PEEL CENTRE

HARBOROUGH HILL ROAD, BARNSLEY

PROPOSED NEW FLOORSPACE AND RELAXATION OF RESTRICTIONS

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TRANSPORT ASSESSMENT

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1.0 INTRODUCTION & BACKGROUND

1.1 This Transport Assessment (TA) has been prepared by TTHC Ltd on behalf of Peel Property (Investments) Ltd in support of their current proposals at Peel Centre retail park, Harborough Hill Road, Barnsley. The proposals comprise of three separate planning applications, but this TA considers the cumulative impact of these.

1.2 The proposed changes are as follows:

- Provision of a new retail unit which would replace the garden centre which currently forms part of Unit 2 The Range. The floorspace of this unit would be 936 m^2 Gross Internal Floor Area (GFA) (997 m^2 Gross External Floor Area); and
- Section 73 applications for relaxation of sales restrictions on some of the existing units to allow for open A1 trading including food sales (this would be up to a maximum of 1,394 m^2 GFA, be it in a single unit, or spread across several units).

1.3 These proposals follow approval last year of a Section 73 application to relax the sales restrictions specifically on units 3c, 5 and 6 to provide for open A1 non-food sales with up to a maximum of 30% food sales area. If this were taken up in all three units then it would equate to a maximum food sales area of 559 m^2 (699 m^2 GFA). TTHC prepared supporting documentation for that application that showed that the impact would not be material.

1.4 Pre-application scoping discussions with Barnsley Metropolitan Borough Council (BMBC) Highways have been sought for the current applications. It took some time to obtain agreement from Highways on the Unit 3c, 5 and 6 application before that application was finally approved, but we understand that TTHC's 'no material impact' conclusion was shared by BMBC's traffic consultants. The same methodology has been applied in respect of the current Section 73 applications.

1.5 This report provides information under the following headings:

- Site Location and Accessibility;
- Existing Traffic Flows;
- Development Proposals;
- Development Trip Generation;
- Base Traffic Flows;
- Traffic Impact and Junction Operation; and
- Conclusions.

2.0 SITE LOCATION AND ACCESSIBILITY

2.1 The Peel Centre is located some 700 metres north east of the centre of Barnsley. The location of Peel Centre on Harborough Hill Road is indicated in **Figure 1.** The existing site plan is attached at **Appendix A**.

2.2 A number of retail interests are located in this area around the A61/A635 Harborough Hill gyratory, which make for easy trip linkages. In addition to Peel Centre, there is also Asda, Twibell Street retail park, B&M Bargains and Magnet, and just over Old Mill Lane bridge to the north is Wickes and some other smaller units.

2.3 To the east is open countryside and the River Dearne, but a large residential population sits immediately to the west, and north over the River Dearne into Monk Bretton and beyond.

2.4 In relation to the Site's location and trip linkages, it is worth noting that an exit survey undertaken at the Centre in 2012 (by CACI Ltd) revealed that 23% of those visiting the Peel Centre had a linked trip with the town centre. Other strong linkages with Asda and Wickes were revealed.

Local Highway Network

2.5 The Peel Centre is accessed via a signalised junction onto Harborough Hill Road, which, in this locality, is of dual carriageway standard. The access road is called Dryden Road providing access to the retail park car parks and beyond to the service yards.

2.6 The Peel Centre junction sits at the southern corner of Harborough Hill gyratory, which provides a junction between the A61 and A635, before the A61 crosses over the River Dearne at Old Mill Lane.

2.7 Permission was previously granted for a new service access road to Peel Centre to be taken directly off Harborough Hill Road to the south of units 1a, b

and c (and replacing the two simple drive-way style dropped kerb type arrangements which serve the existing retail unit south of units 1a, b and c). The permission for the access was obtained at the third attempt following protracted discussions with BMBC Highways section and a public inquiry resulting from an appeal against the refusal of the second application. This consent has now lapsed but the principle of an access in this location has been thoroughly examined in evidence and accepted. The approved access arrangement was a left in/left out junction on the southbound carriageway of Harborough Hill Road. In order to cater for slower moving HGVs it incorporated a deceleration lane into the site.

2.8 Harborough Hill Road leads south and provides one of several routes via which access into the town centre can be gained. It has a speed limit of 40 mph and has an uphill gradient of up to 11% climbing southbound from the gyratory.

2.9 The gyratory is a multiple lane arrangement with three signalised entries for A61 and A635 approaches. The A61 approach from the south incorporates Dryden Road (access to Peel Centre) into the signals arrangement. The A61 signals arrangement from the north incorporates a bus gate. There are a number of priority controlled access points within the gyratory, namely Twibell Street, Meadow Street, Canal Way, and lastly access to B&M Bargains on the island in the centre of the gyratory. There are several controlled pedestrian crossing points, including at the Peel Centre Dryden Road junction.

2.10 The Site's location at such a key highway node facilitates linked trips with other retail destinations around the area and with the town centre just to the south. Such combined journey purposes can easily be catered for by drivers simply turning off into the Site en-route elsewhere. Such trips are referred to as Pass-by trips, and at a location on two key corridors, these would be expected to form a significant proportion of visitors to the Site, thus minimising overall vehicle mileage.

Public Transport Links

2.11 The A61 is a Quality Bus Corridor. As such Old Mill Lane, A635 and Eldon Street North (into the town centre and Barnsley bus & rail transport interchange) is a major bus route which passes close to Peel Centre.

2.12 The 2012 exit survey undertaken at the Centre indicated that 6% of those surveyed accessed the retail park by bus, coach or taxi.

2.13 Bus stops are located at the gyratory (southbound on the eastern side adjacent to Twibell Street retail park, and northbound immediately north of the gyratory). The walk distances from Peel Centre to these bus stops are approximately 320 metres for the northbound direction and 200 metres for the southbound direction. Conveniently located green man pedestrian crossings are provided.

2.14 A walk distance of 400 metres is generally considered to represent a 'reasonable' walk distance to a bus stop, and therefore the Site is readily accessible by bus.

2.15 **Figure 2** shows the Old Mill Lane bus routes, which provide good service coverage between the town centre and north of the River Dearne.

2.16 **Table 1** overleaf details their frequencies. All buses route into Barnsley bus and rail transport interchange which allows for easy connections to the rest of Barnsley and beyond.

Bus Service Frequency

		Weekdays				Saturday		Sunday	
Bus No:	**Description**	**First Bus**	**Last Bus**	**Daytime Freq (mins)**	**Total**	**Daytime Freq (mins)**	**Total**	**Daytime Freq (mins)**	**Total**
1	Barnsley – Staincross	6:58	23:00	10	76	10	67	30	28
1	Staincross - Barnsley	7:01	23:37	10	78	10	69	30	28
11	Barnsley - Athersley	5:20	22:45	10	78	10	73	30	28
11	Athersley - Barnsley	5:45	23:10	10	75	10	71	30	28
31	Barnsley - Cudworth	10:15	16:15	60	6	60	5	NS	NS
31	Cudworth – Barnsley	10:04	16:23	60	6	60	5	NS	NS
34	Barnsley - Shafton	6:20	17:30	60	12	60	11	NS	NS
34	Shafton - Barnsley	7:10	18:20	60	13	60	11	NS	NS
34A	Barnsley - Shafton	6:50	17:00	60	11	60	10	NS	NS
34A	Shafton - Barnsley	7:40	17:50	60	11	60	11	NS	NS
57	Barnsley – Royston	7:20	18:15	10-20	42	10-20	40	NS	NS
57	Royston – Barnsley	5:56	18:41	10-20	45	10-20	42	NS	NS
59	Barnsley – Wakefield	5:20	17:30	60	13	60	12	60	9
59	Wakefield - Barnsley	7:10	19:25	60	13	60	12	60	9
59	Royston - Barnsley	5:19	23:30	60	14	60	15	60	12
59A	Barnsley – Royston	8:50	23:40	60	15	60	16	60	13
194	Barnsley - Wakefield	5:45	22:53	60	18	60	18	60	14
194	Wakefield - Barnsley	5:40	22:50	60	18	60	18	60	14

Table 1

2.17 It can be seen that Peel Centre is served by numerous regular bus services. In particular, the No. 1 and 11 services each operate on a 10 minute frequency providing over 70 buses per day each in each direction. In total, Peel Centre is served by over 20 buses per hour in each direction.

2.18 Peel Centre is also accessible by rail. It lies approximately 600 metres walk distance from Barnsley Interchange. A walk distance of around 800 metres is generally considered to represent the limit for a 'reasonable' walk distance to a rail station.

2.19 Barnsley Interchange is served by high frequency rail services to Leeds, Wakefield, Sheffield, Huddersfield and Nottingham, and many other stops in

between. Although rail is less likely to be used by customers to the Site, it does provide a feasible mode of access for the staff journey to work.

Walk & Cycle Links

2.20 The 2012 exit survey indicated that 9% accessed the Centre on foot and 1% by cycle.

2.21 All roads in the area surrounding Peel Centre have footways on both sides. As discussed, green man pedestrian crossing facilities are provided at the Peel Centre access junction and on the gyratory. These crossing facilities provide a safe walk route between the Site and the bus stops.

2.22 Wide footways are provided on the bridge over the River Dearne providing a connection to/from the residential area to the north. To the west, pedestrians can route via quieter residential streets to reach Barnsley Interchange (approximately 600 metres – around 8 minutes walk) and the town centre just beyond (around 800 metres – 10 minutes walk), and the nearby residential area of Honeywell.

2.23 The Site's accessibility has been examined with reference to walking journey distances.

2.24 The Institute of Highways and Transportation (IHT) produced their 'Guidelines for Journeys on Foot' in 2000 which suggests that around 80% of walk journeys and walk stages in urban areas are less than 1 mile with the average length of a walk journey being just 1km (0.6 miles).

2.25 This guidance also provides 'suggested acceptable walking distances'. The walking thresholds presented in **Table 2** overleaf are suggested:

Suggested Acceptable Walking Distances		
	Commuting, school & Sightseeing (m)	**Elsewhere (m)**
Desirable	500	400
Acceptable	1000	800
Preferred maximum	2000	1200

Table 2

2.26 A commuting walk catchment of up to 2 km takes in some large residential areas both north and south of the River Dearne, such that there is the opportunity for staff to live within walking distance of the Site.

2.27 Cycling can substitute car trips, particularly for journeys under 5km, and such a cycle catchment area takes in all of Barnsley, although in practice this may be more limited by the local topography.

2.28 Overall, the Site is considered to have a good level of non-car accessibility, particularly given its location adjacent to a major bus corridor and within walking distance of the town centre and Barnsley Interchange. This is evidenced by the exit survey data which confirms that 16% of visitors, that is only a little over 1 in 6, access the site by non-car modes.

3.0 EXISTING TRAFFIC FLOWS

3.1 As part of a previous application in connection with the Twibell Street retail site, Peel instructed full traffic counts at the gyratory which tracked movements around the whole gyratory. These surveys were undertaken on Friday 20th (0700 – 1000 hours and 1600 – 1900 hours) and Saturday 21st (1200 – 1500 hours) June 2014.

3.2 The peak periods for consideration in respect of retail impact are the weekday PM and Saturday afternoon periods. The peak hour traffic flows have therefore been extracted for these periods. The peak hours for the retail park and the gyratory as a whole coincide. They are 1600 – 1700 hours on the Friday and 1345 to 1445 hours on the Saturday.

3.3 Vehicular flows have been converted into Passenger Car Units (PCUs) for junction assessment purposes. The use of PCUs, where heavy vehicles are assigned a PCU value of 2, takes full account of the greater impact that these larger vehicles have. The peak hour PCU flows are indicated in **Figures 3** and **4** respectively. Summary details of the peak period and light and heavy vehicle classification are contained at **Appendix B**.

3.4 **Table 3** below provides a comparative summary of the Friday PM and Saturday afternoon peaks for the gyratory as a whole and also specifically for traffic entering and exiting Peel Centre.

Peak Hour Comparison Summary of Existing Flows (PCUs)				
	Peel Centre			**Gyratory**
	In	**Out**	**Two Way**	**Total**
PM Peak Hour	201	238	439	4221
Saturday Peak Hour	443	448	891	4452

Table 3

3.5 This confirms that the Saturday peak hour flows at Peel Centre are considerably higher than the Friday PM peak hour, and also that the

background traffic is also higher at this time (gyratory total flows are approximately 5% higher on the Saturday). This is as to be expected given the significant other retail presence in the area. Given that the Saturday peak represents the worst case both in terms of retail impact and background traffic levels, it is the Saturday peak which has been taken forward for purposes of assessment.

4.0 DEVELOPMENT PROPOSALS

4.1 This TA considers the cumulative implications of the proposed changes at Peel Centre: the new infill unit and the Section 73 relaxation of restrictions.

4.2 The infill unit (between units 2 and 3a) will replace the existing garden centre (945 m^2 GFA) which is attached to Unit 2 The Range, and will extend slightly into the service yard to the rear. Permission has already been granted for a smaller replacement garden centre on the other side of Unit 2. Assuming no subdivision, the maximum floorspace of this new unit would be 936 m^2 GFA. In terms of sales conditions it is proposed that it would be subject to the same conditions as Units 1a, 1b, 1c, 2, 3a, 3b, 4 and 8 described below, and would be part of the same overall food sales limit.

4.3 The Section 73 applications seek to remove current non-food sales restrictions and in addition to permit some sale of food within the units in order to achieve more market flexibility. Units 3c, 5 and 6 already benefit from this relaxation. The current applications relate to Units 1a, 1b, 1c, 2, 3a, 3b, 4 and 8. Units 7 (leisure facility and sports goods) and 9 (A3 use) are unaffected by the applications. The total quantum of food sales across these 8 units plus the new infill unit will not exceed 1,394 m^2 GFA. It may be focussed in a single unit or it may be split across several of the units in order to cater for the growing popularity of stores that sell a limited range of discounted food.

4.4 The proposed layout changes within Peel Centre are indicated in the plan attached at **Appendix C**. Customer access to the newly created unit will be directly off the existing retail strip walkway.

4.5 The planning application for the new unit includes proposals for the provision of two electric vehicle charging points and these are indicated on the plan.

4.6 Other than some minor modifications in relation to the provision of these charging points and some additional cycle and motorcycle parking, there are

no proposed changes to the car park layout or its vehicular and pedestrian access arrangements.

4.7 There are currently 524 standard spaces (including parent & child) within Peel Centre. This equates to 1 space per 23.7 m^2 GFA at present and 1 per 25.6 m^2 with the proposals both of which complies with the maximum permitted (1 space per 20m^2) through Barnsley's Local Development Framework Supplementary Planning Document on Parking (adopted March 2012).

4.8 There are currently 37 disabled spaces located at various positions all along the unit frontages. This is well in excess of the minimum requirement of 4% of standard spaces.

4.9 In conjunction with the proposals, cycle and motorcycle parking will be provided in accordance with BMBC standards. This equates to an additional 5 cycle and 3 motorcycle spaces which will be implemented prior to the availability of the proposed additional floorspace.

4.10 A Travel Plan will also be implemented in connection with the proposed new unit, and a Framework Travel Plan has been prepared as part of that application. It is also intended that as the existing units are leased to new occupiers over time, that they will also be committed through a condition of lease to implementing their own Travel Plans.

4.11 The proposed new unit will extend slightly into the existing service area to the rear of the garden centre. HGV Tracking of the proposed new arrangement is attached at **Appendix D**.

5.0 DEVELOPMENT TRIP GENERATION

5.1 This section considers the travel demands resulting from the different elements of the proposed new floorspace and relaxations of conditions.

5.2 In order to make an assessment of what these traffic levels would be consideration is given to the site specific travel demands (based on the 2014 traffic surveys) and reference has also been made to the TRICS database.

5.3 As detailed in chapter 3 the retail park peak demands occur on Saturday and this coincides with the overall peak hour at the adjacent gyratory. Since clearly development impact will also be higher on Saturday, it is only this worst case period which has been taken forward for assessment.

5.4 **Table 3** details the existing peak hour trip generation for Peel Centre with a two way flow of 891 PCUs. Peel Centre currently has a total floorspace of 12,398 m^2 GFA with a further 4,076 m^2 GFA of mezzanine. The actual occupied and operational floorspace at the time of the 2014 traffic surveys was 13,537 m^2 GFA. This therefore equates to an operational trip rate as detailed in **Table 4** below.

Peel Centre Observed Trip Rates (per 100 m^2)			
	In	**Out**	**Total**
Saturday Peak Hour	3.27	3.31	6.58

Table 4

5.5 These rates are very representative of average rates by comparison with typical TRICS rates. Based on an average of 20 sites previously presented in the Units 3c, 5 and 6 Section 73 application work, the two way rate was very comparable at 6.47. Details are provided at **Appendix E**.

New Unit

5.6 The new unit would replace the existing garden centre (GFA 945m^2) which currently forms part of The Range (Unit 2). The proposed new unit will have a floorspace of 936 m^2 GFA. In trip generation terms it has first been considered as a non-food retail unit. If it were to be occupied or partly occupied for food sales then that additional impact is considered as part of the overall 1,394 m^2 GFA relaxation (following section).

5.7 As the proposed unit is located within the Peel Centre, the existing observed trip rates shown in **Table 4** have been applied directly to the proposed floorspace. Of course, in reality one would not expect a straight pro-rata uplift as many of the stores visitors will already be visiting the Centre and just adding another store to their visit (linked trips).

5.8 The resulting trip generations adopted for the proposed new unit are as detailed in **Table 5** below. Whilst the relocated garden centre will reduce considerably in size, the following trips are all considered as additional, and no adjustments have been made to reflect the overall net change relative to the garden centre, thus providing another element of robust testing.

Proposed New Unit Trip Generation			
(GFA 936 m^2)	**Saturday Peak Hour**		
	In	**Out**	**Total**
Proposed Flow	31	31	62

Table 5

5.9 Of course, many of the trips are vehicles already passing the site and simply turning off into it. In line with standard industry assumptions a pass-by factor of 30% has been applied in this assessment work. This includes for linkages with the town centre and other nearby retail and leisure facilities and is

considered to be on the low side given the site's location on the A61/A635 gyratory.

5.10 The resulting trip types adopted for the new unit are detailed in **Table 6**.

Proposed New Unit Trip Type			
(GFA 936 m^2)	**Saturday Peak Hour**		
	In	**Out**	**Total**
New	22	22	43
Pass-by	9	9	19
Total	**31**	**31**	**62**

Table 6

Relaxation Permitting Food Element

5.11 The proposals include for Section 73 applications for relaxation of sales restrictions on some of the units with a worst case food sales trip generating potential (up to a maximum of 1,394 m^2 GFA in total across those 8 units to which the s73 applications relate and the proposed unit 2a). The assessment of such trip increases adopts the same methodology as for the Units 3c, 5 and 6 application.

5.12 That assessment considered two alternative calculations and for robustness, the methodology for the resulting worst case increase in trips (Option 2) has been applied to the 1,394 m^2 GFA currently under consideration. Details of the units 3c, 5 and 6 application methodologies and resulting calculated trip generations are provided at **Appendix E**. The resulting uplift in the trip generations for the currently proposed relaxation of sales restrictions are as detailed in **Table 7** below along with the assumed 70% new and 30% pass-by trip type proportions.

Proposed Relaxation of Sales Restrictions Trip Generation			
(GFA 1,394m^2)	**Saturday Peak Hour**		
	In	**Out**	**Total**
Uplift Rate (trips per 100m^2)	2.73	2.36	5.09
Total Trip Generation	38	33	71
New	27	23	50
Pass-by	11	10	21

Table 7

5.13 Combining the new unit and sales relaxation trips together results in the overall traffic increases detailed in **Table 8**.

Proposed Development Traffic Flows			
	Saturday Peak Hour		
	In	**Out**	**Total**
New	49	45	93
Pass-by	20	19	40
Total	**69**	**64**	**133**

Table 8

Trip Distribution

5.14 The distribution of the 'New' traffic flows associated with the proposed development are based on the proportional distribution from the surveyed traffic flows entering / exiting the Peel Centre retail park.

5.15 With regards to the 'Pass-by' trips, these are vehicles already passing the site and simply turning off into it. Given that the access junction sits on the gyratory, there is also likely to be an element of trip diversion from the far side of the gyratory (trips that don't pass the access). However, for the purposes of a robust assessment, these have been included as part of the 30% Pass-by; rather than additional to it. Twenty percent of these Pass-by trips have been taken from those travelling south through the gyratory and immediately passing Dryden Road access. The other 10% of Pass-by trips are assumed

to divert from the key movements travelling on the other side of the gyratory between Harborough Hill Road, A635 and A61 Old Mill Lane.

5.16 The individual distribution flow diagrams for New and Pass-by trips for the new unit and for the S73 applications are provided at **Appendix F**. **Figure 5** shows the total trip distribution for the proposed development flows which represents the cumulative impact of the three applications currently presented.

6.0 BASE TRAFFIC FLOWS

6.1 Department of Transport (DfT) 'Guidance on Transport Assessment' notes that developments should be assessed for a period not less than 5 years after registration of the application. An assessment year of 2020 has therefore been chosen.

6.2 In order to take account of future year flows in 2020 an allowance has been made for general background growth of existing peak hour flows, and the specific traffic forecasts associated with known committed developments in the area is also added in. As growth forecasts already take account of new development, this results in an element of double counting.

6.3 The existing passing traffic flows have been 'growthed' to the future year by applying DfT TEMPRO growth factors based on the 'Barnsley' area and the time period of 'Saturdays (all times of day)'. The 2014 observed peak hour flows have therefore been 'growthed' by 7.9%. This provides a robust test for the peak hour application.

6.4 Saturday 2020 'growthed' flows (PCUs) are shown in **Figure 6**.

Adjustments to Account for Vacant & Consented Floorspace – Peel Centre

6.5 At the time of the traffic survey three units within the retail park were vacant (units 3c, 5 and 6). These are the same three units to which the S73 approval applies. In order to provide a robust assessment of future conditions with the retail park fully trading, the existing traffic flows associated with the Centre have been increased to reflect the potential generations of these units. This is a two stage approach: considering the typical non-food generation firstly; and then the uplift to reflect the permitted food element.

6.6 The three units total 2,330m^2 GFA ground floorspace with a further 607m^2 mezzanine floorspace, and the observed Peel Centre trip rates as detailed in

Table 4 have been applied. Again, these have been applied on a straight pro-rata basis and to the full ground plus mezzanine floorspace. Of course mezzanine floorspace typically generates a much lower footfall than ground floorspace, so the inclusion of this mezzanine within the calculations provides for a robust assessment. Furthermore, this pro-rata trip rate application makes no allowance for increased trip linkages within the Centre, therefore adding yet another level of robust testing.

6.7 The additional trips calculated for the vacant units are detailed below in **Table 9**. As per the proposed development flows shown in section 5 the non-food trips associated with the vacant units have been separated into trip types 'New' (70%) and 'Pass-by' (30%).

Vacant Units: Additional Non-Food Trip Generation			
(GFA 2,937m^2)	**In**	**Out**	**Total**
Rates (trips per 100 sqm)	3.27	3.31	6.58
New (70%)	67	68	135
Pass-by (30%)	29	29	58
Total	**96**	**97**	**193**

Table 9

6.8 To take account of the approved Section 73 application for these units and the potential introduction of an element of food, the previously calculated uplift (relative to non-food) has been applied on top of the **Table 9** flows. As previously discussed two alternative calculations were presented, and it is the worst case of these which has been adopted here.

6.9 Details of these previously presented calculations are provided at **Appendix E**. The resulting potential uplift in the trip generation associated with these vacant units is as detailed in **Table 10** below.

Vacant Units: Food Sales Uplift			
	In	**Out**	**Total**
New (70%)	13	12	25
Pass-by (30%)	6	5	11
Total	**19**	**17**	**36**

Table 10

6.10 **Table 11** below shows the overall additional Peel Centre traffic to be included within the Base assessment flows.

Overall Additional Peel Centre Traffic Flows			
	In	**Out**	**Total**
New (70%)	80	80	160
Pass-by (30%)	35	34	69
Total	**115**	**114**	**229**

Table 11

6.11 The distribution of the traffic flows associated with the vacant units and the associated Section 73 consent are as per detailed for the development flows in section 5. The distribution flow diagrams are provided at **Appendix G**.

Adjustments to Account for Vacant Units – Twibell Street Units

6.12 At the time of the survey 3 units located at the trading park off Twibell Street (accessed off the gyratory) were also vacant. Therefore, account has also been taken of the reoccupation of these vacant units. As with Peel Centre vacant units, a pro-rata uplift has been applied to the observed traffic flows. The observed flows entering and exiting Twibell Street during the Saturday peak hour were 34 inbound and 35 outbound.

6.13 Whilst Twibell Street serves other properties including residential, for purposes of a robust assessment the observed traffic is assumed to be all associated with the trading park. At the time of the traffic count the occupied

floorspace was 1,836m^2 GFA and 3,350 m^2 GFA was vacant. A factor of 1.82 (3,350/1,836) has therefore been applied to the observed flows to reflect the increase in traffic which might result from reoccupation of the vacant units.

6.14 The additional trips calculated for the vacant units are detailed below in **Table 12**. The proposed trips for the vacant units have been separated into trip types 'New' (70%) and 'Pass-by' (30%).

Vacant Units: Additional Twibell Street Traffic Flows			
(GFA 3,350sqm)	**In**	**Out**	**Total**
New (70%)	43	45	88
Pass-by (30%)	19	19	38
Total	**62**	**64**	**126**

Table 12

6.15 The distribution of these 'New' and 'Pass-by' trips has been undertaken on the same basis as for the Peel Centre trips. The distribution flow diagrams are provided at **Appendix H**.

6.16 The resulting 2020 Base flows are the addition of the existing flows growthed to 2020 plus the reoccupation of units 3c, 5 and 6 at Peel Centre (including the permitted food allowance), plus the reoccupation of the Twibell Street vacant units. The 2020 Base flows are indicated in **Figure 7**.

7.0 TRAVEL IMPACTS AND JUNCTION OPERATION

7.1 Peel Centre takes access off the A61/A635 Harborough Hill gyratory junction (via Dryden Road). The impact of the development proposals, **assuming full take up of the relaxation floorspace for food sales** as well as the new unit, equates to a 2.4% increase in traffic at the gyratory during the Saturday peak hour.

With Development Flows

7.2 The 'With Development' flow scenario is the addition of the 2020 Base flows (**Figure 7**) with the Cumulative Proposed Development Flows (**Figure 5**).

7.3 The 2020 Base plus Development flows are presented in **Figure 8**.

Operational Assessments

7.4 The operation of the gyratory junction has been assessed using the industry standard LinSig computer program. In order to understand the impact of the development proposals peak hour junction assessments have been undertaken for comparative purposes between the 'Existing', '2020 Base' and '2020 Base plus Development' scenarios.

7.5 The LinSig model has been adapted from a model previously submitted to BMBC by Curtins consultants in connection with a planning application for a proposed foodstore, on land to the north of Twibell Street. This LinSig model has been reviewed and where appropriate following advice received from JCT (the software developer) has been edited to better reflect the existing operation of the gyratory junction.

7.6 All tests have been carried out on the basis of a common cycle time of 90 seconds to enable comparative assessment to be made.

7.7 The results of the assessments are summarised in **Table 13** below and the full LinSig output is provided at **Appendix I**.

A61 / A635 Harborough Hill Gyratory Operational Performance Comparison							
		Existing		2020 Base		2020 Base plus Dev	
Link - Entries		**DoS**	**Queue**	**DoS**	**Queue**	**DoS**	**Queue**
1/1	Twibell Street (entry)	14.9%	1	54.2%	2	61.4%	3
2/1	Dryden Road (entry) Left	14.0%	1	17.7%	1	19.8%	1
2/2	Dryden Road (entry) Left	17.0%	1	21.5%	1	23.8%	1
2/3	Dryden Road (entry) Ahead	23.7%	2	32.1%	2	31.7%	2
2/4	Dryden Road (entry) Ahead	72.3%	6	89.1%	10	84.6%	9
3/1	A61 Harborough Hill Road (entry)	19.7%	2	19.8%	2	19.6%	2
3/2	A61 Harborough Hill Road (entry)	84.4%	12	87.2%	14	88.4%	14
3/3	A61 Harborough Hill Road (entry)	85.8%	13	88.9%	14	90.0%	15
4/1	Meadow Street (entry)	4.5%	1	5.1%	1	5.3%	1
5/1	A635 Old Mill Lane (entry)	89.9%	14	73.9%	12	82.9%	13
5/2	A635 Old Mill Lane (entry)	83.8%	13	68.9%	11	77.2%	12
6/1	Canal Way (entry)	62.3%	3	67.6%	4	69.7%	4
6/2	Canal Way (entry)	74.4%	8	83.2%	10	85.3%	12
7/1	PC world (Egress)	24.4%	1	26.6%	1	28.0%	1
8/1	A61 Old Mill Lane (SB) – Bus Lane	34.7%	1	35.4%	1	35.4%	1
8/2+8/3	A61 Old Mill Lane (SB)	94.7%	27	98.6%	39	101.4%	51
Internal Circulating							
10/2+10/1	Gyratory East (Ahead & Left)	54.2%	8	64.4%	11	70.1%	10
10/3	Gyratory East (Ahead)	35.3%	7	37.0%	7	37.5%	4
10/4	Gyratory East (Right)	76.4%	15	82.5%	16	85.2%	15
10/5	Gyratory East (Right)	25.0%	1	28.3%	2	29.4%	3
12/1	Gyratory West (Left)	38.3%	1	41.1%	1	41.2%	1
12/2	Gyratory West (Right)	56.7%	6	71.1%	7	68.9%	10
12/3	Gyratory West (Right)	37.0%	2	47.0%	2	45.6%	2
16/1	Gyratory North (Right)	49.3%	8	72.3%	12	78.2%	11
16/2	Gyratory North (Right)	72.3%	11	82.9%	14	82.7%	14
24/1	A61 Old Mill Lane (NB)–Ped Crossing	36.1%	5	41.7%	7	42.9%	4
24/2	A61 Old Mill Lane (NB)-Ped Crossing	44.2%	7	44.3%	9	43.9%	5
Cycle Time		90 seconds		90 seconds		90 seconds	
Overall PRC		-5.2%		-9.6%		-12.7%	

DoS – Degree of Saturation (%) PRC = Practical Reserve Capacity

Table 13

7.8 Firstly, with specific regard to the site access junction part of the gyratory (arms 2, 3 and 10), this would continue to operate within capacity in all scenarios. The highest degree of saturation (DoS) at this node is on lane 3/3 (A61 Harborough Hill Road NB off-side entry lane). This particular lane increased from 88.9% in the Base to 90.0% in the Base plus Development scenario. Queuing at the site access junction generally remains consistent between the Base and Base plus Development scenarios. Owing to the allocation of the flows in the model for the Base plus Development, this has adjusted the green times at the site access junction which has resulted in a decrease in queuing on certain lanes.

7.9 The most critical part of the junction occurs at A61 Old Mill Lane (SB) entry lanes (arm 8). In the Existing scenario this particular node is operating above 90%. With the addition of committed developments and background growth the operation of the entry links increases by 3.9% to 98.6%. With the addition of the proposed development the operation of the entry links increases by 2.8% to 101.4%. Therefore, background growth will have had greater effect on the operation of this part of the junction than the addition of the worst case development traffic flows, which assume full take up of the proposed relaxations.

7.10 The green time for Lanes 8/1, 8/2 and 8/3 is balanced between the circulating lanes 16/1 and 16/2. Weighting factors have been applied to lanes 16/1 and 16/2 to reduce potential blocking issues on the circulating links. The Base shows the Mean Max Queue on lanes 16/1 and 16/2 to be 12 and 14 pcus, this is slightly outside the available stacking space available on the ground. With the addition of the proposed development flows the model has rebalanced the flows and the proposed Mean Max Queues on the lanes are 11 and 14 pcus, therefore no material increase on these particular lanes as a consequence of the development.

7.11 It should also be noted that with the A61 Old Mill Lane entry the bus gate has been called every cycle. The traffic count shows within the peak hour 23 buses entered the roundabout from this arm. Given this position the maximum

number of times the bus gate would be 'called' is therefore 23 and in practice this would be less (where two buses pass through at the same time). Based on the adopted cycle time of 90seconds the bus gate within the TTHC tests is assumed to be called 40 times in a hour.

7.12 This robust assumption within the tests provides a more onerous assessment than would occur in practice. In reality the bus gate would not be called as often as assumed in the model. Some of the 10 seconds (green time plus intergreens) allocated to the bus gate would in practice be available as additional green time which would be distributed to lanes 8/2, 8/3, 16/1 and 16/2, which would in turn improve the capacity and queuing of these lanes.

7.13 In terms of the overall Practical Reserve Capacity (PRC) of the junction as a consequence of the background growth and the committed development the Base scenario reduces the PRC by 4.4%. The proposed development flows, assuming full take up of the relaxation floorspace for food sales as well as the new unit, equates to just a 2.4% increase in traffic at the gyratory junction. The effect of the increase in traffic on the PRC as a consequence of the proposals (based on all of the robust assumptions and testing) would reduce the operation of the Base scenario by only 3.1%.

7.14 Overall, the peak hour testing undertaken demonstrates that in practice the proposals will not result in a severe cumulative impact.

8.0 CONCLUSIONS

8.1 This Transport Assessment (TA) has been prepared by TTHC Ltd on behalf of Peel Property (Investments) Ltd in support of their current proposals at Peel Centre retail park, Harborough Hill Road, Barnsley.

8.2 The proposals include a new retail unit of 936 m^2 Gross Internal Floor Area (GFA) (997 m^2 Gross External Floor Area) which would replace the garden centre which currently forms part of Unit 2 The Range. Also proposed are Section 73 applications for relaxation of sales restrictions on some of the existing units to allow for open A1 trading including a proportion of food sales. The maximum floorspace on which the proposed relaxation to allow food sales would apply would be 1,394 m^2 GFA, be it in a single unit, or spread across several units.

8.3 The location of the Site is considered to have a good level of non-car accessibility, particularly given its location near a major bus corridor and within acceptable walking distance of Barnsley Interchange. This is borne out by the evidence provided by the exit survey, which shows that approximately one in six visitors to the park travel by non-car modes.

8.4 Peel Centre takes access off the A61 / A635 Harborough Hill gyratory junction (via Dryden Road). The impact of the development proposals equates to a 2.4% increase in traffic at the gyratory during the Saturday peak hour.

8.5 The operational assessments of the A61 / A635 Harborough Hill gyratory have been undertaken based on a number of robust assumptions. The assessment flows are based on the following assumptions:

- The potential trip generation from the vacant and consented floorspace at the Peel Centre has been included;
- The potential trip generation from the vacant units at Twibell Street has been included;
- Trip generation for the vacant mezzanine floorspace at the Peel Centre has been calculated on a straight pro-rata basis (in reality mezzanine

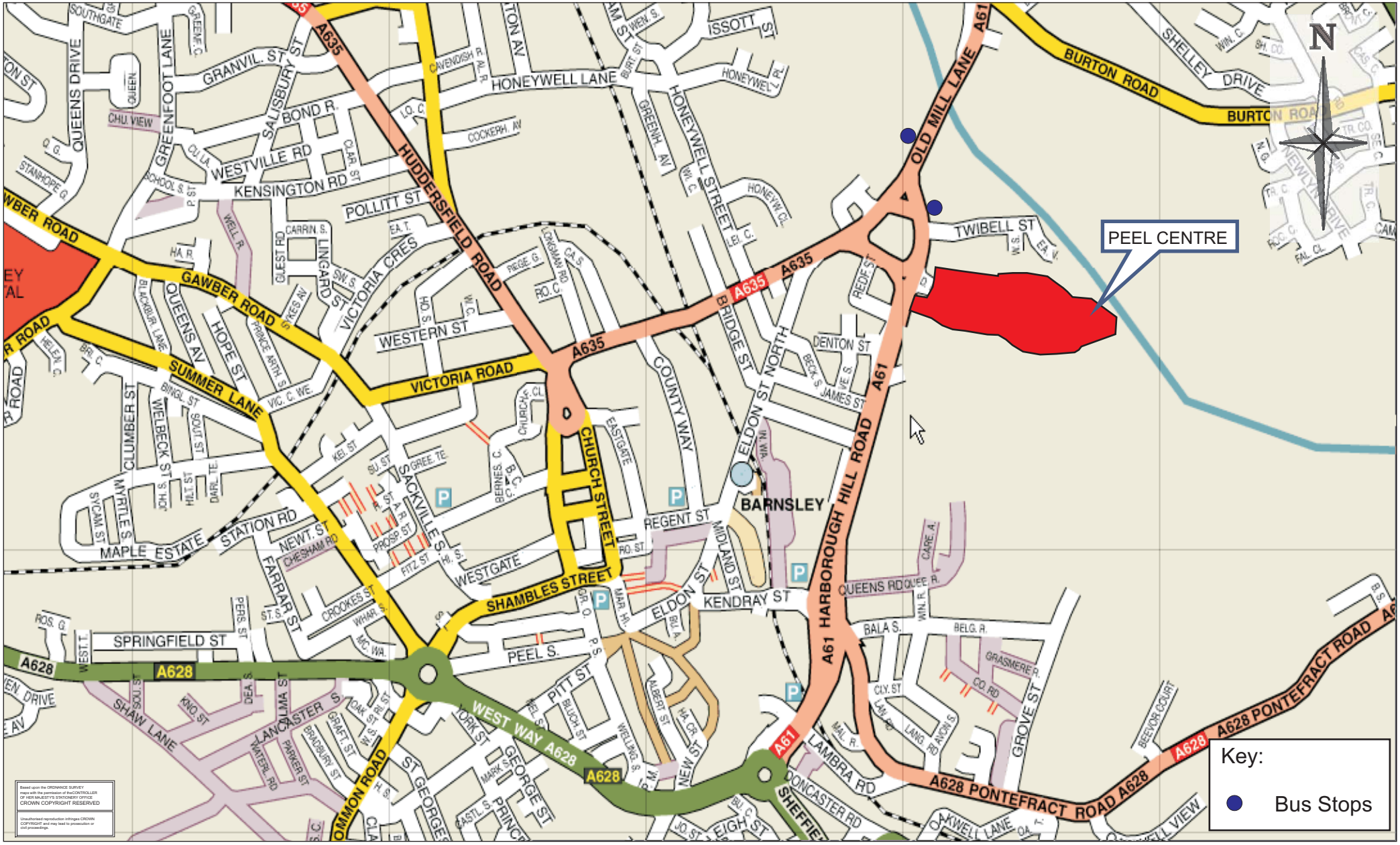
floorspace typically generates a much lower footfall than ground floorspace);

- Full TEMPRO growth factors have been applied to the existing passing peak hour flows (TEMPRO growth forecasts already take account of new development, and therefore this results in an element of double counting);
- The existing observed trip rates for the Peel Centre have been applied to the proposed floorspace. By applying a pro-rata trip rate this makes no allowance for increased trip linkages within the Centre as many of the stores visitors will already be visiting the Centre and just adding another store to their visit (linked trips);and
- The assessment flows assume maximum GFA up take of the relaxation of sales restrictions.

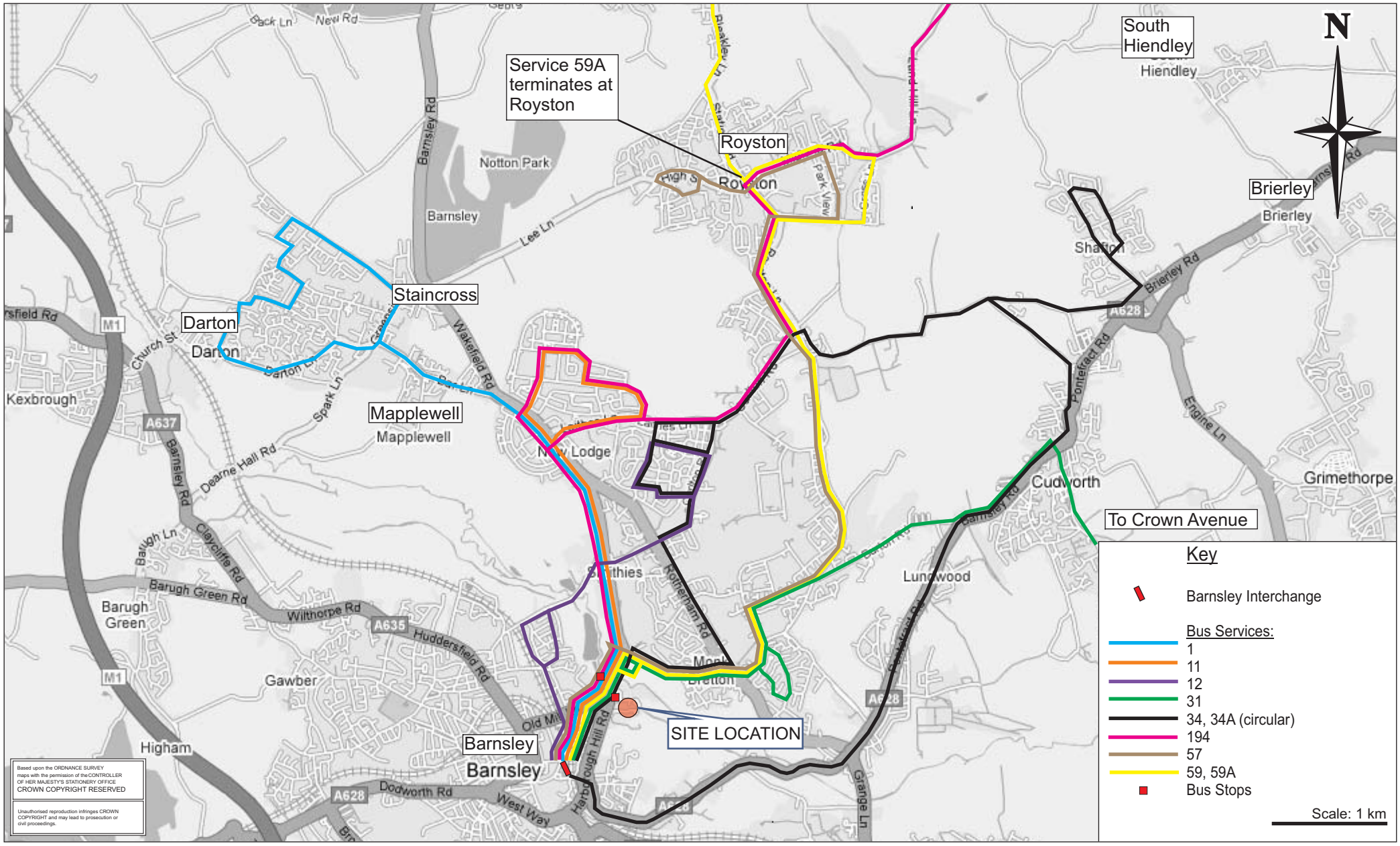
8.6 Overall, the peak hour testing undertaken demonstrates that in practice the proposals will not result in a severe cumulative impact.

8.7 In conclusion, this Transport Assessment demonstrates that there are no transport related issues which would prevent the granting of planning permission for the proposals at Peel Centre retail park.

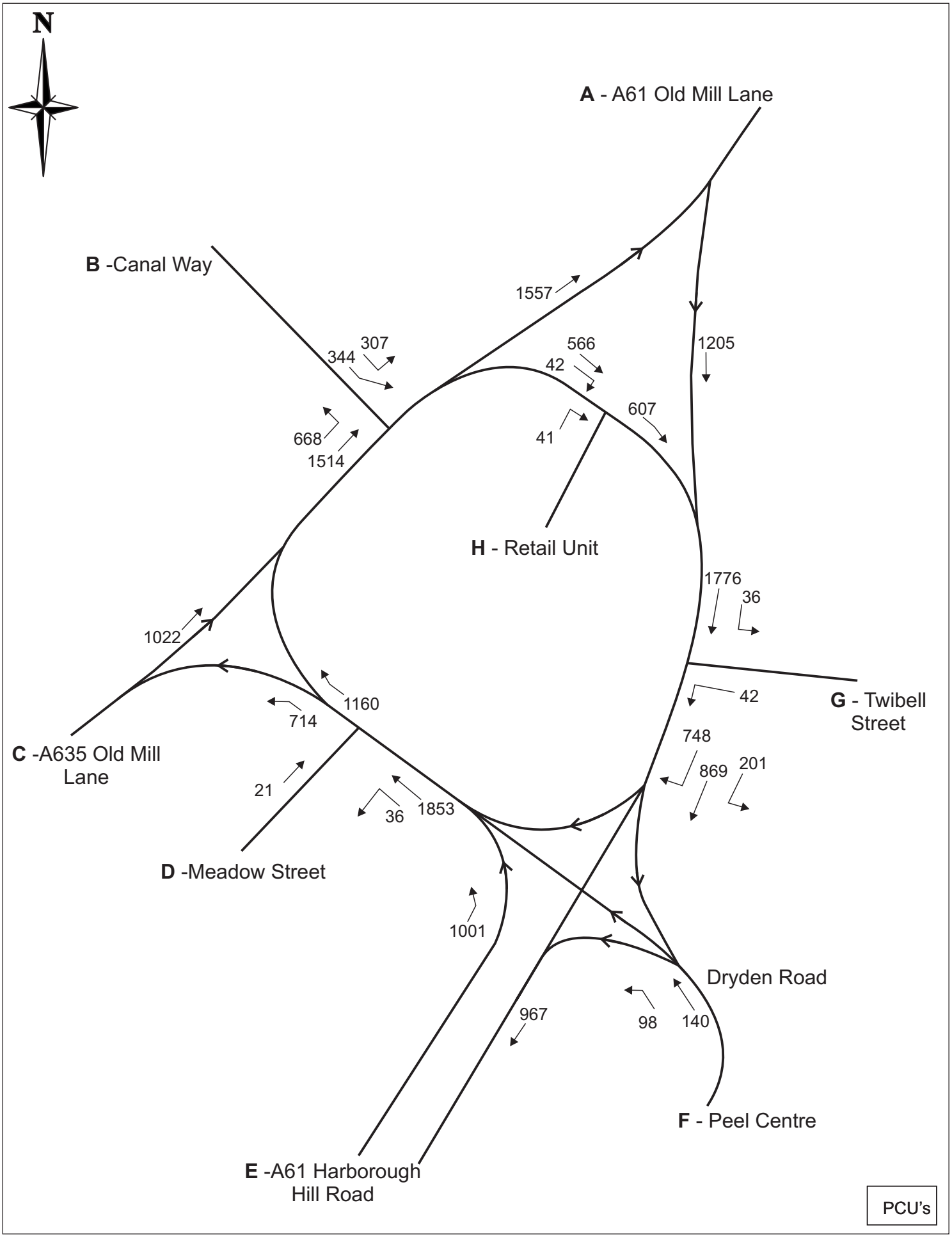
FIGURES



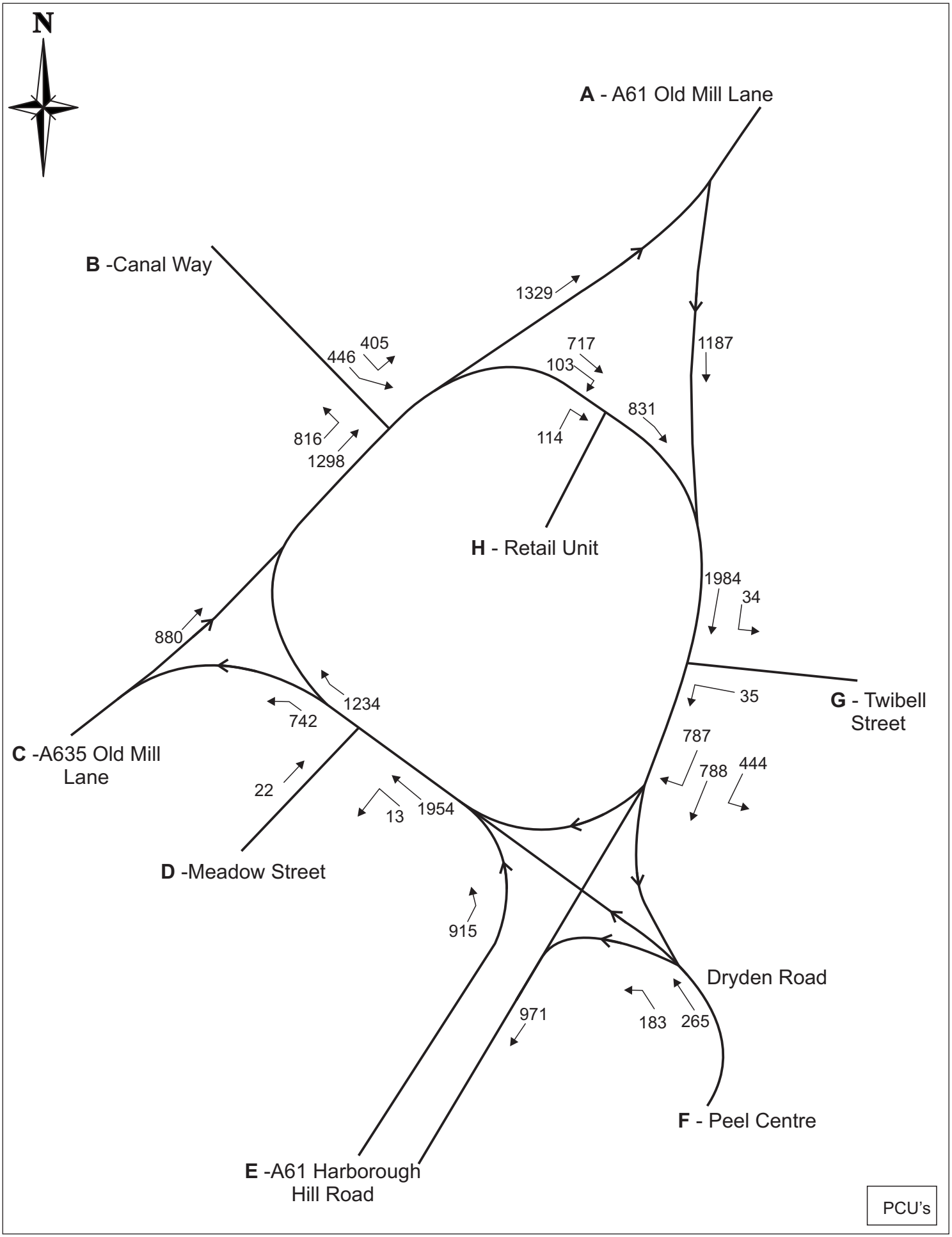
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	Date 19.06.15	Rev Date .	SITE LOCATION PLAN	
	Drawn By UD	Authorised MAW	Scale NTS	**FIGURE 1**



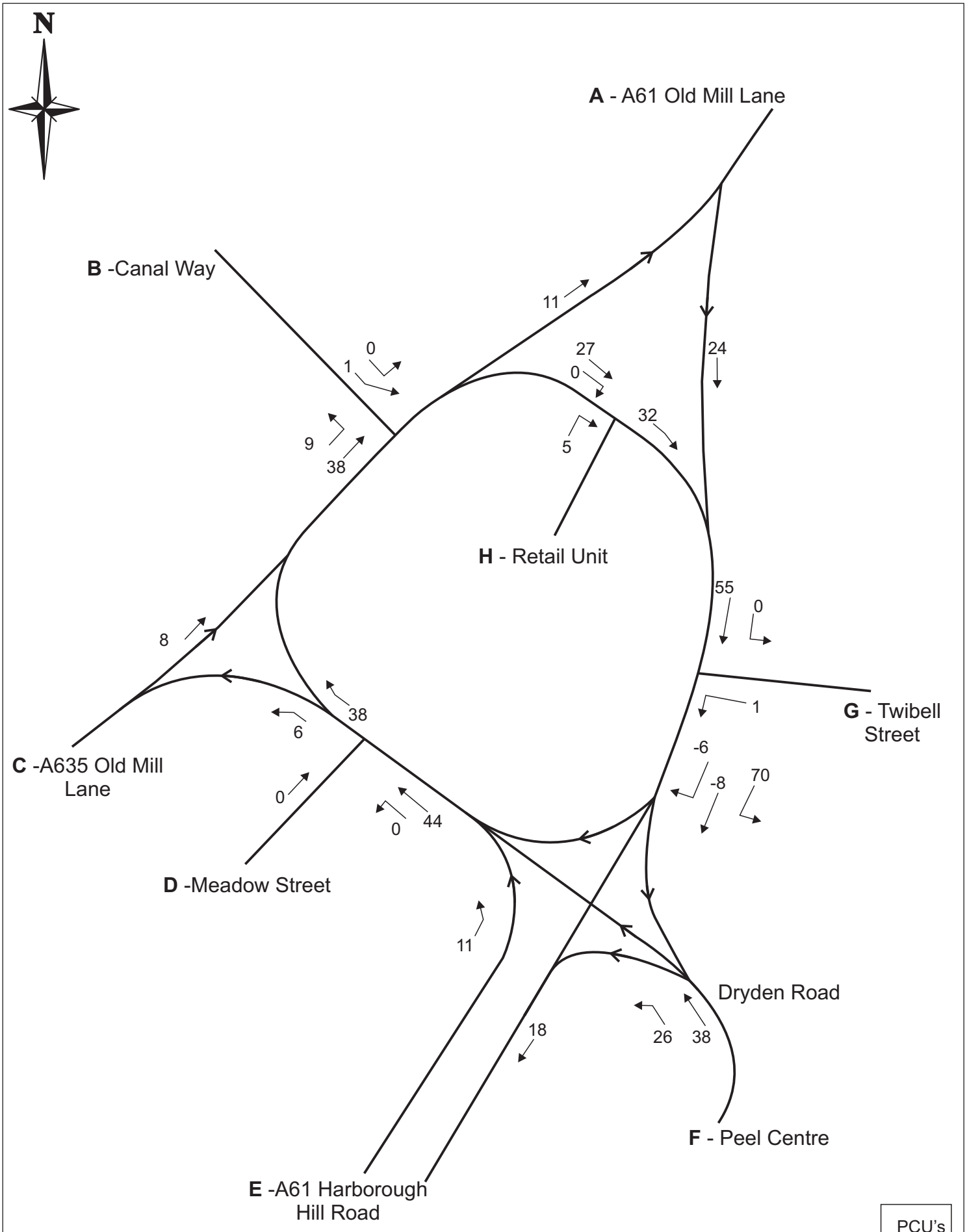
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	Drawn By: UD	Authorised: MAW	Scale: NTS@A4	**FIGURE 2**



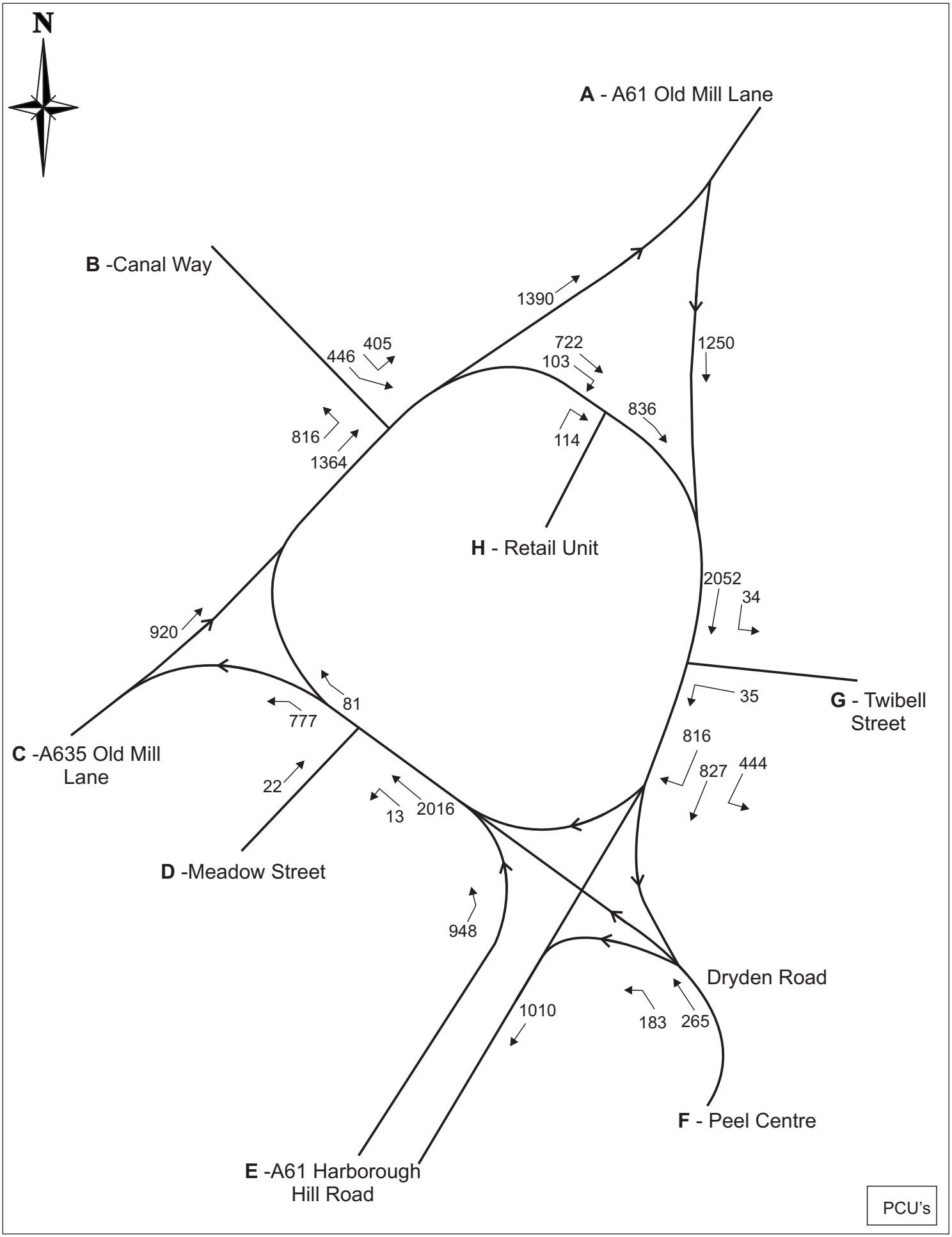
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	Date: MAY 2015	Rev Date: .	EXISTING PM PEAK, PEAK HOUR FLOWS
	Drawn By: GB	Authorised: MAW	Scale: NTS — **FIGURE 3**



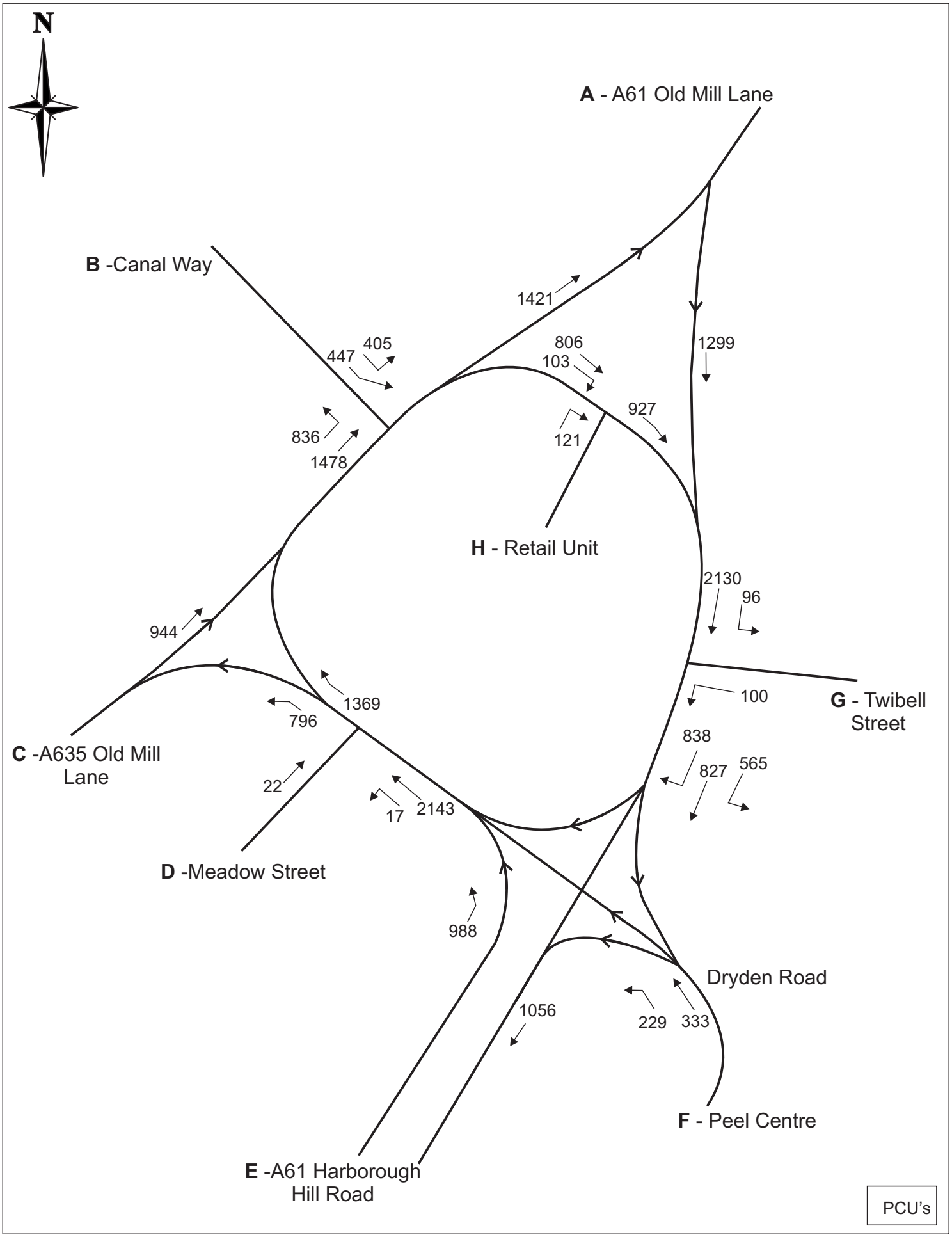
the Traffic, Transport & Highway Consultancy	Drawing No: M06011-C-013	Rev: .	PEEL CENTRE, BARNSLEY	
	Date: MAY 2015	Rev Date: .	EXISTING SATURDAY PEAK HOUR FLOWS	
	Drawn By: GB	Authorised: MAW	Scale: NTS	**FIGURE 4**



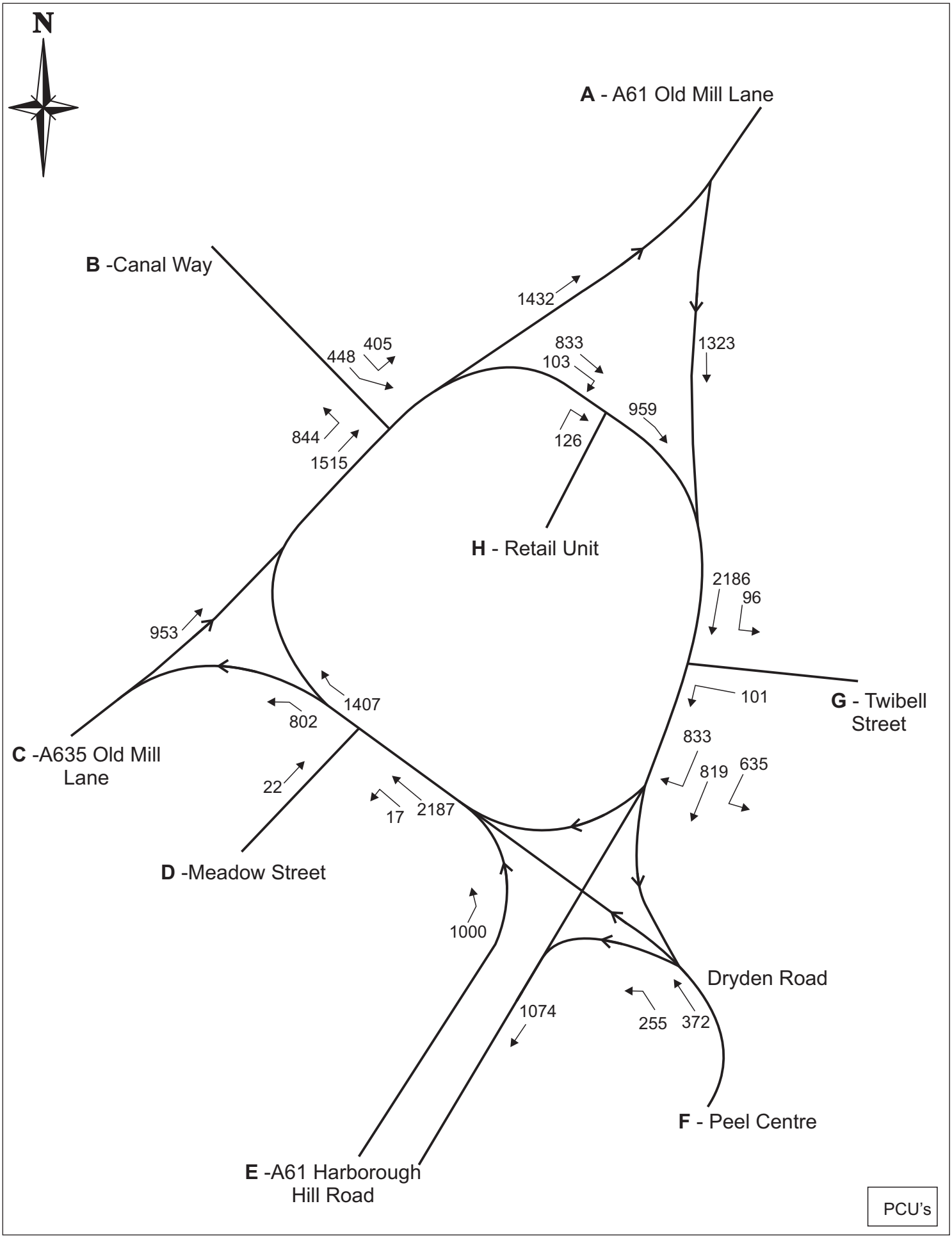
the Traffic, Transport & Highway Consultancy	Drawing No: M06011-C-015	Rev: .	PEEL CENTRE, BARNSLEY
	Date: MAY 2015	Rev Date: .	CUMULATIVE DEVELOPMENT FLOWS - SATURDAY PEAK
	Drawn By: GB	Authorised: MAW	Scale: NTS — **FIGURE 5**



tthc the Traffic, Transport & Highway Consultancy	Drawing No: M06011-C-016	Rev: .	PEEL CENTRE, BARNSLEY	
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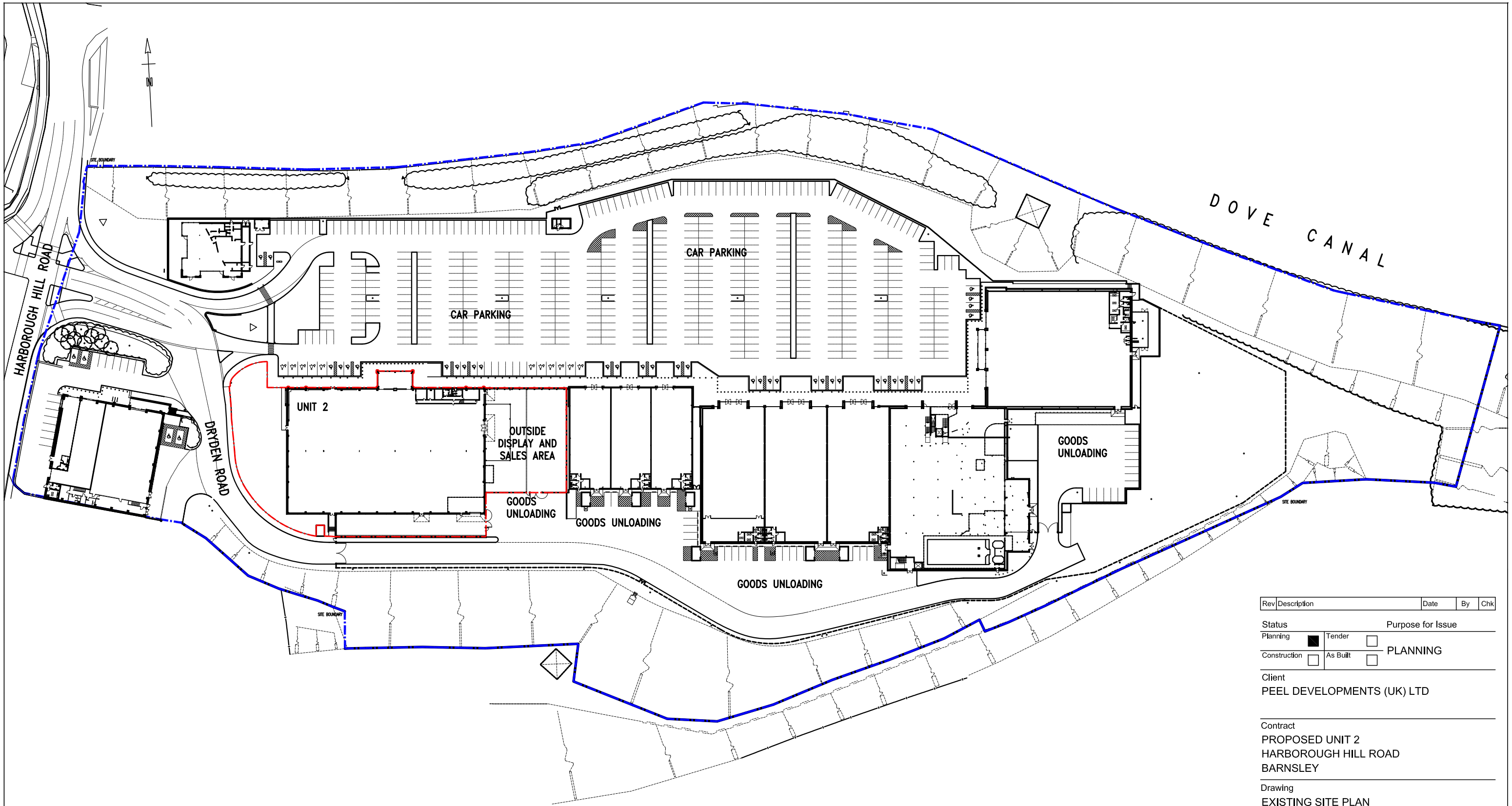


the Traffic, Transport & Highway Consultancy	Drawing No: M06011-C-017	Rev: .	PEEL CENTRE, BARNSLEY	
	Date: MAY 2015	Rev Date: .	2020 BASE FLOWS - SATURDAY PEAK	
	Drawn By: GB	Authorised: MAW	Scale: NTS	**FIGURE 7**



tthc the Traffic, Transport & Highway Consultancy	Drawing No: M06011-C-018	Rev: .	PEEL CENTRE, BARNSLEY	
	Date: MAY 2015	Rev Date: .	2020 BASE + DEVELOPMENT FLOWS- SATURDAY PEAK	
	Drawn By: GB	Authorised: MAW	Scale: NTS	**FIGURE 8**

APPENDIX A



01 Existing Site Plan
Scale 1:1250 @ A3

Rev	Description	Date	By	Chk

Status — Purpose for Issue

Planning	■	Tender	☐
Construction	☐	As Built	☐

PLANNING

Client
PEEL DEVELOPMENTS (UK) LTD

Contract
PROPOSED UNIT 2
HARBOROUGH HILL ROAD
BARNSLEY

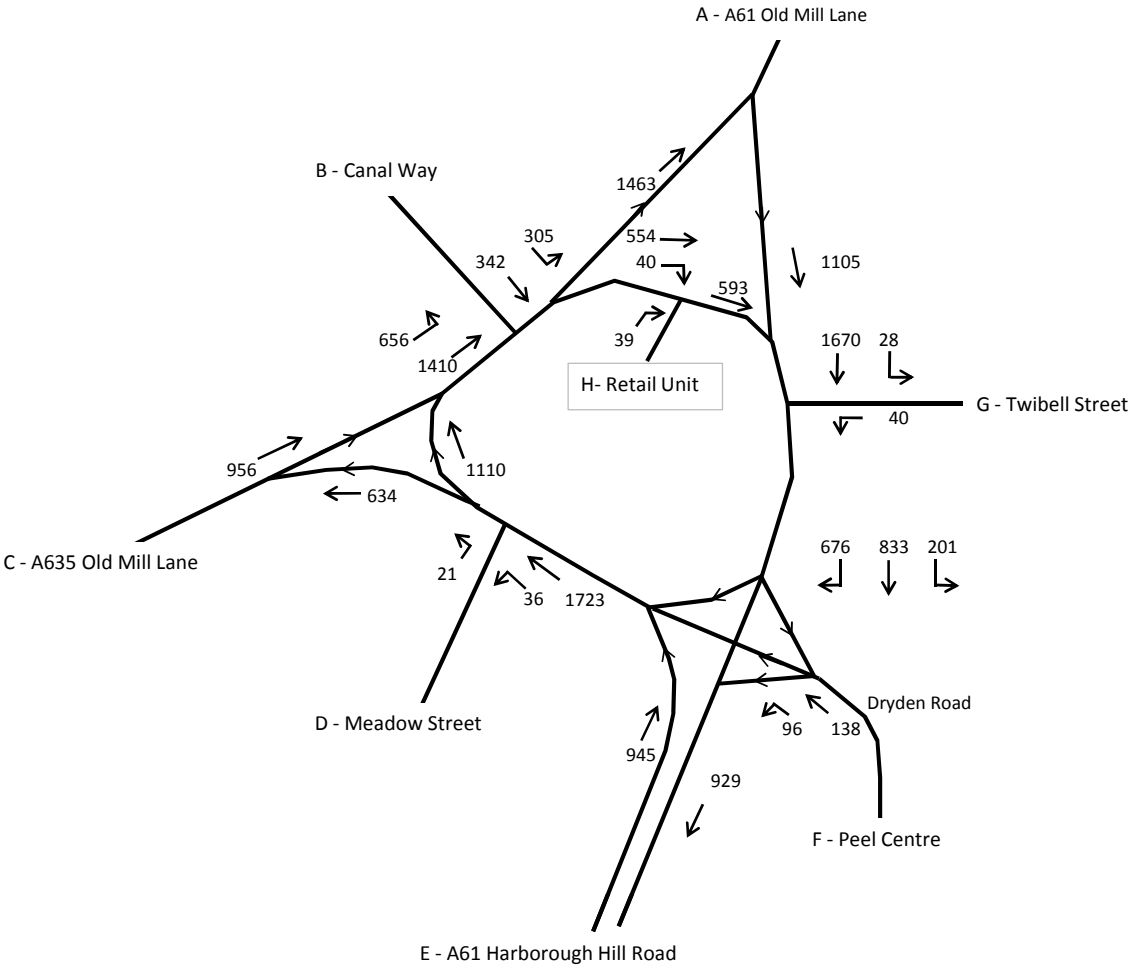
Drawing
EXISTING SITE PLAN

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Drawing No.	MH733-100	Revision	/
Scales	1:1250 @ A3	Date	FEB '12
Drawn	PR	Checked	GB

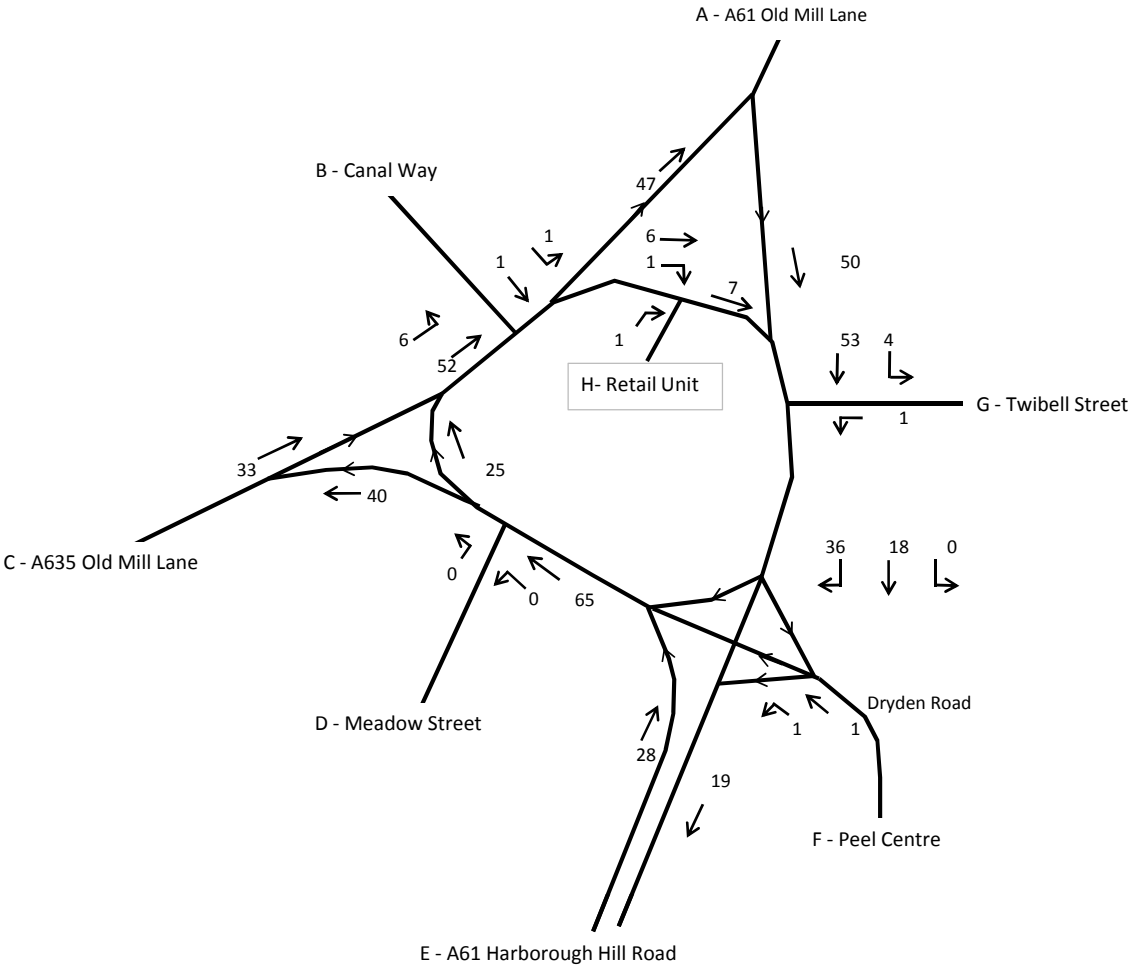
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APPENDIX B



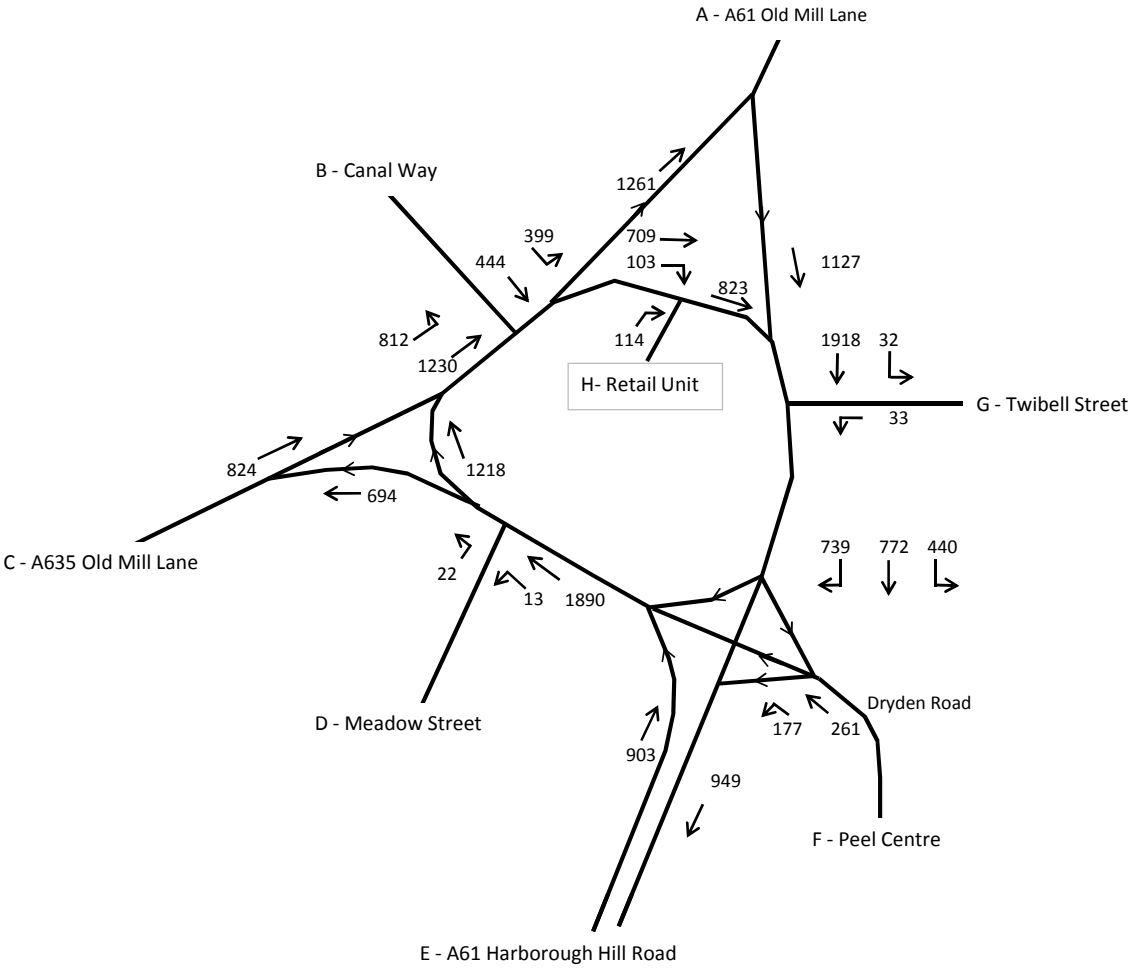
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A	2	163	315	20	516	72	4	13	1105
B	305	0	129	0	196	15	1	1	647
C	579	247	0	6	54	57	3	10	956
D	6	1	12	0	2	0	0	0	21
E	528	188	114	8	27	44	20	16	945
F	34	53	51	0	96	0	0	0	234
G	9	0	7	2	17	5	0	0	40
H	0	4	6	0	21	8	0	0	39
Total	1463	656	634	36	929	201	28	40	3987

tthc the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	PM PEAK - Existing Traffic Flows 2014 (Lights)	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX B1**



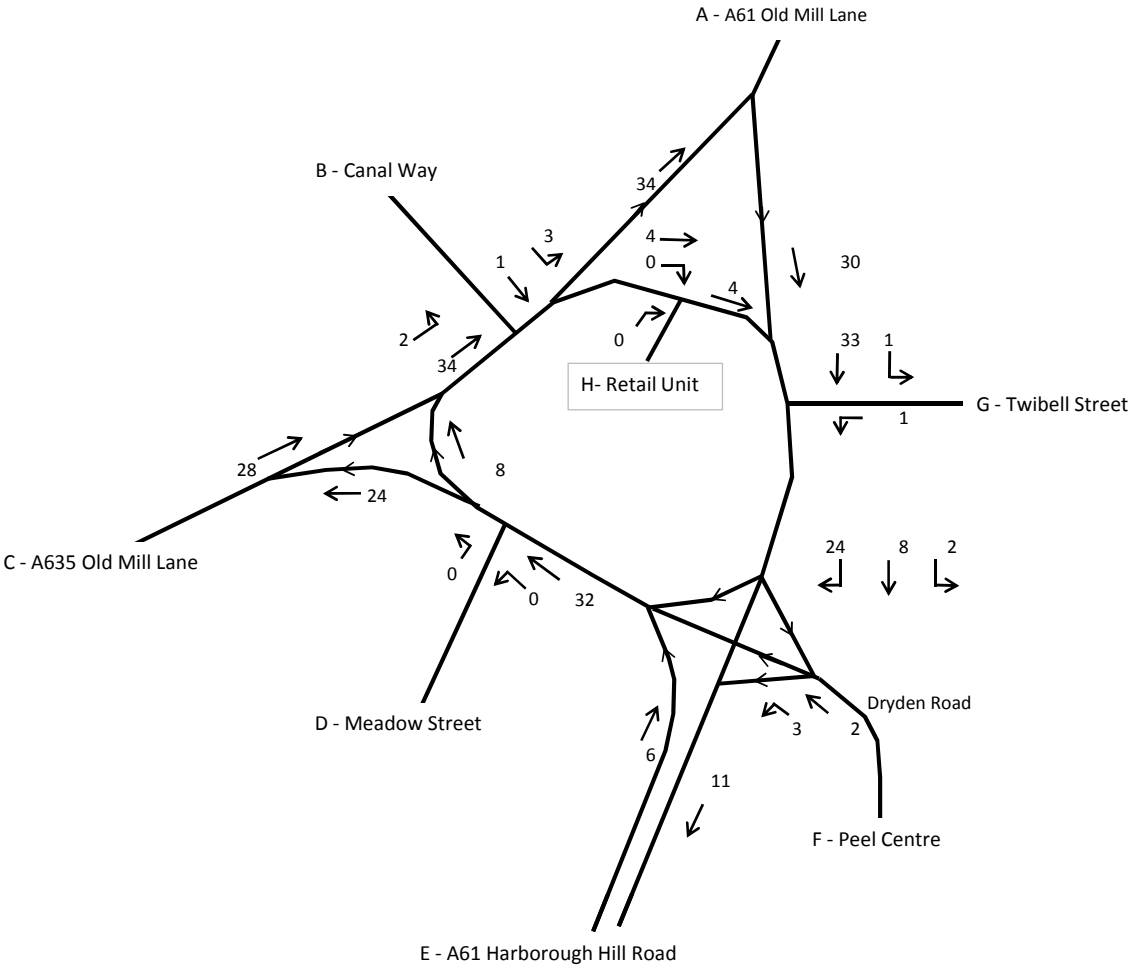
	A	B	C	D	E	F	G	H	Total
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B	1	0	0	0	1	0	0	0	2
C	31	0	0	0	2	0	0	0	33
D	0	0	0	0	0	0	0	0	0
E	13	4	8	0	0	0	3	0	28
F	1	0	0	0	1	0	0	0	2
G	1	0	0	0	0	0	0	0	1
H	0	0	0	0	1	0	0	0	1
Total	47	6	40	0	19	0	4	1	117

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	PM PEAK - Existing Traffic Flows 2014 (HGVs)	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX B2**



	A	B	C	D	E	F	G	H	Total
A	0	166	319	0	419	215	8	0	1127
B	399	0	195	0	216	6	0	27	843
C	390	272	2	0	63	70	7	20	824
D	8	6	8	0	0	0	0	0	22
E	330	277	83	7	30	103	17	56	903
F	113	88	60	0	177	0	0	0	438
G	6	3	6	3	10	5	0	0	33
H	15	0	21	3	34	41	0	0	114
Total	1261	812	694	13	949	440	32	103	4304

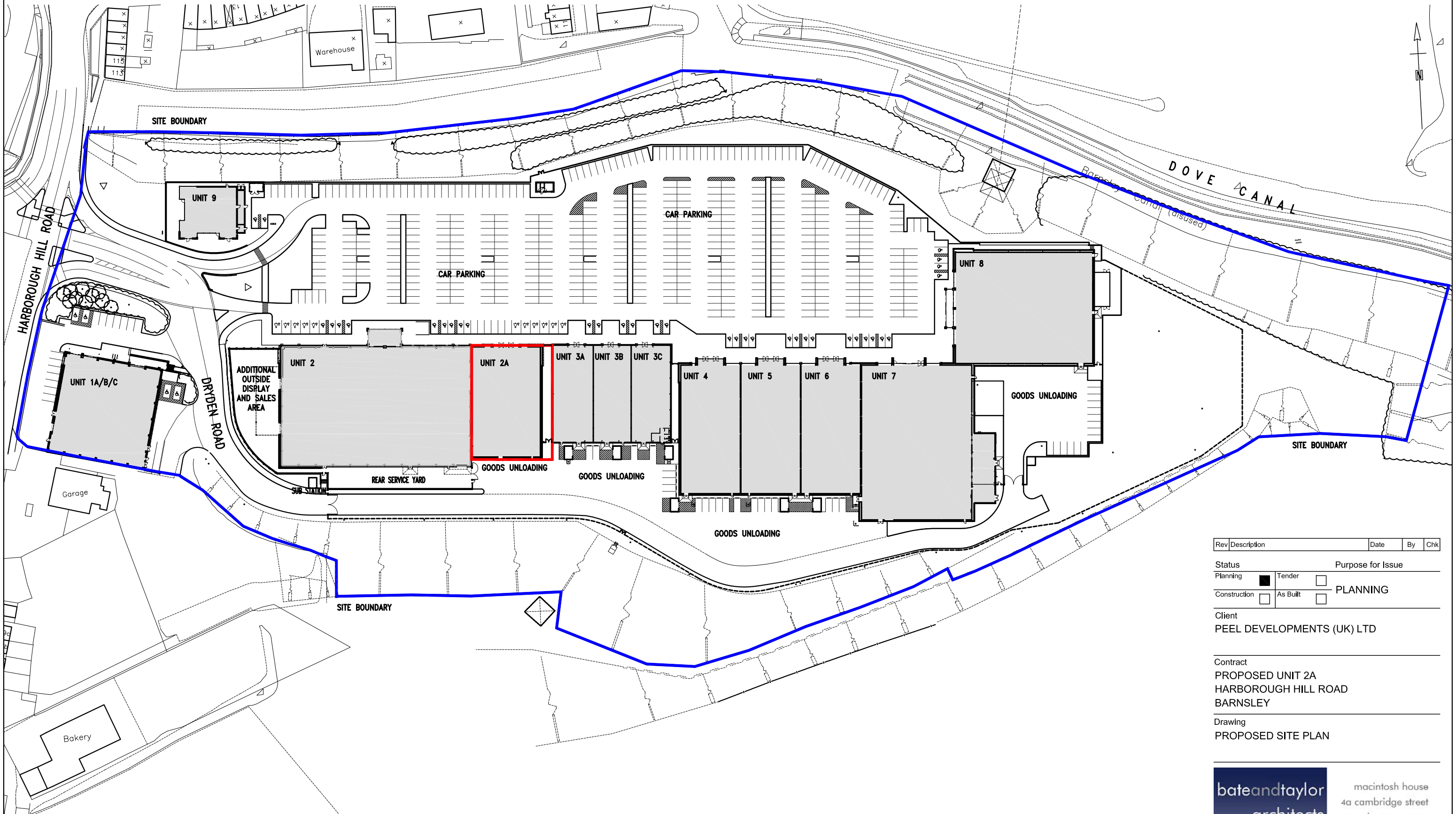
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	Date MAY 2015	Rev Date	SAT PEAK - Existing Traffic Flows 2014 (Lights)	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX B3**



	A	B	C	D	E	F	G	H	Total
A	0	0	23	0	7	0	0	0	30
B	3	0	0	0	1	0	0	0	4
C	25	0	0	0	0	2	1	0	28
D	0	0	0	0	0	0	0	0	0
E	4	2	0	0	0	0	0	0	6
F	1	0	1	0	3	0	0	0	5
G	1	0	0	0	0	0	0	0	1
H	0	0	0	0	0	0	0	0	0
Total	34	2	24	0	11	2	1	0	74

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Existing Traffic Flows 2014 (HGVs)	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX B4**

APPENDIX C



01 Proposed Site Plan

Scale 1:1250 @ A3

Please note:

Additional outside display and sales area to Unit 2 subject to separate application reference PP-04175785 and as previously approved reference: PP-01810440.

Rev	Description	Date	By	Chk

Status: Purpose for Issue

Planning ■ Tender □ Construction □ As Built □ — PLANNING

Client

PEEL DEVELOPMENTS (UK) LTD

Contract

PROPOSED UNIT 2A
HARBOROUGH HILL ROAD
BARNSLEY

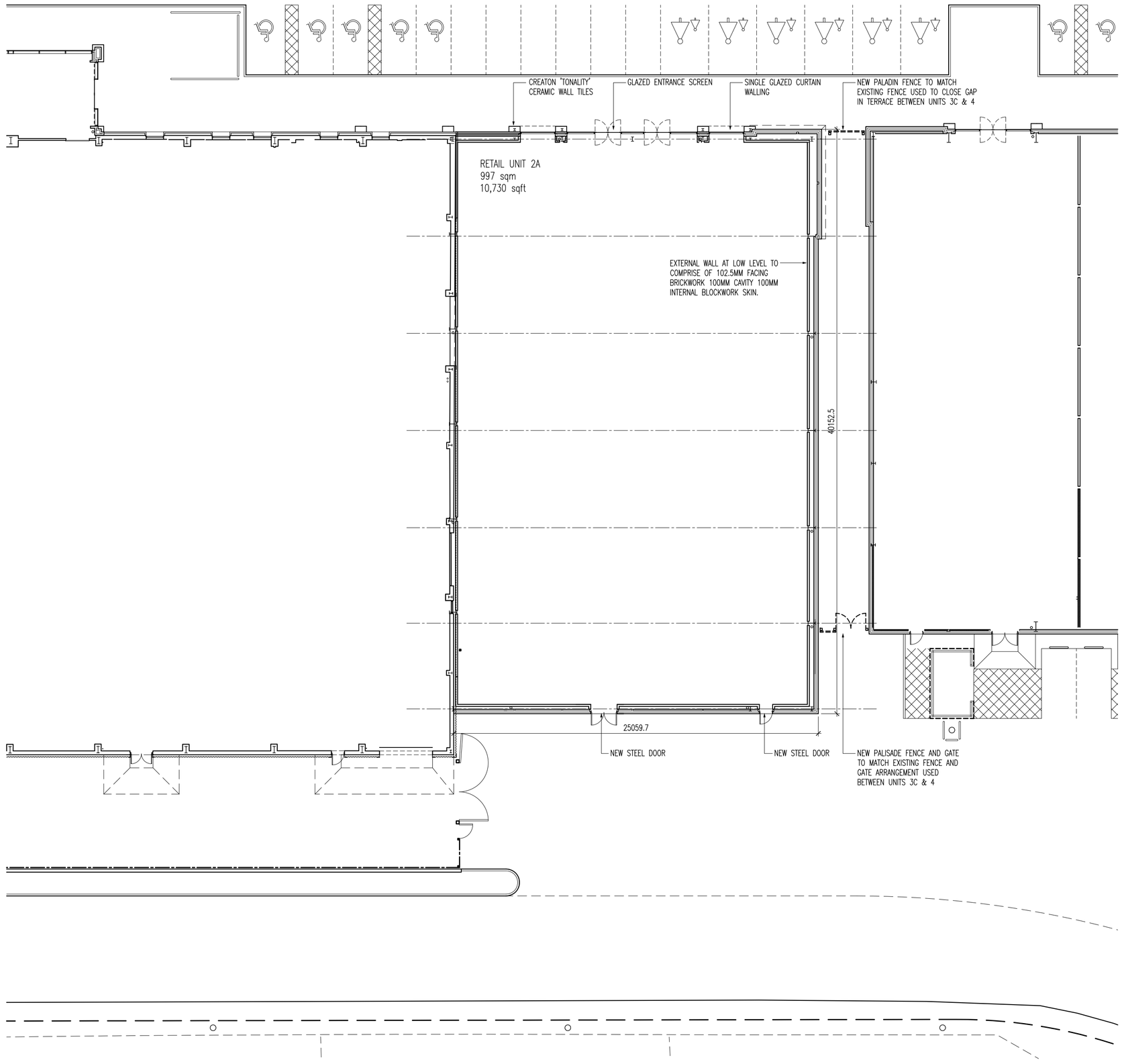
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PROPOSED SITE PLAN

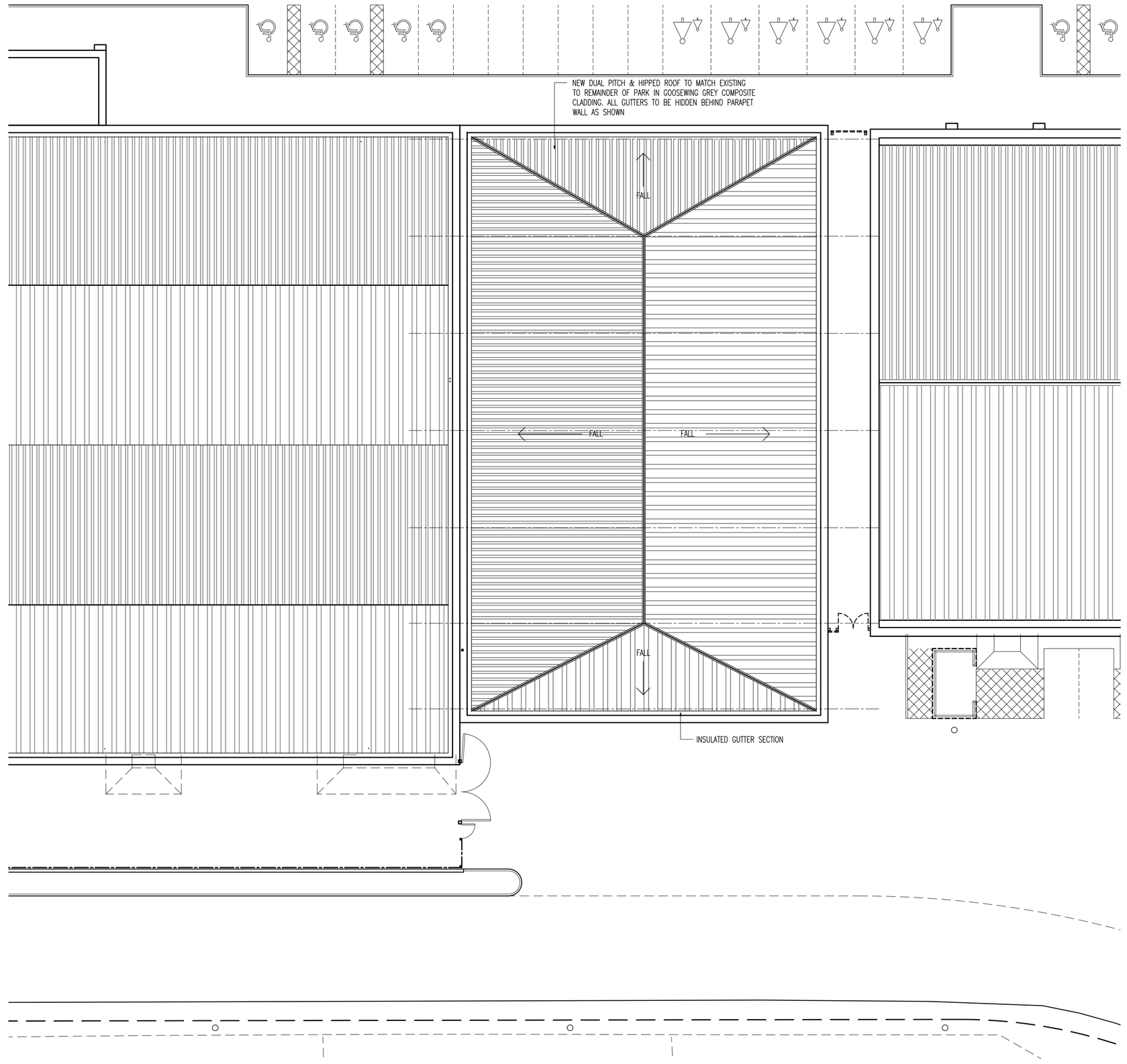
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Scales	1:1250 @ A3	Date	JULY '15
Drawn	DL	Checked	GB

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01 Proposed Floor Plan
Scale 1:200 @ A1



02 Proposed Roof Plan
Scale 1:200 @ A1

Rev	Description	Date	By	Chk
A	GROSS EXTERNAL AREA ADDED	13/08/15	DL	GB

Status: Purpose for Issue
Planning ■ Tender □
Construction □ As Built □
PLANNING

Client
PEEL DEVELOPMENTS UK Ltd

Contract
PROPOSED UNIT 2A
HARBOROUGH HILL ROAD
BARNSLEY

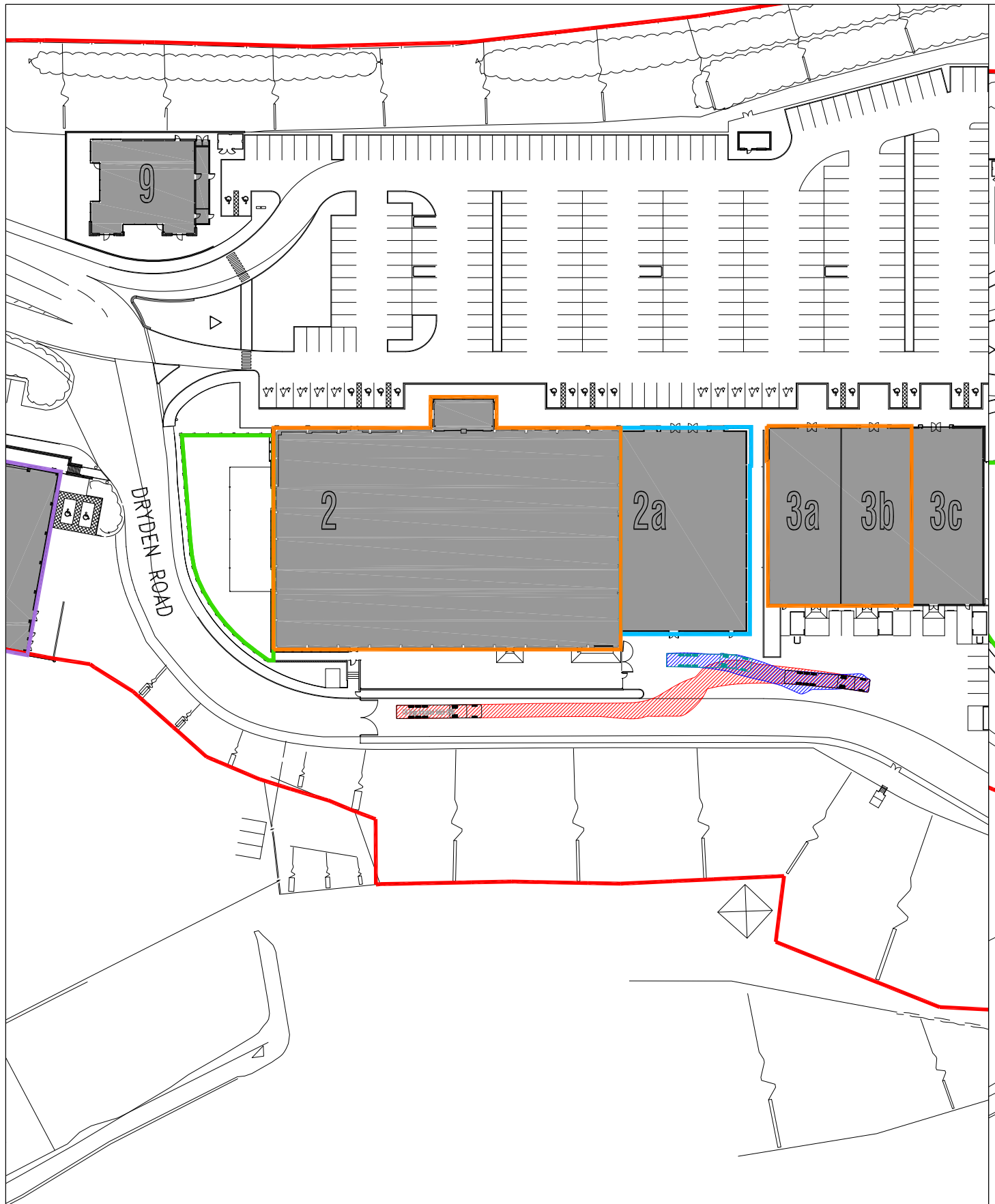
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PROPOSED FLOOR PLAN
AND ROOF PLAN

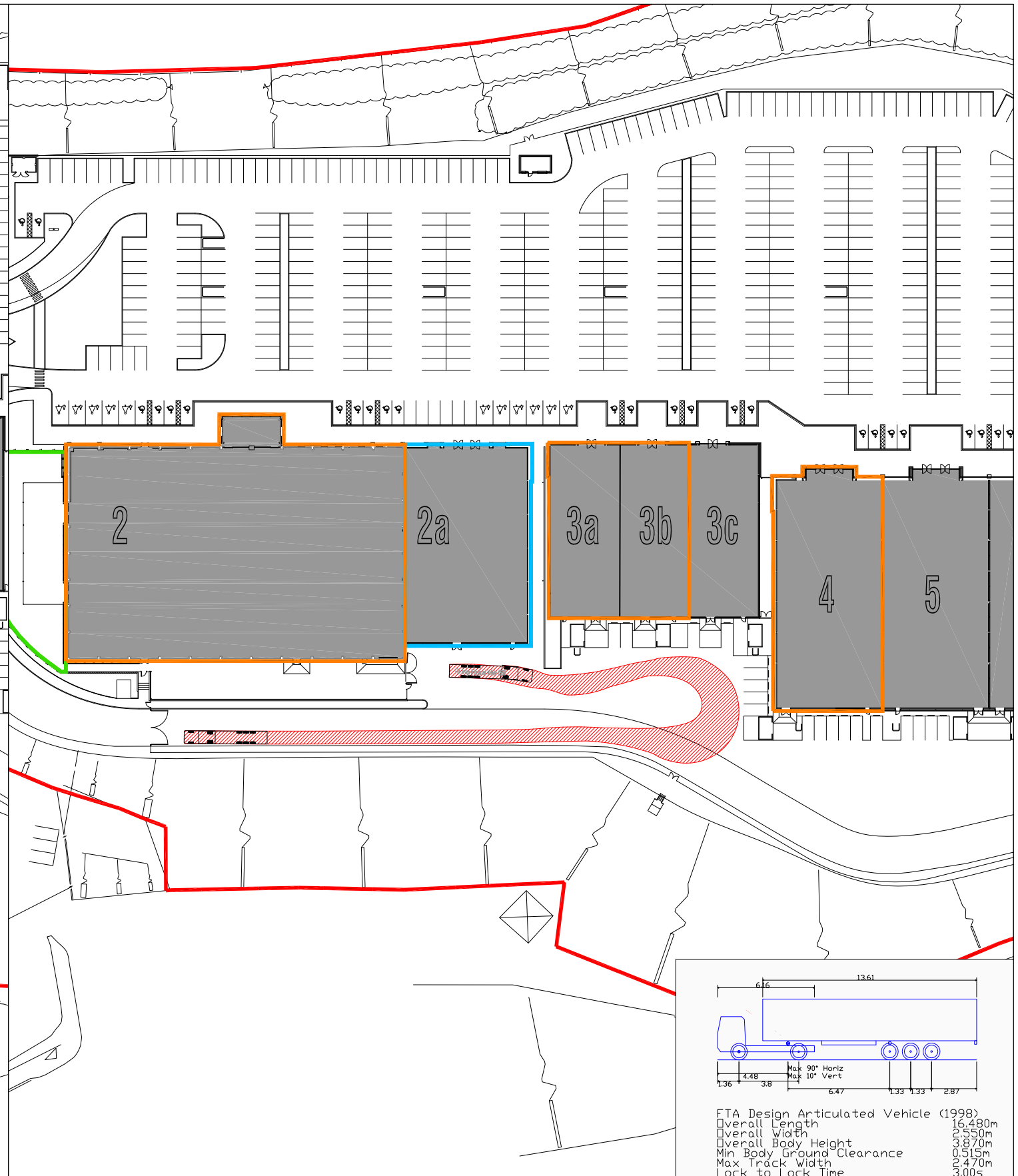
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APPENDIX D





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Date JULY 2015	Rev Date	PEEL CENTRE SERVICE YARD TRACKING	
Drawn By GB	Authorised JE	Scale 1:1,000@A3	**APPENDIX D**

APPENDIX E

SECTION 73 APPLICATION - PEEL CENTRE BARNSLEY

1.1 This Note has been prepared by TTHC Ltd, on behalf of Peel Developments (UK) Ltd (Peel), in response to feedback received from Barnsley Metropolitan Borough Council (BMBC) Highways in respect of a Section 73 application relating to Units 3C, 5 and 6 and a supporting TTHC Technical Note (M06011-TN04C, dated June 2014).

1.2 The Section 73 application seeks to amend condition 1 of planning permission 05/1165/BA such that these three units may be used for any non-food retail purpose and for the sale of food from a maximum of 30% of the net sales area of any of these individual units.

1.3 The technical note previously submitted described how and explained why the proposals would be expected to have minimal impact in traffic generation terms. Although BMBC has accepted that there is no like for like comparison which can be made from TRICS data, it has insisted that some numerical assessment be provided. Peel has not been able to obtain any evidence from likely operators which can be connected to traffic generation.

1.4 TTHC have therefore reviewed the TRICS database again with a view to providing a calculation which, although it may not provide a like for like comparative assessment, will provide a worst case assessment which should remove any doubts BMBC might have over the impact of the proposed change of use.

1.5 The three units referred to (3C, 5 and 6) have gross floor areas (GFAs) of 473sqm, 929sqm and 929sqm with 378sqm, 743sqm and 743sqm of net sales area respectively. Therefore, the largest total sales floorspace in any one unit which could be used for food sales is 223sqm.

1.6 In the unlikely event that all three units were to have 30% food sales the maximum possible food sales would be 559 sqm (with a GFA equivalent for TRICS calculation purposes of 699sqm).

1.7 The maximum potential effect of the proposals would relate to the **difference in trip generation** between Non-Food Retail floorspace (which is the 'Base' scenario) and Non-Food Retail floorspace with a limited proportion of food sales (which is the 'Development' scenario).

1.8 To reiterate, the type of operators who occupy units with these kind of updated restrictions are 'discount' operators, some of whom sell a small component of food such as B&M Bargains, Home Bargains, Poundstretcher and Poundland. These operators tend not to carry multiple, or even regular, lines which can be relied upon for a primary or even top-up food shop. Food purchases are essentially ancillary or incidental to the main established non-food shopping activity.

1.9 The nearest TRICS category which might reflect the **food element** sold from such stores is 'Discount Foodstores' e.g. Aldi and Lidl. These stores have trip rates which are considerably higher than non-food units as they are primarily food stores where people can do their weekly or top-up food shopping: they are not the same as the above mentioned operators where customers are really only able to food shop on spec according to what is in store when they visit.

1.10 This starting point of adopting trips rates from the Discount Foodstore category therefore considers a much higher trip generation case than would be expected from the operators who could occupy the units.

1.11 Using these Discount Foodstore trip rates and comparing them to non-food retail rates TTHC have undertaken two alternative calculations for the worst case Saturday trip generation, both of which result in a significantly lower Net trip increase than the 30 movements two way threshold which was originally suggested by BMBC (anything beyond this triggering the need for a Transport Statement).

1.12 The two calculations are explained overleaf. The calculations themselves are also attached at **Appendix A** along with the TRICS data summary.

- **Option 1** This option simply compares the trip generation of standalone discount foodstores to standalone non-food retail units (TRICS category: 'Other Individual Non Food Superstores') in order to compare on the same basis. The difference in trip rates is applied to the maximum possible food sales area (699 sqm GFA). Of course this takes no account of the trip linkage benefits of retail parks. Some simple but robust linked trip and pass-by factors have therefore been applied (these are described in detail below). This option results in a figure for the uplift in trip generation of 19 two way trips during the Saturday peak hour.

- **Option 2** This option compares against the true 'Base' position of a retail park context by commencing with trip rates from the TRICS category 'Retail Parks Excluding Food'. It then adjusts the 'standalone' discount foodstore rate to a 'retail park' type setting in order to compare with the true base on the same basis. This adjustment has the effect of taking some account of the trip linkage benefits of retail parks, whilst still robustly commencing with the materially higher discount foodstore trip rates. The discount foodstore rates have therefore been factored by a 'standalone to retail park' factor for non-food retail. The retail park conversion component will take some account of internal trip linkage within the retail park itself. This will not take account of all actual linkage which is likely to occur in the reality of this case (see additional comments below). Nevertheless, in this option only the pass-by discount factor has been applied.

1.13 Given the location of the three units within an established retail park there is considerable potential for trip linkages with other units within the retail park. It is expected that many of the trips to the three retail units will be people already visiting the Peel Centre. Likewise, there will also be an element of trip linkages with other nearby retail destinations (particularly the nearby B&M Bargains and Asda since like impacts on like in retailing, and therefore there is also likely to be a significant element of trip linkages with (or diversion from) these external units.

1.14 However, in keeping with our aim to provide a clearly robust assessment TTHC have only attempted to factor in internal trip linkages. In Option 1 a 30% factor was applied to take some account of internal trip linkages, but in reality it is expected that this could be much higher. In Option 2, given the use of a 'standalone to retail park' factor, no separate trip linkages either internal or external, have been applied.

1.15 It should be noted, however, that many of the trips will be vehicles already passing the site and simply turning off into it. In line with the previous assessment work, a pass-by factor of 30% has been applied to both options.

1.16 Taking account of both linked and pass-by trips the actual number of **New** vehicular trips visiting Peel Centre as a result of the proposed relaxation will be extremely small.

1.17 Despite the robust assumptions, including starting with very high discount foodstore trip rates, Option 1 results in a Net vehicle increase of just 19 movements (two way total) and Option 2 of just 25 movements.

1.18 In summary and conclusion, through the adoption of robust assumptions two alternative calculations have resulted in minimal traffic increases, which would clearly have no perceptible impact on the adjacent highway network and are both comfortably below the 30 trip threshold suggested by BMBC Highways. There are therefore no transport-related reasons which should prevent approval of this Section 73 application for what is a relaxation of use on a maximum of 559 sqm net sales area (699 sqm GFA), since there is absolutely no indication let alone evidence that the NPPF threshold of severe impact will be breached.

APPENDIX A

Consideration of conversion of 699 sqm to discount food
Saturday (worst case)

Option 1

Rates		**Trip Uplift**	699 sq.m. Food
	2 way		**2 way**
discount food rates	14.91		
individual non-food units	8.26		
difference	**6.65**	**Total**	**46**
		assume 30% linked	
		asume 30% pass-by	
		40% New	**19**

Option 2

Rates		**2 way**						
standalone discount food rate		14.91						
to compare against a retail park setting including trip linkages (retail park exc. Food rates):								
convert standalone discount food rate to a retail park discount food rate by applying non-food retail park/standalone non-food factor								
retail park exc. Food		6.47						
individual non-food units		8.26						
retail park discount food rate	14.91	x	6.47 / 8.26	=	11.67			
retail park discount food rate		11.67	**Trip Uplift**			699 sq.m. Food		
retail park exc. Food		6.47				**2 way**		
difference		**5.21**	**Total**			**36**		
			asume 30% pass-by					
			70% New			**25**		

TRICS 7.1.2 **full GFA range, back to year 2000, exc GL & Ireland, exc tc/edge tc,**
Trip Rate Par Gross floor area **exc. KwikSave & Netto (outliers compared to Aldi/Lidl)**

RANK ORDER for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
Ranking Type: TOTALS Time Range: 11:00-12:00
85th/15th Percentile Survey Not Highlighted

Rank	Site Ref	Description	Town/City	GFA	Day	Date	Arrivals	Departures	Totals
1	ES-01-C-01	ALDI	BEXHILL	1222	Saturday	6/10/2001	10.229	9.738	19.967
2	SW-01-C-01	LIDL	SWANSEA	969	Saturday	14/09/02	7.121	7.74	14.861
3	BR-01-C-01	LIDL	BRISTOL	1007	Saturday	17/05/03	7.15	6.157	13.307
4	CB-01-C-01	ALDI	CARLISLE	1216	Saturday	7/9/2002	6.168	5.345	11.513
						Average	**7.667**	**7.245**	**14.912**

TRICS 7.1.2
Trip Rate Par Gross floor area **500 - 3000 sqm GFA, back to 2000, exc GL & Ireland, exc. tc/edge tc, exc. toy store in Dec**

RANK ORDER for Land Use 01 - RETAIL/G - OTHER INDIVIDUAL NON-FOOD SUPERSTORE
Ranking Type: TOTALS Time Range: 13:00-14:00
85th/15th Percentile Survey Not Highlighted

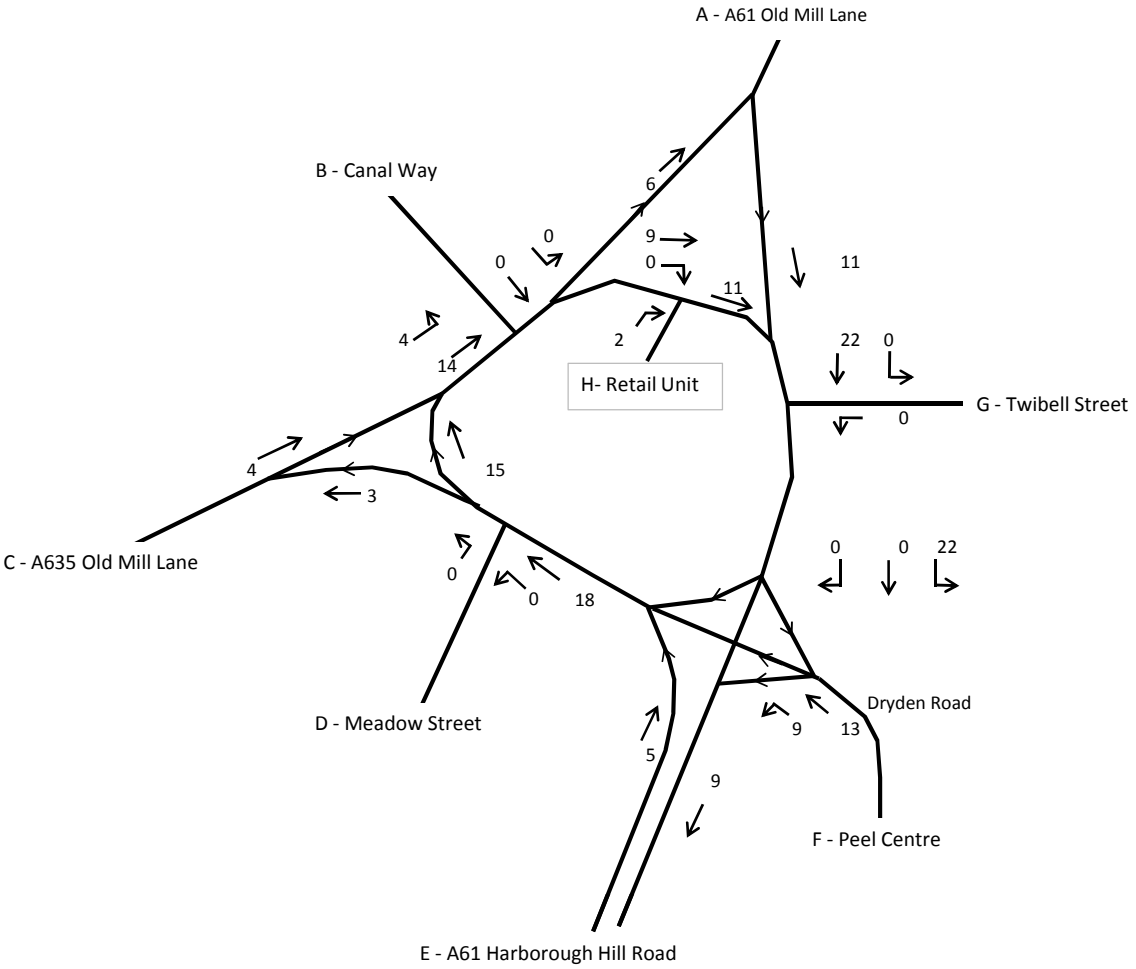
Rank	Site Ref	Description	Town/City	GFA	Day	Date	Arrivals	Departures	Totals
1	KC-01-G-01	PREMUS HO	HERNE BAY	1248	Saturday	22/06/02	6.731	5.849	12.58
2	WM-01-G-04	COMET	SOLIHULL	2100	Saturday	13/10/01	3.571	4.905	8.476
3	WM-01-G-02	PC WORLD	SOLIHULL	2800	Saturday	15/09/01	4.179	4.036	8.215
4	WM-01-G-01	STAPLES	BIRMINGHAI	1880	Saturday	18/11/00	3.351	2.979	6.33
5	EX-01-G-01	MFI	COLCHESTER	1000	Saturday	19/07/08	2.2	3.5	5.7
						Average	**4.006**	**4.254**	**8.260**

TRICS 7.1.2
Trip Rate Par Gross floor area **full GFA range, default 2006, exc GL & Ireland, exc tc/edge tc**

RANK ORDER for Land Use 01 - RETAIL/K - RETAIL PARK - EXCLUDING FOOD
Ranking Type: TOTALS Time Range: 14:00-15:00
85th Percentile = no. 4

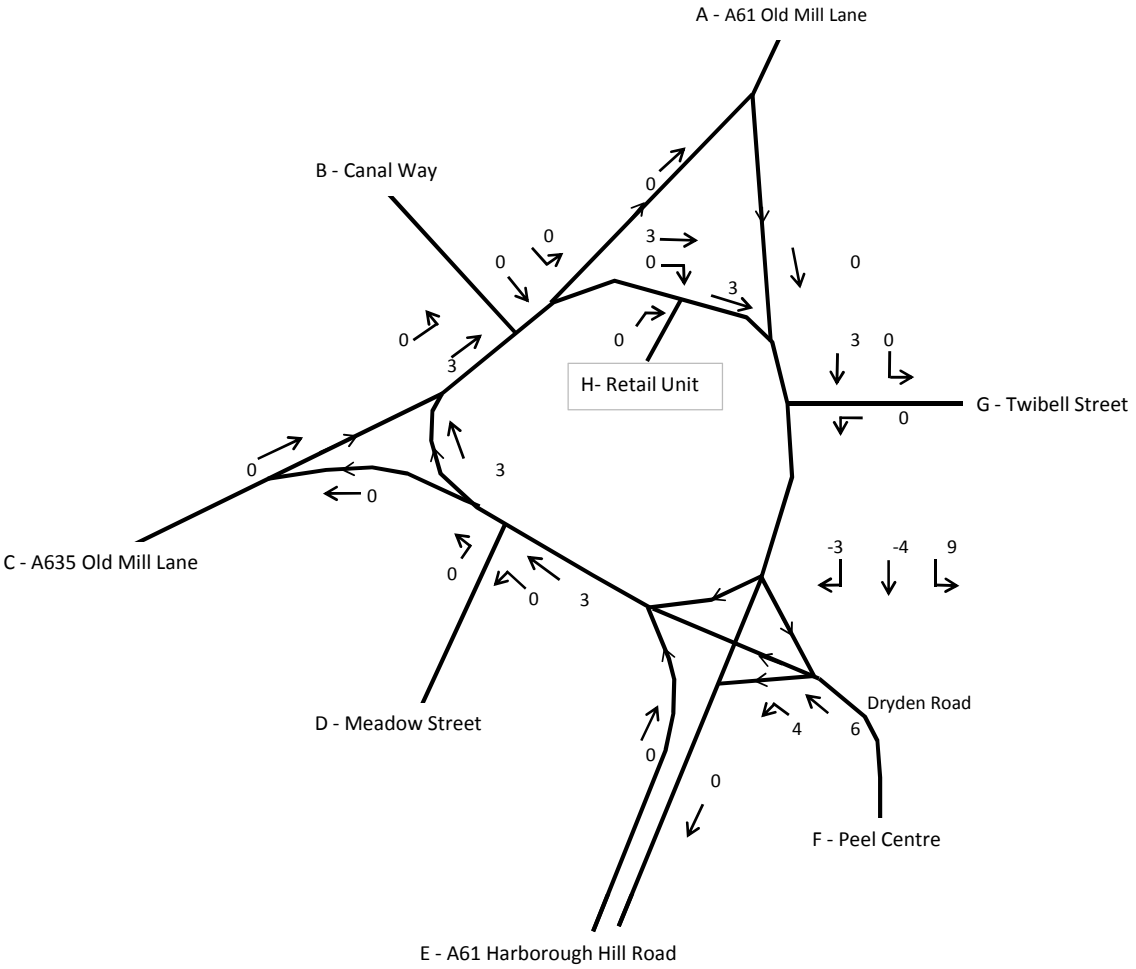
Rank	Site Ref	Description	Town/City	GFA	Day	Date	Arrivals	Departures	Totals
1	WM-01-K-02	RETAIL PARK	SOLIHULL	9350	Saturday	15/09/07	5.658	5.594	11.252
2	NR-01-K-01	RETAIL PARK	NORTHAMPT	6675	Saturday	29/11/08	5.333	5.483	10.816
3	SC-01-K-05	RETAIL PARK	WOKING	4300	Saturday	5/7/2008	5.302	5.023	10.325
4	WM-01-K-03	RETAIL PARK	BIRMINGHAI	5025	Saturday	29/11/08	3.96	4.02	7.98
5	EX-01-K-02	RETAIL PARK	CHELMSFORI	13195	Saturday	19/10/13	4.335	3.282	7.617
6	NY-01-K-02	RETAIL PARK	KNARESBOR(	9452	Saturday	27/09/08	3.576	3.809	7.385
7	LC-01-K-05	RETAIL PARK	PRESTON	3500	Saturday	8/10/2011	3.543	3.057	6.6
8	NT-01-K-01	RETAIL PARK	NOTTINGHAI	7020	Saturday	26/05/07	3.319	3.248	6.567
9	MO-01-K-01	RETAIL PARK	ELGIN	7430	Saturday	13/05/06	3.338	3.217	6.555
10	LN-01-K-01	RETAIL PARK	LINCOLN	13129	Saturday	12/5/2007	3.283	3.153	6.436
11	CW-01-K-01	RETAIL PARK	CAMBORNE	11400	Saturday	22/09/07	2.842	3.018	5.86
12	SR-01-K-01	RETAIL PARK	STIRLING	8675	Saturday	21/04/07	2.847	2.87	5.717
13	CP-01-K-01	RETAIL PARK	CAERPHILLY	4913	Saturday	14/10/06	2.585	2.87	5.455
14	WM-01-K-05	RETAIL PARK	BIRMINGHAI	11599	Saturday	10/11/2012	2.457	2.673	5.13
15	NF-01-K-01	RETAIL PARK	NORWICH	14100	Saturday	12/5/2007	2.532	2.482	5.014
16	WM-01-K-04	RETAIL PARK	BIRMINGHAI	14690	Saturday	29/11/08	2.491	2.362	4.853
17	DC-01-K-07	RETAIL PARK	POOLE	12850	Saturday	19/07/08	2.374	2.374	4.748
18	SF-01-K-01	RETAIL PARK	BURY ST EDI	9437	Saturday	13/05/06	2.003	2.363	4.366
19	NY-01-K-03	RETAIL PARK	SCARBOROU	2800	Saturday	19/09/09	1.679	2.071	3.75
20	CB-01-K-01	HOMEBASE/	CARLISLE	9225	Saturday	6/2/2010	1.496	1.409	2.905
						AVERAGE	**3.248**	**3.219**	**6.467**

APPENDIX F



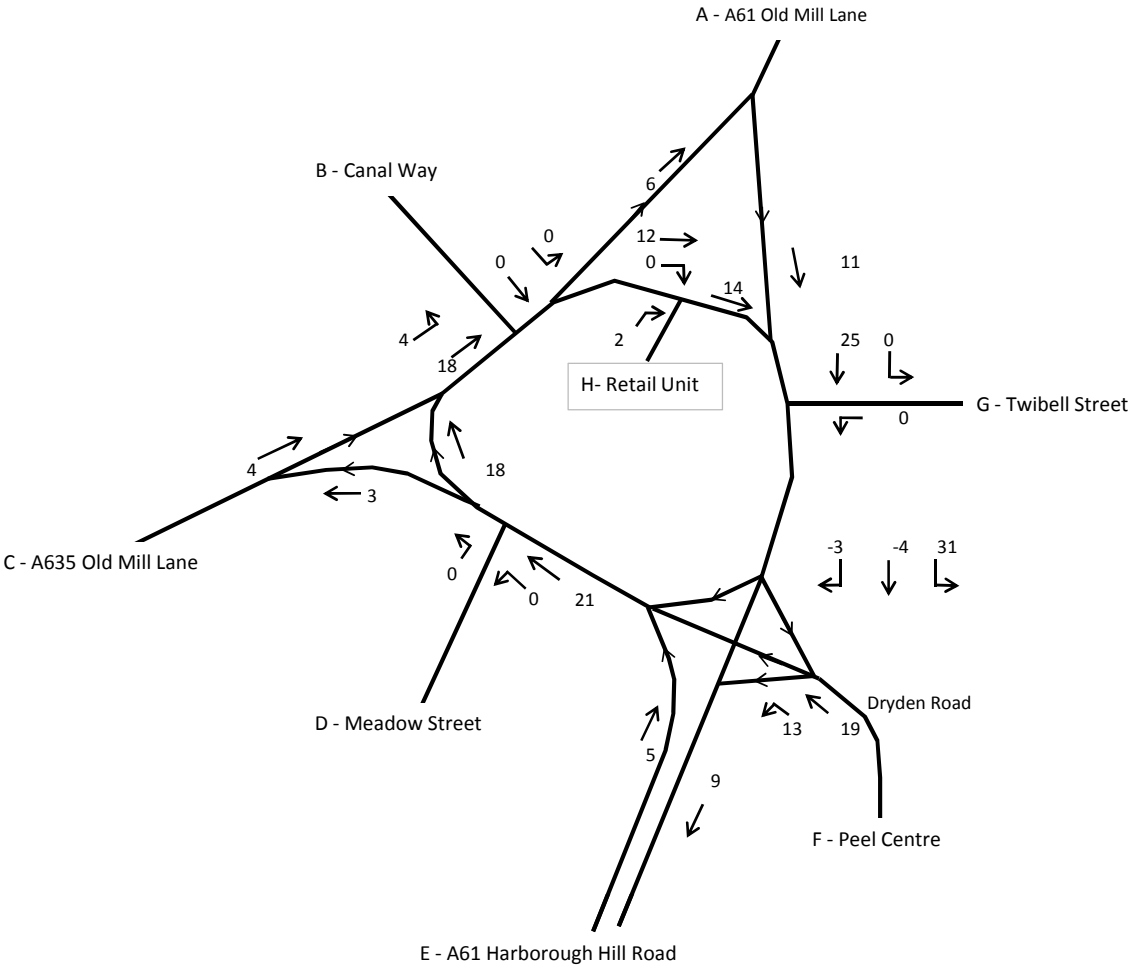
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F	6	4	3	0	9	0	0	0	22
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	2	0	0	2
Total	6	4	3	0	9	22	0	0	44

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre New Unit - New Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX F1**



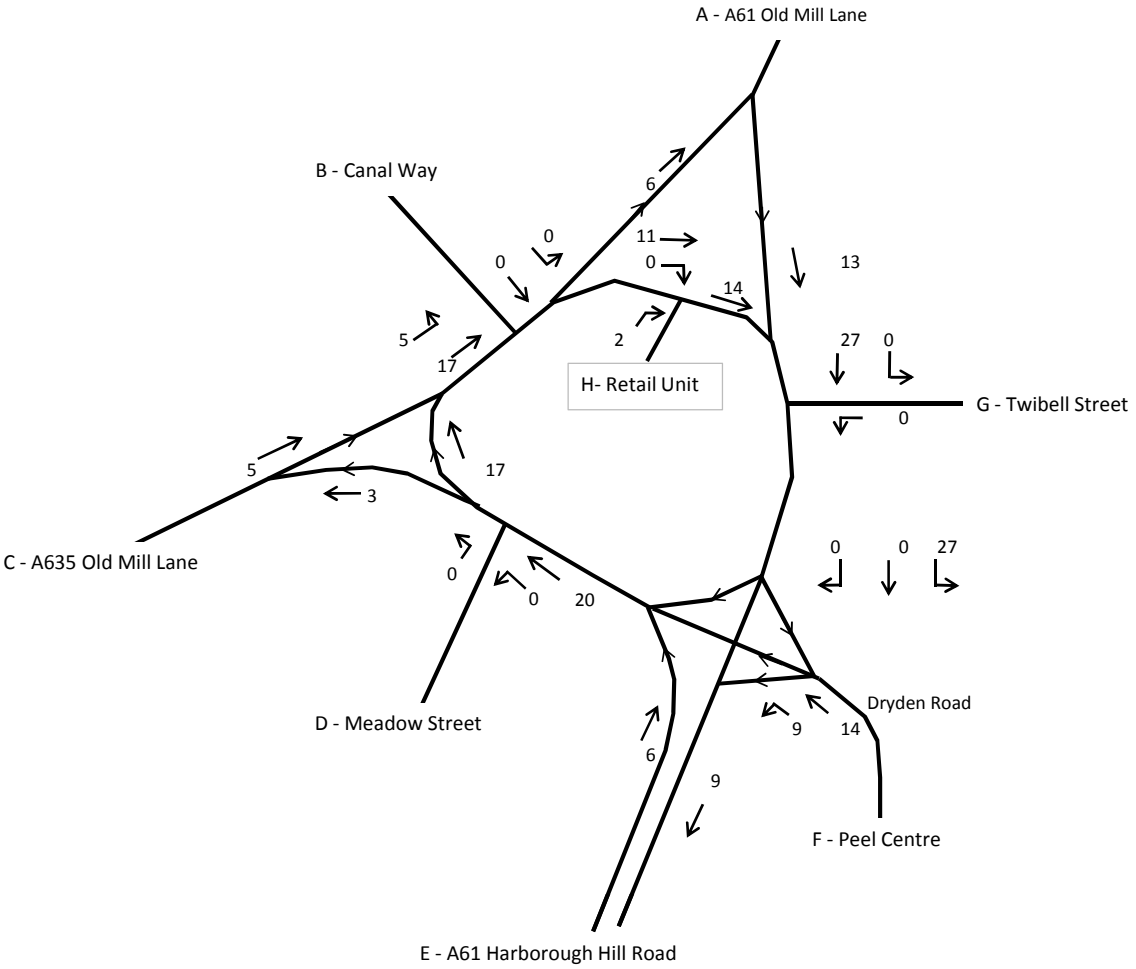
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D	0	0	0	0	0	0	0	0	0
E	-1	0	0	0	0	2	0	0	0
F	3	0	3	0	4	0	0	0	9
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	9	0	0	9

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre New Unit - Pass-by Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX F2**



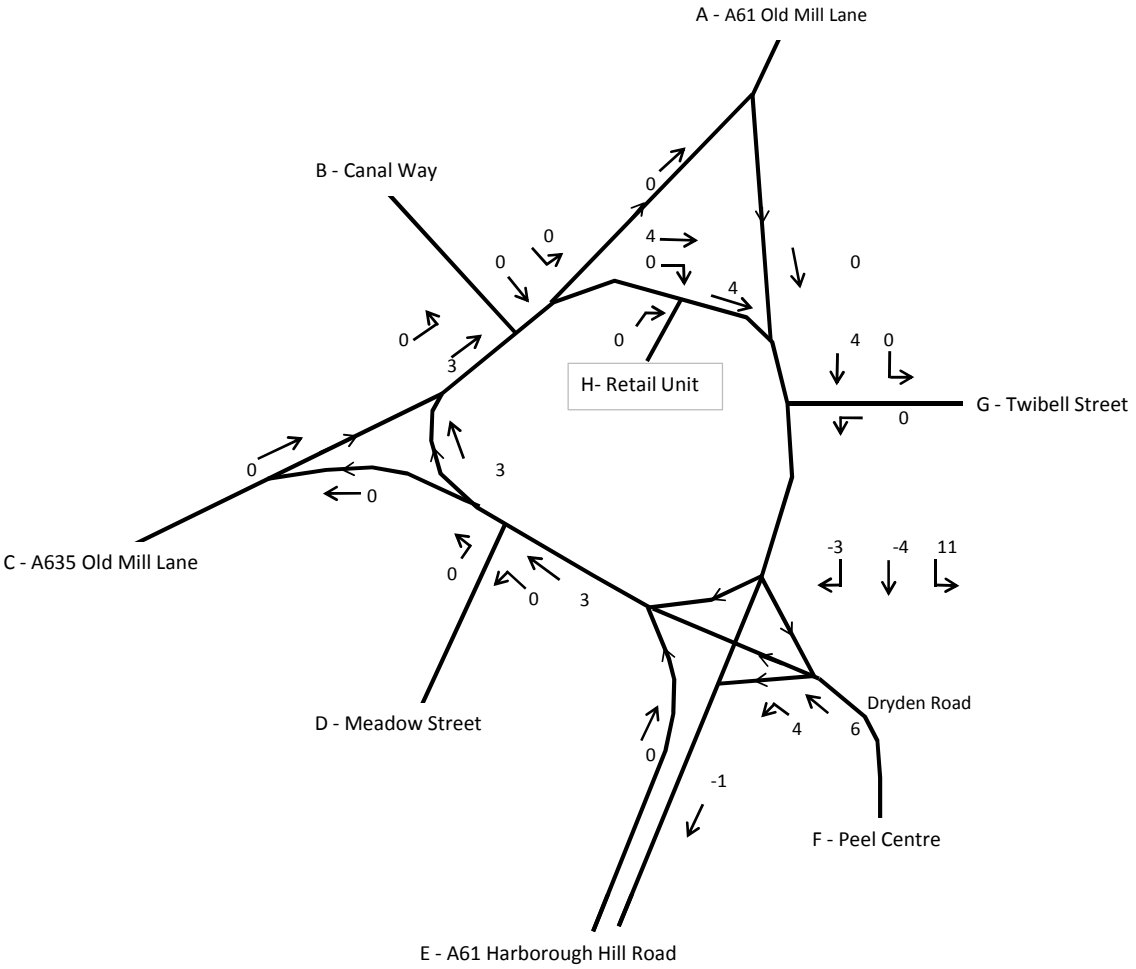
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C	-2	0	0	0	0	6	0	0	4
D	0	0	0	0	0	0	0	0	0
E	-1	0	0	0	0	7	0	0	5
F	8	4	6	0	13	0	0	0	31
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	2	0	0	2
Total	6	4	3	0	9	31	0	0	53

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre New Unit - Total Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX F3**



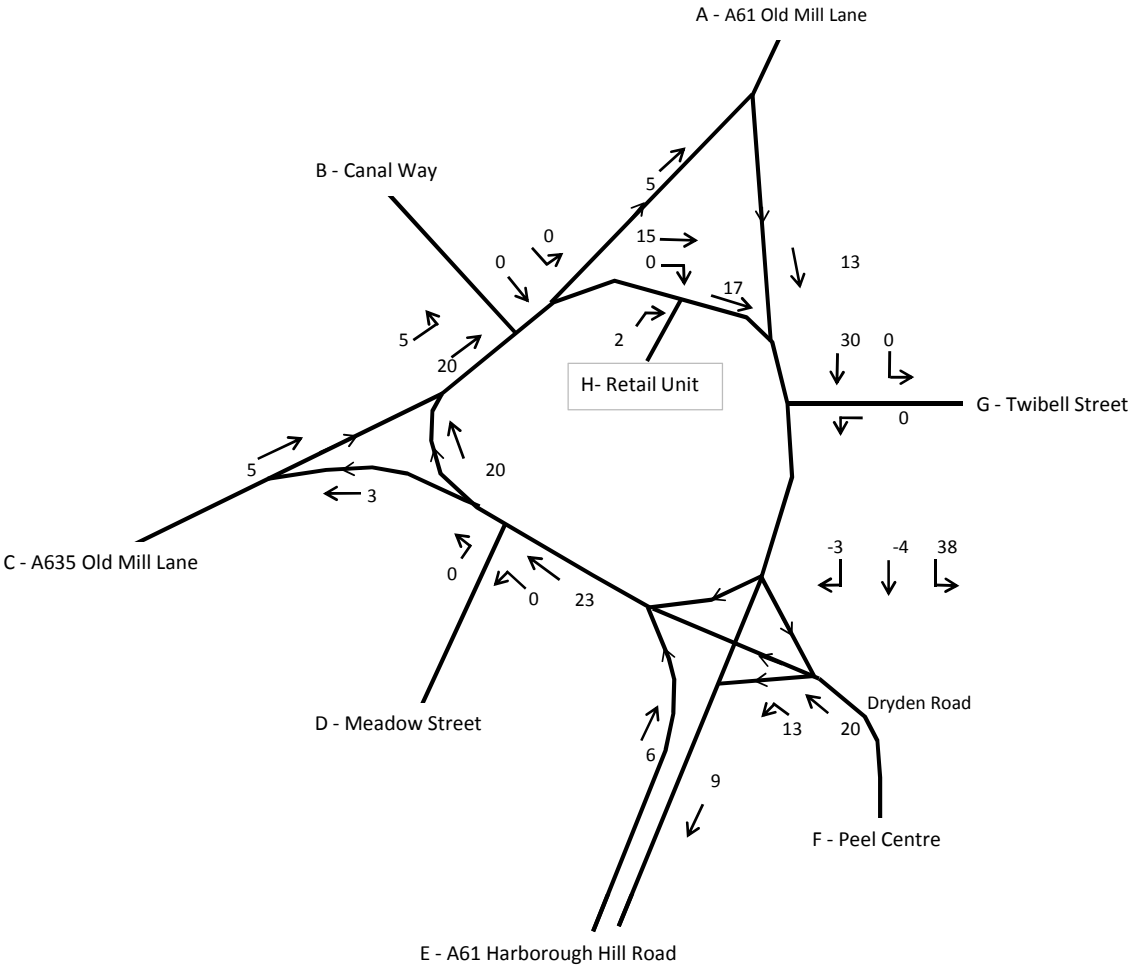
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D	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	6	0	0	6
F	6	5	3	0	9	0	0	0	23
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	2	0	0	2
Total	6	5	3	0	9	27	0	0	50

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre S73 Relaxation - New Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX F4**



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B	0	0	0	0	0	0	0	0	0
C	-2	0	0	0	-1	2	0	0	0
D	0	0	0	0	0	0	0	0	0
E	-2	0	0	0	0	2	0	0	0
F	3	0	3	0	4	0	0	0	10
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	-1	11	0	0	10

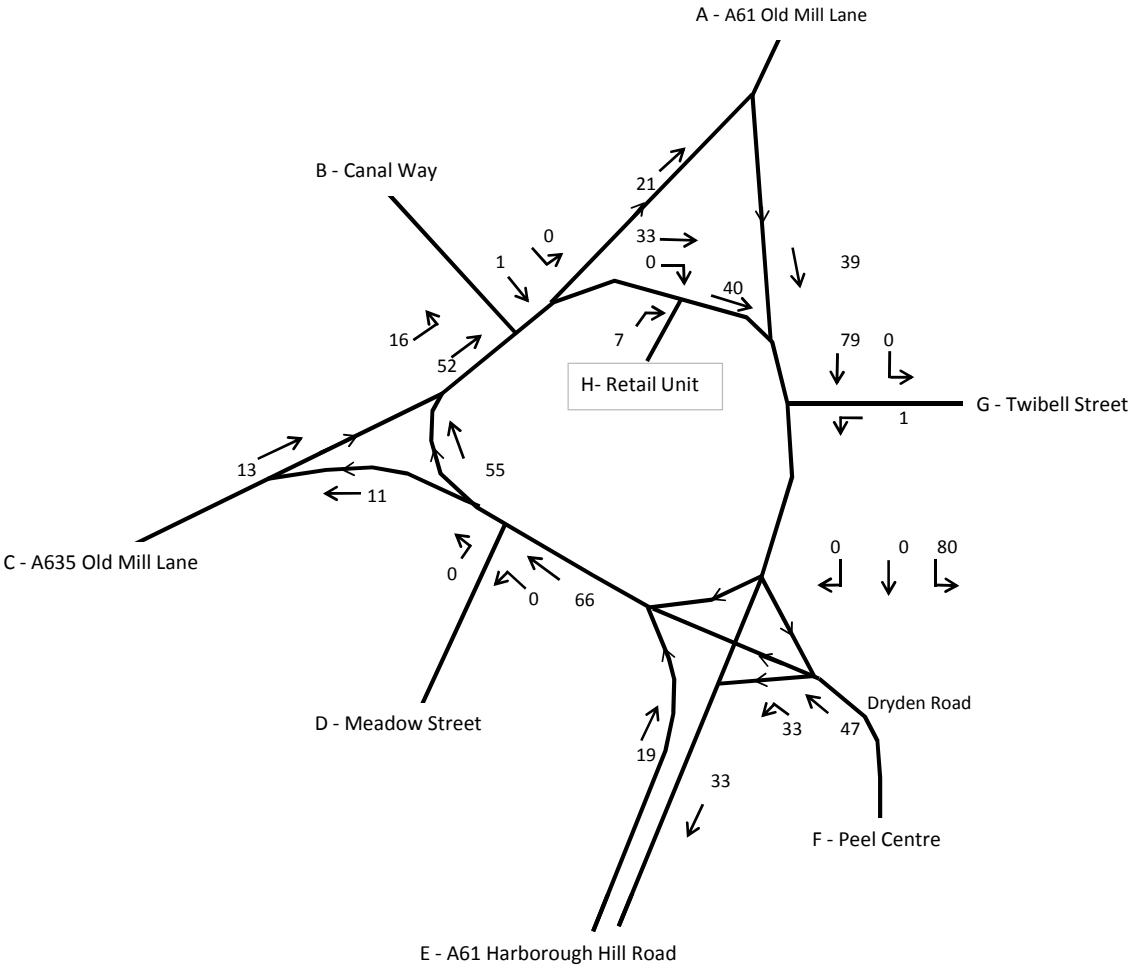
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	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre S73 Relaxation - Pass-by Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX F5**



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A	0	0	-3	0	-4	20	0	0	13
B	0	0	0	0	0	0	0	0	0
C	-2	0	0	0	-1	7	0	0	5
D	0	0	0	0	0	0	0	0	0
E	-2	0	0	0	0	8	0	0	6
F	9	5	6	0	13	0	0	0	33
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	2	0	0	2
Total	5	5	3	0	9	38	0	0	60

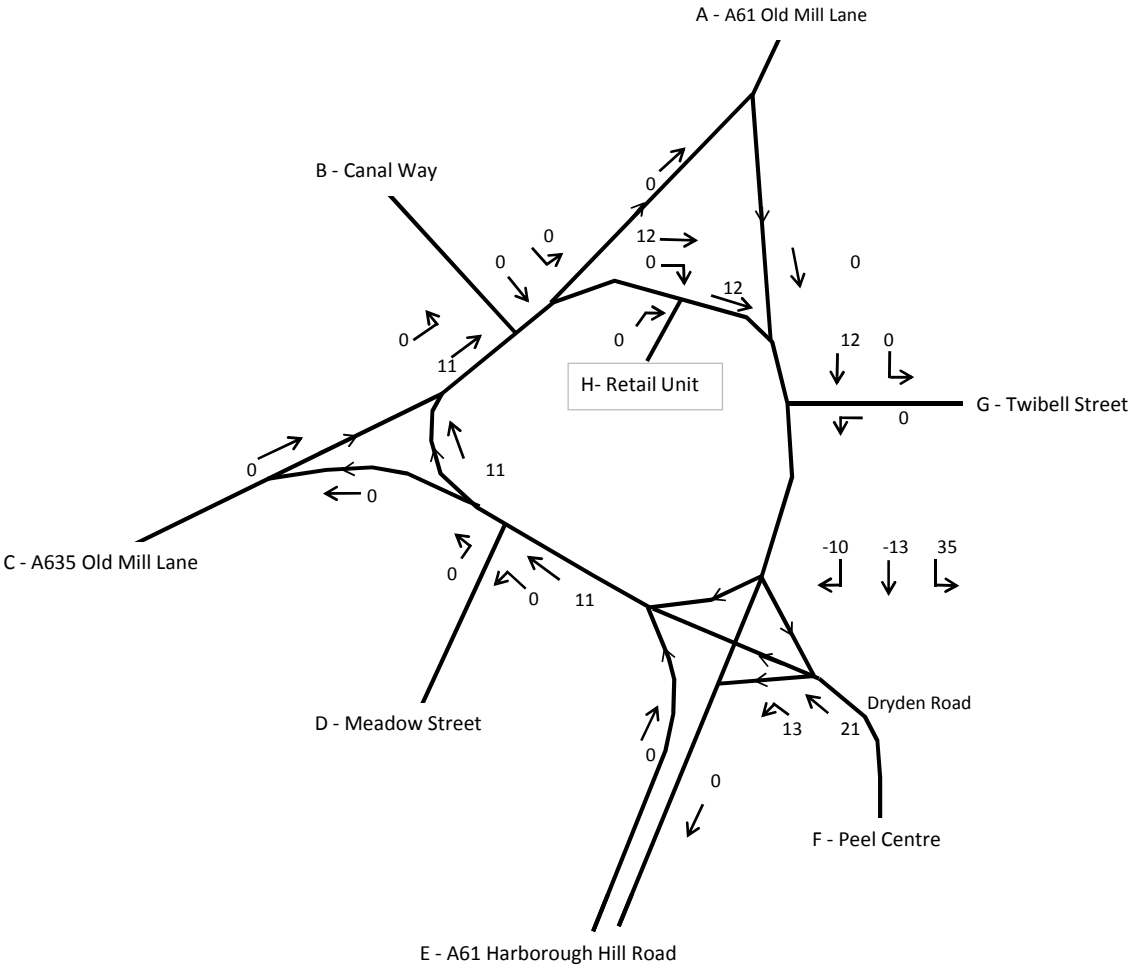
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	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre S73 Relaxation - Total Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX F6**

APPENDIX G



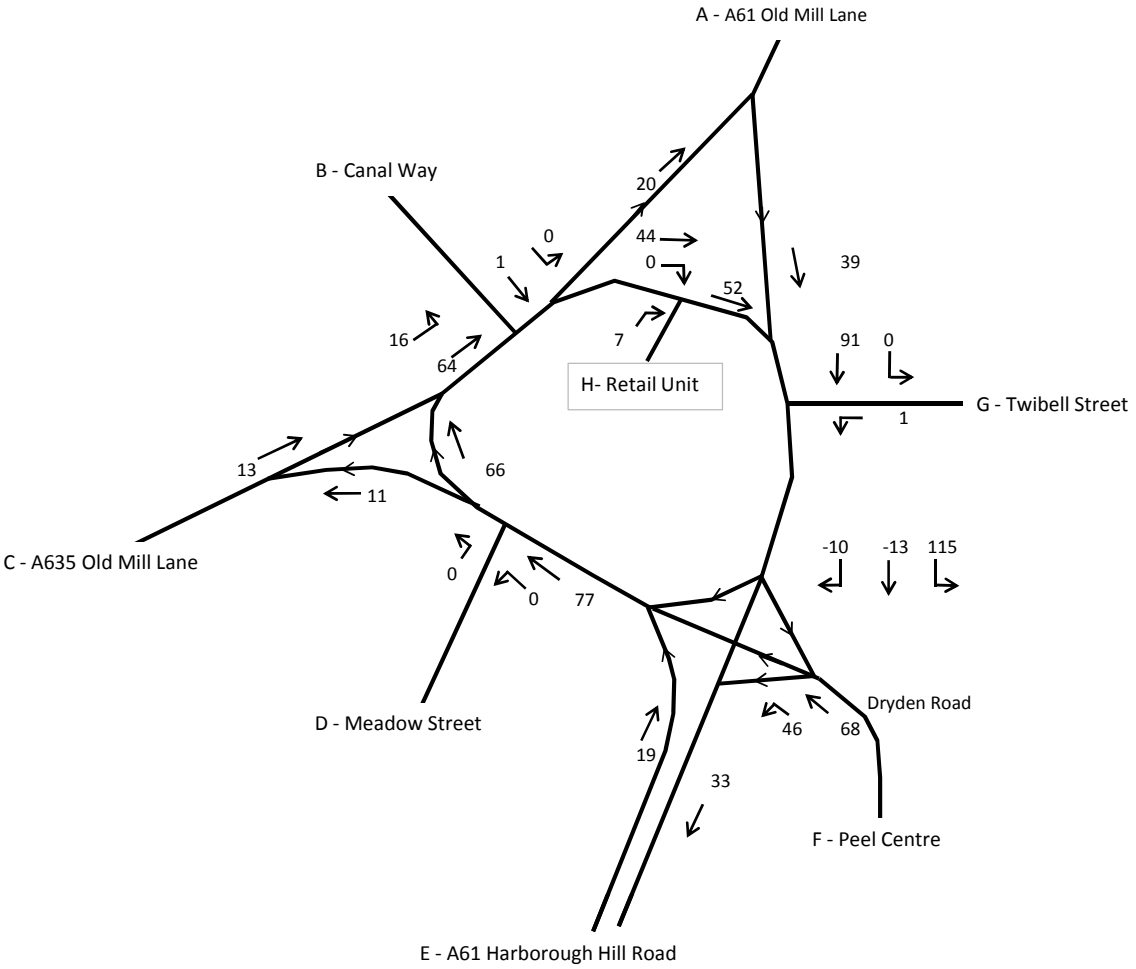
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D	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	19	0	0	19
F	21	16	11	0	33	0	0	0	80
G	0	0	0	0	0	1	0	0	1
H	0	0	0	0	0	7	0	0	7
Total	21	16	11	0	33	80	0	0	160

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre Vacant and Committed - New Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX G1**



	A	B	C	D	E	F	G	H	Total
A	0	0	-10	0	-12	21	0	0	0
B	0	0	0	0	0	0	0	0	0
C	-6	0	0	0	-2	7	0	0	0
D	0	0	0	0	0	0	0	0	0
E	-5	0	-1	0	0	6	0	0	0
F	10	0	11	0	13	0	0	0	34
G	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	35	0	0	34

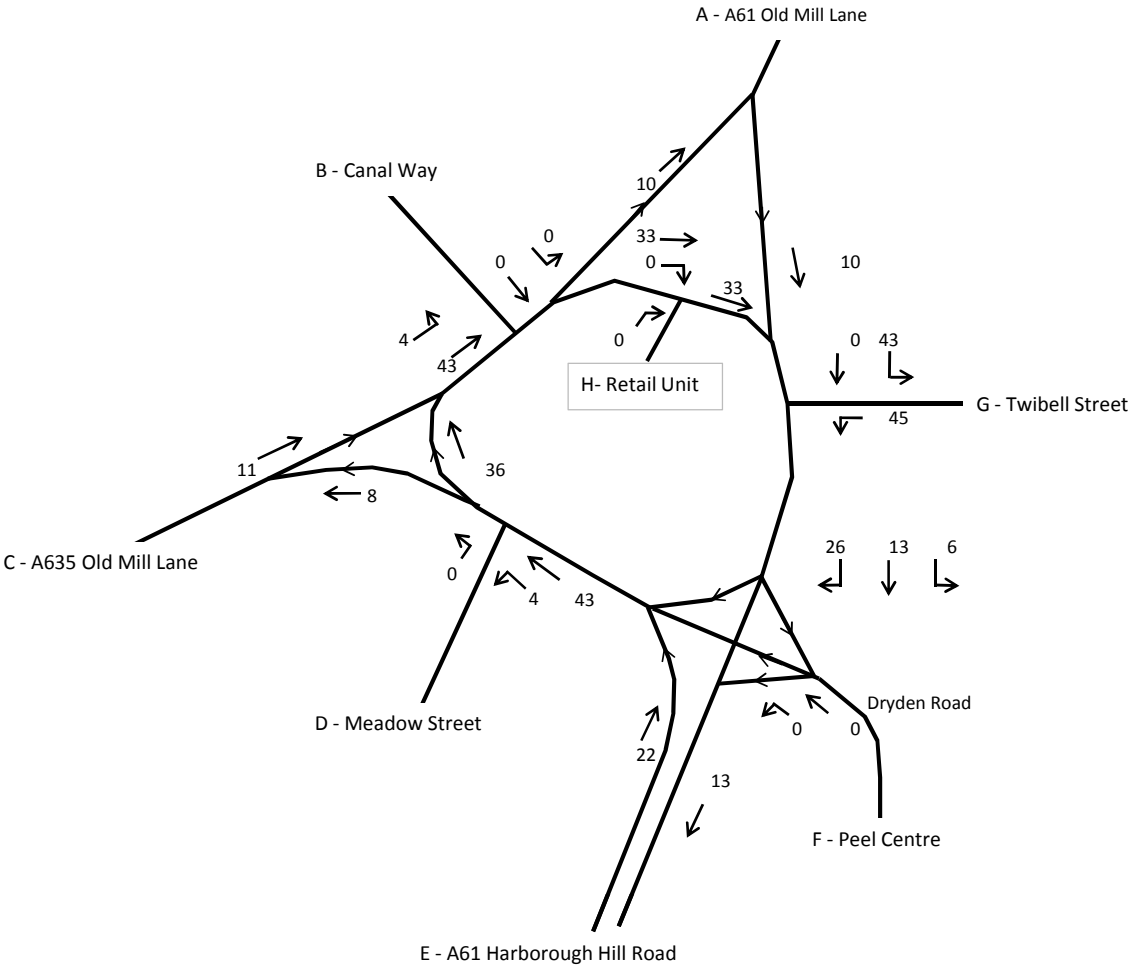
tthc the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre Vacant and Committed - Pass-by Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX G2**



	A	B	C	D	E	F	G	H	Total
A	0	0	-10	0	-12	60	0	0	39
B	0	0	0	0	0	1	0	0	1
C	-6	0	0	0	-2	21	0	0	13
D	0	0	0	0	0	0	0	0	0
E	-5	0	-1	0	0	24	0	0	19
F	31	16	22	0	46	0	0	0	114
G	0	0	0	0	0	1	0	0	1
H	0	0	0	0	0	7	0	0	7
Total	20	16	11	0	33	115	0	0	194

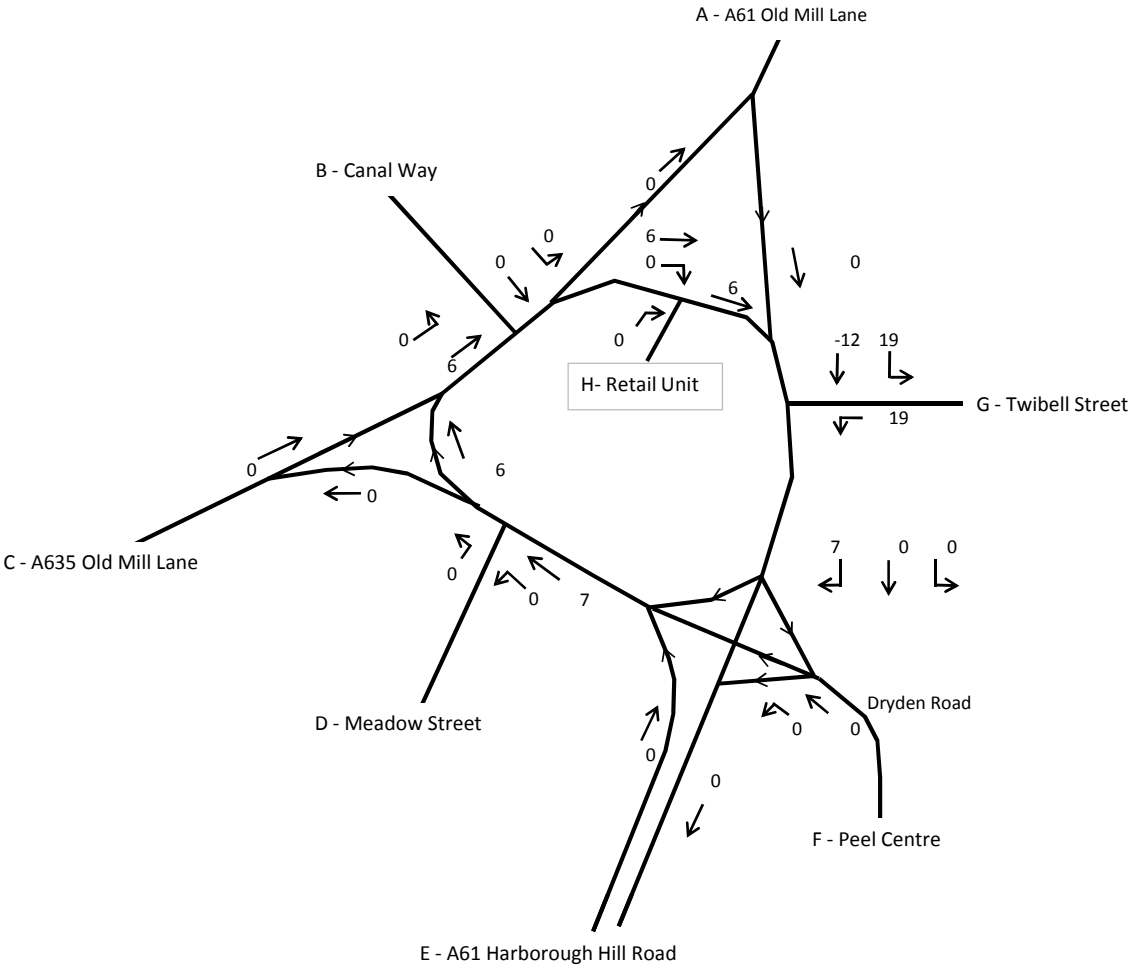
the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Peel Centre Vacant and Committed - Total Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX G3**

APPENDIX H



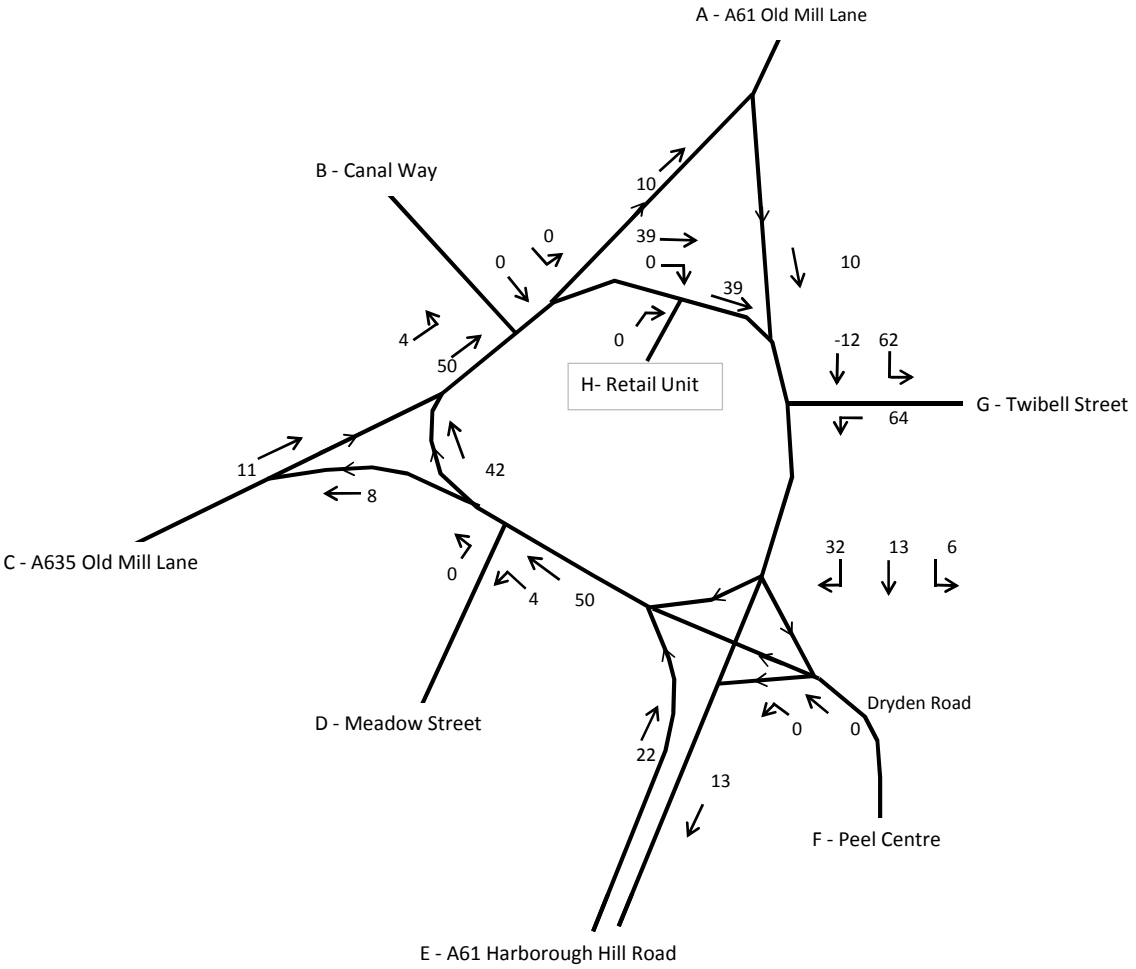
	A	B	C	D	E	F	G	H	Total
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B	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	11	0	11
D	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	22	0	22
F	0	0	0	0	0	0	0	0	0
G	10	4	8	4	13	6	0	0	45
H	0	0	0	0	0	0	0	0	0
Total	10	4	8	4	13	6	43	0	88

tthc the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Twibell St Uplift - New Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX H1**



	A	B	C	D	E	F	G	H	Total
A	0	0	-5	0	-6	0	11	0	0
B	0	0	0	0	0	0	0	0	0
C	-3	0	0	0	-1	0	4	0	0
D	0	0	0	0	0	0	0	0	0
E	-2	0	-1	0	0	0	3	0	0
F	0	0	0	0	0	0	0	0	0
G	6	0	6	0	7	0	0	0	19
H	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	19	0	19

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Twibell St Uplift - Pass-by Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX H2**



	A	B	C	D	E	F	G	H	Total
A	0	0	-5	0	-6	0	22	0	10
B	0	0	0	0	0	0	0	0	0
C	-3	0	0	0	-1	0	15	0	11
D	0	0	0	0	0	0	0	0	0
E	-2	0	-1	0	0	0	25	0	22
F	0	0	0	0	0	0	0	0	0
G	16	4	14	4	20	6	0	0	64
H	0	0	0	0	0	0	0	0	0
Total	10	4	8	4	13	6	62	0	107

the Traffic, Transport & Highway Consultancy	Drawing Number M06011-E-002	Rev	**PEEL CENTRE, BARNSLEY**	
	Date MAY 2015	Rev Date	SAT PEAK - Twibell St Uplift - Total Trips	
	Drawn by Mwi	Authorised MAW	SCALE NTS	**APPENDIX H3**

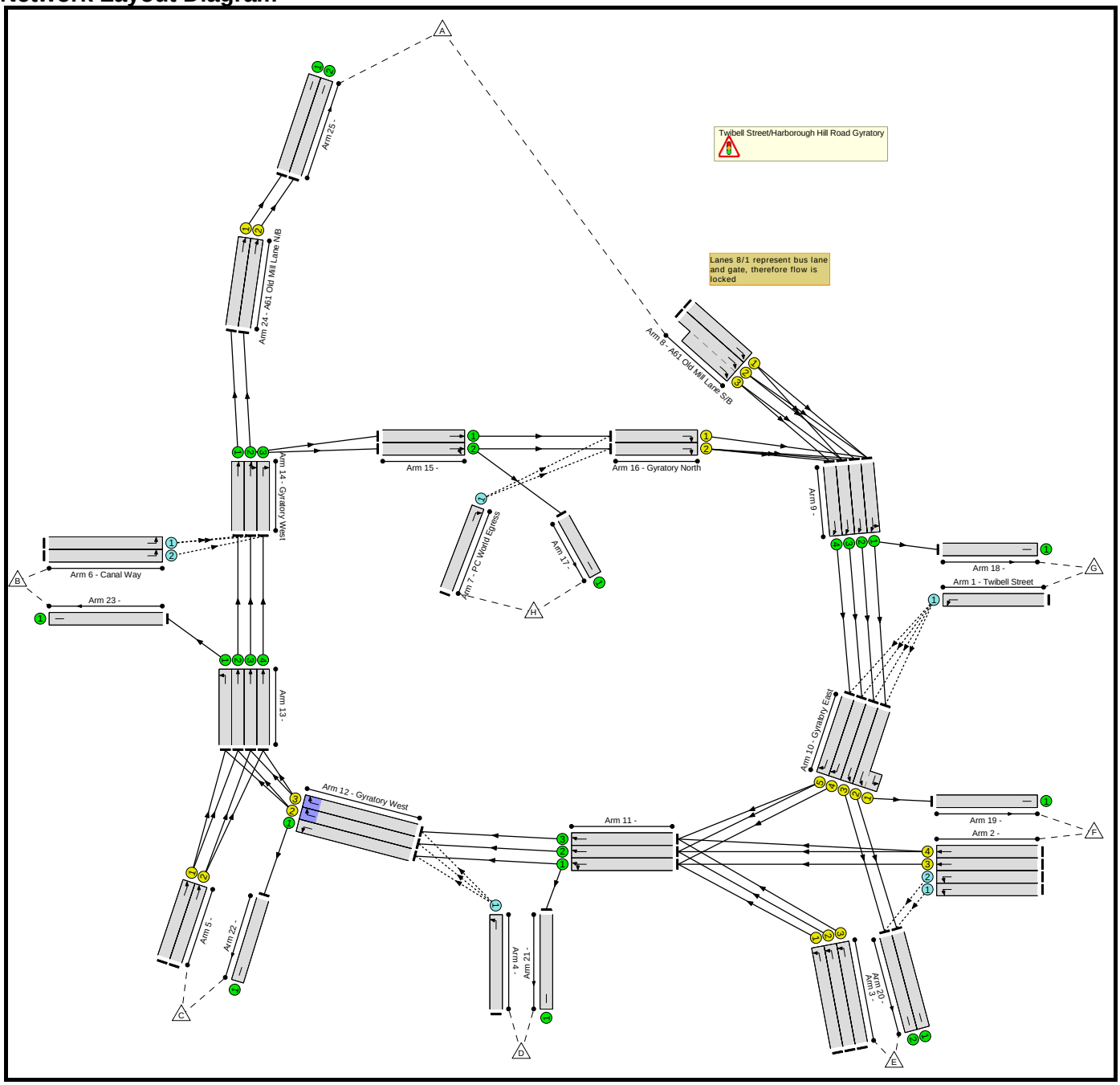
APPENDIX I

Full Input Data And Results

User and Project Details

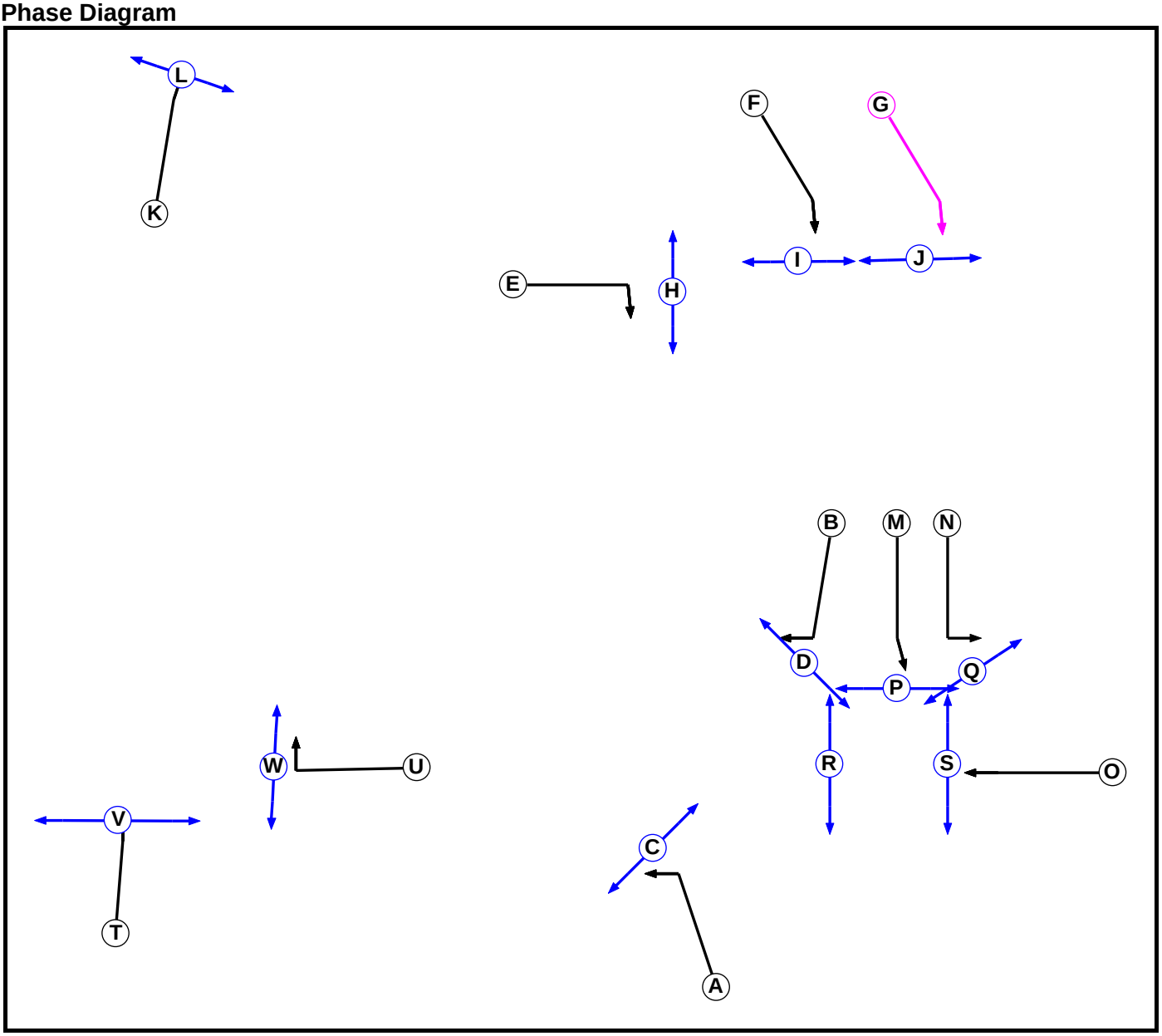
Project:	**M06011 Barnsley**
Title:	**A61 Harborough Hill Road Gyratory**
Location:	Barnsley
File name:	A61 Gyratory assessment M06011-08TA.lsg3x
Author:	M Williamson
Company:	TTHC
Address:	Manchester
Notes:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Pedestrian	1		6	6
D	Pedestrian	1		5	5
E	Traffic	2		7	7
F	Traffic	2		7	7
G	Bus	2		5	5
H	Pedestrian	2		5	5
I	Pedestrian	2		5	5
J	Pedestrian	2		5	5
K	Traffic	3		7	7
L	Pedestrian	3		5	5
M	Traffic	1		7	7
N	Traffic	1		7	7
O	Traffic	1		7	7
P	Pedestrian	1		5	5
Q	Pedestrian	1		5	5
R	Pedestrian	1		5	5
S	Pedestrian	1		5	5
T	Traffic	4		7	4
U	Traffic	4		7	5
V	Pedestrian	4		5	5
W	Pedestrian	4		5	5

Full Input Data And Results

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
A		5	5	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-
B	7		-	5	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-
C	11	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	9	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-		5	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	5		5	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	5	5		-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	8	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	7	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	-	-	-	-	6	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-		5	-	-	-	-	-	-	-	-	-	-	-
L	-	-	-	-	-	-	-	-	-	-	8		-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-	-		-	5	5	-	-	-	-	-	-	-
N	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	5	-	-	-	-	-	-
O	8	7	-	-	-	-	-	-	-	-	-	-	5	-		-	-	6	5	-	-	-	-
P	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-		-	-	-	-	-	-	-
Q	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-		-	-	-	-	-	-
R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-		-	-	-	-	-
S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-		-	-	-	-
T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		5	5	-
U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5		-	5
V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-		-
W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	

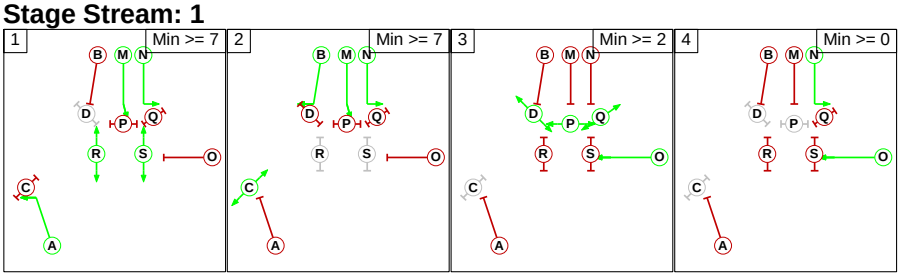
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A M N R S
1	2	B C M N
1	3	D O P Q
1	4	N O
2	1	E I
2	2	G H
2	3	F J
3	1	K
3	2	L
4	1	T W
4	2	U V

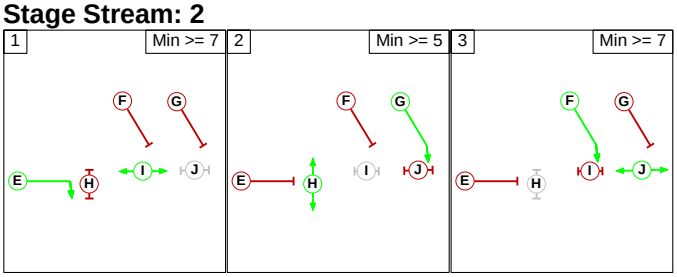
Full Input Data And Results

Stage Diagram

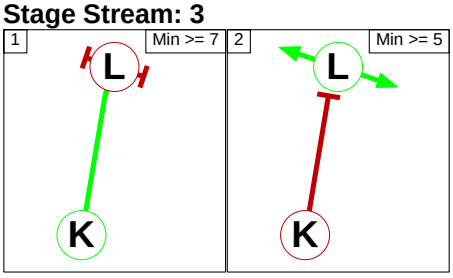
Stage Stream: 1



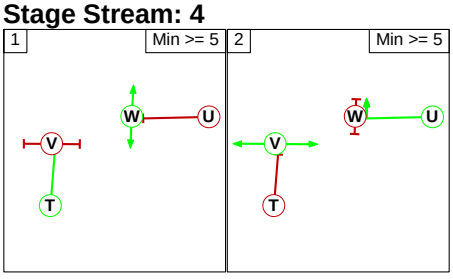
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	T	Losing	3	3
2	1	U	Losing	2	2

Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2	3	4
1		5	8	8
2	11		5	5
3	8	9		6
4	8	7	5	

Stage Stream: 2

From Stage \ To Stage	1	2	3
1		5	7
2	8		5
3	5	6	

Stage Stream: 3

From Stage \ To Stage	1	2
1		5
2	8	

Stage Stream: 4

From Stage \ To Stage	1	2
1		8
2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Twibell Street/Harborough Hill Road Gyratory

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (Twibell Street)	10/2 (Left)	1000	0	9/1	0.33	To 10/2 (Ahead)	-	-	-	-	-
	10/3 (Left)	1000	0	9/1	0.33	To 10/2 (Ahead)					
				9/2	0.33	All					
	10/4 (Left)	1000	0	9/1	0.33	To 10/2 (Ahead)					
				9/2	0.33	All					
				9/3	0.33	All					
	10/5 (Left)	1000	0	9/1	0.33	To 10/2 (Ahead)					
				9/2	1.09	All					
				9/3	1.09	All					
				9/4	1.09	All					
2/1	20/1 (Left)	715	0	10/2	0.22	All	-	-	-	-	-
2/2	20/2 (Left)	715	0	10/2	0.22	All	-	-	-	-	-
				10/3	0.22	All					
4/1	12/1 (Left)	1000	0	11/1	0.33	To 12/1 (Ahead)	-	-	-	-	-
	12/2 (Left)	1000	0	11/1	0.33	To 12/1 (Ahead)					
				11/2	0.33	All					
	12/3 (Left)	1000	0	11/1	0.33	To 12/1 (Ahead)					
				11/2	0.33	All					
				11/3	0.33	All					
6/1 (Canal Way)	14/1 (Left)	1000	0	13/2	0.33	All					
	14/2 (Left)	1000	0	13/2	0.33	All					
				13/3	0.33	All					
6/2 (Canal Way)	14/3 (Left)	1000	0	13/2	0.33	All					
				13/3	0.33	All					
				13/4	0.33	All					
7/1 (PC World Egress)	16/1 (Right)	600	0	15/1	0.19	All	-	-	-	-	-
				15/2	0.19	All					
	16/2 (Right)	600	0	15/2	0.19	All					

Full Input Data And Results

Lane Input Data

Junction: Twibell Street/Harborough Hill Road Gyratory

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Twibell Street)	O		2	3	60.0	Geom	-	5.00	0.00	Y	Arm 10 Left	17.50
2/1	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm 20 Left	17.50
2/2	O		2	3	60.0	Geom	-	3.00	0.00	N	Arm 20 Left	20.00
2/3	U	O	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 11 Ahead	Inf
2/4	U	O	2	3	60.0	Geom	-	3.50	0.00	N	Arm 11 Ahead	Inf
3/1	U	A	2	3	60.0	Geom	-	3.90	0.00	Y	Arm 11 Left	65.00
3/2	U	A	2	3	60.0	Geom	-	3.90	0.00	N	Arm 11 Left	65.00
3/3	U	A	2	3	60.0	Geom	-	3.50	0.00	N	Arm 11 Left	65.00
4/1	O		2	3	60.0	Geom	-	3.37	0.00	Y	Arm 12 Left	15.00
5/1	U	T	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 13 Ahead	Inf
5/2	U	T	2	3	60.0	Geom	-	3.00	0.00	N	Arm 13 Ahead	Inf
6/1 (Canal Way)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Left	15.00
6/2 (Canal Way)	O		2	3	60.0	Geom	-	3.50	0.00	N	Arm 14 Left	Inf
7/1 (PC World Egress)	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 16 Right	17.50
8/1 (A61 Old Mill Lane S/B)	U	G	2	3	4.2	Geom	-	3.75	0.00	Y	Arm 9 Ahead	Inf
8/2 (A61 Old Mill Lane S/B)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 9 Ahead	Inf
8/3 (A61 Old Mill Lane S/B)	U	F	2	3	9.0	Geom	-	3.00	0.00	N	Arm 9 Ahead	Inf
9/1	U		2	3	6.4	Geom	-	3.50	0.00	Y	Arm 10 Ahead Arm 18 Left	Inf 15.00
9/2	U		2	3	6.3	Geom	-	3.50	0.00	N	Arm 10 Ahead	Inf
9/3	U		2	3	6.1	Geom	-	3.00	0.00	N	Arm 10 Ahead	Inf
9/4	U		2	3	6.1	Geom	-	2.50	0.00	N	Arm 10 Ahead	Inf
10/1 (Gyratory East)	U	N	2	3	2.1	Geom	-	4.00	8.00	Y	Arm 19 Left	25.00
10/2 (Gyratory East)	U	M	2	3	14.1	Geom	-	3.25	8.00	Y	Arm 20 Ahead	Inf
10/3 (Gyratory East)	U	M	2	3	14.1	Geom	-	3.50	8.00	N	Arm 20 Ahead	Inf
10/4 (Gyratory East)	U	B	2	3	13.6	Geom	-	3.75	8.00	N	Arm 11 Right	20.00
10/5 (Gyratory East)	U	B	2	3	13.2	Geom	-	3.50	8.00	N	Arm 11 Right	20.00
11/1	U		2	3	15.4	Geom	-	3.50	0.00	Y	Arm 12 Ahead Arm 21 Left	Inf 12.50
11/2	U		2	3	15.3	Geom	-	4.00	0.00	N	Arm 12 Ahead	Inf
11/3	U		2	3	15.3	Geom	-	3.50	0.00	N	Arm 12 Ahead	Inf
12/1 (Gyratory West)	U		2	3	8.5	Geom	-	4.00	0.00	Y	Arm 22 Left	37.50
12/2 (Gyratory West)	U	U	2	3	9.3	Geom	-	3.50	0.00	N	Arm 13 Right	32.50
12/3 (Gyratory West)	U	U	2	3	8.3	Geom	-	3.50	0.00	N	Arm 13 Right	30.00
13/1	U		2	3	8.7	Geom	-	3.75	0.00	Y	Arm 23 Left	17.50
13/2	U		2	3	9.6	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
13/3	U		2	3	9.7	Geom	-	3.75	0.00	N	Arm 14 Ahead	Inf
13/4	U		2	3	9.7	Geom	-	3.50	0.00	N	Arm 14 Ahead	Inf
14/1 (Gyratory West)	U		2	3	5.0	Geom	-	3.75	0.00	Y	Arm 24 Ahead	Inf

Full Input Data And Results

14/2 (Gyratory West)	U		2	3	5.0	Geom	-	3.50	0.00	N	Arm 15 Right Arm 24 Ahead	20.00 Inf
14/3 (Gyratory West)	U		2	3	5.0	Geom	-	3.75	0.00	N	Arm 15 Right	20.00
15/1	U		2	3	4.0	Geom	-	3.75	0.00	Y	Arm 16 Ahead	Inf
15/2	U		2	3	3.3	Geom	-	3.50	0.00	N	Arm 16 Ahead Arm 17 Right	Inf 50.00
16/1 (Gyratory North)	U	E	2	3	4.9	Geom	-	3.50	0.00	Y	Arm 9 Right	30.00
16/2 (Gyratory North)	U	E	2	3	4.9	Geom	-	3.50	0.00	N	Arm 9 Right	20.00
17/1	U		2	3	60.0	Inf	-	-	-	-	-	-
18/1	U		2	3	60.0	Inf	-	-	-	-	-	-
19/1	U		2	3	60.0	Inf	-	-	-	-	-	-
20/1	U		2	3	60.0	Inf	-	-	-	-	-	-
20/2	U		2	3	60.0	Inf	-	-	-	-	-	-
21/1	U		2	3	60.0	Inf	-	-	-	-	-	-
22/1	U		2	3	60.0	Inf	-	-	-	-	-	-
23/1	U		2	3	60.0	Inf	-	-	-	-	-	-
24/1 (A61 Old Mill Lane N/B)	U	K	2	3	10.4	Geom	-	3.50	0.00	Y	Arm 25 Ahead	Inf
24/2 (A61 Old Mill Lane N/B)	U	K	2	3	10.6	Geom	-	3.50	0.00	N	Arm 25 Ahead	Inf
25/1	U		2	3	60.0	Inf	-	-	-	-	-	-
25/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Existing Saturday Peak'	13:45	14:45	01:00	
2: 'Saturday Peak: 2020 Base Flows'	13:45	14:45	01:00	
3: '2020 Base plus Peel Centre Dev'	13:45	14:45	01:00	

Scenario 1: 'Existing Saturday Peak' (FG1: 'Existing Saturday Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination								
		A	B	C	D	E	F	G	H	Tot.
Origin	A	0	166	365	0	433	215	8	0	1187
	B	405	0	195	0	218	6	0	27	851
	C	440	272	2	0	63	74	9	20	880
	D	8	6	8	0	0	0	0	0	22
	E	338	281	83	7	30	103	17	56	915
	F	115	88	62	0	183	0	0	0	448
	G	8	3	6	3	10	5	0	0	35
	H	15	0	21	3	34	41	0	0	114
	Tot.	1329	816	742	13	971	444	34	103	4452

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: Existing Saturday Peak
Junction: Twibell Street/Harborough Hill Road Gyratory	
1/1	35
2/1	91
2/2	92
2/3	62
2/4	203
3/1	90
3/2	413
3/3	412
4/1	22
5/1	440
5/2	440
6/1	426
6/2	425
7/1	114
8/1	46
8/2 (with short)	1141(In) 656(Out)
8/3 (short)	485
9/1	767
9/2	484
9/3	586
9/4	181
10/1 (short)	444
10/2 (with short)	743(In) 299(Out)
10/3	489
10/4	595
10/5	192
11/1	747
11/2	738
11/3	482
12/1	742
12/2	748
12/3	486
13/1	816
13/2	372
13/3	801
13/4	125
14/1	575
14/2	1024
14/3	550
15/1	270
15/2	550
16/1	328
16/2	503
17/1	103
18/1	34

Full Input Data And Results

19/1	444
20/1	390
20/2	581
21/1	13
22/1	742
23/1	816
24/1	575
24/2	754
25/1	575
25/2	754

Full Input Data And Results

Lane Saturation Flows

Junction: Twibell Street/Harborough Hill Road Gyratory								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Twibell Street)	5.00	0.00	Y	Arm 10 Left	17.50	100.0 %	1948	1948
2/1	3.25	0.00	Y	Arm 20 Left	17.50	100.0 %	1787	1787
2/2	3.00	0.00	N	Arm 20 Left	20.00	100.0 %	1912	1912
2/3	3.50	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1965	1965
2/4	3.50	0.00	N	Arm 11 Ahead	Inf	100.0 %	2105	2105
3/1	3.90	0.00	Y	Arm 11 Left	65.00	100.0 %	1960	1960
3/2	3.90	0.00	N	Arm 11 Left	65.00	100.0 %	2097	2097
3/3	3.50	0.00	N	Arm 11 Left	65.00	100.0 %	2058	2058
4/1	3.37	0.00	Y	Arm 12 Left	15.00	100.0 %	1775	1775
5/1	3.00	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1915	1915
5/2	3.00	0.00	N	Arm 13 Ahead	Inf	100.0 %	2055	2055
6/1 (Canal Way)	3.50	0.00	Y	Arm 14 Left	15.00	100.0 %	1786	1786
6/2 (Canal Way)	3.50	0.00	N	Arm 14 Left	Inf	100.0 %	2105	2105
7/1 (PC World Egress)	4.00	0.00	Y	Arm 16 Right	17.50	100.0 %	1856	1856
8/1 (A61 Old Mill Lane S/B)	3.75	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1990	1990
8/2 (A61 Old Mill Lane S/B)	3.50	0.00	N	Arm 9 Ahead	Inf	100.0 %	2105	2105
8/3 (A61 Old Mill Lane S/B)	3.00	0.00	N	Arm 9 Ahead	Inf	100.0 %	2055	2055
9/1	3.50	0.00	Y	Arm 10 Ahead	Inf	95.6 %	1956	1956
				Arm 18 Left	15.00	4.4 %		
9/2	3.50	0.00	N	Arm 10 Ahead	Inf	100.0 %	2105	2105
9/3	3.00	0.00	N	Arm 10 Ahead	Inf	100.0 %	2055	2055
9/4	2.50	0.00	N	Arm 10 Ahead	Inf	100.0 %	2005	2005
10/1 (Gyratory East)	4.00	8.00	Y	Arm 19 Left	25.00	100.0 %	1584	1584
10/2 (Gyratory East)	3.25	8.00	Y	Arm 20 Ahead	Inf	100.0 %	1604	1604
10/3 (Gyratory East)	3.50	8.00	N	Arm 20 Ahead	Inf	100.0 %	1769	1769
10/4 (Gyratory East)	3.75	8.00	N	Arm 11 Right	20.00	100.0 %	1669	1669
10/5 (Gyratory East)	3.50	8.00	N	Arm 11 Right	20.00	100.0 %	1646	1646
11/1	3.50	0.00	Y	Arm 12 Ahead	Inf	98.3 %	1961	1961
				Arm 21 Left	12.50	1.7 %		
11/2	4.00	0.00	N	Arm 12 Ahead	Inf	100.0 %	2155	2155
11/3	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
12/1 (Gyratory West)	4.00	0.00	Y	Arm 22 Left	37.50	100.0 %	1938	1938
12/2 (Gyratory West)	3.50	0.00	N	Arm 13 Right	32.50	100.0 %	2012	2012
12/3 (Gyratory West)	3.50	0.00	N	Arm 13 Right	30.00	100.0 %	2005	2005
13/1	3.75	0.00	Y	Arm 23 Left	17.50	100.0 %	1833	1833
13/2	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/3	3.75	0.00	N	Arm 14 Ahead	Inf	100.0 %	2130	2130
13/4	3.50	0.00	N	Arm 14 Ahead	Inf	100.0 %	2105	2105
14/1 (Gyratory West)	3.75	0.00	Y	Arm 24 Ahead	Inf	100.0 %	1990	1990

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14/2 (Gyratory West)	3.50	0.00	N	Arm 15 Right	20.00	26.4 %	2064	2064
				Arm 24 Ahead	Inf	73.6 %		
14/3 (Gyratory West)	3.75	0.00	N	Arm 15 Right	20.00	100.0 %	1981	1981
15/1	3.75	0.00	Y	Arm 16 Ahead	Inf	100.0 %	1990	1990
15/2	3.50	0.00	N	Arm 16 Ahead	Inf	81.3 %	2093	2093
				Arm 17 Right	50.00	18.7 %		
16/1 (Gyratory North)	3.50	0.00	Y	Arm 9 Right	30.00	100.0 %	1871	1871
16/2 (Gyratory North)	3.50	0.00	N	Arm 9 Right	20.00	100.0 %	1958	1958
17/1	Infinite Saturation Flow						Inf	Inf
18/1	Infinite Saturation Flow						Inf	Inf
19/1	Infinite Saturation Flow						Inf	Inf
20/1	Infinite Saturation Flow						Inf	Inf
20/2	Infinite Saturation Flow						Inf	Inf
21/1	Infinite Saturation Flow						Inf	Inf
22/1	Infinite Saturation Flow						Inf	Inf
23/1	Infinite Saturation Flow						Inf	Inf
24/1 (A61 Old Mill Lane N/B)	3.50	0.00	Y	Arm 25 Ahead	Inf	100.0 %	1965	1965
24/2 (A61 Old Mill Lane N/B)	3.50	0.00	N	Arm 25 Ahead	Inf	100.0 %	2105	2105
25/1	Infinite Saturation Flow						Inf	Inf
25/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2020 Base Flows Sat Peak' (FG2: 'Saturday Peak: 2020 Base Flows', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination								
		A	B	C	D	E	F	G	H	Tot.
Origin	A	0	166	379	0	449	275	30	0	1299
	B	405	0	195	0	218	7	0	27	852
	C	466	272	2	0	65	95	24	20	944
	D	8	6	8	0	0	0	0	0	22
	E	358	281	88	7	30	127	42	56	989
	F	146	104	84	0	229	0	0	0	563
	G	24	7	20	7	30	12	0	0	100
	H	15	0	21	3	34	48	0	0	121
	Tot.	1422	836	797	17	1055	564	96	103	4890

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2020 Base Flows Sat Peak
Junction: Twibell Street/Harborough Hill Road Gyratory	
1/1	100
2/1	114
2/2	115
2/3	84
2/4	250
3/1	95
3/2	447
3/3	447
4/1	22
5/1	472
5/2	472
6/1	426
6/2	426
7/1	121
8/1	47
8/2 (with short)	1252(In) 754(Out)
8/3 (short)	498
9/1	950
9/2	494
9/3	600
9/4	181
10/1 (short)	564
10/2 (with short)	881(In) 317(Out)
10/3	509
10/4	627
10/5	212
11/1	806
11/2	816
11/3	540
12/1	797
12/2	826
12/3	544
13/1	836
13/2	462
13/3	890
13/4	126
14/1	665
14/2	1113
14/3	552
15/1	356
15/2	552
16/1	421
16/2	505
17/1	103
18/1	96

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19/1	564
20/1	431
20/2	624
21/1	17
22/1	797
23/1	836
24/1	665
24/2	757
25/1	665
25/2	757

Full Input Data And Results

Lane Saturation Flows

Junction: Twibell Street/Harborough Hill Road Gyratory								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Twibell Street)	5.00	0.00	Y	Arm 10 Left	17.50	100.0 %	1948	1948
2/1	3.25	0.00	Y	Arm 20 Left	17.50	100.0 %	1787	1787
2/2	3.00	0.00	N	Arm 20 Left	20.00	100.0 %	1912	1912
2/3	3.50	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1965	1965
2/4	3.50	0.00	N	Arm 11 Ahead	Inf	100.0 %	2105	2105
3/1	3.90	0.00	Y	Arm 11 Left	65.00	100.0 %	1960	1960
3/2	3.90	0.00	N	Arm 11 Left	65.00	100.0 %	2097	2097
3/3	3.50	0.00	N	Arm 11 Left	65.00	100.0 %	2058	2058
4/1	3.37	0.00	Y	Arm 12 Left	15.00	100.0 %	1775	1775
5/1	3.00	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1915	1915
5/2	3.00	0.00	N	Arm 13 Ahead	Inf	100.0 %	2055	2055
6/1 (Canal Way)	3.50	0.00	Y	Arm 14 Left	15.00	100.0 %	1786	1786
6/2 (Canal Way)	3.50	0.00	N	Arm 14 Left	Inf	100.0 %	2105	2105
7/1 (PC World Egress)	4.00	0.00	Y	Arm 16 Right	17.50	100.0 %	1856	1856
8/1 (A61 Old Mill Lane S/B)	3.75	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1990	1990
8/2 (A61 Old Mill Lane S/B)	3.50	0.00	N	Arm 9 Ahead	Inf	100.0 %	2105	2105
8/3 (A61 Old Mill Lane S/B)	3.00	0.00	N	Arm 9 Ahead	Inf	100.0 %	2055	2055
9/1	3.50	0.00	Y	Arm 10 Ahead	Inf	89.9 %	1945	1945
				Arm 18 Left	15.00	10.1 %		
9/2	3.50	0.00	N	Arm 10 Ahead	Inf	100.0 %	2105	2105
9/3	3.00	0.00	N	Arm 10 Ahead	Inf	100.0 %	2055	2055
9/4	2.50	0.00	N	Arm 10 Ahead	Inf	100.0 %	2005	2005
10/1 (Gyratory East)	4.00	8.00	Y	Arm 19 Left	25.00	100.0 %	1584	1584
10/2 (Gyratory East)	3.25	8.00	Y	Arm 20 Ahead	Inf	100.0 %	1604	1604
10/3 (Gyratory East)	3.50	8.00	N	Arm 20 Ahead	Inf	100.0 %	1769	1769
10/4 (Gyratory East)	3.75	8.00	N	Arm 11 Right	20.00	100.0 %	1669	1669
10/5 (Gyratory East)	3.50	8.00	N	Arm 11 Right	20.00	100.0 %	1646	1646
11/1	3.50	0.00	Y	Arm 12 Ahead	Inf	97.9 %	1960	1960
				Arm 21 Left	12.50	2.1 %		
11/2	4.00	0.00	N	Arm 12 Ahead	Inf	100.0 %	2155	2155
11/3	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
12/1 (Gyratory West)	4.00	0.00	Y	Arm 22 Left	37.50	100.0 %	1938	1938
12/2 (Gyratory West)	3.50	0.00	N	Arm 13 Right	32.50	100.0 %	2012	2012
12/3 (Gyratory West)	3.50	0.00	N	Arm 13 Right	30.00	100.0 %	2005	2005
13/1	3.75	0.00	Y	Arm 23 Left	17.50	100.0 %	1833	1833
13/2	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/3	3.75	0.00	N	Arm 14 Ahead	Inf	100.0 %	2130	2130
13/4	3.50	0.00	N	Arm 14 Ahead	Inf	100.0 %	2105	2105
14/1 (Gyratory West)	3.75	0.00	Y	Arm 24 Ahead	Inf	100.0 %	1990	1990

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14/2 (Gyratory West)	3.50	0.00	N	Arm 15 Right	20.00	32.0 %	2056	2056
				Arm 24 Ahead	Inf	68.0 %		
14/3 (Gyratory West)	3.75	0.00	N	Arm 15 Right	20.00	100.0 %	1981	1981
15/1	3.75	0.00	Y	Arm 16 Ahead	Inf	100.0 %	1990	1990
15/2	3.50	0.00	N	Arm 16 Ahead	Inf	81.3 %	2093	2093
				Arm 17 Right	50.00	18.7 %		
16/1 (Gyratory North)	3.50	0.00	Y	Arm 9 Right	30.00	100.0 %	1871	1871
16/2 (Gyratory North)	3.50	0.00	N	Arm 9 Right	20.00	100.0 %	1958	1958
17/1	Infinite Saturation Flow						Inf	Inf
18/1	Infinite Saturation Flow						Inf	Inf
19/1	Infinite Saturation Flow						Inf	Inf
20/1	Infinite Saturation Flow						Inf	Inf
20/2	Infinite Saturation Flow						Inf	Inf
21/1	Infinite Saturation Flow						Inf	Inf
22/1	Infinite Saturation Flow						Inf	Inf
23/1	Infinite Saturation Flow						Inf	Inf
24/1 (A61 Old Mill Lane N/B)	3.50	0.00	Y	Arm 25 Ahead	Inf	100.0 %	1965	1965
24/2 (A61 Old Mill Lane N/B)	3.50	0.00	N	Arm 25 Ahead	Inf	100.0 %	2105	2105
25/1	Infinite Saturation Flow						Inf	Inf
25/2	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2020 Base plus Peel Centre Dev' (FG3: '2020 Base plus Peel Centre Dev', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination								
		A	B	C	D	E	F	G	H	Tot.
Origin	A	0	166	373	0	442	312	30	0	1323
	B	405	0	195	0	218	8	0	27	853
	C	462	272	2	0	64	108	24	20	952
	D	8	6	8	0	0	0	0	0	22
	E	355	281	87	7	30	142	42	56	1000
	F	164	113	97	0	256	0	0	0	630
	G	24	7	20	7	30	13	0	0	101
	H	15	0	21	3	34	53	0	0	126
	Tot.	1433	845	803	17	1074	636	96	103	5007

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2020 Base plus Peel Centre Dev
Junction: Twibell Street/Harborough Hill Road Gyratory	
1/1	101
2/1	128
2/2	128
2/3	97
2/4	277
3/1	94
3/2	453
3/3	453
4/1	22
5/1	476
5/2	476
6/1	427
6/2	426
7/1	126
8/1	47
8/2 (with short)	1276(In) 784(Out)
8/3 (short)	492
9/1	1018
9/2	489
9/3	594
9/4	181
10/1 (short)	636
10/2 (with short)	950(In) 314(Out)
10/3	504
10/4	621
10/5	212
11/1	812
11/2	840
11/3	555
12/1	803
12/2	850
12/3	559
13/1	845
13/2	481
13/3	910
13/4	125
14/1	684
14/2	1134
14/3	551
15/1	385
15/2	551
16/1	455
16/2	504
17/1	103
18/1	96

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19/1	636
20/1	442
20/2	632
21/1	17
22/1	803
23/1	845
24/1	684
24/2	749
25/1	684
25/2	749

Full Input Data And Results

Lane Saturation Flows

Junction: Twibell Street/Harborough Hill Road Gyratory								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Twibell Street)	5.00	0.00	Y	Arm 10 Left	17.50	100.0 %	1948	1948
2/1	3.25	0.00	Y	Arm 20 Left	17.50	100.0 %	1787	1787
2/2	3.00	0.00	N	Arm 20 Left	20.00	100.0 %	1912	1912
2/3	3.50	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1965	1965
2/4	3.50	0.00	N	Arm 11 Ahead	Inf	100.0 %	2105	2105
3/1	3.90	0.00	Y	Arm 11 Left	65.00	100.0 %	1960	1960
3/2	3.90	0.00	N	Arm 11 Left	65.00	100.0 %	2097	2097
3/3	3.50	0.00	N	Arm 11 Left	65.00	100.0 %	2058	2058
4/1	3.37	0.00	Y	Arm 12 Left	15.00	100.0 %	1775	1775
5/1	3.00	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1915	1915
5/2	3.00	0.00	N	Arm 13 Ahead	Inf	100.0 %	2055	2055
6/1 (Canal Way)	3.50	0.00	Y	Arm 14 Left	15.00	100.0 %	1786	1786
6/2 (Canal Way)	3.50	0.00	N	Arm 14 Left	Inf	100.0 %	2105	2105
7/1 (PC World Egress)	4.00	0.00	Y	Arm 16 Right	17.50	100.0 %	1856	1856
8/1 (A61 Old Mill Lane S/B)	3.75	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1990	1990
8/2 (A61 Old Mill Lane S/B)	3.50	0.00	N	Arm 9 Ahead	Inf	100.0 %	2105	2105
8/3 (A61 Old Mill Lane S/B)	3.00	0.00	N	Arm 9 Ahead	Inf	100.0 %	2055	2055
9/1	3.50	0.00	Y	Arm 10 Ahead	Inf	90.6 %	1947	1947
				Arm 18 Left	15.00	9.4 %		
9/2	3.50	0.00	N	Arm 10 Ahead	Inf	100.0 %	2105	2105
9/3	3.00	0.00	N	Arm 10 Ahead	Inf	100.0 %	2055	2055
9/4	2.50	0.00	N	Arm 10 Ahead	Inf	100.0 %	2005	2005
10/1 (Gyratory East)	4.00	8.00	Y	Arm 19 Left	25.00	100.0 %	1584	1584
10/2 (Gyratory East)	3.25	8.00	Y	Arm 20 Ahead	Inf	100.0 %	1604	1604
10/3 (Gyratory East)	3.50	8.00	N	Arm 20 Ahead	Inf	100.0 %	1769	1769
10/4 (Gyratory East)	3.75	8.00	N	Arm 11 Right	20.00	100.0 %	1669	1669
10/5 (Gyratory East)	3.50	8.00	N	Arm 11 Right	20.00	100.0 %	1646	1646
11/1	3.50	0.00	Y	Arm 12 Ahead	Inf	97.9 %	1960	1960
				Arm 21 Left	12.50	2.1 %		
11/2	4.00	0.00	N	Arm 12 Ahead	Inf	100.0 %	2155	2155
11/3	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
12/1 (Gyratory West)	4.00	0.00	Y	Arm 22 Left	37.50	100.0 %	1938	1938
12/2 (Gyratory West)	3.50	0.00	N	Arm 13 Right	32.50	100.0 %	2012	2012
12/3 (Gyratory West)	3.50	0.00	N	Arm 13 Right	30.00	100.0 %	2005	2005
13/1	3.75	0.00	Y	Arm 23 Left	17.50	100.0 %	1833	1833
13/2	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/3	3.75	0.00	N	Arm 14 Ahead	Inf	100.0 %	2130	2130
13/4	3.50	0.00	N	Arm 14 Ahead	Inf	100.0 %	2105	2105
14/1 (Gyratory West)	3.75	0.00	Y	Arm 24 Ahead	Inf	100.0 %	1990	1990

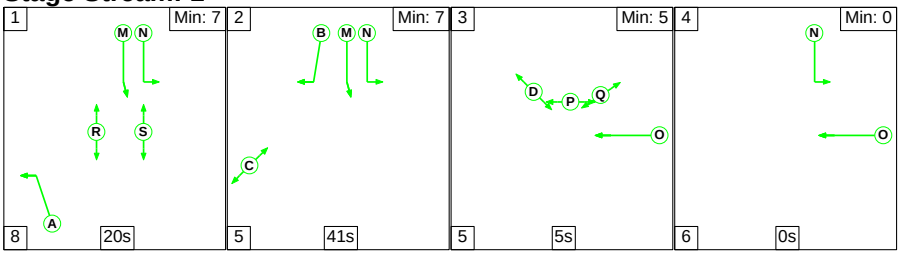
Full Input Data And Results

14/2 (Gyratory West)	3.50	0.00	N	Arm 15 Right Arm 24 Ahead	20.00 Inf	34.0 % 66.0 %	2053	2053
14/3 (Gyratory West)	3.75	0.00	N	Arm 15 Right	20.00	100.0 %	1981	1981
15/1	3.75	0.00	Y	Arm 16 Ahead	Inf	100.0 %	1990	1990
15/2	3.50	0.00	N	Arm 16 Ahead Arm 17 Right	Inf 50.00	81.3 % 18.7 %	2093	2093
16/1 (Gyratory North)	3.50	0.00	Y	Arm 9 Right	30.00	100.0 %	1871	1871
16/2 (Gyratory North)	3.50	0.00	N	Arm 9 Right	20.00	100.0 %	1958	1958
17/1	Infinite Saturation Flow						Inf	Inf
18/1	Infinite Saturation Flow						Inf	Inf
19/1	Infinite Saturation Flow						Inf	Inf
20/1	Infinite Saturation Flow						Inf	Inf
20/2	Infinite Saturation Flow						Inf	Inf
21/1	Infinite Saturation Flow						Inf	Inf
22/1	Infinite Saturation Flow						Inf	Inf
23/1	Infinite Saturation Flow						Inf	Inf
24/1 (A61 Old Mill Lane N/B)	3.50	0.00	Y	Arm 25 Ahead	Inf	100.0 %	1965	1965
24/2 (A61 Old Mill Lane N/B)	3.50	0.00	N	Arm 25 Ahead	Inf	100.0 %	2105	2105
25/1	Infinite Saturation Flow						Inf	Inf
25/2	Infinite Saturation Flow						Inf	Inf

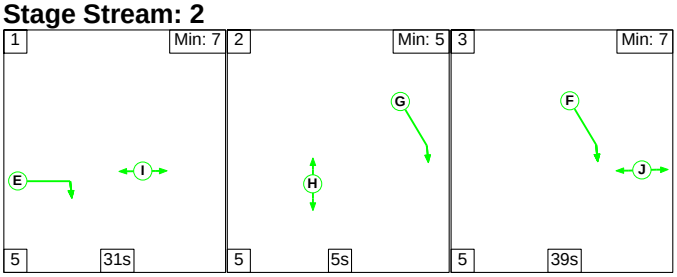
Scenario 1: 'Existing Saturday Peak' (FG1: 'Existing Saturday Peak', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

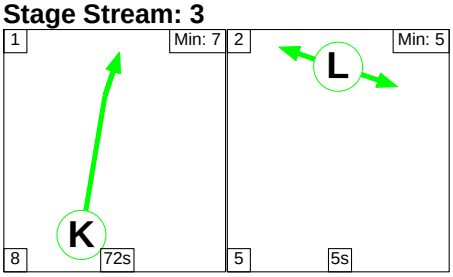
Stage Stream: 1



Stage Stream: 2

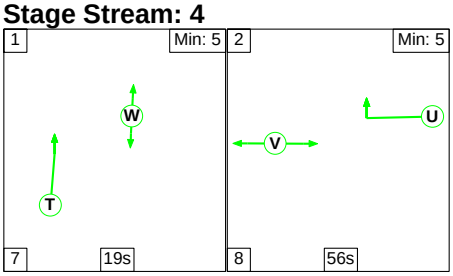


Stage Stream: 3



Full Input Data And Results

Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2	3	4
Duration	20	41	5	0
Change Point	30	58	14	24

Stage Stream: 2

Stage	1	2	3
Duration	31	5	39
Change Point	2	38	48

Stage Stream: 3

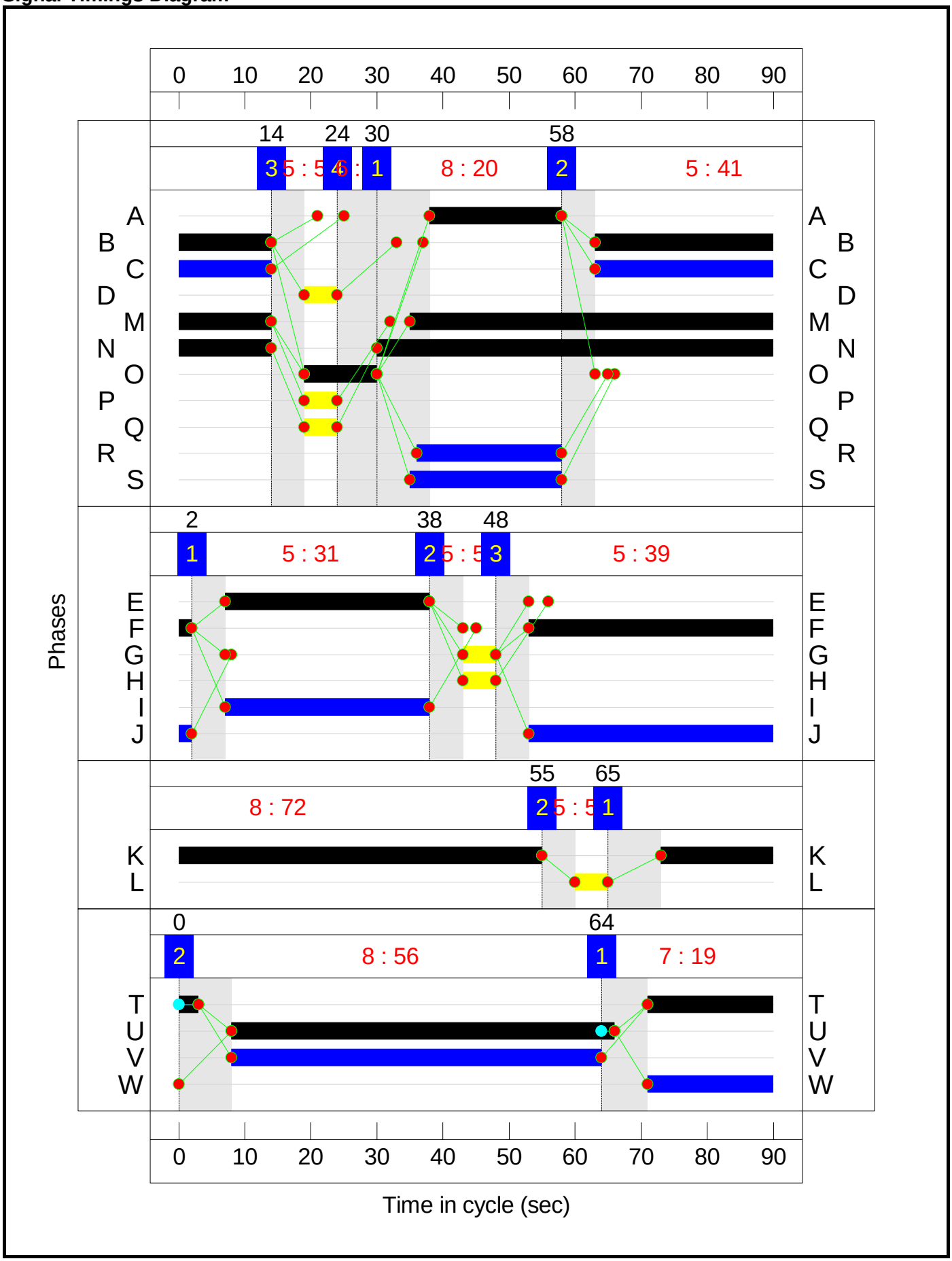
Stage	1	2
Duration	72	5
Change Point	65	55

Stage Stream: 4

Stage	1	2
Duration	19	56
Change Point	64	0

Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A61 Harborough Hill Road Gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.7%**
Twibell Street/Harborough Hill Road Gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.7%**
1/1	Twibell Street Left	O	N/A	N/A	-		-	-	-	35	1948	235	14.9%
2/1	Left	O	N/A	N/A	-		-	-	-	91	1787	649	14.0%
2/2	Left	O	N/A	N/A	-		-	-	-	92	1912	542	17.0%
2/3	Ahead	U	1	N/A	O		1	11	-	62	1965	262	23.7%
2/4	Ahead	U	1	N/A	O		1	11	-	203	2105	281	72.3%
3/1	Left	U	1	N/A	A		1	20	-	90	1960	457	19.7%
3/2	Left	U	1	N/A	A		1	20	-	413	2097	489	84.4%
3/3	Left	U	1	N/A	A		1	20	-	412	2058	480	85.8%
4/1	Left	O	N/A	N/A	-		-	-	-	22	1775	485	4.5%
5/1	Ahead	U	4	N/A	T		1	22	-	440	1915	489	89.9%
5/2	Ahead	U	4	N/A	T		1	22	-	440	2055	525	83.8%
6/1	Canal Way Left	O	N/A	N/A	-		-	-	-	426	1786	684	62.3%
6/2	Canal Way Left	O	N/A	N/A	-		-	-	-	425	2105	571	74.4%
7/1	PC World Egress Right	O	N/A	N/A	-		-	-	-	114	1856	467	24.4%
8/1	A61 Old Mill Lane S/B Ahead	U	2	N/A	G		1	5	-	46	1990	133	34.7%
8/2+8/3	A61 Old Mill Lane S/B Ahead	U	2	N/A	F		1	39	-	1141	2105:2055	1205	94.7%
9/1	Ahead Left	U	N/A	N/A	-		-	-	-	767	1956	1956	39.2%
9/2	Ahead	U	N/A	N/A	-		-	-	-	484	2105	2105	23.0%
9/3	Ahead	U	N/A	N/A	-		-	-	-	586	2055	2055	28.5%
9/4	Ahead	U	N/A	N/A	-		-	-	-	181	2005	2005	9.0%
10/2+10/1	Gyratory East Left Ahead	U	1	N/A	M N		1	69:74	-	743	1604:1584	1372	54.2%
10/3	Gyratory East Ahead	U	1	N/A	M		1	69	-	489	1769	1376	35.5%
10/4	Gyratory East Right	U	1	N/A	B		1	41	-	595	1669	779	76.4%
10/5	Gyratory East Right	U	1	N/A	B		1	41	-	192	1646	768	25.0%
11/1	Ahead Left	U	N/A	N/A	-		-	-	-	747	1961	1961	38.1%
11/2	Ahead	U	N/A	N/A	-		-	-	-	738	2155	2155	34.2%

Full Input Data And Results

11/3	Ahead	U	N/A	N/A	-		-	-	-	482	2105	2105	22.9%
12/1	Gyratory West Left	U	N/A	N/A	-		-	-	-	742	1938	1938	38.3%
12/2	Gyratory West Right	U	4	N/A	U		1	58	-	748	2012	1319	56.7%
12/3	Gyratory West Right	U	4	N/A	U		1	58	-	486	2005	1314	37.0%
13/1	Left	U	N/A	N/A	-		-	-	-	816	1833	1833	44.5%
13/2	Ahead	U	N/A	N/A	-		-	-	-	372	1965	1965	18.9%
13/3	Ahead	U	N/A	N/A	-		-	-	-	801	2130	2130	37.6%
13/4	Ahead	U	N/A	N/A	-		-	-	-	125	2105	2105	5.9%
14/1	Gyratory West Ahead	U	N/A	N/A	-		-	-	-	575	1990	1990	28.9%
14/2	Gyratory West Right Ahead	U	N/A	N/A	-		-	-	-	1024	2064	2064	49.6%
14/3	Gyratory West Right	U	N/A	N/A	-		-	-	-	550	1981	1981	27.8%
15/1	Ahead	U	N/A	N/A	-		-	-	-	270	1990	1990	13.6%
15/2	Ahead Right	U	N/A	N/A	-		-	-	-	550	2093	2093	26.3%
16/1	Gyratory North Right	U	2	N/A	E		1	31	-	328	1871	665	49.3%
16/2	Gyratory North Right	U	2	N/A	E		1	31	-	503	1958	696	72.3%
17/1		U	N/A	N/A	-		-	-	-	103	Inf	Inf	0.0%
18/1		U	N/A	N/A	-		-	-	-	34	Inf	Inf	0.0%
19/1		U	N/A	N/A	-		-	-	-	444	Inf	Inf	0.0%
20/1		U	N/A	N/A	-		-	-	-	390	Inf	Inf	0.0%
20/2		U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
21/1		U	N/A	N/A	-		-	-	-	13	Inf	Inf	0.0%
22/1		U	N/A	N/A	-		-	-	-	742	Inf	Inf	0.0%
23/1		U	N/A	N/A	-		-	-	-	816	Inf	Inf	0.0%
24/1	A61 Old Mill Lane N/B Ahead	U	3	N/A	K		1	72	-	575	1965	1594	36.1%
24/2	A61 Old Mill Lane N/B Ahead	U	3	N/A	K		1	72	-	754	2105	1707	44.2%
25/1		U	N/A	N/A	-		-	-	-	575	Inf	Inf	0.0%
25/2		U	N/A	N/A	-		-	-	-	754	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A61 Harborough Hill Road Gyratory	**-**	**-**	**1164**	**41**	**0**	**39.4**	**33.2**	**0.0**	**72.6**	**-**	**-**	**-**	**-**
Twibell Street/Harborough Hill Road Gyratory	**-**	**-**	**1164**	**41**	**0**	**39.4**	**33.2**	**0.0**	**72.6**	**-**	**-**	**-**	**-**
1/1	35	35	35	0	0	0.1	0.1	-	0.2	20.8	0.4	0.1	0.5
2/1	91	91	71	20	0	0.0	0.1	-	0.1	3.2	0.0	0.1	0.1
2/2	92	92	72	20	0	0.0	0.1	-	0.1	4.0	0.1	0.1	0.2
2/3	62	62	-	-	-	0.6	0.2	-	0.8	43.9	1.4	0.2	1.5
2/4	203	203	-	-	-	2.1	1.3	-	3.4	59.9	4.8	1.3	6.1
3/1	90	90	-	-	-	0.7	0.1	-	0.8	32.6	1.8	0.1	1.9
3/2	413	413	-	-	-	3.8	2.5	-	6.3	55.1	9.8	2.5	12.3
3/3	412	412	-	-	-	3.8	2.8	-	6.6	57.5	9.8	2.8	12.6
4/1	22	22	22	0	0	0.0	0.0	-	0.0	5.6	0.1	0.0	0.1
5/1	440	440	-	-	-	4.0	3.9	-	7.8	63.9	10.5	3.9	14.4
5/2	440	440	-	-	-	3.9	2.4	-	6.3	51.7	10.4	2.4	12.8
6/1	426	426	426	0	0	0.1	0.8	-	0.9	7.6	2.6	0.8	3.4
6/2	425	425	425	0	0	0.6	1.4	-	2.0	16.9	6.8	1.4	8.3
7/1	114	114	114	0	0	0.0	0.2	-	0.2	5.1	0.0	0.2	0.2
8/1	46	46	-	-	-	0.5	0.3	-	0.8	60.8	1.1	0.3	1.3
8/2+8/3	1141	1141	-	-	-	6.6	7.3	-	13.8	43.7	19.7	7.3	26.9
9/1	767	767	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
9/2	484	484	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
9/3	586	586	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
9/4	181	181	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
10/2+10/1	743	743	-	-	-	0.9	0.6	-	1.5	7.2	7.2	0.6	7.7
10/3	489	489	-	-	-	0.9	0.3	-	1.2	8.7	6.7	0.3	6.9
10/4	595	595	-	-	-	3.4	1.6	-	5.0	30.4	13.0	1.6	14.6
10/5	192	192	-	-	-	0.2	0.2	-	0.4	7.6	0.8	0.2	0.9
11/1	747	747	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
11/2	738	738	-	-	-	0.0	0.3	-	0.3	1.3	0.0	0.3	0.3
11/3	482	482	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
12/1	742	742	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
12/2	748	748	-	-	-	1.1	0.7	-	1.8	8.6	5.3	0.7	5.9

Full Input Data And Results

12/3	486	486	-	-	-	0.4	0.3	-	0.7	5.3	1.4	0.3	1.7
13/1	816	816	-	-	-	0.0	0.4	-	0.4	1.8	1.1	0.4	1.5
13/2	372	372	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
13/3	801	801	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
13/4	125	125	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
14/1	575	575	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
14/2	1024	1024	-	-	-	0.0	0.5	-	0.5	1.7	0.0	0.5	0.5
14/3	550	550	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
15/1	270	270	-	-	-	0.0	0.1	-	0.1	1.0	0.0	0.1	0.1
15/2	550	550	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
16/1	328	328	-	-	-	1.9	0.5	-	2.4	26.0	7.5	0.5	8.0
16/2	503	503	-	-	-	3.0	1.3	-	4.2	30.4	9.5	1.3	10.8
17/1	103	103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/1	34	34	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
19/1	444	444	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/1	390	390	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/2	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
21/1	13	13	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
22/1	742	742	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
23/1	816	816	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/1	575	575	-	-	-	0.3	0.3	-	0.6	3.9	4.4	0.3	4.7
24/2	754	754	-	-	-	0.5	0.4	-	0.9	4.4	6.5	0.4	6.9
25/1	575	575	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
25/2	754	754	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

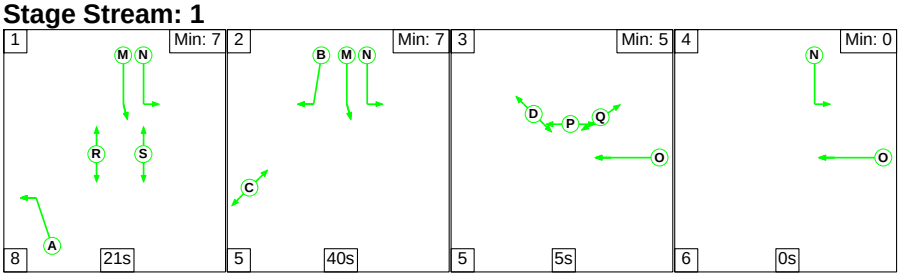
C1	Stream: 1	PRC for Signalled Lanes (%):	4.9	Total Delay for Signalled Lanes (pcuHr):	25.94	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-5.2	Total Delay for Signalled Lanes (pcuHr):	21.23	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	103.8	Total Delay for Signalled Lanes (pcuHr):	1.55	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	0.1	Total Delay for Signalled Lanes (pcuHr):	16.64	Cycle Time (s):	90
		PRC Over All Lanes (%):	-5.2	Total Delay Over All Lanes(pcuHr):	72.58		

Full Input Data And Results

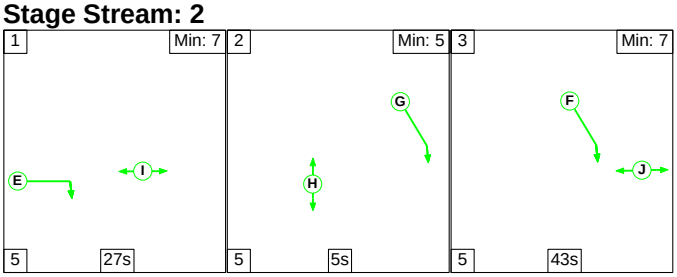
Scenario 2: '2020 Base Flows Sat Peak' (FG2: 'Saturday Peak: 2020 Base Flows', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

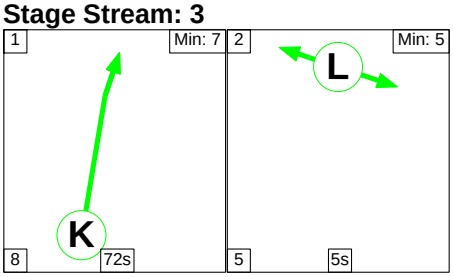
Stage Stream: 1



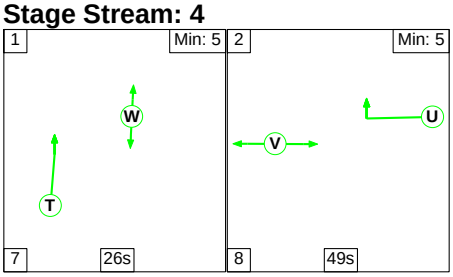
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2	3	4
Duration	21	40	5	0
Change Point	23	52	7	17

Stage Stream: 2

Stage	1	2	3
Duration	27	5	43
Change Point	7	39	49

Stage Stream: 3

Stage	1	2
Duration	72	5
Change Point	72	62

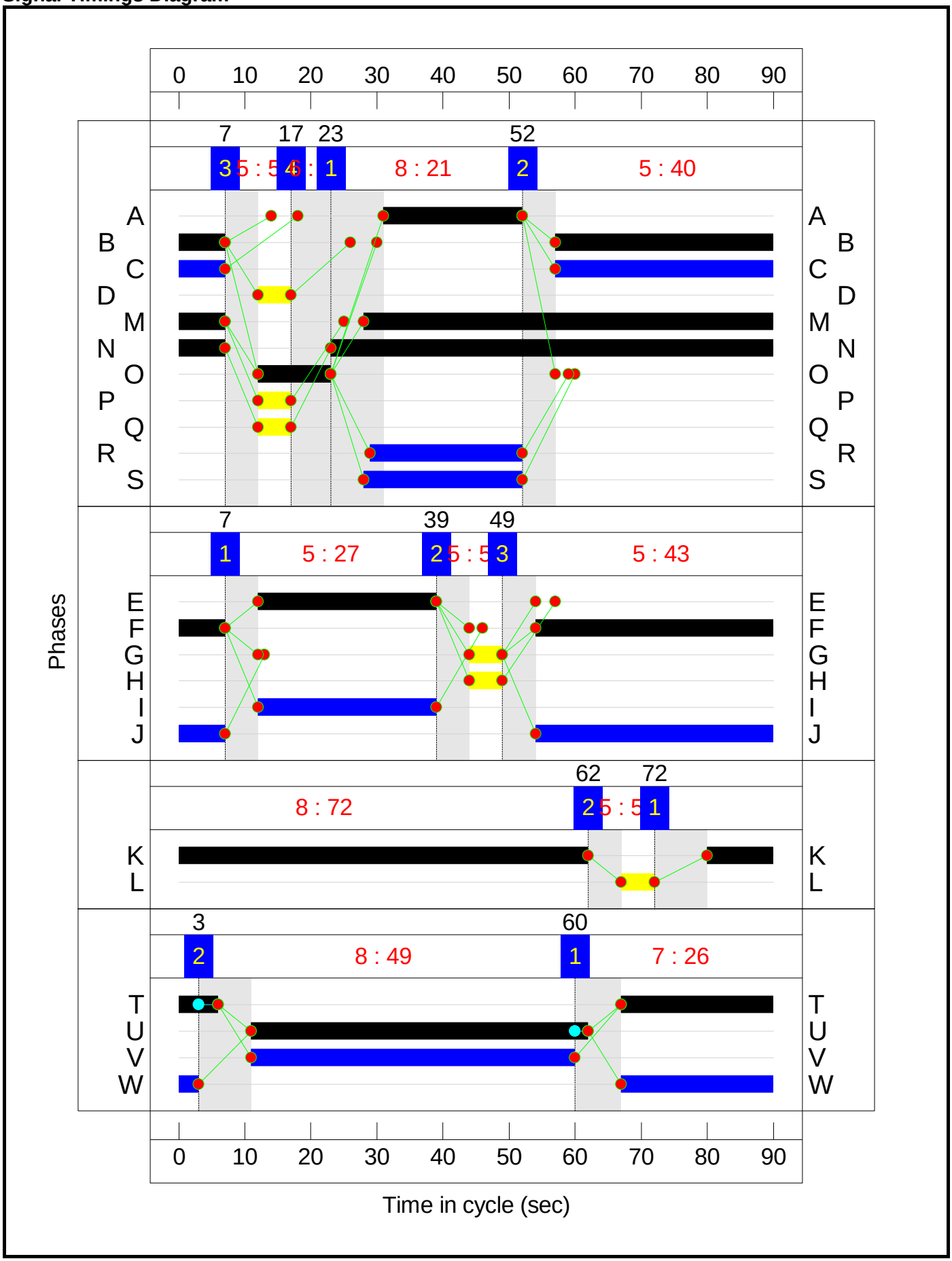
Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	26	49
Change Point	60	3

Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A61 Harborough Hill Road Gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.6%**
Twibell Street/Harborough Hill Road Gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.6%**
1/1	Twibell Street Left	O	N/A	N/A	-		-	-	-	100	1948	184	54.2%
2/1	Left	O	N/A	N/A	-		-	-	-	114	1787	645	17.7%
2/2	Left	O	N/A	N/A	-		-	-	-	115	1912	534	21.5%
2/3	Ahead	U	1	N/A	O		1	11	-	84	1965	262	32.1%
2/4	Ahead	U	1	N/A	O		1	11	-	250	2105	281	89.1%
3/1	Left	U	1	N/A	A		1	21	-	95	1960	479	19.8%
3/2	Left	U	1	N/A	A		1	21	-	447	2097	513	87.2%
3/3	Left	U	1	N/A	A		1	21	-	447	2058	503	88.9%
4/1	Left	O	N/A	N/A	-		-	-	-	22	1775	436	5.1%
5/1	Ahead	U	4	N/A	T		1	29	-	472	1915	638	73.9%
5/2	Ahead	U	4	N/A	T		1	29	-	472	2055	685	68.9%
6/1	Canal Way Left	O	N/A	N/A	-		-	-	-	426	1786	630	67.6%
6/2	Canal Way Left	O	N/A	N/A	-		-	-	-	426	2105	512	83.2%
7/1	PC World Egress Right	O	N/A	N/A	-		-	-	-	121	1856	454	26.6%
8/1	A61 Old Mill Lane S/B Ahead	U	2	N/A	G		1	5	-	47	1990	133	35.4%
8/2+8/3	A61 Old Mill Lane S/B Ahead	U	2	N/A	F		1	43	-	1252	2105:2055	1270	98.6%
9/1	Ahead Left	U	N/A	N/A	-		-	-	-	950	1945	1945	48.8%
9/2	Ahead	U	N/A	N/A	-		-	-	-	494	2105	2105	23.5%
9/3	Ahead	U	N/A	N/A	-		-	-	-	600	2055	2055	29.2%
9/4	Ahead	U	N/A	N/A	-		-	-	-	181	2005	2005	9.0%
10/2+10/1	Gyratory East Left Ahead	U	1	N/A	M N		1	69:74	-	881	1604:1584	1368	64.4%
10/3	Gyratory East Ahead	U	1	N/A	M		1	69	-	509	1769	1376	37.0%
10/4	Gyratory East Right	U	1	N/A	B		1	40	-	627	1669	760	82.5%
10/5	Gyratory East Right	U	1	N/A	B		1	40	-	212	1646	750	28.3%
11/1	Ahead Left	U	N/A	N/A	-		-	-	-	806	1960	1960	41.1%
11/2	Ahead	U	N/A	N/A	-		-	-	-	816	2155	2155	37.9%

Full Input Data And Results

11/3	Ahead	U	N/A	N/A	-		-	-	-	540	2105	2105	25.7%
12/1	Gyratory West Left	U	N/A	N/A	-		-	-	-	797	1938	1938	41.1%
12/2	Gyratory West Right	U	4	N/A	U		1	51	-	826	2012	1162	71.1%
12/3	Gyratory West Right	U	4	N/A	U		1	51	-	544	2005	1158	47.0%
13/1	Left	U	N/A	N/A	-		-	-	-	836	1833	1833	45.6%
13/2	Ahead	U	N/A	N/A	-		-	-	-	462	1965	1965	23.5%
13/3	Ahead	U	N/A	N/A	-		-	-	-	890	2130	2130	41.8%
13/4	Ahead	U	N/A	N/A	-		-	-	-	126	2105	2105	6.0%
14/1	Gyratory West Ahead	U	N/A	N/A	-		-	-	-	665	1990	1990	33.4%
14/2	Gyratory West Right Ahead	U	N/A	N/A	-		-	-	-	1113	2056	2056	54.1%
14/3	Gyratory West Right	U	N/A	N/A	-		-	-	-	552	1981	1981	27.9%
15/1	Ahead	U	N/A	N/A	-		-	-	-	356	1990	1990	17.9%
15/2	Ahead Right	U	N/A	N/A	-		-	-	-	552	2093	2093	26.4%
16/1	Gyratory North Right	U	2	N/A	E		1	27	-	421	1871	582	72.3%
16/2	Gyratory North Right	U	2	N/A	E		1	27	-	505	1958	609	82.9%
17/1		U	N/A	N/A	-		-	-	-	103	Inf	Inf	0.0%
18/1		U	N/A	N/A	-		-	-	-	96	Inf	Inf	0.0%
19/1		U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
20/1		U	N/A	N/A	-		-	-	-	431	Inf	Inf	0.0%
20/2		U	N/A	N/A	-		-	-	-	624	Inf	Inf	0.0%
21/1		U	N/A	N/A	-		-	-	-	17	Inf	Inf	0.0%
22/1		U	N/A	N/A	-		-	-	-	797	Inf	Inf	0.0%
23/1		U	N/A	N/A	-		-	-	-	836	Inf	Inf	0.0%
24/1	A61 Old Mill Lane N/B Ahead	U	3	N/A	K		1	72	-	665	1965	1594	41.7%
24/2	A61 Old Mill Lane N/B Ahead	U	3	N/A	K		1	72	-	757	2105	1707	44.3%
25/1		U	N/A	N/A	-		-	-	-	665	Inf	Inf	0.0%
25/2		U	N/A	N/A	-		-	-	-	757	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A61 Harborough Hill Road Gyratory	**-**	**-**	**1273**	**51**	**0**	**43.9**	**45.4**	**0.0**	**89.3**	**-**	**-**	**-**	**-**
Twibell Street/Harborough Hill Road Gyratory	**-**	**-**	**1273**	**51**	**0**	**43.9**	**45.4**	**0.0**	**89.3**	**-**	**-**	**-**	**-**
1/1	100	100	100	0	0	0.6	0.6	-	1.2	44.3	2.1	0.6	2.7
2/1	114	114	89	25	0	0.0	0.1	-	0.1	3.4	0.0	0.1	0.1
2/2	115	115	89	26	0	0.0	0.1	-	0.1	4.4	0.2	0.1	0.3
2/3	84	84	-	-	-	0.8	0.2	-	1.1	45.4	1.9	0.2	2.1
2/4	250	250	-	-	-	2.7	3.3	-	6.0	86.5	6.1	3.3	9.5
3/1	95	95	-	-	-	0.7	0.1	-	0.8	31.7	1.9	0.1	2.0
3/2	447	447	-	-	-	4.1	3.1	-	7.2	57.7	10.7	3.1	13.8
3/3	447	447	-	-	-	4.1	3.5	-	7.6	61.3	10.7	3.5	14.2
4/1	22	22	22	0	0	0.0	0.0	-	0.0	6.3	0.1	0.0	0.1
5/1	472	472	-	-	-	3.5	1.4	-	4.9	37.2	10.4	1.4	11.8
5/2	472	472	-	-	-	3.4	1.1	-	4.5	34.3	10.1	1.1	11.2
6/1	426	426	426	0	0	0.1	1.0	-	1.2	9.8	2.7	1.0	3.8
6/2	426	426	426	0	0	0.8	2.3	-	3.2	26.8	7.9	2.3	10.3
7/1	121	121	121	0	0	0.0	0.2	-	0.2	5.4	0.0	0.2	0.2
8/1	47	47	-	-	-	0.5	0.3	-	0.8	61.0	1.1	0.3	1.4
8/2+8/3	1252	1252	-	-	-	6.8	13.8	-	20.6	59.3	24.7	13.8	38.5
9/1	950	950	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
9/2	494	494	-	-	-	0.0	0.2	-	0.2	1.1	0.0	0.2	0.2
9/3	600	600	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
9/4	181	181	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
10/2+10/1	881	881	-	-	-	0.6	0.9	-	1.5	6.1	9.8	0.9	10.7
10/3	509	509	-	-	-	0.5	0.3	-	0.8	5.4	6.9	0.3	7.2
10/4	627	627	-	-	-	3.8	2.3	-	6.0	34.7	14.0	2.3	16.3
10/5	212	212	-	-	-	0.7	0.2	-	0.9	14.9	2.0	0.2	2.2
11/1	806	806	-	-	-	0.0	0.3	-	0.3	1.6	0.0	0.3	0.3
11/2	816	816	-	-	-	0.0	0.3	-	0.3	1.3	0.0	0.3	0.3
11/3	540	540	-	-	-	0.0	0.2	-	0.2	1.1	0.0	0.2	0.2
12/1	797	797	-	-	-	0.0	0.3	-	0.3	1.6	0.0	0.3	0.3
12/2	826	826	-	-	-	1.5	1.2	-	2.7	11.9	5.7	1.2	7.0

Full Input Data And Results

12/3	544	544	-	-	-	0.4	0.4	-	0.9	5.7	1.2	0.4	1.6
13/1	836	836	-	-	-	0.0	0.4	-	0.4	1.8	1.6	0.4	2.0
13/2	462	462	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
13/3	890	890	-	-	-	0.0	0.4	-	0.4	1.5	0.0	0.4	0.4
13/4	126	126	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
14/1	665	665	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
14/2	1113	1113	-	-	-	0.0	0.6	-	0.6	1.9	0.0	0.6	0.6
14/3	552	552	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
15/1	356	356	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
15/2	552	552	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
16/1	421	421	-	-	-	3.7	1.3	-	5.0	42.5	10.3	1.3	11.6
16/2	505	505	-	-	-	3.3	2.3	-	5.6	39.8	11.2	2.3	13.5
17/1	103	103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/1	96	96	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
19/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/1	431	431	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/2	624	624	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
21/1	17	17	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
22/1	797	797	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
23/1	836	836	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/1	665	665	-	-	-	0.6	0.4	-	1.0	5.4	6.7	0.4	7.0
24/2	757	757	-	-	-	0.7	0.4	-	1.1	5.3	8.3	0.4	8.7
25/1	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
25/2	757	757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

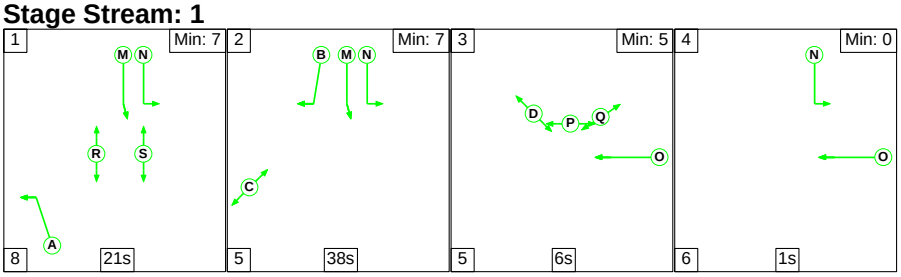
C1	Stream: 1	PRC for Signalled Lanes (%):	1.0	Total Delay for Signalled Lanes (pcuHr):	31.85	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-9.6	Total Delay for Signalled Lanes (pcuHr):	31.98	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	103.0	Total Delay for Signalled Lanes (pcuHr):	2.12	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	21.7	Total Delay for Signalled Lanes (pcuHr):	12.97	Cycle Time (s):	90
		PRC Over All Lanes (%):	-9.6	Total Delay Over All Lanes(pcuHr):	89.30		

Full Input Data And Results

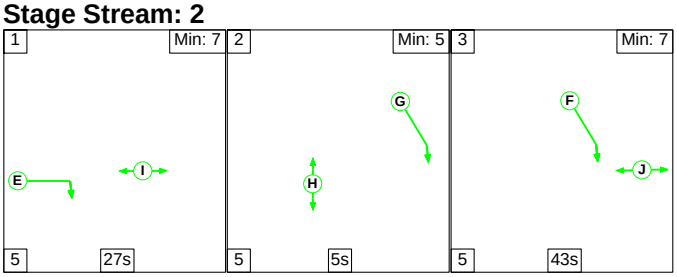
Scenario 3: '2020 Base plus Peel Centre Dev' (FG3: '2020 Base plus Peel Centre Dev', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

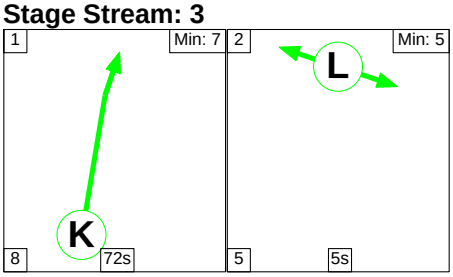
Stage Stream: 1



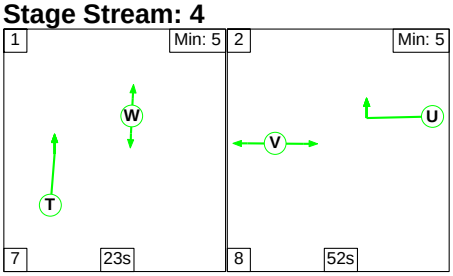
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2	3	4
Duration	21	38	6	1
Change Point	4	33	76	87

Stage Stream: 2

Stage	1	2	3
Duration	27	5	43
Change Point	11	43	53

Stage Stream: 3

Stage	1	2
Duration	72	5
Change Point	77	67

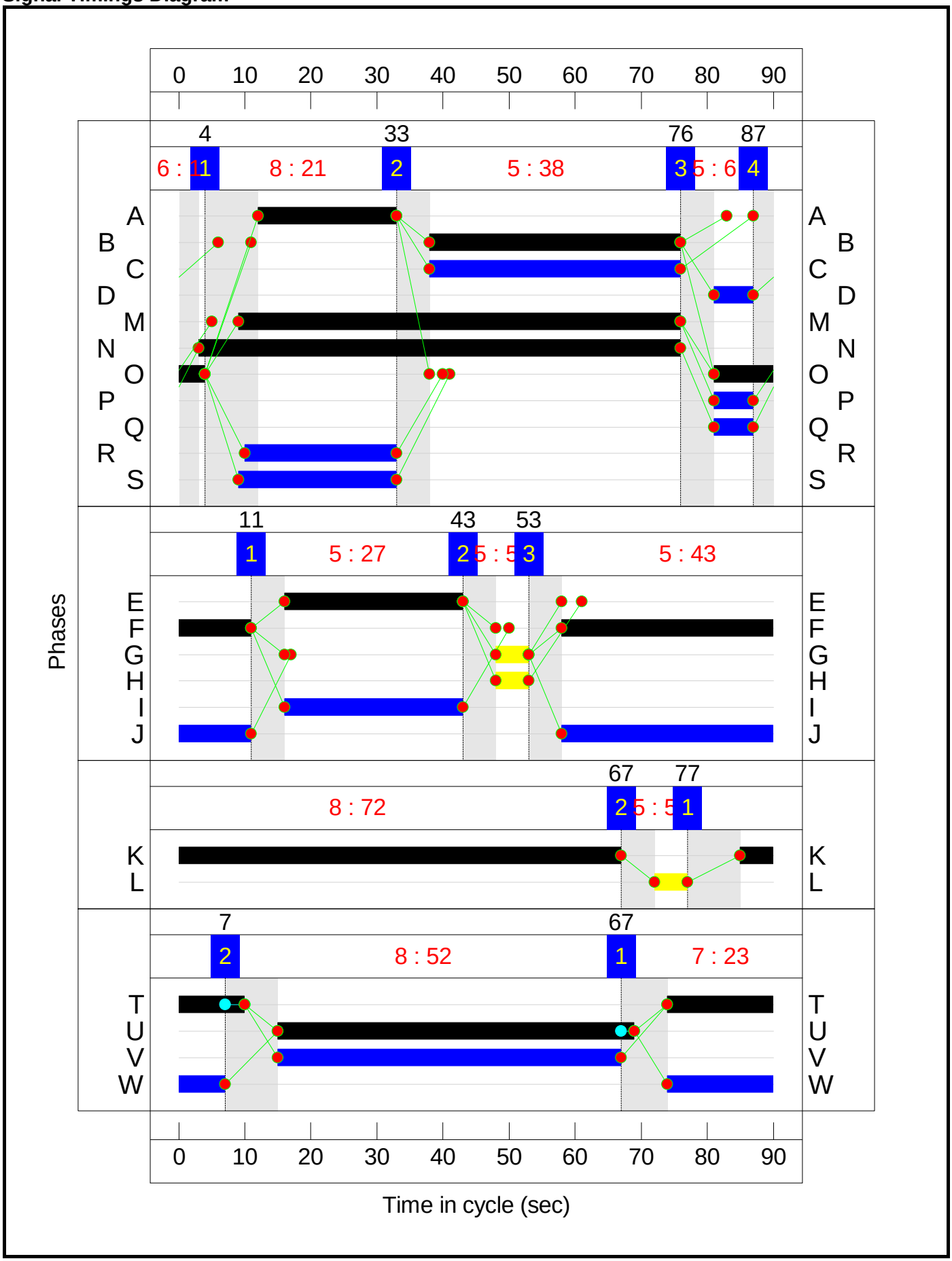
Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	23	52
Change Point	67	7

Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: A61 Harborough Hill Road Gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.4%**
Twibell Street/Harborough Hill Road Gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.4%**
1/1	Twibell Street Left	O	N/A	N/A	-		-	-	-	101	1948	165	61.4%
2/1	Left	O	N/A	N/A	-		-	-	-	128	1787	647	19.8%
2/2	Left	O	N/A	N/A	-		-	-	-	128	1912	538	23.8%
2/3	Ahead	U	1	N/A	O		1	13	-	97	1965	306	31.7%
2/4	Ahead	U	1	N/A	O		1	13	-	277	2105	327	84.6%
3/1	Left	U	1	N/A	A		1	21	-	94	1960	479	19.6%
3/2	Left	U	1	N/A	A		1	21	-	453	2097	513	88.4%
3/3	Left	U	1	N/A	A		1	21	-	453	2058	503	90.0%
4/1	Left	O	N/A	N/A	-		-	-	-	22	1775	418	5.3%
5/1	Ahead	U	4	N/A	T		1	26	-	476	1915	574	82.9%
5/2	Ahead	U	4	N/A	T		1	26	-	476	2055	617	77.2%
6/1	Canal Way Left	O	N/A	N/A	-		-	-	-	427	1786	613	69.7%
6/2	Canal Way Left	O	N/A	N/A	-		-	-	-	426	2105	499	85.3%
7/1	PC World Egress Right	O	N/A	N/A	-		-	-	-	126	1856	450	28.0%
8/1	A61 Old Mill Lane S/B Ahead	U	2	N/A	G		1	5	-	47	1990	133	35.4%
8/2+8/3	A61 Old Mill Lane S/B Ahead	U	2	N/A	F		1	43	-	1276	2105:2055	1258	101.4%
9/1	Ahead Left	U	N/A	N/A	-		-	-	-	1018	1947	1947	51.9%
9/2	Ahead	U	N/A	N/A	-		-	-	-	489	2105	2105	23.1%
9/3	Ahead	U	N/A	N/A	-		-	-	-	594	2055	2055	28.7%
9/4	Ahead	U	N/A	N/A	-		-	-	-	181	2005	2005	8.9%
10/2+10/1	Gyratory East Left Ahead	U	1	N/A	M N		1	67:73	-	950	1604:1584	1344	70.1%
10/3	Gyratory East Ahead	U	1	N/A	M		1	67	-	504	1769	1337	37.5%
10/4	Gyratory East Right	U	1	N/A	B		1	38	-	621	1669	723	85.2%
10/5	Gyratory East Right	U	1	N/A	B		1	38	-	212	1646	713	29.4%
11/1	Ahead Left	U	N/A	N/A	-		-	-	-	812	1960	1960	41.2%
11/2	Ahead	U	N/A	N/A	-		-	-	-	840	2155	2155	38.9%

Full Input Data And Results

11/3	Ahead	U	N/A	N/A	-		-	-	-	555	2105	2105	26.4%
12/1	Gyratory West Left	U	N/A	N/A	-		-	-	-	803	1938	1938	41.2%
12/2	Gyratory West Right	U	4	N/A	U		1	54	-	850	2012	1230	68.9%
12/3	Gyratory West Right	U	4	N/A	U		1	54	-	559	2005	1225	45.6%
13/1	Left	U	N/A	N/A	-		-	-	-	845	1833	1833	46.0%
13/2	Ahead	U	N/A	N/A	-		-	-	-	481	1965	1965	24.5%
13/3	Ahead	U	N/A	N/A	-		-	-	-	910	2130	2130	42.7%
13/4	Ahead	U	N/A	N/A	-		-	-	-	125	2105	2105	5.9%
14/1	Gyratory West Ahead	U	N/A	N/A	-		-	-	-	684	1990	1990	34.4%
14/2	Gyratory West Right Ahead	U	N/A	N/A	-		-	-	-	1134	2053	2053	55.2%
14/3	Gyratory West Right	U	N/A	N/A	-		-	-	-	551	1981	1981	27.8%
15/1	Ahead	U	N/A	N/A	-		-	-	-	385	1990	1990	19.3%
15/2	Ahead Right	U	N/A	N/A	-		-	-	-	551	2093	2093	26.3%
16/1	Gyratory North Right	U	2	N/A	E		1	27	-	455	1871	582	78.2%
16/2	Gyratory North Right	U	2	N/A	E		1	27	-	504	1958	609	82.7%
17/1		U	N/A	N/A	-		-	-	-	103	Inf	Inf	0.0%
18/1		U	N/A	N/A	-		-	-	-	96	Inf	Inf	0.0%
19/1		U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%
20/1		U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
20/2		U	N/A	N/A	-		-	-	-	632	Inf	Inf	0.0%
21/1		U	N/A	N/A	-		-	-	-	17	Inf	Inf	0.0%
22/1		U	N/A	N/A	-		-	-	-	803	Inf	Inf	0.0%
23/1		U	N/A	N/A	-		-	-	-	845	Inf	Inf	0.0%
24/1	A61 Old Mill Lane N/B Ahead	U	3	N/A	K		1	72	-	684	1965	1594	42.9%
24/2	A61 Old Mill Lane N/B Ahead	U	3	N/A	K		1	72	-	749	2105	1707	43.9%
25/1		U	N/A	N/A	-		-	-	-	684	Inf	Inf	0.0%
25/2		U	N/A	N/A	-		-	-	-	749	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: A61 Harborough Hill Road Gyratory	**-**	**-**	**1295**	**63**	**0**	**46.6**	**57.7**	**0.0**	**104.3**	**-**	**-**	**-**	**-**
Twibell Street/Harborough Hill Road Gyratory	**-**	**-**	**1295**	**63**	**0**	**46.6**	**57.7**	**0.0**	**104.3**	**-**	**-**	**-**	**-**
1/1	101	101	101	0	0	0.7	0.8	-	1.5	52.7	2.2	0.8	3.0
2/1	128	128	97	31	0	0.0	0.1	-	0.1	3.5	0.0	0.1	0.1
2/2	128	128	97	31	0	0.0	0.2	-	0.2	4.7	0.3	0.2	0.4
2/3	97	97	-	-	-	0.9	0.2	-	1.1	42.4	2.1	0.2	2.4
2/4	277	277	-	-	-	2.8	2.5	-	5.3	69.4	6.7	2.5	9.2
3/1	94	94	-	-	-	0.7	0.1	-	0.8	31.7	1.9	0.1	2.0
3/2	453	453	-	-	-	4.1	3.4	-	7.5	59.9	10.8	3.4	14.2
3/3	453	453	-	-	-	4.1	3.9	-	8.1	64.0	10.9	3.9	14.9
4/1	22	22	22	0	0	0.0	0.0	-	0.0	6.7	0.1	0.0	0.1
5/1	476	476	-	-	-	3.9	2.3	-	6.2	46.8	11.0	2.3	13.3
5/2	476	476	-	-	-	3.8	1.7	-	5.4	41.2	10.7	1.7	12.4
6/1	427	427	427	0	0	0.2	1.1	-	1.3	11.1	3.0	1.1	4.1
6/2	426	426	426	0	0	0.9	2.7	-	3.6	30.8	9.0	2.7	11.7
7/1	126	126	126	0	0	0.0	0.2	-	0.2	5.6	0.0	0.2	0.2
8/1	47	47	-	-	-	0.5	0.3	-	0.8	61.0	1.1	0.3	1.4
8/2+8/3	1276	1258	-	-	-	8.1	23.0	-	31.0	87.5	28.1	23.0	51.1
9/1	1010	1010	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
9/2	486	486	-	-	-	0.0	0.2	-	0.2	1.1	0.0	0.2	0.2
9/3	589	589	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
9/4	179	179	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
10/2+10/1	942	942	-	-	-	1.2	1.2	-	2.4	9.1	9.1	1.2	10.3
10/3	501	501	-	-	-	0.5	0.3	-	0.8	5.7	3.5	0.3	3.8
10/4	616	616	-	-	-	3.5	2.7	-	6.2	36.5	12.6	2.7	15.3
10/5	210	210	-	-	-	1.2	0.2	-	1.4	23.4	3.2	0.2	3.4
11/1	807	807	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
11/2	838	838	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
11/3	555	555	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
12/1	798	798	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
12/2	848	848	-	-	-	1.1	1.1	-	2.2	9.4	9.3	1.1	10.4

Full Input Data And Results

12/3	559	559	-	-	-	0.2	0.4	-	0.6	3.9	2.0	0.4	2.4
13/1	843	843	-	-	-	0.0	0.4	-	0.4	1.8	0.0	0.4	0.4
13/2	481	481	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
13/3	910	910	-	-	-	0.0	0.4	-	0.4	1.5	0.0	0.4	0.4
13/4	125	125	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
14/1	684	684	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
14/2	1134	1134	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
14/3	551	551	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
15/1	385	385	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
15/2	551	551	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
16/1	455	455	-	-	-	3.8	1.7	-	5.5	43.6	9.5	1.7	11.3
16/2	504	504	-	-	-	4.0	2.3	-	6.2	44.6	12.0	2.3	14.3
17/1	103	103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/1	96	96	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
19/1	632	632	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/1	439	439	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/2	629	629	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
21/1	17	17	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
22/1	798	798	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
23/1	843	843	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
24/1	684	684	-	-	-	0.2	0.4	-	0.5	2.8	1.5	0.4	1.9
24/2	749	749	-	-	-	0.2	0.4	-	0.5	2.6	1.5	0.4	1.9
25/1	684	684	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
25/2	749	749	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1	PRC for Signalled Lanes (%):	-0.1	Total Delay for Signalled Lanes (pcuHr):	33.69	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-12.7	Total Delay for Signalled Lanes (pcuHr):	43.58	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	105.2	Total Delay for Signalled Lanes (pcuHr):	1.07	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	8.6	Total Delay for Signalled Lanes (pcuHr):	14.47	Cycle Time (s):	90
		PRC Over All Lanes (%):	-12.7	Total Delay Over All Lanes(pcuHr):	104.27		