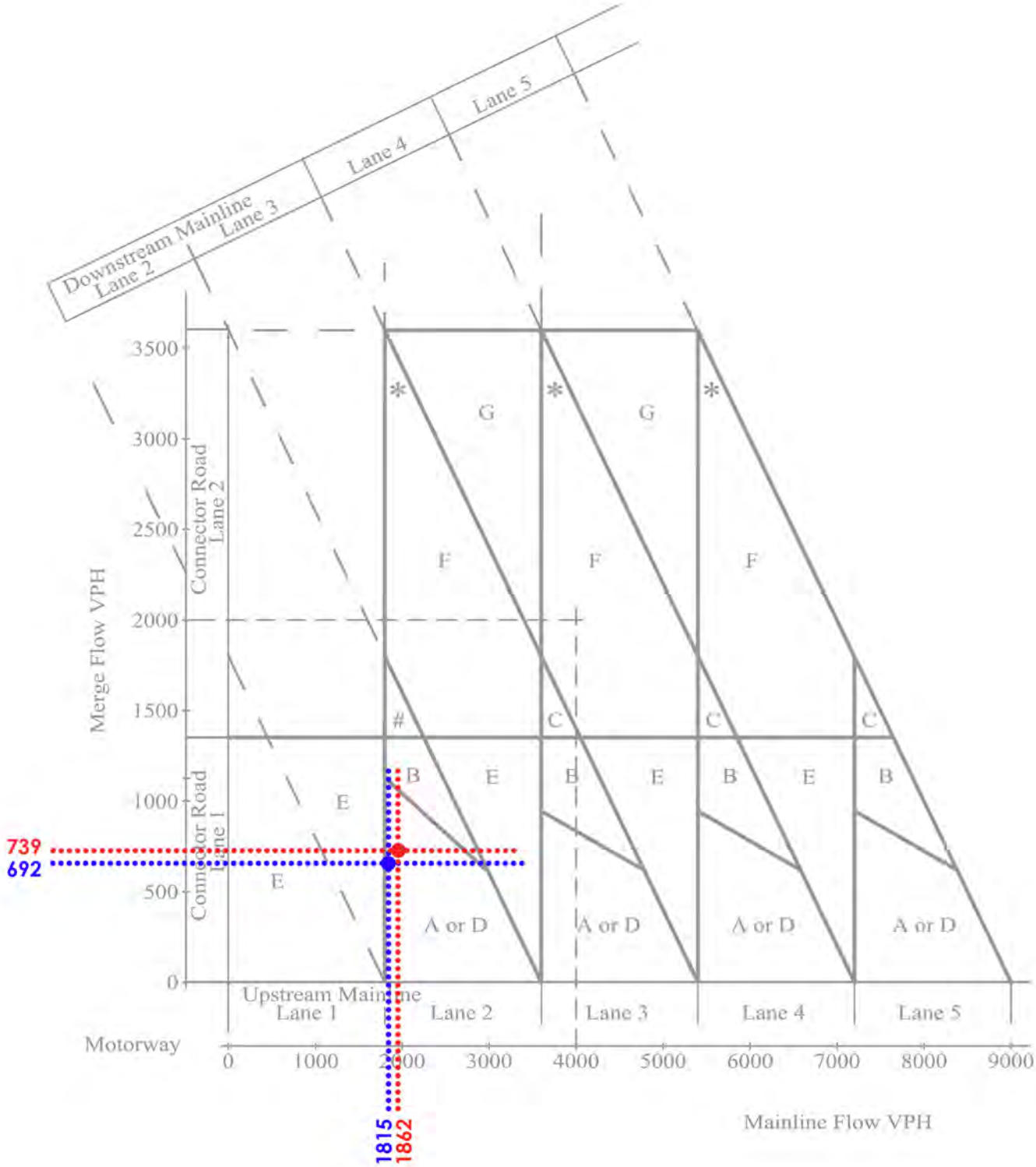
APPENDIX G

APPENDIX H



Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J5 Northbound (Mainline) AM Peak Merging Diagram	Drawing Number: Merging Diagram 1		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING

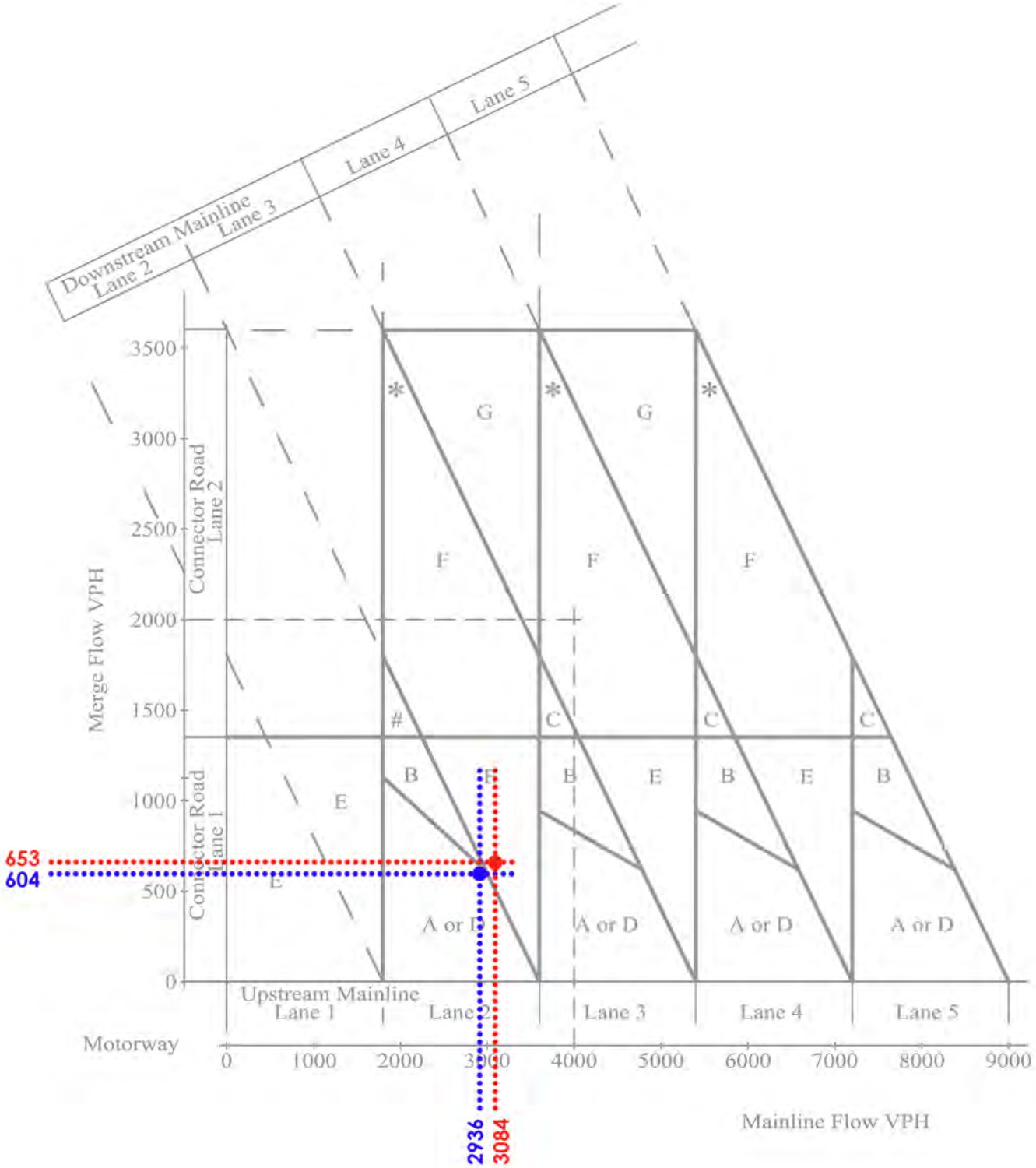


Surveyed

Development

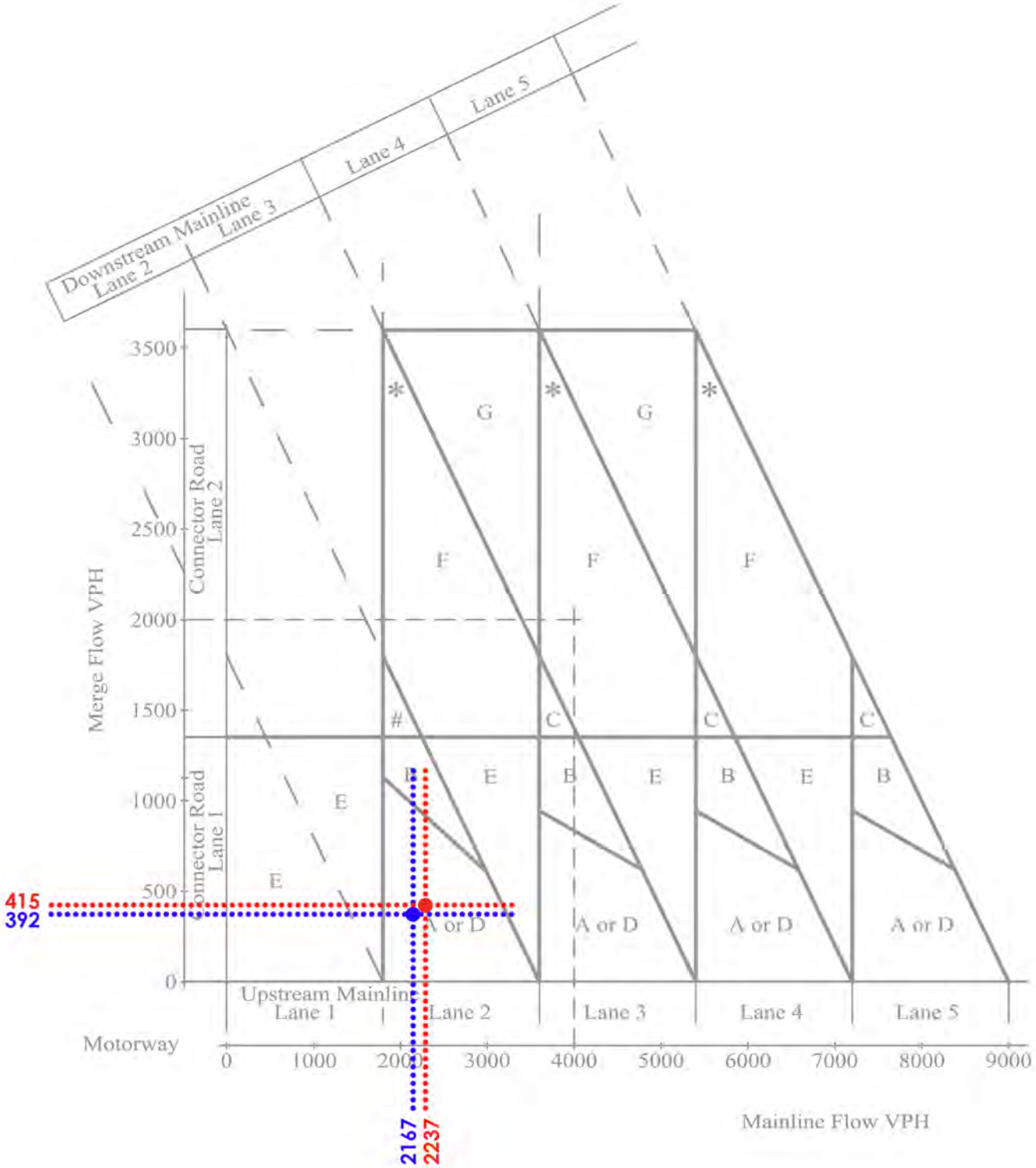
Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J5 Northbound (Mainline) PM Peak Merging Diagram	Drawing Number: Merging Diagram 2		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING



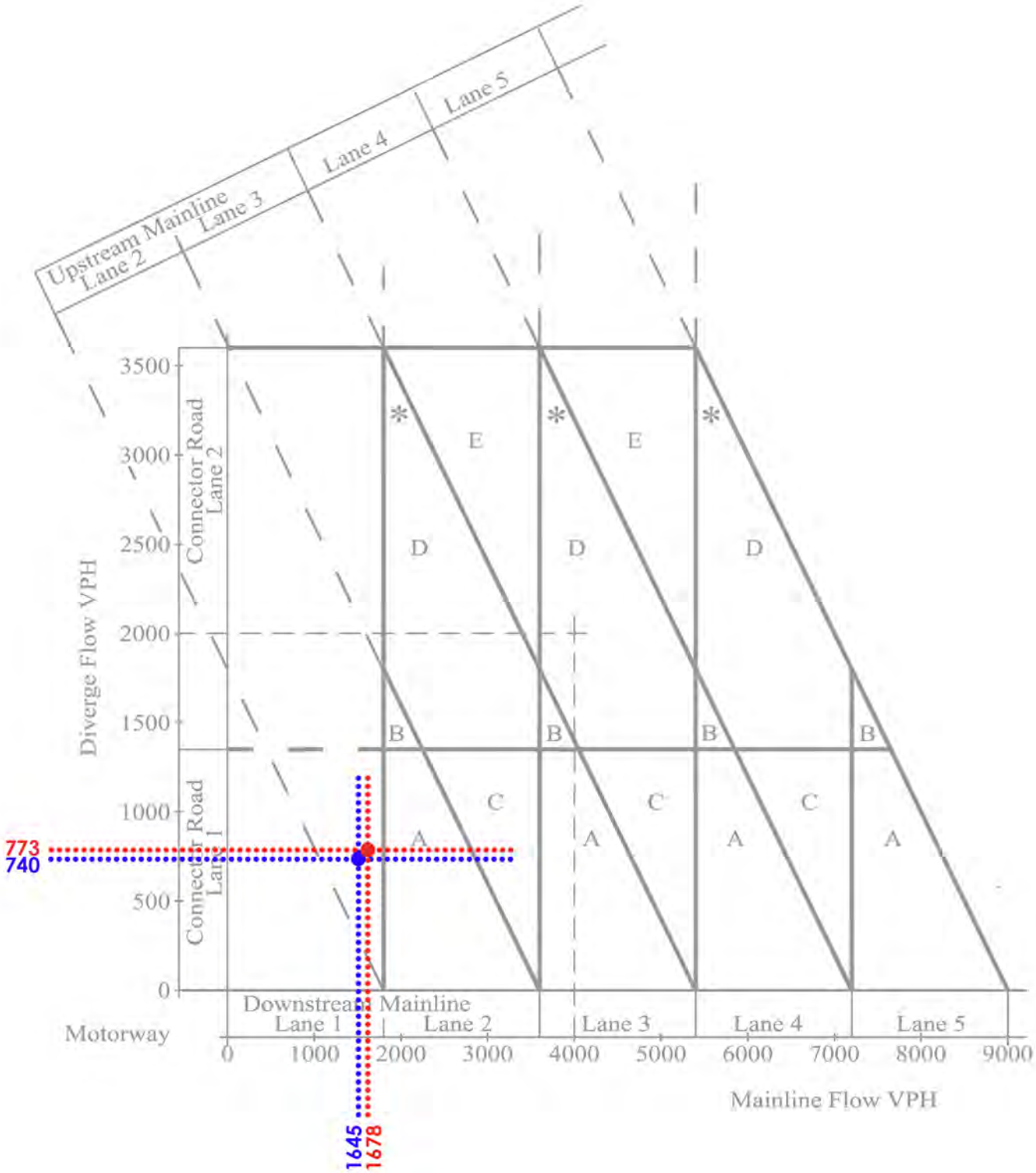
Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J4 Northbound (Mainline) AM Peak Merging Diagram	Drawing Number: Merging Diagram 3		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING



Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J4 Northbound (Mainline) PM Peak Merging Diagram	Drawing Number: Merging Diagram 4		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING

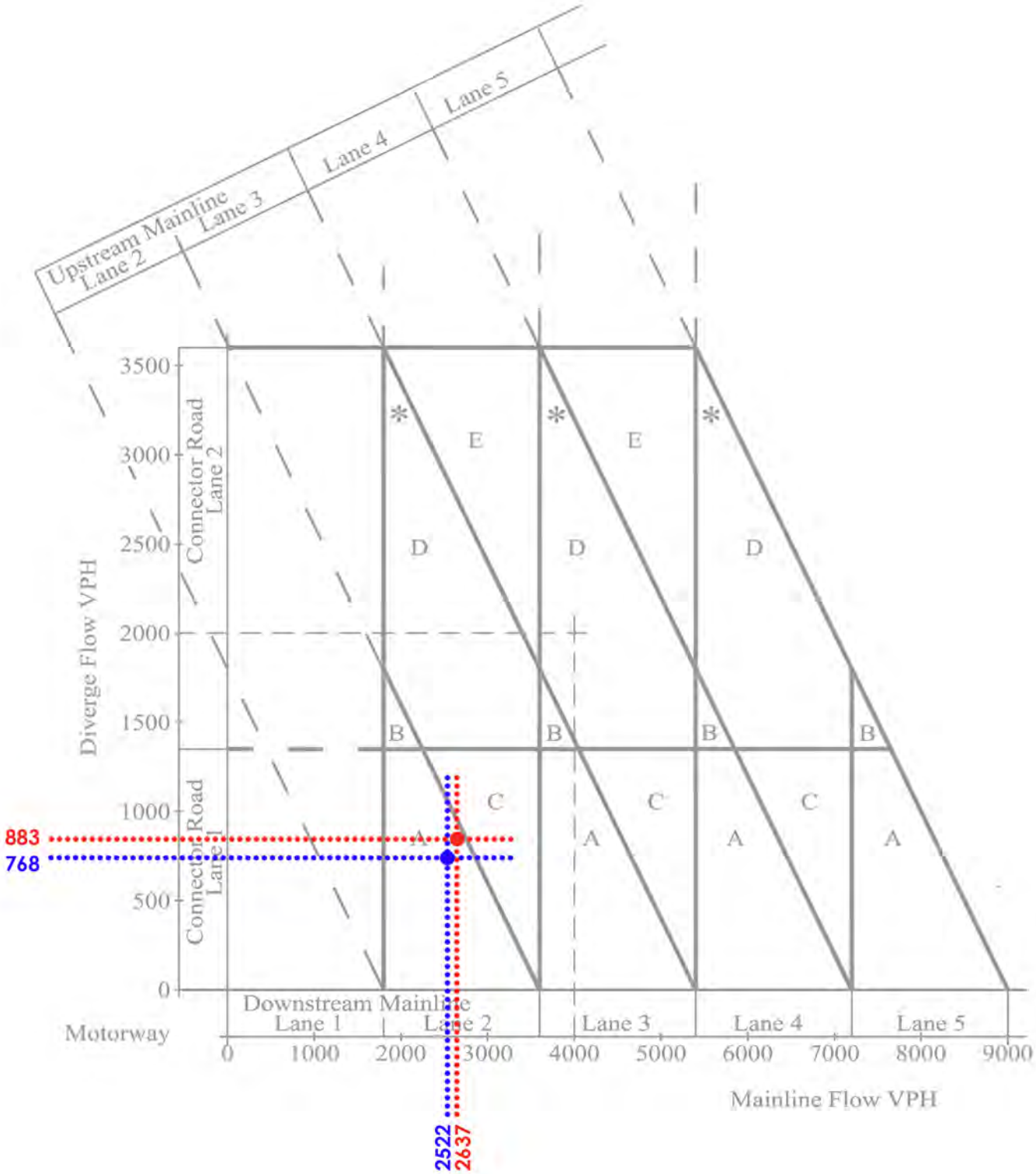


Surveyed

Development

Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J5 Southbound (Mainline) AM Peak Diverging Diagram	Drawing Number: Diverging Diagram 1		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING

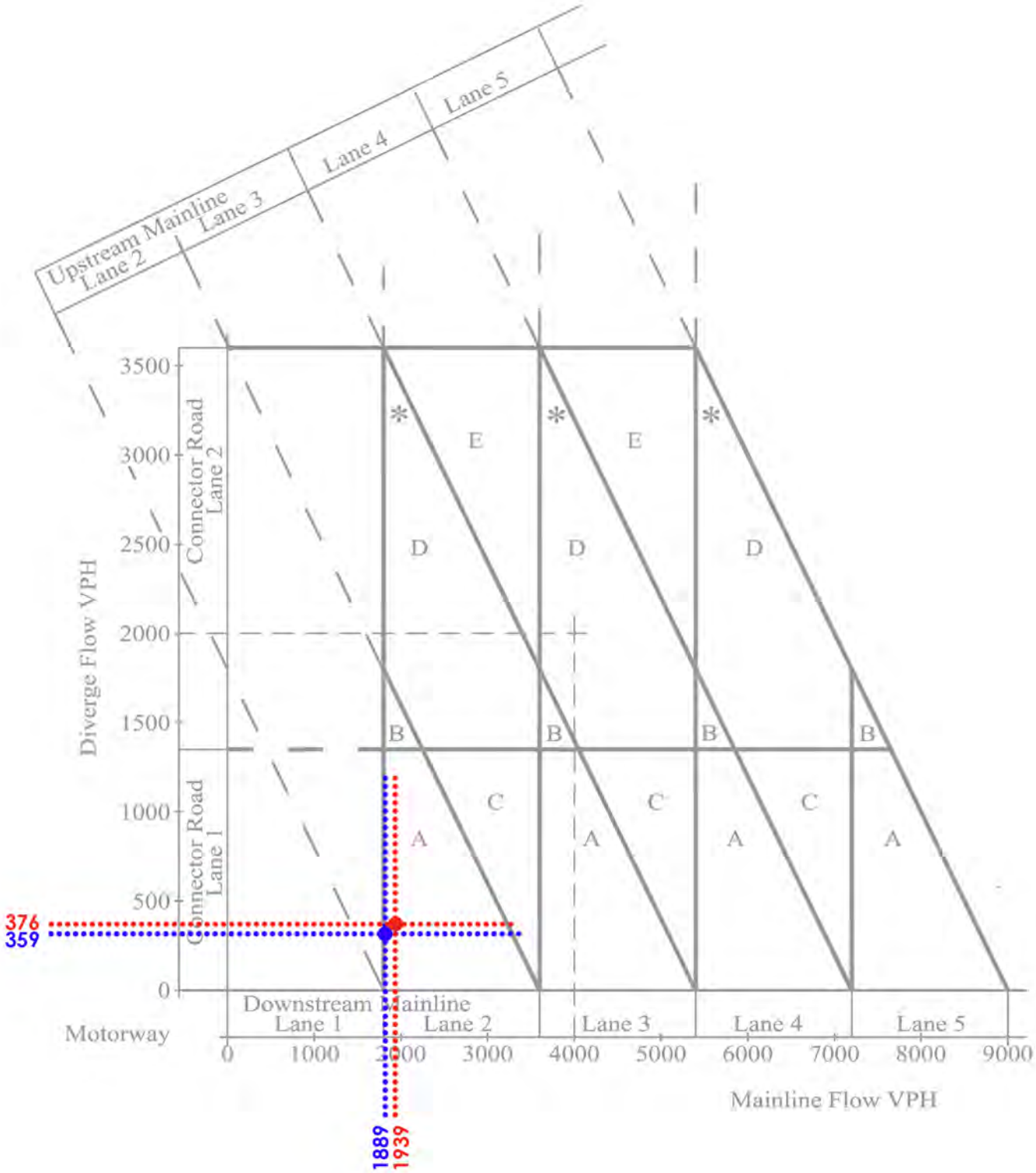


Surveyed

Development

Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J5 Southbound (Mainline) PM Peak Diverging Diagram	Drawing Number: Diverging Diagram 2		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING

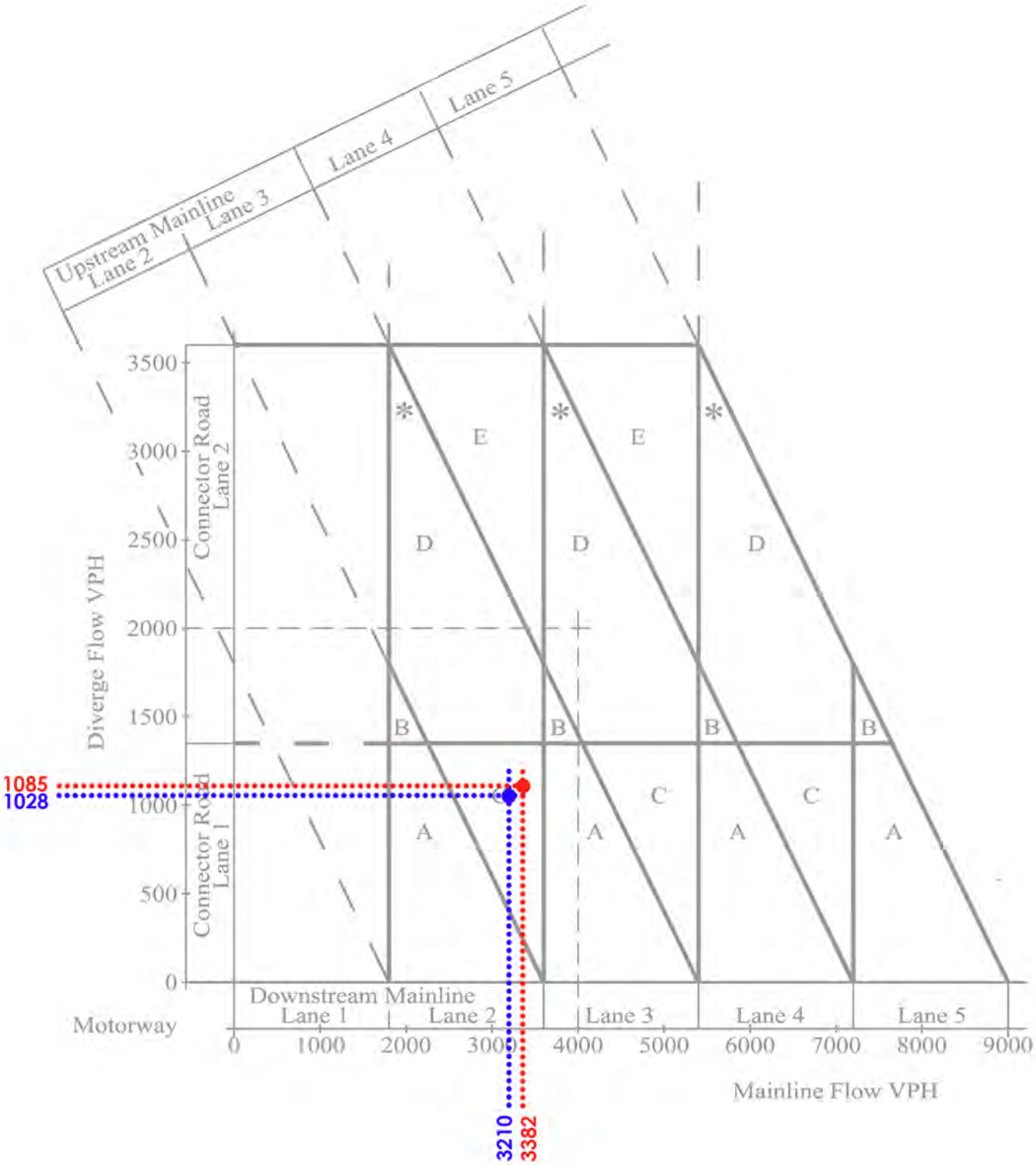


Surveyed

Development

Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J4 Southbound (Mainline) AM Peak Diverging Diagram	Drawing Number: Diverging Diagram 3		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING



Maidenhill, East Renfrewshire	Maidenhill Developers		
2015 North of J4 Southbound (Mainline) PM Peak Diverging Diagram	Drawing Number: Diverging Diagram 4		Scale: NTS @ A4
	Drawn by: NW	Date: Feb 2014	Checked by: AS

TRANSPORT PLANNING