PARSONS BRINCKERHOFF

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FIVE MILE LANE IMPROVEMENT SCHEME: TRANSPORT ASSESSMENT

Vale of Glamorgan Council

3512646D-HHC

Final

Five Mile Lane Improvement Scheme: Transport Assessment

3512646D-HHC

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1 INTRODUCTION

1.1 Project Brief

1.1.1 Parsons Brinckerhoff (PB) has been commissioned by Welsh Government (WG) on behalf of the Vale of Glamorgan (VoG) to prepare a Transport Assessment (TA) in support of a full planning application for highway link improvements along the A4226, otherwise known as Five Mile Lane. The proposed highway improvements are designed to improve the access from the M4 corridor and Cardiff to St Athan and Cardiff Airport Enterprise Zones. WelTAG Stage One and Two Studies have been completed for the 'Links to St Athan and Cardiff Airport Enterprise Zones', which were commissioned by the WG. The WelTAG Stage Two study identified proposed highway improvements to Five Mile Lane to overcome congestion on Port Road and improve journey time and network resilience to St Athan and Cardiff Airport.

1.1.2 The scope of this report has been agreed with VoG and is included within **Appendix A** of this report. The report provides an assessment of the proposed highway improvements to Five Mile Lane, including Sycamore Cross, as outlined in the WelTAG Study. The TA will assess the impact on the highway and other modes, and the traffic shift associated with the proposed alterations to Five Mile Lane on the local network.

1.2 Project Overview

1.2.1 For the purposes of this TA, the 'study area' refers to the Five Mile Lane corridor from Sycamore Cross to Waycock Cross. **Figure 1** presents the study area. Five Mile Lane forms one of the routes to and from Cardiff, Cardiff Airport and St Athan. The purpose of this TA is to assess the impact associated with proposed alterations to Five Mile Lane.

1.2.2 The WG has identified the need for reducing congestion at Culverhouse Cross, as well as improving access and reliability to Cardiff Airport Enterprise Zone and St Athan. The proposed highway improvements are designed to reduce congestion on the A4050. The aim is to provide an alternative route to St Athan and Cardiff Airport Enterprise Zone and therefore improve network resilience and journey times. These improvements would be necessary for unlocking development potential at the enterprise zones and proposed future expansion of Cardiff Airport.

1.2.3 The content of the TA is in accordance with the Planning Policy Wales Technical Advice Note 18: Transport 2007 and previous guidance provided by the DfT 'Guidance on Transport Assessment' (2007). The TA is also based upon *Transport Assessment and Implementation: A Guide 2005*, by the Scottish Executive, and the IHT *Guidance on Traffic Impact Assessment 1994*, the latter of which states that:

> *"Developers should submit transport assessments to accompany planning applications for major developments. The precise scope and content of each assessment will depend upon the scale, travel intensity and characteristics of the proposal. In general, assessments should, as a minimum, provide information on the likely model split of journeys to and from the site, together with details of the measures proposed to improve access by public transport, walking and cycling, and reduce the number and impacts of motorised journeys associated with the proposal."*

1.3 Structure of Report

1.3.1 The remainder of this report is set out as follows:

- **Section 2** – summarises relevant National, Regional and Local policies and objectives

- **Section 3** – details the existing conditions of the base year local transport conditions
- **Section 4** – provides an analysis of collision data
- **Section 5** – presents the development proposals, including non-motorised users (NMU)
- **Section 6** – explains how the assessments will be conducted using appropriate models
- **Section 7** – details the operational performance of the local highway network before and after the proposed development
- **Section 8** – provides a summary, recommendations and conclusion

2 POLICY CONTEXT

2.1 Overview

2.1.1 This section provides a brief overview of all the relevant policy that will affect the transportation aspect of the development. These policies include national, regional, and local policies.

2.2 National Policy

<u>National Transport Plan (2015)</u>

2.2.1 The National Transport Plan is a draft transport plan based on the Wales Transport Strategy published in 2010. It explains in more detail how the policies and objectives in the Strategy will be delivered.

2.2.2 The National Transport Plan focuses on different key areas, with the following most relevant to this scheme:

- Economic growth
- Access to employment
- Sustainable travel and safety
- Access to services

<u>People, Places, Future: The Wales Spatial Plan (2008)</u>

2.2.3 The Wales Spatial Plan (WSP) encompasses the elements required to deliver sustainable development. A statutory plan, it does not form part of the development plan framework, but provides the context and informs the preparation of both Local Development Plan and National and Regional Transport Plan.

2.2.4 The WSP identifies three Strategic Opportunity Areas (SOA) within the 'Capital Network' of South East Wales that will provide the focus for major employment led development with potential regional benefits; St Athan is identified as an SOA site.

2.2.5 Paragraph 19.17 of the WSP recognises that "improved transport for all is central to making the Capital Region work and to the regeneration of the Valleys communities". Measures to alleviate congestion and investment to tackle transport bottlenecks have been identified as key for future economic growth.

<u>Wales Transport Strategy: One Wales – Connecting the Nation (2008)</u>

2.2.6 This document aims to "promote a sustainable development network to safeguard the environment and strengthen the economy and social life of Wales". The document is intended to feed into and inform national strategy and the Wales Spatial Plan. It sets out the outcomes and strategic priorities for the National Transport Plan and Regional Transport Plan.

2.2.7 The strategy identified different key points, with the following most relevant to this scheme:

- Integrate local public transport with any new developments

- Improve the efficient, reliable and sustainable movement of people around and within the new development

Wales Infrastructure Investment Plan

2.2.8 The WG is responsible for planning, constructing, and maintaining all of Wales' 1000 miles of Trunk Roads and 75 miles of Motorways. The Wales Infrastructure Investment Plan (WIIP) for Growth and Jobs "sets out the WG strategic investment priorities" until 2014/15.

2.2.9 The priorities relevant to the proposed development are:

- Economic growth – addressing urban congestion and improving access to key areas
- Improving inter-modal transport links
- Delivering more efficient and economical public services
- Improving the quality of the educational estate, particularly schools

Planning Policy Wales

2.2.10 Planning Policy Wales (PPW) Edition 4 (February 2011) sets out the land use planning policies of the WG, with supporting technical guidance provided within Technical Advice Note 18: Transport (TAN 18). The following points are most relevant to this scheme:

- Supporting the provision of high quality public transport
- Ensuring that transport is accessible to all, taking into account the needs of disabled and other less mobile people
- Supporting necessary infrastructure improvements

Technical Advice Note 18 (Transport)

2.2.11 TAN 18 was published by the WG in March 2007 and is a supplementary document to Planning Policy Wales (PPW). It provides guidance on issues relating to sustainable development through transport.

2.2.12 The following points from the document are most relevant to this scheme:

- Support the provision of high quality public transport
- Road traffic reduction
- Ensure that major travel generating developments are easily accessible by a range of transport modes from nearby residential areas
- Inclusive mobility and access for disabled people
- Public transport integration across a wider area

2.2.13 With particular relevance to the development, TAN 18 states that new developments or major alterations to existing developments must include appropriate provision for pedestrians (including those with special access and mobility requirements), cyclists, public transport, and traffic managements and parking provision.

Active Travel Act

2.2.14 The Active Travel Act was introduced in November 2013 and applies to all new development within Wales. For the purposes of definition, 'active' refers to walking and cycling routes The Active Travel Act requires the Welsh Ministers and local authorities to take reasonable steps to enhance the provision made for, and to have regard to the needs of, walkers and cyclists.

2.2.15 The following point from the document is most relevant to this scheme:

- Requiring the Welsh Ministers and local authorities, in constructing and improving highways, to have regard to the desirability of enhancing the provision made for walking and cycling

2.3 Regional Policy

South East Wales Transport Alliance – Regional Transport Plan (2010)

2.3.1 The aim of the Regional Transport Plan (RTP) is to improve regional transport within South East Wales and help deliver the social, economic, and environmental objectives of the Wales Spatial Plan and the Wales Transport Strategy.

2.3.2 The following points from the document are most relevant to this scheme:

- Improve access for all to services, facilities and employment, particularly by walking, cycling, and public transport
- Increase proportion of trips undertaken by walking, cycling, and public transport
- Provide a transport system that encourages healthy and active lifestyles
- Significantly reduce the emission of greenhouse gases and the impact of the transport system on local communities
- Ensure that developments are accessible by sustainable transport

2.4 Local Policy

Vale of Glamorgan Local Development Plan – Deposit Plan

2.4.1 The Vale of Glamorgan (VoG) is currently preparing a new Local Development Plan (LDP), which will set out how land within the county will be used up until 2026. Although not currently yet adopted, the LDP Deposit Plan provides an outline of the VoG's vision for the county:

> *"Our vision for the Vale is a place that is safe, clean, and attractive, where individuals and communities have sustainable opportunities to improve their health, learning and skills, prosperity and wellbeing."*

2.4.2 Within this vision, the LDP intends to capitalise on the opportunity presented by the designation of St Athan – Cardiff Airport Enterprise Zone to attract inward investment that will benefit the region as a whole.

2.4.3 With regards to transport, measures that serve the economic, social and environmental needs of the Vale and promote the objectives of the South East Wales Regional Transport Plan will be favoured. This constitutes measures that:

- Maintain and improve access to employment and services
- Ensure developments are accessible by means of travel other than the private car
- Safeguard road lines and routes/sites of approved transport schemes
- Improve the safety and convenience of all means of transport

Vale of Glamorgan Community Strategy 2011 – 2021

2.4.4 The Community Strategy considers how the Vale of Glamorgan will look in the future and how that vision of the county can be achieved. This vision is:

- A county that is safe, clean and attractive, where individuals and communities have sustainable opportunities to improve their health, learning and skills, prosperity and wellbeing; and
- Where there is a strong sense of community in which local groups and individuals have the capacity and incentive to make an effective contribution to the future sustainability of the area

2.4.5 Transport is an important aspect of a number of the strategy's objectives, including:

- Ensuring people of all ages have the capacity and confidence to identify their own needs as individuals and within communities
- The diverse needs of local people are met through the provision of customer focused, accessible services and information
- Children and young people are empowered to access a broad range of quality services that enable them to take full advantage of the life opportunity available in their local communities and beyond
- Maximising the Vale's potential within the region, working with its neighbours for the benefit of local people and businesses attract visitors, residents and investment.

2.5 Enterprise Zones

2.5.1 The VoG's LDP contains the policy MG10 that directly refers to the St Athan – Cardiff Airport Enterprise Zone (EZ). It explains the allocated land in the zone and describes the development encouraged within it. The St Athan – Cardiff Airport Enterprise Zone specialises in the aerospace industry. The findings of the WelTAG Study identified the benefit of improving the access to the EZ.

2.5.2 Wales currently has seven EZs, each specialising in a specific business sector, all of which have national and regional significance. From a national perspective, a WG Department for Economic Science and Transport report from May 2014 indicates that, to date, the zones have created 2,159 jobs and have safeguarded a further 2,983. This report also includes a target to create a further 1,900 jobs by the end of 2014/15 and attract a further £50 million worth of investment.

3 EXISTING CONDITIONS

3.1 Overview

3.1.1 This chapter provides an overview of existing conditions, identifying any existing issues with the local highway and transport facilities along the A4226/Five Mile Lane.

3.2 Existing Highway Network

Five Mile Lane

3.2.1 Five Mile Lane is a north-south oriented single lane carriageway linking the A4226 (Port Road West) at the Waycock Cross junction near Barry in the south, with the A48 at the Sycamore Cross junction near Bolviston in the north. The route is approximately 7 km in length and is a non-primary local route (i.e. a B road) which is actually managed by the Vale of Glamorgan Council as an A road. This is due to its strategic importance as an alternative route for the local authority highway network. The route is operated at the national speed limit, with 40mph sections at varying locations due to tight bends and residential properties. It is a rural road, which has a number of farm accesses and minor roads connecting to it (there are a total of 12 road accesses of the route).

3.2.2 The route varies in width between 6.0m and 7.3m with only a small proportion of the route at 7.3m standard and there are no hardstrips throughout. There is minimal positive drainage along the route between the two terminating junctions. This causes issues with flooding and ice during the winter months.

3.2.3 The route is lined by mature hedgerows resulting in the side road junctions and direct accesses to farms and properties along its length not having sufficient visibility for safe access / egress. Only two sections along the route have visibility to a reasonable standard. The first section is from the Sycamore Cross junction to the start of the existing 40mph speed limit which is approximately 1.6km south of the junction. The second section is 300m in length section adjacent to the Welsh Hawking Centre towards the Waycock Cross junction. The remainder of the route fails to meet a range of DMRB highway standards.

Waycock Cross Junction

3.2.4 The Waycock Cross junction is a 4-arm dual lane (un-marked) roundabout junction situated at the southern end of Five Mile Lane. It connects Five Mile Lane with the 40mph single carriageway A4226 (east and west arms), and the 30mph single carriageway B4266 Pontypridd Road to the south.

Sycamore Cross Junction

3.2.5 The Sycamore Cross junction is situated at the northern end of Five Mile Lane. It is a 4-arm staggered junction connecting Five Mile Lane to the 40mph single carriageway A48 (east and west arms), and the un-classified 60mph single-lane road to Pendoylan to the north. The junction was improved by the Vale of Glamorgan Council early in 2013, with the works resulting in a change to the junction type from staggered cross roads to a fully signalised junction.

Culverhouse Cross

3.2.6 Culverhouse Cross is also included within the study area. Culverhouse Cross is a signalised grade separated junction to the west of Cardiff connecting the A4232 dual carriageway (via four slip-roads) with the A48 east into Cardiff, A48 west to Cowbridge and A4050 south to Barry).

3.3 Site Description

3.4 Existing Traffic Conditions

3.4.1 This section of the TA will outline the existing traffic conditions on Five Mile Lane. Appendix B shows base year traffic data. Information provided by the VoG outlined that in 2014 the A4226 had an annual average daily traffic (AADT) flow of between 8,000 – 9,000 vehicles.

3.4.2 The A4226 has a number of sharp bends and narrow sections that reduce visibility. There is no street lighting, which also contributes to the poor visibility of the route, especially at night and in poor driving conditions.

3.4.3 At the scoping meeting with the VoG on 22nd October 2014, it was explained that the A4226 was originally perceived to be a dangerous route. However, there have been various safety improvements to the route, in the form of speed cameras, warning signs and the trimming of hedge, causing the accident rate to decrease.

3.5 Existing Bus Service

3.5.1 There are two bus services that currently use Five Mile Lane between Waycock Cross and Sycamore Cross which are presented in Table 1.

Service	Route	Frequency	Operator
322	Cardiff to Barry	3-4 buses a day	Easyway
Hail-and-Ride V5	Cowbridge to Barry	1 bus a day	GM Coaches

Table 1: Bus Routes

3.5.2 Although there are two routes that use Five Mile Lane, there are no bus stops along the route. There are no footpaths along the carriageway and therefore no accessibility options for local pedestrians.

3.5.3 The nearest bus stop to Five Mile Lane is located at Sycamore Cross to the north and four at Waycock Cross to the south. The bus stop at Sycamore Cross is located on the eastbound carriageway towards Cardiff and is located in a dedicated bus lane to the right of the main carriageway. The bus stop has no timetable or shelter. The bus stops at Waycock Cross all have timetable information and some have shelters.

3.5.4 Further to the bus routes identified in this section, there are a number of school buses that travel along Five Mile Lane.

3.6 Existing Rail Service

3.6.1 The existing rail network provides links between Cardiff Central and Rhoose Cardiff International Airport, passing through Barry. Waycock Cross, which is located at the southern end of Five Mile Lane, is approximately 4.3km away from Rhoose station and 1.8km away from Barry. The rail line provides an hourly service Monday to Saturday and a two-hourly service on Sundays. The services to and from Cardiff Central and Barry are more frequent, with a daily service every 15 minutes Monday to Saturday and a half-hourly service on Sundays.

3.6.2 There is currently a regular shuttle bus service that travels from Rhoose station to Cardiff Airport, providing an hourly service timed to the hourly rail service.

3.7 Pedestrian and Cycle Infrastructure

3.7.1 The area immediately surrounding Five Mile Lane has a poor standard of pedestrian and cycling routes. There are no footways or shared use paths along the entire length of the A4226 Five Mile Lane.

3.7.2 There are no cycle paths along the route, which means that any cyclists share the road space with vehicles. However, a small part of the route has wider carriageways than other parts, providing somewhat safer conditions for cyclists, should they wish to use this.

3.7.3 As a result, for the majority of Five Mile Lane, conditions for cyclists and pedestrians are very poor, owing to the narrow carriageway and lack of footways and suitable paths.

4 COLLISION ANALYSIS

4.1 Introduction

4.1.1 Personal Injury Collisions (PIC) data has been obtained from the VoG for the five year period from January 2009 to December 2013. The area covered stretches from Llantwit Major in the west to Culverhouse Cross and Barry to the north-east and north-west, respectively, for the vicinity of the proposed route alteration. The collision data provided covers a slightly wider area than would usually be studied, and will therefore provide a robust assessment of collisions on the surrounding network. **Figure 2** identifies the location and severity of all collisions.

4.1.2 An analysis of the data shows that there were a total of 557 collisions recorded within the study area over the five year study period. This equates to an average of 111 PIC's per year. Table 2 provides a breakdown of the data by year and severity.

Type	2009	2010	2011	2012	2013	Total
Fatal	4	1	1	0	1	7
Serious	10	12	10	10	13	55
Slight	86	102	107	109	91	495
Total	**100**	**115**	**118**	**119**	**105**	**557**

Table 2: Collision types per year and severity

4.1.3 The frequency of collisions is fairly consistent over the five year period, with 2012 recording the highest incident frequency of 119 collisions, and 2009 the lowest with 100 collisions.

4.1.4 In total, 557 collisions have been reported in the five year period, with 7 fatal and a further 55 identified as serious. The total number of casualties by severity are summarised in Table 3.

Severity	Casualty Count	Percentage of Total Casualties
Fatal	9	1%
Serious	65	8%
Slight	731	91%
Total	**805**	**100%**

Table 3: Casualties by severity

4.1.5 There were a total of 805 casualties from the 557 collisions recorded, of which the vast majority (91%) received slight injuries. There were a total of 65 (8%) seriously injured casualties, and 9 (1%) fatally injured casualties.

4.2 Fatal Collisions

4.2.1 Over the assessment period there were seven fatal collisions recorded within the study area. Details of the fatal collisions are listed in Table 4.

Collision Reference	Date & Time	Vehicles	Casualties	Details
090187687	13/03/09 23:30	2	5	Occurred on Barry Docks Link Road, where V1 collided with V2 when travelling on the incorrect carriageway. The contributory factor identifies that this collision probably occurred due to driver error (V1 driver failing to look properly)
090192595	14/08/09 11:50	2	2	Occurred on the B4265, adjacent to Lougher Place, St. Athan, involving V1 colliding with V2 after hitting the nearside verge and driving towards the crown of the road. The contributory factors identify that this collision very likely occurred due to driver error, and careless/reckless behaviour of V1 driver
090192797	22/08/09 01:40	2	4	Occurred on the B4265, two miles west of St. Athan, involving V1 losing control and rolling onto its roof, with V2 failing to see v1 in the carriageway and colliding with it. The contributory factors identify that this collision very likely occurred due to careless/reckless behaviour of V1 driver, and possibly a lack of experience of driving on the left hand side of the road
090193605	28/09/09 17:35	2	5	Occurred on Barry Docks Link Road, with V2 pulling out of junction and colliding with v1. The contributory factor identifies that this collision probably occurred due to careless/reckless behaviour of V2 driver
100200390	19/05/10 03:50	1	2	Occurred in Bonvilston on the A48, with the vehicle leaving the road and colliding with a residential property. The contributory factor identifies that this collision very likely occurred due to driver error (driver losing control)
110211716	16/10/11 09:21	2	4	Occurred on the A4055 in Dinas Powys, involving V1 colliding with retaining bridge wall, hitting pedestrian, before then striking oncoming V2. The contributory factor identifies that this collision very likely occurred due to driver error (V1 driver losing control)
1301104	19/06/13 22:55	2	3	Occurred on the A4226 in Rhoose, with V1 overtaking and colliding with V2. The contributory factors identify that this accident very likely occurred due to careless driving and driver error (V1 driver going too fast for conditions and possibly speeding, whilst undertaking a poor manoeuvre)

Table 4: Fatal Collisions

4.2.2 The analysis of the 7 fatal accidents identify that all were likely to have occurred due to driver error or careless/reckless driver behaviour, and do not appear to identify any major safety issues with the existing road network.

4.2.3 Two of the accidents occurred in periods of darkness where no street lighting was present (22/08/09 & 19/06/13), and one of these also occurred on a wet/damp road surface (22/08/09). The police reports do not identify that either the lighting or road surface conditions had any likely causation in these accidents.

4.3 Serious/Slight Accidents

4.3.1 In total, 55 serious and 495 slight collisions (550 in total) occurred within the study area over the 5-year assessment period. Of these 550 collisions, 25 included a contributory factor relating to highway design/layout issues. Table 5 identifies these accidents.

Collision Reference	Date & Time	Severity	Collision Details	Analysis
Contributory Factor: 101 – Poor or Defective Road Surface				
090193190	09/01/09 17:20	Slight	Occurred on A48 near Cottrell Park. V2 was waiting at give way line when v1 lost control performing an overtaking manoeuvre and collided into V2	The description identifies poor driving conditions played a possible role in this collision (it was raining and road surface was wet at the time), combined with aggressive driving and a loss of control from v1 driver. This is an isolated incident, and no highway design issue is evident
100199508	04/10/10 17:20	Slight	Occurred on lane between A48 and B4265 in Llancadle. V1 has pulled over to nearside of road to allow V2 to pass in opposite direction. Due to a pothole in the road, slight damage was caused to the wheel of V1 causing airbag to deploy injuring the front passenger	Highway maintenance issue. This is an isolated incident, and the proposed scheme will not cause significant increases of movements along this rural section of road
100205999	22/12/10 17:40	Slight	Occurred on Barry Docks link road at junction with Colbrook Road East. V1 skidded on snow/slush and lost control of vehicle, rolled over and collided with oncoming V2	The description identifies that poor driving conditions were the primary cause of this collision. This is a non-recurring incident, and no highway design issue is evident.
Contributory Factor: 104 – Inadequate or masked signs or road markings				
090188296	04/04/09 15:50	Slight	Occurred on Broad Street in Barry at junction with A4055. V1 failed to give way at junction and collided with V2	The description identifies that the collision very likely occurred due to V1 driver failing to look properly, and that a dazzling sun possibly obscured their view. This is an isolated incident, and no highway design issue is evident.
0214655	02/10/12 09:55	Serious	Occurred on B4265 Llantwit Major at roundabout junction with Cowbridge Road. V1 was travelling towards roundabout when it has skidded on black ice and collided with central reservation	The description identifies that poor driving conditions were the primary cause of this collision. This is a non-recurring incident, and no highway design issue is evident.
Contributory Factor: 106 – Traffic Calming (e.g. speed cushions, chicanes, road humps)				
0199169	18/03/10 20:25	Serious	Occurred along college place in Barry. V1 collided with V2 travelling in opposite direction	This collision was a result of the stolen V1 driving aggressively at excessive speed, and not caused as a result of a highway design issue
Contributory Factor: 108 – Road Layout (e.g. bend, hill, narrow carriageway)				
090187525	03/03/09	Slight	Occurred on Llantrithyd Lane at junction with Llanmaes Road in Llantwit Major. V1 appears to have misjudged road conditions and skidded into V2 travelling in opposite direction	The description identifies the although the road layout (no description why) may have played a possible role in this collision, it is very likely that the main causation factors were that V1 was travelling too fast for the conditions and broke suddenly. This is a one-off incident, and no highway design issue is evident
090192799	20/08/09	Slight	Occurred along Devon Avenue in Barry. Pedestrian has ran out in path of V1, and collision has occurred	The description identifies that along with the road layout (hill and bend), failure of V1 driver to look properly very likely cause for this collision. This is an isolated incident, and no highway design issue is evident

0198180	12/02/10 07:35	Slight	Occurred on lane from Flemingston towards St. Mary Church. V1 and V2 were travelling towards each other in opposite directions and collided	The description identifies that both icy road conditions and the narrow carriageway were the cause of this collision. This is an isolated incident, and the proposed scheme will not cause significant increases of movements along this rural section of road
100202143	16/07/10	Slight	Occurred along A4266 Five Mile Lane at junction with a un-classified road in Barry. V1 emerging from driveway collided with V2 on Main Road	The description identifies that both the road layout (bend) and roadside vegetation (blocking view) were very likely causes of this collision. It is apparent that the road layout at this junction has since been amended, with re-surfacing on the side lane, and a roadside driver visibility mirror installed to aid vehicles entering onto the main carriageway. No collisions have been recorded there since
110210943	08/04/11	Slight	Occurred on East Street at junction with The Strand in Llantwit Major. Pedestrian was walking along the street when V1 has approached and caught the pedestrians umbrella, and spun them into a wall	The description identifies that along with the road layout (narrow lane) both driver error and pedestrian negligence were very likely causes. This is an isolated incident, and no highway design issue is evident
1200971	09/03/12 12:55	Slight	Occurred on Commercial Road in Barry. Driver of parked v1 opened the driver side door, did not see moped approaching, and hit rider off vehicle	The description identifies that along with the road layout (narrow road), driver negligence when opening the door played a very likely role in this collision. This is an isolated incident, and no highway design issue is evident
1201535	28/11/12 16:15	Slight	Occurred on Holton Road in Barry at junction with Thompson Street. Driver of parked V2 opened their door which collided with V1 and ejected driver of V2	The description identifies that this collision occurred as a result of the bend in the road. This is a one-off incident
1300923	06/02/13	Slight	Occurred on A4055 Cardiff Road between McDonalds roundabout and Dians Powys. V1 stopped at layby just after bend. V2 on rounding the bend swerved to avoid V1 and veered off road into ditch	The description identifies that along with the road layout (bend), a distraction in V2 is a possible cause for this collision. This is a non-recurring incident, and no highway design issue is evident
1300537	30/03/13	Slight	Occurred on the A48 outside Traherne Arms in St Nicholas. V1 has spun in the carriageway causing injury	This collision was a result of the driver driving recklessly, whilst being impaired by alcohol, and not caused as a result of a highway design issue
1301402	14/08/13	Slight	Occurred at junction between Nant Isaf and Walston Road in Wenvoe. V1 has pulled out of junction into oncoming V2	The description identifies that along with the road layout (narrow lane) poor manoeuvring and reckless driving were very likely causes. This is an isolated incident, and no highway design issue is evident
1301109	07/09/13	Slight	Occurred along southern end of A4266 Five Mile Lane in Barry. Wing mirror of V1 smashed on V2. V1 failed to stop	The description identifies the road layout (no description given), was the likely cause for this collision. This is a one-off incident, and no highway design issue is evident
090192566	08/12/13	Slight	Occurred at junction with St Brides Way and Michaelston Close in Barry. V1 exiting road failed to see V2 and collision occurred	The description identifies that along with the road layout (bend in road, street furniture blocking view), failure of V1 driver to look properly very likely cause for this collision. This is an isolated incident, and no highway design issue is evident

110208471	04/02/11	Slight	Occurred on Larkin Drive at junction with Sherborne Drive in Barry. V1 has pulled out of junction and collided with V2	The description identifies that although the road layout (no description why) likely played a role in this collision, a dazzling sun was also likely a cause. This is a one-off incident, and no highway design issue is evident
Contributory Factor: 702 – Vision Affected by Vegetation				
110212664	11/01/11	Slight	Occurred on un-named road in Singstone Village, Llantwit Major. V1 and V2 travelling towards each other down narrow lane collided head on.	The description identifies that although the road layout (narrow bend blocking visibility) possibly played a role in this collision other factors suggest that the driver of V1 was likely travelling too fast for the conditions (wet surface) and failed to look properly. This is a one-off incident, and no highway design issue is evident
1201059	28/09/12	Slight	Occurred on Gladstone Road leaving roundabout from Court Road in Barry. Driver V1 whilst leaving the roundabout has failed to notice that V2 in front has stopped, and collision occurred.	The description identifies that this collision very likely occurred due to V1 driver vision being obscured by overgrown vegetation in the centre of the roundabout. This is a one-off occurrence which is down to poor highway maintenance
Contributory Factor: 703 – Vision Affected by Road Layout (e.g. bend, winding road, hill crest)				
110210866	08/08/11	Slight	Occurred on Ffordd Elin in Barry. V1 and V2 were both reversing around a corner. Neither driver saw the other vehicle and collided	The description identifies that although the road layout (bend blocking visibility) possibly played a role in this collision other factors suggest that both drivers failed to look properly while undertaking a poor manoeuvre. This is a one-off incident, and no highway design issue is evident
1200985	09/06/12	Slight	Occurred on A4055 Cardiff Road between McDonalds roundabout and Dians Powys. V1 passed V2 travelling in opposite direction. As they passed, offside wing mirrors collided.	The description identifies the road layout (bend blocking visibility) was the likely cause of this collision. This is a one-off incident, and no highway design issue is evident
1301828	14/10/13	Slight	Occurred on Argae Lane in Barry. V1 has lost control of vehicle and has landed in ditch	The description identifies that although the road layout (bend blocking visibility) likely played a role in this collision other likely factors suggest the driver was inexperienced and lost control while possibly driving too fast for conditions (wet surface). This is a one-off incident, and no highway design issue is evident
1302048	15/11/13	Slight	Occurred on Kenson Hill in Bonvilston. V1 has crossed the path of V2, causing a collision.	The description identifies that although the road layout (bend blocking visibility) possibly played a role in this collision other factors suggest that the driver of V1 likely overshot the junction due to careless driving. This is a one-off incident, and no highway design issue is evident

Table 5: Collisions with Contributory Factors relating to Highway Layout/Design Issues

4.3.2 All collisions identified within Table 5 (with the exception of 1201535 and 1201059) appear to be isolated, one-off incidents and do not highlight any major collision hotspots caused as a result of highway design/layout issues. The majority of incidents identified are as a result of human error (both driver and pedestrian), or poor weather/driving conditions (i.e. snow and ice). Where the road design did play a major part (i.e. narrow lane, bend in road), these collisions occurred on rural or lightly trafficked roads on which the proposed scheme will not cause significant increases in trips.

4.4 Collisions on the Proposed Scheme Network (Five Mile Lane)

4.4.1 The following section provided an analysis of personal injury collisions along Five Mile Lane and its connecting junctions. Five Mile Lane is a single carriageway road, in a rural location, varying in width between 6.0 and 7.3m. The route is classified and maintained as an 'A' road by the Vale of Glamorgan; however it currently fails to meet appropriate highway standards for a 60mph road. The proposed scheme (as outlined in Section 5) will offer both a section of new and upgraded carriageway, as well as some improvements to the existing Five Mile Lane (which is to be retained to provide access to local farms).

4.4.2 Five Mile Lane has been a hot spot location for road accidents with 11 fatal collisions between 1994 and 2007. Vale of Glamorgan Council has endeavoured to improve safety on the road through the introduction of speed limits, re-surfacing, improved signage, lighting, and solar powered LED cat's eyes. However, the road still contains a number of sharp bends, has substandard forward visibility and is too narrow in places for two large vehicles such as farm traffic, lorries or buses to pass. Along most of its length, the speed limit is 40 miles per hour and overtaking is not permitted.

4.4.3 Table 6 provides an analysis of all reported personal injury collisions which have occurred along Five Mile Lane and the connecting junctions over the 5-year study period.

Collision Reference	Date & Time	Severity	Collision Details	Analysis
Occurred along A4426 Five Mile Lane				
0198045	02/06/10 14:40	Slight	V1(Motorcycle) travelling along Five Mile Lane drifted over the solid central white line and collided with V2 which was travelling in opposite direction	The description identifies that careless/reckless driving, and disobeying of double white lines by v1 driver were the very likely cause for this collision
100200992	06/07/10 20:10	Slight	V1 travelling along Five Mile Lane lost control, on approaching bend and collided with banking	The description identifies that this collision very likely occurred as a result of a slipper road (due to rain)
100202143	16/07/10 09:55	Slight	V1 emerging from driveway collided with V2 travelling along Five Mile Lane	The description identifies that both the road layout (bend) and roadside vegetation (blocking view) were very likely causes of this collision. It is apparent that the road layout at this junction has since been amended, with re-surfacing on the side lane, and a roadside driver visibility mirror installed to aid vehicles entering onto the main carriageway
110210950	08/09/11 18:10	Slight	Occurred along Five Mile Lane at junction with Whitton Lodge, Waterston Road. V2 stopped to take a right turn. V1 does not realise travelling behind V2 did not realise V2 was stopping and collides with rear	The description identifies that this collision very likely occurred as V1 driver failed to look properly and failed to judge V2's path and speed
1200367	05/03/12 05:30	Slight	V1 travelling along Five Mile Lane has collided after aquaplaning on road, ending up in bushes	The description identifies that this collision very likely occurred as a result of a slipper road (due to rain)
1201040	26/09/12 16:15	Slight	V1 travelling along Five Mile Lane, struck excess road water, aquaplaned, and collided with V2	The description identifies that this collision very likely occurred as a result of a slipper road (due to rain)

1201255	30/10/12 13:30	Slight	V1 travelling along Five Mile Lane has lost control negotiating a right hand bend, collided with hedge and turned over	The description identifies that this collision very likely occurred as a result of V1 driver losing control of the vehicle
1201568	12/11/12 18:20	Slight	V1 travelling along Five Mile Lane has driven into a verge and hit a wall	The description identifies that this collision very likely occurred as a result of a hazardous fog/mist conditions
1301092	27/06/13 14:00	Serious	V1 travelling along Five Mile Lane crossed over central double white lines and collided head on with V2	The description identifies that a poor manoeuvre and an illegal direction of travel are the very likely causes for this collision
1301109	07/09/13 09:15	Slight	V1 and V2 travelling in opposite directions. Wing mirror of V1 smashed on V2. V1 failed to stop	The description identifies the road layout (no description given), was the likely cause for this collision.
1301147	15/07/13 16:40	Slight	V1 travelling along Five Mile Lane when driver has lost control after hitting embankment	The description identifies that this collision very likely occurred as a result of the driver losing control of the vehicle
1302267	12/08/13 10:55	Slight	V1 and V2 travelling in same direction along Five Mile Lane. V1 collided with V2 when V1 failed to indicate to turn right and V2 attempted to overtake.	The description identifies that this collision very likely occurred due to V1 driver failing to signal or look properly
1302447	28/12/03 22:10	Slight	V1 travelling along Five Mile Lane lost control on sharp bend and left carriageway	The description identifies that this collision very likely occurred as a result of V1 driver travelling too fast for the conditions (wet/damp) and being an inexperienced/learner driver
Occurred on Sycamore Cross Junction (with the A48 at north end of Five Mile Lane)				
090188571	04/01/09 17:25	Slight	V1 has pulled out of Sycamore Cross junction into path of oncoming V2	The description identifies that this collision very likely occurred as V1 driver failed to look properly
110211645	29/09/11 14:05	Slight	V1 has pulled out of Sycamore Cross junction into path of V2 causing a collision	The description identifies that this collision very likely occurred as V1 driver failed to look properly
100201642	24/06/10 15:00	Slight	V1 has crossed to the opposite side of the carriageway at the junction for no apparent reason and collided with V2. V1 has continued along opposite side of the carriageway and collided with oncoming V3	The description identifies that this collision possibly occurred due to fatigue or illness/disability with V1 driver
1201382	20/11/12 08:40	Slight	V1 and V2 travelling in the same direction at Sycamore Cross junction. Traffic had slowed due to the police dealing with previous collision. V2 driver was distracted by looking at previous collision and collided into the back of V1	The description identifies that this collision possibly occurred due driver of V1 failing to look properly
Occurred on Waycock Cross Roundabout Junction (with A4226 and B4266 at south end of Five Mile Lane)				
0214576	02/05/12 17:45	Slight	V2 waiting at junction along a4226 west. V1 has driven into the back of V2 and failed to stop	The description identifies that this collision very likely occurred as V1 driver failed to look properly and was distracted in the vehicle
110210317	14/06/11 07:20	Slight	V2 (ped cycle) was cycling on roundabout when V1 has pulled onto roundabout and hit cyclist off bike	The description identifies that this collision very likely occurred as V1 driver failed to look properly and was dazzled by the sun
1300643	17/04/13 21:30	Slight	V1 collided with V2 on roundabout	The description identifies that this collision very likely occurred as V1 lost control and was distracted within the vehicle

1301038	18/06/13 18:10	Slight	V2 and V3 have stopped in queuing traffic on approach to rbt. V1 has failed to notice and collided with rear of V2 which in turn has collided with V3	The description identifies that this collision very likely occurred as V1 driver was impaired by alcohol and failed to look properly

Table 6: Five Mile Lane Collisions

4.4.4 Table 6 identifies that there have been 21 recorded collisions directly related to Five Mile Lane over the 5-year study period. Of these collisions 20 (95%) were identified as slight with the remaining 1 (5%) identified as serious. There have been no fatal collisions.

4.4.5 The majority of collisions occurred as a result of driver error (lost control negotiating bends, crossing the central white line) or poor driving conditions (wet surface in/after bad weather).

4.4.6 As identified in Section 5, the proposed scheme would provide an improved carriageway alternative to that of the existing Five Mile Lane (improved road surface, straighter and wider of carriageway), and would considerably reduce the volume of traffic using the retained sections of Five Mile Lane (now only used for local access). The proposed scheme would therefore potentially provide an improvement to road safety to that of the existing conditions along Five Mile Lane.

4.5 Collisions Hotspots

4.5.1 This section will look at the collision hotspots within the study area (i.e. areas where a concentrated number of collisions have occurred over the study period).

A4055 / A4231 / B4267 Roundabout Junction

4.5.2 The 4-arm roundabout junction between the A4055 Cardiff Road / A4231 Barry Docks Link Road / B4267 Sully Moors Road situated in the East of Barry recorded a total of 12 collisions over the study period. Of these 1 was classed a serious collision and the remaining 10 were classed as slight collisions.

4.5.3 The collisions are spread out quite evenly over the study period with 4 collisions occurring in 2012, and 2 collisions occurring in 2009, 2010, 2011, and 2013 respectively.

4.5.4 Analysis of the collision descriptions identifies that 11 of the collisions very likely occurred as a result of driver error, and 1 very likely occurred due to a slippery road surface (due to rain). There do not appear to be any major safety issues relating to poor highway design / layout at this junction.

4.5.5 The traffic flow diagrams at **Appendix D** identify that the proposed scheme would likely reduce future traffic volumes through this junction, and therefore potentially provide a reduction in possible collisions on the roundabout.

A4055 / B4294 / Court Road Roundabout Junction

4.5.6 The 4-arm roundabout junction between the A4055 Gladstone Road / B4294 Court Road / Court Road situated within Barry recorded a total of 14 collisions over the study period. All were classed as slight collisions.

4.5.7 The collisions are spread out quite evenly over the study period with 4 collisions occurring in both 2012 and 2013, 3 collisions in 2009, 2 collisions in 2011 and 1 collision in 2010.

4.5.8 Analysis of the collision descriptions identifies that 13 of the collisions very likely occurred as a result of driver error, and 1 very likely occurred due to the drivers vision being affected by overgrown vegetation (as identified in Table 5). There do not appear to be any major safety issues relating to poor highway design / layout at this junction.

4.5.9 Traffic modelling (as shown in **Appendix D**) suggests that the proposed scheme will result in no significant capacity or delay increase along the local highway network, and therefore the proposed scheme is not likely to lead to an increase in collisions at this junction.

Holton Road

4.5.10 The stretch of Holton Road situated between the junctions with Thompson Street / Regent Street and Ty-Newydd Road in the town centre of Barry recorded a total of 14 collisions over the study period. All were classed as slight collisions.

4.5.11 The greatest majority of the collisions (5 in total) occurred in 2010, with 3 occurring in 2011, and 2 occurring in 2009, 2012, and 2013 respectively.

4.5.12 This section of Holton Road is a one-way, 20mph road running through the local shopping area. 10 of the 14 collisions were involving a pedestrian or cyclist. Analysis of the collision descriptions identifies that 13 of the collisions occurred due to driver or pedestrian error (i.e. driver or pedestrian failing to look properly). The remaining 1 collision occurred as a result of the bend in the road obstructing the drivers view (as identified in Table 5).

4.5.13 The concentration of collisions along this stretch of road is as a result of a high level of pedestrian movements in the area. Horton Road has already been allocated a 20mph status and a number of safety elements are already in place (one-way to vehicles, wide footways, bollards, dropped kerbs) to try and reduce pedestrian collisions, and as traffic modelling (as per Chapter 7) suggests that the proposed scheme results in no significant capacity or delay increase along the local highway network, the proposed scheme is not likely to increase collisions along Horton Road.

5 PROPOSED DEVELOPMENT

5.1 Introduction

5.1.1 This section provides a detailed description of the scheme proposals, identifying the route and specification of the proposed new infrastructure. This represents the extent of the planning application.

5.2 Scheme Overview

5.2.1 The Scheme aims to improve access and journey time reliability to the Cardiff Airport and St Athan Enterprise Zones, and reduce congestion along the A4050 Port Road, A4050 Port Road East and the A4226 Port Road West between Culverhouse Cross and Waycock Cross Roundabout. WelTAG Stage One, previously produced by Parsons Brinckerhoff, identified highway improvements to A4226 (Five Mile Lane) as the most appropriate option to improve the resilience of the local network and provide a realistic alternative to the A4050 Port Road.

5.3 Highway Improvement Proposals

Five Mile Lane

5.3.1 The proposed route will run from the north of Amelia Trust Farm in the north towards Waycock Cross Roundabout in the south, as shown in **Figure 3**. The highway improvements will be 4,850m in length from just north of the Amelia Methodist Trust Farm in the north to Waycock Cross roundabout in the south with most of the improvements being offline. A 300m length of this section, located just north of the Welsh Hawking Centre, will be existing road that will remain unchanged.

5.3.2 Minimal improvements are required along the remaining section to the south of the Welsh Hawking Centre to Waycock Cross roundabout. This will entail works to improve the drainage of the existing carriageway and the potential rerouting of some Statutory Undertaker's apparatus, located on the western side of Five Mile Lane, adjacent to Barry Woodlands SSSI.

5.3.3 The Scheme will result in a new and upgraded single lane carriageway 7.3m wide with a 1m wide hard strip, making the total carriageway 9.3 metres wide, except for the carriageway section approaching Waycock Cross junction, which will be 7.3m wide due to the absence of hardstrips. A 2.5m wide verge would be located on west side of the on-line road widening for a proposed cycleway / footpath. Street lighting is proposed on the approach to Waycock Cross roundabout only.

5.3.4 Three new junctions will be constructed along the route including two T-junctions and one staggered junction. All junctions will have ghost islands that will be DMRB compliant. This will enable through traffic to continue along the route without being hindered by right turn traffic at the junctions. Vehicles will be able to turn in both directions when leaving the junctions. Each junction will have merge and diverge tapers on and off the carriageway that will be DMRB compliant. The southbound approach to Waycock Cross junction will be widened to two lanes, being approximately 60m in length.

5.3.5 The offline section of the scheme will be constructed on mix of embankment and cutting along its length. There is a 40mph speed limit along most of the existing road with overtaking not permitted. The Scheme will allow a 60mph speed limit to be maintained from Sycamore Cross to the Welsh Hawking Centre, upon which it will revert to 40mph for south-bound traffic, and then 30mph on the approach to Waycock Cross.

5.3.6 The existing road will remain open after the Scheme is completed to provide local access to the various farms along its length and as a safer route option for NMUs. The only access to and from this road will be from the three proposed junctions linking to the new road. All other provisions along the existing road will remain unchanged.

Sycamore Cross Junction

5.3.7 Minor improvements will be made to the existing junction between the A48 and Five Mile Lane at Sycamore Cross. The aim of this element of the works is to provide capacity increases for the turning movements at the junction, therefore enabling the benefit of any improvements along Five Mile Lane to be maximised. The proposed Sycamore Cross Junction improvements are shown on **Figure 7**.

5.3.8 The works will consist of widening of the westbound carriageway of the A48 to provide a dedicated lane for turning left onto Five Mile Lane. In addition, the existing street furniture will be re-arranged, and the road markings amended to enable two lanes of traffic to travel westbound through the existing signalised junction.

5.3.9 For eastbound traffic, there will be two lanes of traffic provided through the junction on the A48 from Bonvilston heading east towards Culverhouse Cross. To enable this to be constructed, the existing bus lane will be re-aligned further towards the north side of the junction to provide sufficient lane width for traffic on the A48.

5.3.10 For traffic travelling north of Five Mile Lane the lane destinations for traffic have been amended. It is proposed to allow both lanes of traffic to be utilised for right turning traffic (to travel eastbound on the A487). In addition to this, the existing left hand lane will also be utilised for left turning traffic.

5.3.11 All the proposed works are to be carried out within the existing Highway Boundary resulting in an area of the grass verge being lost to provide the additional carriageway capacity. The grass verges are currently maintained by the Vale of Glamorgan Council and are therefore disturbed on a regular basis as part of the highway maintenance regime.

5.3.12 The junction was improved by the Vale of Glamorgan Council early in 2013, with the works resulting in a change to the junction type from staggered cross roads to a fully signalised junction. These works resulted in significant disturbance in the area surrounding the junction, partly due to the requirements to significantly widen the highway footprint.

5.4 Accommodation Works

5.4.1 The Scheme will also include construction of an integral single span steel composite accommodation bridge carrying a farm access road over the proposed route (refer to Figure 3). It will be located immediately north east of Sutton Fach Farm, spanning the proposed road to provide the farm with access to local fields. The bridge will consist of twin steel girders braced together and made composite with a concrete deck slab. The bridge deck will comprise a 3.5m carriageway with a 0.5m verge on either side. Minimum headroom beneath the structure of 6.45m will be provided. In order to minimise the size of the approaches and abutments, the structure has been curved to facilitate additional headroom beneath. The structure will be open to provide the maximum line of sight for drivers using the proposed route, as well as increasing the aesthetic appeal of the structure. The bridge abutments will be covered with a local stone façade to ensure the structure is in keeping with the rural environment.

5.5 Non-motorised Users

5.5.1 As outlined in Technical Advice Note (TAN) 18, alterations to existing developments must include appropriate improvements to NMUs. The existing cycle provision in the study area is poor with no cycle route / path along Five Mile Lane, although the local area beyond has a more developed network of cycle routes that link the area to the wider communities, such as Barry and Cardiff.

5.5.2 At the northern end of the Scheme, between Chainage (Ch) 0m to Ch300m, the verge on the west side of the new road will be surfaced to provide an unsegregated footway / cycleway link between the existing Five Mile Lane road and a proposed cycleway route which will utilise the existing roadside verge between the Sycamore Cross junction and the new cycleway (refer to Figure 3).

5.5.3 At the southern end of the Scheme, a new length of unsegregated footway / cycleway will be provided running adjacent to the west side of the on-line road widening, between Ch3545m and Ch4800m, to link the existing Five Mile Lane to the Waycock Cross roundabout. The intention is to utilise the existing road for pedestrian and cycle access as traffic flows will be significantly reduced. A safety review will be undertaken to identify any works considered necessary to enable safe pedestrian and cycle access. These will likely include appropriate signage to indicate access for both pedestrians and cyclists.

5.5.4 A new bridleway that can be used by equestrians and pedestrians will provide a link across the new road linking the lane at Ch2180m to the new accommodation overbridge at Ch2920m and to the existing road at Ch3100m.

5.5.5 As the old road will be secondary to the new main road, the number of vehicles will significantly reduce with only local traffic (i.e. for access to the farms) using the road. Therefore, this will provide much safer and more comfortable conditions for cyclists and pedestrians

5.5.6 Figure 45 outlines the NMU improvements.

5.6 Summary

5.6.1 The proposed development includes:

- New carriageway for 4850m (300m already existing and not upgraded)
- Two new cycle paths both north and south of the tie in locations to the old road

6 ASSESSMENT METHODOLOGY

6.1 Introduction

6.1.1 The following chapter presents a quantitative analysis of the likely traffic generation associated with the proposed highway improvements to Five Mile Lane. This section will outline the assessment approach to determine the traffic impact associated with the proposed development on key junctions along the local network.

6.1.2 The assessment approach will use the strategic transport model built in SATURN, which was developed as part of the WelTAG Links to St Athan and Cardiff Airport Enterprise Zone study, and will be supported by local junction modelling to assess specific highway impacts.

6.2 Modelling Approach

6.2.1 The WelTAG Stage One and Two Studies that identified the preferred highway options for the Links to St Athan and Cardiff Airport Enterprise Zone were assessed using the strategic transportation model built in SATURN. The traffic model was developed to assess a variety of highway options and their impact on the local area.

6.2.2 For this TA, the SATURN model used in the WelTAG Study has been identified as fit for purpose and will be used to determine the traffic flows required for the junction assessments.

6.2.3 The scope of the TA was discussed and agreed with VoG and presented in **Appendix A**. Three junctions were identified as part of the assessment and will be assessed in the following manner:

- Sycamore Cross will be assessed using Junctions 8
- Waycock Cross will be assessed using LinSig
- Culverhouse Cross will be assessed using the Cardiff Council TRANSYT model that was built in TRANSYT version 11

6.2.4 In the scoping report for this TA, it was mentioned that the roundabout junction of Port Road / Barry Docks Link Road would also be modelled. Analysis of the network flow diagrams (Appendix D) suggests that the proposed scheme will reduce traffic volumes through this junction in future years. On this basis, the capacity of this junction is likely to improve and detailed modelling of the junction is not required.

6.3 Year of Assignment

6.3.1 The base year of the SATURN model is 2013, the proposed opening year of the scheme is 2017 and the design year used in the WelTAG study is 2032.

6.4 Growth Rates

6.4.1 The forecast flows for the opening and design year for the TA were taken from the SATURN model. A detailed methodology of the development of the forecast traffic matrices used in the SATURN model can be found in the Links to St Athan and Cardiff Airport Enterprise Zone Forecasting Report.

6.5 Proposed Highway Improvements

Do Minimum (2017)

6.5.1 The assessment process does not only consider the effects of the highway improvements to Five Mile Lane against the conditions as they are now, but also makes the detailed assessment against what is described as the 'Do Minimum scenario'. The Do Minimum represents what could be reasonably expected to have occurred over the same timescale if the proposed development did not go ahead in 2017 and 2032.

6.5.2 The Do Minimum network includes numerous network improvements that are outlined in the VoG Local Development Plan (LDP), which are necessary for the successful delivery of the Council's growth aspirations by 2026.

6.5.3 Indicative capacity improvements have also been made in the Do Minimum and Do Something forecast model networks to junctions where traffic exceeds capacity in the 2032 forecast year. These improvements were developed as part of the WelTAG project and are DMRB compliant, which are summarised in the Links to St Athan and Cardiff Airport Enterprise Zone Forecasting Report.

Do Something (2032)

6.5.4 The Do Something option is the Do Minimum improvements coupled with the proposed scheme.

7 LOCAL HIGHWAY NETWORK ASSESSMENT

7.1 Introduction

7.1.1 This chapter will look at the three different junctions and assess how they perform in the Do Minimum and Do Something scenarios in the opening and design years, along with the base year.

7.2 Methodology

7.2.1 Three junctions have been agreed with the VoG to be assessed. These are:

- Sycamore Cross
- Waycock Cross
- Culverhouse Cross

7.2.2 To assess the operational performance of the key junctions on the local highway network, each junction has been assessed using appropriate transport modelling software. Junctions 8 was used to assess the Waycock Cross roundabout. For Sycamore Cross, LinSig was used due to it being a signalised control junction. Finally, the analysis for Culverhouse Cross used TRANSYT version 11 which was agreed with both the Vale of Glamorgan and Welsh Government. **Appendix B** presents the traffic count diagrams for each of the three assessment junctions.

7.3 Assessment Scenario

7.3.1 The modelling results within this assessment outline the impact of the proposed development traffic on the key junctions in the network based on the following scenarios outlined in 7.

Scenario	Description
2013 Base Year	This represents when the data has been collected
2017 - Opening Year DM	This is the proposed opening year of the scheme based on only current improvements as set out by the VoG (based on the DM SATURN model)
2032 - Design Year DM	This is the proposed design year of the scheme based on only current improvements as set out by the VoG (based on the DM SATURN model)
2017 - Opening Year DS	This is the opening year with the Five Mile Lane improvements completed
2032 - Design Year DS	This is the design year with the Five Mile Lane improvements completed

Table 7: Scenario Descriptions

7.4 Link Analysis

7.4.1 Along with the junction analyses, link analysis has been conducted to assess the future growth of traffic on the network, which is compared against base year data. As requested by the VoG, this analysis involves parts of the A4050 Port Road from Culverhouse Cross to Port Road and Five Mile Lane. Five links have been chosen at various points along the A4050 that represent the entire length of route, with two links on Five Mile Lane. The results are presented in section 7. The locations of these seven links are shown in **Figure 5**.

1. Between Old Port Road/Brooklands Terrace Roundabout to the Alps roundabout for VoG Council
2. Between Wenvoe North roundabout to Wenvoe South roundabout
3. Between St Andrew's Road to the A4231 roundabout
4. Between Pencoedtre Road and Merthyr Dyfan Road
5. Between Stirling Road and Waycock Cross
6. Between Sycamore Cross and Amelia Trust Farm (Five Mile Lane)
7. Between crossroads to Dyffryn and Walterston, and lane to Northcliff Farm (Five Mile Lane)

7.4.2 The results are presented in 8 and Table . The link analysis results are given as percentage change in hourly traffic demand. The raw traffic data can be found in **Appendix C**.

7.4.3 As shown in Table 8, the results for the 2017 assessment year indicate that the proposed improvements have a positive impact on reducing traffic along the five links identified on the A4050. As expected, traffic increases on links 6 and 7 along Five Mile Lane.

Link	Percentage Change in Hourly Traffic Demand					
	AM		IP		PM	
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	-16	-10	-27	-29	-11	-21
2	-16	-10	-28	-29	-11	-21
3	-16	-10	-28	-29	-11	-21
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	-14	-11	-24	-29	-12	-23
5	-19	-9	-31	-34	-15	-29
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	+47	+26	+107	+104	+33	+66
7	+48	+25	+105	+98	+43	+67

Note: traffic increase is presented in red; traffic decrease is present in green

Table 8: 2017 Do Something Percentage Change in Traffic Demand

7.4.1 The results for the 2032 assessment year are shown in Table 9. Like the 2017 DS scenario, traffic decreases in all situations, apart from links 4 and 5 in the AM eastbound, where traffic stays the same. Similarly, traffic increases on Five Mile Lane.

Link	Percentage Change in Hourly Traffic Demand					
	AM		IP		PM	
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	-12	-2	-26	-26	-5	-12
2	-13	-2	-27	-27	-6	-13
3	-12	-2	-27	-27	-6	-12
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	-5	0	-23	-28	-2	-10
5	-12	0	-32	-35	-6	-11
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	34	5	112	105	15	27
7	33	5	110	100	14	28

Note: traffic increase is presented in red; traffic decrease is present in green

Table 9: 2032 Do Something Percentage Change in Traffic Demand

7.4.2 The change in flows within the scheme can be seen diagrammatically in the Network Flow Diagrams in **Appendix D**.

7.5 Definitions

7.5.1 The Degree of Saturation refers to the ratio of demand and capacity on an approach to an intersection. A value of 100% means that the approach cannot accept any more traffic. A percentage of 85% is considered to be very high and suffering from traffic congestion.

7.5.2 The Mean Max Queue refers to the average maximum queue modelled along the approach arm to a junction. This queue is measured in Passenger Car Units (PCUs), which convert all vehicle types into a single comparable unit, where each is given a different value depending on its size, e.g. a car is 1, a bicycle is 0.2 and a HGV is 2.3.

7.5.3 The Ratio of Flow to Capacity (RFC) is a ratio of the demand to capacity on each approach to the junctions, with a value of 100% (1.0) signifying that the capacity of the road has been reached, thus resulting in vehicle queues. With Junctions 8, RFC values over 85% are typically regarded as suffering from traffic congestion, with queues of vehicles beginning to form. It is generally accepted that RFC values of less than 0.85 indicate the junction is operating at an acceptable level and within capacity.

7.6 Junction Modelling

7.6.1 This section includes the results for the Sycamore Cross, Waycock Cross and Culverhouse Cross modelling assessments. The output files for the junction modelling are included within **Appendix E**, **Appendix F** and **Appendix G** respectively.

Sycamore Cross

7.6.2 Sycamore Cross is a staggered crossroad signalised junction located at the north end of Five Mile Lane/A4226 with the A48 and the un-classified road to Pendoylan. **Figure 6** shows the existing junction. The junction is included within the proposed highway improvements along Five Mile Lane and the traffic impact associated with the development assessment has been modelled in LinSig.

7.6.3 The recent signal design of the junction has been provided by VoG that included the existing signal phasing and timings. It has a four stage sequence and cycle time of either 90 or 120 seconds depending on demand – both Do Something scenarios have a 90 second cycle time.

7.6.4 Table 50 presents the base year modelling results.

Link Name	AM Peak		PM Peak	
	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)
A48 Westbound Left	12.4%	1.6	17.8%	2.4
A48 Westbound Ahead	39.0%	6.1	74.7%	16.0
A48 Westbound Inner Ahead	28.5%	1.4	47.0%	5.7
A48 Westbound Inner Right	48.8%	2.8	74.7%	5.0
A48 Eastbound Ahead Left	62.6%	12.6	38.1%	5.9
A48 Eastbound Ahead	9.3%	1.3	11.7%	1.6
A48 Eastbound Inner Ahead	64.8%	3.7	37.2%	0.9
A48 Eastbound Inner Right	47.6%	5.6	72.6%	7.3
Five Mile Lane Left Right	53.4%	5.4	29.3%	3.6
Pendoylan Right Left	78.7%	5.1	48.5%	2.5

Table 50: Sycamore Cross Base Year Results

7.6.5 Table 50 shows how the junction is currently operating based on existing demand. Generally, there is a higher level of congestion during the PM peak, particularly in the through traffic on the A48, both west and eastbound, as well as the turning into Five Mile Lane from the A48 eastbound. Queues are usually small in length; however, the A48 westbound suffers from larger tailbacks during the PM peak (16 PCU's).

7.6.6 Table 61 presents the modelling results for the Do Minimum in both the opening and design year. The results demonstrate that the junction will operate over capacity in both assessment years. The results show that the current junction layout is unable to provide sufficient capacity for the forecast demand, regardless of the proposed highway improvements to Five Mile Lane. This would cumulate with very large queues along the A48 eastbound (during the AM) and Five Mile Lane (during the PM).

Link Name	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)
A48 Westbound Left	24.8%	2.6	27.6%	3.9	72.2%	4.9	44.1%	6.5
A48 Westbound Ahead	48.9%	6.1	79.7%	17.3	94.8%	11.2	92.5%	23.6
A48 Westbound Inner Ahead	30.9%	1.4	49.2%	5.8	38.6%	1.5	58.6%	5.4
A48 Westbound Inner Right	28.3%	2.1	58.3%	4.8	25.3%	1.7	80.3%	7.7
A48 Eastbound Ahead Left	71.7%	15.4	39.6%	6.8	175.3%	238.6	49.7%	8.9
A48 Eastbound Ahead	11.6%	1.5	13.3%	1.9	31.5%	2.6	13.6%	1.9
A48 Eastbound Inner Ahead	57.8%	13.2	31.5%	4.3	44.1%	7.4	39.1%	6.6
A48 Eastbound Inner Right	32.9%	3.4	47.0%	4.4	46.3%	4.5	48.8%	4.3
Five Mile Lane Left Right	120.8%	55.7	51.0%	5.6	112.5%	46.4	135.3%	97.6
Pendoylan Right Left	86.8%	6.5	54.1%	2.9	97.7%	11.0	61.8%	3.4

Table 61: Sycamore Cross DM 2017 and 2032 Results

7.6.7 Similarly, Table 72 shows the Do Something modelling results for Sycamore Cross with solely the improvements to Five Mile Lane in place. As the results show, due to the higher amount of traffic on Five Mile Lane, Sycamore Cross becomes more congested compared to the DM results in Table 6, which is especially the case in the PM peak in the design year (2032).

Link Name	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)
A48 Westbound Ahead Left	47.1%	5.4	46.9%	7.7	196.8%	122.8	48.2%	7.6
A48 Westbound Ahead	36.4%	4.2	76.4%	16.8	128.5%	45.0	87.4%	21.0
A48 Westbound Inner Ahead	30.8%	0.2	48.7%	5.8	32.1%	0.8	53.5%	5.9
A48 Westbound Inner Right	21.6%	1.5	34.6%	4.2	29.3%	1.7	45.1%	4.6
A48 Eastbound Ahead Left	82.7%	16.5	45.6%	8.5	155.7%	204.8	49.3%	9.0
A48 Eastbound Ahead	13.3%	1.5	15.3%	2.3	28.2%	2.8	16.8%	2.4
A48 Eastbound Inner Ahead	60.8%	13.2	35.4%	6.1	45.7%	10.7	38.2%	6.6
A48 Eastbound Inner Ahead Right	50.8%	3.3	70.6%	5.7	32.8%	3.6	69.2%	6.1
Five Mile Lane Left Right	146.1%	120.0	91.8%	13.2	132.9%	95.4	167.5%	197.3
Pendoylan Right Left	73.9%	4.5	56.5%	3.0	114.0%	25.4	63.2%	3.5

Table 72: Sycamore Cross DS 2017 and 2032 Results – Five Mile Lane Improvements Only

7.6.8 As part of the proposed improvements, it is recommended to include junction improvements at Sycamore Cross to improve the operation of the junction in the forecasting assessment years. The proposed improvements are presented in Figure 7 and are outlined below:

- Additional lane of the A48 Eastbound approach
- Additional stacking lane at the inner junction on the A48 Westbound approach
- Dedicated right hand flare on the A48 Westbound approach

7.6.9 Table 83 presents the Do Something modelling results with the above improvements in place. These results include the proposed highway improvements to Five Mile Lane.

Link Name	Opening Year 2017				Design Year 2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)	Degree of Saturation (%)	Mean Max Queue (PCU)
A48 Westbound Ahead Left	77.0%	8.0	68.7%	6.8	74.7%	8.1	81.8%	9.9
A48 Westbound Ahead	44.7%	3.1	55.2%	4.8	32.4%	1.6	71.7%	7.6
A48 Westbound Inner Ahead	23.9%	0.2	36.1%	3.0	31.4%	2.6	39.9%	2.2
A48 Westbound Inner Ahead	5.9%	0.0	18.7%	0.1	4.7%	0.0	21.6%	0.1
A48 Westbound Inner Right	40.3%	3.0	38.4%	3.2	36.8%	1.4	54.9%	3.6
A48 Eastbound Ahead Left	37.7%	7.1	44.4%	4.8	55.7%	8.6	47.4%	6.2
A48 Eastbound Ahead	37.9%	7.2	40.6%	4.3	52.6%	8.0	41.0%	5.2
A48 Eastbound Inner Ahead	56.6%	7.5	62.8%	2.6	72.4%	7.1	79.8%	5.4
A48 Eastbound Inner Ahead Right	62.0%	7.8	68.5%	3.7	76.6%	7.9	83.6%	6.7
Five Mile Lane Left Right	75.3%	9.6	66.0%	5.8	81.5%	9.1	81.3%	9.4
Pendoylan Right Left	61.8%	5.3	24.7%	1.5	77.1%	6.5	33.4%	2.2

Table 83: Sycamore Cross DS 2017 and 2032 Results

7.6.10 Table 83 demonstrates that the junction will operate within capacity compared to the Do Minimum scenario in the opening year and design year. This shows, therefore, that the improvements to Sycamore Cross would be beneficial to the natural future growth in traffic.

Waycock Cross

7.6.11 This junction is located towards the south of Five Mile Lane and forms a roundabout with the A4050 Port Road, as well as the roads into Barry and to St Athan. **Figure 8** shows the existing junction; **Figure 9** shows the proposed improvements. The junction is a roundabout and was analysed using Junctions 8.

7.6.12 Table 94 presents the base year modelling results, showing how the junction is operating based on current usage. As the results show, the A4226 Port Road West (W) approach fails in the AM Peak. All other results show that, at present, the junction is operating within capacity.

Arm	AM			IP			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
Waycock Cross Junction – Base Year									
A4226 Waycock Road	1.14	10.93	0.54	0.39	5.84	0.28	1.28	9.7	0.56
A4226 Port Road West (E)	1.33	6.56	0.57	0.72	4.2	0.42	1.4	6.29	0.59
Pontypridd Road	0.77	4.25	0.43	0.42	3.19	0.29	0.92	4.8	0.48
A4226 Port Road West (W)	9.01	35.16	0.92	1.19	6.55	0.54	1.44	7.54	0.59

Table 94: Waycock Cross Base Year Results

7.6.13 Table 105 shows the modelling results for the DM scenario. The results show that, although the A4226/Five Mile Lane is not above capacity in 2017, the approach is over capacity in 2032. For this reason, the current layout is not sufficient and improvements are needed to improve the situation.

Arm	AM			IP			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
Waycock Cross Junction – 2017 – DM									
A4226 Waycock Road	2.16	16.88	0.69	0.55	6.84	0.35	3.28	20.76	0.78
A4226 Port Road West (E)	2.22	9.09	0.69	1.01	5.11	0.51	1.97	8.28	0.67
Pontypridd Road	1.08	5.6	0.52	0.51	3.66	0.34	1.2	5.93	0.55
A4226 Port Road West (W)	71.87	201.43	1.12	2.03	9.16	0.67	3.74	15.01	0.8
Waycock Cross Junction – 2032 – DM									
A4226 Waycock Road	16.13	86.35	0.99	1.18	12.18	0.55	26	122.54	1.03
A4226 Port Road West (E)	66.09	163.82	1.09	2.93	10.59	0.75	5.76	20.82	0.86
Pontypridd Road	4.59	20.08	0.83	0.89	5.38	0.47	2.24	10.36	0.7
A4226 Port Road West (W)	285.97	884.91	1.42	23.4	72.16	1	302.31	869.73	1.41

Table 105: Waycock Cross DM Results

7.6.14 The proposed highway improvements along Five Mile Lane link directly to Waycock Cross. The development proposes to increase the approaching carriageway to a dual approach to the northern arm of the junction, the A4226 Waycock Road.

7.6.15 Table 116 shows that the scheme has significant benefits for all arms of the roundabout compared to the DM. The A4226 Waycock Road will operate within capacity in both the opening and design years, compared to the DM where is exceeded the 0.85 RFC threshold by 2032.

7.6.16 While the scheme prioritises the A4226 Waycock Road and the A4266 Port Road West (W), it has had a negative effect on the A4226 Port Road West (E). During the AM 2032 peak, the scheme would have increasing the queues by 30 vehicles, increasing the delay by 123 seconds, and increasing the RFC by 0.09.

7.6.17 A similar effect is seen during the PM peak. By 2032, the A4226 Waycock Road will exceed capacity during the DM scenario, while being well within capacity during the DS scenario.

7.6.18 It must be noted that the A4226 other arms on the junction, including the A4226 Port Road West (E) and (W), will fail in the 2032 scenarios sometimes quite significantly – with or without this scheme. This has been agreed and accepted by the Welsh Government.

Arm	AM			IP			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
Waycock Cross Junction – 2017 – DS									
A4226 Waycock Road	1.06	5.5	0.52	0.54	3.31	0.35	0.97	4.5	0.49
A4226 Port Road West (E)	1.92	9.69	0.66	0.7	5.06	0.41	1.82	8.98	0.65
Pontypridd Road	1.22	6.12	0.55	0.57	3.93	0.37	1.51	7.02	0.6
A4226 Port Road West (W)	31.56	93.67	1.02	1.62	7.29	0.62	2.69	10.71	0.73
Waycock Cross Junction – 2032 – DS									
A4226 Waycock Road	2.45	9.73	0.71	1	4.86	0.5	1.48	6.3	0.6
A4226 Port Road West (E)	96.15	286.26	1.18	1.8	9.51	0.65	8.29	32.28	0.91
Pontypridd Road	4.71	21.43	0.84	0.99	5.98	0.5	2.96	13.21	0.75
A4226 Port Road West (W)	177.81	531.06	1.28	8.9	29.08	0.91	192.22	530.76	1.28

Table 116: Waycock Cross DS Results

Culverhouse Cross

7.6.19 This junction is located to the west of Cardiff and joins the A4232 with the A48 and A4050. The junction is a large five arm signalised roundabout. **Figure 10** shows the existing junction. The junction analysis for this junction was completed using the existing Cardiff Council TRANSYT model. The model was developed and assessed using TRANSYT version 11. The use of this model has been discussed and agreed with VoG. A node link diagram can be provided upon request.

7.6.20 The proposed highway improvements along Five Mile Lane will have an impact on the Culverhouse Cross junction as the aim of the development is to redistribute traffic from the A4050 to the A48. The potential impact in terms of the redistribution of traffic at this junction has been taken from the WelTAG SATURN model for both the opening and design year.

7.6.21 Table 127 presents the base year modelling results for Culverhouse Cross. The results show that the junction is currently operating over capacity on the A48 East Cowbridge Road approach in the AM peak and on the A4232 South and A4050 Port Road in the PM peak.

Approach	2014 AM (0730-0830 hrs)		2014 PM (1630-1730 hrs)	
	Degree of Saturation %	Mean Max. Queue (pcu)	Degree of Saturation %	Mean Max. Queue (pcu)
A4232 North: - Approach	24/35/49	2/4/6	36/54/79	4/6/11
A48 East Cowbridge Rd: - Approach	100/88/39	24/13/4	69/68/29	8/8/3
A4232 South: - Approach	21/11/26	2/1/3	54/44/89	6/5/14
A4050 Port Road: - Approach	13/76/68	1/12/10	21/92/64	2/15/7
A48 Tesco Approach: - Approach	54/11/41/33	5/1/5/3	37/16/30/21	4/1/3/2

Note: 24/35/49 denotes value by lane number e.g. lane 1/2/3 (from nearside)
Red figures denote degrees of saturation greater than 85% design capacity.

Table 127: Culverhouse Cross Base Year Results

7.6.22 Table 138 presents the Do Minimum modelling results for Culverhouse Cross. The results show that the junction will be operating over capacity on the A48 East Cowbridge Road approach in the AM peak and on the A4232 South and A4050 Port Road in the PM peak in the opening year. With continued traffic growth, four arms of the junction in 2032 will operate over capacity.

Approach	AM (0730-0830 hrs)		PM (1630-1730 hrs)	
	Degree of Saturation %	Mean Max. Queue (pcu)	Degree of Saturation %	Mean Max. Queue (pcu)
2017				
A4232 North: - Approach	26/35/61	3/4/8	29/41/69	3/5/10
A48 East Cowbridge Rd: - Approach	132/82/32	122/11/3	55/85/25	6/12/2
A4232 South: - Approach	41/19/65	3/1/5	72/53/114	8/5/60
A4050 Port Road: - Approach	21/9/32	2/1/3	16/85/46	1/14/5
A48 Tesco Approach: - Approach	35/11/41/30	3/1/5/3	27/17/47/38	1/1/4/3
2032				
A4232 North: - Approach	57/56/113	7/7/75	39/51/92	4/6/19
A48 East Cowbridge Rd: - Approach	148/92/36	178/16/3	116/178/53	39/161/4
A4232 South: - Approach	45/20/79	3/1/8	78/54/117	9/6/75
A4050 Port Road: - Approach	23/147/105	2/199/40	16/95/57	1/21/7
A48 Tesco Approach: - Approach	77/21/80/59	8/2/11/7	73/22/55/46	5/2/5/4

Note: 24/35/49 denotes value by lane number e.g. lane 1/2/3 (from nearside)
Red figures denote degrees of saturation greater than 85% design capacity.

Table 138: Culverhouse Cross DM Results

7.6.23 Table19 presents the Do Something modelling results for Culverhouse Cross. The results show that the impact associated with the Five Mile Lane highway improvements at the junction will have a slightly positive impact. The redistribution of traffic associated with the Five Mile Lane improvements shows that the junction operates under capacity in the AM peak in the opening and slightly over capacity on the A4234 south arm in the PM peak, however, this is still an improvement on the DM results. This shows that the scheme will help congestion at Culverhouse Cross.

Approach	AM (0730-0830 hrs)		PM (1630-1730 hrs)	
	Degree of Saturation %	Mean Max. Queue (pcu)	Degree of Saturation %	Mean Max. Queue (pcu)
2017				
A4232 North: - Approach	31/36/77	3/4/11	29/36/74	3/4/12
A48 East Cowbridge Rd: - Approach	94/68/24	19/9/3	55/87/26	6/12/2
A4232 South: - Approach	38/20/66	3/1/5	76/61/129	8/6/97
A4050 Port Road: - Approach	6/82/66	1/14/9	10/79/43	1/11/4
A48 Tesco Approach: - Approach	64/18/69/51	6/2/9/6	44/16/38/25	3/1/4/2
2032				
A4232 North: - Approach	59/51/125	7/6/118	38/47/92	4/5/19
A48 East Cowbridge Rd: - Approach	116/80/29	84/12/3	114/179/53	36/164/4
A4232 South: - Approach	41/22/79	3/2/8	81/56/123	10/6/91
A4050 Port Road: - Approach	19/133/97	2/156/23	12/92/50	1/17/6
A48 Tesco Approach: - Approach	78/21/80/59	4/8/2/11	60/22/48/31	5/2/5/3

Note: 24/35/49 denotes value by lane number e.g. lane 1/2/3 (from nearside)
Red figures denote degrees of saturation greater than 85% design capacity.

Table 19: Culverhouse Cross DS Results

7.6.24 The junction analysis at Culverhouse Cross junction demonstrates that, following the proposed improvements at Five Mile Lane, the redistribution of traffic at the junction, which has been calculated using the strategic SATURN model, will have a positive impact on the junction operation.

7.7 Junction Assessment Summary

7.7.1 The junction assessments summarised within this chapter demonstrate that there is sufficient capacity in Sycamore Cross junction following the proposed highway improvements along Five Mile Lane to accommodate the predicted traffic demand. This remains the case in both the opening and design year.

7.7.2 The analysis shows that the proposed highway improvements at Five Mile Lane will have a negative impact on the operation of Waycock Cross Junction. This has been agreed and accepted by the Welsh Government, and a separate scheme will be needed to improve these arms; this TA only looks at the northbound arm of Waycock Cross, part of the Five Mile Lane scheme.

7.7.3 The analysis at Culverhouse Cross junction demonstrates that following the proposed improvements at Five Mile Lane the redistribution of traffic at junction will have a positive impact on the junction operation compared to the Do Minimum assessment. Therefore, in terms of traffic impact associated outlined within this TA the proposed improvements will have no significant impact on the junction operation.

7.7.4 In conclusion, the traffic impact associated with the proposed highway improvements along Five Mile Lane will have minimal impact on the junction operations.

8 CONCLUSION

8.1 Summary

8.1.1 This Transport Assessment has been produced by PB on behalf of the Vale of Glamorgan in order to examine the highway and transportation impacts of improvements to Five Mile Lane. The scheme consists of a new section of road, 4850m in length, with three proposed junctions, along with improvements to Sycamore Cross and Waycock Cross.

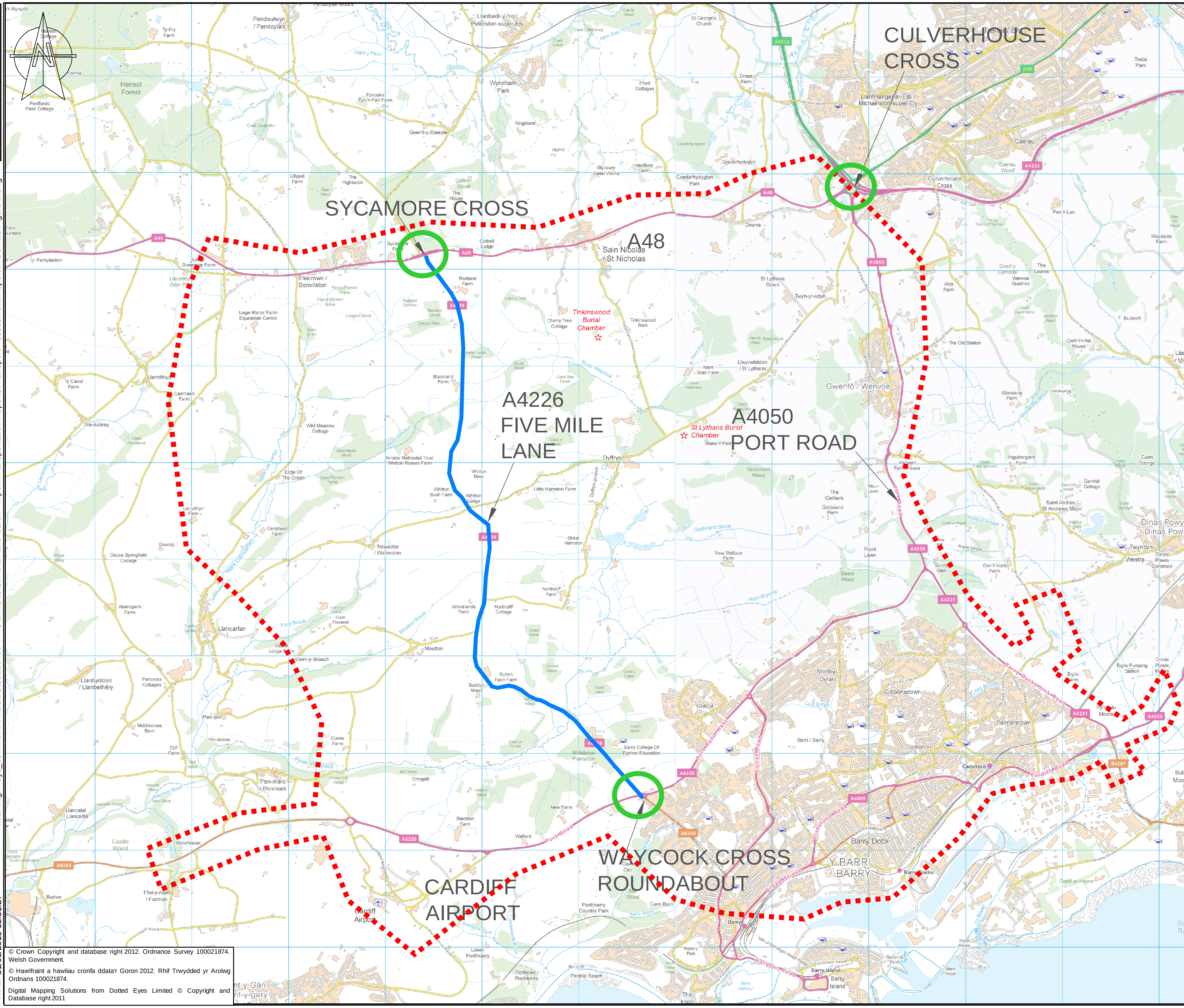
8.1.2 The scheme seeks to benefit both cyclists and pedestrians. There will be two cycle routes, north and south of the existing road. As there is significantly less traffic on the old road, this is hoped to become friendlier for non-motorised vehicles. Accesses at the northern and southern ends of the old road will link it with the new road and will only be wide enough for pedestrians and cyclists. There will be no new footpaths or cycle lanes on the new road.

8.1.3 An analysis of personal injury collisions identified a total of 557 collisions occurred within the study area over the period between January 2009 to December 2013, of which 7 (1.3%) were fatal collisions. Across the study area in general, the collision data does not appear to highlight any road layout / design issues which need addressing by the proposed scheme, and along Five Mile Lane itself, the proposed scheme has the potential to improve driving conditions, and therefore provide safety benefits to the current situation.

8.1.4 The traffic modelling results show that the improvements result in no significant capacity or delay along the local highway network in both forecast years for the areas covered by the scheme. Roads outside of this may result in traffic growth; however, this is acknowledged by the WG and a separate scheme will be needed to address this.

8.1.5 There is no reason why the Five Mile Lane, along with other junction improvements, should not be granted outline planning consent as it provides an alternative route and, therefore, gives network resilience and journey time reliability, which would be necessary for unlocking development potential at the Enterprise Zones and proposed future expansion of Cardiff Airport.

Figure 1: Study Area



File Name: \\carf\highways_common\HHJ\JOBS\3512646D-HHC Links to St Athan and Cardiff Airport\Transportation\Reports\Transport Assessment\Report\FIGURES\Figure 1.dwg

Plot Date: 31/03/2015 12:51:27

Login: Smith, Geraint

Project Number: 3512646D-HHC | Drawing Number: FIGURE 1 | Revision: -

NOTES

1. THIS DRAWING WAS PRODUCED IN AUTOCAD AND SHOULD NOT BE AMENDED BY HAND.
2. DO NOT SCALE FROM THIS DRAWING, USE FIGURED DIMENSIONS ONLY.

KEY

FIVE MILE LANE

STUDY AREA

ASSESSMENT JCT

Rev	Date	Description	By	Chk	App

FOR ISSUE

PARSONS BRINCKERHOFF

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Tel: 44-(0)29-2082-7000
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Client:

VALE OF GLAMORGAN COUNCIL

Site/Project:

FIVE MILE LANE IMPROVEMENTS

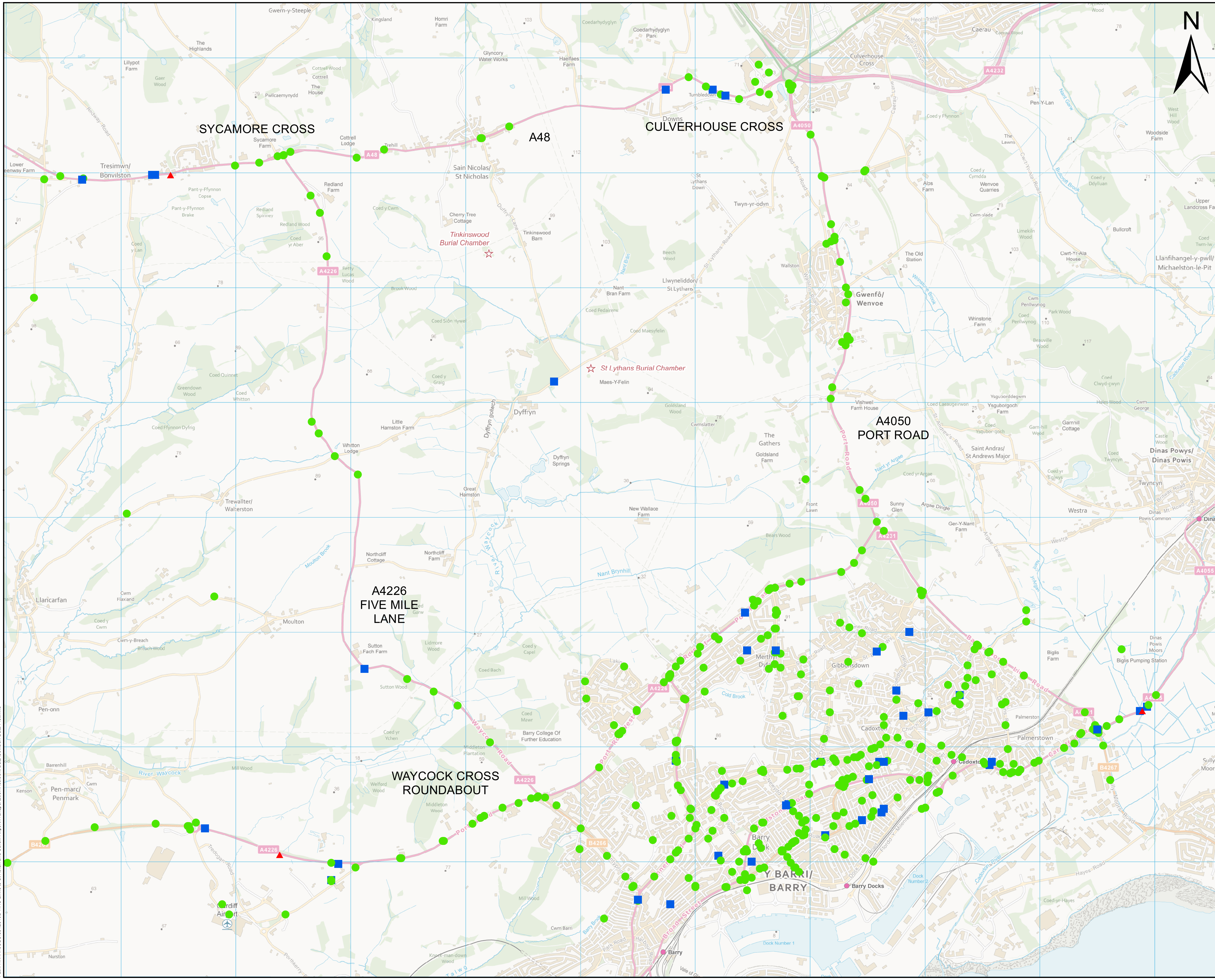
Title:

STUDY AREA

Drawn:	GS		Checked:	GC	
Designed:	TL		Approved:	JC	
Date: 30/01/2015	Scale: NTS	A3	Sheet: 1 OF 1		

Project Number:	Drawing Number:	Revision:
3512646D-HHC	FIGURE 1	-

Figure 2: Collision Location Map



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Notes

Legend

Accident Severity

- Fatal
- Serious
- Slight

Data covers 5-year period between January 2009 and December 2013

Revision Details	By / Check	Date	Suffix

Drawing Status: FOR ISSUE

Job Title: Five Mile Lane Improvement Scheme

Drawing Title: Five Year Accident Plot Data

Scale at A3: 1:30,000

Drawn: TL

Stage 1 check	Stage 2 check	Originated	Date
GC	JC	TL	23/04/2015

29 Cathedral Road
Cardiff, CF11 9HA
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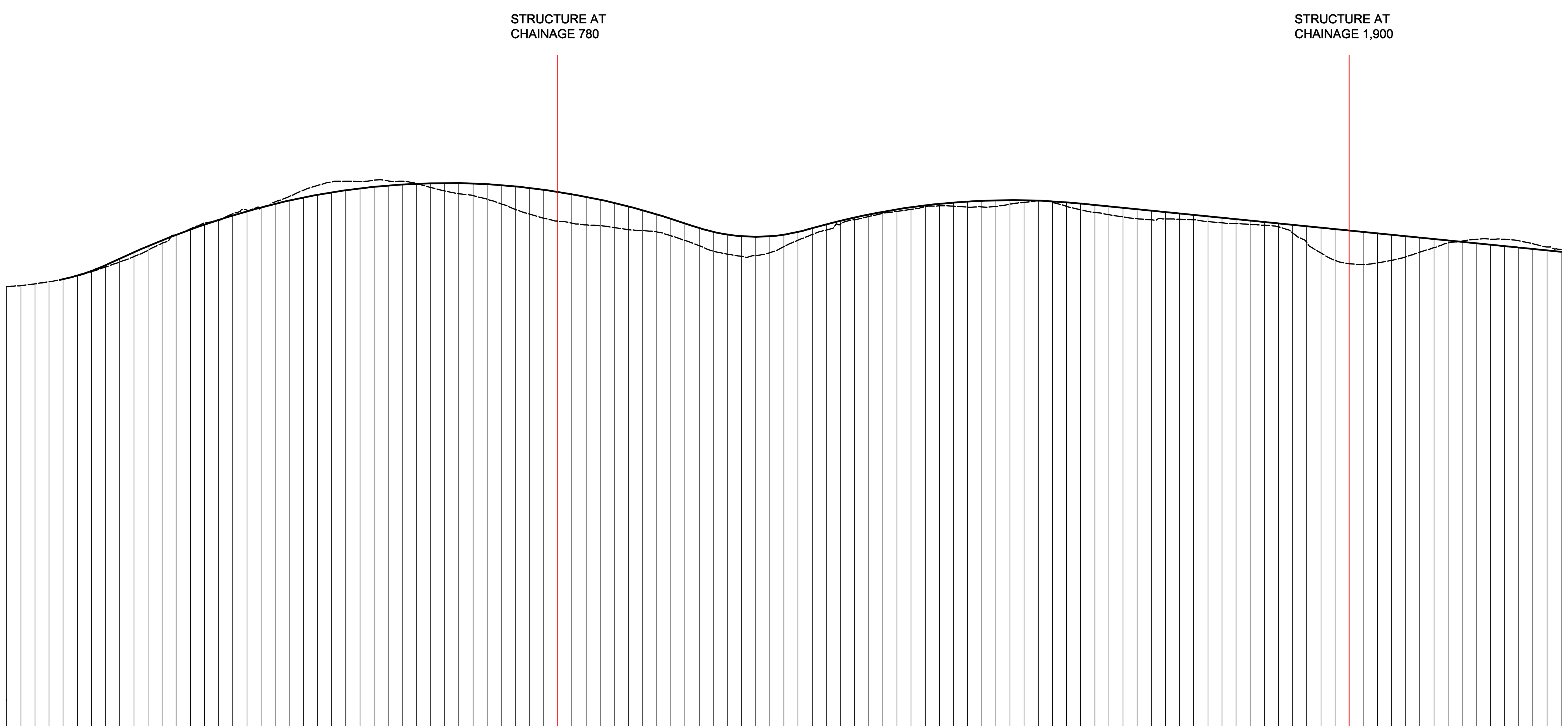
PARSONS BRINCKERHOFF

Drawing Number: **Figure 2** Rev: 1

Path: H:\HHI\JOBS\3512646D-HHC Links to St Athan and Cardiff Airport\Transportation\Accident Data\Collision Data Plot.mxd

Figure 3: Five Mile Lane Improvements

SCALE OF PLAN 1:5,000



Datum 14.0 AOD

CHAINAGE	PROPOSED LEVEL (MC99)	EXISTING LEVEL	LEVEL DIFFERENCE
0.00	76.511	76.511	0.000
20.00	76.677	76.677	-0.005
40.00	76.912	76.912	0.007
60.00	77.216	77.216	-0.009
80.00	77.590	77.590	-0.011
100.00	78.094	78.094	-0.027
120.00	78.752	78.752	-0.107
140.00	79.564	79.564	-0.249
160.00	80.494	80.494	-0.471
180.00	81.399	81.399	-0.622
200.00	82.264	82.264	-0.591
220.00	83.090	83.090	-0.429
240.00	83.875	83.875	0.009
260.00	84.620	84.620	0.101
280.00	85.325	85.325	0.225
300.00	85.990	85.990	-0.105
320.00	86.616	86.616	0.229
340.00	87.201	87.201	0.158
360.00	87.746	87.746	-0.085
380.00	88.251	88.251	0.275
400.00	88.716	88.716	0.575
420.00	89.142	89.142	1.050
440.00	89.527	89.527	1.323
460.00	89.872	89.872	1.482
480.00	90.177	90.177	1.284
500.00	90.443	90.443	0.957
520.00	90.668	90.668	0.920
540.00	90.853	90.853	0.657
560.00	90.998	90.998	0.441
580.00	91.103	91.103	0.029
600.00	91.169	91.169	-0.605
620.00	91.194	91.194	-1.110
640.00	91.179	91.179	-1.504
660.00	91.124	91.124	-1.709
680.00	91.029	91.029	-2.126
700.00	90.895	90.895	-2.644
720.00	90.720	90.720	-3.259
740.00	90.505	90.505	-3.710
760.00	90.250	90.250	-4.035
780.00	89.955	89.955	-4.160
800.00	89.621	89.621	-4.104
820.00	89.246	89.246	-3.985
840.00	88.831	88.831	-3.684
860.00	88.376	88.376	-3.487
880.00	87.882	87.882	-3.273
900.00	87.347	87.347	-2.884
920.00	86.772	86.772	-2.499
940.00	86.157	86.157	-2.412
960.00	85.502	85.502	-2.451
980.00	84.831	84.831	-2.502
1000.00	84.290	84.290	-2.743
1020.00	83.902	83.902	-2.776
1040.00	83.668	83.668	-2.843
1060.00	83.588	83.588	-2.655
1080.00	83.661	83.661	-2.319
1100.00	83.889	83.889	-1.698
1120.00	84.270	84.270	-1.164
1140.00	84.799	84.799	-0.879
1160.00	85.342	85.342	-0.806
1180.00	85.845	85.845	-0.481
1200.00	86.308	86.308	-0.301
1220.00	86.732	86.732	-0.291
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1340.00	88.430	88.430	-0.511
1360.00	88.574	88.574	-0.787
1380.00	88.677	88.677	-0.855
1400.00	88.740	88.740	-0.860
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1440.00	88.746	88.746	-0.300
1460.00	88.689	88.689	0.054
1480.00	88.592	88.592	-0.137
1500.00	88.455	88.455	-0.551
1520.00	88.279	88.279	-0.880
1540.00	88.079	88.079	-1.042
1560.00	87.879	87.879	-1.173
1580.00	87.679	87.679	-1.281
1600.00	87.479	87.479	-1.344
1620.00	87.279	87.279	-1.302
1640.00	87.079	87.079	-0.970
1660.00	86.879	86.879	-0.819
1680.00	86.679	86.679	-0.680
1700.00	86.479	86.479	-0.754
1720.00	86.279	86.279	-0.724
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1760.00	85.879	85.879	-0.570
1780.00	85.679	85.679	-0.467
1800.00	85.479	85.479	-0.488
1820.00	85.279	85.279	-1.142
1840.00	85.079	85.079	-2.321
1860.00	84.879	84.879	-3.599
1880.00	84.679	84.679	-4.427
1900.00	84.479	84.479	-4.696
1920.00	84.279	84.279	-4.614
1940.00	84.079	84.079	-4.181
1960.00	83.879	83.879	-3.625
1980.00	83.679	83.679	-2.943
2000.00	83.479	83.479	-2.078
2020.00	83.279	83.279	-1.242
2040.00	83.079	83.079	-0.388
2060.00	82.879	82.879	0.087
2080.00	82.679	82.679	0.536
2100.00	82.479	82.479	0.758
2120.00	82.279	82.279	0.937
2140.00	82.079	82.079	0.950
2160.00	81.879	81.879	0.706
2180.00	81.679	81.679	0.446
2200.00	81.479	81.479	0.297

SCALE H 1:5,000 V 1:500

NOTES

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Rev	Date	Description	By	Chk	App

FOR INFORMATION

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1 Capital Quarter,
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Tel: 44-(0)2920 769200

Client: VALE of GLAMORGAN BRO MORGANNWG

Site/Project: FIVE MILE LANE IMPROVEMENTS

Title: ROUTE PLAN AND LONGITUDINAL SECTION

Drawn: IM		Checked:	
Designed: IM		Approved:	
Date: 16/10/2015	Scale: AS SHOWN @ A1	Sheet: 1 OF 2	
Project Number: 3512646D-HHC		Drawing Number: FIGURE 3a	Revision: -

3512646D-HHC FIGURE 1.2a -

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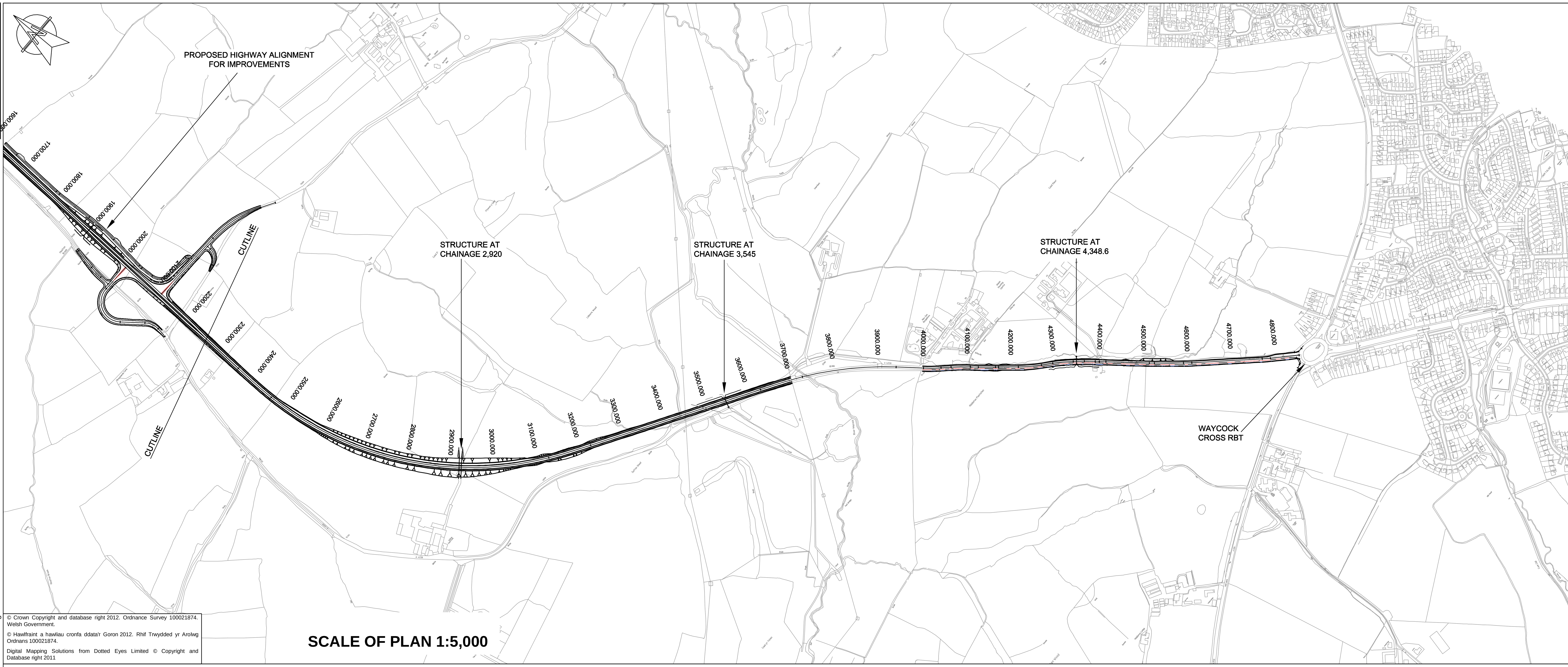
Login: Millward, Ianto
Plot Date: 21/10/2015 09:40:11



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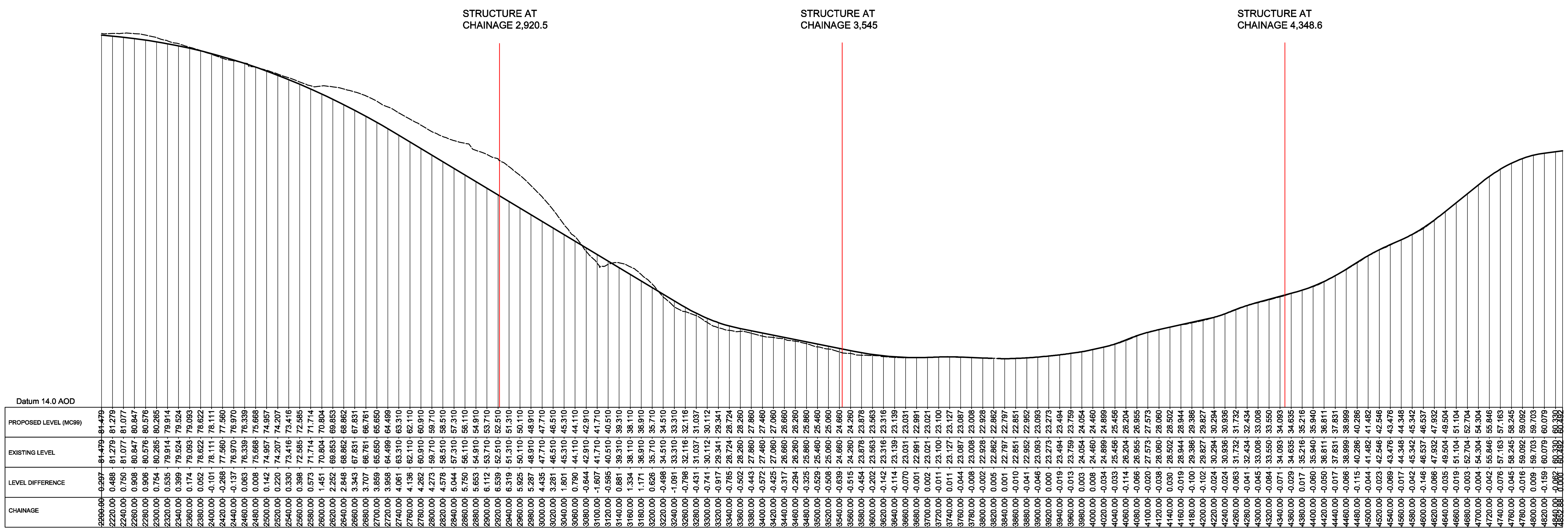

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Title:

ROUTE PLAN AND LONGITUDINAL SECTION

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Designed: IM		Approved:	
Date: 16/10/2015	Scale: AS SHOWN @ A1	Sheet: 2 of 2	
Project Number: 3512646D-HHC		Drawing Number: FIGURE 3b	Revision: -

File Name: H:\HHI\JOBS\3512646D-HHC Links to St Athan and Cardiff Airport\Planning\ACAD\EA Figures\Figure 1.2 - Route Plan and Longitudinal section.dwg

Login: Millward, Ianto
Plot Date: 21/10/2015 09:41:25

3512646D-HHC | FIGURE 1.2a | -

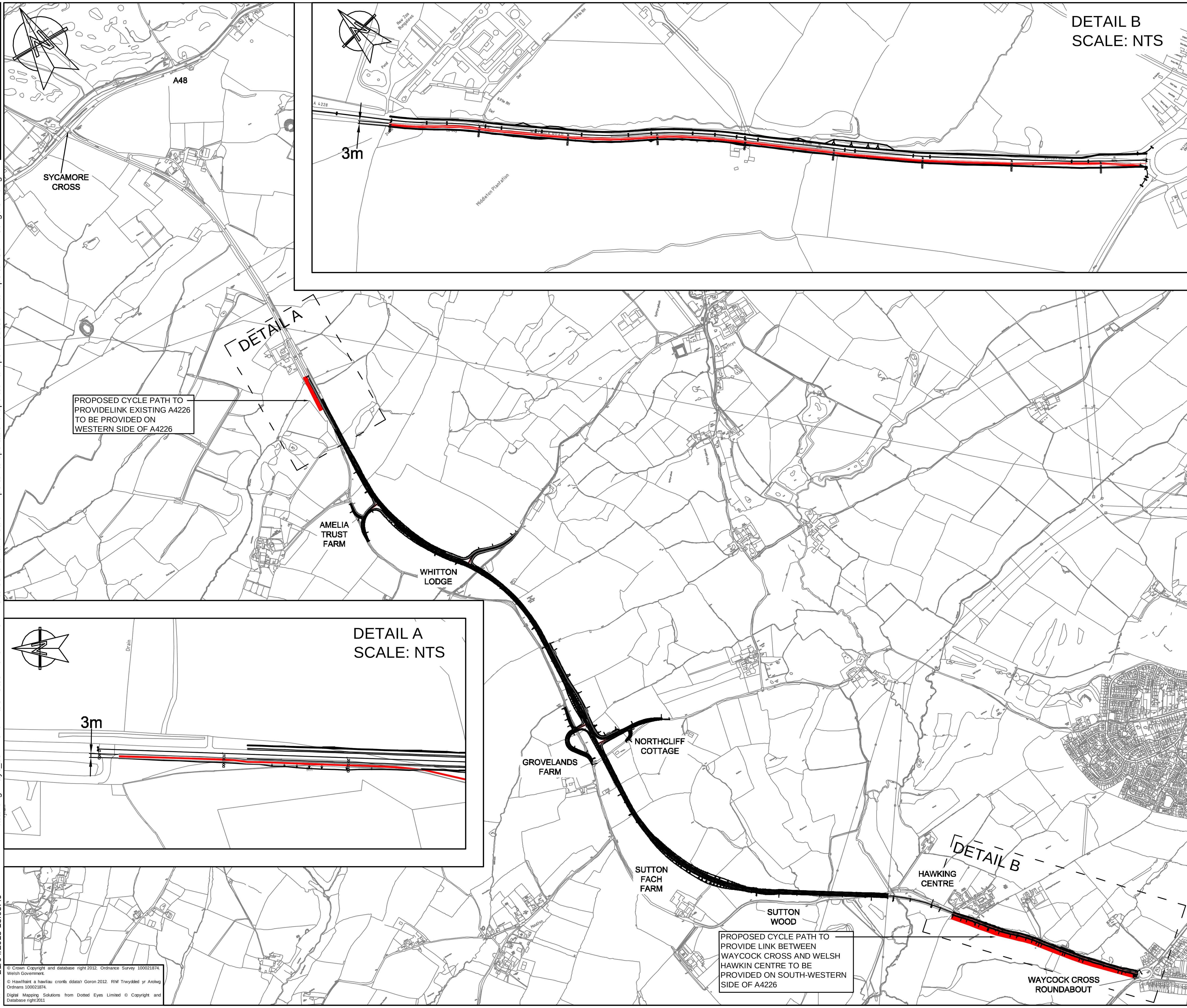
Figure 4: Proposed Cycle Routes

Project Number: 3512646D-HHC | Drawing Number: FIGURE 4 | Revision: -

File Name: \\carf\highways_common\HHIJOBS\3512646D-HHC Links to St Athan and Cardiff Airport\Transportation\Reports\Transport Assessment\Report\FIGURES\Figure 4.dwg

Plot Date: 21/04/2015 15:03:49

Login: Smith, Geraint



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KEY

PROPOSED CYCLE PATHS (3m) WIDE

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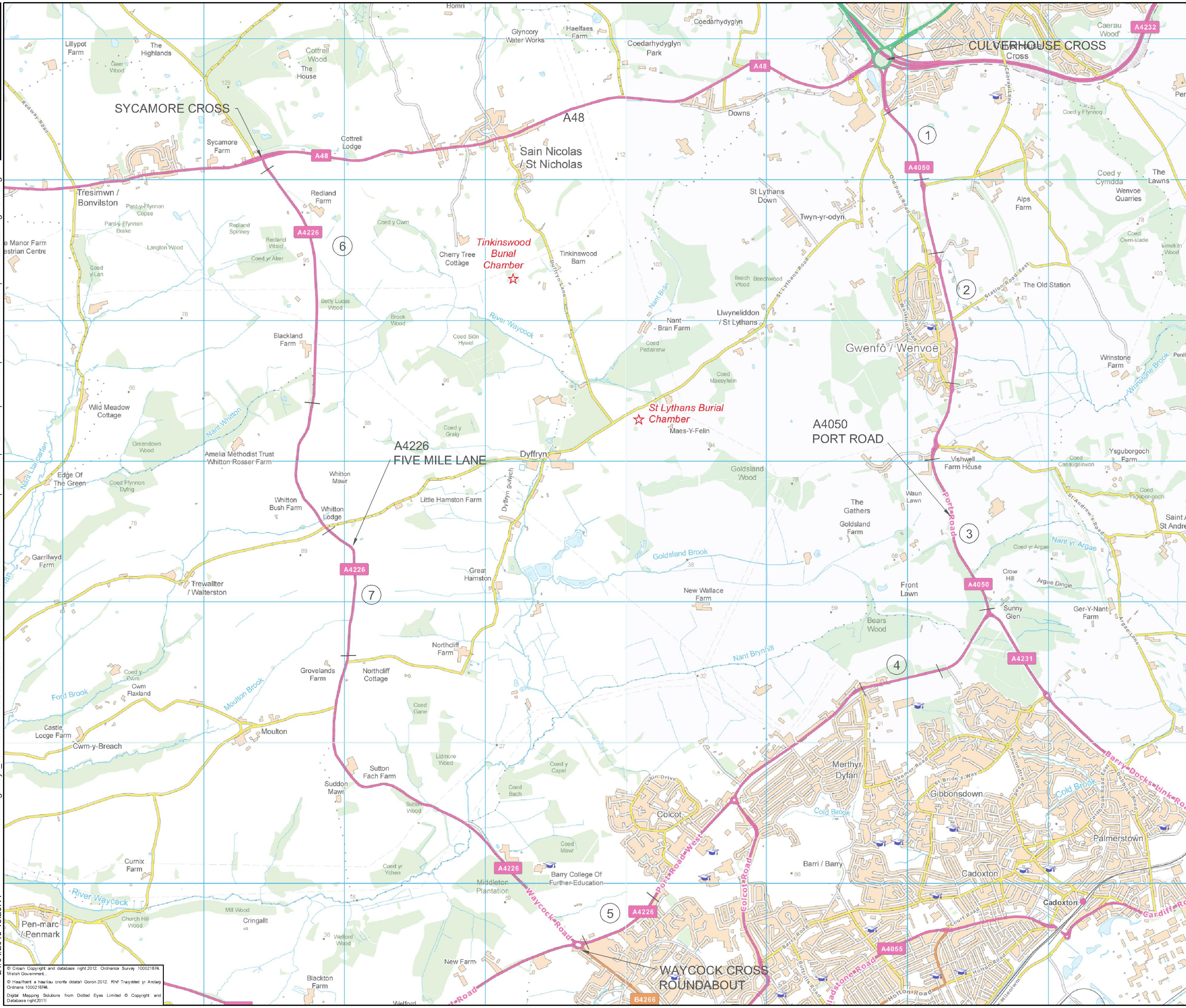
Site/Project: FIVE MILE LANE IMPROVEMENTS

Title: PROPOSED CYCLE ROUTES

Drawn: GS		Checked: GC			
Designed: GS		Approved: JC			
Date: 04/02/2015	Scale: NTS	A3	Sheet: 1 OF 1		
Project Number: 3512646D-HHC		Drawing Number: FIGURE 4		Revision: -	

Figure 5: Link Analysis Sections Map



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KEY

1	BETWEEN OLD PORT ROAD/BROOKLANDS TERRACE ROUNDABOUT TO THE ALPS ROUNDABOUT FOR VOG COUNCIL
2	BETWEEN WENVOE NORTH ROUNDABOUT TO WENVOE SOUTH ROUNDABOUT
3	BETWEEN ST ANDREW'S ROAD TO THE A4231 ROUNDABOUT
4	BETWEEN PENCOEDTRE ROAD AND MERTHYR DYFAN ROAD
5	BETWEEN STIRLING ROAD AND WAYCOCK CROSS
6	BETWEEN SYCAMORE CROSS AND AMELIA TRUST FARM (FIVE MILE LANE)
7	BETWEEN CROSSROADS TO DYFFRYN AND WALTERSTON, AND LANE TO NORTHCLIFF FARM (FIVE MILE LANE)

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Client: VALE OF GLAMORGAN COUNCIL

Site/Project: FIVE MILE LANE IMPROVEMENTS

Title: LINK ANALYSIS ROAD SECTIONS

Drawn: GS		Checked: GC	
Designed: TL		Approved: JC	
Date: 11/02/2015	Scale: NTS	A3	Sheet: 1 OF 1
Project Number: 3512646D-HHC	Drawing Number: FIGURE 5	Revision: -	

File Name: \\carf\highways_common\HH\JOBS\3512646D-HHC Links to St Athan and Cardiff Airport\Transportation\Reports\Transport Assessment\Report\FIGURES\Figure 5.dwg

Login: Smith, Geraint
Plot Date: 21/04/2015 15:23:44

3512646D-HHC FIGURE 5 -

Figure 6: Sycamore Cross Existing Junction

Login: Smith, Geraint
Plot Date: 31/03/2015 13:08:30
File Name: \\carf\highways_common\HH\JOBS\3512646D-HHC Links to St Athan and Cardiff Airport\Transportation\Reports\Transport Assessment\Report\FIGURES\Figure 6.dwg

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Client:
VALE OF GLAMORGAN

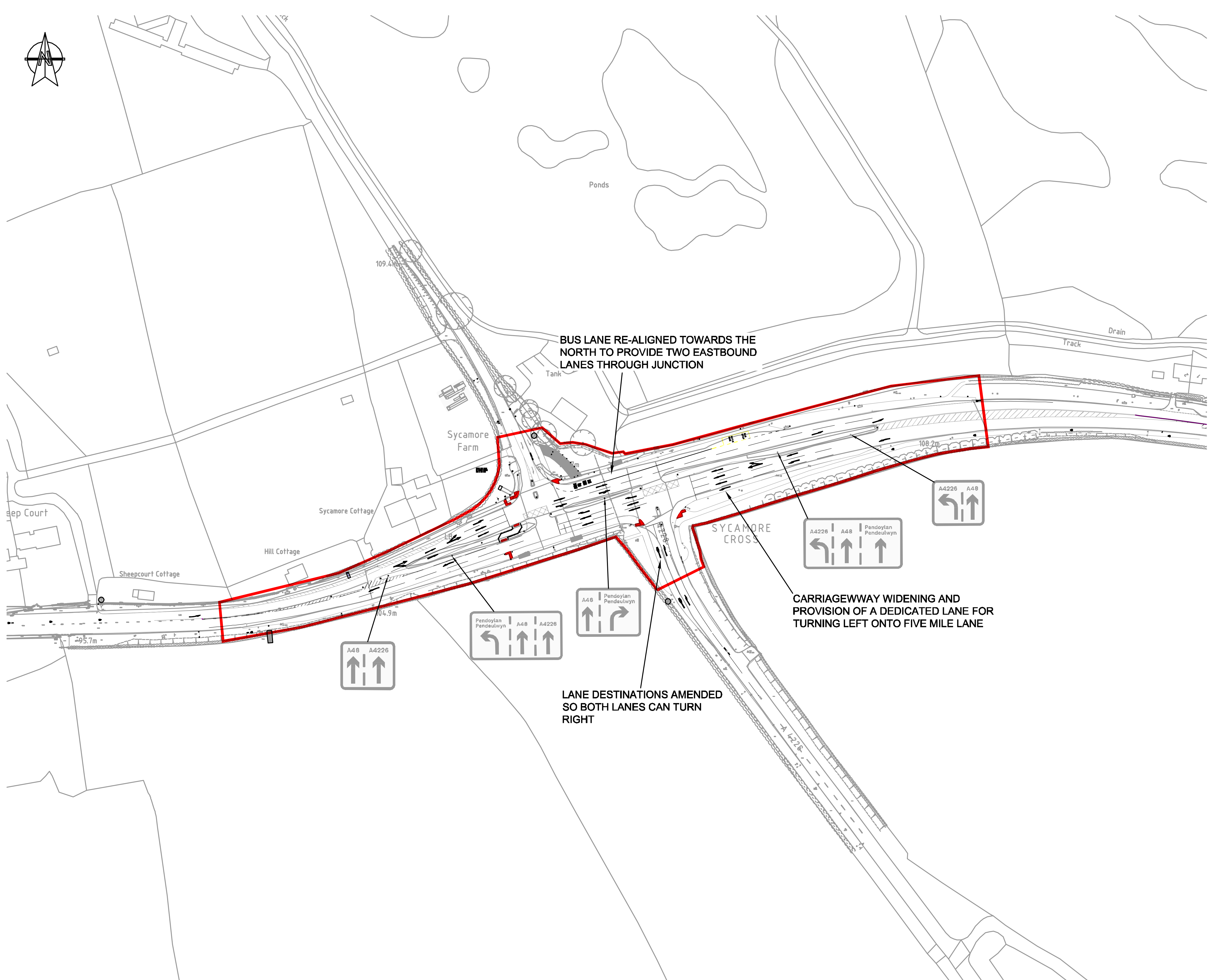
Site/Project:
FIVE MILE LANE IMPROVEMENTS

Title:
SYCAMORE CROSS

EXISTING JUNCTION

Drawn: GS			Checked: GC		
Designed: TL			Approved: JC		
Date: 09/02/2015	Scale: 1:1250	A1	Sheet: 1 OF 1		
Project Number: 3512646D-HHC			Drawing Number: Figure 6		Revision: -

Figure 7: Sycamore Cross Improvements



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Plot Date: 02/12/2015 16:01:50
Login: Watt, Chris

KEY

RED LINE BOUNDARY

Rev	Date	Description	By	Chk	App

PARSONS BRINCKERHOFF
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1 Queen Street
Bristol BS2 0HQ
Tel: 44-(0)1179-306200

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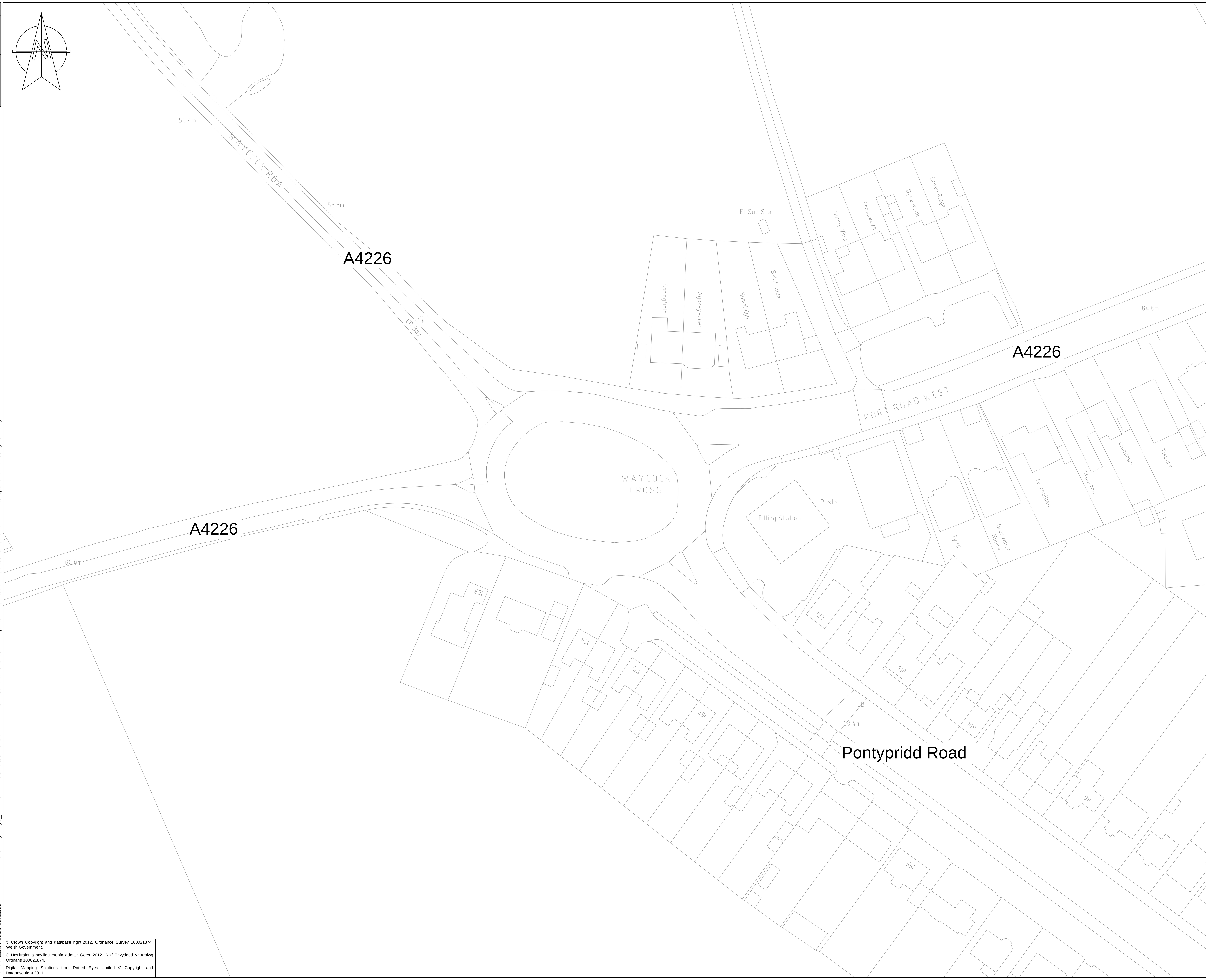
FIVE MILE LANE IMPROVEMENTS

Title:

SYCAMORE CROSS JUNCTION WORKS

Drawn: CEW		Checked:	
Designed: JM		Approved:	
Date: 27/11/2015	Scale: 1:2000	A3	Sheet:
Project Number: 3512646D		Drawing Number: FIGURE 7	Revision: -

Figure 8: Waycock Cross Existing Junction



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Client:
VALE OF GLAMORGAN

Site/Project:
FIVE MILE LANE IMPROVEMENTS

Title:
WAYCOCK CROSS EXISTING JUNCTION

Drawn:	IM		Checked:	GC	
Designed:	TL		Approved:	JC	
Date:	23/03/2015	Scale: 1:500	A1	Sheet:	1 OF 1
Project Number: 3512646D-HHC			Drawing Number: Figure 8		Revision: -

351246D-HHC Figure 8 -

Login: Smith, Geraint Plot Date: 21/04/2015 13:11:35 File Name: \\carf\highways_common\HHI\JOBS\351246D-HHC Links to St Athan and Cardiff Airport\Transportation\Reports\Transport Assessment\Report\FIGURES\Figure 8.dwg

Figure 9: Waycock Cross Improvements

Login: Nichols, Chris
Plot Date: 14/07/2015 09:10:42
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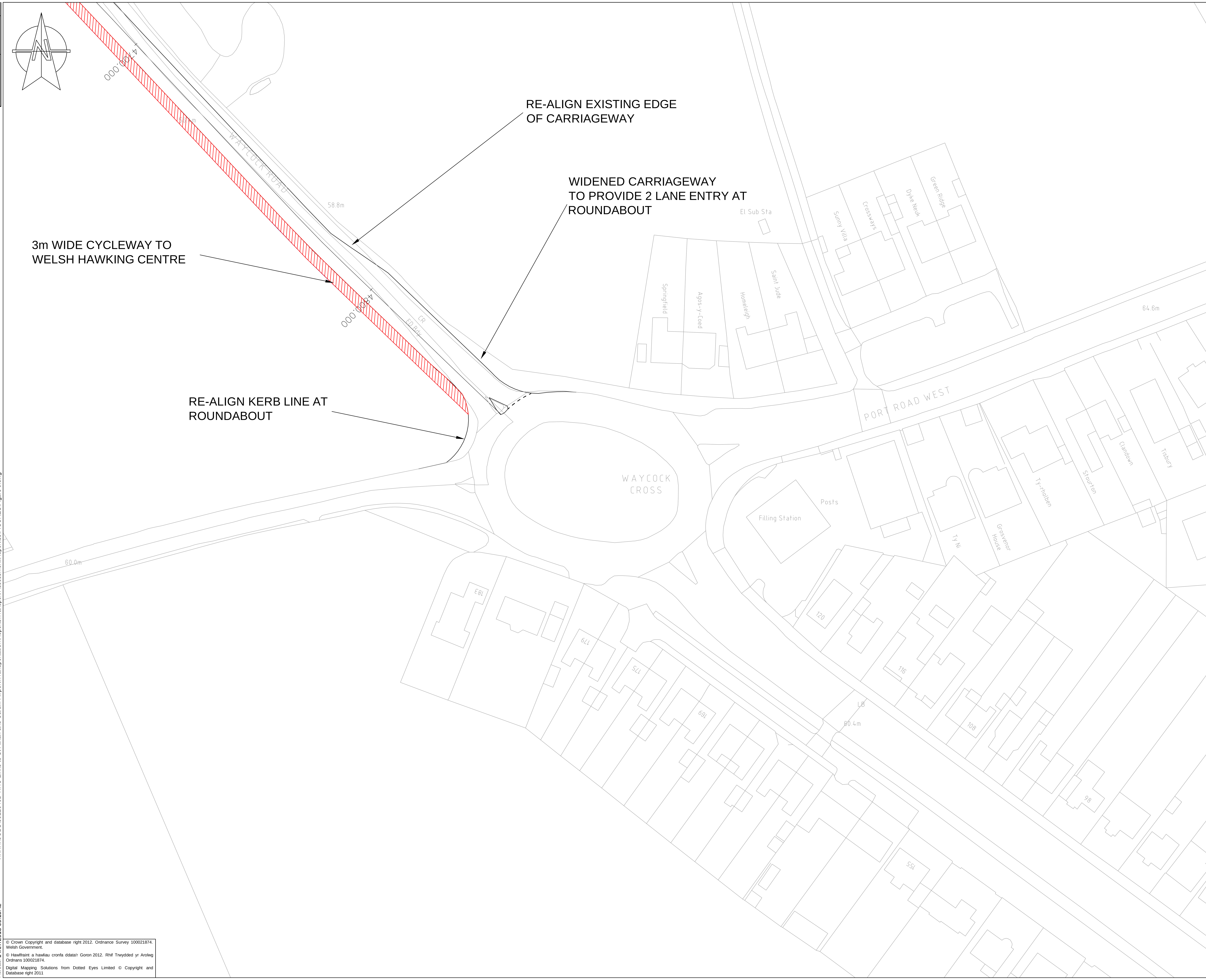

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Fax: 44-(0)29-2082-7001

Client: VALE OF GLAMORGAN

Site/Project: FIVE MILE LANE IMPROVEMENTS

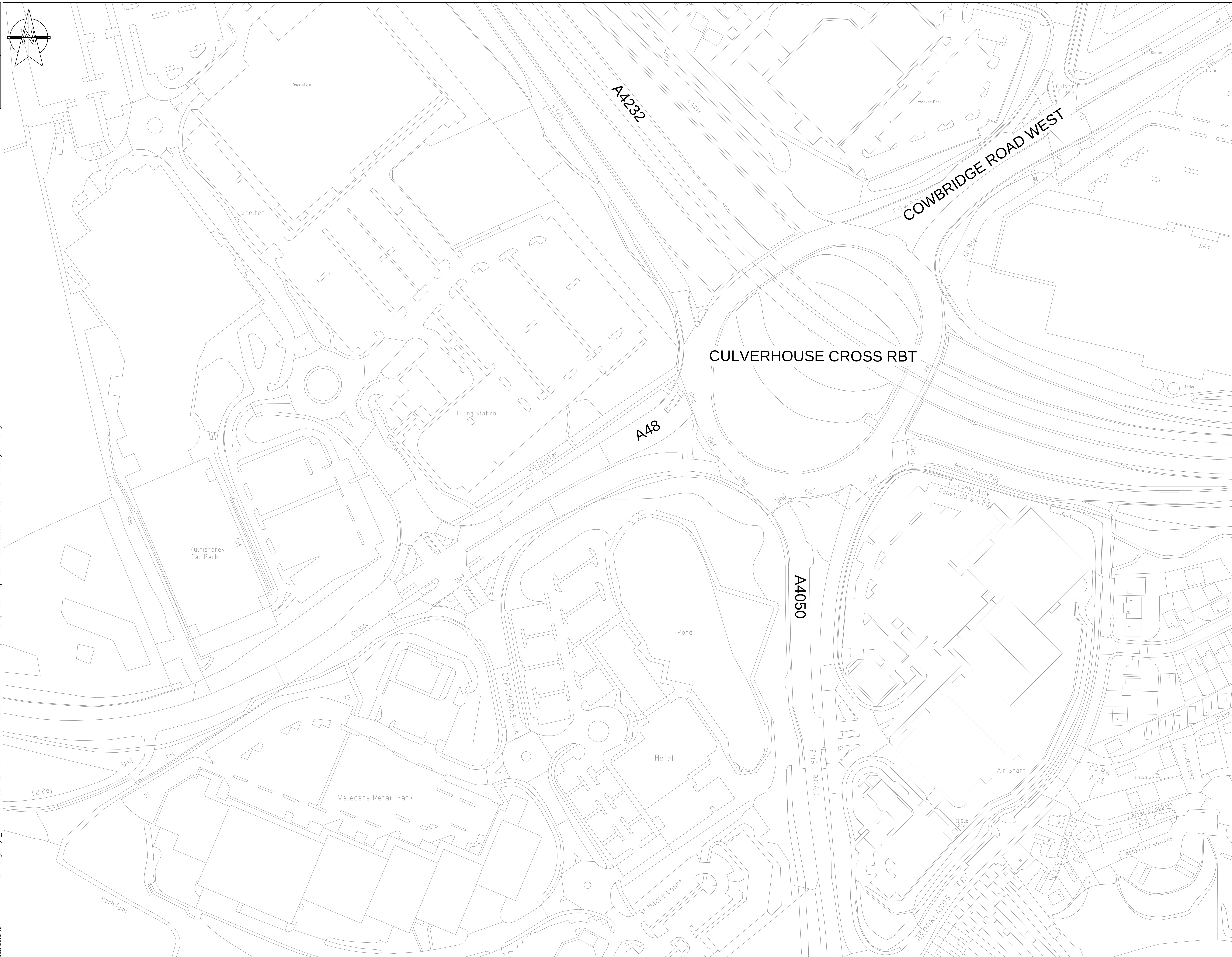
Title: WAYCOCK CROSS IMPROVEMENTS

Drawn: IM		Checked: CN	
Designed: LEP		Approved: JC	
Date: 23/03/2015	Scale: 1:500	A1	Sheet: 1 OF 1

Project Number:	Drawing Number:	Revision
3512646D-HHC	Figure 9	-

Project Number	Drawing Number	Revision
351246D-HHC	Figure 9	-

Figure 10: Culverhouse Cross Existing Junction



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VALE OF GLAMORGAN

Site/Project:

FIVE MILE LANE IMPROVEMENTS

Title:

CULVERHOUSE CROSS EXISTING JUNCTION

Drawn: IM		Checked: GC	
Designed: TL		Approved: JC	
Date: 23/03/2015	Scale: 1:1000	A1	Sheet: 1 OF 1
Project Number: 3512646D-HHC	Drawing Number: Figure 10	Revision: -	

3512646D-HHC Figure 10 -

File Name: \\car\highways_common\HHJOBS\3512646D-HHC Links to St Athan and Cardiff Airport\Transportation\Reports\Transport Assessment\Report\FIGURES\Figure 10.dwg

Login: Smith, Geraint
Plot Date: 21/04/2015 13:14:07

Appendix A: Project Scoping Report

Prepared by GJ
Approved by RW

PB Cardiff

VALE OF GLAMORGAN

LINKS TO CARDIFF AIRPORT AND ST ATHAN

DRAFT SCOPING NOTE

24 OCTOBER 2014

PROJECT: 3512646D-HHC

1 INTRODUCTION

1.1 PB has been commissioned by the Welsh Government (WG) to produce a Transport Assessment (TA) in support of a planning application for highway improvements to St Athan and Cardiff Airport that will be submitted to Vale of Glamorgan (VoG).

1.2 This technical note outlines the proposed methodology for producing the TA to support the planning application for the highway link improvements to Five Mile Lane. The purpose of the TA is to assess the likely highway impact and traffic shift associated with the proposed alterations to Five Mile Lane on the local network. The assessment will also consider the impact of the proposed improvements on sustainable transport modes.

1.3 The TA will cover the following element:

- Policy Review
- Existing Conditions
- Development Proposal
- Assessment Methodology
- Highway Assessment Results
- Summary

2 PROPOSED METHODOLOGY

2.1 This section outlines the proposed methodology for producing the TA. The study area of the TA will consist of two routes:

- The A4050 between Culverhouse Cross and Boverton
- The A48/A4226 between Culverhouse Cross and Boverton, via Sycamore Cross

2.2 The A4226 between Waycock Cross and Boverton is common for both routes. The content of the TA is in accordance with the ‘Planning Policy Wales Technical Advice Note 18: Transport’ (2007), based upon ‘Transport Assessment and Implementation: A Guide’ 2005 by the Scottish Executive and the IHT ‘Guidance on Traffic Impact Assessment’ 1994. The Guidance on Traffic Impact Assessment states that:

> *“Developers should submit transport assessment to accompany planning applications for major developments. The precise scope and content of each assessment will depend upon the scale, travel intensity and characteristics of the proposal. In general, assessments should as a minimum provide information on the likely model split of journeys to and from the site, together with details of the measures proposed to improve access by public transport, walking and cycling and reduce the number and impacts of motorised journeys associated with the proposal.”*

Stage 1: Policy Review

2.3 This section will assess the compatibility of the scheme with the relevant policy framework at a national, regional, and local level. It will also identify relevant Enterprise Zone policies and initiatives in Wales.

Stage 2: Existing Conditions

2.4 In order to assess the effect that the proposed alterations to Five Mile Lane will have on the operation of the study network, it is necessary to understand the existing conditions of the transport network.

2.5 The TA will review the existing pedestrian, cycling facilities and public transport connections along the network. It will also analyse the existing conditions on the local highway in terms of traffic volume, vehicle access, and existing parking locations.

2.6 All relevant data has been received by PB. Traffic data will be obtained from the Saturn model developed for the Links to St Athan and Cardiff Airport WelTAG study.

2.7 Collision analysis will be undertaken, which will identify the location, severity, and any common factors with the collisions recorded along the study route. The collision data will be obtained from the Links to St Athan and Cardiff Airport WelTAG study and cover the 5 years between 2009 and 2013.

Stage 3: Development Proposal

2.8 The proposed development will consist of improvements to Five Mile Lane as identified in the WelTAG study. These alterations aim to reduce travel time and congestion, improve the resilience of the local network whilst improving travel time reliability, quality and safety.

2.9 This section of the report will outline the development proposal, presenting specific detail regarding the carriageway width, proposed speed limit, construction timeframe etc. CAD drawings of the scheme will be provided as an appendix.

Stage 4: Assessment Method

2.10 This section will outline the methodology for the proposed assessment of the highway improvements to Five Mile Lane. It will identify the assessment periods, including the Base year (2014), Opening year (2016), and Design year scenario (2031). It should be noted that design year will represent a worst case scenario, given that TA's typically require a post submission assessment of 10 years.

2.11 This section will outline the traffic impact for each assessment scenario, based on the SATURN model developed for the WelTAG study. The following elements have been already assessed in the WelTAG assessment and it is assumed that this TA will use the information already provided:

- Committed developments are based on all aspirations in LDP (using TEMPRO and available TA) are already included in the SATURN model
- All committed highway improvements are included in the SATURN model
- All safety improvements for the study area have been included
- Growth rates are applied and accepted in the SATURN model - Opening Year (2016) and Future year (2031)

2.12 As part of the assessment traffic shift from Port Road to Five Mile Lane seen in the SATURN will be explained, with link and junction analyses conducted for the various sections of carriageway and junctions. The strategic impacts will be assessed by utilising the SATURN model.

2.13 This TA will assess the potential impact on an individual junction assessment, using Junctions 8 software, TRANSYT and Linsig V3. It is proposed that the following junctions will be assessed in the TA:

- Culverhouse Cross (TRANSYT), including surrounding roads for the various business parks
- A48/A4226 (LinSig)
- A4226/Port Rd W/Pontypridd Rd Roundabout (ARCADY)

2.14 The models will allow the operation of the individual junctions to be assessed in all assessment years. The analysis will show if the junctions are operating within capacity and if any potential highway improvements are needed. If measures are needed to improve the junction operations the TA will assess potential measures.

2.15 It is necessary to note that the junction with Port Road and Barry Docks Link Road will not be included – this will be explained and justified.

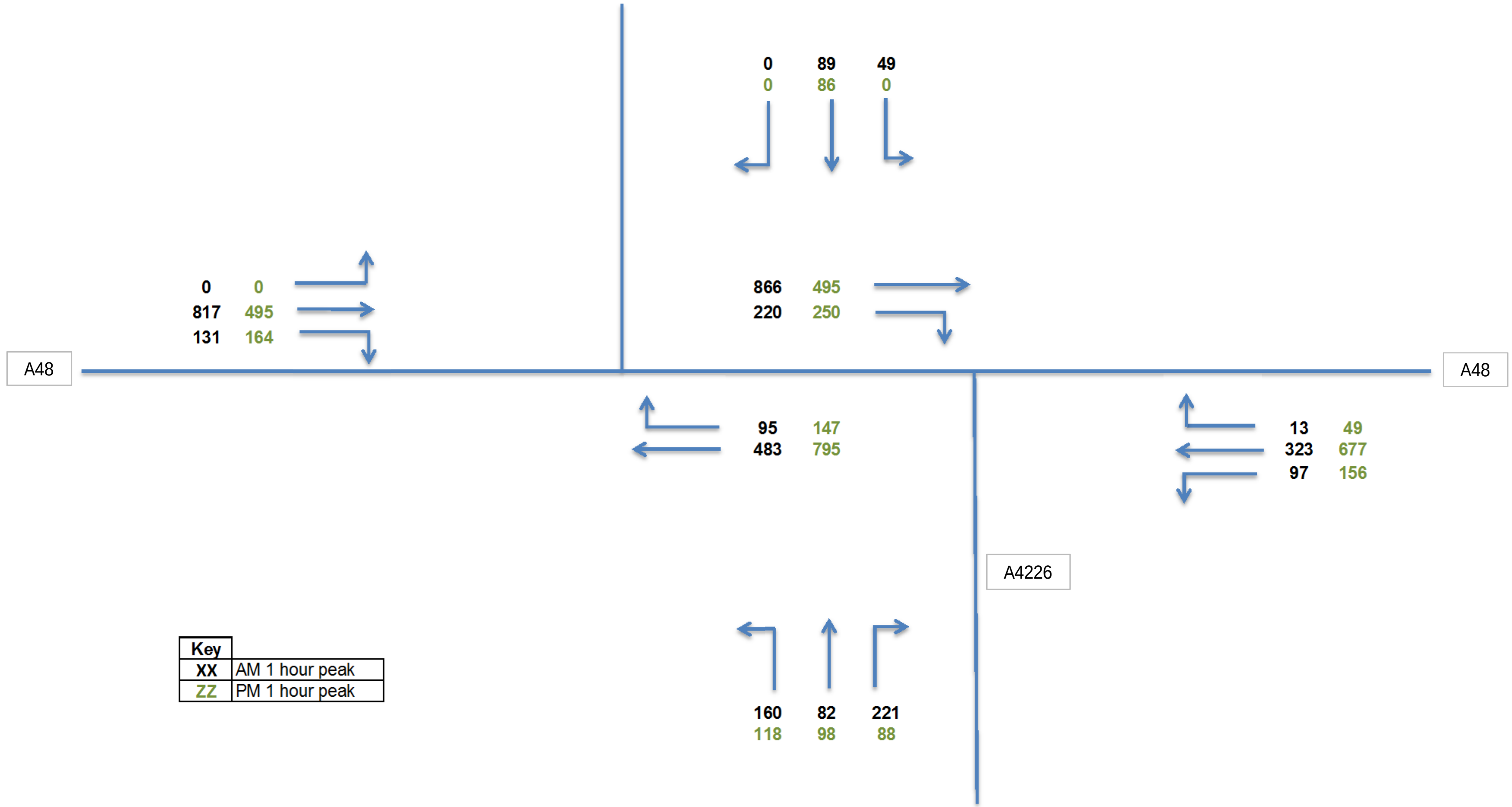
Stage 5: Highway Assessment Results

2.16 This section will present the impact of the proposed development in terms of traffic levels, travel time, queue length, and highway capacity.

Summary

2.17 This section will summarise the whole report, providing a brief overview of the development, and the results of the assessment.

Appendix B: Traffic Count Diagrams



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Fax: +44 (0)29 2082 7001

CLIENT/PROJECT
Vale of Glamorgan Council

TITLE
Sycamore Cross - Base Year Traffic Flows

DATE
30/01/2015

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Figure 1

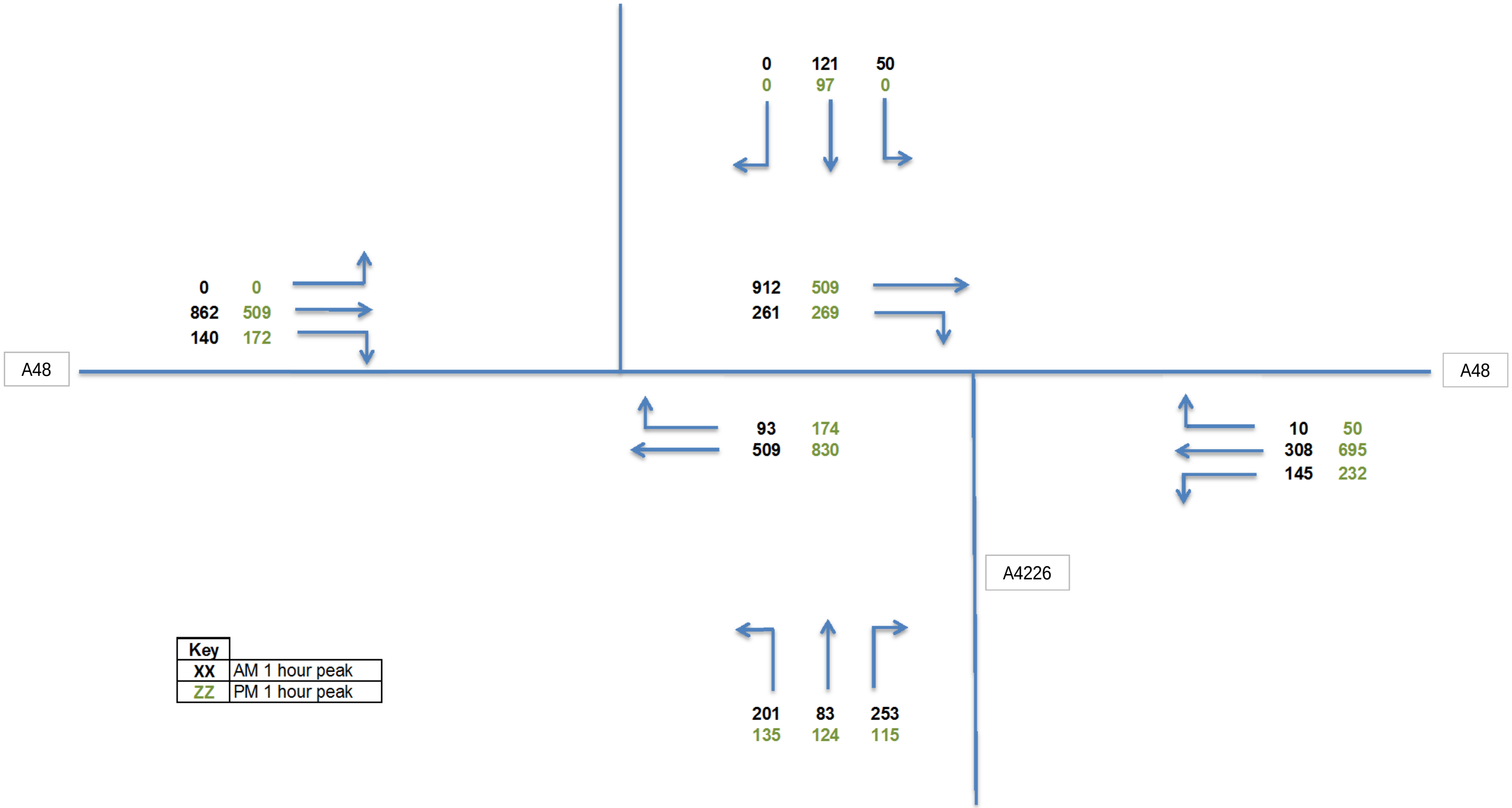

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Figure 2

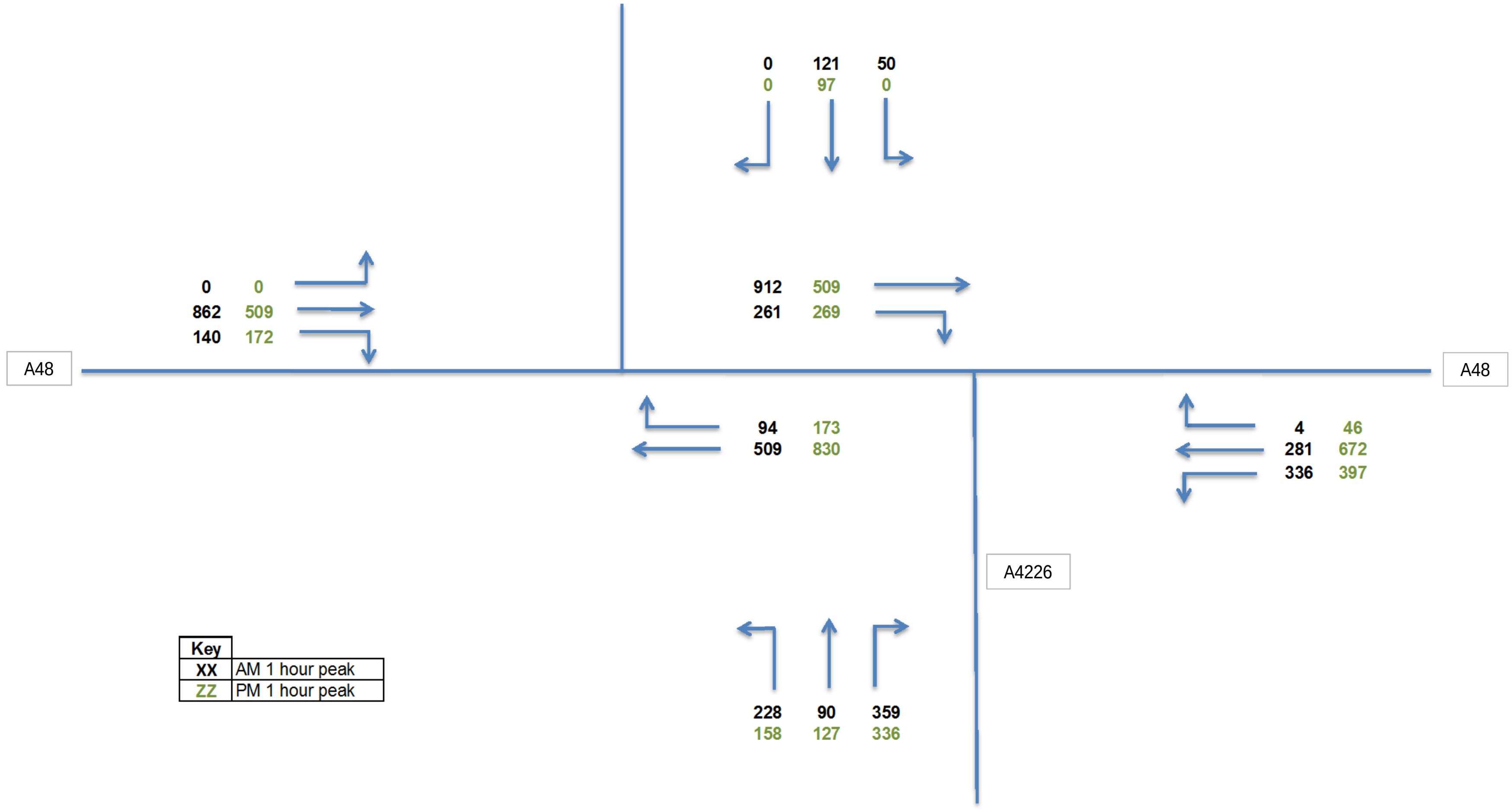

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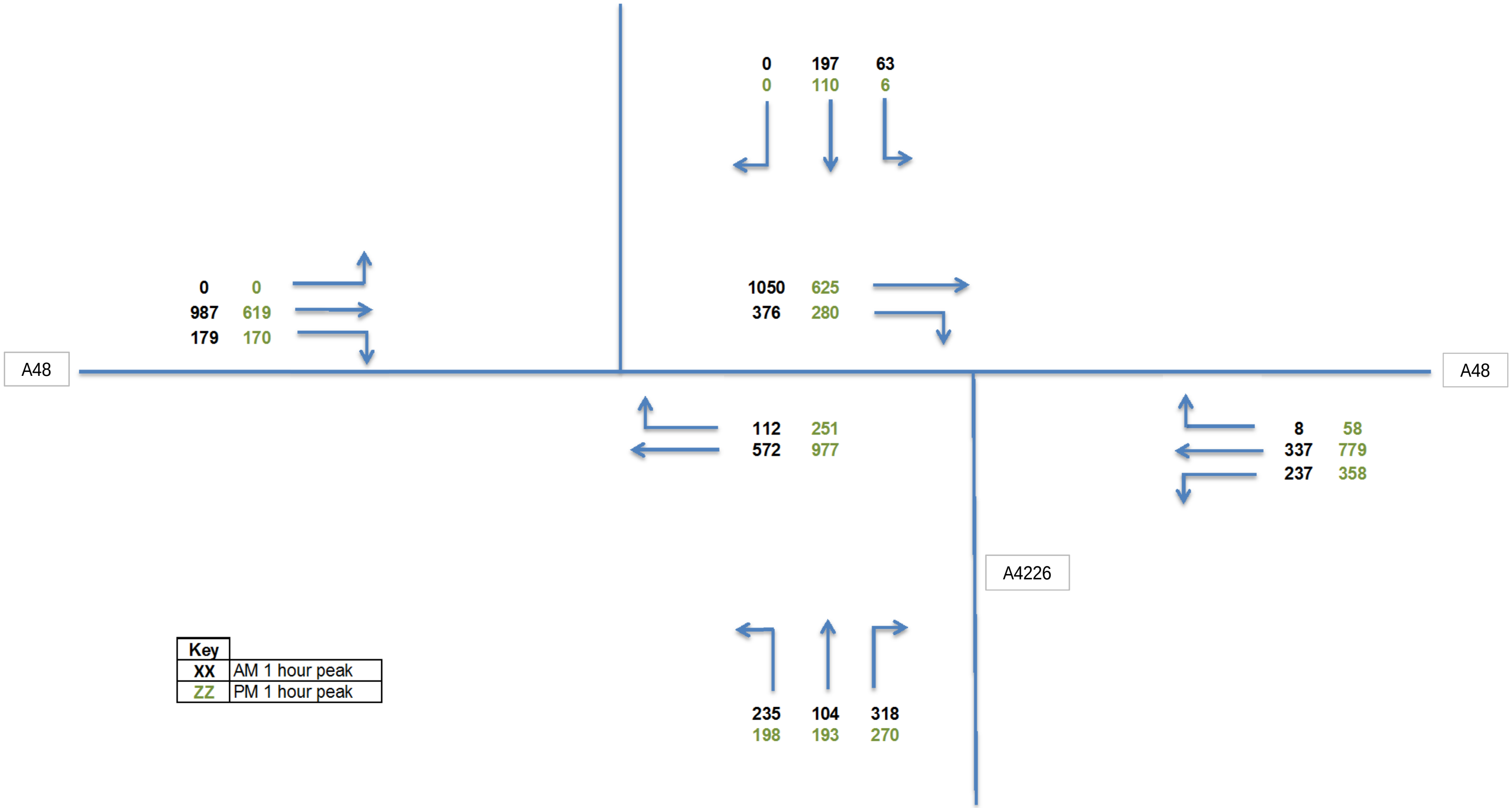
Figure 3



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TITLE
Sycamore Cross - 2032 DM Year Traffic Flows

DATE
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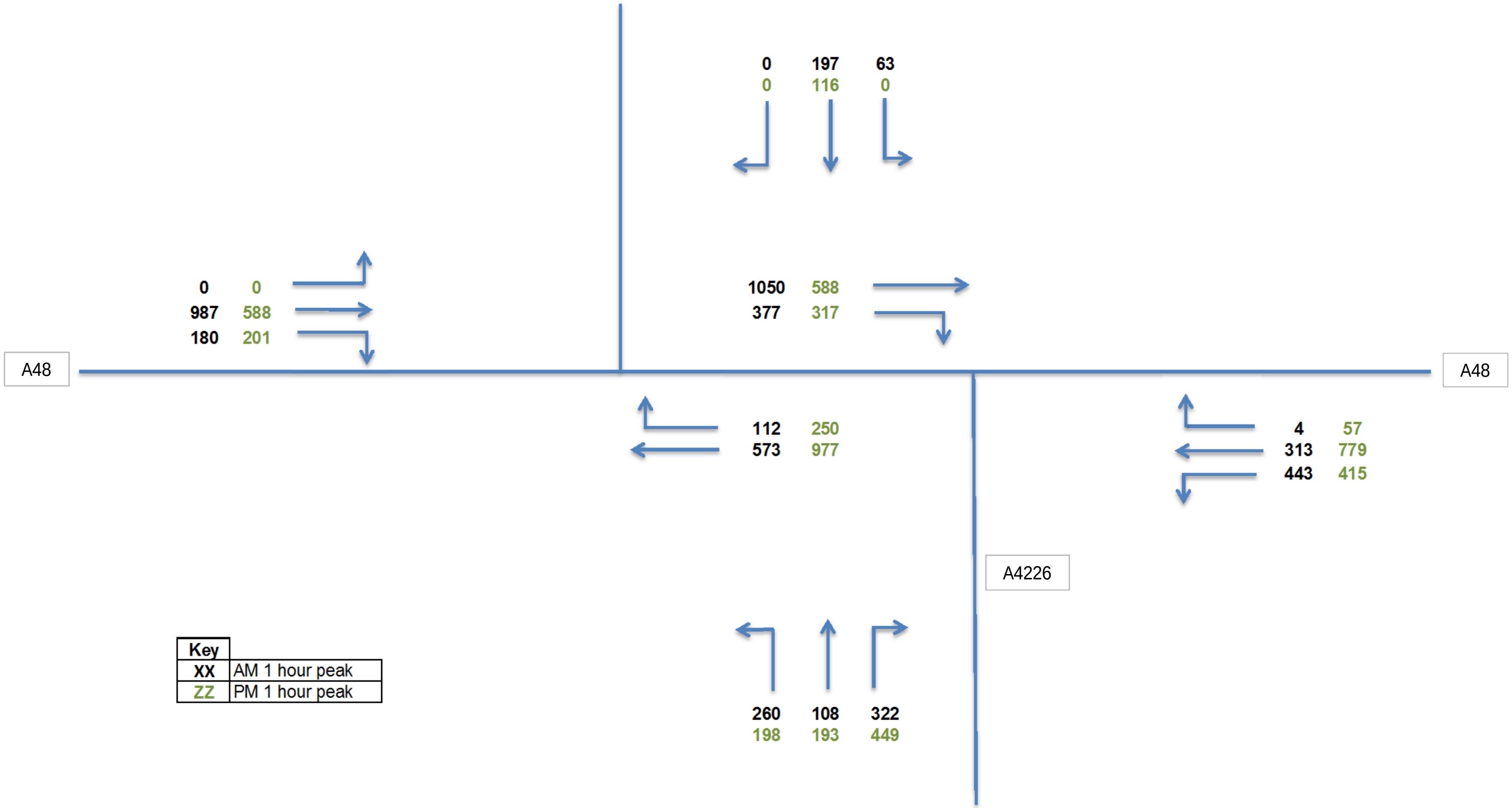
JC

Figure 4



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JC

Figure 5

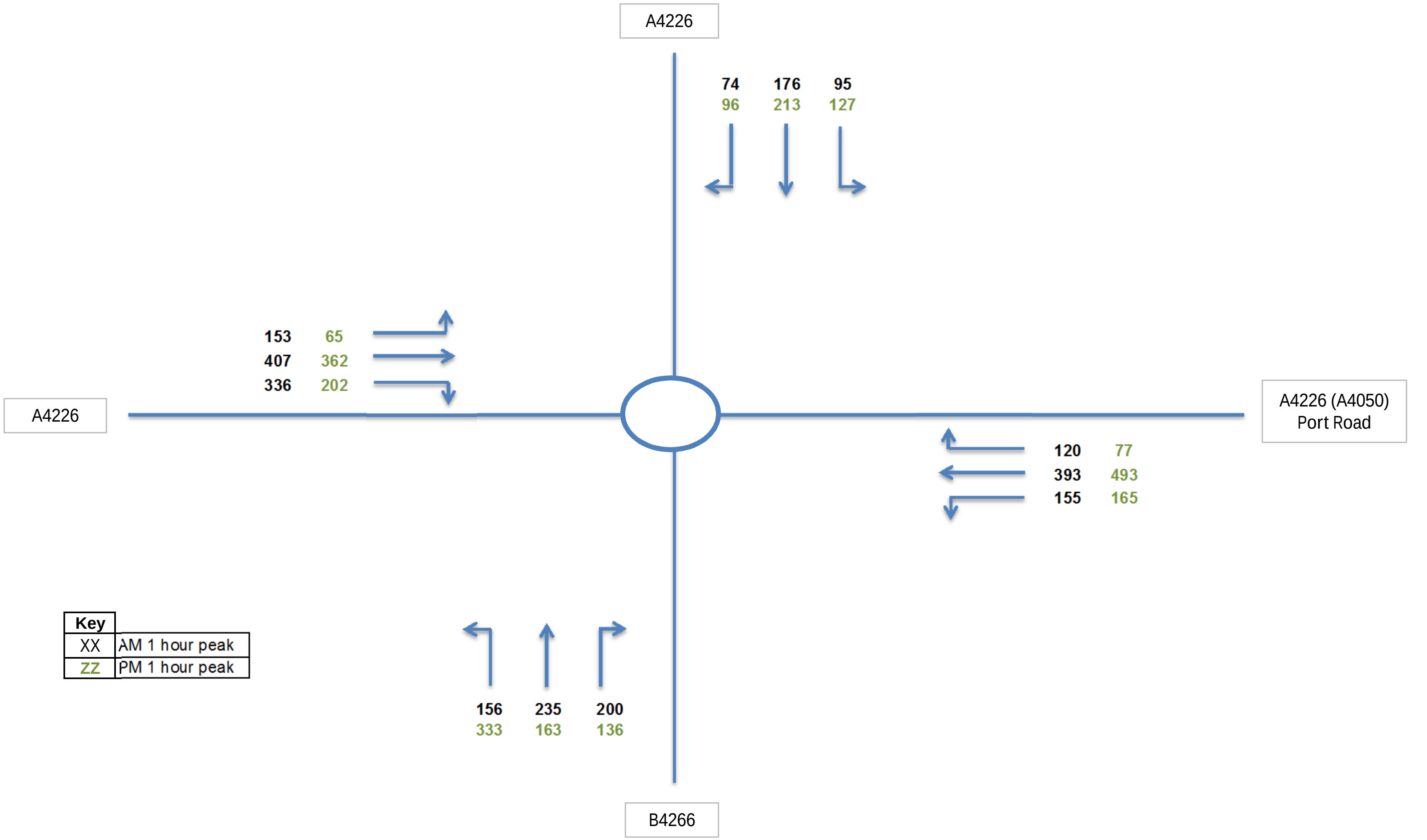

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Figure 6

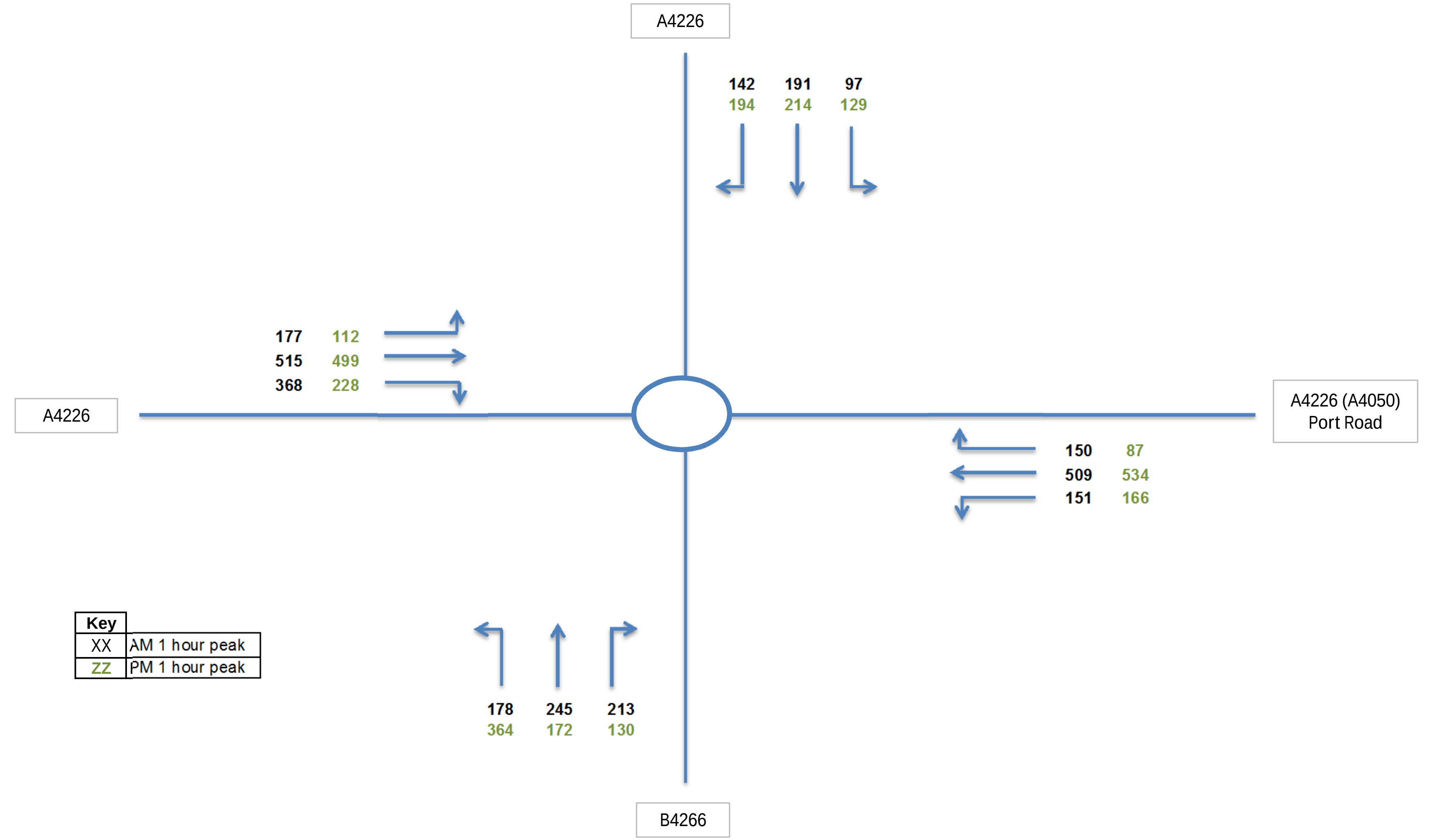

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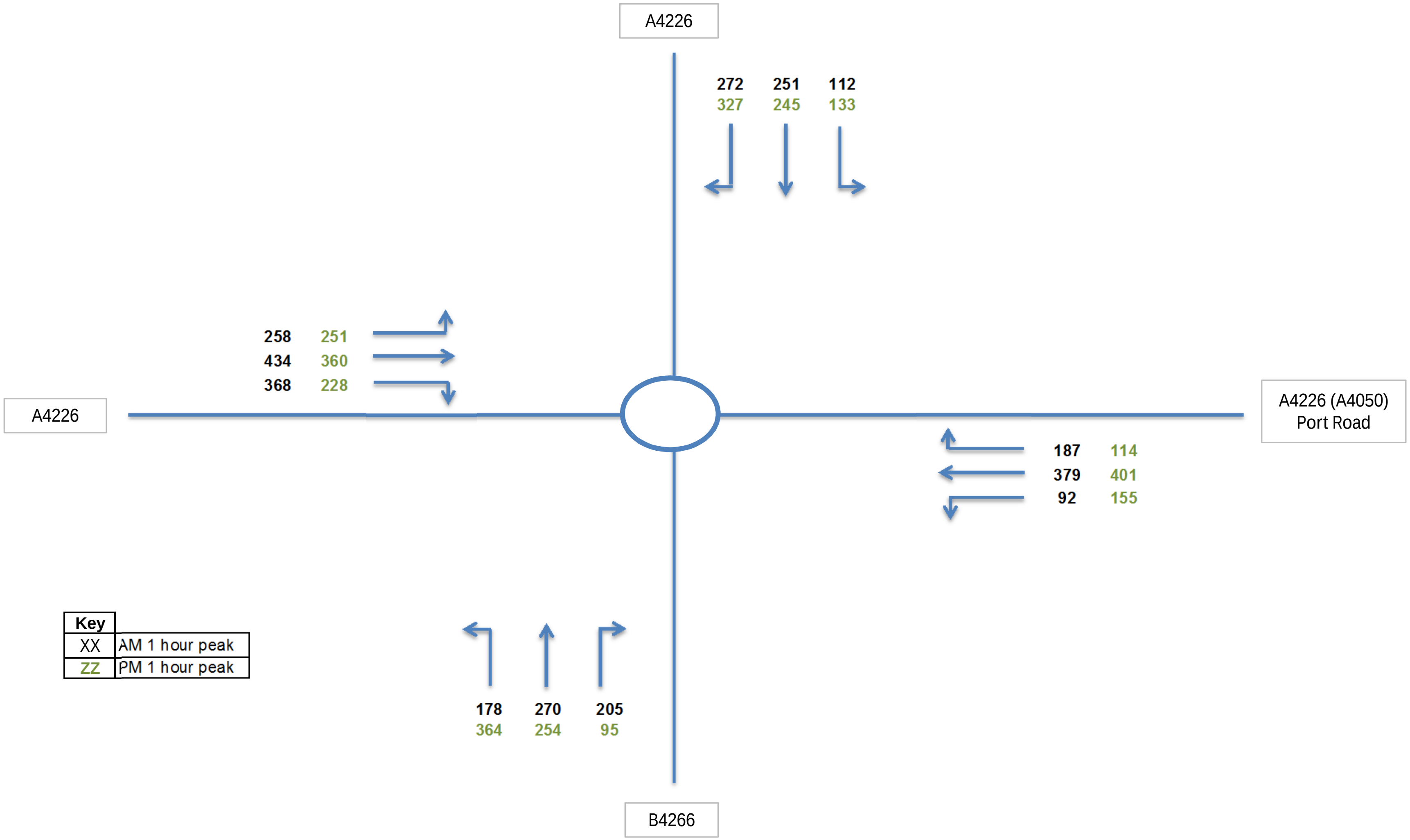
Figure 7



Key	
XX	AM 1 hour peak
ZZ	PM 1 hour peak

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Figure 8

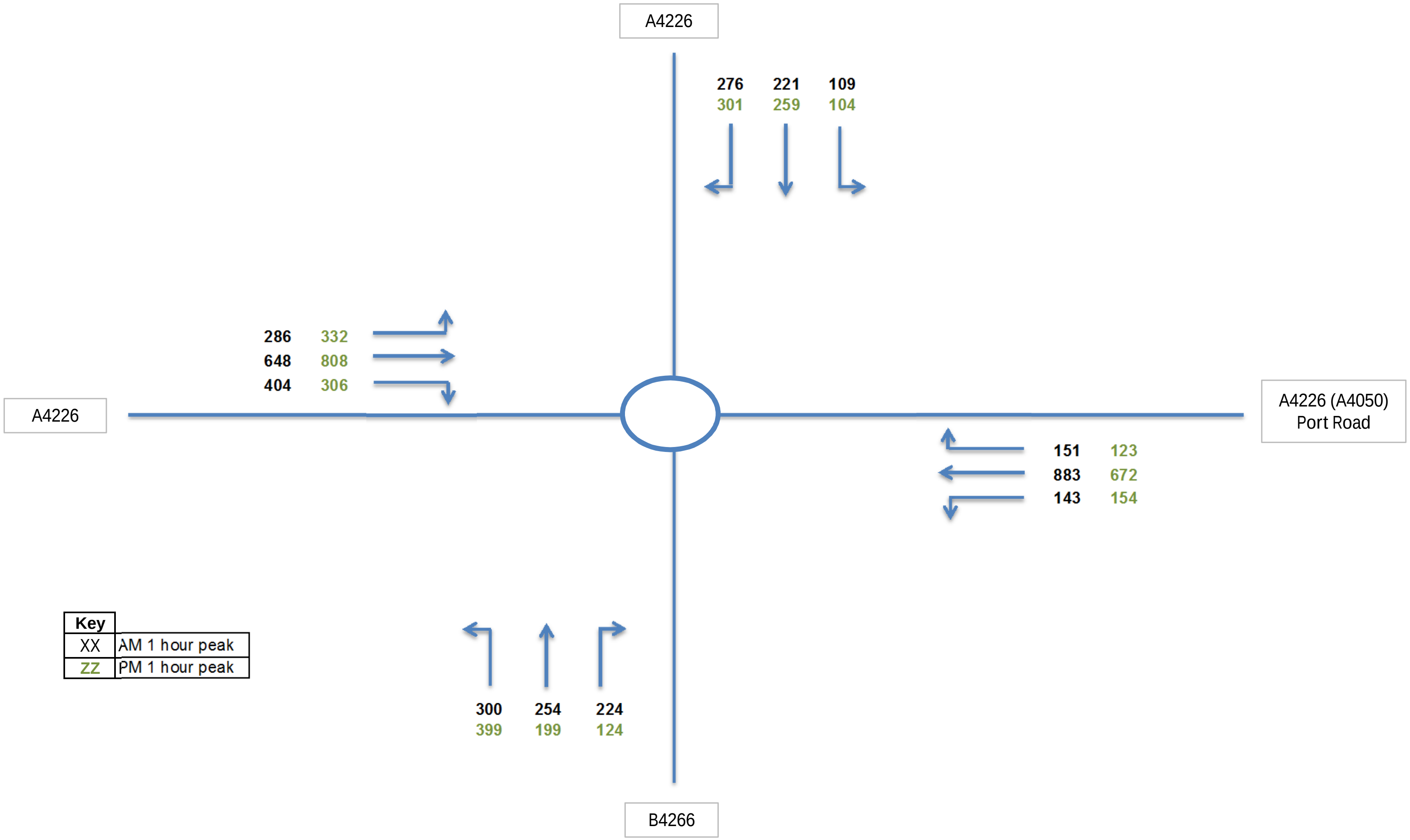

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Figure 9

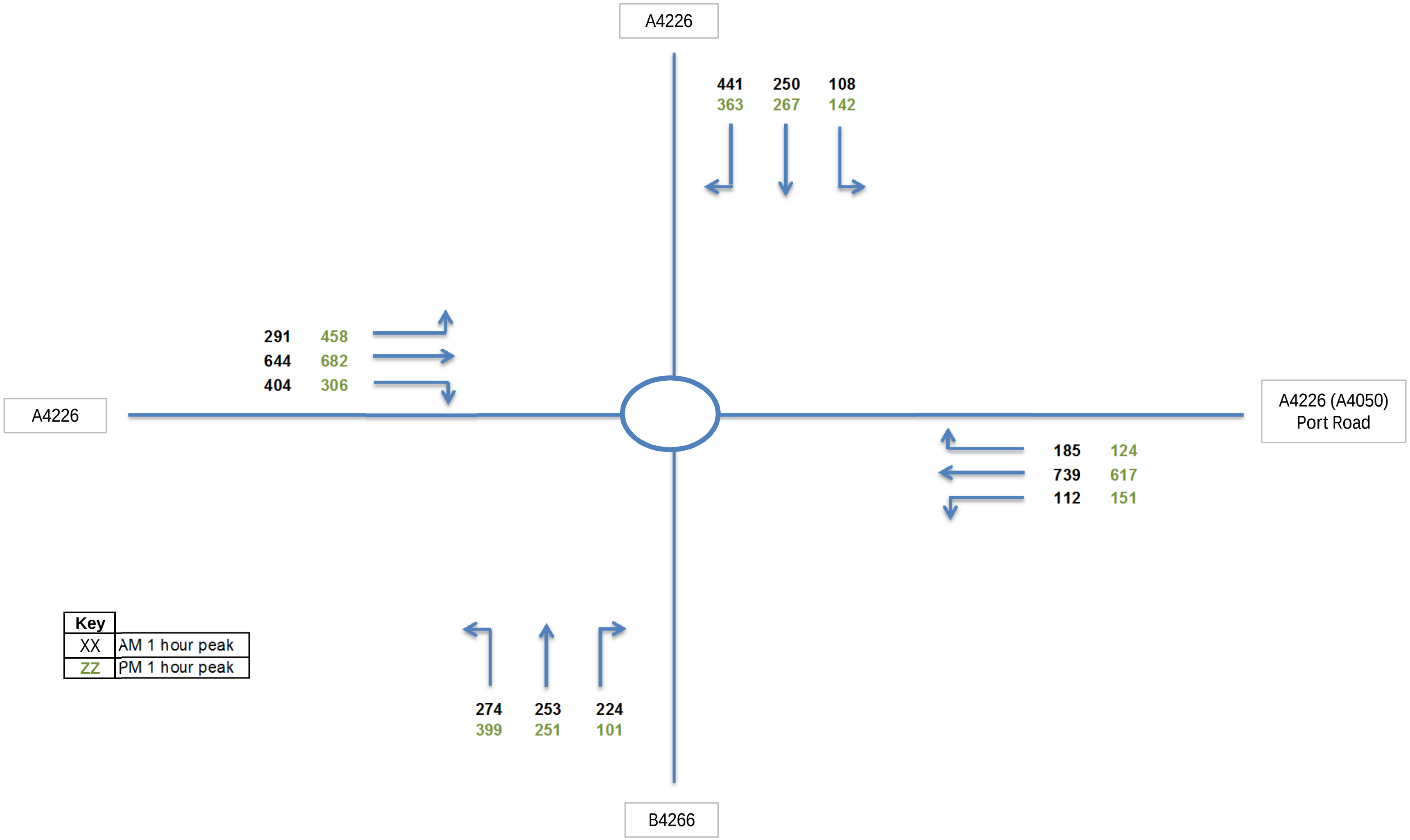

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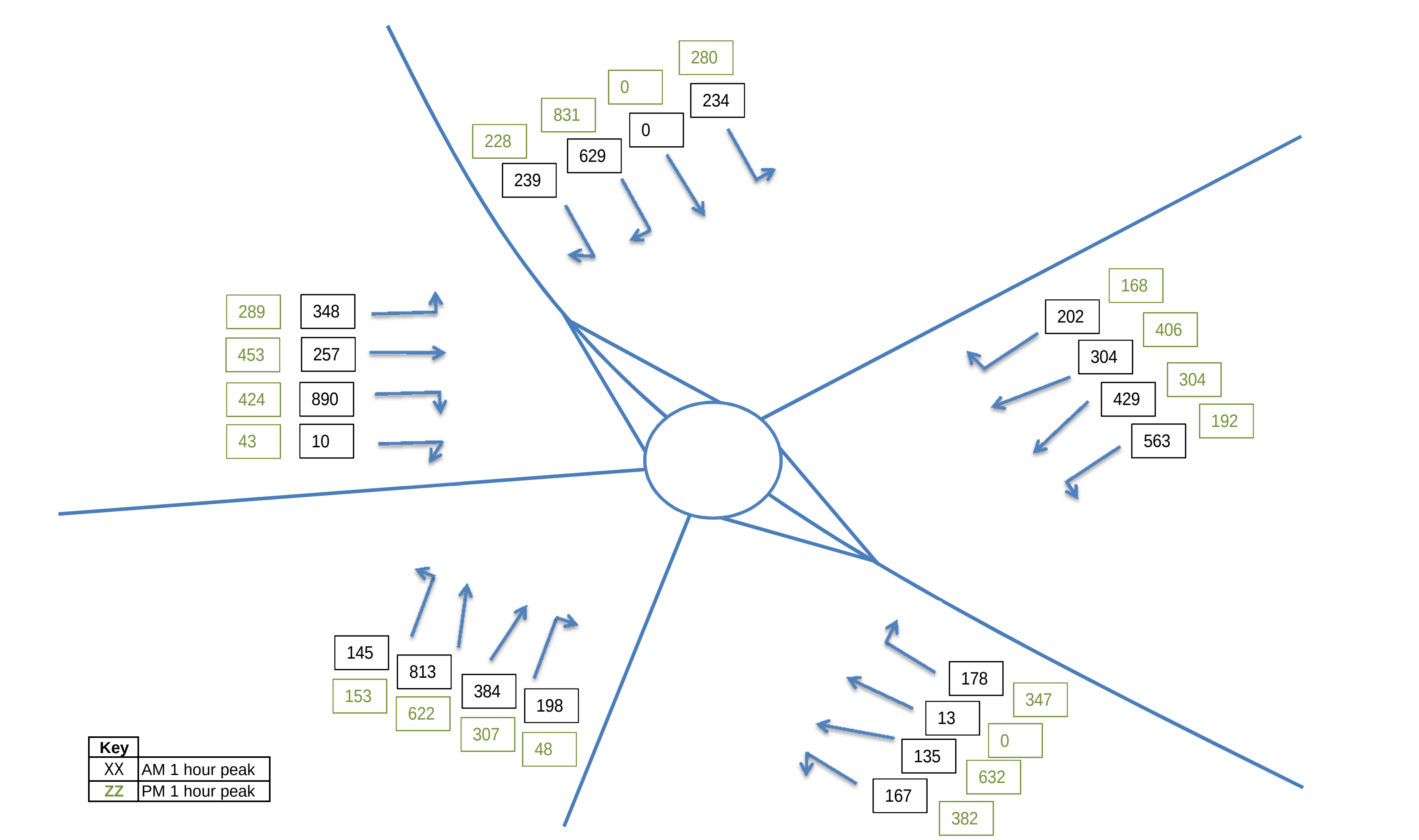
Figure 10



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TITLE
Culverhouse Cross - Base Year Traffic Flows

DATE
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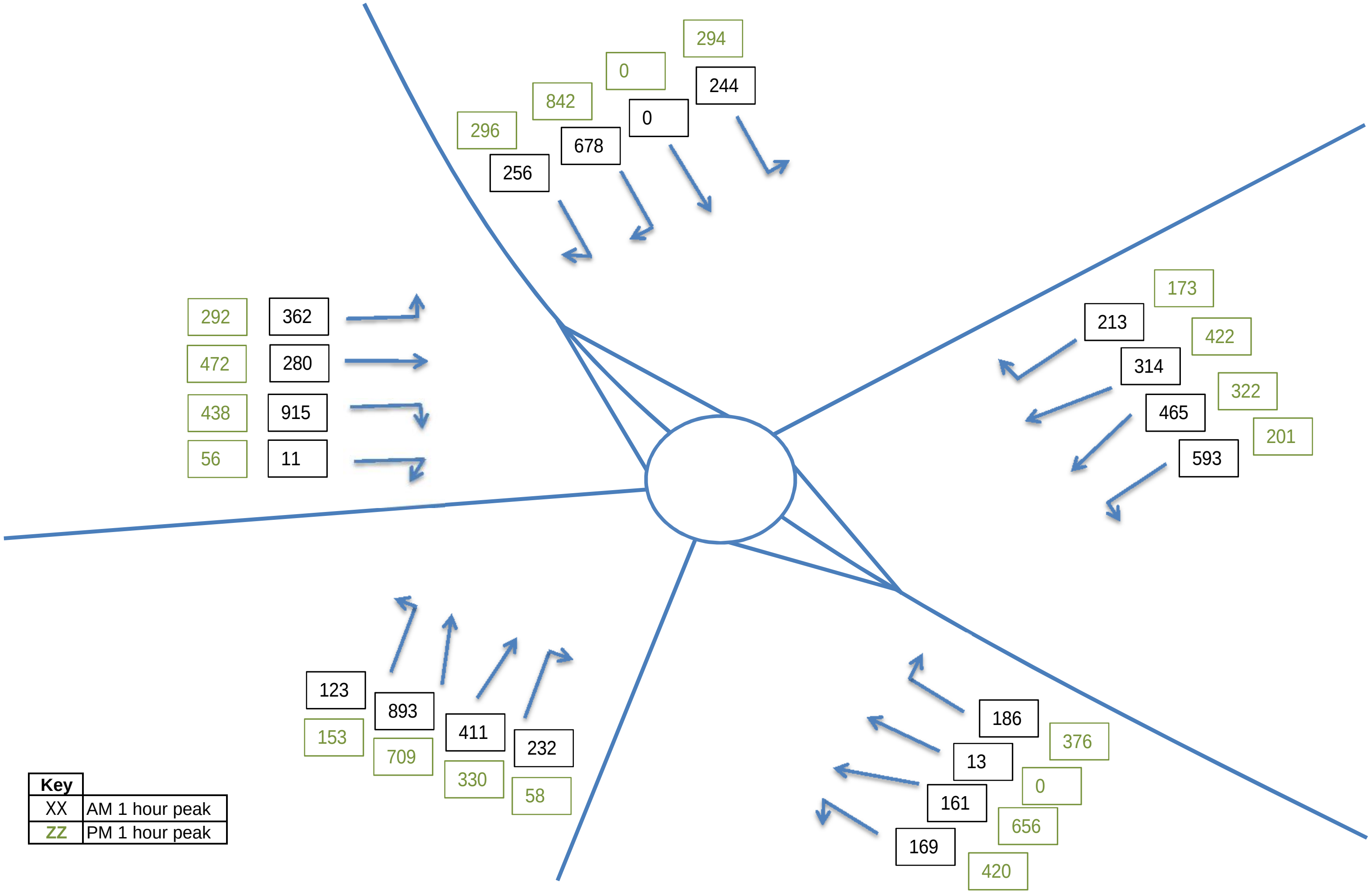
Figure 11



Key	
XX	AM 1 hour peak
ZZ	PM 1 hour peak

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Figure 12

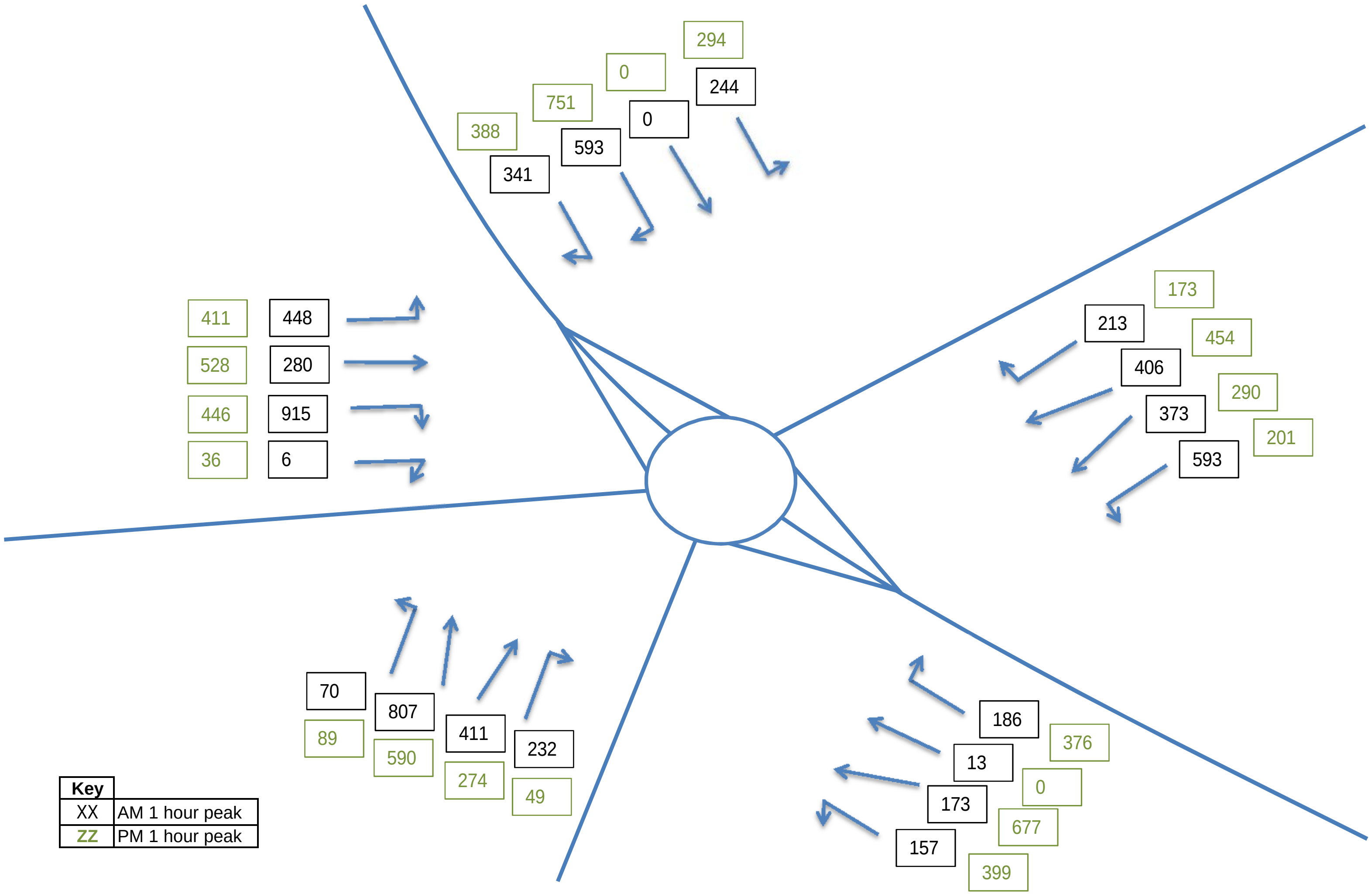

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Figure 13

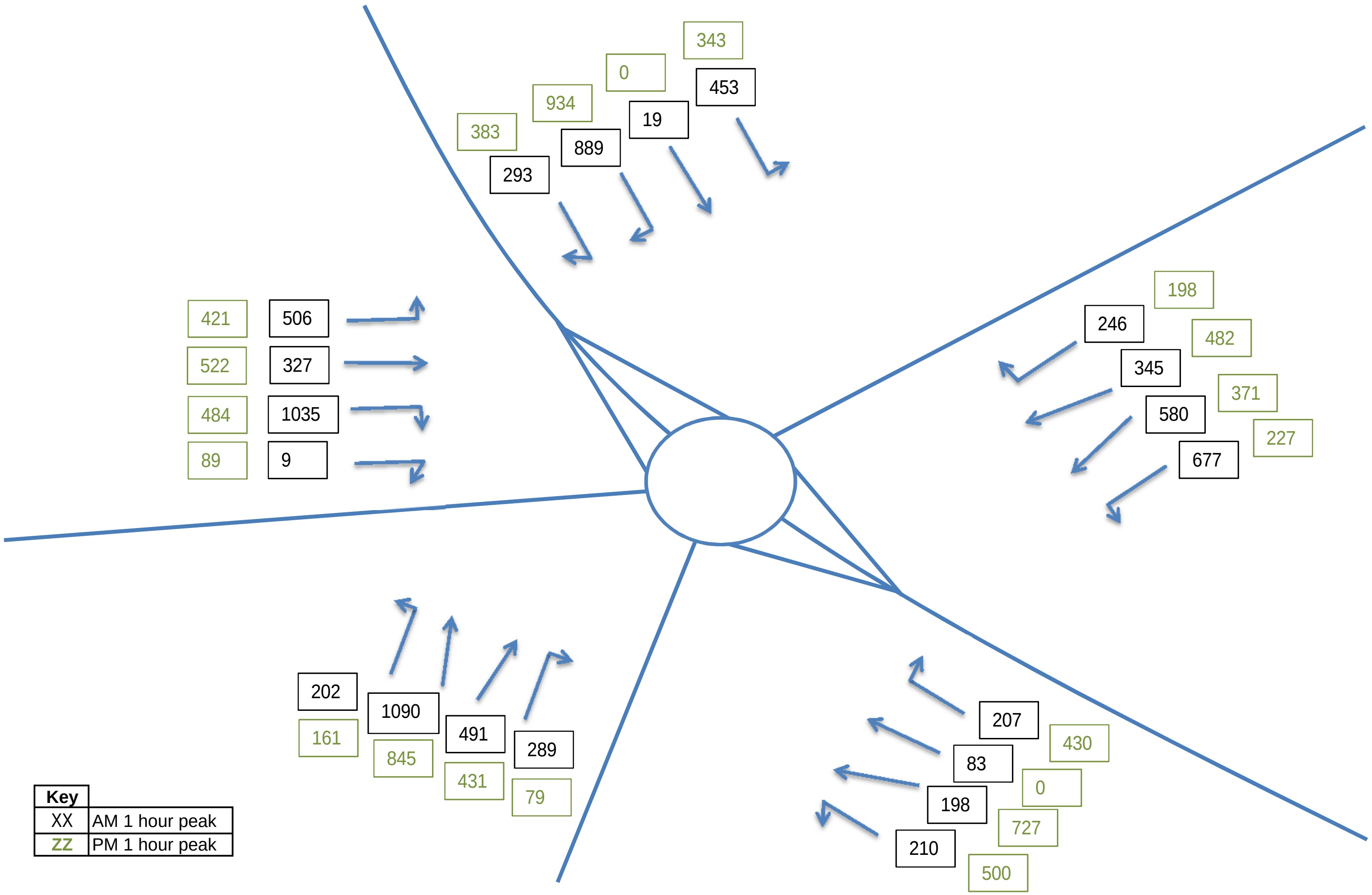

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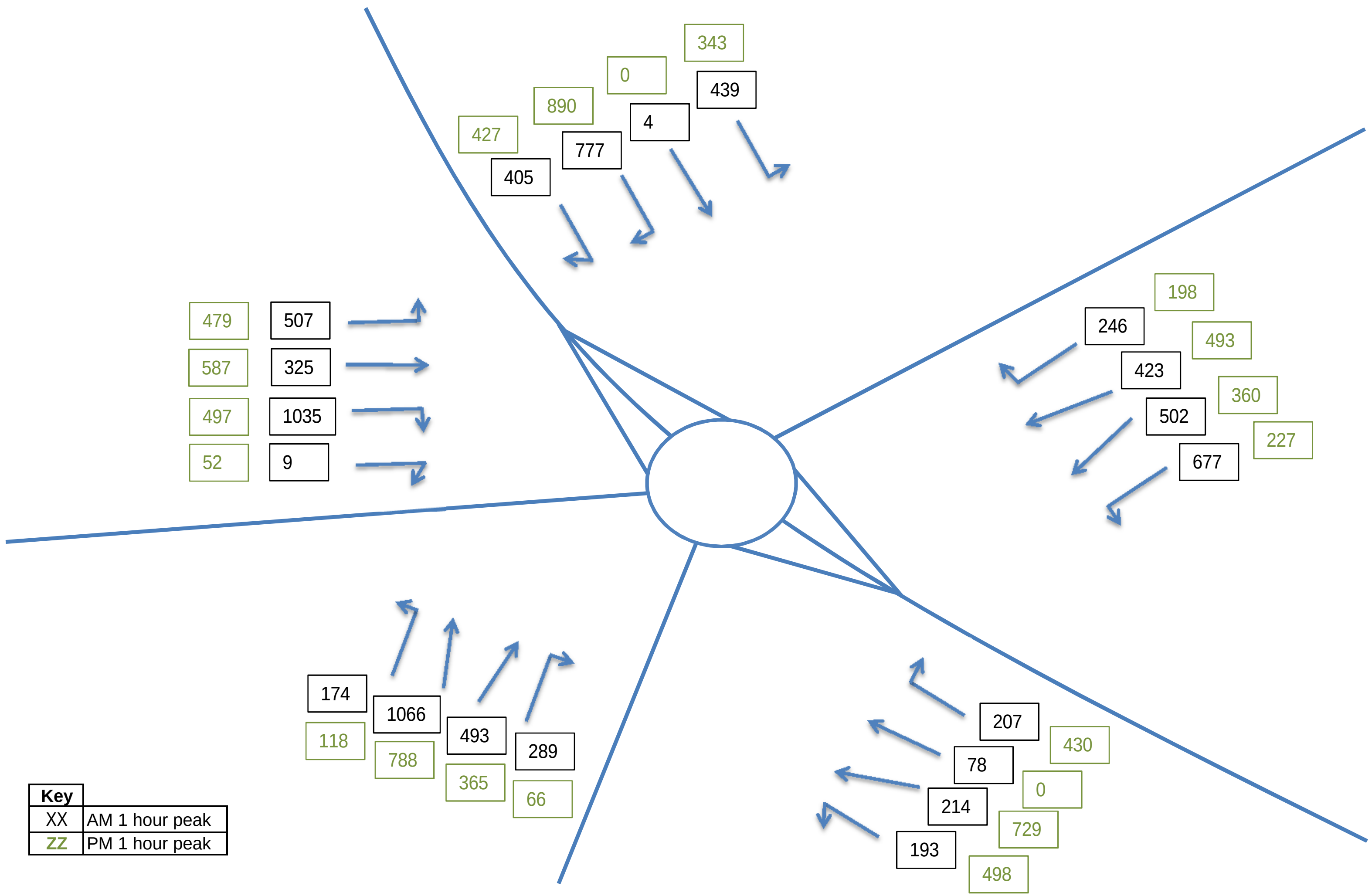
Figure 14



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TITLE
Culverhouse Cross - 2032 DS Year Traffic Flows

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Figure 15

Appendix C: Link Analysis Raw and Percentage Data

Link Analysis - Raw and Percentage Data

Base Traffic Flows

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	1179	1378	905	957	1432	1050
2	1177	1357	884	940	1403	1050
3	1182	1360	889	940	1395	1051
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	840	771	772	700	925	700
5	668	700	561	331	735	625
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	318	463	216	217	406	304
7	346	508	221	230	436	305

2017 Do Minimum Traffic Flows

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	1270	1486	1009	1010	1508	1168
2	1261	1464	985	999	1481	1169
3	1263	1467	989	998	1472	1171
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	982	865	822	754	1013	920
5	811	825	654	577	788	757
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	406	537	258	283	501	374
7	430	572	263	298	536	371

2017 Do Something Traffic Flows

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	1063	1342	732	717	1339	921
2	1054	1320	709	705	1312	922
3	1057	1324	712	705	1303	923
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	847	774	622	536	895	712
5	659	754	454	379	670	538
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	597	676	534	576	666	621
7	636	716	539	591	765	618

2032 Do Minimum Traffic Flows

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	1661	1746	1367	1352	1746	1452
2	1647	1695	1332	1327	1694	1440
3	1675	1702	1347	1334	1694	1463
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	1258	1122	1097	1068	1198	1235
5	1192	988	926	849	952	1040
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	613	658	318	337	638	660

7	632	694	324	354	681	654

2032 Do Something Traffic Flows

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	1454	1711	1010	998	1661	1273
2	1440	1661	975	974	1600	1260
3	1468	1667	990	980	1600	1283
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	1189	1118	849	774	1179	1115
5	1048	985	629	554	895	928
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	820	689	675	691	732	840
7	839	729	681	708	775	834

2017 Do Minimum compared to Base

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	8	8	11	6	5	11
2	7	8	11	6	6	11
3	7	8	11	6	6	11
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	17	12	6	8	10	31
5	21	18	17	74	7	21
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	28	16	19	30	23	23
7	24	13	19	30	23	22

2017 Do Something compared to Do Minimum

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	-16	-10	-27	-29	-11	-21
2	-16	-10	-28	-29	-11	-21
3	-16	-10	-28	-29	-11	-21
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	-14	-11	-24	-29	-12	-23
5	-19	-9	-31	-34	-15	-29
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	47	26	107	104	33	66
7	48	25	105	98	43	67

2032 Do Minimum compared to Base

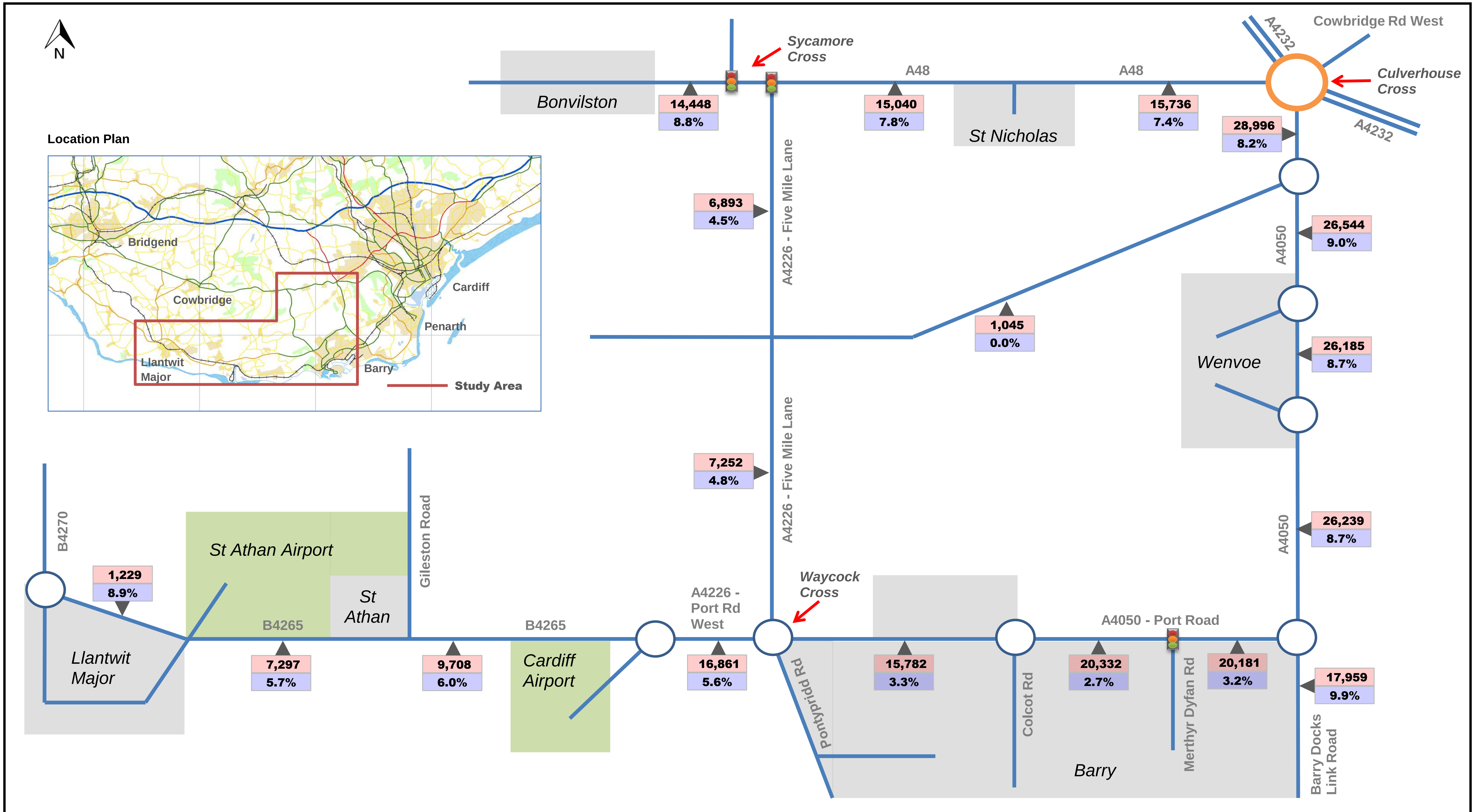
	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	41	27	51	41	22	38
2	40	25	51	41	21	37
3	42	25	52	42	21	39
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	50	46	42	53	30	76
5	78	41	65	156	30	66
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	93	42	47	55	57	117

7	83	37	47	54	56	114

2032 Do Something compared to Do Minimum

	AM		IP		PM	
Link	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
1	-12	-2	-26	-26	-5	-12
2	-13	-2	-27	-27	-6	-13
3	-12	-2	-27	-27	-6	-12
	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound
4	-5	0	-23	-28	-2	-10
5	-12	0	-32	-35	-6	-11
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
6	34	5	112	105	15	27
7	33	5	110	100	14	28

Appendix D: Network Flow Diagrams



NOTES

KEY

#,###	24 Hour Two-Way AADT
##.#%	HGV Percentage

Settlements

Airports / Enterprise Zones

Signalised Interchange

Roundabout

Traffic Signals

Key Junctions

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CLIENT / PROJECT

VALE of GLAMORGAN
BRO MORGANNWG

Vale of Glamorgan Council
Five Mile Lane Improvement Scheme: Transport Assessment

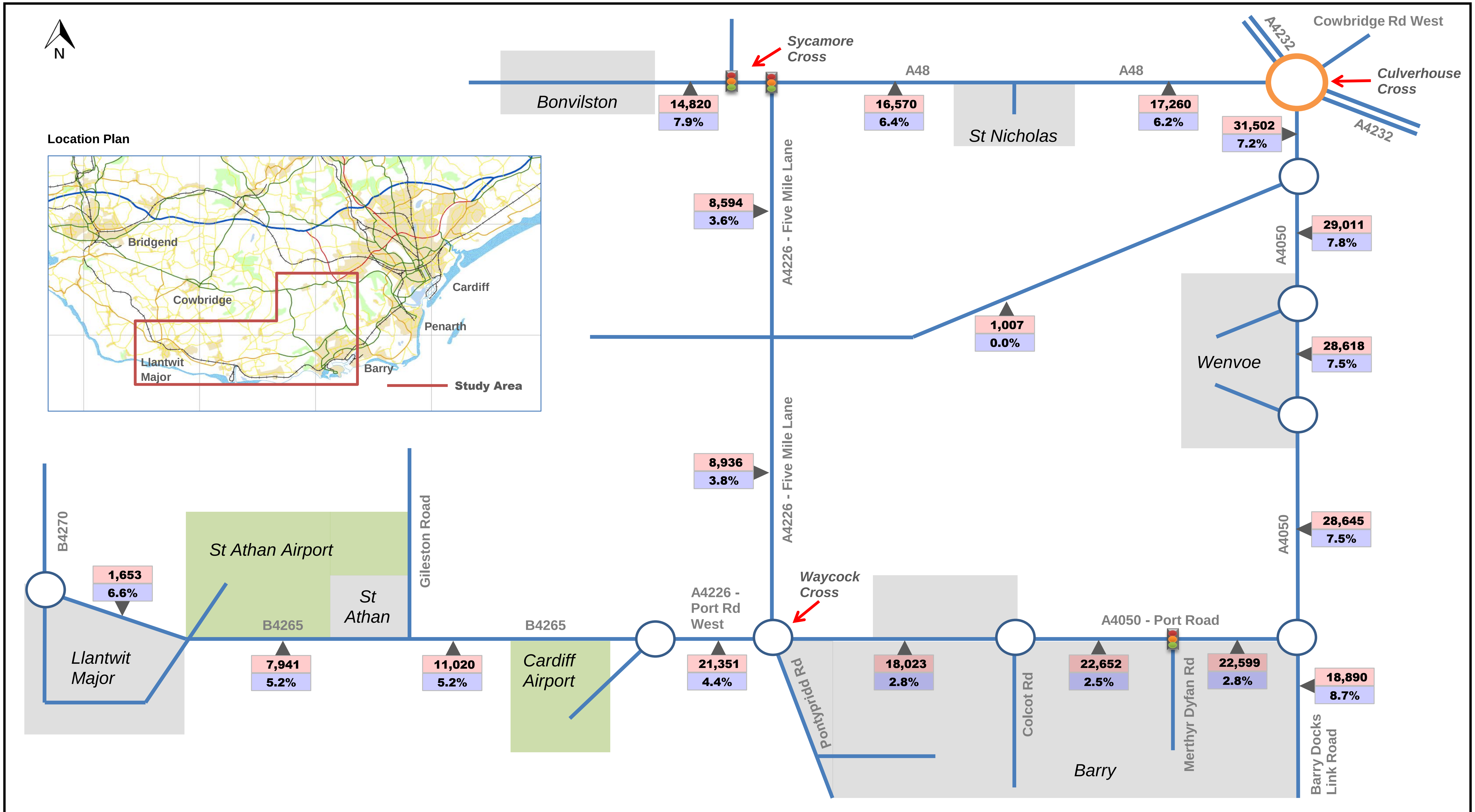
TITLE:

Base Year Traffic Flows

DRAWING NUMBER

01 -

DATE	PRODUCED
21/04/2015	SH
SCALE	CHECKED
NTS	GC
REF	APPROVED
3512646D-HHC	JC



NOTES

KEY

#,###	24 Hour Two-Way AADT	
##.#%	HGV Percentage	
Settlements	Airports / Enterprise Zones	Signalised Interchange
Roundabout	Traffic Signals	Key Junctions

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Five Mile Lane Improvement Scheme: Transport Assessment

TITLE:
2017 DM Traffic Flows

DRAWING NUMBER
02 -

DATE	PRODUCED
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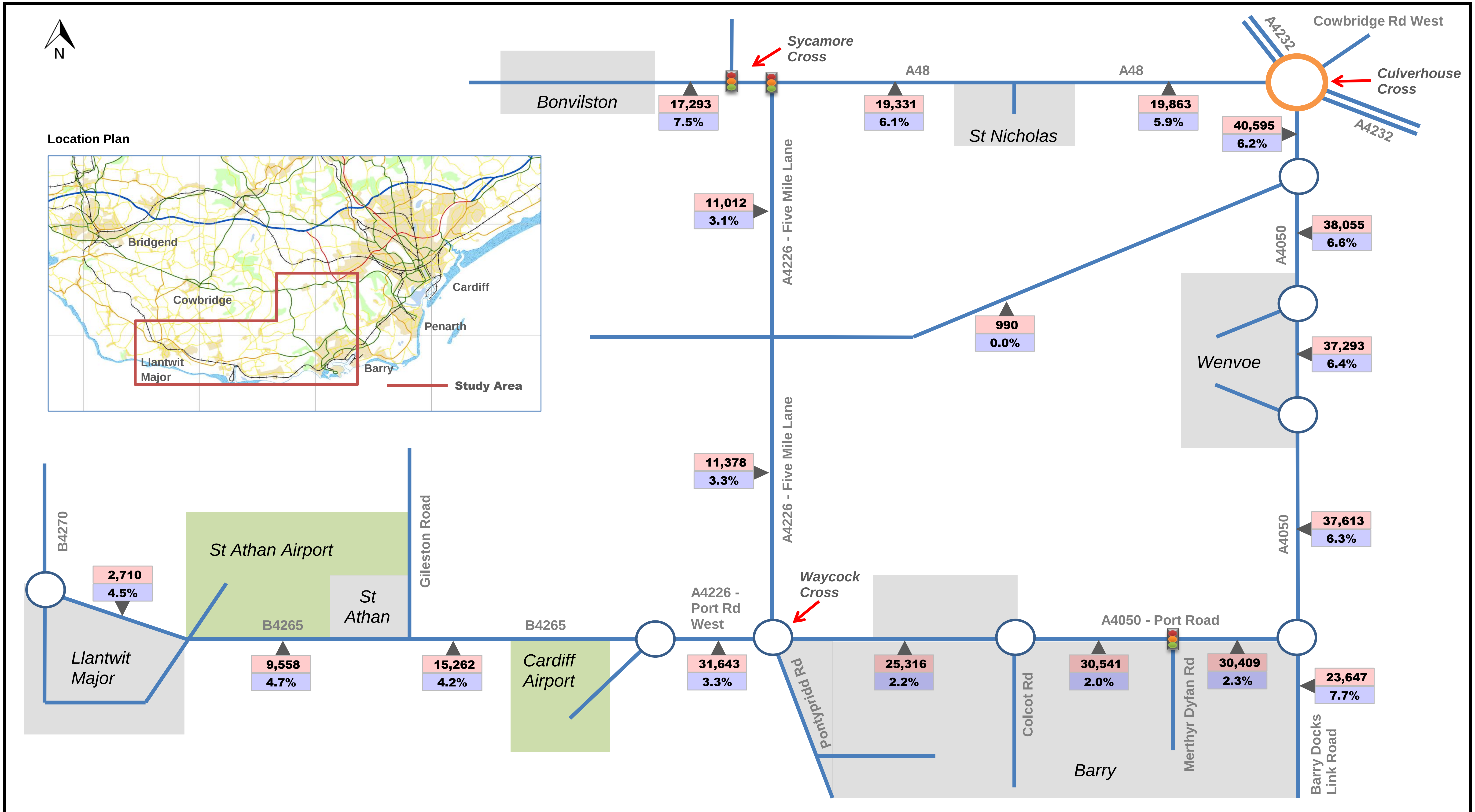
SCALE	**CHECKED**
NTS	*GC*
REF	**APPROVED**
3512646D-HHC	*JC*



NOTES

KEY

#,###	24 Hour Two-Way AADT
##.#%	HGV Percentage

Settlements

Airports / Enterprise Zones

Signalised Interchange

Roundabout

Traffic Signals

Key Junctions

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Vale of Glamorgan Council
Five Mile Lane Improvement Scheme: Transport Assessment

TITLE:

2032 DM Traffic Flows

DRAWING NUMBER

03 -

DATE	PRODUCED
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SCALE	CHECKED
NTS	*GC*
REF	APPROVED
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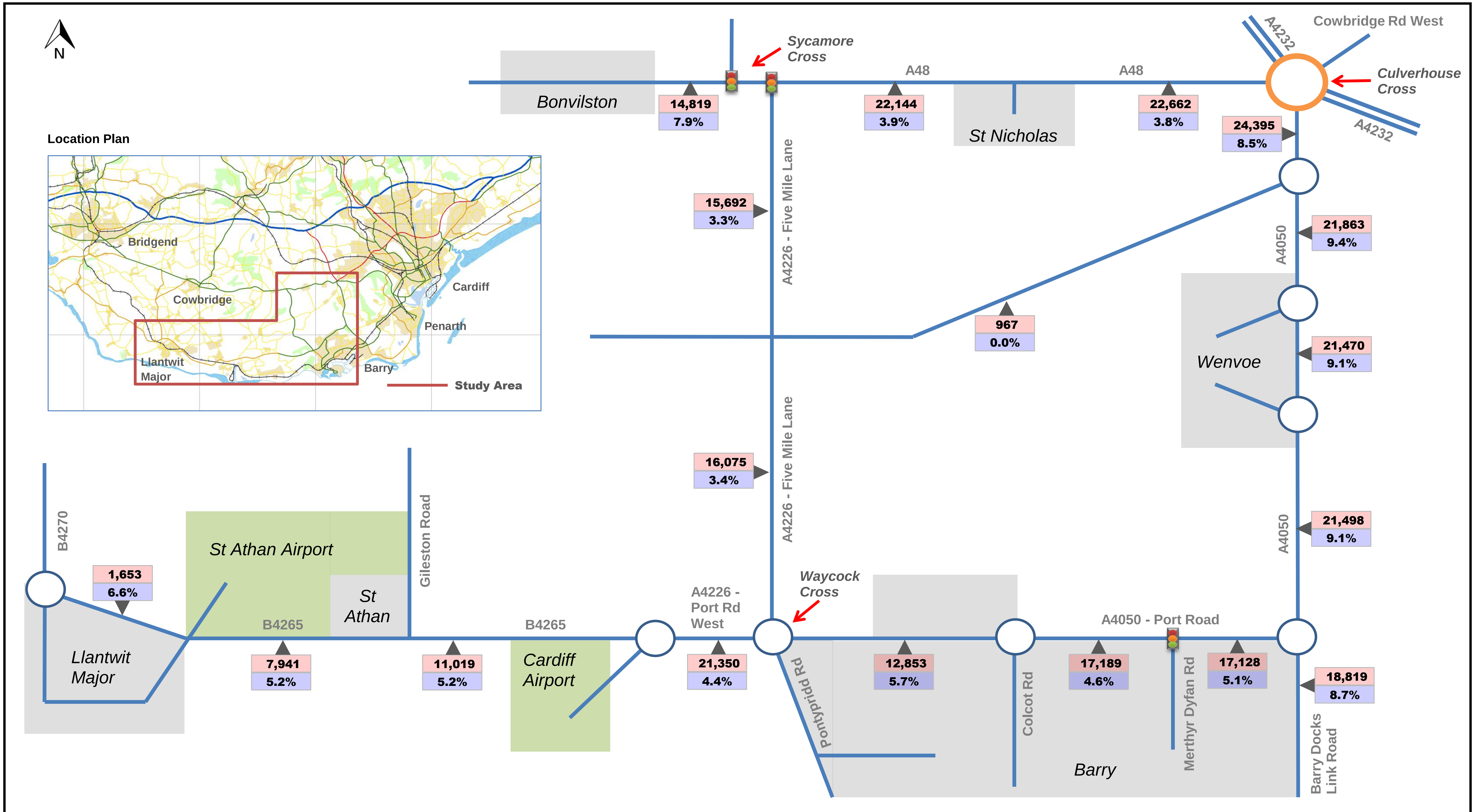

NOTES

KEY

#,###	24 Hour Two-Way AADT
##.#%	HGV Percentage

Settlements

Airports / Enterprise Zones

Signalised Interchange

Roundabout

Traffic Signals

Key Junctions

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Five Mile Lane Improvement Scheme: Transport Assessment

TITLE:

2017 DS Traffic Flows

DRAWING NUMBER

04 -

DATE	PRODUCED
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SCALE	CHECKED
NTS	*GC*
REF	APPROVED
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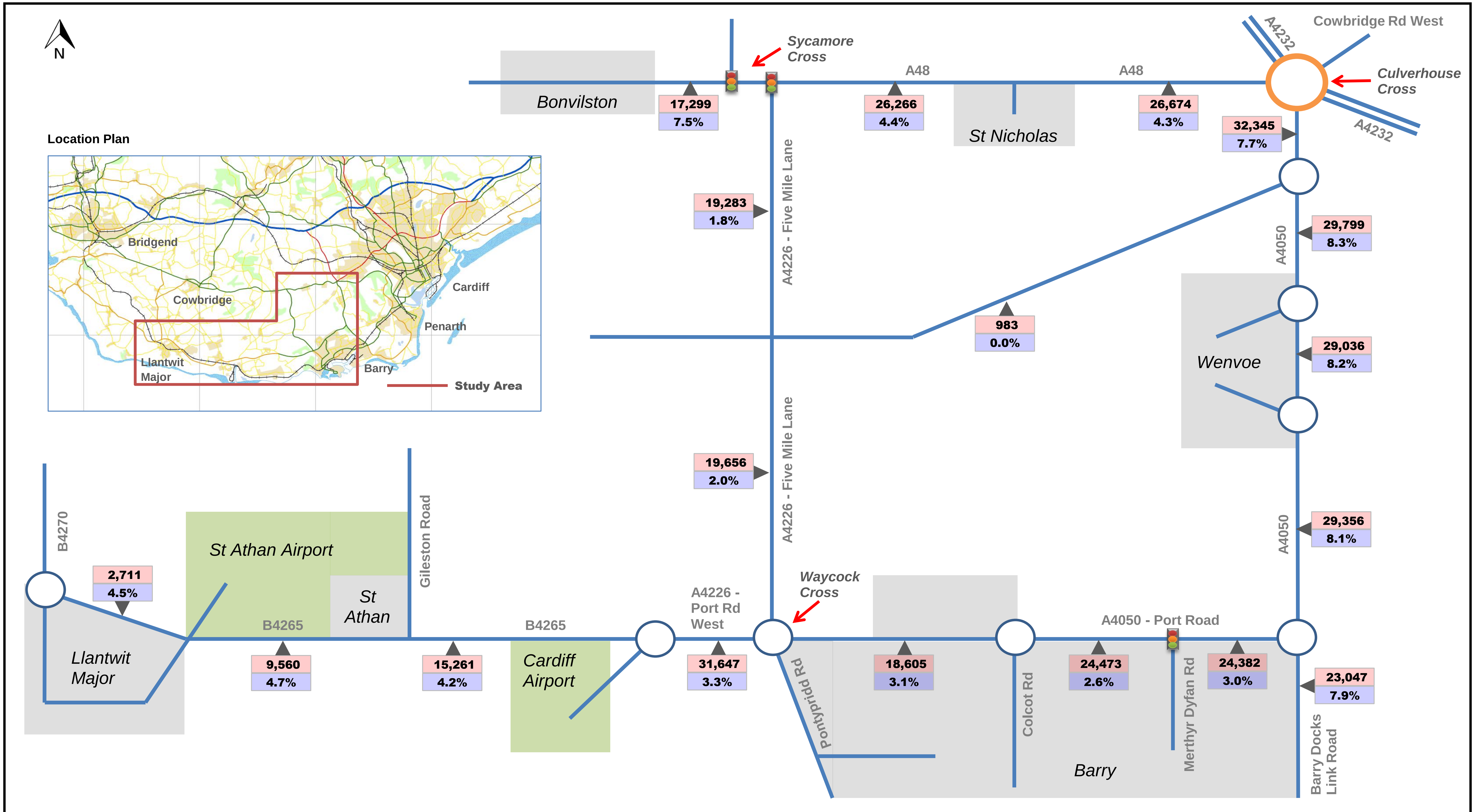

NOTES

KEY

#,###	24 Hour Two-Way AADT
##.#%	HGV Percentage

Settlements

Airports / Enterprise Zones

Signalised Interchange

Roundabout

Traffic Signals

Key Junctions

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BRO MORGANNWG

Vale of Glamorgan Council
Five Mile Lane Improvement Scheme: Transport Assessment

TITLE:

2032 DS Traffic Flows

DRAWING NUMBER

05 -

DATE	PRODUCED
21/04/2015	*SH*
SCALE	CHECKED
NTS	*GC*
REF	APPROVED
3512646D-HHC	*JC*

Appendix E: Model Output Files – Sycamore Cross Junction

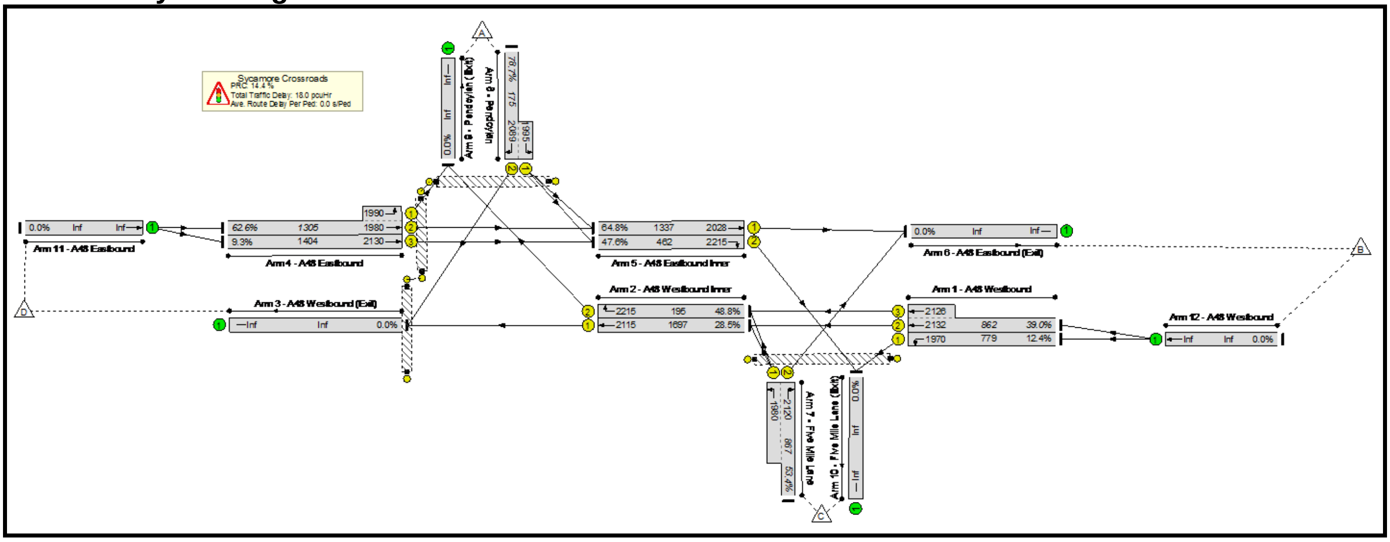
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Sycamore Crossroads TA_Base.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: 'Base AM' (FG1: 'Base AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.7%**	**0**	**0**	**0**	**18.0**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.7%**	**0**	**0**	**0**	**18.0**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	35	-	97	1970	779	12.4%	-	-	-	0.5	20.1	1.6
1/2+1/3	A48 Westbound Ahead	U	B		1	35	-	336	2132:2126	862	39.0%	-	-	-	2.1	22.9	6.1
2/1	A48 Westbound Inner Ahead	U	D		1	72	-	483	2115	1697	28.5%	-	-	-	0.3	2.1	1.4
2/2	A48 Westbound Inner Right	U	F		1	7	-	95	2215	195	48.8%	-	-	-	1.3	48.1	2.8
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	59	-	817	1980:1990	1305	62.6%	-	-	-	2.9	12.7	12.6
4/3	A48 Eastbound Ahead	U	A		1	59	-	131	2130	1404	9.3%	-	-	-	0.3	7.0	1.3
5/1	A48 Eastbound Inner Ahead	U	C		1	59	-	866	2028	1337	64.8%	-	-	-	1.4	5.6	3.7
5/2	A48 Eastbound Inner Right	U	E		1	18	-	220	2215	462	47.6%	-	-	-	2.7	44.2	5.6
7/2+7/1	Five Mile Lane Left Right	U	I H		1	20:44	-	463	2120:1980	867	53.4%	-	-	-	3.3	25.7	5.4
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	138	2089:1995	175	78.7%	-	-	-	3.3	84.8	5.1
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

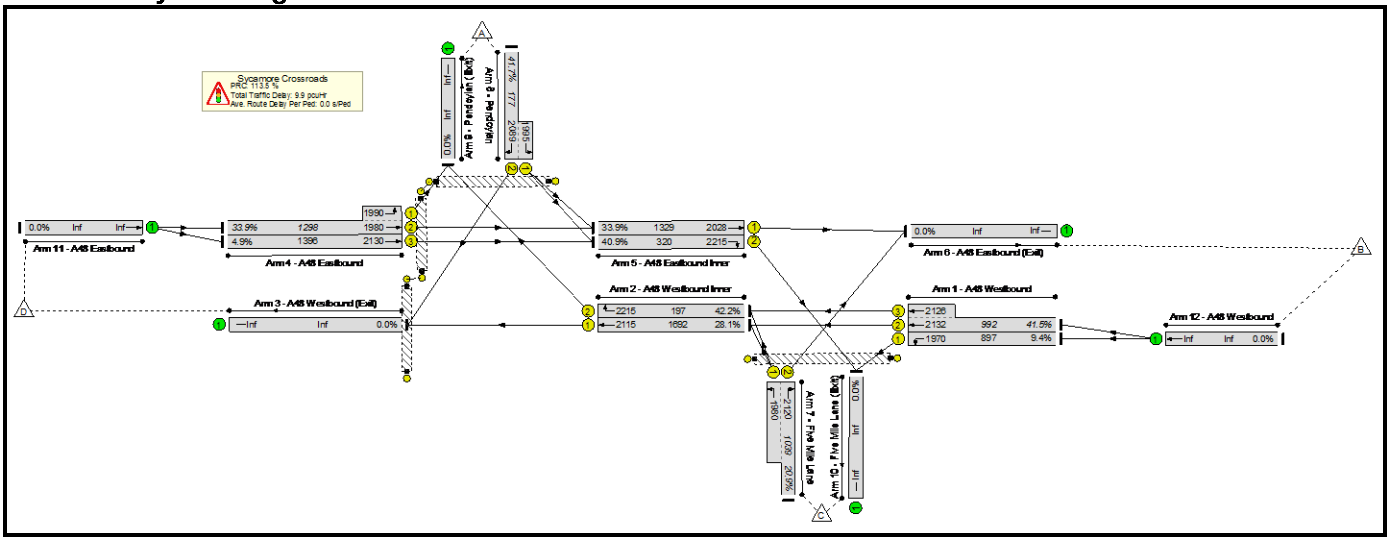
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 PRC for Signalled Lanes (%): 14.4 Total Delay for Signalled Lanes (pcuHr): 17.97 Cycle Time (s): 91
PRC Over All Lanes (%): 14.4 Total Delay Over All Lanes(pcuHr): 17.97

Basic Results Summary

Scenario 2: 'Base IP' (FG2: 'Base IP', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary
Network Results

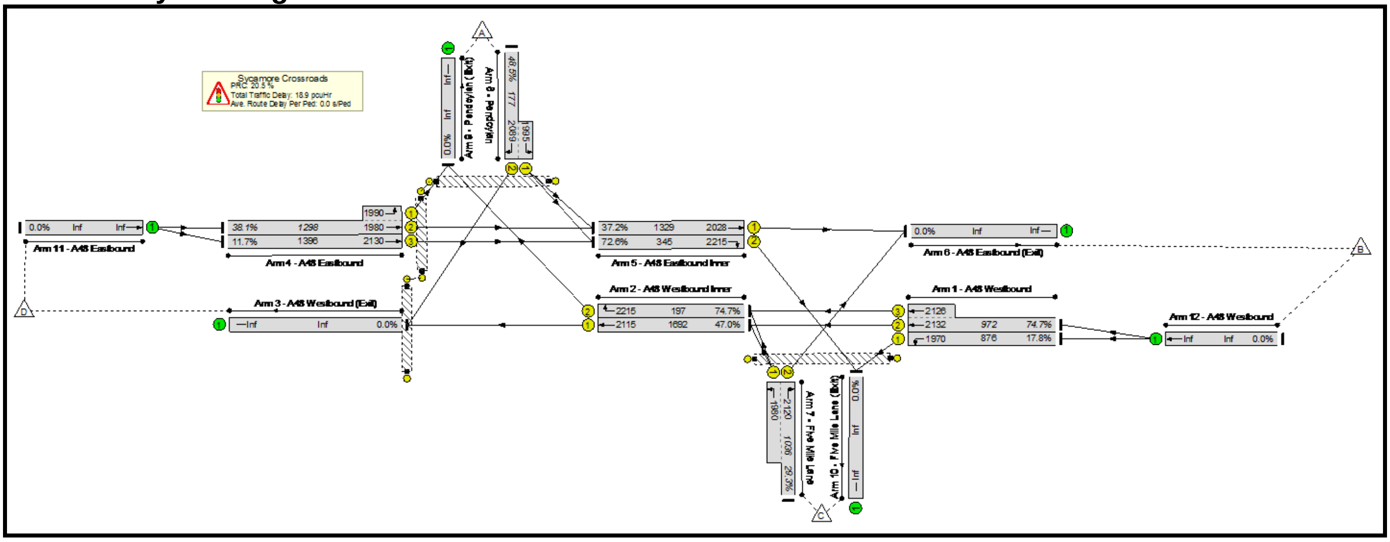
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**42.2%**	**0**	**0**	**0**	**9.9**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**42.2%**	**0**	**0**	**0**	**9.9**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	40	-	84	1970	897	9.4%	-	-	-	0.4	16.2	1.2
1/2+1/3	A48 Westbound Ahead	U	B		1	40	-	412	2132:2126	992	41.5%	-	-	-	2.2	19.3	6.9
2/1	A48 Westbound Inner Ahead	U	D		1	71	-	476	2115	1692	28.1%	-	-	-	0.2	1.8	2.6
2/2	A48 Westbound Inner Right	U	F		1	7	-	83	2215	197	42.2%	-	-	-	1.1	46.0	2.4
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	58	-	440	1980:1990	1298	33.9%	-	-	-	1.1	9.0	5.1
4/3	A48 Eastbound Ahead	U	A		1	58	-	68	2130	1396	4.9%	-	-	-	0.1	6.9	0.6
5/1	A48 Eastbound Inner Ahead	U	C		1	58	-	451	2028	1329	33.9%	-	-	-	0.4	3.6	1.0
5/2	A48 Eastbound Inner Right	U	E		1	12	-	131	2215	320	40.9%	-	-	-	1.9	52.3	3.5
7/2+7/1	Five Mile Lane Left Right	U	I H		1	20:38	-	217	2120:1980	1039	20.9%	-	-	-	1.3	21.6	2.4
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	74	2089:1995	177	41.7%	-	-	-	1.2	56.1	2.1
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1	PRC for Signalled Lanes (%):	113.5	Total Delay for Signalled Lanes (pcuHr):	9.92	Cycle Time (s):	90
	PRC Over All Lanes (%):	113.5	Total Delay Over All Lanes(pcuHr):	9.92		

Basic Results Summary
Scenario 3: 'Base PM' (FG3: 'Base PM', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.7%**	**0**	**0**	**0**	**18.9**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.7%**	**0**	**0**	**0**	**18.9**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	39	-	156	1970	876	17.8%	-	-	-	0.8	17.6	2.4
1/2+1/3	A48 Westbound Ahead	U	B		1	39	-	726	2132:2126	972	74.7%	-	-	-	5.6	27.6	16.0
2/1	A48 Westbound Inner Ahead	U	D		1	71	-	795	2115	1692	47.0%	-	-	-	0.5	2.3	5.7
2/2	A48 Westbound Inner Right	U	F		1	7	-	147	2215	197	74.7%	-	-	-	2.7	66.7	5.0
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	58	-	495	1980:1990	1298	38.1%	-	-	-	1.3	9.4	5.9
4/3	A48 Eastbound Ahead	U	A		1	58	-	164	2130	1396	11.7%	-	-	-	0.3	7.3	1.6
5/1	A48 Eastbound Inner Ahead	U	C		1	58	-	495	2028	1329	37.2%	-	-	-	0.5	3.5	0.9
5/2	A48 Eastbound Inner Right	U	E		1	13	-	250	2215	345	72.6%	-	-	-	4.1	58.5	7.3
7/2+7/1	Five Mile Lane Left Right	U	I H		1	20:39	-	304	2120:1980	1036	29.3%	-	-	-	1.8	21.5	3.6
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	86	2089:1995	177	48.5%	-	-	-	1.4	58.6	2.5
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 PRC for Signalled Lanes (%): 20.5 Total Delay for Signalled Lanes (pcuHr): 18.93 Cycle Time (s): 90
PRC Over All Lanes (%): 20.5 Total Delay Over All Lanes(pcuHr): 18.93

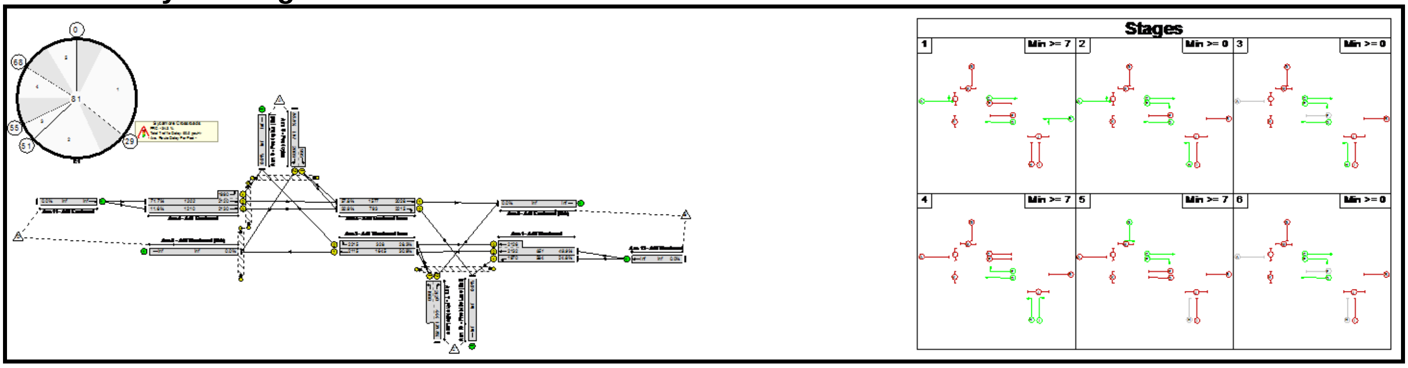
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Sycamore Crossroads TA_DM.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: '2017 DM AM' (FG1: '2017 DM AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**120.8%**	**0**	**0**	**0**	**69.5**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**120.8%**	**0**	**0**	**0**	**69.5**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	23	-	145	1970	584	24.8%	-	-	-	1.0	25.8	2.6
1/2+1/3	A48 Westbound Ahead	U	B		1	23	-	318	2132:2126	651	48.9%	-	-	-	2.5	28.8	6.1
2/1	A48 Westbound Inner Ahead	U	D		1	62	-	509	2115	1645	30.9%	-	-	-	0.3	1.8	1.4
2/2	A48 Westbound Inner Right	U	F		1	11	-	93	2215	328	28.3%	-	-	-	0.7	25.6	2.1
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	45	-	862	2120:1990	1202	71.7%	-	-	-	4.3	18.0	15.4
4/3	A48 Eastbound Ahead	U	A		1	45	-	140	2130	1210	11.6%	-	-	-	0.4	9.8	1.5
5/1	A48 Eastbound Inner Ahead	U	C		1	62	-	912	2028	1577	57.8%	-	-	-	0.8	3.0	13.2
5/2	A48 Eastbound Inner Right	U	E		2	27	-	261	2215	793	32.9%	-	-	-	1.2	15.9	3.4
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:33	-	537	2120:1980	444	120.8%	-	-	-	54.0	362.1	55.7
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	171	2089:1995	197	86.8%	-	-	-	4.4	93.2	6.5
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

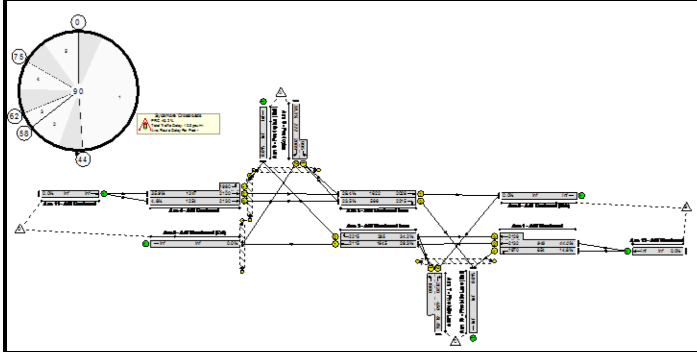
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

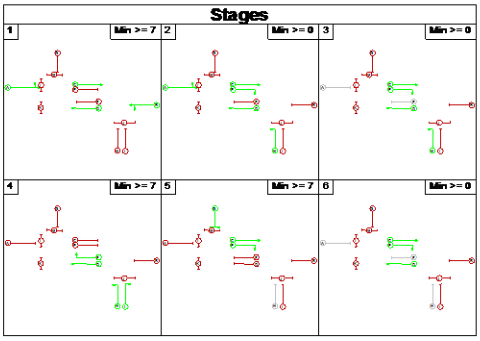
C1 PRC for Signalled Lanes (%): -34.3 Total Delay for Signalled Lanes (pcuHr): 69.54 Cycle Time (s): 81
PRC Over All Lanes (%): -34.3 Total Delay Over All Lanes(pcuHr): 69.54

Basic Results Summary

Scenario 2: '2017 DM IP' (FG2: '2017 DM IP', Plan 1: 'Network Control Plan 1')

Network Layout Diagram





Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**61.6%**	**0**	**0**	**0**	**10.9**	-	-
Sycamore Crossroads	-	-	-		-	-	-	-	-	-	**61.6%**	**0**	**0**	**0**	**10.9**	-	-
1/1	A48 Westbound Left	U	B		1	38	-	125	1970	854	14.6%	-	-	-	0.6	17.9	2.0
1/2+1/3	A48 Westbound Ahead	U	B		1	38	-	416	2132:2126	946	44.0%	-	-	-	2.4	21.0	7.3
2/1	A48 Westbound Inner Ahead	U	D		1	69	-	482	2115	1645	29.3%	-	-	-	0.2	1.7	2.6
2/2	A48 Westbound Inner Right	U	F		1	11	-	101	2215	295	34.2%	-	-	-	0.8	27.9	2.6
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	52	-	448	2120:1990	1247	35.9%	-	-	-	1.5	11.9	6.0
4/3	A48 Eastbound Ahead	U	A		1	52	-	60	2130	1254	4.8%	-	-	-	0.2	9.3	0.7
5/1	A48 Eastbound Inner Ahead	U	C		1	71	-	460	2028	1622	28.4%	-	-	-	0.2	1.7	3.7
5/2	A48 Eastbound Inner Right	U	E		2	21	-	133	2215	566	23.5%	-	-	-	0.6	16.9	1.5
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:25	-	283	2120:1980	460	61.6%	-	-	-	3.2	41.0	4.0
8/2+8/1	Pendoylan Right Left	U	G		1	9	-	85	2089:1995	222	38.3%	-	-	-	1.2	50.3	2.3
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

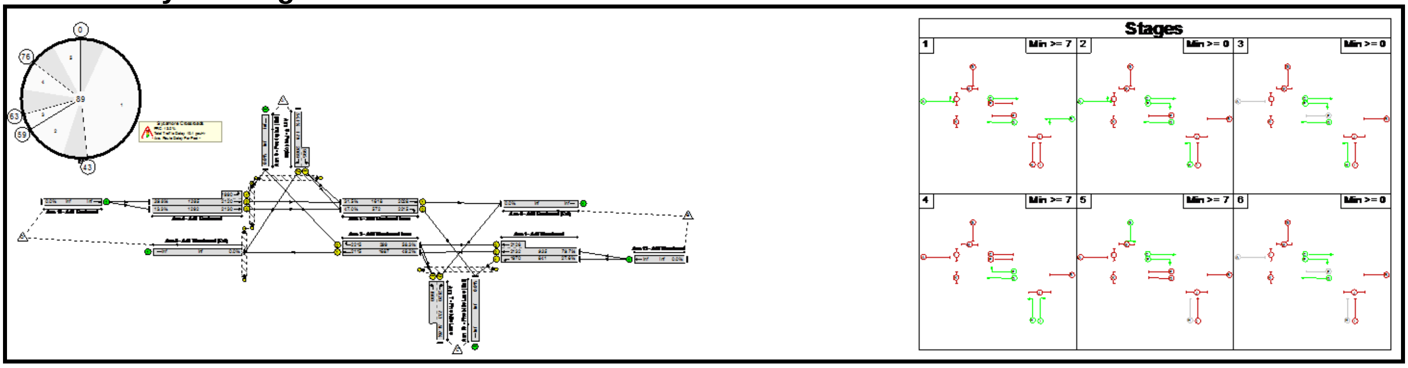
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1	PRC for Signalled Lanes (%):	46.2	Total Delay for Signalled Lanes (pcuHr):	10.94	Cycle Time (s):	90
	PRC Over All Lanes (%):	46.2	Total Delay Over All Lanes(pcuHr):	10.94		

Basic Results Summary

Scenario 3: '2017 DM PM' (FG3: '2017 DM PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.7%**	**0**	**0**	**0**	**19.1**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.7%**	**0**	**0**	**0**	**19.1**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	37	-	232	1970	841	27.6%	-	-	-	1.3	19.5	3.9
1/2+1/3	A48 Westbound Ahead	U	B		1	37	-	745	2132:2126	935	79.7%	-	-	-	6.4	31.0	17.3
2/1	A48 Westbound Inner Ahead	U	D		1	70	-	830	2115	1687	49.2%	-	-	-	0.5	2.2	5.8
2/2	A48 Westbound Inner Right	U	F		1	11	-	174	2215	299	58.3%	-	-	-	1.7	35.6	4.8
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	53	-	509	2120:1990	1285	39.6%	-	-	-	1.6	11.4	6.8
4/3	A48 Eastbound Ahead	U	A		1	53	-	172	2130	1292	13.3%	-	-	-	0.4	9.1	1.9
5/1	A48 Eastbound Inner Ahead	U	C		1	70	-	509	2028	1618	31.5%	-	-	-	0.2	1.8	4.3
5/2	A48 Eastbound Inner Right	U	E		2	21	-	269	2215	572	47.0%	-	-	-	1.8	23.7	4.4
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:27	-	374	2120:1980	733	51.0%	-	-	-	3.5	33.7	5.6
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	97	2089:1995	179	54.1%	-	-	-	1.6	60.3	2.9
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

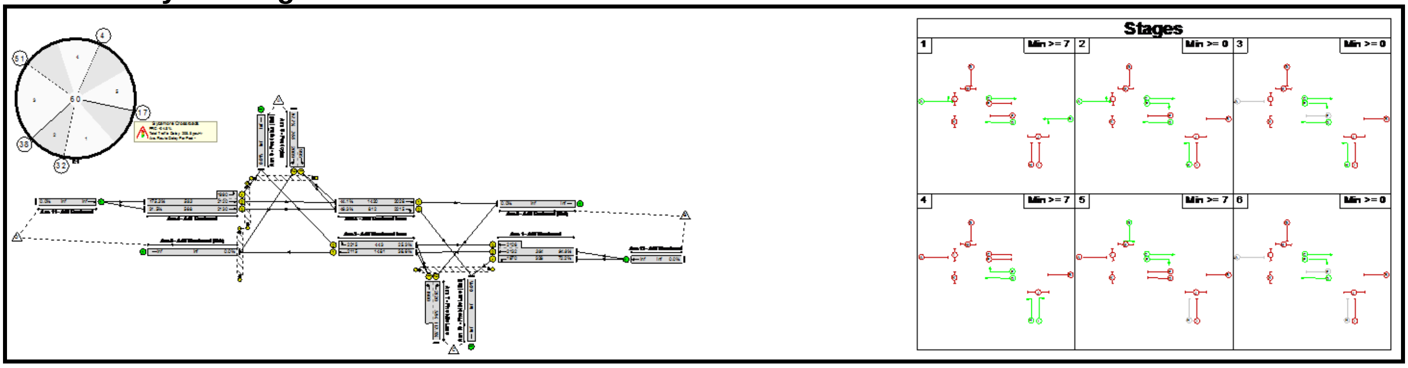
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 PRC for Signalled Lanes (%): 13.0 Total Delay for Signalled Lanes (pcuHr): 19.08 Cycle Time (s): 89
PRC Over All Lanes (%): 13.0 Total Delay Over All Lanes(pcuHr): 19.08

Basic Results Summary

Scenario 4: '2032 DM AM' (FG4: '2032 DM AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**175.3%**	**0**	**0**	**0**	**298.8**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**175.3%**	**0**	**0**	**0**	**298.8**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	9	-	237	1970	328	72.2%	-	-	-	2.8	42.9	4.9
1/2+1/3	A48 Westbound Ahead	U	B		1	9	-	345	2132:2126	364	94.8%	-	-	-	8.1	84.3	11.2
2/1	A48 Westbound Inner Ahead	U	D		1	41	-	572	2115	1481	38.6%	-	-	-	0.4	2.3	1.5
2/2	A48 Westbound Inner Right	U	F		1	11	-	112	2215	443	25.3%	-	-	-	0.5	15.9	1.7
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	15	-	987	2120:1990	563	175.3%	-	-	-	230.6	841.0	238.6
4/3	A48 Eastbound Ahead	U	A		1	15	-	179	2130	568	31.5%	-	-	-	1.1	22.2	2.6
5/1	A48 Eastbound Inner Ahead	U	C		1	41	-	1050	2028	1420	44.1%	-	-	-	0.4	2.4	7.4
5/2	A48 Eastbound Inner Right	U	E		2	20	-	376	2215	812	46.3%	-	-	-	1.3	12.9	4.5
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:26	-	657	2120:1980	584	112.5%	-	-	-	45.0	246.8	46.4
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	260	2089:1995	266	97.7%	-	-	-	8.6	118.7	11.0
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

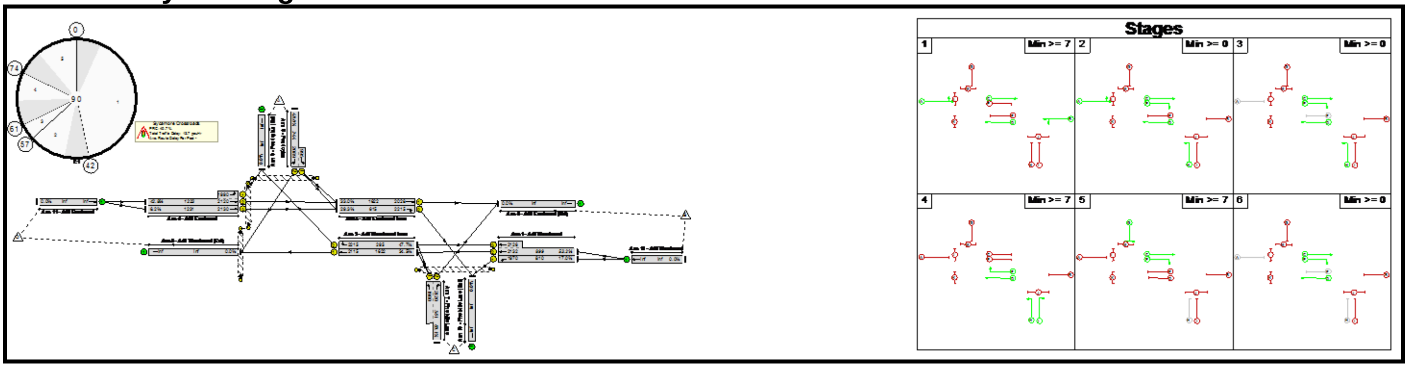
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 PRC for Signalled Lanes (%): -94.8 Total Delay for Signalled Lanes (pcuHr): 298.79 Cycle Time (s): 60
PRC Over All Lanes (%): -94.8 Total Delay Over All Lanes(pcuHr): 298.79

Basic Results Summary

Scenario 5: '2032 DM IP' (FG5: '2032 DM IP', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**60.1%**	**0**	**0**	**0**	**13.7**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**60.1%**	**0**	**0**	**0**	**13.7**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	36	-	138	1970	810	17.0%	-	-	-	0.7	19.5	2.2
1/2+1/3	A48 Westbound Ahead	U	B		1	36	-	478	2132:2126	899	53.2%	-	-	-	3.2	23.9	9.2
2/1	A48 Westbound Inner Ahead	U	D		1	68	-	559	2115	1622	34.5%	-	-	-	0.3	1.8	4.4
2/2	A48 Westbound Inner Right	U	F		1	11	-	141	2215	295	47.7%	-	-	-	1.2	29.7	3.8
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	51	-	523	2120:1990	1223	42.8%	-	-	-	1.9	13.2	7.6
4/3	A48 Eastbound Ahead	U	A		1	51	-	76	2130	1231	6.2%	-	-	-	0.2	9.9	0.9
5/1	A48 Eastbound Inner Ahead	U	C		1	71	-	536	2028	1622	33.0%	-	-	-	0.3	1.8	5.4
5/2	A48 Eastbound Inner Right	U	E		2	23	-	180	2215	615	29.3%	-	-	-	0.8	15.6	1.9
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:26	-	337	2120:1980	561	60.1%	-	-	-	3.5	37.8	5.1
8/2+8/1	Pendoylan Right Left	U	G		1	10	-	117	2089:1995	244	48.0%	-	-	-	1.7	50.9	3.2
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

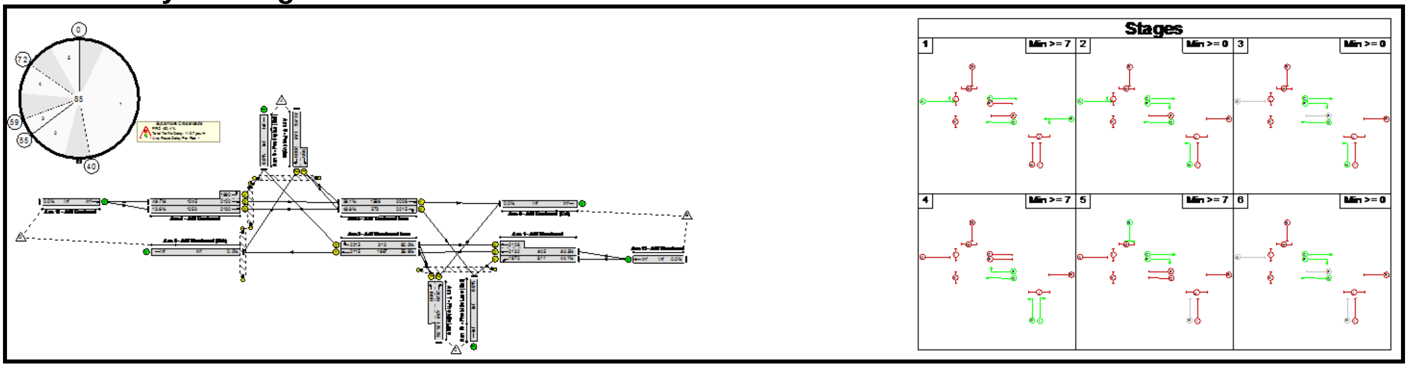
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1	PRC for Signalled Lanes (%):	49.7	Total Delay for Signalled Lanes (pcuHr):	13.75	Cycle Time (s):	90
	PRC Over All Lanes (%):	49.7	Total Delay Over All Lanes(pcuHr):	13.75		

Basic Results Summary

Scenario 6: '2032 DM PM' (FG6: '2032 DM PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**135.3%**	**0**	**0**	**0**	**119.7**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**135.3%**	**0**	**0**	**0**	**119.7**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	34	-	358	1970	811	44.1%	-	-	-	2.2	21.9	6.5
1/2+1/3	A48 Westbound Ahead	U	B		1	34	-	837	2132:2126	905	92.5%	-	-	-	10.8	46.3	23.6
2/1	A48 Westbound Inner Ahead	U	D		1	66	-	977	2115	1667	58.6%	-	-	-	0.7	2.7	5.4
2/2	A48 Westbound Inner Right	U	F		1	11	-	251	2215	313	80.3%	-	-	-	3.1	45.1	7.7
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	49	-	619	2120:1990	1245	49.7%	-	-	-	2.2	13.1	8.9
4/3	A48 Eastbound Ahead	U	A		1	49	-	170	2130	1253	13.6%	-	-	-	0.4	9.5	1.9
5/1	A48 Eastbound Inner Ahead	U	C		1	66	-	625	2028	1599	39.1%	-	-	-	0.3	2.0	6.6
5/2	A48 Eastbound Inner Right	U	E		2	20	-	280	2215	573	48.8%	-	-	-	1.7	22.4	4.3
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:26	-	661	2120:1980	488	135.3%	-	-	-	96.1	523.5	97.6
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	116	2089:1995	188	61.8%	-	-	-	2.0	61.6	3.4
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

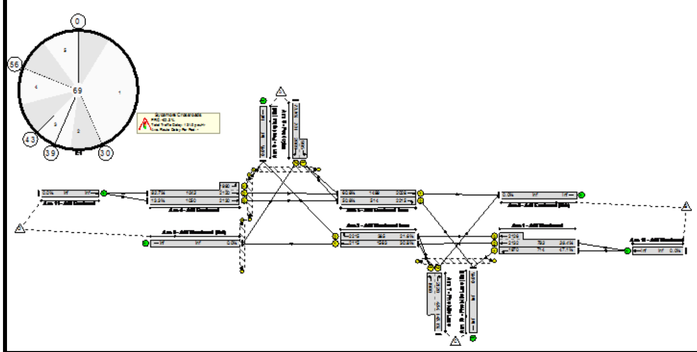
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

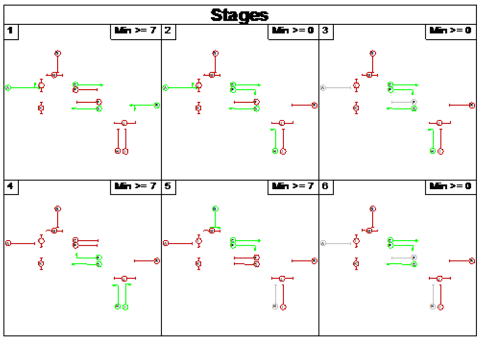
C1	PRC for Signalled Lanes (%):	-50.4	Total Delay for Signalled Lanes (pcuHr):	119.73	Cycle Time (s):	85
	PRC Over All Lanes (%):	-50.4	Total Delay Over All Lanes(pcuHr):	119.73		

Basic Results Summary

Scenario 7: '2017 DM DS flows AM' (FG7: '2017 DS AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram





Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**146.1%**	**0**	**0**	**0**	**131.9**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**146.1%**	**0**	**0**	**0**	**131.9**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	24	-	336	1970	714	47.1%	-	-	-	2.0	21.7	5.4
1/2+1/3	A48 Westbound Ahead	U	B		1	24	-	285	2132:2126	783	36.4%	-	-	-	1.6	19.8	4.2
2/1	A48 Westbound Inner Ahead	U	D		1	50	-	509	2115	1563	30.8%	-	-	-	0.2	1.7	0.2
2/2	A48 Westbound Inner Right	U	F		1	11	-	94	2215	385	21.6%	-	-	-	0.2	10.2	1.5
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	33	-	862	2120:1990	1043	82.7%	-	-	-	5.9	24.7	16.5
4/3	A48 Eastbound Ahead	U	A		1	33	-	140	2130	1050	13.3%	-	-	-	0.4	11.5	1.5
5/1	A48 Eastbound Inner Ahead	U	C		1	50	-	912	2028	1499	60.8%	-	-	-	0.9	3.4	13.2
5/2	A48 Eastbound Inner Right	U	E		2	14	-	261	2215	514	50.8%	-	-	-	1.4	19.8	3.3
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:20	-	677	2120:1980	464	146.1%	-	-	-	116.5	619.3	120.0
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	171	2089:1995	231	73.9%	-	-	-	2.8	58.1	4.5
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

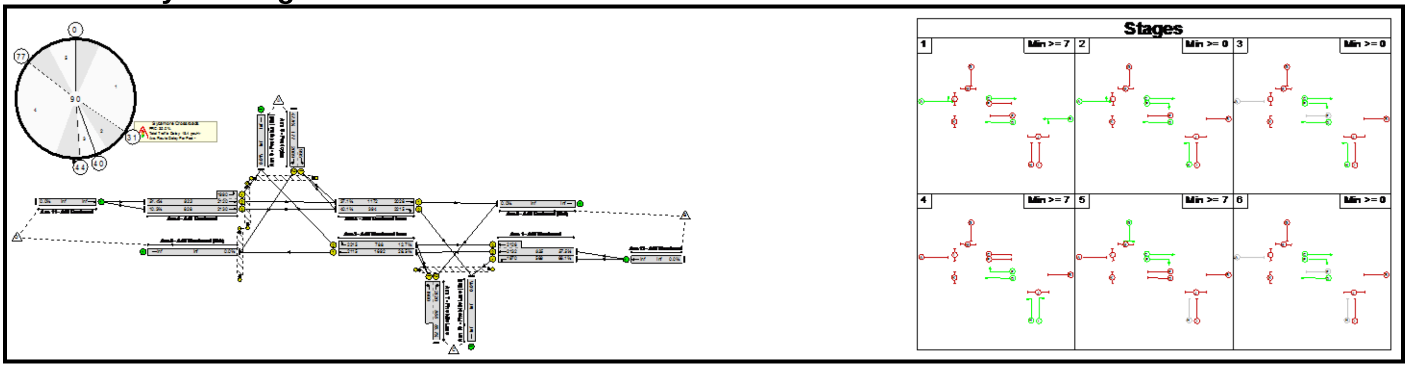
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1	PRC for Signalled Lanes (%):	-62.3	Total Delay for Signalled Lanes (pcuHr):	131.93	Cycle Time (s):	69
	PRC Over All Lanes (%):	-62.3	Total Delay Over All Lanes(pcuHr):	131.93		

Basic Results Summary

Scenario 8: '2017 DM DS flows IP' (FG8: '2017 DS IP', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.7%**	**0**	**0**	**0**	**18.4**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.7%**	**0**	**0**	**0**	**18.4**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	25	-	376	1970	569	66.1%	-	-	-	3.9	37.4	9.2
1/2+1/3	A48 Westbound Ahead	U	B		1	25	-	365	2132:2126	635	57.5%	-	-	-	3.4	33.8	8.2
2/1	A48 Westbound Inner Ahead	U	D		1	71	-	482	2115	1692	28.5%	-	-	-	0.2	1.6	3.2
2/2	A48 Westbound Inner Right	U	F		1	31	-	100	2215	788	12.7%	-	-	-	0.3	11.3	1.9
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	34	-	423	2120:1990	823	51.4%	-	-	-	3.0	25.5	8.5
4/3	A48 Eastbound Ahead	U	A		1	34	-	85	2130	828	10.3%	-	-	-	0.5	20.0	1.4
5/1	A48 Eastbound Inner Ahead	U	C		1	51	-	435	2028	1172	37.1%	-	-	-	0.3	2.7	6.1
5/2	A48 Eastbound Inner Right	U	E		2	14	-	158	2215	394	40.1%	-	-	-	0.9	20.1	2.4
7/2+7/1	Five Mile Lane Left Right	U	I H		1	27:40	-	577	2120:1980	866	66.7%	-	-	-	4.5	27.9	8.4
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	85	2089:1995	177	47.9%	-	-	-	1.4	58.4	2.5
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

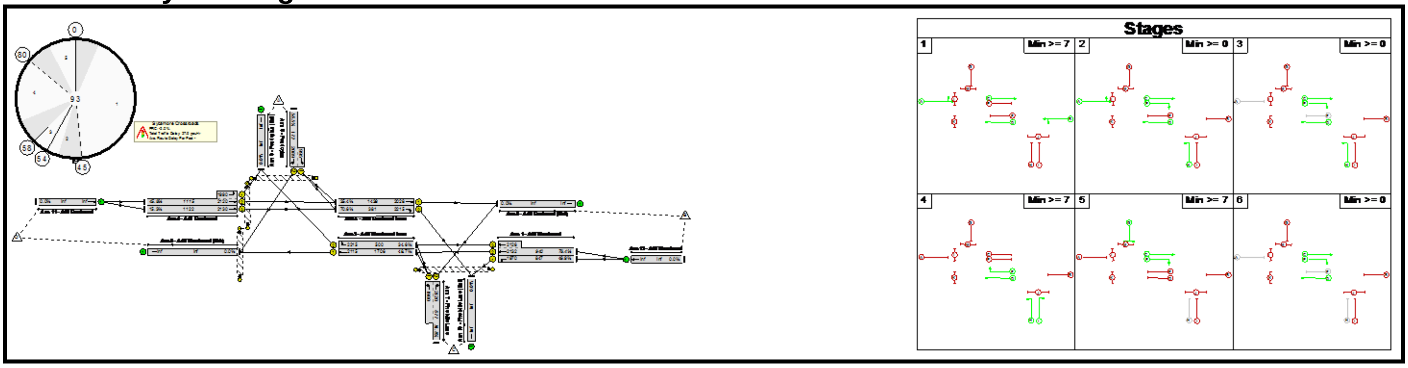
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 PRC for Signalled Lanes (%): 35.0 Total Delay for Signalled Lanes (pcuHr): 18.39 Cycle Time (s): 90
PRC Over All Lanes (%): 35.0 Total Delay Over All Lanes(pcuHr): 18.39

Basic Results Summary

Scenario 9: '2017 DM DS flows PM' (FG9: '2017 DS PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.8%**	**0**	**0**	**0**	**27.9**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.8%**	**0**	**0**	**0**	**27.9**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	39	-	397	1970	847	46.9%	-	-	-	2.5	22.9	7.7
1/2+1/3	A48 Westbound Ahead	U	B		1	39	-	718	2132:2126	940	76.4%	-	-	-	6.0	30.1	16.8
2/1	A48 Westbound Inner Ahead	U	D		1	74	-	830	2115	1706	48.7%	-	-	-	0.5	2.2	5.8
2/2	A48 Westbound Inner Right	U	F		1	20	-	173	2215	500	34.6%	-	-	-	0.9	19.8	4.2
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	48	-	509	2120:1990	1115	45.6%	-	-	-	2.4	16.7	8.5
4/3	A48 Eastbound Ahead	U	A		1	48	-	172	2130	1122	15.3%	-	-	-	0.6	13.2	2.3
5/1	A48 Eastbound Inner Ahead	U	C		1	65	-	509	2028	1439	35.4%	-	-	-	0.3	2.1	6.1
5/2	A48 Eastbound Inner Right	U	E		2	14	-	269	2215	381	70.6%	-	-	-	2.8	36.8	5.7
7/2+7/1	Five Mile Lane Left Right	U	I H		1	16:29	-	621	2120:1980	677	91.8%	-	-	-	10.2	59.1	13.2
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	97	2089:1995	172	56.5%	-	-	-	1.7	64.6	3.0
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

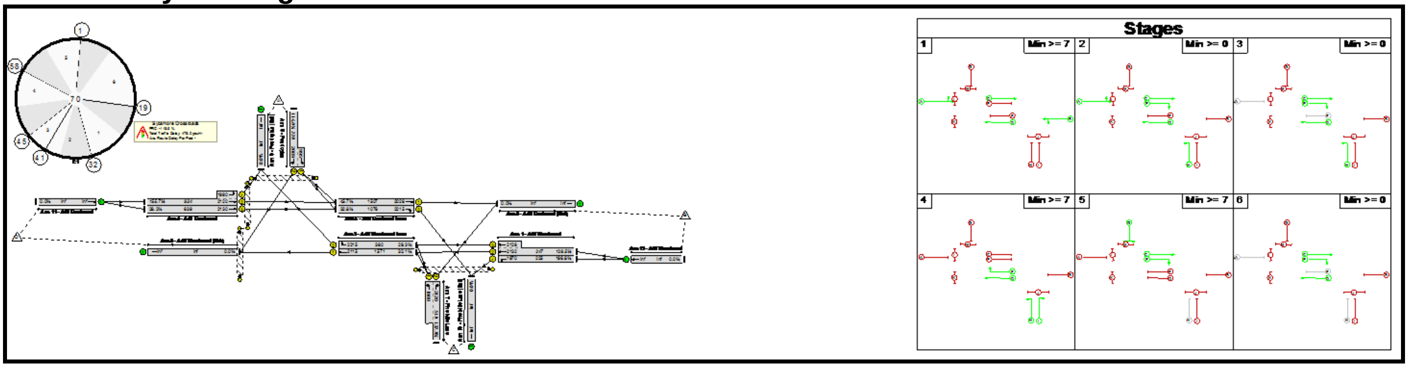
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1	PRC for Signalled Lanes (%):	-2.0	Total Delay for Signalled Lanes (pcuHr):	27.95	Cycle Time (s):	93
	PRC Over All Lanes (%):	-2.0	Total Delay Over All Lanes(pcuHr):	27.95		

Basic Results Summary

Scenario 10: '2032 DM DS flows AM' (FG10: '2032 DS AM', Plan 2: 'Network Control Plan 2')

Network Layout Diagram



Basic Results Summary

Network Results

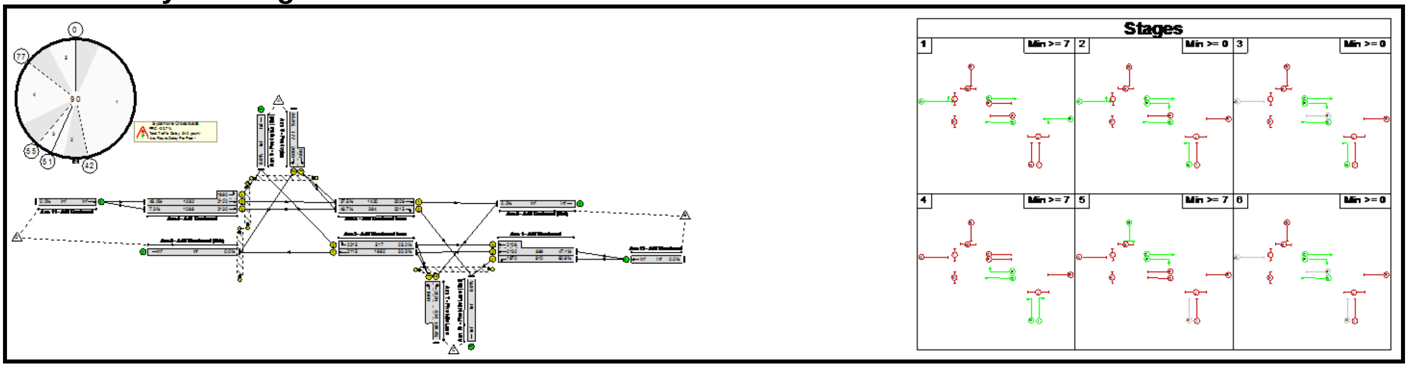
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**196.8%**	**0**	**0**	**0**	**478.0**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**196.8%**	**0**	**0**	**0**	**478.0**	**-**	**-**
1/1	A48 Westbound Left	U	B		1	7	-	443	1970	225	196.8%	-	-	-	120.4	978.2	122.8
1/2+1/3	A48 Westbound Ahead	U	B		1	7	-	317	2132:2126	247	128.5%	-	-	-	42.1	478.1	45.0
2/1	A48 Westbound Inner Ahead	U	D		1	51	-	573	2115	1571	32.1%	-	-	-	0.3	2.0	0.8
2/2	A48 Westbound Inner Right	U	F		1	11	-	112	2215	380	29.3%	-	-	-	0.4	11.5	1.7
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	20	-	987	2120:1990	634	155.7%	-	-	-	195.1	711.7	204.8
4/3	A48 Eastbound Ahead	U	A		1	20	-	180	2130	639	28.2%	-	-	-	1.1	22.7	2.8
5/1	A48 Eastbound Inner Ahead	U	C		1	51	-	1050	2028	1507	45.7%	-	-	-	0.6	2.9	10.7
5/2	A48 Eastbound Inner Right	U	E		2	32	-	377	2215	1076	32.8%	-	-	-	0.8	8.2	3.6
7/2+7/1	Five Mile Lane Left Right	U	I H		1	7:20	-	690	2120:1980	519	132.9%	-	-	-	94.4	492.3	95.4
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	260	2089:1995	228	114.0%	-	-	-	22.8	316.3	25.4
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 PRC for Signalled Lanes (%): -118.6 Total Delay for Signalled Lanes (pcuHr): 477.96 Cycle Time (s): 70
PRC Over All Lanes (%): -118.6 Total Delay Over All Lanes(pcuHr): 477.96

Basic Results Summary
Scenario 11: '2032 DM DS flows IP' (FG11: '2032 DS IP', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**108.6%**	**0**	**0**	**0**	**54.0**	-	-
Sycamore Crossroads	-	-	-		-	-	-	-	-	-	**108.6%**	**0**	**0**	**0**	**54.0**	-	-
1/1	A48 Westbound Left	U	B		1	36	-	491	1970	810	60.6%	-	-	-	3.6	26.4	10.3
1/2+1/3	A48 Westbound Ahead	U	B		1	36	-	422	2132:2126	896	47.1%	-	-	-	2.7	22.9	7.8
2/1	A48 Westbound Inner Ahead	U	D		1	71	-	559	2115	1692	32.3%	-	-	-	0.3	1.8	3.2
2/2	A48 Westbound Inner Right	U	F		1	20	-	140	2215	517	25.2%	-	-	-	0.6	16.4	3.4
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	45	-	519	2120:1990	1082	48.0%	-	-	-	2.5	17.5	8.8
4/3	A48 Eastbound Ahead	U	A		1	45	-	80	2130	1089	7.3%	-	-	-	0.3	13.0	1.0
5/1	A48 Eastbound Inner Ahead	U	C		1	62	-	532	2028	1420	37.5%	-	-	-	0.3	2.2	6.6
5/2	A48 Eastbound Inner Right	U	E		2	14	-	184	2215	394	46.7%	-	-	-	1.2	23.0	2.6
7/2+7/1	Five Mile Lane Left Right	U	I H		1	16:29	-	691	2120:1980	636	108.6%	-	-	-	40.3	210.2	46.7
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	117	2089:1995	177	66.0%	-	-	-	2.2	68.6	3.8
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

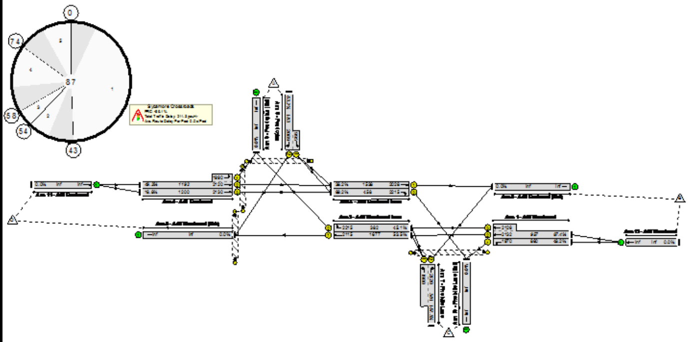
Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

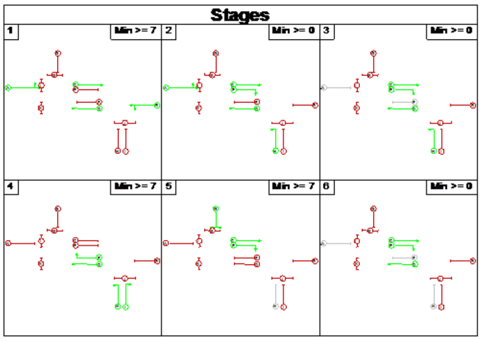
C1 PRC for Signalled Lanes (%): -20.7 Total Delay for Signalled Lanes (pcuHr): 54.05 Cycle Time (s): 90
PRC Over All Lanes (%): -20.7 Total Delay Over All Lanes(pcuHr): 54.05

Basic Results Summary

Scenario 12: '2032 DM DS flows PM' (FG12: '2032 DS PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram





Basic Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**167.5%**	**0**	**0**	**0**	**211.3**	-	-
Sycamore Crossroads	-	-	-		-	-	-	-	-	-	**167.5%**	**0**	**0**	**0**	**211.3**	-	-
1/1	A48 Westbound Left	U	B		1	37	-	415	1970	860	48.2%	-	-	-	2.5	21.5	7.6
1/2+1/3	A48 Westbound Ahead	U	B		1	37	-	836	2132:2126	957	87.4%	-	-	-	8.4	36.0	21.0
2/1	A48 Westbound Inner Ahead	U	D		1	68	-	977	2115	1677	53.5%	-	-	-	0.6	2.3	5.9
2/2	A48 Westbound Inner Right	U	F		1	14	-	250	2215	382	45.1%	-	-	-	1.2	25.5	4.6
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	48	-	588	2120:1990	1192	49.3%	-	-	-	2.4	14.5	9.0
4/3	A48 Eastbound Ahead	U	A		1	48	-	201	2130	1200	16.8%	-	-	-	0.6	11.0	2.4
5/1	A48 Eastbound Inner Ahead	U	C		1	65	-	588	2028	1538	38.2%	-	-	-	0.3	2.1	6.6
5/2	A48 Eastbound Inner Right	U	E		2	16	-	317	2215	458	69.2%	-	-	-	2.8	32.2	6.1
7/2+7/1	Five Mile Lane Left Right	U	I H		1	10:25	-	840	2120:1980	501	167.5%	-	-	-	190.5	816.3	197.3
8/2+8/1	Pendoylan Right Left	U	G		1	7	-	116	2089:1995	183	63.2%	-	-	-	2.1	64.1	3.5
Ped Link: P1	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	M		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

Basic Results Summary

Ped Link: P3	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1	PRC for Signalled Lanes (%):	-86.1	Total Delay for Signalled Lanes (pcuHr):	211.31	Cycle Time (s):	87
	PRC Over All Lanes (%):	-86.1	Total Delay Over All Lanes(pcuHr):	211.31		

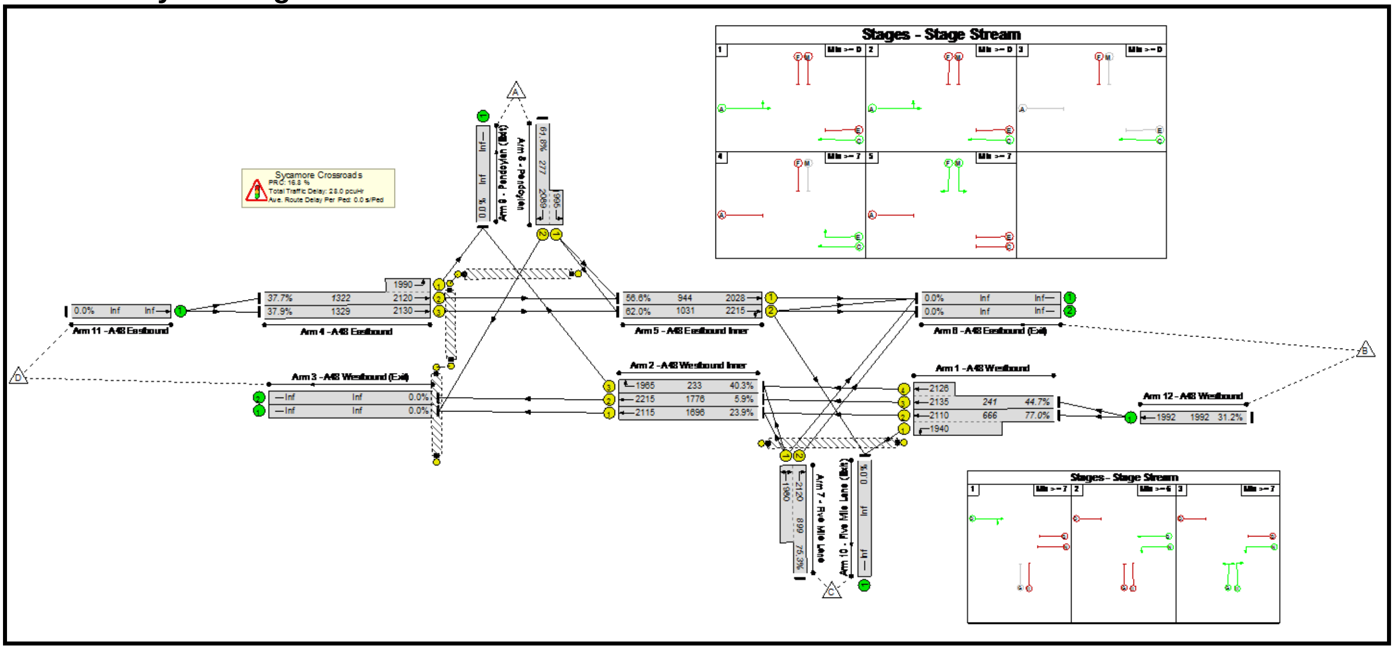
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Sycamore Crossroads TA_DSsh.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: '2017 DS AM' (FG1: '2017 DS AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.0%**	**0**	**0**	**0**	**28.0**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.0%**	**0**	**0**	**0**	**28.0**	**-**	**-**
1/2+1/1	A48 Westbound Ahead Left	U	B N		1	10:43	-	513	2110:1940	666	77.0%	-	-	-	5.6	39.4	8.0
1/3+1/4	A48 Westbound Ahead	U	B		1	10	-	108	2135:2126	241	44.7%	-	-	-	1.7	55.5	3.1
2/1	A48 Westbound Inner Ahead	U	C		1	80	-	405	2115	1696	23.9%	-	-	-	0.2	1.4	0.2
2/2	A48 Westbound Inner Ahead	U	C		1	80	-	104	2215	1776	5.9%	-	-	-	0.0	1.1	0.0
2/3	A48 Westbound Inner Right	U	E		1	11	-	94	1965	233	40.3%	-	-	-	0.9	33.2	3.0
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	62	-	498	2120:1990	1322	37.7%	-	-	-	1.6	11.5	7.1
4/3	A48 Eastbound Ahead	U	A		1	62	-	504	2130	1329	37.9%	-	-	-	1.6	11.5	7.2
5/1	A48 Eastbound Inner Ahead	U	D		1	46	-	534	2028	944	56.6%	-	-	-	3.0	20.5	7.5
5/2	A48 Eastbound Inner Ahead Right	U	D		1	46	-	639	2215	1031	62.0%	-	-	-	3.2	18.0	7.8
7/2+7/1	Five Mile Lane Left Right	U	H G		1	28	-	677	2120:1980	899	75.3%	-	-	-	7.3	38.7	9.6
8/2+8/1	Pendoylan Right Left	U	F M		1	9:13	-	171	2089:1995	277	61.8%	-	-	-	2.7	57.8	5.3

Basic Results Summary

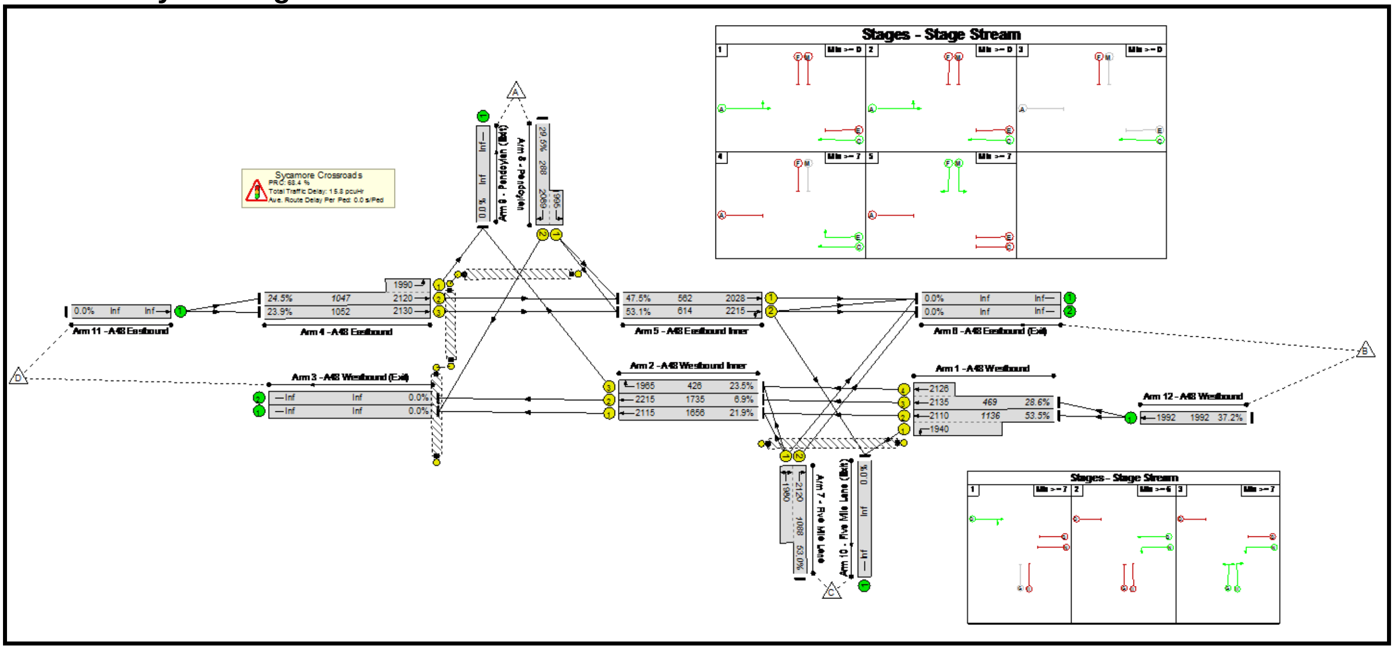
12/1	A48 Westbound Ahead	U	-		-	-	-	621	1992	1992	31.2%	-	-	-	0.2	1.3	0.2
Ped Link: P1	Unnamed Ped Link	-	I		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P3	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 Stream: 1 PRC for Signalled Lanes (%): 45.5 Total Delay for Signalled Lanes (pcuHr): 7.01 Cycle Time (s): 101
C1 Stream: 2 PRC for Signalled Lanes (%): 16.8 Total Delay for Signalled Lanes (pcuHr): 20.78 Cycle Time (s): 101
PRC Over All Lanes (%): 16.8 Total Delay Over All Lanes(pcuHr): 28.02

Basic Results Summary

Scenario 2: '2017 DS IP' (FG2: '2017 DS IP', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**53.5%**	**0**	**0**	**0**	**15.8**	-	-
Sycamore Crossroads	-	-	-		-	-	-	-	-	-	**53.5%**	**0**	**0**	**0**	**15.8**	-	-
1/2+1/1	A48 Westbound Ahead Left	U	B N		1	16:49	-	607	2110:1940	1136	53.5%	-	-	-	3.3	19.7	5.3
1/3+1/4	A48 Westbound Ahead	U	B		1	16	-	134	2135:2126	469	28.6%	-	-	-	1.2	33.0	2.5
2/1	A48 Westbound Inner Ahead	U	C		1	64	-	363	2115	1656	21.9%	-	-	-	0.2	2.1	0.7
2/2	A48 Westbound Inner Ahead	U	C		1	64	-	119	2215	1735	6.9%	-	-	-	0.0	1.1	0.0
2/3	A48 Westbound Inner Right	U	E		1	17	-	100	1965	426	23.5%	-	-	-	0.5	16.6	0.8
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	40	-	257	2120:1990	1047	24.5%	-	-	-	1.0	14.4	3.5
4/3	A48 Eastbound Ahead	U	A		1	40	-	251	2130	1052	23.9%	-	-	-	1.0	14.3	3.4
5/1	A48 Eastbound Inner Ahead	U	D		1	22	-	267	2028	562	47.5%	-	-	-	1.5	20.4	2.4
5/2	A48 Eastbound Inner Ahead Right	U	D		1	22	-	326	2215	614	53.1%	-	-	-	1.9	20.7	4.3
7/2+7/1	Five Mile Lane Left Right	U	H G		1	28	-	577	2120:1980	1088	53.0%	-	-	-	3.8	24.0	5.7
8/2+8/1	Pendoylan Right Left	U	F M		1	7:11	-	85	2089:1995	288	29.5%	-	-	-	1.0	40.6	2.0

Basic Results Summary

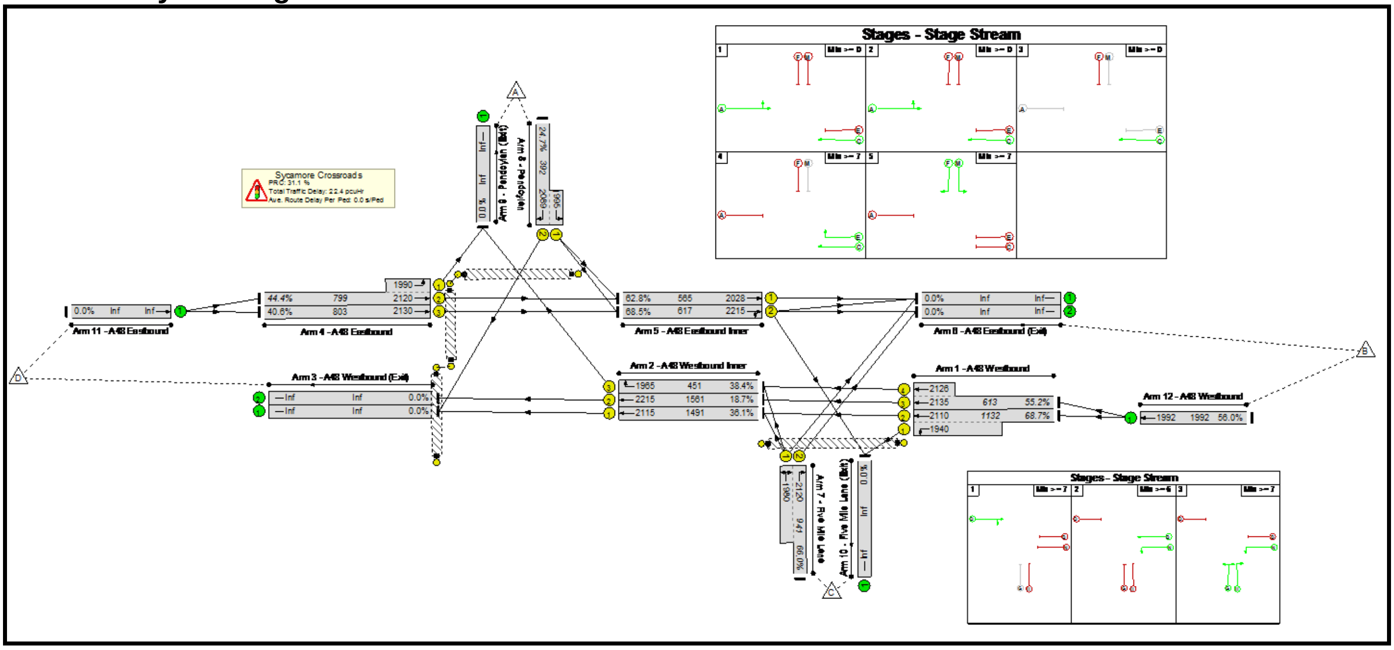
12/1	A48 Westbound Ahead	U	-		-	-	-	741	1992	1992	37.2%	-	-	-	0.3	1.4	0.3
Ped Link: P1	Unnamed Ped Link	-	I		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P3	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 Stream: 1 PRC for Signalled Lanes (%): 205.4 Total Delay for Signalled Lanes (pcuHr): 3.69 Cycle Time (s): 83
C1 Stream: 2 PRC for Signalled Lanes (%): 68.4 Total Delay for Signalled Lanes (pcuHr): 11.78 Cycle Time (s): 83
PRC Over All Lanes (%): 68.4 Total Delay Over All Lanes(pcuHr): 15.77

Basic Results Summary

Scenario 3: '2017 DS PM' (FG3: '2017 DS PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**68.7%**	**0**	**0**	**0**	**22.4**	-	-
Sycamore Crossroads	-	-	-		-	-	-	-	-	-	**68.7%**	**0**	**0**	**0**	**22.4**	-	-
1/2+1/1	A48 Westbound Ahead Left	U	B N		1	15:33	-	777	2110:1940	1132	68.7%	-	-	-	4.1	18.8	6.8
1/3+1/4	A48 Westbound Ahead	U	B		1	15	-	338	2135:2126	613	55.2%	-	-	-	2.4	25.5	4.8
2/1	A48 Westbound Inner Ahead	U	C		1	42	-	538	2115	1491	36.1%	-	-	-	0.9	6.0	3.0
2/2	A48 Westbound Inner Ahead	U	C		1	42	-	292	2215	1561	18.7%	-	-	-	0.1	1.5	0.1
2/3	A48 Westbound Inner Right	U	E		1	13	-	173	1965	451	38.4%	-	-	-	1.9	39.4	3.2
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	22	-	355	2120:1990	799	44.4%	-	-	-	1.8	18.3	4.8
4/3	A48 Eastbound Ahead	U	A		1	22	-	326	2130	803	40.6%	-	-	-	1.6	17.7	4.3
5/1	A48 Eastbound Inner Ahead	U	D		1	16	-	355	2028	565	62.8%	-	-	-	1.6	15.7	2.6
5/2	A48 Eastbound Inner Ahead Right	U	D		1	16	-	423	2215	617	68.5%	-	-	-	2.1	18.1	3.7
7/2+7/1	Five Mile Lane Left Right	U	H G		1	13	-	621	2120:1980	941	66.0%	-	-	-	4.6	26.9	5.8
8/2+8/1	Pendoylan Right Left	U	F M		1	7:11	-	97	2089:1995	392	24.7%	-	-	-	0.7	26.8	1.5

Basic Results Summary

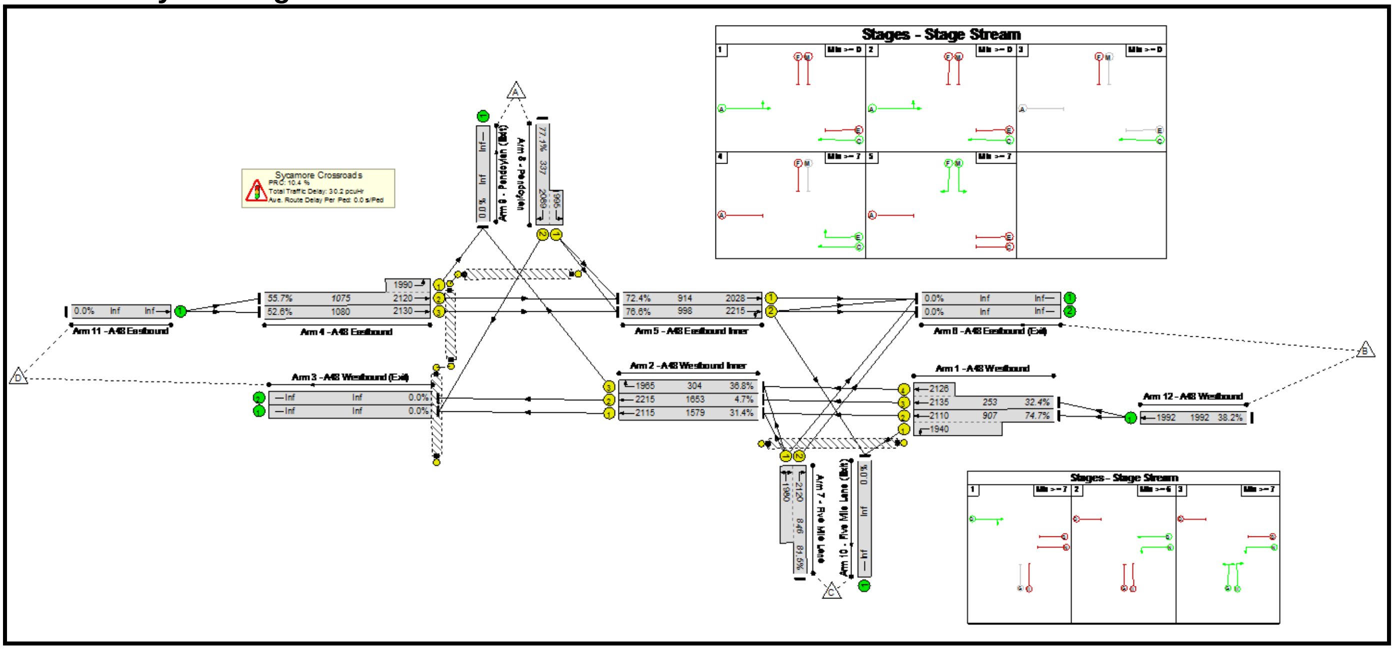
12/1	A48 Westbound Ahead	U	-		-	-	-	1115	1992	1992	56.0%	-	-	-	0.6	2.0	0.6
Ped Link: P1	Unnamed Ped Link	-	I		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P3	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 Stream: 1 PRC for Signalled Lanes (%): 102.7 Total Delay for Signalled Lanes (pcuHr): 7.03 Cycle Time (s): 61
C1 Stream: 2 PRC for Signalled Lanes (%): 31.1 Total Delay for Signalled Lanes (pcuHr): 14.78 Cycle Time (s): 61
PRC Over All Lanes (%): 31.1 Total Delay Over All Lanes(pcuHr): 22.44

Basic Results Summary

Scenario 4: '2032 DS AM' (FG4: '2032 DS AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.5%**	**0**	**0**	**0**	**30.2**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.5%**	**0**	**0**	**0**	**30.2**	**-**	**-**
1/2+1/1	A48 Westbound Ahead Left	U	B N		1	7:28	-	678	2110:1940	907	74.7%	-	-	-	5.5	29.2	8.1
1/3+1/4	A48 Westbound Ahead	U	B		1	7	-	82	2135:2126	253	32.4%	-	-	-	0.9	39.5	1.6
2/1	A48 Westbound Inner Ahead	U	C		1	52	-	495	2115	1579	31.4%	-	-	-	0.8	5.7	2.6
2/2	A48 Westbound Inner Ahead	U	C		1	52	-	78	2215	1653	4.7%	-	-	-	0.0	1.1	0.0
2/3	A48 Westbound Inner Right	U	E		1	10	-	112	1965	304	36.8%	-	-	-	1.1	35.2	1.4
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	35	-	599	2120:1990	1075	55.7%	-	-	-	2.6	15.8	8.6
4/3	A48 Eastbound Ahead	U	A		1	35	-	568	2130	1080	52.6%	-	-	-	2.4	15.3	8.0
5/1	A48 Eastbound Inner Ahead	U	D		1	31	-	662	2028	914	72.4%	-	-	-	2.7	14.5	7.1
5/2	A48 Eastbound Inner Ahead Right	U	D		1	31	-	765	2215	998	76.6%	-	-	-	3.3	15.6	7.9
7/2+7/1	Five Mile Lane Left Right	U	H G		1	16	-	690	2120:1980	846	81.5%	-	-	-	6.9	36.0	9.1
8/2+8/1	Pendoylan Right Left	U	F M		1	7:11	-	260	2089:1995	337	77.1%	-	-	-	3.7	50.6	6.5

Basic Results Summary

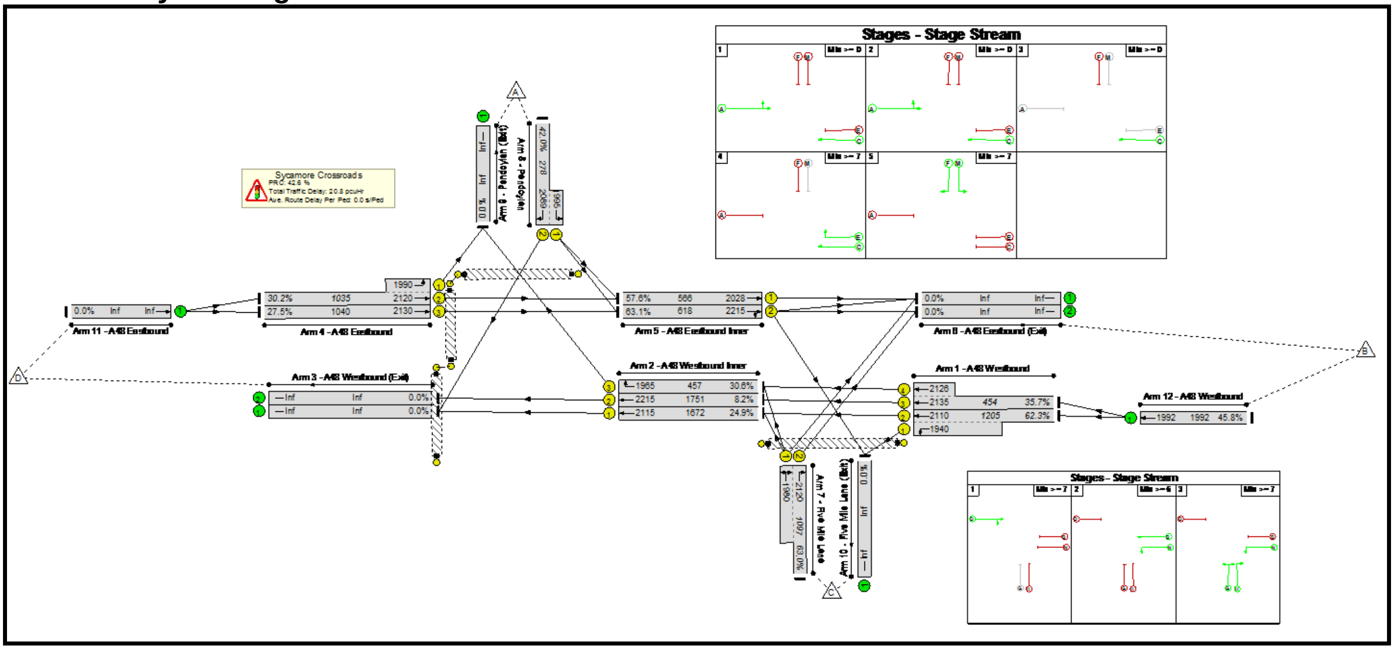
12/1	A48 Westbound Ahead	U	-		-	-	-	760	1992	1992	38.2%	-	-	-	0.3	1.5	0.3
Ped Link: P1	Unnamed Ped Link	-	I		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P3	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 Stream: 1 PRC for Signalled Lanes (%): 16.7 Total Delay for Signalled Lanes (pcuHr): 10.59 Cycle Time (s): 71
C1 Stream: 2 PRC for Signalled Lanes (%): 10.4 Total Delay for Signalled Lanes (pcuHr): 19.27 Cycle Time (s): 71
PRC Over All Lanes (%): 10.4 Total Delay Over All Lanes(pcuHr): 30.17

Basic Results Summary

Scenario 5: '2032 DS IP' (FG5: '2032 DS IP', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.1%**	**0**	**0**	**0**	**20.8**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.1%**	**0**	**0**	**0**	**20.8**	**-**	**-**
1/2+1/1	A48 Westbound Ahead Left	U	B N		1	16:51	-	751	2110:1940	1205	62.3%	-	-	-	4.3	20.8	7.0
1/3+1/4	A48 Westbound Ahead	U	B		1	16	-	162	2135:2126	454	35.7%	-	-	-	1.6	35.6	3.2
2/1	A48 Westbound Inner Ahead	U	C		1	67	-	416	2115	1672	24.9%	-	-	-	0.2	2.1	0.7
2/2	A48 Westbound Inner Ahead	U	C		1	67	-	143	2215	1751	8.2%	-	-	-	0.0	1.1	0.0
2/3	A48 Westbound Inner Right	U	E		1	19	-	140	1965	457	30.6%	-	-	-	0.6	15.8	1.1
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	41	-	313	2120:1990	1035	30.2%	-	-	-	1.4	15.7	4.7
4/3	A48 Eastbound Ahead	U	A		1	41	-	286	2130	1040	27.5%	-	-	-	1.2	15.4	4.2
5/1	A48 Eastbound Inner Ahead	U	D		1	23	-	326	2028	566	57.6%	-	-	-	2.1	22.8	3.3
5/2	A48 Eastbound Inner Ahead Right	U	D		1	23	-	390	2215	618	63.1%	-	-	-	2.5	22.8	5.4
7/2+7/1	Five Mile Lane Left Right	U	H G		1	30	-	691	2120:1980	1097	63.0%	-	-	-	4.9	25.6	7.4
8/2+8/1	Pendoylan Right Left	U	F M		1	7:11	-	117	2089:1995	278	42.0%	-	-	-	1.5	44.9	2.9

Basic Results Summary

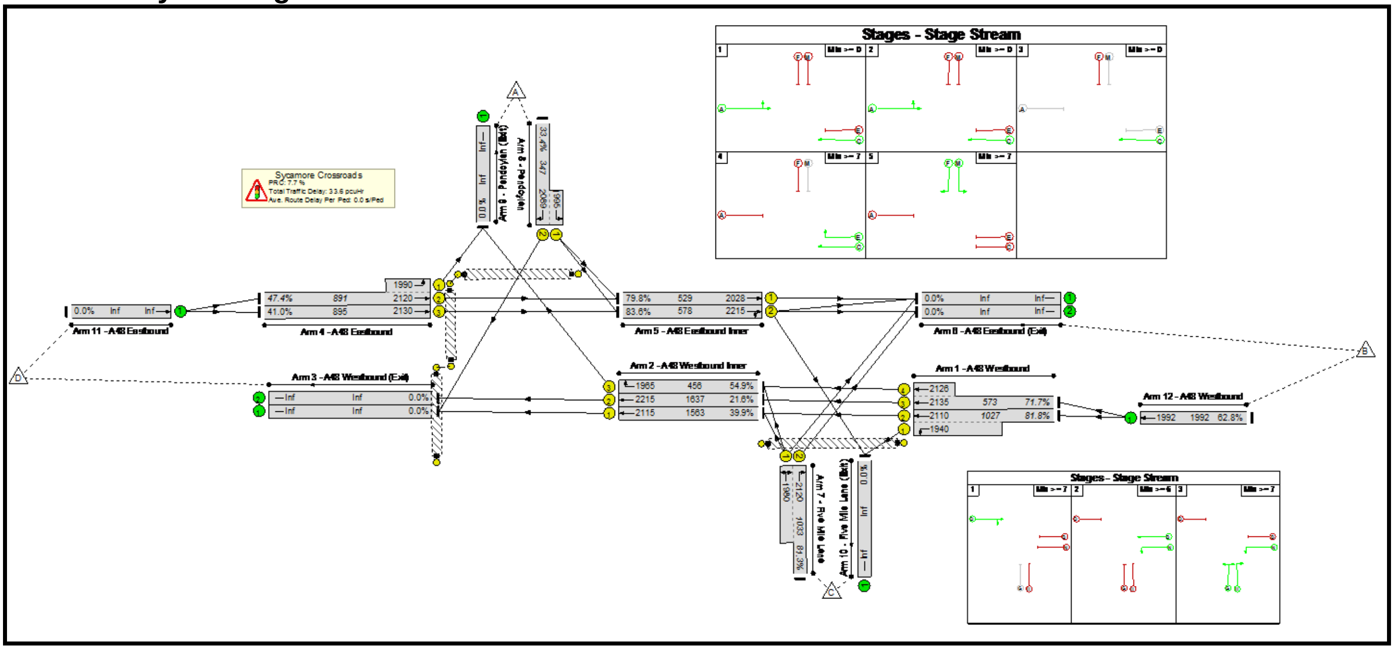
12/1	A48 Westbound Ahead	U	-		-	-	-	913	1992	1992	45.8%	-	-	-	0.4	1.7	0.4
Ped Link: P1	Unnamed Ped Link	-	I		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P3	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 Stream: 1 PRC for Signalled Lanes (%): 114.1 Total Delay for Signalled Lanes (pcuHr): 4.95 Cycle Time (s): 86
C1 Stream: 2 PRC for Signalled Lanes (%): 42.6 Total Delay for Signalled Lanes (pcuHr): 15.38 Cycle Time (s): 86
PRC Over All Lanes (%): 42.6 Total Delay Over All Lanes(pcuHr): 20.75

Basic Results Summary

Scenario 6: '2032 DS PM' (FG6: '2032 DS PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.6%**	**0**	**0**	**0**	**33.6**	**-**	**-**
Sycamore Crossroads	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.6%**	**0**	**0**	**0**	**33.6**	**-**	**-**
1/2+1/1	A48 Westbound Ahead Left	U	B N		1	16:40	-	840	2110:1940	1027	81.8%	-	-	-	5.9	25.4	9.9
1/3+1/4	A48 Westbound Ahead	U	B		1	16	-	411	2135:2126	573	71.7%	-	-	-	3.9	34.1	7.6
2/1	A48 Westbound Inner Ahead	U	C		1	50	-	623	2115	1563	39.9%	-	-	-	0.8	4.4	2.2
2/2	A48 Westbound Inner Ahead	U	C		1	50	-	354	2215	1637	21.6%	-	-	-	0.1	1.4	0.1
2/3	A48 Westbound Inner Right	U	E		1	15	-	250	1965	456	54.9%	-	-	-	2.2	31.2	3.6
4/2+4/1	A48 Eastbound Ahead Left	U	A		1	28	-	422	2120:1990	891	47.4%	-	-	-	2.1	18.3	6.2
4/3	A48 Eastbound Ahead	U	A		1	28	-	367	2130	895	41.0%	-	-	-	1.8	17.4	5.2
5/1	A48 Eastbound Inner Ahead	U	D		1	17	-	422	2028	529	79.8%	-	-	-	3.5	29.9	5.4
5/2	A48 Eastbound Inner Ahead Right	U	D		1	17	-	483	2215	578	83.6%	-	-	-	4.1	30.9	6.7
7/2+7/1	Five Mile Lane Left Right	U	H G		1	19	-	840	2120:1980	1033	81.3%	-	-	-	7.2	31.0	9.4
8/2+8/1	Pendoylan Right Left	U	F M		1	7:11	-	116	2089:1995	347	33.4%	-	-	-	1.1	32.8	2.2

Basic Results Summary

12/1	A48 Westbound Ahead	U	-		-	-	-	1251	1992	1992	62.8%	-	-	-	0.8	2.4	0.8
Ped Link: P1	Unnamed Ped Link	-	I		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P2	Unnamed Ped Link	-	L		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P3	Unnamed Ped Link	-	J		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf
Ped Link: P4	Unnamed Ped Link	-	K		0	0	-	0	-	0	0.0%	-	-	-	Inf	Inf	Inf

C1 Stream: 1 PRC for Signalled Lanes (%): 64.0 Total Delay for Signalled Lanes (pcuHr): 8.04 Cycle Time (s): 69
C1 Stream: 2 PRC for Signalled Lanes (%): 7.7 Total Delay for Signalled Lanes (pcuHr): 24.70 Cycle Time (s): 69
PRC Over All Lanes (%): 7.7 Total Delay Over All Lanes(pcuHr): 33.59

Appendix F: Model Output Files – Waycock Cross Junction

Junctions 8

ARCADY 8 - Roundabout Module

Filename: (new file)
Path:
Report generation date: 10/03/2016 10:26:54

» Waycock Cross Junction - Base, AM
» Waycock Cross Junction - Base, IP
» Waycock Cross Junction - Base, PM
» Waycock Cross Junction - 2017 - DM, AM
» Waycock Cross Junction - 2017 - DM, IP
» Waycock Cross Junction - 2017 - DM, PM
» Waycock Cross Junction - 2032 - DM, AM
» Waycock Cross Junction - 2032 - DM, IP
» Waycock Cross Junction - 2032 - DM, PM

Summary of junction performance

	AM				IP				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	Waycock Cross Junction - 2017 - DM											
A4226 Waycock Road	2.16	16.88	0.69	C	0.55	6.84	0.35	A	3.28	20.76	0.78	C
A4226 Port Road West (E)	2.22	9.09	0.69	A	1.01	5.11	0.51	A	1.97	8.28	0.67	A
Pontypridd Road	1.08	5.60	0.52	A	0.51	3.66	0.34	A	1.20	5.93	0.55	A
A4226 Port Road West (W)	71.87	201.43	1.12	F	2.03	9.16	0.67	A	3.74	15.01	0.80	C
	Waycock Cross Junction - 2032 - DM											
A4226 Waycock Road	16.13	86.35	0.99	F	1.18	12.18	0.55	B	26.00	122.54	1.03	F
A4226 Port Road West (E)	66.09	163.82	1.09	F	2.93	10.59	0.75	B	5.76	20.82	0.86	C
Pontypridd Road	4.59	20.08	0.83	C	0.89	5.38	0.47	A	2.24	10.36	0.70	B
A4226 Port Road West (W)	285.97	884.91	1.42	F	23.40	72.16	1.00	F	302.31	869.73	1.41	F
	Waycock Cross Junction - Base											
A4226 Waycock Road	1.14	10.93	0.54	B	0.39	5.84	0.28	A	1.28	9.70	0.56	A
A4226 Port Road West (E)	1.33	6.56	0.57	A	0.72	4.20	0.42	A	1.40	6.29	0.59	A
Pontypridd Road	0.77	4.25	0.43	A	0.42	3.19	0.29	A	0.92	4.80	0.48	A
A4226 Port Road West (W)	9.01	35.16	0.92	E	1.19	6.55	0.54	A	1.44	7.54	0.59	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - Base, AM " model duration: 07:15 - 08:45
"D2 - Base, IP" model duration: 11:45 - 13:15

"D3 - Base, PM" model duration: 16:15 - 17:45
"D4 - 2017 - DM, AM" model duration: 07:15 - 08:45
"D5 - 2017 - DM, IP" model duration: 11:45 - 13:15
"D6 - 2017 - DM, PM" model duration: 16:15 - 17:45
"D7 - 2032 - DM, AM" model duration: 07:15 - 08:45
"D8 - 2032 - DM, IP" model duration: 11:45 - 13:15
"D9 - 2032 - DM, PM" model duration: 16:15 - 17:45

Run using Junctions 8.0.1.305 at 10/03/2016 10:26:51

File summary

File Description

Title	Waycock Cross Roundabout
Location	Barry
Site Number	
Date	10/06/2014
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\alison.simpson
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Waycock Cross Junction - Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Base, AM	Base	AM		ONE HOUR	07:15	08:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			16.86	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default	Vehicle	Vehicle	Vehicle Mix		PCU	Default	Estimate	Turning	Turning	Turning

Vehicle Mix	Mix Varies Over Time	Mix Varies Over Turn	Varies Over Entry	Vehicle Mix Source	Factor for a HV (PCU)	Turning Proportions	from entry/exit counts	Proportions Vary Over Time	Proportions Vary Over Turn	Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	345.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	668.00	100.000
Pontypridd Road	ONE HOUR	✓	591.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	896.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:15-07:30	A4226 Waycock Road	259.73	269.70	N/A	N/A
07:15-07:30	A4226 Port Road West (E)	502.91	532.41	N/A	N/A
07:15-07:30	Pontypridd Road	444.94	451.73	N/A	N/A
07:15-07:30	A4226 Port Road West (W)	674.56	698.39	N/A	N/A
07:30-07:45	A4226 Waycock Road	310.15	322.05	N/A	N/A
07:30-07:45	A4226 Port Road West (E)	600.52	635.75	N/A	N/A
07:30-07:45	Pontypridd Road	531.30	539.41	N/A	N/A
07:30-07:45	A4226 Port Road West (W)	805.49	833.95	N/A	N/A
07:45-08:00	A4226 Waycock Road	379.85	394.43	N/A	N/A
07:45-08:00	A4226 Port Road West (E)	735.48	778.63	N/A	N/A
07:45-08:00	Pontypridd Road	650.70	660.65	N/A	N/A
07:45-08:00	A4226 Port Road West (W)	986.51	1021.37	N/A	N/A
08:00-08:15	A4226 Waycock Road	379.85	394.43	N/A	N/A
08:00-08:15	A4226 Port Road West (E)	735.48	778.63	N/A	N/A
08:00-08:15	Pontypridd Road	650.70	660.65	N/A	N/A
08:00-08:15	A4226 Port Road West (W)	986.51	1021.37	N/A	N/A
08:15-08:30	A4226 Waycock Road	310.15	322.05	N/A	N/A
08:15-08:30	A4226 Port Road West (E)	600.52	635.75	N/A	N/A
08:15-					

08:30	Pontypridd Road	531.30	539.41	N/A	N/A
08:15-08:30	A4226 Port Road West (W)	805.49	833.95	N/A	N/A
08:30-08:45	A4226 Waycock Road	259.73	269.70	N/A	N/A
08:30-08:45	A4226 Port Road West (E)	502.91	532.41	N/A	N/A
08:30-08:45	Pontypridd Road	444.94	451.73	N/A	N/A
08:30-08:45	A4226 Port Road West (W)	674.56	698.39	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	95.000	176.000	74.000
	2	120.000	0.000	155.000	393.000
	3	235.000	200.000	0.000	156.000
	4	153.000	407.000	336.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.28	0.51	0.21
	2	0.18	0.00	0.23	0.59
	3	0.40	0.34	0.00	0.26
	4	0.17	0.45	0.38	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.040	1.020	1.080
	2	1.000	1.090	1.050	1.080
	3	1.010	1.010	1.000	1.030
	4	1.030	1.050	1.020	1.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.000	2.000	8.000
	2	0.000	9.000	5.000	8.000
	3	1.000	1.000	0.000	3.000
	4	3.000	5.000	2.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.54	10.93	1.14	B
A4226 Port Road West (E)	0.57	6.56	1.33	A
Pontypridd Road	0.43	4.25	0.77	A
A4226 Port Road West (W)	0.92	35.16	9.01	E

Main Results for each time segment

Main results: (07:15-07:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	259.73	258.05	705.05	0.00	872.76	0.298	0.42	5.842	A
A4226 Port Road West (E)	502.90	500.68	437.97	0.00	1402.73	0.359	0.56	3.981	A
Pontypridd Road	444.94	443.45	439.86	0.00	1636.80	0.272	0.37	3.012	A
A4226 Port Road West (W)	674.56	669.28	416.34	0.00	1175.93	0.574	1.32	7.036	A

Main results: (07:30-07:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	310.15	309.34	844.11	0.00	803.60	0.386	0.62	7.271	A
A4226 Port Road West (E)	600.52	599.57	524.66	0.00	1352.71	0.444	0.79	4.774	A
Pontypridd Road	531.30	530.76	526.81	0.00	1577.98	0.337	0.50	3.435	A
A4226 Port Road West (W)	805.49	801.34	498.37	0.00	1133.91	0.710	2.36	10.689	B

Main results: (07:45-08:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	379.85	377.93	1019.47	0.00	716.42	0.530	1.10	10.574	B
A4226 Port Road West (E)	735.48	733.41	635.46	0.00	1288.75	0.571	1.31	6.457	A
Pontypridd Road	650.70	649.68	644.30	0.00	1498.50	0.434	0.76	4.236	A
A4226 Port Road West (W)	986.52	964.27	609.94	0.00	1076.77	0.916	7.92	27.743	D

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	379.85	379.72	1034.64	0.00	708.83	0.536	1.14	10.929	B
A4226 Port Road West (E)	735.48	735.40	643.47	0.00	1284.15	0.573	1.33	6.557	A
Pontypridd Road	650.70	650.69	646.21	0.00	1497.20	0.435	0.77	4.252	A
A4226 Port Road West (W)	986.52	982.16	611.04	0.00	1076.21	0.917	9.01	35.158	E

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS

A4226 Waycock Road	310.15	312.07	869.47	0.00	790.92	0.392	0.65	7.549	A
A4226 Port Road West (E)	600.52	602.57	537.87	0.00	1345.12	0.446	0.81	4.860	A
Pontypridd Road	531.30	532.31	529.69	0.00	1576.03	0.337	0.51	3.454	A
A4226 Port Road West (W)	805.49	831.28	500.05	0.00	1133.06	0.711	2.56	12.865	B

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	259.73	260.63	714.07	0.00	868.26	0.299	0.43	5.934	A
A4226 Port Road West (E)	502.90	503.90	443.60	0.00	1399.49	0.359	0.56	4.023	A
Pontypridd Road	444.94	445.48	442.88	0.00	1634.76	0.272	0.38	3.027	A
A4226 Port Road West (W)	674.56	679.32	418.41	0.00	1174.87	0.574	1.37	7.331	A

Waycock Cross Junction - Base, IP

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Base, IP	Base	IP		ONE HOUR	11:45	13:15	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			4.95	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description

A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	222.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	560.00	100.000
Pontypridd Road	ONE HOUR	✓	427.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	597.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:45-12:00	A4226 Waycock Road	167.13	170.87	N/A	N/A
11:45-12:00	A4226 Port Road West (E)	421.60	430.13	N/A	N/A
11:45-12:00	Pontypridd Road	321.47	328.26	N/A	N/A
11:45-12:00	A4226 Port Road West (W)	449.45	465.73	N/A	N/A
12:00-12:15	A4226 Waycock Road	199.57	204.04	N/A	N/A
12:00-12:15	A4226 Port Road West (E)	503.43	513.62	N/A	N/A
12:00-12:15	Pontypridd Road	383.86	391.97	N/A	N/A
12:00-12:15	A4226 Port Road West (W)	536.69	556.13	N/A	N/A
12:15-12:30	A4226 Waycock Road	244.43	249.90	N/A	N/A
12:15-12:30	A4226 Port Road West (E)	616.57	629.06	N/A	N/A
12:15-12:30	Pontypridd Road	470.14	480.07	N/A	N/A
12:15-12:30	A4226 Port Road West (W)	657.31	681.11	N/A	N/A
12:30-12:45	A4226 Waycock Road	244.43	249.90	N/A	N/A
12:30-12:45	A4226 Port Road West (E)	616.57	629.06	N/A	N/A
12:30-12:45	Pontypridd Road	470.14	480.07	N/A	N/A
12:30-12:45	A4226 Port Road West (W)	657.31	681.11	N/A	N/A
12:45-13:00	A4226 Waycock Road	199.57	204.04	N/A	N/A
12:45-13:00	A4226 Port Road West (E)	503.43	513.62	N/A	N/A
12:45-13:00	Pontypridd Road	383.86	391.97	N/A	N/A
12:45-13:00	A4226 Port Road West (W)	536.69	556.13	N/A	N/A
13:00-13:15	A4226 Waycock Road	167.13	170.87	N/A	N/A
13:00-13:15	A4226 Port Road West (E)	421.60	430.13	N/A	N/A
13:00-13:15	Pontypridd Road	321.47	328.26	N/A	N/A
13:00-13:15	A4226 Port Road West (W)	449.45	465.73	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	53.000	103.000	66.000
	2	70.000	0.000	168.000	322.000
	3	95.000	152.000	0.000	180.000
	4	65.000	326.000	206.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.24	0.46	0.30
	2	0.13	0.00	0.30	0.58
	3	0.22	0.36	0.00	0.42
	4	0.11	0.55	0.35	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030
	3	1.060	1.010	1.000	1.010
	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.28	5.84	0.39	A
A4226 Port Road West (E)	0.42	4.20	0.72	A
Pontypridd Road	0.29	3.19	0.42	A
A4226 Port Road West (W)	0.54	6.55	1.19	A

Main Results for each time segment

Main results: (11:45-12:00)

	Total Demand	Entry Flow	Circulating Flow	Pedestrian Demand	Capacity		End Queue	Delay	

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	167.13	166.32	512.67	0.00	982.84	0.170	0.20	4.404	A
A4226 Port Road West (E)	421.60	420.11	280.94	0.00	1551.72	0.272	0.37	3.177	A
Pontypridd Road	321.47	320.54	343.53	0.00	1700.86	0.189	0.23	2.607	A
A4226 Port Road West (W)	449.45	447.27	237.93	0.00	1264.42	0.355	0.55	4.394	A

Main results: (12:00-12:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	199.57	199.30	614.06	0.00	931.47	0.214	0.27	4.916	A
A4226 Port Road West (E)	503.43	502.94	336.62	0.00	1518.80	0.331	0.49	3.541	A
Pontypridd Road	383.87	383.59	411.31	0.00	1656.96	0.232	0.30	2.827	A
A4226 Port Road West (W)	536.69	535.86	284.76	0.00	1240.10	0.433	0.76	5.105	A

Main results: (12:15-12:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	244.43	243.94	751.43	0.00	861.87	0.284	0.39	5.820	A
A4226 Port Road West (E)	616.57	615.69	411.93	0.00	1474.29	0.418	0.71	4.188	A
Pontypridd Road	470.14	469.68	503.51	0.00	1597.26	0.294	0.42	3.190	A
A4226 Port Road West (W)	657.31	655.62	348.65	0.00	1206.93	0.545	1.18	6.510	A

Main results: (12:30-12:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	244.43	244.42	753.06	0.00	861.04	0.284	0.39	5.837	A
A4226 Port Road West (E)	616.57	616.56	412.86	0.00	1473.73	0.418	0.72	4.199	A
Pontypridd Road	470.14	470.13	504.26	0.00	1596.78	0.294	0.42	3.194	A
A4226 Port Road West (W)	657.31	657.28	349.02	0.00	1206.73	0.545	1.19	6.551	A

Main results: (12:45-13:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	199.57	200.05	616.55	0.00	930.20	0.215	0.28	4.935	A
A4226 Port Road West (E)	503.43	504.30	338.06	0.00	1517.96	0.332	0.50	3.553	A
Pontypridd Road	383.87	384.32	412.48	0.00	1656.20	0.232	0.30	2.833	A
A4226 Port Road West (W)	536.69	538.36	285.35	0.00	1239.80	0.433	0.77	5.143	A

Main results: (13:00-13:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	167.13	167.41	515.81	0.00	981.24	0.170	0.21	4.424	A
A4226 Port Road West (E)	421.60	422.09	282.82	0.00	1550.60	0.272	0.38	3.193	A

Pontypridd Road	321.47	321.74	345.24	0.00	1699.75	0.189	0.23	2.612	A
A4226 Port Road West (W)	449.45	450.31	238.88	0.00	1263.93	0.356	0.56	4.429	A

Waycock Cross Junction - Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
Base, PM	Base	PM		ONE HOUR	16:15	17:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			6.84	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	

A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	436.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	735.00	100.000
Pontypridd Road	ONE HOUR	✓	632.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	629.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:15-16:30	A4226 Waycock Road	328.24	335.76	N/A	N/A
16:15-16:30	A4226 Port Road West (E)	553.35	565.72	N/A	N/A
16:15-16:30	Pontypridd Road	475.80	486.70	N/A	N/A
16:15-	A4226 Port Road	473.54	491.42	N/A	N/A

16:30	West (W)				
16:30-16:45	A4226 Waycock Road	391.96	400.94	N/A	N/A
16:30-16:45	A4226 Port Road West (E)	660.75	675.53	N/A	N/A
16:30-16:45	Pontypridd Road	568.16	581.16	N/A	N/A
16:30-16:45	A4226 Port Road West (W)	565.46	586.80	N/A	N/A
16:45-17:00	A4226 Waycock Road	480.04	491.04	N/A	N/A
16:45-17:00	A4226 Port Road West (E)	809.25	827.35	N/A	N/A
16:45-17:00	Pontypridd Road	695.84	711.78	N/A	N/A
16:45-17:00	A4226 Port Road West (W)	692.54	718.68	N/A	N/A
17:00-17:15	A4226 Waycock Road	480.04	491.04	N/A	N/A
17:00-17:15	A4226 Port Road West (E)	809.25	827.35	N/A	N/A
17:00-17:15	Pontypridd Road	695.84	711.78	N/A	N/A
17:00-17:15	A4226 Port Road West (W)	692.54	718.68	N/A	N/A
17:15-17:30	A4226 Waycock Road	391.96	400.94	N/A	N/A
17:15-17:30	A4226 Port Road West (E)	660.75	675.53	N/A	N/A
17:15-17:30	Pontypridd Road	568.16	581.16	N/A	N/A
17:15-17:30	A4226 Port Road West (W)	565.46	586.80	N/A	N/A
17:30-17:45	A4226 Waycock Road	328.24	335.76	N/A	N/A
17:30-17:45	A4226 Port Road West (E)	553.35	565.72	N/A	N/A
17:30-17:45	Pontypridd Road	475.80	486.70	N/A	N/A
17:30-17:45	A4226 Port Road West (W)	473.54	491.42	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	127.000	213.000	96.000
	2	77.000	0.000	165.000	493.000
	3	163.000	136.000	0.000	333.000
	4	65.000	362.000	202.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.29	0.49	0.22
	2	0.10	0.00	0.22	0.67

	3	0.26	0.22	0.00	0.53
	4	0.10	0.58	0.32	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030
	3	1.060	1.010	1.000	1.010
	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.56	9.70	1.28	A
A4226 Port Road West (E)	0.59	6.29	1.40	A
Pontypridd Road	0.48	4.80	0.92	A
A4226 Port Road West (W)	0.59	7.54	1.44	A

Main Results for each time segment

Main results: (16:15-16:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	328.24	326.24	524.43	0.00	975.86	0.336	0.50	5.525	A
A4226 Port Road West (E)	553.35	550.99	382.50	0.00	1488.25	0.372	0.59	3.832	A
Pontypridd Road	475.80	474.11	499.13	0.00	1596.96	0.298	0.42	3.202	A
A4226 Port Road West (W)	473.55	471.09	282.03	0.00	1238.71	0.382	0.61	4.675	A

Main results: (16:30-16:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	391.96	391.05	628.24	0.00	923.19	0.425	0.73	6.754	A

A4226 Port Road West (E)	660.75	659.75	458.41	0.00	1443.40	0.458	0.84	4.588	A
Pontypridd Road	568.15	567.50	597.75	0.00	1533.14	0.371	0.58	3.726	A
A4226 Port Road West (W)	565.46	564.44	337.60	0.00	1209.70	0.467	0.87	5.569	A

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	480.05	477.92	768.44	0.00	852.06	0.563	1.26	9.567	A
A4226 Port Road West (E)	809.25	807.04	560.40	0.00	1383.14	0.585	1.39	6.225	A
Pontypridd Road	695.84	694.51	731.10	0.00	1446.84	0.481	0.92	4.776	A
A4226 Port Road West (W)	692.54	690.33	413.13	0.00	1170.28	0.592	1.42	7.466	A

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	480.05	479.98	770.65	0.00	850.93	0.564	1.28	9.700	A
A4226 Port Road West (E)	809.25	809.19	562.55	0.00	1381.87	0.586	1.40	6.286	A
Pontypridd Road	695.84	695.82	733.22	0.00	1445.47	0.481	0.92	4.801	A
A4226 Port Road West (W)	692.54	692.48	413.97	0.00	1169.84	0.592	1.44	7.538	A

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	391.96	394.07	631.54	0.00	921.52	0.425	0.75	6.851	A
A4226 Port Road West (E)	660.75	662.94	461.58	0.00	1441.53	0.458	0.85	4.638	A
Pontypridd Road	568.15	569.47	600.88	0.00	1531.11	0.371	0.59	3.747	A
A4226 Port Road West (W)	565.46	567.65	338.87	0.00	1209.04	0.468	0.89	5.633	A

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	328.24	329.19	528.09	0.00	974.00	0.337	0.51	5.590	A
A4226 Port Road West (E)	553.35	554.37	385.72	0.00	1486.35	0.372	0.60	3.866	A
Pontypridd Road	475.80	476.47	502.41	0.00	1594.84	0.298	0.43	3.222	A
A4226 Port Road West (W)	473.55	474.60	283.50	0.00	1237.95	0.383	0.62	4.722	A

Waycock Cross Junction - 2017 - DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017 - DM, AM	2017 - DM	AM		ONE HOUR	07:15	08:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			79.29	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	430.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	810.00	100.000
Pontypridd Road	ONE HOUR	✓	636.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1060.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:15-07:30	A4226 Waycock Road	323.73	330.93	N/A	N/A
07:15-07:30	A4226 Port Road West (E)	609.81	622.44	N/A	N/A
07:15-07:30	Pontypridd Road	478.81	492.82	N/A	N/A
07:15-07:30	A4226 Port Road West (W)	798.02	824.06	N/A	N/A
07:30-07:45	A4226 Waycock Road	386.56	395.16	N/A	N/A
07:30-07:45	A4226 Port Road West (E)	728.17	743.26	N/A	N/A
07:30-07:45	Pontypridd Road	571.75	588.48	N/A	N/A
07:30-07:45	A4226 Port Road West (W)	952.92	984.00	N/A	N/A
07:45-08:00	A4226 Waycock Road	473.44	483.98	N/A	N/A
07:45-08:00	A4226 Port Road West (E)	891.83	910.30	N/A	N/A
07:45-	Pontypridd Road	700.25	720.74	N/A	N/A

08:00	Pontypridd Road	700.25	720.74	N/A	N/A
07:45-08:00	A4226 Port Road West (W)	1167.08	1205.16	N/A	N/A
08:00-08:15	A4226 Waycock Road	473.44	483.98	N/A	N/A
08:00-08:15	A4226 Port Road West (E)	891.83	910.30	N/A	N/A
08:00-08:15	Pontypridd Road	700.25	720.74	N/A	N/A
08:00-08:15	A4226 Port Road West (W)	1167.08	1205.16	N/A	N/A
08:15-08:30	A4226 Waycock Road	386.56	395.16	N/A	N/A
08:15-08:30	A4226 Port Road West (E)	728.17	743.26	N/A	N/A
08:15-08:30	Pontypridd Road	571.75	588.48	N/A	N/A
08:15-08:30	A4226 Port Road West (W)	952.92	984.00	N/A	N/A
08:30-08:45	A4226 Waycock Road	323.73	330.93	N/A	N/A
08:30-08:45	A4226 Port Road West (E)	609.81	622.44	N/A	N/A
08:30-08:45	Pontypridd Road	478.81	492.82	N/A	N/A
08:30-08:45	A4226 Port Road West (W)	798.02	824.06	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	97.000	191.000	142.000
	2	150.000	0.000	151.000	509.000
	3	245.000	213.000	0.000	178.000
	4	177.000	515.000	368.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.23	0.44	0.33
	2	0.19	0.00	0.19	0.63
	3	0.39	0.33	0.00	0.28
	4	0.17	0.49	0.35	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030
	3	1.060	1.010	1.000	1.010

	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.69	16.88	2.16	C
A4226 Port Road West (E)	0.69	9.09	2.22	A
Pontypridd Road	0.52	5.60	1.08	A
A4226 Port Road West (W)	1.12	201.43	71.87	F

Main Results for each time segment

Main results: (07:15-07:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	323.73	321.19	817.31	0.00	828.75	0.391	0.63	7.057	A
A4226 Port Road West (E)	609.81	606.78	522.78	0.00	1408.03	0.433	0.76	4.476	A
Pontypridd Road	478.81	476.99	599.73	0.00	1523.32	0.314	0.46	3.434	A
A4226 Port Road West (W)	798.03	789.37	455.86	0.00	1154.11	0.691	2.16	9.655	A

Main results: (07:30-07:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	386.56	384.92	974.44	0.00	749.17	0.516	1.04	9.838	A
A4226 Port Road West (E)	728.17	726.56	624.50	0.00	1347.91	0.540	1.16	5.778	A
Pontypridd Road	571.75	570.98	718.23	0.00	1447.30	0.395	0.65	4.104	A
A4226 Port Road West (W)	952.92	940.21	545.73	0.00	1107.05	0.861	5.34	20.174	C

Main results: (07:45-08:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	473.44	469.34	1090.46	0.00	690.68	0.685	2.07	15.970	C
A4226 Port Road West (E)	891.82	887.79	720.43	0.00	1291.10	0.691	2.17	8.838	A
Pontypridd Road	700.25	698.55	877.29	0.00	1345.25	0.521	1.07	5.552	A

A4226 Port Road West (W)	1167.08	1028.21	667.45	0.00	1043.31	1.119	40.06	92.131	F

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	473.44	473.07	1100.71	0.00	685.48	0.691	2.16	16.884	C
A4226 Port Road West (E)	891.82	891.63	727.36	0.00	1287.01	0.693	2.22	9.094	A
Pontypridd Road	700.25	700.21	881.64	0.00	1342.47	0.522	1.08	5.605	A
A4226 Port Road West (W)	1167.08	1039.84	669.36	0.00	1042.32	1.120	71.87	201.428	F

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	386.56	389.86	1100.40	0.00	685.03	0.564	1.33	12.329	B
A4226 Port Road West (E)	728.17	732.00	680.48	0.00	1314.96	0.554	1.26	6.216	A
Pontypridd Road	571.75	573.44	724.28	0.00	1443.42	0.396	0.66	4.147	A
A4226 Port Road West (W)	952.92	1090.43	548.50	0.00	1105.61	0.862	37.49	182.719	F

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	323.73	326.08	942.40	0.00	765.05	0.423	0.74	8.245	A
A4226 Port Road West (E)	609.81	611.63	578.33	0.00	1375.33	0.443	0.80	4.726	A
Pontypridd Road	478.81	479.61	605.29	0.00	1519.76	0.315	0.46	3.465	A
A4226 Port Road West (W)	798.03	938.49	458.64	0.00	1152.66	0.692	2.38	29.468	D

Waycock Cross Junction - 2017 - DM, IP

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017 - DM, IP	2017 - DM	IP		ONE HOUR	11:45	13:15	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			6.43	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default	Vehicle	Vehicle	Vehicle Mix		PCU	Default	Estimate	Turning	Turning	Turning

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	Factor for a HV (PCU)	Default Turning Proportions	from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	263.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	653.00	100.000
Pontypridd Road	ONE HOUR	✓	460.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	734.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:45-12:00	A4226 Waycock Road	198.00	202.26	N/A	N/A
11:45-12:00	A4226 Port Road West (E)	491.61	502.25	N/A	N/A
11:45-12:00	Pontypridd Road	346.31	354.29	N/A	N/A
11:45-12:00	A4226 Port Road West (W)	552.59	572.50	N/A	N/A
12:00-12:15	A4226 Waycock Road	236.43	241.52	N/A	N/A
12:00-12:15	A4226 Port Road West (E)	587.03	599.74	N/A	N/A
12:00-12:15	Pontypridd Road	413.53	423.06	N/A	N/A
12:00-12:15	A4226 Port Road West (W)	659.85	683.62	N/A	N/A
12:15-12:30	A4226 Waycock Road	289.57	295.80	N/A	N/A
12:15-12:30	A4226 Port Road West (E)	718.97	734.52	N/A	N/A
12:15-12:30	Pontypridd Road	506.47	518.14	N/A	N/A
12:15-12:30	A4226 Port Road West (W)	808.15	837.26	N/A	N/A
12:30-12:45	A4226 Waycock Road	289.57	295.80	N/A	N/A
12:30-12:45	A4226 Port Road West (E)	718.97	734.52	N/A	N/A
12:30-12:45	Pontypridd Road	506.47	518.14	N/A	N/A
12:30-12:45	A4226 Port Road West (W)	808.15	837.26	N/A	N/A
12:45-13:00	A4226 Waycock Road	236.43	241.52	N/A	N/A
12:45-13:00	A4226 Port Road West (E)	587.03	599.74	N/A	N/A

12:45-13:00	Pontypridd Road	413.53	423.06	N/A	N/A
12:45-13:00	A4226 Port Road West (W)	659.85	683.62	N/A	N/A
13:00-13:15	A4226 Waycock Road	198.00	202.26	N/A	N/A
13:00-13:15	A4226 Port Road West (E)	491.61	502.25	N/A	N/A
13:00-13:15	Pontypridd Road	346.31	354.29	N/A	N/A
13:00-13:15	A4226 Port Road West (W)	552.59	572.50	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	40.000	108.000	115.000
	2	72.000	0.000	165.000	416.000
	3	120.000	135.000	0.000	205.000
	4	105.000	403.000	226.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.15	0.41	0.44
	2	0.11	0.00	0.25	0.64
	3	0.26	0.29	0.00	0.45
	4	0.14	0.55	0.31	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030
	3	1.060	1.010	1.000	1.010
	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.35	6.84	0.55	A
A4226 Port Road West (E)	0.51	5.11	1.01	A
Pontypridd Road	0.34	3.66	0.51	A
A4226 Port Road West (W)	0.67	9.16	2.03	A

Main Results for each time segment

Main results: (11:45-12:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	198.00	196.96	572.21	0.00	952.77	0.208	0.26	4.756	A
A4226 Port Road West (E)	491.61	489.70	336.19	0.00	1516.90	0.324	0.48	3.499	A
Pontypridd Road	346.31	345.24	452.09	0.00	1627.34	0.213	0.27	2.805	A
A4226 Port Road West (W)	552.59	549.50	245.38	0.00	1260.37	0.438	0.77	5.044	A

Main results: (12:00-12:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	236.43	236.05	685.49	0.00	895.19	0.264	0.36	5.457	A
A4226 Port Road West (E)	587.03	586.32	402.88	0.00	1477.52	0.397	0.65	4.036	A
Pontypridd Road	413.53	413.18	541.39	0.00	1569.60	0.263	0.36	3.113	A
A4226 Port Road West (W)	659.85	658.42	293.70	0.00	1235.19	0.534	1.13	6.227	A

Main results: (12:15-12:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	289.57	288.82	838.02	0.00	817.66	0.354	0.54	6.797	A
A4226 Port Road West (E)	718.97	717.55	492.66	0.00	1424.49	0.505	1.01	5.082	A
Pontypridd Road	506.47	505.85	662.53	0.00	1491.26	0.340	0.51	3.651	A
A4226 Port Road West (W)	808.15	804.68	359.53	0.00	1200.88	0.673	2.00	9.006	A

Main results: (12:30-12:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	289.57	289.55	841.08	0.00	816.10	0.355	0.55	6.836	A
A4226 Port Road West (E)	718.97	718.94	494.31	0.00	1423.52	0.505	1.01	5.109	A
Pontypridd Road	506.47	506.46	663.89	0.00	1490.38	0.340	0.51	3.657	A
A4226 Port Road West (W)	808.15	808.03	360.03	0.00	1200.62	0.673	2.03	9.164	A

Main results: (12:45-13:00)

Main results: (12:45-13:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	236.43	237.17	689.96	0.00	892.91	0.265	0.36	5.497	A
A4226 Port Road West (E)	587.03	588.43	405.33	0.00	1476.07	0.398	0.67	4.063	A
Pontypridd Road	413.53	414.15	543.45	0.00	1568.26	0.264	0.36	3.122	A
A4226 Port Road West (W)	659.85	663.31	294.46	0.00	1234.79	0.534	1.16	6.336	A

Main results: (13:00-13:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	198.00	198.39	576.57	0.00	950.55	0.208	0.26	4.788	A
A4226 Port Road West (E)	491.61	492.34	338.83	0.00	1515.35	0.324	0.48	3.523	A
Pontypridd Road	346.31	346.67	454.69	0.00	1625.66	0.213	0.27	2.814	A
A4226 Port Road West (W)	552.59	554.10	246.46	0.00	1259.80	0.439	0.79	5.111	A

Waycock Cross Junction - 2017 - DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017 - DM, PM	2017 - DM	PM		ONE HOUR	16:15	17:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			12.11	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	537.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	787.00	100.000

Pontypridd Road	ONE HOUR	✓	666.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	839.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:15-16:30	A4226 Waycock Road	404.28	413.34	N/A	N/A
16:15-16:30	A4226 Port Road West (E)	592.49	605.81	N/A	N/A
16:15-16:30	Pontypridd Road	501.40	512.89	N/A	N/A
16:15-16:30	A4226 Port Road West (W)	631.64	655.90	N/A	N/A
16:30-16:45	A4226 Waycock Road	482.75	493.57	N/A	N/A
16:30-16:45	A4226 Port Road West (E)	707.50	723.39	N/A	N/A
16:30-16:45	Pontypridd Road	598.72	612.44	N/A	N/A
16:30-16:45	A4226 Port Road West (W)	754.24	783.21	N/A	N/A
16:45-17:00	A4226 Waycock Road	591.25	604.49	N/A	N/A
16:45-17:00	A4226 Port Road West (E)	866.50	885.97	N/A	N/A
16:45-17:00	Pontypridd Road	733.28	750.08	N/A	N/A
16:45-17:00	A4226 Port Road West (W)	923.76	959.23	N/A	N/A
17:00-17:15	A4226 Waycock Road	591.25	604.49	N/A	N/A
17:00-17:15	A4226 Port Road West (E)	866.50	885.97	N/A	N/A
17:00-17:15	Pontypridd Road	733.28	750.08	N/A	N/A
17:00-17:15	A4226 Port Road West (W)	923.76	959.23	N/A	N/A
17:15-17:30	A4226 Waycock Road	482.75	493.57	N/A	N/A
17:15-17:30	A4226 Port Road West (E)	707.50	723.39	N/A	N/A
17:15-17:30	Pontypridd Road	598.72	612.44	N/A	N/A
17:15-17:30	A4226 Port Road West (W)	754.24	783.21	N/A	N/A
17:30-17:45	A4226 Waycock Road	404.28	413.34	N/A	N/A
17:30-17:45	A4226 Port Road West (E)	592.49	605.81	N/A	N/A
17:30-17:45	Pontypridd Road	501.40	512.89	N/A	N/A
17:30-17:45	A4226 Port Road West (W)	631.64	655.90	N/A	N/A

Turning Proportions

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	129.000	214.000	194.000
	2	87.000	0.000	166.000	534.000
	3	172.000	130.000	0.000	364.000
	4	112.000	499.000	228.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.24	0.40	0.36
	2	0.11	0.00	0.21	0.68
	3	0.26	0.20	0.00	0.55
	4	0.13	0.59	0.27	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030
	3	1.060	1.010	1.000	1.010
	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.78	20.76	3.28	C
A4226 Port Road West (E)	0.67	8.28	1.97	A
Pontypridd Road	0.55	5.93	1.20	A
A4226 Port Road West (W)	0.80	15.01	3.74	C

Main Results for each time segment

Main Results for each time segment

Main results: (16:15-16:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	404.28	401.17	641.22	0.00	916.04	0.441	0.78	6.951	A
A4226 Port Road West (E)	592.49	589.70	475.32	0.00	1433.17	0.413	0.70	4.255	A
Pontypridd Road	501.40	499.45	610.24	0.00	1525.30	0.329	0.49	3.504	A
A4226 Port Road West (W)	631.64	627.50	291.67	0.00	1232.86	0.512	1.04	5.907	A

Main results: (16:30-16:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	482.75	480.75	768.15	0.00	851.40	0.567	1.28	9.660	A
A4226 Port Road West (E)	707.49	706.12	569.57	0.00	1377.47	0.514	1.04	5.351	A
Pontypridd Road	598.72	597.87	730.86	0.00	1447.30	0.414	0.70	4.233	A
A4226 Port Road West (W)	754.25	751.82	349.17	0.00	1202.86	0.627	1.64	7.938	A

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	591.25	583.94	936.40	0.00	765.74	0.772	3.11	19.075	C
A4226 Port Road West (E)	866.50	862.97	692.56	0.00	1304.79	0.664	1.93	8.083	A
Pontypridd Road	733.28	731.34	891.90	0.00	1343.15	0.546	1.19	5.865	A
A4226 Port Road West (W)	923.76	915.92	427.03	0.00	1162.23	0.795	3.60	14.178	B

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	591.25	590.55	943.11	0.00	762.31	0.776	3.28	20.763	C
A4226 Port Road West (E)	866.50	866.34	699.58	0.00	1300.64	0.666	1.97	8.282	A
Pontypridd Road	733.28	733.23	896.96	0.00	1339.88	0.547	1.20	5.934	A
A4226 Port Road West (W)	923.76	923.23	428.26	0.00	1161.59	0.795	3.74	15.014	C

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	482.75	490.43	777.77	0.00	846.49	0.570	1.36	10.317	B
A4226 Port Road West (E)	707.49	711.04	579.77	0.00	1371.44	0.516	1.08	5.481	A
Pontypridd Road	598.72	600.66	738.24	0.00	1442.53	0.415	0.72	4.285	A
A4226 Port Road West (W)	754.25	762.29	350.97	0.00	1201.92	0.628	1.72	8.332	A

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	404.28	406.50	647.65	0.00	912.76	0.443	0.81	7.140	A
A4226 Port Road	592.49	593.95	481.21	0.00	1429.68	0.414	0.71	4.314	A

West (E)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	A
Pontypridd Road	501.40	502.29	615.53	0.00	1521.88	0.329	0.49	3.535	A
A4226 Port Road West (W)	631.64	634.28	293.42	0.00	1231.95	0.513	1.07	6.051	A

Waycock Cross Junction - 2032 - DM, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2032 - DM, AM	2032 - DM	AM		ONE HOUR	07:15	08:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			368.94	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	631.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	1192.00	100.000
Pontypridd Road	ONE HOUR	✓	784.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1339.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:15-07:30	A4226 Waycock Road	475.05	485.40	N/A	N/A
07:15-07:30	A4226 Port Road West (E)	897.40	918.53	N/A	N/A
07:15-07:30	Pontypridd Road	590.24	605.81	N/A	N/A

07:15-07:30	A4226 Port Road West (W)	1008.07	1040.61	N/A	N/A
07:30-07:45	A4226 Waycock Road	567.26	579.62	N/A	N/A
07:30-07:45	A4226 Port Road West (E)	1071.58	1096.82	N/A	N/A
07:30-07:45	Pontypridd Road	704.80	723.40	N/A	N/A
07:30-07:45	A4226 Port Road West (W)	1203.73	1242.59	N/A	N/A
07:45-08:00	A4226 Waycock Road	694.74	709.88	N/A	N/A
07:45-08:00	A4226 Port Road West (E)	1312.42	1343.32	N/A	N/A
07:45-08:00	Pontypridd Road	863.20	885.98	N/A	N/A
07:45-08:00	A4226 Port Road West (W)	1474.27	1521.85	N/A	N/A
08:00-08:15	A4226 Waycock Road	694.74	709.88	N/A	N/A
08:00-08:15	A4226 Port Road West (E)	1312.42	1343.32	N/A	N/A
08:00-08:15	Pontypridd Road	863.20	885.98	N/A	N/A
08:00-08:15	A4226 Port Road West (W)	1474.27	1521.85	N/A	N/A
08:15-08:30	A4226 Waycock Road	567.26	579.62	N/A	N/A
08:15-08:30	A4226 Port Road West (E)	1071.58	1096.82	N/A	N/A
08:15-08:30	Pontypridd Road	704.80	723.40	N/A	N/A
08:15-08:30	A4226 Port Road West (W)	1203.73	1242.59	N/A	N/A
08:30-08:45	A4226 Waycock Road	475.05	485.40	N/A	N/A
08:30-08:45	A4226 Port Road West (E)	897.40	918.53	N/A	N/A
08:30-08:45	Pontypridd Road	590.24	605.81	N/A	N/A
08:30-08:45	A4226 Port Road West (W)	1008.07	1040.61	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	113.000	224.000	294.000
	2	155.000	0.000	152.000	885.000
	3	257.000	222.000	0.000	305.000
	4	282.000	653.000	404.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
	1	0.00	0.18	0.35	0.47

From	2	0.13	0.00	0.13	0.74
	3	0.33	0.28	0.00	0.39
	4	0.21	0.49	0.30	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030
	3	1.060	1.010	1.000	1.010
	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.99	86.35	16.13	F
A4226 Port Road West (E)	1.09	163.82	66.09	F
Pontypridd Road	0.83	20.08	4.59	C
A4226 Port Road West (W)	1.42	884.91	285.97	F

Main Results for each time segment

Main results: (07:15-07:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	475.05	468.72	942.67	0.00	764.69	0.621	1.58	11.944	B
A4226 Port Road West (E)	897.40	888.96	681.56	0.00	1310.20	0.685	2.11	8.388	A
Pontypridd Road	590.24	586.82	993.99	0.00	1272.87	0.464	0.86	5.221	A
A4226 Port Road West (W)	1008.07	983.66	474.12	0.00	1144.89	0.881	6.10	20.026	C

Main results: (07:30-07:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	567.26	559.41	1050.88	0.00	709.94	0.799	3.54	22.789	C

A4226 Port Road West (E)	1071.58	1058.79	784.92	0.00	1249.15	0.858	5.31	17.810	C
Pontypridd Road	704.80	702.03	1184.43	0.00	1150.15	0.613	1.55	7.983	A
A4226 Port Road West (W)	1203.73	1079.43	566.60	0.00	1096.43	1.098	37.18	85.257	F

Main results: (07:45-08:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	694.74	660.89	1061.43	0.00	705.21	0.985	12.01	56.896	F
A4226 Port Road West (E)	1312.41	1186.46	855.96	0.00	1206.99	1.087	36.80	75.869	F
Pontypridd Road	863.20	852.55	1343.10	0.00	1047.94	0.824	4.21	17.543	C
A4226 Port Road West (W)	1474.26	1038.79	675.16	0.00	1039.37	1.418	146.04	325.659	F

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	694.74	678.27	1061.61	0.00	705.16	0.985	16.13	86.354	F
A4226 Port Road West (E)	1312.41	1195.25	869.31	0.00	1199.07	1.095	66.09	163.819	F
Pontypridd Road	863.20	861.66	1358.87	0.00	1037.79	0.832	4.59	20.085	C
A4226 Port Road West (W)	1474.26	1035.76	681.87	0.00	1035.85	1.423	255.67	690.251	F

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	567.26	612.94	1056.95	0.00	706.91	0.802	4.70	47.036	E
A4226 Port Road West (E)	1071.58	1204.34	829.80	0.00	1222.56	0.877	32.90	150.497	F
Pontypridd Road	704.80	714.79	1336.35	0.00	1052.21	0.670	2.10	10.967	B
A4226 Port Road West (W)	1203.73	1082.53	593.32	0.00	1082.66	1.112	285.97	884.915	F

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	475.05	485.18	1060.23	0.00	704.72	0.674	2.17	17.080	C
A4226 Port Road West (E)	897.40	1019.06	739.16	0.00	1276.34	0.703	2.48	21.380	C
Pontypridd Road	590.24	594.67	1115.17	0.00	1194.71	0.494	0.99	6.042	A
A4226 Port Road West (W)	1008.07	1129.78	495.84	0.00	1133.73	0.889	255.55	863.020	F

Waycock Cross Junction - 2032 - DM, IP

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

		Geometry	

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2032 - DM, IP	2032 - DM	IP		ONE HOUR	11:45	13:15	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			32.95	D

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	324.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	926.00	100.000
Pontypridd Road	ONE HOUR	✓	546.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1067.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:45-12:00	A4226 Waycock Road	243.92	249.16	N/A	N/A
11:45-12:00	A4226 Port Road West (E)	697.14	713.86	N/A	N/A
11:45-12:00	Pontypridd Road	411.06	420.10	N/A	N/A
11:45-12:00	A4226 Port Road West (W)	803.29	834.58	N/A	N/A
12:00-12:15	A4226 Waycock Road	291.27	297.52	N/A	N/A
12:00-12:15	A4226 Port Road West (E)	832.46	852.42	N/A	N/A
12:00-12:15	Pontypridd Road	490.84	501.64	N/A	N/A
12:00-12:15	A4226 Port Road West (W)	959.21	996.57	N/A	N/A
12:15-12:30	A4226 Waycock Road	356.73	364.38	N/A	N/A
12:15-12:30	A4226 Port Road West (E)	1019.55	1044.00	N/A	N/A
12:15-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

12:30	Pontypridd Road	601.16	614.38	N/A	N/A
12:15-12:30	A4226 Port Road West (W)	1174.79	1220.55	N/A	N/A
12:30-12:45	A4226 Waycock Road	356.73	364.38	N/A	N/A
12:30-12:45	A4226 Port Road West (E)	1019.55	1044.00	N/A	N/A
12:30-12:45	Pontypridd Road	601.16	614.38	N/A	N/A
12:30-12:45	A4226 Port Road West (W)	1174.79	1220.55	N/A	N/A
12:45-13:00	A4226 Waycock Road	291.27	297.52	N/A	N/A
12:45-13:00	A4226 Port Road West (E)	832.46	852.42	N/A	N/A
12:45-13:00	Pontypridd Road	490.84	501.64	N/A	N/A
12:45-13:00	A4226 Port Road West (W)	959.21	996.57	N/A	N/A
13:00-13:15	A4226 Waycock Road	243.92	249.16	N/A	N/A
13:00-13:15	A4226 Port Road West (E)	697.14	713.86	N/A	N/A
13:00-13:15	Pontypridd Road	411.06	420.10	N/A	N/A
13:00-13:15	A4226 Port Road West (W)	803.29	834.58	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	47.000	126.000	151.000
	2	77.000	0.000	163.000	686.000
	3	131.000	154.000	0.000	261.000
	4	146.000	647.000	274.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.15	0.39	0.47
	2	0.08	0.00	0.18	0.74
	3	0.24	0.28	0.00	0.48
	4	0.14	0.61	0.26	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030

	3	1.060	1.010	1.000	1.010
	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.55	12.18	1.18	B
A4226 Port Road West (E)	0.75	10.59	2.93	B
Pontypridd Road	0.47	5.38	0.89	A
A4226 Port Road West (W)	1.00	72.16	23.40	F

Main Results for each time segment

Main results: (11:45-12:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	243.92	242.29	802.74	0.00	834.19	0.292	0.41	6.068	A
A4226 Port Road West (E)	697.14	693.57	411.59	0.00	1468.99	0.475	0.89	4.621	A
Pontypridd Road	411.06	409.52	684.40	0.00	1478.05	0.278	0.38	3.365	A
A4226 Port Road West (W)	803.29	796.17	271.44	0.00	1243.30	0.646	1.78	7.932	A

Main results: (12:00-12:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	291.27	290.42	960.27	0.00	753.82	0.386	0.62	7.755	A
A4226 Port Road West (E)	832.46	830.47	492.84	0.00	1421.11	0.586	1.39	6.074	A
Pontypridd Road	490.84	490.21	819.63	0.00	1390.40	0.353	0.54	3.996	A
A4226 Port Road West (W)	959.21	952.31	324.93	0.00	1215.50	0.789	3.51	13.332	B

Main results: (12:15-12:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	356.73	354.69	1137.60	0.00	663.45	0.538	1.13	11.583	B
A4226 Port Road West (E)	1019.55	1013.74	591.34	0.00	1363.03	0.748	2.84	10.140	B
Pontypridd Road	601.16	599.78	1000.59	0.00	1273.11	0.472	0.88	5.336	A

A4226 Port Road West (W)	1174.79	1121.95	397.37	0.00	1177.86	0.997	16.72	43.917	E

Main results: (12:30-12:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	356.73	356.52	1160.51	0.00	651.71	0.547	1.18	12.179	B
A4226 Port Road West (E)	1019.55	1019.19	599.62	0.00	1358.17	0.751	2.93	10.593	B
Pontypridd Road	601.16	601.12	1005.94	0.00	1269.65	0.473	0.89	5.384	A
A4226 Port Road West (W)	1174.79	1148.05	398.52	0.00	1177.27	0.998	23.40	72.160	F

Main results: (12:45-13:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	291.27	293.22	1033.43	0.00	716.32	0.407	0.70	8.548	A
A4226 Port Road West (E)	832.46	838.30	516.84	0.00	1407.02	0.592	1.47	6.395	A
Pontypridd Road	490.84	492.20	827.39	0.00	1385.37	0.354	0.55	4.036	A
A4226 Port Road West (W)	959.21	1036.43	326.63	0.00	1214.62	0.790	4.10	27.034	D

Main results: (13:00-13:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	243.92	245.02	817.18	0.00	826.80	0.295	0.42	6.198	A
A4226 Port Road West (E)	697.14	699.37	418.04	0.00	1465.20	0.476	0.92	4.714	A
Pontypridd Road	411.06	411.71	690.45	0.00	1474.13	0.279	0.39	3.392	A
A4226 Port Road West (W)	803.29	812.18	273.06	0.00	1242.45	0.647	1.87	8.531	A

Waycock Cross Junction - 2032 - DM, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2032 - DM, PM	2032 - DM	PM		ONE HOUR	16:15	17:45	90	15		

Junction Network

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			362.32	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	3.00	5.00	22.00	13.00	51.00	45.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	6.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.501	1270.394
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.526	1438.244

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

					PCU		Estimate			

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	681.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	952.00	100.000
Pontypridd Road	ONE HOUR	✓	723.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1446.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:15-16:30	A4226 Waycock Road	512.69	523.74	N/A	N/A
16:15-16:30	A4226 Port Road West (E)	716.72	733.10	N/A	N/A
16:15-16:30	Pontypridd Road	544.31	557.17	N/A	N/A
16:15-16:30	A4226 Port Road West (W)	1088.62	1127.38	N/A	N/A
16:30-16:45	A4226 Waycock Road	612.21	625.40	N/A	N/A
16:30-16:45	A4226 Port Road West (E)	855.83	875.39	N/A	N/A
16:30-16:45	Pontypridd Road	649.96	665.32	N/A	N/A
16:30-16:45	A4226 Port Road West (W)	1299.92	1346.20	N/A	N/A
16:45-17:00	A4226 Waycock Road	749.79	765.96	N/A	N/A
16:45-17:00	A4226 Port Road West (E)	1048.17	1072.13	N/A	N/A
16:45-17:00	Pontypridd Road	796.04	814.84	N/A	N/A
16:45-17:00	A4226 Port Road West (W)	1592.08	1648.76	N/A	N/A
17:00-17:15	A4226 Waycock Road	749.79	765.96	N/A	N/A
17:00-17:15	A4226 Port Road West (E)	1048.17	1072.13	N/A	N/A
17:00-17:15	Pontypridd Road	796.04	814.84	N/A	N/A
17:00-17:15	A4226 Port Road West (W)	1592.08	1648.76	N/A	N/A
17:15-17:30	A4226 Waycock Road	612.21	625.40	N/A	N/A
17:15-17:30	A4226 Port Road West (E)	855.83	875.39	N/A	N/A

17:15-17:30	Pontypridd Road	649.96	665.32	N/A	N/A
17:15-17:30	A4226 Port Road West (W)	1299.92	1346.20	N/A	N/A
17:30-17:45	A4226 Waycock Road	512.69	523.74	N/A	N/A
17:30-17:45	A4226 Port Road West (E)	716.72	733.10	N/A	N/A
17:30-17:45	Pontypridd Road	544.31	557.17	N/A	N/A
17:30-17:45	A4226 Port Road West (W)	1088.62	1127.38	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	106.000	266.000	309.000
	2	124.000	0.000	154.000	674.000
	3	197.000	127.000	0.000	399.000
	4	333.000	807.000	306.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.16	0.39	0.45
	2	0.13	0.00	0.16	0.71
	3	0.27	0.18	0.00	0.55
	4	0.23	0.56	0.21	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.030	1.020	1.020
	2	1.000	1.070	1.010	1.030
	3	1.060	1.010	1.000	1.010
	4	1.000	1.060	1.010	2.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	3.000	2.000	2.000
	2	0.000	7.000	1.000	3.000
	3	6.000	1.000	0.000	1.000
	4	0.000	6.000	1.000	100.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	1.03	122.54	26.00	F
A4226 Port Road West (E)	0.86	20.82	5.76	C
Pontypridd Road	0.70	10.36	2.24	B
A4226 Port Road West (W)	1.41	869.73	302.31	F

Main Results for each time segment

Main results: (16:15-16:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	512.69	505.27	911.67	0.00	777.46	0.659	1.86	12.900	B
A4226 Port Road West (E)	716.71	712.09	651.11	0.00	1328.73	0.539	1.15	5.796	A
Pontypridd Road	544.31	541.74	826.16	0.00	1385.00	0.393	0.64	4.256	A
A4226 Port Road West (W)	1088.63	1060.81	335.53	0.00	1213.35	0.897	6.95	20.830	C

Main results: (16:30-16:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	612.20	601.67	1009.26	0.00	727.72	0.841	4.49	26.549	D
A4226 Port Road West (E)	855.83	852.37	754.18	0.00	1267.75	0.675	2.02	8.594	A
Pontypridd Road	649.96	648.46	987.49	0.00	1280.79	0.507	1.02	5.679	A
A4226 Port Road West (W)	1299.93	1163.23	401.62	0.00	1178.79	1.103	41.13	86.802	F

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	749.79	698.53	1010.54	0.00	727.50	1.031	17.31	71.915	F
A4226 Port Road West (E)	1048.17	1035.20	829.41	0.00	1223.11	0.857	5.26	18.021	C
Pontypridd Road	796.04	791.50	1184.69	0.00	1153.39	0.690	2.15	9.825	A
A4226 Port Road West (W)	1592.08	1132.26	489.53	0.00	1132.81	1.405	156.08	320.930	F

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	749.79	715.00	1010.31	0.00	727.64	1.030	26.00	122.537	F
A4226 Port Road West (E)	1048.17	1046.19	843.06	0.00	1215.02	0.863	5.76	20.816	C
Pontypridd Road	796.04	795.68	1201.39	0.00	1142.61	0.697	2.24	10.356	B
A4226 Port Road West (W)	1592.08	1131.01	492.84	0.00	1131.09	1.408	271.35	674.026	F

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	612.20	685.77	1020.22	0.00	722.11	0.848	7.61	90.832	F
A4226 Port Road West (E)	855.83	869.23	827.92	0.00	1224.05	0.699	2.41	10.502	B
Pontypridd Road	649.96	654.52	1039.79	0.00	1247.09	0.521	1.10	6.122	A
A4226 Port Road West (W)	1299.93	1176.10	406.53	0.00	1176.24	1.105	302.31	869.731	F

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	512.69	532.54	1025.52	0.00	719.05	0.713	2.65	21.040	C
A4226 Port Road West (E)	716.71	721.32	705.23	0.00	1296.82	0.553	1.25	6.306	A
Pontypridd Road	544.31	546.08	846.28	0.00	1372.03	0.397	0.66	4.367	A
A4226 Port Road West (W)	1088.63	1207.72	338.67	0.00	1211.72	0.898	272.53	856.969	F

Junctions 8
ARCADY 8 - Roundabout Module
Version: 8.0.1.305 [25 May 2012] © Copyright TRL Limited, 2016
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Filename: (new file)
Path:
Report generation date: 10/03/2016 10:28:16

» Waycock Cross Junction - 2017 - DS, AM
» Waycock Cross Junction - 2017 - DS, IP
» Waycock Cross Junction - 2017 - DS, PM
» Waycock Cross Junction - 2032 - DS, AM
» Waycock Cross Junction - 2032 - DS, IP
» Waycock Cross Junction - 2032 - DS, PM

Summary of junction performance

	AM				IP				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	Waycock Cross Junction - 2017 - DS											
A4226 Waycock Road	1.06	5.50	0.52	A	0.54	3.31	0.35	A	0.97	4.50	0.49	A
A4226 Port Road West (E)	1.92	9.69	0.66	A	0.70	5.06	0.41	A	1.82	8.98	0.65	A
Pontypridd Road	1.22	6.12	0.55	A	0.57	3.93	0.37	A	1.51	7.02	0.60	A
A4226 Port Road West (W)	31.56	93.67	1.02	F	1.62	7.29	0.62	A	2.69	10.71	0.73	B
	Waycock Cross Junction - 2032 - DS											
A4226 Waycock Road	2.45	9.73	0.71	A	1.00	4.86	0.50	A	1.48	6.30	0.60	A
A4226 Port Road West (E)	96.15	286.26	1.18	F	1.80	9.51	0.65	A	8.29	32.28	0.91	D
Pontypridd Road	4.71	21.43	0.84	C	0.99	5.98	0.50	A	2.96	13.21	0.75	B
A4226 Port Road West (W)	177.81	531.06	1.28	F	8.90	29.08	0.91	D	192.22	530.76	1.28	F

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D7 - 2017 - DS, AM " model duration: 07:15 - 08:45
"D8 - 2017 - DS, IP" model duration: 11:45 - 13:15
"D9 - 2017 - DS, PM" model duration: 16:15 - 17:45
"D13 - 2032 - DS, AM" model duration: 07:15 - 08:45
"D14 - 2032 - DS, IP" model duration: 11:45 - 13:15
"D15 - 2032 - DS, PM" model duration: 16:15 - 17:45

Run using Junctions 8.0.1.305 at 10/03/2016 10:28:14

File summary

File Description

Title	Waycock Cross Roundabout
Location	Barry

Site Number	
Date	10/06/2014
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\alison.simpson
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Waycock Cross Junction - 2017 - DS, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Waycock Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017 - DS, AM	2017 - DS	AM		ONE HOUR	07:15	08:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			37.51	E

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	4.00	8.00	53.00	13.00	50.00	20.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	8.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.707	2206.545
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.554	1589.071

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	636.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	660.00	100.000
Pontypridd Road	ONE HOUR	✓	656.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1060.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:15-07:30	A4226 Waycock Road	478.81	502.36	N/A	N/A
07:15-07:30	A4226 Port Road West (E)	496.88	523.21	N/A	N/A
07:15-07:30	Pontypridd Road	493.87	501.49	N/A	N/A
07:15-07:30	A4226 Port Road West (W)	798.02	825.77	N/A	N/A
07:30-07:45	A4226 Waycock Road	571.75	599.87	N/A	N/A
07:30-07:45	A4226 Port Road West (E)	593.33	624.76	N/A	N/A
07:30-07:45	Pontypridd Road	589.73	598.83	N/A	N/A
07:30-07:45	A4226 Port Road West (W)	952.92	986.05	N/A	N/A
07:45-08:00	A4226 Waycock Road	700.25	734.69	N/A	N/A
07:45-08:00	A4226 Port Road West (E)	726.67	765.18	N/A	N/A
07:45-08:00	Pontypridd Road	722.27	733.41	N/A	N/A
07:45-08:00	A4226 Port Road West (W)	1167.08	1207.67	N/A	N/A
08:00-08:15	A4226 Waycock Road	700.25	734.69	N/A	N/A
08:00-08:15	A4226 Port Road West (E)	726.67	765.18	N/A	N/A
08:00-08:15	Pontypridd Road	722.27	733.41	N/A	N/A
08:00-08:15	A4226 Port Road West (W)	1167.08	1207.67	N/A	N/A
08:15-08:30	A4226 Waycock Road	571.75	599.87	N/A	N/A
08:15-08:30	A4226 Port Road West (E)	593.33	624.76	N/A	N/A
08:15-08:30	Pontypridd Road	589.73	598.83	N/A	N/A
08:15-08:30	A4226 Port Road West (W)	952.92	986.05	N/A	N/A
08:30-08:45	A4226 Waycock Road	478.81	502.36	N/A	N/A
08:30-08:45	A4226 Port Road West (E)	496.88	523.21	N/A	N/A
08:30-08:45	Pontypridd Road	493.87	501.49	N/A	N/A
08:30-	A4226 Port Road	798.02	825.77	N/A	N/A

08:45	West (W)				

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	112.000	252.000	272.000
	2	188.000	0.000	93.000	379.000
	3	273.000	205.000	0.000	178.000
	4	255.000	437.000	368.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.18	0.40	0.43
	2	0.28	0.00	0.14	0.57
	3	0.42	0.31	0.00	0.27
	4	0.24	0.41	0.35	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.040	1.020	1.080
	2	1.000	1.090	1.050	1.080
	3	1.010	1.010	1.000	1.030
	4	1.030	1.050	1.020	1.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.000	2.000	8.000
	2	0.000	9.000	5.000	8.000
	3	1.000	1.000	0.000	3.000
	4	3.000	5.000	2.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.52	5.50	1.06	A
A4226 Port Road West (E)	0.66	9.69	1.92	A
Pontypridd Road	0.55	6.12	1.22	A
A4226 Port Road West (W)	1.02	93.67	31.56	F

Main Results for each time segment

Main results: (07:15-07:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	478.82	477.08	754.72	0.00	1578.94	0.303	0.43	3.267	A
A4226 Port Road West (E)	496.88	494.35	667.80	0.00	1272.92	0.390	0.63	4.609	A
Pontypridd Road	493.87	491.94	628.72	0.00	1509.44	0.327	0.48	3.532	A
A4226 Port Road West (W)	798.03	791.36	499.27	0.00	1266.22	0.630	1.67	7.481	A

Main results: (07:30-07:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	571.75	570.97	902.33	0.00	1476.43	0.387	0.63	3.972	A
A4226 Port Road West (E)	593.33	591.98	798.79	0.00	1196.13	0.496	0.97	5.945	A
Pontypridd Road	589.73	588.86	752.75	0.00	1425.67	0.414	0.70	4.297	A
A4226 Port Road West (W)	952.92	945.84	597.71	0.00	1213.10	0.786	3.44	13.127	B

Main results: (07:45-08:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	700.25	698.61	1059.23	0.00	1367.62	0.512	1.04	5.368	A
A4226 Port Road West (E)	726.68	723.07	956.92	0.00	1103.23	0.659	1.87	9.380	A
Pontypridd Road	722.27	720.24	919.96	0.00	1312.73	0.550	1.21	6.055	A
A4226 Port Road West (W)	1167.09	1098.39	730.78	0.00	1141.28	1.023	20.61	51.655	F

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	700.25	700.15	1078.75	0.00	1354.00	0.517	1.06	5.503	A
A4226 Port Road West (E)	726.68	726.48	966.82	0.00	1097.50	0.662	1.92	9.692	A
Pontypridd Road	722.27	722.22	923.55	0.00	1310.32	0.551	1.22	6.121	A
A4226 Port Road West (W)	1167.09	1123.28	733.18	0.00	1139.98	1.024	31.56	93.670	F

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	571.75	573.26	992.07	0.00	1413.79	0.404	0.68	4.292	A
A4226 Port Road West (E)	593.33	596.86	841.29	0.00	1171.62	0.506	1.04	6.300	A
Pontypridd Road	589.73	591.74	757.93	0.00	1422.19	0.415	0.71	4.346	A
A4226 Port Road West (W)	952.92	1062.85	601.20	0.00	1211.22	0.787	4.08	36.981	E

Main results: (08:30-08:45)

	Total Demand	Entry Flow	Circulating Flow	Pedestrian Demand	Capacity		End Queue	Delay	

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	478.82	479.79	767.74	0.00	1569.87	0.305	0.44	3.307	A
A4226 Port Road West (E)	496.88	498.45	675.58	0.00	1268.41	0.392	0.65	4.684	A
Pontypridd Road	493.87	494.76	633.40	0.00	1506.28	0.328	0.49	3.561	A
A4226 Port Road West (W)	798.03	807.35	502.50	0.00	1264.48	0.631	1.75	8.030	A

Waycock Cross Junction - 2017 - DS, IP

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Waycock Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017 - DS, IP	2017 - DS	IP		ONE HOUR	11:45	13:15	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			5.12	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	4.00	8.00	53.00	13.00	50.00	20.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	8.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.707	2206.545
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.554	1589.071

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	539.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	454.00	100.000
Pontypridd Road	ONE HOUR	✓	479.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	734.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time	Name	Direct Demand Entry	DirectDemandEntryFlowInPCU	Direct Demand Exit Flow	Direct Demand Pedestrian

Segment	Name	Flow (Veh/hr)	(PCU/hr)	(Veh/hr)	Flow (Ped/hr)
11:45-12:00	A4226 Waycock Road	405.79	428.54	N/A	N/A
11:45-12:00	A4226 Port Road West (E)	341.80	359.46	N/A	N/A
11:45-12:00	Pontypridd Road	360.62	367.31	N/A	N/A
11:45-12:00	A4226 Port Road West (W)	552.59	571.13	N/A	N/A
12:00-12:15	A4226 Waycock Road	484.55	511.72	N/A	N/A
12:00-12:15	A4226 Port Road West (E)	408.14	429.24	N/A	N/A
12:00-12:15	Pontypridd Road	430.61	438.60	N/A	N/A
12:00-12:15	A4226 Port Road West (W)	659.85	681.98	N/A	N/A
12:15-12:30	A4226 Waycock Road	593.45	626.72	N/A	N/A
12:15-12:30	A4226 Port Road West (E)	499.86	525.70	N/A	N/A
12:15-12:30	Pontypridd Road	527.39	537.18	N/A	N/A
12:15-12:30	A4226 Port Road West (W)	808.15	835.26	N/A	N/A
12:30-12:45	A4226 Waycock Road	593.45	626.72	N/A	N/A
12:30-12:45	A4226 Port Road West (E)	499.86	525.70	N/A	N/A
12:30-12:45	Pontypridd Road	527.39	537.18	N/A	N/A
12:30-12:45	A4226 Port Road West (W)	808.15	835.26	N/A	N/A
12:45-13:00	A4226 Waycock Road	484.55	511.72	N/A	N/A
12:45-13:00	A4226 Port Road West (E)	408.14	429.24	N/A	N/A
12:45-13:00	Pontypridd Road	430.61	438.60	N/A	N/A
12:45-13:00	A4226 Port Road West (W)	659.85	681.98	N/A	N/A
13:00-13:15	A4226 Waycock Road	405.79	428.54	N/A	N/A
13:00-13:15	A4226 Port Road West (E)	341.80	359.46	N/A	N/A
13:00-13:15	Pontypridd Road	360.62	367.31	N/A	N/A
13:00-13:15	A4226 Port Road West (W)	552.59	571.13	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	66.000	171.000	302.000
	2	122.000	0.000	103.000	229.000
	3	204.000	70.000	0.000	205.000

	4	265.000	243.000	226.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.12	0.32	0.56
	2	0.27	0.00	0.23	0.50
	3	0.43	0.15	0.00	0.43
	4	0.36	0.33	0.31	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.040	1.020	1.080
	2	1.000	1.090	1.050	1.080
	3	1.010	1.010	1.000	1.030
	4	1.030	1.050	1.020	1.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.000	2.000	8.000
	2	0.000	9.000	5.000	8.000
	3	1.000	1.000	0.000	3.000
	4	3.000	5.000	2.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.35	3.31	0.54	A
A4226 Port Road West (E)	0.41	5.06	0.70	A
Pontypridd Road	0.37	3.93	0.57	A
A4226 Port Road West (W)	0.62	7.29	1.62	A

Main Results for each time segment

Main results: (11:45-12:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	405.79	404.63	403.92	0.00	1810.34	0.224	0.29	2.558	A
A4226 Port Road West (E)	341.79	340.45	524.41	0.00	1356.38	0.252	0.34	3.539	A
Pontypridd Road	360.62	359.45	489.93	0.00	1597.33	0.226	0.29	2.905	A

A4226 Port Road West (W)	552.59	549.94	297.11	0.00	1377.01	0.401	0.66	4.339	A

Main results: (12:00-12:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	484.55	484.18	483.76	0.00	1755.18	0.276	0.38	2.832	A
A4226 Port Road West (E)	408.14	407.65	627.71	0.00	1295.31	0.315	0.46	4.054	A
Pontypridd Road	430.61	430.22	586.45	0.00	1532.16	0.281	0.39	3.267	A
A4226 Port Road West (W)	659.85	658.70	355.64	0.00	1345.39	0.490	0.95	5.234	A

Main results: (12:15-12:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	593.45	592.80	591.68	0.00	1680.63	0.353	0.54	3.307	A
A4226 Port Road West (E)	499.86	498.91	768.24	0.00	1212.22	0.412	0.70	5.041	A
Pontypridd Road	527.39	526.66	717.86	0.00	1443.42	0.365	0.57	3.923	A
A4226 Port Road West (W)	808.15	805.55	435.33	0.00	1302.34	0.621	1.60	7.209	A

Main results: (12:30-12:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	593.45	593.44	593.40	0.00	1679.43	0.353	0.54	3.314	A
A4226 Port Road West (E)	499.86	499.85	769.59	0.00	1211.43	0.413	0.70	5.058	A
Pontypridd Road	527.39	527.38	718.95	0.00	1442.69	0.366	0.57	3.932	A
A4226 Port Road West (W)	808.15	808.08	435.99	0.00	1301.98	0.621	1.62	7.286	A

Main results: (12:45-13:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	484.55	485.19	486.31	0.00	1753.42	0.276	0.38	2.841	A
A4226 Port Road West (E)	408.14	409.08	629.75	0.00	1294.11	0.315	0.46	4.071	A
Pontypridd Road	430.61	431.33	588.12	0.00	1531.03	0.281	0.39	3.275	A
A4226 Port Road West (W)	659.85	662.43	356.66	0.00	1344.83	0.491	0.97	5.294	A

Main results: (13:00-13:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	405.79	406.16	406.61	0.00	1808.48	0.224	0.29	2.567	A
A4226 Port Road West (E)	341.79	342.29	526.94	0.00	1354.89	0.252	0.34	3.558	A
Pontypridd Road	360.62	361.02	492.21	0.00	1595.79	0.226	0.29	2.915	A
A4226 Port Road West (W)	552.59	553.79	298.49	0.00	1376.26	0.402	0.68	4.384	A

Waycock Cross Junction - 2017 - DS, PM

Waycock Cross Junction - 2017 - DS, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Waycock Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2017 - DS, PM	2017 - DS	PM		ONE HOUR	16:15	17:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			7.92	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	4.00	8.00	53.00	13.00	50.00	20.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	8.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.707	2206.545
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.554	1589.071

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	705.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	670.00	100.000
Pontypridd Road	ONE HOUR	✓	713.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	839.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:15-16:30	A4226 Waycock Road	530.76	558.15	N/A	N/A
16:15-16:30	A4226 Port Road West (E)	504.41	534.40	N/A	N/A
16:15-16:30	Pontypridd Road	536.78	547.63	N/A	N/A
16:15-16:30	A4226 Port Road West (W)	631.64	654.30	N/A	N/A
16:30-16:45	A4226 Waycock Road	633.78	666.49	N/A	N/A

16:30-16:45	A4226 Port Road West (E)	602.32	638.12	N/A	N/A
16:30-16:45	Pontypridd Road	640.97	653.93	N/A	N/A
16:30-16:45	A4226 Port Road West (W)	754.24	781.29	N/A	N/A
16:45-17:00	A4226 Waycock Road	776.22	816.27	N/A	N/A
16:45-17:00	A4226 Port Road West (E)	737.68	781.54	N/A	N/A
16:45-17:00	Pontypridd Road	785.03	800.89	N/A	N/A
16:45-17:00	A4226 Port Road West (W)	923.76	956.89	N/A	N/A
17:00-17:15	A4226 Waycock Road	776.22	816.27	N/A	N/A
17:00-17:15	A4226 Port Road West (E)	737.68	781.54	N/A	N/A
17:00-17:15	Pontypridd Road	785.03	800.89	N/A	N/A
17:00-17:15	A4226 Port Road West (W)	923.76	956.89	N/A	N/A
17:15-17:30	A4226 Waycock Road	633.78	666.49	N/A	N/A
17:15-17:30	A4226 Port Road West (E)	602.32	638.12	N/A	N/A
17:15-17:30	Pontypridd Road	640.97	653.93	N/A	N/A
17:15-17:30	A4226 Port Road West (W)	754.24	781.29	N/A	N/A
17:30-17:45	A4226 Waycock Road	530.76	558.15	N/A	N/A
17:30-17:45	A4226 Port Road West (E)	504.41	534.40	N/A	N/A
17:30-17:45	Pontypridd Road	536.78	547.63	N/A	N/A
17:30-17:45	A4226 Port Road West (W)	631.64	654.30	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	133.000	245.000	327.000
	2	114.000	0.000	155.000	401.000
	3	254.000	95.000	0.000	364.000
	4	251.000	360.000	228.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.19	0.35	0.46
	2	0.17	0.00	0.23	0.60
	3	0.36	0.13	0.00	0.51
	4	0.30	0.43	0.27	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.040	1.020	1.080
	2	1.000	1.090	1.050	1.080
	3	1.010	1.010	1.000	1.030
	4	1.030	1.050	1.020	1.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.000	2.000	8.000
	2	0.000	9.000	5.000	8.000
	3	1.000	1.000	0.000	3.000
	4	3.000	5.000	2.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.49	4.50	0.97	A
A4226 Port Road West (E)	0.65	8.98	1.82	A
Pontypridd Road	0.60	7.02	1.51	A
A4226 Port Road West (W)	0.73	10.71	2.69	B

Main Results for each time segment

Main results: (16:15-16:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	530.76	529.02	511.45	0.00	1742.68	0.305	0.44	2.962	A
A4226 Port Road West (E)	504.41	501.90	599.92	0.00	1302.61	0.387	0.63	4.483	A
Pontypridd Road	536.78	534.56	631.16	0.00	1497.89	0.358	0.55	3.730	A
A4226 Port Road West (W)	631.65	628.15	347.06	0.00	1346.88	0.469	0.87	4.985	A

Main results: (16:30-16:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	633.78	633.10	612.57	0.00	1672.37	0.379	0.61	3.462	A
A4226 Port Road West (E)	602.31	601.05	718.13	0.00	1233.33	0.488	0.94	5.682	A
Pontypridd Road	640.97	639.90	755.65	0.00	1413.65	0.453	0.82	4.645	A

A4226 Port Road West (W)	754.25	752.40	415.49	0.00	1309.98	0.576	1.34	6.434	A

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	776.22	774.81	748.00	0.00	1578.22	0.492	0.96	4.472	A
A4226 Port Road West (E)	737.68	734.31	878.26	0.00	1139.47	0.647	1.79	8.812	A
Pontypridd Road	785.03	782.33	923.81	0.00	1299.84	0.604	1.50	6.920	A
A4226 Port Road West (W)	923.76	918.56	507.88	0.00	1260.15	0.733	2.64	10.381	B

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	776.22	776.19	751.82	0.00	1575.55	0.493	0.97	4.503	A
A4226 Port Road West (E)	737.68	737.57	880.73	0.00	1138.03	0.648	1.82	8.982	A
Pontypridd Road	785.03	784.95	926.96	0.00	1297.72	0.605	1.51	7.018	A
A4226 Port Road West (W)	923.76	923.53	509.72	0.00	1259.16	0.734	2.69	10.705	B

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	633.78	635.18	618.04	0.00	1668.57	0.380	0.62	3.487	A
A4226 Port Road West (E)	602.31	605.70	721.74	0.00	1231.23	0.489	0.97	5.787	A
Pontypridd Road	640.97	643.67	760.19	0.00	1410.58	0.454	0.84	4.711	A
A4226 Port Road West (W)	754.25	759.49	418.12	0.00	1308.56	0.576	1.38	6.619	A

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	530.76	531.46	515.72	0.00	1739.71	0.305	0.44	2.982	A
A4226 Port Road West (E)	504.41	505.73	603.38	0.00	1300.59	0.388	0.64	4.536	A
Pontypridd Road	536.78	537.89	635.25	0.00	1495.13	0.359	0.56	3.767	A
A4226 Port Road West (W)	631.65	633.60	349.34	0.00	1345.65	0.469	0.89	5.071	A

Waycock Cross Junction - 2032 - DS, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Waycock Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2032 - DS, AM	2032 - DS	AM		ONE HOUR	07:15	08:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			260.20	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	4.00	8.00	53.00	13.00	50.00	20.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	8.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.707	2206.545
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.554	1589.071

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	839.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	1048.00	100.000
Pontypridd Road	ONE HOUR	✓	754.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1339.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:15-07:30	A4226 Waycock Road	631.64	666.86	N/A	N/A
07:15-07:30	A4226 Port Road West (E)	788.99	838.27	N/A	N/A
07:15-07:30	Pontypridd Road	567.65	577.47	N/A	N/A
07:15-07:30	A4226 Port Road West (W)	1008.07	1045.07	N/A	N/A
07:30-07:45	A4226 Waycock Road	754.24	796.30	N/A	N/A
07:30-07:45	A4226 Port Road West (E)	942.13	1000.98	N/A	N/A
07:30-07:45	Pontypridd Road	677.83	689.55	N/A	N/A
07:30-07:45	A4226 Port Road West (W)	1203.73	1247.92	N/A	N/A
07:45-08:00	A4226 Waycock Road	923.76	975.26	N/A	N/A
07:45-08:00	A4226 Port Road West (E)	1153.87	1225.94	N/A	N/A
07:45-08:00	Pontypridd Road	830.17	844.53	N/A	N/A
07:45-	A4226 Port Road	1474.27	1528.38	N/A	N/A

08:00	West (W)	[illegible]	[illegible]	N/A	N/A
08:00-08:15	A4226 Waycock Road	923.76	975.26	N/A	N/A
08:00-08:15	A4226 Port Road West (E)	1153.87	1225.94	N/A	N/A
08:00-08:15	Pontypridd Road	830.17	844.53	N/A	N/A
08:00-08:15	A4226 Port Road West (W)	1474.27	1528.38	N/A	N/A
08:15-08:30	A4226 Waycock Road	754.24	796.30	N/A	N/A
08:15-08:30	A4226 Port Road West (E)	942.13	1000.98	N/A	N/A
08:15-08:30	Pontypridd Road	677.83	689.55	N/A	N/A
08:15-08:30	A4226 Port Road West (W)	1203.73	1247.92	N/A	N/A
08:30-08:45	A4226 Waycock Road	631.64	666.86	N/A	N/A
08:30-08:45	A4226 Port Road West (E)	788.99	838.27	N/A	N/A
08:30-08:45	Pontypridd Road	567.65	577.47	N/A	N/A
08:30-08:45	A4226 Port Road West (W)	1008.07	1045.07	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	114.000	263.000	462.000
	2	187.000	0.000	114.000	747.000
	3	258.000	221.000	0.000	275.000
	4	284.000	651.000	404.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.14	0.31	0.55
	2	0.18	0.00	0.11	0.71
	3	0.34	0.29	0.00	0.36
	4	0.21	0.49	0.30	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.040	1.020	1.080
	2	1.000	1.090	1.050	1.080
	3	1.010	1.010	1.000	1.030
	4	1.030	1.050	1.020	1.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.000	2.000	8.000
	2	0.000	9.000	5.000	8.000
	3	1.000	1.000	0.000	3.000
	4	3.000	5.000	2.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.71	9.73	2.45	A
A4226 Port Road West (E)	1.18	286.26	96.15	F
Pontypridd Road	0.84	21.43	4.71	C
A4226 Port Road West (W)	1.28	531.06	177.81	F

Main Results for each time segment

Main results: (07:15-07:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	631.64	628.52	948.09	0.00	1433.98	0.440	0.78	4.453	A
A4226 Port Road West (E)	788.99	780.69	842.85	0.00	1156.89	0.682	2.08	9.375	A
Pontypridd Road	567.65	564.23	1041.87	0.00	1223.37	0.464	0.86	5.433	A
A4226 Port Road West (W)	1008.07	993.42	497.74	0.00	1264.67	0.797	3.66	12.666	B

Main results: (07:30-07:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	754.24	752.15	1106.65	0.00	1324.36	0.570	1.30	6.269	A
A4226 Port Road West (E)	942.13	925.60	997.99	0.00	1066.07	0.884	6.21	23.296	C
Pontypridd Road	677.83	674.83	1239.08	0.00	1089.48	0.622	1.61	8.620	A
A4226 Port Road West (W)	1203.73	1153.51	593.86	0.00	1212.88	0.992	16.22	42.206	E

Main results: (07:45-08:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	923.75	919.33	1151.24	0.00	1294.16	0.714	2.41	9.492	A
A4226 Port Road West (E)	1153.87	970.93	1143.34	0.00	980.02	1.177	51.95	120.112	F
Pontypridd Road	830.17	819.10	1371.55	0.00	999.09	0.831	4.37	18.937	C
A4226 Port Road West (W)	1474.26	1156.44	693.60	0.00	1159.05	1.272	95.67	183.614	F

Main results: (08:00-08:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	923.75	923.57	1152.83	0.00	1293.11	0.714	2.45	9.728	A
A4226 Port Road West (E)	1153.87	977.06	1146.52	0.00	978.13	1.180	96.15	277.042	F
Pontypridd Road	830.17	828.82	1379.34	0.00	993.80	0.835	4.71	21.433	C
A4226 Port Road West (W)	1474.26	1154.83	700.87	0.00	1155.13	1.276	175.53	424.240	F

Main results: (08:15-08:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	754.24	758.43	1143.00	0.00	1299.16	0.581	1.41	6.707	A
A4226 Port Road West (E)	942.13	1044.91	1015.81	0.00	1055.78	0.892	70.45	286.256	F
Pontypridd Road	677.83	688.37	1348.88	0.00	1015.29	0.668	2.08	11.343	B
A4226 Port Road West (W)	1203.73	1194.60	623.76	0.00	1196.85	1.006	177.81	531.059	F

Main results: (08:30-08:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	631.64	633.47	1135.58	0.00	1303.66	0.485	0.95	5.385	A
A4226 Port Road West (E)	788.99	1059.21	918.14	0.00	1113.83	0.708	2.90	112.621	F
Pontypridd Road	567.65	571.21	1292.82	0.00	1053.86	0.539	1.19	7.511	A
A4226 Port Road West (W)	1008.07	1228.78	551.87	0.00	1235.69	0.816	122.63	441.017	F

Waycock Cross Junction - 2032 - DS, IP

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Waycock Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2032 - DS, IP	2032 - DS	IP		ONE HOUR	11:45	13:15	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			14.85	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	4.00	8.00	53.00	13.00	50.00	20.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	8.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.707	2206.545
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.554	1589.071

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	680.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	629.00	100.000
Pontypridd Road	ONE HOUR	✓	547.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1067.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:45-12:00	A4226 Waycock Road	511.94	543.77	N/A	N/A
11:45-12:00	A4226 Port Road West (E)	473.54	500.74	N/A	N/A
11:45-12:00	Pontypridd Road	411.81	419.86	N/A	N/A
11:45-12:00	A4226 Port Road West (W)	803.29	831.44	N/A	N/A
12:00-12:15	A4226 Waycock Road	611.31	649.31	N/A	N/A
12:00-12:15	A4226 Port Road West (E)	565.46	597.94	N/A	N/A
12:00-12:15	Pontypridd Road	491.74	501.35	N/A	N/A
12:00-12:15	A4226 Port Road West (W)	959.21	992.82	N/A	N/A
12:15-12:30	A4226 Waycock Road	748.69	795.25	N/A	N/A
12:15-12:30	A4226 Port Road West (E)	692.54	732.32	N/A	N/A
12:15-12:30	Pontypridd Road	602.26	614.03	N/A	N/A
12:15-12:30	A4226 Port Road West (W)	1174.79	1215.96	N/A	N/A
12:30-12:45	A4226 Waycock Road	748.69	795.25	N/A	N/A
12:30-12:45	A4226 Port Road West (E)	692.54	732.32	N/A	N/A
12:30-12:45	Pontypridd Road	602.26	614.03	N/A	N/A
12:30-12:45	A4226 Port Road West (W)	1174.79	1215.96	N/A	N/A
12:45-13:00	A4226 Waycock Road	611.31	649.31	N/A	N/A
12:45-	A4226 Port Road	[illegible]	[illegible]	[illegible]	[illegible]

13:00	West (E)	565.46	597.94	N/A	N/A
12:45-13:00	Pontypridd Road	491.74	501.35	N/A	N/A
12:45-13:00	A4226 Port Road West (W)	959.21	992.82	N/A	N/A
13:00-13:15	A4226 Waycock Road	511.94	543.77	N/A	N/A
13:00-13:15	A4226 Port Road West (E)	473.54	500.74	N/A	N/A
13:00-13:15	Pontypridd Road	411.81	419.86	N/A	N/A
13:00-13:15	A4226 Port Road West (W)	803.29	831.44	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	51.000	168.000	461.000
	2	132.000	0.000	121.000	376.000
	3	188.000	98.000	0.000	261.000
	4	387.000	406.000	274.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.08	0.25	0.68
	2	0.21	0.00	0.19	0.60
	3	0.34	0.18	0.00	0.48
	4	0.36	0.38	0.26	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.040	1.020	1.080
	2	1.000	1.090	1.050	1.080
	3	1.010	1.010	1.000	1.030
	4	1.030	1.050	1.020	1.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.000	2.000	8.000
	2	0.000	9.000	5.000	8.000
	3	1.000	1.000	0.000	3.000
	4	3.000	5.000	2.000	0.000

Results

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.50	4.86	1.00	A
A4226 Port Road West (E)	0.65	9.51	1.80	A
Pontypridd Road	0.50	5.98	0.99	A
A4226 Port Road West (W)	0.91	29.08	8.90	D

Main Results for each time segment

Main results: (11:45-12:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	511.94	510.19	581.85	0.00	1676.87	0.305	0.44	3.082	A
A4226 Port Road West (E)	473.54	471.15	676.77	0.00	1257.63	0.377	0.60	4.564	A
Pontypridd Road	411.81	410.21	726.39	0.00	1434.42	0.287	0.40	3.511	A
A4226 Port Road West (W)	803.30	797.68	313.35	0.00	1366.26	0.588	1.40	6.271	A

Main results: (12:00-12:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	611.30	610.59	696.54	0.00	1597.93	0.383	0.62	3.645	A
A4226 Port Road West (E)	565.46	564.21	810.02	0.00	1178.93	0.480	0.91	5.844	A
Pontypridd Road	491.74	491.04	869.62	0.00	1337.43	0.368	0.58	4.249	A
A4226 Port Road West (W)	959.21	954.92	375.14	0.00	1332.93	0.720	2.48	9.418	A

Main results: (12:15-12:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	748.69	747.20	842.32	0.00	1497.60	0.500	0.99	4.787	A
A4226 Port Road West (E)	692.54	689.13	987.21	0.00	1074.19	0.645	1.76	9.266	A
Pontypridd Road	602.26	600.63	1063.11	0.00	1206.41	0.499	0.98	5.927	A
A4226 Port Road West (W)	1174.79	1152.86	458.66	0.00	1287.88	0.912	7.96	23.570	C

Main results: (12:30-12:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	748.69	748.63	854.18	0.00	1489.42	0.503	1.00	4.859	A
A4226 Port Road West (E)	692.54	692.40	993.20	0.00	1070.73	0.647	1.80	9.507	A
Pontypridd Road	602.26	602.22	1066.73	0.00	1203.97	0.500	0.99	5.982	A
A4226 Port Road West (W)	1174.79	1171.01	460.18	0.00	1287.07	0.913	8.90	29.084	D

Main results: (12:45-13:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	611.30	612.79	715.58	0.00	1584.79	0.386	0.63	3.711	A
A4226 Port Road West (E)	565.46	568.90	819.56	0.00	1173.41	0.482	0.94	5.990	A
Pontypridd Road	491.74	493.36	874.90	0.00	1333.88	0.369	0.59	4.290	A
A4226 Port Road West (W)	959.21	984.13	377.34	0.00	1331.75	0.720	2.67	11.045	B

Main results: (13:00-13:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	511.94	512.69	588.96	0.00	1671.97	0.306	0.44	3.109	A
A4226 Port Road West (E)	473.54	474.87	681.78	0.00	1254.70	0.377	0.61	4.623	A
Pontypridd Road	411.81	412.54	731.09	0.00	1431.24	0.288	0.41	3.535	A
A4226 Port Road West (W)	803.30	808.17	315.35	0.00	1365.18	0.588	1.45	6.517	A

Waycock Cross Junction - 2032 - DS, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A4226 Waycock Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	A4226 Port Road West (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Analysis Set Details

Name	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
Waycock Cross Junction			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2032 - DS, PM	2032 - DS	PM		ONE HOUR	16:15	17:45	90	15		

Junction Network

Junctions

Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
Waycock Cross Roundabout	Roundabout	1,2,3,4			208.71	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Name	Description
A4226 Waycock Road	A4226 Waycock Road	
A4226 Port Road West (E)	A4226 Port Road West (E)	
Pontypridd Road	Pontypridd Road	
A4226 Port Road West (W)	A4226 Port Road West (W)	

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
A4226 Waycock Road	4.00	8.00	53.00	13.00	50.00	20.00	
A4226 Port Road West (E)	4.50	6.50	37.50	15.00	51.00	45.00	
Pontypridd Road	6.25	7.00	3.00	20.00	51.00	38.00	
A4226 Port Road West (W)	3.50	8.50	14.00	10.00	51.00	45.00	

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Pedestrian Crossings

Name	Crossing Type
A4226 Waycock Road	None
A4226 Port Road West (E)	None
Pontypridd Road	None
A4226 Port Road West (W)	None

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Name	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
A4226 Waycock Road		(calculated)	(calculated)	0.707	2206.545
A4226 Port Road West (E)		(calculated)	(calculated)	0.594	1752.577
Pontypridd Road		(calculated)	(calculated)	0.646	1963.925
A4226 Port Road West (W)		(calculated)	(calculated)	0.554	1589.071

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A4226 Waycock Road	ONE HOUR	✓	775.00	100.000
A4226 Port Road West (E)	ONE HOUR	✓	896.00	100.000
Pontypridd Road	ONE HOUR	✓	753.00	100.000
A4226 Port Road West (W)	ONE HOUR	✓	1447.00	100.000

Direct/Resultant Flows

Direct Flows Data

Time Segment	Name	Direct Demand Entry Flow (Veh/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (Veh/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:15-16:30	A4226 Waycock Road	583.46	613.68	N/A	N/A
16:15-16:30	A4226 Port Road West (E)	674.56	717.58	N/A	N/A
16:15-16:30	Pontypridd Road	566.90	578.57	N/A	N/A
16:15-16:30	A4226 Port Road West (W)	1089.38	1130.05	N/A	N/A
16:30-16:45	A4226 Waycock Road	696.71	732.79	N/A	N/A
16:30-16:45	A4226 Port Road West (E)	805.49	856.86	N/A	N/A
16:30-16:45	Pontypridd Road	676.93	690.87	N/A	N/A
16:30-16:45	A4226 Port Road West (W)	1300.82	1349.40	N/A	N/A
16:45-17:00	A4226 Waycock Road	853.29	897.49	N/A	N/A
16:45-17:00	A4226 Port Road West (E)	986.51	1049.44	N/A	N/A
16:45-17:00	Pontypridd Road	829.07	846.15	N/A	N/A
16:45-17:00	A4226 Port Road West (W)	1593.18	1652.66	N/A	N/A
17:00-17:15	A4226 Waycock Road	853.29	897.49	N/A	N/A
17:00-17:15	A4226 Port Road West (E)	986.51	1049.44	N/A	N/A
17:00-17:15	Pontypridd Road	829.07	846.15	N/A	N/A
17:00-17:15	A4226 Port Road West (W)	1593.18	1652.66	N/A	N/A
17:15-17:30	A4226 Waycock Road	696.71	732.79	N/A	N/A
17:15-17:30	A4226 Port Road West (E)	805.49	856.86	N/A	N/A
17:15-17:30	Pontypridd Road	676.93	690.87	N/A	N/A
17:15-17:30	A4226 Port Road West (W)	1300.82	1349.40	N/A	N/A
17:30-17:45	A4226 Waycock Road	583.46	613.68	N/A	N/A
17:30-17:45	A4226 Port Road West (E)	674.56	717.58	N/A	N/A
17:30-17:45	Pontypridd Road	566.90	578.57	N/A	N/A
17:30-	A4226 Port Road	[illegible]	[illegible]	[illegible]	[illegible]

17:45	West (W)	1089.38	1130.05	N/A	N/A

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	143.000	269.000	363.000
	2	125.000	0.000	151.000	620.000
	3	252.000	102.000	0.000	399.000
	4	457.000	684.000	306.000	0.000

Turning Proportions (Veh) - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.18	0.35	0.47
	2	0.14	0.00	0.17	0.69
	3	0.33	0.14	0.00	0.53
	4	0.32	0.47	0.21	0.00

Vehicle Mix

Average PCU Per Vehicle - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.040	1.020	1.080
	2	1.000	1.090	1.050	1.080
	3	1.010	1.010	1.000	1.030
	4	1.030	1.050	1.020	1.000

Heavy Vehicle Percentages - Waycock Cross Roundabout (for whole period)

		To			
		1	2	3	4
From	1	0.000	4.000	2.000	8.000
	2	0.000	9.000	5.000	8.000
	3	1.000	1.000	0.000	3.000
	4	3.000	5.000	2.000	0.000

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A4226 Waycock Road	0.60	6.30	1.48	A
A4226 Port Road West (E)	0.91	32.28	8.29	D
Pontypridd Road	0.75	13.21	2.96	B
A4226 Port Road West (W)	1.28	530.76	192.22	F

Main Results for each time segment

Main results: (16:15-16:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	583.46	581.02	810.67	0.00	1532.50	0.381	0.61	3.774	A
A4226 Port Road West (E)	674.56	669.85	700.77	0.00	1238.93	0.544	1.18	6.275	A
Pontypridd Road	566.90	564.07	829.10	0.00	1362.47	0.416	0.71	4.494	A
A4226 Port Road West (W)	1089.38	1073.21	358.63	0.00	1338.76	0.814	4.04	12.872	B

Main results: (16:30-16:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	696.71	695.44	942.95	0.00	1440.30	0.484	0.93	4.825	A
A4226 Port Road West (E)	805.49	801.49	830.31	0.00	1163.29	0.692	2.18	9.840	A
Pontypridd Road	676.93	675.12	992.16	0.00	1251.98	0.541	1.16	6.220	A
A4226 Port Road West (W)	1300.82	1244.57	429.20	0.00	1300.76	1.000	18.10	43.027	E

Main results: (16:45-17:00)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	853.29	851.13	965.77	0.00	1424.75	0.599	1.47	6.252	A
A4226 Port Road West (E)	986.52	965.73	958.16	0.00	1087.97	0.907	7.37	25.942	D
Pontypridd Road	829.07	822.50	1201.63	0.00	1110.00	0.747	2.80	12.250	B
A4226 Port Road West (W)	1593.18	1248.74	521.40	0.00	1251.10	1.273	104.21	185.100	F

Main results: (17:00-17:15)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	853.29	853.24	966.10	0.00	1424.54	0.599	1.48	6.301	A
A4226 Port Road West (E)	986.52	982.86	959.74	0.00	1087.04	0.908	8.29	32.284	D
Pontypridd Road	829.07	828.45	1216.86	0.00	1099.71	0.754	2.96	13.209	B
A4226 Port Road West (W)	1593.18	1248.04	526.59	0.00	1248.32	1.276	190.50	425.778	F

Main results: (17:15-17:30)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	696.71	698.72	977.90	0.00	1415.88	0.492	0.98	5.033	A
A4226 Port Road West (E)	805.49	829.09	843.42	0.00	1155.76	0.697	2.39	11.757	B
Pontypridd Road	676.93	683.83	1016.64	0.00	1235.45	0.548	1.23	6.604	A
A4226 Port Road West (W)	1300.82	1293.92	437.15	0.00	1296.49	1.003	192.22	530.757	F

Main results: (17:30-17:45)

Name	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
A4226 Waycock Road	583.46	584.53	986.97	0.00	1409.21	0.414	0.71	4.370	A
A4226 Port Road West (E)	674.56	678.95	757.92	0.00	1206.30	0.559	1.29	6.883	A
Pontypridd Road	566.90	568.92	838.31	0.00	1356.24	0.418	0.72	4.585	A
A4226 Port Road West (W)	1089.38	1329.93	362.18	0.00	1336.85	0.815	132.08	439.781	F

Appendix G: Model Output Files – Culverhouse Cross Junction

1 T R A N S Y T

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TRAffic Network StudY Tool

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0Implementation for IBM-PC or compatible, running under Microsoft Windows 95

0Program TRANSYT 11, Analysis Program Version 1.1

0Run with file:- "AM_2014OPT.DAT" at 11:21 on 15/04/14

02014 AM

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

~~~~~~

NUMBER OF NODES = 5

NUMBER OF LINKS = 45

NUMBER OF OPTIMISED NODES = 5

MAXIMUM NUMBER OF GRAPHIC PLOTS = 0

NUMBER OF STEPS IN CYCLE = 32

MAXIMUM NUMBER OF SHARED STOPLINES = 2

MAXIMUM NUMBER OF TIMING POINTS = 3

MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS

CORE AVAILABLE = 72000 WORDS

.

0 DATA INPUT :-

~~~~ ~~~~~

0CARD CARD

NO. TYPE

(1)= TITLE:- 2014 AM

0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP

NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE

PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER

(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100

2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170

0CARD CARD LIST OF NODES TO BE OPTIMISED

NO. TYPE

3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0

0 LINKS HAVING SHARED STOPLINES

CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................

NO. TYPE

4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0

5)= 7 260 261 0 0 0 350 351 0 0 0 360 361 0 0 0

6)= 7 370 371 0 0 0 450 451 0 0 0 460 461 0 0 0

7)= 7 470 471 0 0 0 550 551 0 0 0 560 561 0 0 0

8)= 7 570 571 0 0 0 0 0 0 0 0 0 0 0 0 0

0 NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES
~~~~

CARD CARD NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6
STAGE 7

NO. TYPE NO. CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE
MIN CHANGE MIN CHANGE MIN

9)= 12 1 34 12 59 12 0 0 0 0 0 0 0 0 0 0

10)= 12 2 55 12 23 12 0 0 0 0 0 0 0 0 0 0

11)= 12 3 50 12 23 12 0 0 0 0 0 0 0 0 0 0

12)= 12 5 27 12 0 12 0 0 0 0 0 0 0 0 0 0

13)= 13 4 35 12 60 0 16 12 0 0 0 0 0 0 0 0

0 LINK CARDS: FIXED DATA

FIRST GREEN SECOND GREEN

CARD CARD LINK EXIT START END START END LINK STOP SAT
DELAY DISPSN

NO. TYPE NO. NODE STAGE LAG STAGE LAG STAGE LAG STAGE LAG LENGTH
WT.X100 FLOW WT.X100 X100

14)= 31 101 1 1 5 2 0 0 0 0 0 120 0 1900 0 0

15)= 31 102 1 1 5 2 0 0 0 0 0 120 0 2000 0 0

16)= 31 103 1 1 5 2 0 0 0 0 0 120 0 2000 0 0

17)= 31 150 1 2 5 1 0 0 0 0 0 60 0 2000 0 0

18)= 31 151 0 0 0 0 0 0 0 0 0 60 0 0 0 0

19)= 31 160 1 2 5 1 0 0 0 0 0 60 0 2000 0 0

20)= 31 161 0 0 0 0 0 0 0 0 0 60 0 0 0 0

21)= 31 170 1 2 5 1 0 0 0 0 0 60 0 2000 0 0

22)= 31 201 2 1 5 2 0 0 0 0 0 200 0 1875 0 0

23)= 31 202 2 1 5 2 0 0 0 0 0 200 0 1975 0 0

24)= 31 203 2 1 5 2 0 0 0 0 0 200 0 1975 0 0

25)= 31 250 2 2 5 1 0 0 0 0 0 110 0 2000 0 0

26)= 31 251 0 0 0 0 0 0 0 0 0 110 0 0 0 0

27)= 31 260 2 2 5 1 0 0 0 0 0 110 0 2000 0 0

28)=	31	261	0	0	0	0	0	0	0	0	0	110	0	0	0	0
29)=	31	270	2	2	5	1	0	0	0	0	0	110	0	2000	0	0
30)=	31	301	3	1	0	2	0	0	0	0	0	145	0	1825	0	0
31)=	31	302	3	1	5	2	0	0	0	0	0	145	0	1900	0	0
32)=	31	303	3	1	5	2	0	0	0	0	0	145	0	1900	0	0
33)=	31	350	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
34)=	31	351	0	0	0	0	0	0	0	0	0	70	0	0	0	0
35)=	31	360	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
36)=	31	361	0	0	0	0	0	0	0	0	0	70	0	0	0	0
37)=	31	370	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
38)=	31	371	0	0	0	0	0	0	0	0	0	70	0	0	0	0
39)=	31	380	3	2	0	1	0	0	0	0	0	70	0	2000	0	0
40)=	31	401	4	2	0	3	0	0	0	0	0	70	0	1925	0	0
41)=	31	402	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
42)=	31	403	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
43)=	31	404	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
44)=	31	450	4	3	5	1	0	0	0	0	0	75	0	2000	0	0
45)=	31	461	0	0	0	0	0	0	0	0	0	75	0	0	0	0
46)=	31	460	4	3	5	1	0	0	0	0	0	75	0	2000	0	0
47)=	31	451	0	0	0	0	0	0	0	0	0	75	0	0	0	0
48)=	31	470	4	3	5	1	0	0	0	0	0	75	0	2000	0	0
49)=	31	471	0	0	0	0	0	0	0	0	0	75	0	0	0	0
50)=	31	501	5	1	5	2	0	0	0	0	0	200	0	1825	0	0
51)=	31	502	5	1	5	2	0	0	0	0	0	200	0	1900	0	0
52)=	31	503	5	1	5	2	0	0	0	0	0	200	0	1900	0	0
53)=	31	550	5	2	5	1	0	0	0	0	0	125	0	2025	0	0
54)=	31	561	0	0	0	0	0	0	0	0	0	125	0	0	0	0

55)= 31 560 5 2 5 1 0 0 0 0 0 125 0 2025 0 0

56)= 31 551 0 0 0 0 0 0 0 0 0 125 0 0 0 0

57)= 31 570 5 2 5 1 0 0 0 0 0 125 0 2025 0 0

58)= 31 571 0 0 0 0 0 0 0 0 0 125 0 0 0 0

0 LINK CARDS: FLOW DATA

ENTRY 1 .... ENTRY 2 .... ENTRY 3 .... ENTRY 4 ....

CARD CARD LINK TOTAL UNIFORM LINK CRUISE LINK CRUISE LINK CRUISE
LINK CRUISE

NO. TYPE NO. FLOW FLOW NO. FLOW SPEED NO. FLOW SPEED NO. FLOW
SPEED NO. FLOW SPEED

59)= 32 101 626 0 0 0 48 0 0 0 0 0 0 0 0 0

60)= 32 102 580 0 0 0 48 0 0 0 0 0 0 0 0 0

61)= 32 103 257 0 0 0 48 0 0 0 0 0 0 0 0 0

62)= 32 150 10 0 502 10 40 0 0 0 0 0 0 0 0 0

63)= 32 151 656 0 560 460 40 561 196 48 0 0 0 0 0 0

64)= 32 160 207 0 502 207 40 0 0 0 0 0 0 0 0 0

65)= 32 161 426 0 570 342 40 571 81 48 0 0 0 0 0 0

66)= 32 170 611 0 503 611 40 0 0 0 0 0 0 0 0 0

67)= 32 201 169 0 0 0 48 0 0 0 0 0 0 0 0 0

68)= 32 202 93 0 0 0 48 0 0 0 0 0 0 0 0 0

69)= 32 203 227 0 0 0 48 0 0 0 0 0 0 0 0 0

70)= 32 250 255 0 101 255 40 0 0 0 0 0 0 0 0 0

71)= 32 251 483 0 160 458 40 161 25 48 0 0 0 0 0 0

72)= 32 260 398 0 102 398 40 0 0 0 0 0 0 0 0 0

73)= 32 261 355 0 161 11 40 170 344 48 0 0 0 0 0 0

74)= 32 270 257 0 103 257 40 0 0 0 0 0 0 0 0 0

75)= 32 301 136 0 0 0 48 0 0 0 0 0 0 0 0 0

76)= 32 302 741 0 0 0 48 0 0 0 0 0 0 0 0 0

77)= 32 303 665 0 0 0 48 0 0 0 0 0 0 0 0 0

78)= 32 350 93 0 202 93 40 0 0 0 0 0 0 0 0 0

79)= 32 351 219 0 260 144 40 261 74 48 0 0 0 0 0 0

80)= 32 360 93 0 203 93 40 0 0 0 0 0 0 0 0 0

81)= 32 361 219 0 260 144 40 261 74 48 0 0 0 0 0 0

82)= 32 370 10 0 203 10 40 0 0 0 0 0 0 0 0 0

83)= 32 371 257 0 270 257 40 0 0 0 0 0 0 0 0 0

84)= 32 380 131 0 203 131 40 0 0 0 0 0 0 0 0 0

85)= 32 401 344 0 0 0 48 0 0 0 0 0 0 0 0 0

86)= 32 402 141 0 0 0 48 0 0 0 0 0 0 0 0 0

87)= 32 403 524 0 0 0 48 0 0 0 0 0 0 0 0 0

88)= 32 404 419 0 0 0 48 0 0 0 0 0 0 0 0 0

89)= 32 450 445 0 302 445 40 0 0 0 0 0 0 0 0 0

90)= 32 451 159 0 370 10 40 371 154 48 0 0 0 0 0 0

91)= 32 460 450 0 302 296 40 303 154 48 0 0 0 0 0 0

92)= 32 461 159 0 370 10 40 371 103 48 380 52 48 0 0 0

93)= 32 470 511 0 303 511 40 0 0 0 0 0 0 0 0 0

94)= 32 471 79 0 380 79 40 0 0 0 0 0 0 0 0 0

95)= 32 501 229 0 0 0 48 0 0 0 0 0 0 0 0 0

96)= 32 502 338 0 0 0 48 0 0 0 0 0 0 0 0 0

97)= 32 503 480 0 0 0 48 0 0 0 0 0 0 0 0 0

98)= 32 550 197 0 402 197 40 0 0 0 0 0 0 0 0 0

99)= 32 551 335 0 460 270 40 461 66 48 0 0 0 0 0 0

100)= 32 560 391 0 403 391 40 0 0 0 0 0 0 0 0 0

101)= 32 561 228 0 470 228 40 0 0 0 0 0 0 0 0 0

102)= 32 570 496 0 404 496 40 0 0 0 0 0 0 0 0 0

103)= 32 571 168 0 470 168 40 0 0 0 0 0 0 0 0 0

0LINK 251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 221 PER CENT

0*****END OF SUBROUTINE TINPUT*****

.

0 64 SECOND CYCLE 32 STEPS

0INITIAL SETTINGS

- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE

NO OF STAGES 1 2 3 4 5 6 7

1 2 34 59

2 2 55 23

3 2 50 23

4 3 35 60 16

5 2 27 0

0 LINK FLOW SAT DEGREE MEAN TIMES --------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START

LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES 1ST 2ND

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H) (SECONDS)

101 626 1900 100 9 97 3.7 + 13.2 (157.3) 181 (23.8) 24 + 181.1 1 39 59

102 580 2000 88 9 42 3.3 + 3.5 (62.9) 118 (14.4) 13 77.3 1 39 59

103 257 2000 39 9 21 1.2 + 0.3 (14.0) 78 (4.2) 4 18.2 1 39 59

150 10 2000S 57 5 22 0.0 + 0.0 (0.6) 93 (0.1) 8 0.7 1 0 34

151 609< 150L 57 5 4 0.1 + 0.6 (6.9) 19 (1.8) 8 8.7 1 0 34

160 207 2000S 56 5 24 1.1 + 0.2 (12.6) 100 (3.0) 4 15.7 1 0 34

161 407< 160L 56 5 4 0.0 + 0.4 (4.1) 6 (0.4) 4 4.5 1 0 34

170 611 2000 56 5 29 4.3 + 0.6 (45.8) 105 (9.4) 11 + 55.2 1 0 34

201 169 1875 21 15 14 0.5 + 0.1 (6.1) 60 (2.1) 2 8.2 2 60 23

202 93 1975 11 15 13 0.3 + 0.1 (3.1) 56 (1.1) 1 4.2 2 60 23

203 227 1975 26 15 14 0.7 + 0.2 (8.4) 62 (3.0) 3 11.4 2 60 23

250 254 2000S 84 10 34 1.5 + 0.9 (22.4) 89 (3.3) 14 25.7 2 28 55

251 481 250L 84 10 39 3.5 + 1.7 (48.1) 118 (8.3) 14 56.4 2 28 55

260 398 2000S 86 10 36 2.4 + 1.6 (36.8) 86 (5.0) 14 41.8 2 28 55

261 355 260L 86 8 38 2.3 + 1.4 (34.5) 120 (6.2) 14 40.8 2 28 55

270 257 2000 29 10 14 0.8 + 0.2 (9.2) 39 (1.5) 2 10.6 2 28 55

301 136 1825 13 11 8 0.2 + 0.1 (2.7) 41 (1.2) 1 3.8 3 50 23

302 741 1900 76 11 20 2.5 + 1.5 (37.8) 82 (12.8) 12 50.6 3 55 23

303 665 1900 68 11 17 2.1 + 1.0 (29.6) 75 (10.5) 10 40.0 3 55 23

350 93 2000S 43 6 28 0.6 + 0.1 (6.7) 104 (1.4) 3 8.1 3 28 50

351 219 350L 43 6 15 0.6 + 0.3 (8.5) 36 (1.1) 3 9.7 3 28 50

360 93 2000S 43 6 27 0.6 + 0.1 (6.5) 104 (1.4) 3 8.0 3 28 50

361 219 360L 43 6 15 0.6 + 0.3 (8.5) 36 (1.1) 3 9.7 3 28 50

370 10 2000S 37 6 28 0.1 + 0.0 (0.7) 104 (0.2) 4 0.9 3 28 50

371 257 370L 37 6 28 1.7 + 0.3 (18.6) 74 (2.8) 4 21.4 3 28 50

380 131 2000 15 6 19 0.6 + 0.1 (6.3) 95 (1.8) 2 8.1 3 23 50

401 344 1925 54 5 24 1.7 + 0.6 (21.2) 85 (6.1) 5 27.3 4 60 16

402 141 2000 11 5 6 0.2 + 0.1 (2.2) 37 (1.1) 1 3.3 4 40 60 60 16

403 524 2000 41 5 8 0.8 + 0.3 (10.8) 48 (5.3) 5 16.1 4 40 60 60
16

404 419 2000 33 5 7 0.6 + 0.2 (7.9) 45 (3.9) 3 11.9 4 40 60 60 16

450 445 2000S 129 7 440 3.2 + 51.2 (505.7) 270 (17.5) 82 + 523.1 4 21 35

451 159 450L 129 6 457 1.9 + 18.3 (187.8) 269 (6.2) 82 + 194.1 4 21 35

460 451 2000S 130 6 455 3.4 + 53.6 (530.1) 272 (17.8) 85 + 548.0 4 21 35

461 159 460L 130 6 473 2.0 + 18.9 (194.3) 266 (6.2) 85 + 200.5 4 21 35

470 511 2000S 126 7 414 4.2 + 54.5 (546.1) 266 (19.8) 75 + 566.0 4 21 35

471 79 470L 126 7 439 1.2 + 8.5 (89.6) 290 (3.3) 75 + 92.9 4 21 35

501 229 1825 24 15 11 0.5 + 0.2 (6.6) 54 (2.6) 2 9.2 5 32 0

502 338 1900 35 15 12 0.9 + 0.3 (10.5) 57 (4.1) 4 14.5 5 32 0

503 480 1900 49 15 14 1.3 + 0.5 (16.9) 63 (6.4) 6 23.3 5 32 0

550 197 2025S 63 11 24 1.0 + 0.4 (12.2) 92 (2.7) 8 14.9 5 5 27

551 259< 550L 63 11 40 2.4 + 0.5 (26.9) 85 (4.2) 8 31.0 5 5 27

560 391 2025S 78 11 27 1.8 + 1.2 (27.6) 102 (5.8) 11 33.4 5 5 27

561 174< 560L 78 11 43 1.5 + 0.5 (19.1) 89 (2.9) 11 22.1 5 5 27

.

0 64 SECOND CYCLE 32 STEPS

0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START

LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES 1ST 2ND

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H) (SECONDS)

570 496 2025S 86 11 34 2.3 + 2.3 (42.9) 113 (8.2) 14 51.1 5 5 27

571 128< 570L 86 11 48 1.1 + 0.6 (15.7) 95 (2.3) 14 18.1 5 5 27

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1546.8 343.8 4.5 67.7 241.3 (2873.2) + (248.3) + (0.0) = 3121.5 TOTALS

0***

0 CRUISE DELAY STOPS TOTALS

LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR

0FUEL CONSUMPTION PREDICTIONS 83.6 + 355.3 + 173.1 = 611.9

0

NO. OF ENTRIES TO SUBPT = 1

NO. OF LINKS RECALCULATED= 45

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9

- (SECONDS)

1	2	52	13	
2	2	55	23	
3	2	4	41	
4	3	44	5	25
5	2	27	0	

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY   DELAY   STOPS   QUEUES

(PCU-KM/H)   (PCU-H/H)   (KM/H)   (PCU-H/H)(PCU-H/H)   ($/H)   ($/H)   ($/H)   ($/H)

0 1546.8   332.6   4.7   56.6   241.2   (2769.1) + (251.4) + (0.0)   =   3020.6   TOTALS

0

NO. OF ENTRIES TO SUBPT =   13

NO. OF LINKS RECALCULATED= 324

.

0   64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9 25

- (SECONDS)

1	2	52	13	
2	2	55	23	
3	2	4	41	
4	3	44	5	25
5	2	27	0	

0 TOTAL   TOTAL   MEAN   TOTAL   TOTAL   TOTAL   TOTAL   PENALTY   TOTAL

DISTANCE   TIME   JOURNEY   UNIFORM   RANDOM+   COST   COST   FOR
PERFORMANCE

TRAVELLED   SPENT   SPEED   DELAY   OVERSAT   OF   OF   EXCESS   INDEX

DELAY   DELAY   STOPS   QUEUES

(PCU-KM/H)   (PCU-H/H)   (KM/H)   (PCU-H/H)(PCU-H/H)   ($/H)   ($/H)   ($/H)   ($/H)

0 1546.8   332.6   4.7   56.6   241.2   (2769.1) + (251.4) + (0.0)   =   3020.6   TOTALS

0

NO. OF ENTRIES TO SUBPT =   11

NO. OF LINKS RECALCULATED= 285

.

0   64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1

- (SECONDS)

1 2 47 15

2 2 6 26

3 2 5 44

4 3 56 6 22

5 2 30 59

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1546.8 105.9 14.6 49.1 21.9 (660.8) + (183.7) + (0.0) = 844.5 TOTALS

0

NO. OF ENTRIES TO SUBPT = 71

NO. OF LINKS RECALCULATED= 1367

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9

- (SECONDS)

1 2 47 15

2 2 15 35

3 2 14 53

4 3 1 15 31

5 2 30 59

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1546.8 103.2 15.0 46.3 22.1 (635.7) + (178.3) + (0.0) = 814.0 TOTALS

0

NO. OF ENTRIES TO SUBPT = 11

NO. OF LINKS RECALCULATED= 309

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25

- (SECONDS)

1	2	47	15	
2	2	15	35	
3	2	39	14	
4	3	1	15	31
5	2	30	59	

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1546.8 103.7 14.9 46.8 22.1 (640.3) + (173.6) + (0.0) = 814.0 TOTALS

0

NO. OF ENTRIES TO SUBPT = 11

NO. OF LINKS RECALCULATED= 325

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25 1

- (SECONDS)

1	2	51	19	
2	2	19	39	
3	2	33	8	
4	3	2	16	32
5	2	30	59	

0 TOTAL DISTANCE TRAVELLED (PCU-KM/H)	TOTAL TIME SPENT (PCU-H/H)	MEAN JOURNEY SPEED (KM/H)	TOTAL UNIFORM DELAY (PCU-H/H)	TOTAL RANDOM+ OVERSAT DELAY (PCU-H/H)	TOTAL COST OF DELAY ($/H)	TOTAL COST OF STOPS ($/H)	PENALTY FOR EXCESS QUEUES ($/H)	TOTAL PERFORMANCE INDEX ($/H)	
0 1546.8	100.6	15.4	43.8	21.9	(611.1) +	(167.8) +	(0.0) =	778.9	TOTALS

0

NO. OF ENTRIES TO SUBPT = 23

NO. OF LINKS RECALCULATED= 597

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25 1 -1

- (SECONDS)

1	2	52	19

2 2 19 38

3 2 33 9

4 3 3 16 33

5 2 30 59

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1546.8 100.0 15.5 43.6 21.6 (606.2) + (166.7) + (0.0) = 772.9 TOTALS

0

NO. OF ENTRIES TO SUBPT = 25

NO. OF LINKS RECALCULATED= 640

.

0 64 SECOND CYCLE 32 STEPS

0FINAL SETTINGS OBTAINED WITH INCREMENTS :- 9 25 -1 9 25 1 -1 1

- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE

NO OF STAGES 1 2 3 4 5 6 7

1 2 54 21

2 2 18 37

3 2 33 9

4 3 3 16 33

5 2 30 59

0 LINK FLOW SAT DEGREE MEAN TIMES --------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START

LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES 1ST 2ND

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H) (SECONDS)

101	626	1900	78	9	26	2.8 + 1.7 (42.0)	94 (12.3)	11		54.3	1	59	21
102	580	2000	69	9	22	2.4 + 1.1 (32.7)	84 (10.2)	9		42.9	1	59	21
103	257	2000	30	9	15	0.9 + 0.2 (10.2)	65 (3.5)	3		13.7	1	59	21
150	10	2000S	73	5	15	0.0 + 0.0 (0.4)	63 (0.1)	13	+	0.5	1	26	54
151	656	150L	73	5	24	3.0 + 1.3 (40.7)	109 (10.4)	13	+	51.1	1	26	54
160	207	2000S	70	5	12	0.3 + 0.4 (6.3)	29 (0.9)	9		7.2	1	26	54
161	426	160L	70	5	19	1.5 + 0.8 (21.1)	101 (6.3)	9		27.3	1	26	54
170	611	2000	67	5	13	1.3 + 1.0 (21.2)	45 (4.0)	9		25.2	1	26	54
201	169	1875	38	15	27	1.0 + 0.3 (11.9)	88 (3.1)	3		15.0	2	23	37
202	93	1975	20	15	25	0.5 + 0.1 (5.9)	82 (1.6)	1		7.5	2	23	37
203	227	1975	49	15	29	1.3 + 0.5 (16.9)	92 (4.4)	4		21.3	2	23	37
250	255	2000S	58	10	10	0.5 + 0.2 (6.8)	42 (1.6)	4		8.4	2	42	18
251	482	250L	58	10	5	0.2 + 0.4 (6.2)	22 (1.6)	4		7.7	2	42	18
260	398	2000S	59	10	9	0.6 + 0.4 (9.3)	35 (2.0)	5		11.4	2	42	18
261	355	260L	59	8	6	0.2 + 0.3 (5.4)	30 (1.6)	5		7.0	2	42	18
270	257	2000	20	10	6	0.3 + 0.1 (3.7)	25 (0.9)	1		4.7	2	42	18
301	136	1825	12	11	6	0.2 + 0.1 (2.2)	36 (1.0)	1		3.2	3	33	9
302	741	1900	69	11	15	2.1 + 1.1 (29.7)	71 (11.1)	10		40.7	3	38	9
303	665	1900	62	11	14	1.7 + 0.8 (23.8)	66 (9.2)	9		33.1	3	38	9
350	93	2000S	50	6	13	0.2 + 0.1 (3.2)	27 (0.4)	4		3.6	3	14	33

351 219 350L 50 6 21 0.9 + 0.3 (11.8) 85 (2.7) 4 14.5 3 14 33

360 93 2000S 50 6 17 0.3 + 0.1 (4.1) 36 (0.5) 4 4.6 3 14 33

361 219 360L 50 6 21 0.9 + 0.4 (11.9) 86 (2.7) 4 14.6 3 14 33

370 10 2000S 43 6 16 0.0 + 0.0 (0.4) 35 (0.1) 4 0.5 3 14 33

371 257 370L 43 6 16 0.8 + 0.4 (10.4) 82 (3.1) 4 13.5 3 14 33

380 131 2000 17 6 13 0.4 + 0.1 (4.2) 32 (0.6) 1 4.8 3 9 33

401 344 1925 64 5 29 1.9 + 0.9 (25.9) 94 (6.8) 6 32.7 4 16 33

402 141 2000 17 5 15 0.5 + 0.1 (5.4) 67 (2.0) 2 7.4 4 8 16 16 33

403 524 2000 64 5 22 2.2 + 0.9 (29.1) 92 (10.1) 8 39.2 4 8 16 16
33

404 419 2000 52 5 19 1.7 + 0.5 (20.4) 82 (7.2) 6 27.6 4 8 16 16
33

450 445 2000S 64 7 12 0.8 + 0.7 (13.7) 33 (2.1) 6 15.9 4 38 3

451 159 450L 64 6 25 0.9 + 0.2 (10.1) 107 (2.5) 6 12.6 4 38 3

460 451 2000S 65 6 12 0.8 + 0.7 (13.7) 34 (2.2) 6 15.9 4 38 3

461 159 460L 65 6 23 0.8 + 0.2 (9.2) 105 (2.4) 6 11.7 4 38 3

470 511 2000S 63 7 12 0.9 + 0.7 (15.3) 30 (2.3) 4 17.5 4 38 3

471 79 470L 63 7 15 0.2 + 0.1 (3.1) 84 (1.0) 4 4.1 4 38 3

501 229 1825 32 15 17 0.9 + 0.2 (10.2) 70 (3.4) 3 13.6 5 35 59

502 338 1900 46 15 19 1.4 + 0.4 (16.5) 74 (5.3) 5 21.8 5 35 59

503 480 1900 65 15 23 2.1 + 0.9 (28.1) 85 (8.5) 8 36.7 5 35 59

550 197 2025S 54 11 10 0.3 + 0.2 (5.2) 29 (0.8) 7 6.0 5 0 30

551 335 550L 54 11 14 0.9 + 0.4 (12.1) 88 (4.3) 7 16.4 5 0 30

560 391 2025S 63 11 14 0.9 + 0.5 (13.7) 38 (2.1) 7 15.8 5 0 30

561 228 560L 63 11 14 0.6 + 0.3 (8.3) 83 (2.8) 7 11.1 5 0 30

.

0 64 SECOND CYCLE 32 STEPS

0 LINK FLOW SAT DEGREE MEAN TIMES --------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START

LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

570 496 2025S 68 11 13 1.0 + 0.8 (16.7) 36 (2.6) 6 19.2 5 0 30

571 168 570L 68 11 14 0.4 + 0.3 (6.2) 81 (2.0) 6 8.2 5 0 30

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1546.8 99.9 15.5 43.5 21.6 (605.3) + (166.1) + (0.0) = 771.4 TOTALS

0**

0 CRUISE DELAY STOPS TOTALS

LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR

0FUEL CONSUMPTION PREDICTIONS 83.6 + 74.8 + 115.8 = 274.2

0

NO. OF ENTRIES TO SUBPT = 13

NO. OF LINKS RECALCULATED= 373

PROGRAM TRANSYT FINISHED

1 T R A N S Y T
~~~~~~~~~~~~~~
TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "AM_2017_DM.DAT" at 10:16 on 21/01/15
02017 AM DM

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~
0CARD CARD
NO. TYPE
(1)= TITLE:- 2017 AM DM
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

5)= 7 260 261 0 0 0 350 351 0 0 0 360 361 0 0 0
6)= 7 370 371 0 0 0 450 451 0 0 0 460 461 0 0 0
7)= 7 470 471 0 0 0 550 551 0 0 0 560 561 0 0 0
8)= 7 570 571 0 0 0 0 0 0 0 0 0 0 0 0 0
0 NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES
CARD CARD NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6
STAGE 7
NO. TYPE NO. CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE
MIN CHANGE MIN CHANGE MIN
9)= 12 1 34 12 59 12 0 0 0 0 0 0 0 0 0 0
10)= 12 2 55 12 23 12 0 0 0 0 0 0 0 0 0 0
11)= 12 3 50 12 23 12 0 0 0 0 0 0 0 0 0 0
12)= 12 5 27 12 0 12 0 0 0 0 0 0 0 0 0 0
13)= 13 4 35 12 60 0 16 12 0 0 0 0 0 0 0 0
0 LINK CARDS: FIXED DATA
FIRST GREEN SECOND GREEN
CARD CARD LINK EXIT START END START END LINK STOP SAT
DELAY DISPSN
NO. TYPE NO. NODE STAGE LAG STAGE LAG STAGE LAG STAGE LAG LENGTH
WT.X100 FLOW WT.X100 X100
14)= 31 101 1 1 5 2 0 0 0 0 0 120 0 1900 0 0
15)= 31 102 1 1 5 2 0 0 0 0 0 120 0 2000 0 0
16)= 31 103 1 1 5 2 0 0 0 0 0 120 0 2000 0 0
17)= 31 150 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
18)= 31 151 0 0 0 0 0 0 0 0 0 60 0 0 0 0
19)= 31 160 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
20)= 31 161 0 0 0 0 0 0 0 0 0 60 0 0 0 0
21)= 31 170 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
22)= 31 201 2 1 5 2 0 0 0 0 0 200 0 1875 0 0
23)= 31 202 2 1 5 2 0 0 0 0 0 200 0 1975 0 0
24)= 31 203 2 1 5 2 0 0 0 0 0 200 0 1975 0 0
25)= 31 250 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
26)= 31 251 0 0 0 0 0 0 0 0 0 110 0 0 0 0
27)= 31 260 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
28)= 31 261 0 0 0 0 0 0 0 0 0 110 0 0 0 0
29)= 31 270 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
30)= 31 301 3 1 0 2 0 0 0 0 0 145 0 1825 0 0
31)= 31 302 3 1 5 2 0 0 0 0 0 145 0 1900 0 0
32)= 31 303 3 1 5 2 0 0 0 0 0 145 0 1900 0 0
33)= 31 350 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
34)= 31 351 0 0 0 0 0 0 0 0 0 70 0 0 0 0
35)= 31 360 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
36)= 31 361 0 0 0 0 0 0 0 0 0 70 0 0 0 0
37)= 31 370 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
38)= 31 371 0 0 0 0 0 0 0 0 0 70 0 0 0 0
39)= 31 380 3 2 0 1 0 0 0 0 0 70 0 2000 0 0
40)= 31 401 4 2 0 3 0 0 0 0 0 70 0 1925 0 0
41)= 31 402 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
42)= 31 403 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
43)= 31 404 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
44)= 31 450 4 3 5 1 0 0 0 0 0 75 0 2000 0 0

45)= 31 461 0 0 0 0 0 0 0 0 0 75 0 0 0 0
46)= 31 460 4 3 5 1 0 0 0 0 0 75 0 2000 0 0
47)= 31 451 0 0 0 0 0 0 0 0 0 75 0 0 0 0
48)= 31 470 4 3 5 1 0 0 0 0 0 75 0 2000 0 0
49)= 31 471 0 0 0 0 0 0 0 0 0 75 0 0 0 0
50)= 31 501 5 1 5 2 0 0 0 0 0 200 0 1825 0 0
51)= 31 502 5 1 5 2 0 0 0 0 0 200 0 1900 0 0
52)= 31 503 5 1 5 2 0 0 0 0 0 200 0 1900 0 0
53)= 31 550 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
54)= 31 561 0 0 0 0 0 0 0 0 0 125 0 0 0 0
55)= 31 560 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
56)= 31 551 0 0 0 0 0 0 0 0 0 125 0 0 0 0
57)= 31 570 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
58)= 31 571 0 0 0 0 0 0 0 0 0 125 0 0 0 0
0 LINK CARDS: FLOW DATA
ENTRY 1 .... ENTRY 2 .... ENTRY 3 .... ENTRY 4 ....
CARD CARD LINK TOTAL UNIFORM LINK CRUISE LINK CRUISE LINK CRUISE
LINK CRUISE
NO. TYPE NO. FLOW FLOW NO. FLOW SPEED NO. FLOW SPEED NO. FLOW
SPEED NO. FLOW SPEED
59)= 32 101 826 0 0 0 48 0 0 0 0 0 0 0 0 0
60)= 32 102 547 0 0 0 48 0 0 0 0 0 0 0 0 0
61)= 32 103 213 0 0 0 48 0 0 0 0 0 0 0 0 0
62)= 32 150 10 0 502 10 40 0 0 0 0 0 0 0 0 0
63)= 32 151 621 0 560 459 40 561 162 48 0 0 0 0 0 0
64)= 32 160 203 0 502 203 40 0 0 0 0 0 0 0 0 0
65)= 32 161 379 0 570 310 40 571 69 48 0 0 0 0 0 0
66)= 32 170 731 0 503 731 40 0 0 0 0 0 0 0 0 0
67)= 32 201 169 0 0 0 48 0 0 0 0 0 0 0 0 0
68)= 32 202 81 0 0 0 48 0 0 0 0 0 0 0 0 0
69)= 32 203 280 0 0 0 48 0 0 0 0 0 0 0 0 0
70)= 32 250 326 0 101 326 40 0 0 0 0 0 0 0 0 0
71)= 32 251 477 0 160 475 40 161 10 48 0 0 0 0 0 0
72)= 32 260 454 0 102 454 40 0 0 0 0 0 0 0 0 0
73)= 32 261 461 0 161 10 40 170 459 48 0 0 0 0 0 0
74)= 32 270 213 0 103 213 40 0 0 0 0 0 0 0 0 0
75)= 32 301 122 0 0 0 48 0 0 0 0 0 0 0 0 0
76)= 32 302 893 0 0 0 48 0 0 0 0 0 0 0 0 0
77)= 32 303 642 0 0 0 48 0 0 0 0 0 0 0 0 0
78)= 32 350 81 0 202 81 40 0 0 0 0 0 0 0 0 0
79)= 32 351 285 0 260 157 40 261 128 48 0 0 0 0 0 0
80)= 32 360 81 0 203 81 40 0 0 0 0 0 0 0 0 0
81)= 32 361 285 0 260 157 40 261 128 48 0 0 0 0 0 0
82)= 32 370 13 0 203 13 40 0 0 0 0 0 0 0 0 0
83)= 32 371 213 0 270 213 40 0 0 0 0 0 0 0 0 0
84)= 32 380 186 0 203 186 40 0 0 0 0 0 0 0 0 0
85)= 32 401 223 0 0 0 48 0 0 0 0 0 0 0 0 0
86)= 32 402 137 0 0 0 48 0 0 0 0 0 0 0 0 0
87)= 32 403 519 0 0 0 48 0 0 0 0 0 0 0 0 0
88)= 32 404 387 0 0 0 48 0 0 0 0 0 0 0 0 0
89)= 32 450 536 0 302 536 40 0 0 0 0 0 0 0 0 0

90)= 32 451 136 0 370 10 40 371 128 48 0 0 0 0 0 0
91)= 32 460 522 0 302 357 40 303 164 48 0 0 0 0 0 0
92)= 32 461 165 0 370 10 40 371 85 48 380 74 48 0 0 0
93)= 32 470 478 0 303 478 40 0 0 0 0 0 0 0 0 0
94)= 32 471 112 0 380 112 40 0 0 0 0 0 0 0 0 0
95)= 32 501 244 0 0 0 48 0 0 0 0 0 0 0 0 0
96)= 32 502 339 0 0 0 48 0 0 0 0 0 0 0 0 0
97)= 32 503 595 0 0 0 48 0 0 0 0 0 0 0 0 0
98)= 32 550 191 0 402 191 40 0 0 0 0 0 0 0 0 0
99)= 32 551 381 0 460 288 40 461 93 48 0 0 0 0 0 0
100)= 32 560 388 0 403 388 40 0 0 0 0 0 0 0 0 0
101)= 32 561 216 0 470 216 40 0 0 0 0 0 0 0 0 0
102)= 32 570 463 0 404 463 40 0 0 0 0 0 0 0 0 0
103)= 32 571 139 0 470 139 40 0 0 0 0 0 0 0 0 0
0 LINK DATA: QUEUE CONSTRAINTS
CARD CARD LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT
QUEUE LINK LIMIT QUEUE
NO. TYPE NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO.
QUEUE WEIGHT NO. QUEUE WEIGHT
104)= 38 150 10 5000 151 10 5000 160 10 5000 161 10 5000 170 10
5000
105)= 38 250 19 5000 251 19 5000 260 19 5000 261 19 5000 270 19
5000
106)= 38 350 12 5000 351 12 5000 360 12 5000 361 12 5000 370 12
5000
107)= 38 371 12 5000 380 12 5000 450 13 5000 451 13 5000 460 13
5000
108)= 38 461 13 5000 470 13 5000 471 13 5000 550 13 5000 551 13
5000
109)= 38 560 13 5000 561 13 5000 570 13 5000 571 13 5000 0 0
0
0LINK 251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 230 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0 64 SECOND CYCLE 32 STEPS
0INITIAL SETTINGS
- (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

1 2 34 59
2 2 55 23
3 2 50 23
4 3 35 60 16
5 2 27 0
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 826 1900 132 9 489 8.8 +103.3 (999.9) 270 (46.7) 122 + 1089.4 1 39
59
102 547 2000 83 9 36 3.0 + 2.4 (50.4) 108 (12.5) 11 62.8 1 39 59
103 213 2000 32 9 20 1.0 + 0.2 (11.1) 75 (3.4) 3 14.5 1 39 59
150 10 2000S 54 5 22 0.0 + 0.0 (0.6) 93 (0.1) 8 (0.0)* 0.7 1 0 34
151 585< 150L 54 5 4 0.1 + 0.6 (6.3) 18 (1.6) 8 (0.0)* 7.9 1 0 34
160 203 2000S 52 5 23 1.1 + 0.2 (12.1) 99 (2.9) 4 (0.0)* 15.1 1 0 34
161 364< 160L 52 5 4 0.0 + 0.3 (3.3) 5 (0.3) 4 (0.0)* 3.6 1 0 34
170 731 2000 67 5 31 5.4 + 1.0 (59.1) 107 (11.5) 14 (1.6)* 151.8 1 0 34
201 169 1875 21 15 14 0.5 + 0.1 (6.1) 60 (2.1) 2 8.2 2 60 23
202 81 1975 9 15 13 0.2 + 0.1 (2.7) 56 (1.0) 1 3.7 2 60 23
203 280 1975 32 15 15 0.9 + 0.2 (10.8) 63 (3.7) 3 14.5 2 60 23
250 246< 2000S 82 10 33 1.5 + 0.8 (21.0) 66 (3.1) 14 (0.0)* 24.1 2 28 55
251 476 250L 82 10 38 3.5 + 1.5 (46.6) 117 (8.1) 14 (0.0)* 54.8 2 28 55
260 454 2000S 105 10 134 2.9 + 14.0 (156.9) 195 (12.9) 44 (9.7)* 654.1 2 28
55
261 461 260L 105 8 135 3.1 + 14.2 (161.0) 216 (14.5) 44 (9.7)* 659.7 2 28
55
270 213 2000 24 10 13 0.6 + 0.2 (6.9) 37 (1.1) 1 (0.0)* 8.1 2 28 55
301 122 1825 11 11 8 0.2 + 0.1 (2.4) 40 (1.0) 1 3.4 3 50 23
302 893 1900 91 11 33 3.5 + 4.7 (75.9) 109 (20.3) 19 96.3 3 55 23
303 642 1900 66 11 17 2.0 + 0.9 (27.6) 73 (9.9) 9 37.5 3 55 23
350 81 2000S 49 6 29 0.5 + 0.1 (6.1) 105 (1.2) 4 (0.0)* 7.3 3 28 50
351 271< 350L 49 6 19 1.0 + 0.4 (13.0) 43 (1.8) 4 (0.0)* 14.7 3 28 50
360 81 2000S 49 6 28 0.5 + 0.1 (5.9) 105 (1.2) 4 (0.0)* 7.1 3 28 50
361 271< 360L 49 6 19 1.0 + 0.4 (13.0) 43 (1.8) 4 (0.0)* 14.8 3 28 50
370 13 2000S 31 6 27 0.1 + 0.0 (0.9) 102 (0.2) 3 (0.0)* 1.1 3 28 50
371 213 370L 31 6 28 1.5 + 0.2 (15.6) 72 (2.2) 3 (0.0)* 17.9 3 28 50
380 186 2000 21 6 19 0.9 + 0.1 (9.3) 98 (2.6) 3 (0.0)* 12.0 3 23 50
401 223 1925 35 5 21 1.0 + 0.3 (12.0) 76 (3.6) 3 15.5 4 60 16
402 137 2000 11 5 6 0.2 + 0.1 (2.1) 37 (1.1) 1 3.2 4 40 60 60 16
403 519 2000 41 5 8 0.8 + 0.3 (10.7) 48 (5.2) 5 15.9 4 40 60 60
16
404 387 2000 30 5 7 0.6 + 0.2 (7.2) 44 (3.6) 3 10.7 4 40 60 60 16
450 536 2000S 143 7 587 5.2 + 82.2 (813.4) 259 (20.3) 118 (9.3)* 1299.5 4
21 35
451 136 450L 143 6 603 1.9 + 20.8 (211.9) 297 (5.9) 118 (9.3)* 683.6 4 21
35
460 522 2000S 146 6 614 5.2 + 83.9 (828.2) 257 (19.5) 126 (10.0)* 1348.1 4
21 35
461 165 460L 146 6 631 2.4 + 26.5 (269.0) 295 (7.1) 126 (10.0)* 776.5 4 21
35
470 478 2000S 126 7 411 3.7 + 50.8 (506.9) 268 (18.7) 75 (7.1)* 880.2 4 21
35
471 112 470L 126 7 432 1.5 + 11.9 (125.1) 276 (4.5) 75 (7.1)* 484.2 4 21
35

```
  501    244   1825    26    15    11    0.6 +  0.2  (  7.1)     54  (  2.8)      3            9.9     5     32   0
  502    339   1900    35    15    12    0.9 +  0.3  ( 10.5)     57  (  4.1)      4           14.6     5     32   0
  503    595   1900    61    15    16    1.8 +  0.8  ( 24.0)     70  (  8.7)      8           32.7     5     32   0
  550    191   2025S   62    11    24    0.9 +  0.3  ( 11.8)     92  (  2.6)      8  ( 0.0)*     14.4     5     5  27
  551    261<   550L   62    11    40    2.5 +  0.5  ( 27.3)     75  (  4.2)      8  ( 0.0)*     31.5     5     5  27
  560    388   2025S   76    11    27    1.8 +  1.1  ( 26.8)    101  (  5.7)     11  ( 0.0)*     32.5     5     5  27
  561    168<   560L   76    11    42    1.5 +  0.5  ( 18.1)     90  (  2.8)     11  ( 0.0)*     20.9     5     5  27
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF    PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)    ($/H)
(SECONDS)

  570    463   2025S   78    11    27    2.1 +  1.4  ( 32.6)    102  (  6.9)     11  ( 0.0)*     39.5     5     5  27
  571    108<   570L   78    11    42    0.9 +  0.3  ( 11.6)     91  (  1.8)     11  ( 0.0)*     13.4     5     5  27
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT    OF         OF        EXCESS      INDEX
                                       DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)     (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1638.4       544.7       3.0        79.3    428.6    (4723.5) + (  297.0)  +  (3691.4)   =    8711.9     TOTALS
0*******************************************************************************
**************************************************
0                          CRUISE             DELAY             STOPS            TOTALS
                        LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       88.5        +     584.1        +     207.0        =     879.5
0
 NO. OF ENTRIES TO SUBPT  =    1
 NO. OF LINKS RECALCULATED=   45
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9
  - (SECONDS)

    1      2      6     31
    2      2     55     23
    3      2     59     32
    4      3     35     60     16
    5      2      9     46
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT    OF         OF        EXCESS      INDEX
```

```
                                  DELAY   DELAY    STOPS     QUEUES
 (PCU-KM/H)   (PCU-H/H)  (KM/H)   (PCU-H/H)(PCU-H/H)  ($/H)    ($/H)     ($/H)    ($/H)
0  1638.4      528.2      3.1       62.9   428.4   (4569.2) + (  293.0)  +  (2960.3)  =   7822.5    TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   16
 NO. OF LINKS RECALCULATED=  378
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9  25
  - (SECONDS)

    1     2     6     31
    2     2     55     23
    3     2     59     32
    4     3     35     60     16
    5     2     9     46
0  TOTAL       TOTAL     MEAN      TOTAL   TOTAL   TOTAL     TOTAL     PENALTY     TOTAL
  DISTANCE      TIME   JOURNEY     UNIFORM  RANDOM+   COST      COST       FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED      DELAY  OVERSAT    OF       OF       EXCESS     INDEX
                                  DELAY   DELAY    STOPS     QUEUES
 (PCU-KM/H)   (PCU-H/H)  (KM/H)   (PCU-H/H)(PCU-H/H)  ($/H)    ($/H)     ($/H)    ($/H)
0  1638.4      528.2      3.1       62.9   428.4   (4569.2) + (  293.0)  +  (2960.3)  =   7822.5    TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  303
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9  25  -1
  - (SECONDS)

    1     2     62     31
    2     2     4     24
    3     2     60     34
    4     3     47     60     11
    5     2     18     46
0  TOTAL       TOTAL     MEAN      TOTAL   TOTAL   TOTAL     TOTAL     PENALTY     TOTAL
  DISTANCE      TIME   JOURNEY     UNIFORM  RANDOM+   COST      COST       FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED      DELAY  OVERSAT    OF       OF       EXCESS     INDEX
                                  DELAY   DELAY    STOPS     QUEUES
 (PCU-KM/H)   (PCU-H/H)  (KM/H)   (PCU-H/H)(PCU-H/H)  ($/H)    ($/H)     ($/H)    ($/H)
0  1638.4      121.0      13.5      49.8    34.3   ( 782.7) + (  207.8)  +  (  69.1)  =   1059.6    TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   70
 NO. OF LINKS RECALCULATED= 1290
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9  25  -1   9
  - (SECONDS)
```

```
    1     2    62    31
    2     2     4    24
    3     2    60    34
    4     3    47    60    11
    5     2    18    46
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF         OF        EXCESS      INDEX
                                        DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1638.4       121.0      13.5       49.8     34.3    ( 782.7) + (  207.8)  +  (  69.1)   =    1059.6     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  317
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25
  - (SECONDS)

    1     2    37     6
    2     2     4    24
    3     2    60    34
    4     3    47    60    11
    5     2    18    46
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF         OF        EXCESS      INDEX
                                        DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1638.4       121.1      13.5       49.9     34.3    ( 783.5) + (  202.5)  +  (  56.9)   =    1042.9     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   12
 NO. OF LINKS RECALCULATED=  346
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1
  - (SECONDS)

    1     2    38     7
    2     2     4    24
    3     2    62    36
    4     3    49    62    13
    5     2    18    46
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF         OF        EXCESS      INDEX
                                        DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
```

```
0  1638.4      120.7     13.6      49.5    34.3   ( 779.8) + (  201.9)  +  (  45.4)   =    1027.1     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   13
 NO. OF LINKS RECALCULATED=  347
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1  -1
  - (SECONDS)

    1     2    38     7
    2     2     6    24
    3     2    61    37
    4     3    49    62    11
    5     2    16    47
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                                      DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1638.4      119.0     13.8      49.0    33.1   ( 764.0) + (  199.6)  +  (  50.1)   =    1013.7     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   27
 NO. OF LINKS RECALCULATED=  665
.
0    64 SECOND CYCLE  32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :-    9  25  -1   9  25   1  -1   1
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
   NO   OF STAGES   1      2      3      4      5      6      7

    1     2    36     5
    2     2     6    24
    3     2    62    38
    4     3    49    62    11
    5     2    16    47
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                             DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  101    826   1900    96    9    52    3.9 +  8.1  (111.3)    135  ( 23.5)     22    +      134.7     1    41   5
  102    547   2000    60    9    18    2.0 +  0.8  ( 25.6)     75  (  8.6)      8            34.3     1    41   5
  103    213   2000    24    9    13    0.6 +  0.2  (  7.3)     59  (  2.7)      2            10.0     1    41   5
  150     10   2000S   75    5    18    0.0 +  0.0  (  0.5)     57  (  0.1)     13  ( 0.4)*     21.1     1    10  36
```

151 621 150L 75 5 21 2.2 + 1.4 (33.5) 107 (9.7) 13 (0.4)* 63.8 1 10 36
160 203 2000S 69 5 15 0.5 + 0.4 (7.9) 38 (1.1) 9 (0.0)* 9.1 1 10 36
161 379 160L 69 5 17 1.1 + 0.7 (16.7) 98 (5.4) 9 (0.0)* 22.1 1 10 36
170 731 2000 87 5 35 3.9 + 3.1 (65.2) 78 (8.3) 10 (0.0)* 73.5 1 10 36
201 169 1875 41 15 29 1.0 + 0.3 (12.6) 90 (3.2) 3 15.8 2 11 24
202 81 1975 19 15 25 0.5 + 0.1 (5.3) 84 (1.4) 1 6.8 2 11 24
203 280 1975 65 15 34 1.8 + 0.9 (24.9) 102 (6.0) 5 30.9 2 11 24
250 325 2000S 61 10 9 0.5 + 0.3 (7.8) 36 (1.7) 10 (0.0)* 9.5 2 29 6
251 477 250L 61 10 8 0.6 + 0.5 (9.8) 56 (3.9) 10 (0.0)* 13.7 2 29 6
260 454 2000S 70 10 7 0.4 + 0.6 (8.8) 23 (1.5) 10 (0.0)* 10.3 2 29 6
261 461 260L 70 8 12 0.9 + 0.6 (14.1) 84 (5.6) 10 (0.0)* 19.8 2 29 6
270 213 2000 16 10 4 0.2 + 0.1 (2.3) 18 (0.6) 1 (0.0)* 2.9 2 29 6
301 122 1825 10 11 6 0.2 + 0.1 (2.0) 35 (0.9) 1 2.9 3 62 38
302 893 1900 84 11 22 2.9 + 2.5 (49.6) 87 (16.4) 15 66.0 3 3 38
303 642 1900 60 11 13 1.6 + 0.7 (22.3) 65 (8.7) 8 31.0 3 3 38
350 81 2000S 59 6 35 0.6 + 0.2 (7.3) 111 (1.3) 6 (0.0)* 8.6 3 43 62
351 285 350L 59 6 22 1.2 + 0.5 (16.0) 81 (3.4) 6 (0.0)* 19.4 3 43 62
360 81 2000S 59 6 32 0.6 + 0.2 (6.8) 111 (1.3) 6 (0.0)* 8.1 3 43 62
361 285 360L 59 6 22 1.2 + 0.5 (16.0) 81 (3.4) 6 (0.0)* 19.4 3 43 62
370 13 2000S 36 6 28 0.1 + 0.0 (0.9) 106 (0.2) 2 (0.0)* 1.1 3 43 62
371 213 370L 36 6 18 0.8 + 0.3 (9.9) 51 (1.6) 2 (0.0)* 11.5 3 43 62
380 186 2000 24 6 23 1.0 + 0.2 (11.0) 104 (2.8) 3 (0.0)* 13.8 3 38 62
401 223 1925 53 5 31 1.4 + 0.6 (18.0) 96 (4.5) 4 22.5 4 62 11
402 137 2000 20 5 18 0.6 + 0.1 (6.4) 75 (2.2) 2 8.6 4 54 62 62 11
403 519 2000 75 5 29 2.7 + 1.5 (39.0) 112 (12.2) 10 51.3 4 54 62 62
11
404 387 2000 56 5 23 1.8 + 0.6 (23.1) 92 (7.5) 6 30.5 4 54 62 62
11
450 536 2000S 63 7 8 0.4 + 0.7 (10.5) 49 (3.8) 9 (0.0)* 14.3 4 16 49
451 136 450L 63 6 21 0.6 + 0.2 (7.5) 83 (1.6) 9 (0.0)* 9.1 4 16 49
460 522 2000S 65 6 8 0.5 + 0.7 (11.2) 54 (4.1) 8 (0.0)* 15.3 4 16 49
461 165 460L 65 6 15 0.5 + 0.2 (6.6) 54 (1.3) 8 (0.0)* 7.9 4 16 49
470 478 2000S 55 7 7 0.4 + 0.5 (8.3) 52 (3.6) 7 (0.0)* 11.9 4 16 49
471 112 470L 55 7 12 0.3 + 0.1 (3.5) 36 (0.6) 7 (0.0)* 4.1 4 16 49
501 244 1825 32 15 16 0.8 + 0.2 (9.9) 66 (3.4) 3 13.3 5 21 47
502 339 1900 42 15 17 1.2 + 0.4 (14.8) 70 (5.0) 5 19.8 5 21 47
503 595 1900 74 15 24 2.6 + 1.4 (37.1) 89 (11.1) 10 48.2 5 21 47
550 191 2025S 62 11 9 0.2 + 0.3 (4.4) 36 (1.0) 9 (0.0)* 5.4 5 52 16
551 381 550L 62 11 24 1.9 + 0.5 (23.2) 104 (5.8) 9 (0.0)* 29.0 5 52 16
560 388 2025S 66 11 10 0.5 + 0.6 (10.0) 22 (1.2) 6 (0.0)* 11.3 5 52 16
561 216 560L 66 11 25 1.2 + 0.3 (14.0) 105 (3.3) 6 (0.0)* 17.3 5 52 16
.
0 64 SECOND CYCLE 32 STEPS
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END
DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES 1ST 2ND

```
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  570    463   2025S   66    11    9   0.4 +  0.7  ( 10.9)    21  (  1.4)     4  ( 0.0)*     12.3     5    52  16
  571    139   570L   66    11   24   0.7 +  0.2  (  8.5)   101  (  2.1)     4  ( 0.0)*     10.5     5    52  16
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                      DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1638.4       118.8      13.8       48.9     33.1    ( 762.4) + (  199.0)  +  (  41.1)  =    1002.5     TOTALS
0*****************************************************************************
*************************************************
0                         CRUISE            DELAY            STOPS           TOTALS
                     LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       88.5       +      94.3       +     138.7       =     321.5
0
 NO. OF ENTRIES TO SUBPT  =   13
 NO. OF LINKS RECALCULATED=  361

 PROGRAM TRANSYT FINISHED
```

1 T R A N S Y T
~~~~~~~~~~~~~

TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "AM_2017_DS.DAT" at 10:20 on 21/01/15
02017 AM DS

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~
0CARD CARD
NO. TYPE
(1)= TITLE:- 2017 AM DS
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET......................... SECOND SET........................ THIRD SET.........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

5)=	7	260	261	0	0	0	350	351	0	0	0	360	361	0	0	0
6)=	7	370	371	0	0	0	450	451	0	0	0	460	461	0	0	0
7)=	7	470	471	0	0	0	550	551	0	0	0	560	561	0	0	0
8)=	7	570	571	0	0	0	0	0	0	0	0	0	0	0	0	0

0 NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES

CARD CARD NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6
STAGE 7
NO. TYPE NO. CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE
MIN CHANGE MIN CHANGE MIN

9)=	12	1	34	12	59	12	0	0	0	0	0	0	0	0	0	0
10)=	12	2	55	12	23	12	0	0	0	0	0	0	0	0	0	0
11)=	12	3	50	12	23	12	0	0	0	0	0	0	0	0	0	0
12)=	12	5	27	12	0	12	0	0	0	0	0	0	0	0	0	0
13)=	13	4	35	12	60	0	16	12	0	0	0	0	0	0	0	0

0 LINK CARDS: FIXED DATA

FIRST GREEN SECOND GREEN
CARD CARD LINK EXIT START END START END LINK STOP SAT
DELAY DISPSN
NO. TYPE NO. NODE STAGE LAG STAGE LAG STAGE LAG STAGE LAG LENGTH
WT.X100 FLOW WT.X100 X100

14)=	31	101	1	1	5	2	0	0	0	0	0	120	0	1900	0	0
15)=	31	102	1	1	5	2	0	0	0	0	0	120	0	2000	0	0
16)=	31	103	1	1	5	2	0	0	0	0	0	120	0	2000	0	0
17)=	31	150	1	2	5	1	0	0	0	0	0	60	0	2000	0	0
18)=	31	151	0	0	0	0	0	0	0	0	0	60	0	0	0	0
19)=	31	160	1	2	5	1	0	0	0	0	0	60	0	2000	0	0
20)=	31	161	0	0	0	0	0	0	0	0	0	60	0	0	0	0
21)=	31	170	1	2	5	1	0	0	0	0	0	60	0	2000	0	0
22)=	31	201	2	1	5	2	0	0	0	0	0	200	0	1875	0	0
23)=	31	202	2	1	5	2	0	0	0	0	0	200	0	1975	0	0
24)=	31	203	2	1	5	2	0	0	0	0	0	200	0	1975	0	0
25)=	31	250	2	2	5	1	0	0	0	0	0	110	0	2000	0	0
26)=	31	251	0	0	0	0	0	0	0	0	0	110	0	0	0	0
27)=	31	260	2	2	5	1	0	0	0	0	0	110	0	2000	0	0
28)=	31	261	0	0	0	0	0	0	0	0	0	110	0	0	0	0
29)=	31	270	2	2	5	1	0	0	0	0	0	110	0	2000	0	0
30)=	31	301	3	1	0	2	0	0	0	0	0	145	0	1825	0	0
31)=	31	302	3	1	5	2	0	0	0	0	0	145	0	1900	0	0
32)=	31	303	3	1	5	2	0	0	0	0	0	145	0	1900	0	0
33)=	31	350	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
34)=	31	351	0	0	0	0	0	0	0	0	0	70	0	0	0	0
35)=	31	360	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
36)=	31	361	0	0	0	0	0	0	0	0	0	70	0	0	0	0
37)=	31	370	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
38)=	31	371	0	0	0	0	0	0	0	0	0	70	0	0	0	0
39)=	31	380	3	2	0	1	0	0	0	0	0	70	0	2000	0	0
40)=	31	401	4	2	0	3	0	0	0	0	0	70	0	1925	0	0
41)=	31	402	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
42)=	31	403	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
43)=	31	404	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
44)=	31	450	4	3	5	1	0	0	0	0	0	75	0	2000	0	0

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 45)=  31    461     0     0     0     0     0     0     0     0     0    75     0     0     0     0
 46)=  31    460     4     3     5     1     0     0     0     0     0    75     0  2000     0     0
 47)=  31    451     0     0     0     0     0     0     0     0     0    75     0     0     0     0
 48)=  31    470     4     3     5     1     0     0     0     0     0    75     0  2000     0     0
 49)=  31    471     0     0     0     0     0     0     0     0     0    75     0     0     0     0
 50)=  31    501     5     1     5     2     0     0     0     0     0   200     0  1825     0     0
 51)=  31    502     5     1     5     2     0     0     0     0     0   200     0  1900     0     0
 52)=  31    503     5     1     5     2     0     0     0     0     0   200     0  1900     0     0
 53)=  31    550     5     2     5     1     0     0     0     0     0   125     0  2025     0     0
 54)=  31    561     0     0     0     0     0     0     0     0     0   125     0     0     0     0
 55)=  31    560     5     2     5     1     0     0     0     0     0   125     0  2025     0     0
 56)=  31    551     0     0     0     0     0     0     0     0     0   125     0     0     0     0
 57)=  31    570     5     2     5     1     0     0     0     0     0   125     0  2025     0     0
 58)=  31    571     0     0     0     0     0     0     0     0     0   125     0     0     0     0
0                              LINK CARDS:    FLOW DATA
                         ENTRY 1 ...........    ENTRY 2 ...........    ENTRY 3 ...........    ENTRY 4 ...........
 CARD   CARD   LINK   TOTAL  UNIFORM   LINK        CRUISE    LINK        CRUISE    LINK        CRUISE
LINK        CRUISE
 NO.   TYPE    NO.    FLOW    FLOW     NO.    FLOW   SPEED     NO.    FLOW   SPEED     NO.    FLOW
SPEED    NO.    FLOW   SPEED
 59)=  32    101    780     0     0     0    48     0     0     0     0     0     0     0     0     0
 60)=  32    102    593     0     0     0    48     0     0     0     0     0     0     0     0     0
 61)=  32    103    213     0     0     0    48     0     0     0     0     0     0     0     0     0
 62)=  32    150     10     0   502    10    40     0     0     0     0     0     0     0     0     0
 63)=  32    151    621     0   560   459    40   561   162    48     0     0     0     0     0     0
 64)=  32    160    178     0   502   178    40     0     0     0     0     0     0     0     0     0
 65)=  32    161    377     0   570   308    40   571    69    48     0     0     0     0     0     0
 66)=  32    170    756     0   503   756    40     0     0     0     0     0     0     0     0     0
 67)=  32    201    157     0     0     0    48     0     0     0     0     0     0     0     0     0
 68)=  32    202     87     0     0     0    48     0     0     0     0     0     0     0     0     0
 69)=  32    203    286     0     0     0    48     0     0     0     0     0     0     0     0     0
 70)=  32    250    261     0   101   261    40     0     0     0     0     0     0     0     0     0
 71)=  32    251    417     0   160   415    40   161    10    48     0     0     0     0     0     0
 72)=  32    260    518     0   102   518    40     0     0     0     0     0     0     0     0     0
 73)=  32    261    520     0   161    10    40   170   519    48     0     0     0     0     0     0
 74)=  32    270    213     0   103   213    40     0     0     0     0     0     0     0     0     0
 75)=  32    301     68     0     0     0    48     0     0     0     0     0     0     0     0     0
 76)=  32    302    807     0     0     0    48     0     0     0     0     0     0     0     0     0
 77)=  32    303    642     0     0     0    48     0     0     0     0     0     0     0     0     0
 78)=  32    350     87     0   202    87    40     0     0     0     0     0     0     0     0     0
 79)=  32    351    374     0   260   203    40   261   171    48     0     0     0     0     0     0
 80)=  32    360     87     0   203    87    40     0     0     0     0     0     0     0     0     0
 81)=  32    361    374     0   260   203    40   261   171    48     0     0     0     0     0     0
 82)=  32    370     13     0   203    13    40     0     0     0     0     0     0     0     0     0
 83)=  32    371    213     0   270   213    40     0     0     0     0     0     0     0     0     0
 84)=  32    380    186     0   203   186    40     0     0     0     0     0     0     0     0     0
 85)=  32    401    309     0     0     0    48     0     0     0     0     0     0     0     0     0
 86)=  32    402    136     0     0     0    48     0     0     0     0     0     0     0     0     0
 87)=  32    403    519     0     0     0    48     0     0     0     0     0     0     0     0     0
 88)=  32    404    385     0     0     0    48     0     0     0     0     0     0     0     0     0
 89)=  32    450    484     0   302   484    40     0     0     0     0     0     0     0     0     0
```

90)= 32 451 136 0 370 10 40 371 128 48 0 0 0 0 0 0
91)= 32 460 487 0 302 323 40 303 164 48 0 0 0 0 0 0
92)= 32 461 165 0 370 10 40 371 85 48 380 74 48 0 0 0
93)= 32 470 478 0 303 478 40 0 0 0 0 0 0 0 0 0
94)= 32 471 112 0 380 112 40 0 0 0 0 0 0 0 0 0
95)= 32 501 244 0 0 0 48 0 0 0 0 0 0 0 0 0
96)= 32 502 297 0 0 0 48 0 0 0 0 0 0 0 0 0
97)= 32 503 638 0 0 0 48 0 0 0 0 0 0 0 0 0
98)= 32 550 190 0 402 190 40 0 0 0 0 0 0 0 0 0
99)= 32 551 381 0 460 288 40 461 93 48 0 0 0 0 0 0
100)= 32 560 388 0 403 388 40 0 0 0 0 0 0 0 0 0
101)= 32 561 216 0 470 216 40 0 0 0 0 0 0 0 0 0
102)= 32 570 461 0 404 461 40 0 0 0 0 0 0 0 0 0
103)= 32 571 139 0 470 139 40 0 0 0 0 0 0 0 0 0
0 LINK DATA: QUEUE CONSTRAINTS
CARD CARD LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT QUEUE
NO. TYPE NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO. QUEUE WEIGHT
104)= 38 150 10 5000 151 10 5000 160 10 5000 161 10 5000 170 10 5000
105)= 38 250 19 5000 251 19 5000 260 19 5000 261 19 5000 270 19 5000
106)= 38 350 12 5000 351 12 5000 360 12 5000 361 12 5000 370 12 5000
107)= 38 371 12 5000 380 12 5000 450 13 5000 451 13 5000 460 13 5000
108)= 38 461 13 5000 470 13 5000 471 13 5000 550 13 5000 551 13 5000
109)= 38 560 13 5000 561 13 5000 570 13 5000 571 13 5000 0 0 0
0LINK 251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 228 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0 64 SECOND CYCLE 32 STEPS
0INITIAL SETTINGS
- (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

1 2 34 59
2 2 55 23
3 2 50 23
4 3 35 60 16
5 2 27 0
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 780 1900 125 9 407 7.6 + 80.7 (821.1) 269 (44.1) 97 + 865.1 1 39
59
102 593 2000 90 9 46 3.4 + 4.1 (70.0) 124 (15.4) 14 85.4 1 39 59
103 213 2000 32 9 20 1.0 + 0.2 (11.1) 75 (3.4) 3 14.5 1 39 59
150 10 2000S 54 5 22 0.1 + 0.0 (0.6) 93 (0.1) 8 (0.0)* 0.7 1 0 34
151 585< 150L 54 5 4 0.1 + 0.6 (6.3) 18 (1.6) 8 (0.0)* 7.9 1 0 34
160 178 2000S 49 5 23 1.0 + 0.2 (10.5) 98 (2.5) 4 (0.0)* 13.1 1 0 34
161 362< 160L 49 5 3 0.0 + 0.3 (3.2) 5 (0.3) 4 (0.0)* 3.4 1 0 34
170 755 2000 69 5 32 5.5 + 1.1 (61.8) 108 (11.9) 15 (2.0)* 175.8 1 0 34
201 157 1875 19 15 14 0.5 + 0.1 (5.6) 60 (2.0) 2 7.6 2 60 23
202 87 1975 10 15 13 0.3 + 0.1 (2.9) 56 (1.0) 1 3.9 2 60 23
203 286 1975 33 15 15 0.9 + 0.2 (11.1) 64 (3.8) 3 14.9 2 60 23
250 208< 2000S 71 10 28 1.2 + 0.4 (15.3) 64 (2.4) 11 (0.0)* 17.7 2 28 55
251 417 250L 71 10 32 2.9 + 0.8 (34.7) 111 (6.7) 11 (0.0)* 41.4 2 28 55
260 518 2000S 118 10 318 3.8 + 42.0 (426.2) 248 (18.7) 104 (12.3)* 1061.2 2
28 55
261 519 260L 118 8 318 3.9 + 42.0 (426.7) 279 (21.1) 104 (12.3)* 1064.1 2
28 55
270 213 2000 24 10 13 0.6 + 0.2 (6.9) 37 (1.1) 1 (0.0)* 8.1 2 28 55
301 68 1825 6 11 7 0.1 + 0.0 (1.3) 40 (0.6) 1 1.9 3 50 23
302 807 1900 82 11 23 2.9 + 2.3 (48.3) 90 (15.3) 14 63.6 3 55 23
303 642 1900 66 11 17 2.0 + 0.9 (27.6) 73 (9.9) 9 37.5 3 55 23
350 87 2000S 55 6 30 0.6 + 0.1 (6.8) 107 (1.4) 4 (0.0)* 8.1 3 28 50
351 310< 350L 55 6 19 1.1 + 0.5 (14.9) 38 (2.1) 4 (0.0)* 17.0 3 28 50
360 87 2000S 55 6 29 0.6 + 0.1 (6.5) 107 (1.4) 4 (0.0)* 7.9 3 28 50
361 310< 360L 55 6 19 1.1 + 0.5 (14.9) 38 (2.1) 4 (0.0)* 17.0 3 28 50
370 13 2000S 31 6 28 0.1 + 0.0 (0.9) 104 (0.2) 3 (0.0)* 1.1 3 28 50
371 213 370L 31 6 28 1.5 + 0.2 (15.6) 72 (2.2) 3 (0.0)* 17.9 3 28 50
380 186 2000 21 6 19 0.9 + 0.1 (9.3) 98 (2.6) 3 (0.0)* 11.9 3 23 50
401 309 1925 49 5 23 1.5 + 0.5 (18.2) 82 (5.3) 5 23.5 4 60 16
402 136 2000 11 5 6 0.2 + 0.1 (2.1) 37 (1.1) 1 3.2 4 40 60 60 16
403 519 2000 41 5 8 0.8 + 0.3 (10.7) 48 (5.2) 5 15.9 4 40 60 60
16
404 385 2000 30 5 7 0.6 + 0.2 (7.1) 44 (3.6) 3 10.7 4 40 60 60 16
450 484 2000S 132 7 480 3.8 + 60.7 (600.2) 263 (18.6) 91 (7.6)* 998.6 4 21
35
451 136 450L 132 6 501 1.9 + 17.1 (175.9) 293 (5.8) 91 (7.6)* 561.6 4 21
35
460 487 2000S 139 6 548 4.3 + 69.8 (689.7) 263 (18.7) 108 (8.8)* 1147.1 4
21 35
461 165 460L 139 6 566 2.3 + 23.7 (241.3) 285 (6.9) 108 (8.8)* 686.9 4 21
35
470 478 2000S 126 7 410 3.7 + 50.8 (506.9) 268 (18.7) 75 (7.1)* 880.1 4 21
35
471 112 470L 126 7 432 1.5 + 11.9 (125.0) 276 (4.5) 75 (7.1)* 484.1 4 21
35

```
  501    244  1825    26    15    11    0.6 +  0.2  (  7.1)    54  (  2.8)      3             9.9     5    32   0
  502    297  1900    30    15    12    0.7 +  0.2  (  8.9)    55  (  3.4)      3            12.3     5    32   0
  503    638  1900    65    15    17    2.0 +  0.9  ( 27.3)    73  (  9.7)      9            37.0     5    32   0
  550    190  2025S   64    11    25    0.9 +  0.4  ( 12.1)    93  (  2.6)      9  ( 0.0)*     14.6     5     5  27
  551    273<  550L   64    11    41    2.6 +  0.5  ( 28.9)    79  (  4.4)      9  ( 0.0)*     33.3     5     5  27
  560    388  2025S   76    11    27    1.8 +  1.1  ( 26.8)   101  (  5.7)     11  ( 0.0)*     32.5     5     5  27
  561    168<  560L   76    11    42    1.5 +  0.5  ( 18.1)    90  (  2.8)     11  ( 0.0)*     20.9     5     5  27
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF    PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
     (PCU/H) (PCU/H)  (%)  (SEC) (SEC)   (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)    ($/H)
(SECONDS)

  570    461  2025S   78    11    27    2.1 +  1.4  ( 32.4)   102  (  6.9)     11  ( 0.0)*     39.2     5     5  27
  571    108<  570L   78    11    41    0.9 +  0.3  ( 11.6)    91  (  1.8)     11  ( 0.0)*     13.4     5     5  27
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                   DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)      ($/H)       ($/H)       ($/H)
0  1630.1       532.4       3.1        77.2    418.6    (4610.4) + (  302.3)  +  (3680.9)   =    8593.6     TOTALS
0**************************************************************************************
**************************************************
0                        CRUISE            DELAY            STOPS           TOTALS
                      LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       88.1       +     570.1       +     210.7       =     868.9
0
 NO. OF ENTRIES TO SUBPT  =    1
 NO. OF LINKS RECALCULATED=   45
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9
  - (SECONDS)

    1      2      6     31
    2      2     55     23
    3      2      4     41
    4      3     44      5     25
    5      2      9     46
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
```

DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1630.1 514.7 3.2 59.6 418.5 (4446.2) + (296.5) + (3100.0) = 7842.7 TOTALS
0
NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 400
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25
- (SECONDS)

```
1  2  31  56
2  2  55  23
3  2   4  41
4  3  44   5  25
5  2   9  46
```

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1630.1 515.3 3.2 60.3 418.4 (4452.0) + (295.0) + (3069.0) = 7815.9 TOTALS
0
NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 297
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1
- (SECONDS)

```
1  2  25  57
2  2   7  25
3  2   7  41
4  3  55   4  21
5  2  10  44
```

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1630.1 123.7 13.2 52.8 34.2 (809.7) + (208.7) + (96.1) = 1114.6 TOTALS
0
NO. OF ENTRIES TO SUBPT = 65
NO. OF LINKS RECALCULATED= 1299
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9
- (SECONDS)

```
    1     2    34     2
    2     2     7    25
    3     2     7    41
    4     3    46    59    12
    5     2    10    44
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                   DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)      ($/H)
0  1630.1       120.2      13.6       49.2    34.4    ( 777.0) + (  197.9)  +  (  51.8)  =    1026.7     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   12
 NO. OF LINKS RECALCULATED=  321
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25
  - (SECONDS)

    1     2    34     2
    2     2     7    25
    3     2     7    41
    4     3    46    59    12
    5     2    10    44
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                   DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)      ($/H)
0  1630.1       120.2      13.6       49.2    34.4    ( 777.0) + (  197.9)  +  (  51.8)  =    1026.7     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  315
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1
  - (SECONDS)

    1     2    31    63
    2     2     6    24
    3     2     1    35
    4     3    47    60    13
    5     2    10    44
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                   DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)      ($/H)
```

```
0  1630.1       119.1      13.7       48.2    34.2   ( 767.1) + (  199.8)  +  (  34.1)   =    1001.0     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   21
 NO. OF LINKS RECALCULATED=  539
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1  -1
  - (SECONDS)

    1      2     31     63
    2      2      6     24
    3      2     63     36
    4      3     47     60     11
    5      2     11     43
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1630.1       117.5      13.9       48.8    32.0   ( 751.6) + (  197.6)  +  (  35.5)   =     984.8     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   25
 NO. OF LINKS RECALCULATED=  629
.
0    64 SECOND CYCLE  32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :-    9  25  -1   9  25   1  -1   1
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
   NO   OF STAGES   1      2      3      4      5      6      7

    1      2     31     63
    2      2      6     24
    3      2     63     36
    4      3     47     60     11
    5      2     10     42
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  101    780   1900    94    9    46    3.7 +  6.1  ( 91.7)    126  ( 20.7)     19           112.4     1    36  63
  102    593   2000    68    9    21    2.4 +  1.0  ( 31.8)     82  ( 10.2)      9            42.0     1    36  63
  103    213   2000    24    9    14    0.7 +  0.2  (  7.7)     62  (  2.8)      3            10.5     1    36  63
  150     10   2000S   72    5    16    0.0 +  0.0  (  0.4)     55  (  0.1)     12  ( 0.3)*     17.1     1     4  31
```

```
  151   621   150L   72    5   19   2.1 +  1.3  ( 31.2)   105  (  9.5)     12  ( 0.3)*     57.3     1     4  31
  160   178   2000S   63    5   13   0.4 +  0.3  (  6.1)    35  (  0.9)     8  ( 0.0)*      7.0     1     4  31
  161   377   160L   63    5   15   0.9 +  0.6  ( 14.2)    91  (  5.0)     8  ( 0.0)*     19.2     1     4  31
  170   755   2000    86    5   32   3.8 +  3.0  ( 63.0)    73  (  8.0)     10  ( 0.0)*     71.0     1     4  31
  201   157   1875    38   15   28   0.9 +  0.3  ( 11.5)    90  (  3.0)     3           14.5     2    11  24
  202    87   1975    20   15   26   0.5 +  0.1  (  5.8)    84  (  1.5)     1           7.3     2    11  24
  203   286   1975    66   15   35   1.8 +  1.0  ( 25.9)   103  (  6.2)     5           32.0     2    11  24
  250   261   2000S   52   10    5   0.1 +  0.2  (  3.2)    14  (  0.5)     8  ( 0.0)*      3.7     2    29   6
  251   418   250L   52   10   10   0.8 +  0.3  ( 10.6)    77  (  4.7)     8  ( 0.0)*     15.3     2    29   6
  260   518   2000S   79   10    8   0.2 +  0.9  ( 10.5)    20  (  1.5)    13  ( 0.0)*     12.0     2    29   6
  261   519   260L   79    8   19   1.8 +  0.9  ( 25.2)   103  (  7.8)    13  ( 0.0)*     33.0     2    29   6
  270   213   2000    16   10    3   0.1 +  0.1  (  1.5)     8  (  0.3)     0  ( 0.0)*      1.8     2    29   6
  301    68   1825     6   11    7   0.1 +  0.0  (  1.2)    38  (  0.5)     1           1.8     3    63  36
  302   807   1900    82   11   23   2.9 +  2.3  ( 48.4)    90  ( 15.3)    14           63.7     3     4  36
  303   642   1900    66   11   17   2.0 +  0.9  ( 27.6)    73  (  9.8)     9           37.5     3     4  36
  350    87   2000S   64    6   32   0.6 +  0.2  (  7.3)   110  (  1.4)     6  ( 0.0)*      8.7     3    41  63
  351   373   350L   64    6   16   1.0 +  0.7  ( 15.6)    62  (  3.4)     6  ( 0.0)*     18.9     3    41  63
  360    87   2000S   64    6   30   0.6 +  0.2  (  6.7)   110  (  1.4)     6  ( 0.0)*      8.1     3    41  63
  361   373   360L   64    6   16   1.0 +  0.7  ( 15.6)    62  (  3.4)     6  ( 0.0)*     18.9     3    41  63
  370    13   2000S   31    6   26   0.1 +  0.0  (  0.9)   107  (  0.2)     1  ( 0.0)*      1.1     3    41  63
  371   213   370L   31    6   12   0.5 +  0.2  (  6.5)    32  (  1.0)     1  ( 0.0)*      7.5     3    41  63
  380   186   2000    21    6   20   0.9 +  0.1  (  9.8)   103  (  2.8)     3  ( 0.0)*     12.6     3    36  63
  401   309   1925    64    5   32   1.8 +  0.9  ( 25.4)    99  (  6.4)     6           31.8     4    60  11
  402   136   2000    18    5   16   0.5 +  0.1  (  5.8)    71  (  2.0)     2           7.8     4    52  60  60  11
  403   519   2000    69    5   25   2.4 +  1.1  ( 33.0)    99  ( 10.8)     9           43.8     4    52  60  60
11
  404   385   2000    51    5   20   1.7 +  0.5  ( 20.3)    85  (  6.9)     6           27.2     4    52  60  60
11
  450   484   2000S   62    7    8   0.4 +  0.6  (  9.4)    48  (  3.4)     8  ( 0.0)*     12.8     4    16  47
  451   136   450L   62    6   24   0.7 +  0.2  (  8.4)    89  (  1.8)     8  ( 0.0)*     10.2     4    16  47
  460   487   2000S   65    6    8   0.4 +  0.7  ( 10.6)    55  (  3.9)     8  ( 0.0)*     14.5     4    16  47
  461   165   460L   65    6   17   0.6 +  0.2  (  7.3)    58  (  1.4)     8  ( 0.0)*      8.7     4    16  47
  470   478   2000S   59    7    7   0.3 +  0.6  (  8.3)    48  (  3.3)     7  ( 0.0)*     11.6     4    16  47
  471   112   470L   59    7   13   0.3 +  0.1  (  3.9)    37  (  0.6)     7  ( 0.0)*      4.5     4    16  47
  501   244   1825    31   15   15   0.8 +  0.2  (  9.4)    64  (  3.3)     3           12.7     5    15  42
  502   297   1900    36   15   15   1.0 +  0.3  ( 11.8)    65  (  4.1)     4           15.8     5    15  42
  503   638   1900    77   15   24   2.7 +  1.6  ( 40.2)    91  ( 12.1)    11           52.4     5    15  42
  550   190   2025S   65   11   12   0.3 +  0.3  (  5.7)    28  (  0.8)     8  ( 0.0)*      6.5     5    47  10
  551   381   550L   65   11   21   1.6 +  0.6  ( 20.4)   101  (  5.6)     8  ( 0.0)*     26.1     5    47  10
  560   388   2025S   68   11   15   1.0 +  0.7  ( 15.5)    38  (  2.1)     7  ( 0.0)*     17.6     5    47  10
  561   216   560L   68   11   23   1.0 +  0.4  ( 12.9)   104  (  3.3)     7  ( 0.0)*     16.2     5    47  10
.
0     64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK         SAT    CRUISE            OVERSAT  OF     STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END     END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS         EXCESS  OF ( ) VALUES
1ST     2ND
```

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

570 461 2025S 68 11 13 0.9 + 0.8 (16.0) 33 (2.2) 5 (0.0)* 18.2 5 47 10
571 139 570L 68 11 22 0.6 + 0.2 (7.8) 101 (2.0) 5 (0.0)* 9.8 5 47 10
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1630.1 117.5 13.9 48.8 32.0 (751.7) + (198.0) + (33.2) = 982.9 TOTALS
0***
****

0 CRUISE DELAY STOPS TOTALS
LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS 88.1 + 93.0 + 138.0 = 319.0
0
NO. OF ENTRIES TO SUBPT = 12
NO. OF LINKS RECALCULATED= 343

PROGRAM TRANSYT FINISHED

1 T R A N S Y T
~~~~~~~~~~~~~

TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "AM_2032_DM.DAT" at 10:20 on 21/01/15
02032 AM DM

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~

0CARD CARD
NO. TYPE
(1)= TITLE:- 2032 AM DM
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

```
  5)=  7   260   261    0    0    0   350   351    0    0    0   360   361    0    0    0
  6)=  7   370   371    0    0    0   450   451    0    0    0   460   461    0    0    0
  7)=  7   470   471    0    0    0   550   551    0    0    0   560   561    0    0    0
  8)=  7   570   571    0    0    0    0    0    0    0    0    0    0    0    0    0
0                     NODE  CARDS:  STAGE  CHANGE  TIMES  AND  MINIMUM  STAGE  TIMES
 CARD   CARD   NODE      STAGE 1       STAGE 2       STAGE 3       STAGE 4       STAGE 5       STAGE 6
STAGE 7
 NO.  TYPE   NO.  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE
MIN  CHANGE   MIN  CHANGE   MIN
  9)=  12    1   34   12   59   12    0    0    0    0    0    0    0    0    0    0
 10)=  12    2   55   12   23   12    0    0    0    0    0    0    0    0    0    0
 11)=  12    3   50   12   23   12    0    0    0    0    0    0    0    0    0    0
 12)=  12    5   27   12    0   12    0    0    0    0    0    0    0    0    0    0
 13)=  13    4   35   12   60    0   16   12    0    0    0    0    0    0    0    0
0                               LINK  CARDS:  FIXED  DATA
                       FIRST   GREEN            SECOND  GREEN
 CARD   CARD  LINK    EXIT     START        END        START        END      LINK   STOP    SAT
DELAY   DISPSN
 NO.  TYPE   NO.    NODE   STAGE   LAG   STAGE   LAG   STAGE   LAG   STAGE   LAG  LENGTH
WT.X100  FLOW  WT.X100   X100
 14)=  31   101    1    1    5    2    0    0    0    0    0   120    0   1900    0    0
 15)=  31   102    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 16)=  31   103    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 17)=  31   150    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 18)=  31   151    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 19)=  31   160    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 20)=  31   161    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 21)=  31   170    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 22)=  31   201    2    1    5    2    0    0    0    0    0   200    0   1875    0    0
 23)=  31   202    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 24)=  31   203    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 25)=  31   250    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 26)=  31   251    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 27)=  31   260    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 28)=  31   261    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 29)=  31   270    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 30)=  31   301    3    1    0    2    0    0    0    0    0   145    0   1825    0    0
 31)=  31   302    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 32)=  31   303    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 33)=  31   350    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 34)=  31   351    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 35)=  31   360    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 36)=  31   361    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 37)=  31   370    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 38)=  31   371    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 39)=  31   380    3    2    0    1    0    0    0    0    0    70    0   2000    0    0
 40)=  31   401    4    2    0    3    0    0    0    0    0    70    0   1925    0    0
 41)=  31   402    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 42)=  31   403    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 43)=  31   404    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 44)=  31   450    4    3    5    1    0    0    0    0    0    75    0   2000    0    0
```

45)= 31 461 0 0 0 0 0 0 0 0 0 75 0 0 0 0
46)= 31 460 4 3 5 1 0 0 0 0 0 75 0 2000 0 0
47)= 31 451 0 0 0 0 0 0 0 0 0 75 0 0 0 0
48)= 31 470 4 3 5 1 0 0 0 0 0 75 0 2000 0 0
49)= 31 471 0 0 0 0 0 0 0 0 0 75 0 0 0 0
50)= 31 501 5 1 5 2 0 0 0 0 0 200 0 1825 0 0
51)= 31 502 5 1 5 2 0 0 0 0 0 200 0 1900 0 0
52)= 31 503 5 1 5 2 0 0 0 0 0 200 0 1900 0 0
53)= 31 550 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
54)= 31 561 0 0 0 0 0 0 0 0 0 125 0 0 0 0
55)= 31 560 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
56)= 31 551 0 0 0 0 0 0 0 0 0 125 0 0 0 0
57)= 31 570 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
58)= 31 571 0 0 0 0 0 0 0 0 0 125 0 0 0 0
0 LINK CARDS: FLOW DATA
ENTRY 1 .... ENTRY 2 .... ENTRY 3 .... ENTRY 4 ....
CARD CARD LINK TOTAL UNIFORM LINK CRUISE LINK CRUISE LINK CRUISE
LINK CRUISE
NO. TYPE NO. FLOW FLOW NO. FLOW SPEED NO. FLOW SPEED NO. FLOW
SPEED NO. FLOW SPEED
59)= 32 101 967 0 0 0 48 0 0 0 0 0 0 0 0 0
60)= 32 102 635 0 0 0 48 0 0 0 0 0 0 0 0 0
61)= 32 103 246 0 0 0 48 0 0 0 0 0 0 0 0 0
62)= 32 150 10 0 502 10 40 0 0 0 0 0 0 0 0 0
63)= 32 151 731 0 560 530 40 561 202 48 0 0 0 0 0 0
64)= 32 160 286 0 502 286 40 0 0 0 0 0 0 0 0 0
65)= 32 161 442 0 570 355 40 571 86 48 0 0 0 0 0 0
66)= 32 170 1113 0 503 1113 40 0 0 0 0 0 0 0 0 0
67)= 32 201 210 0 0 0 48 0 0 0 0 0 0 0 0 0
68)= 32 202 99 0 0 0 48 0 0 0 0 0 0 0 0 0
69)= 32 203 389 0 0 0 48 0 0 0 0 0 0 0 0 0
70)= 32 250 406 0 101 406 40 0 0 0 0 0 0 0 0 0
71)= 32 251 624 0 160 622 40 161 10 48 0 0 0 0 0 0
72)= 32 260 519 0 102 519 40 0 0 0 0 0 0 0 0 0
73)= 32 261 560 0 161 10 40 170 560 48 0 0 0 0 0 0
74)= 32 270 246 0 103 246 40 0 0 0 0 0 0 0 0 0
75)= 32 301 201 0 0 0 48 0 0 0 0 0 0 0 0 0
76)= 32 302 1090 0 0 0 48 0 0 0 0 0 0 0 0 0
77)= 32 303 779 0 0 0 48 0 0 0 0 0 0 0 0 0
78)= 32 350 99 0 202 99 40 0 0 0 0 0 0 0 0 0
79)= 32 351 319 0 260 173 40 261 147 48 0 0 0 0 0 0
80)= 32 360 99 0 203 99 40 0 0 0 0 0 0 0 0 0
81)= 32 361 319 0 260 173 40 261 147 48 0 0 0 0 0 0
82)= 32 370 281 0 203 281 40 0 0 0 0 0 0 0 0 0
83)= 32 371 246 0 270 246 40 0 0 0 0 0 0 0 0 0
84)= 32 380 207 0 203 207 40 0 0 0 0 0 0 0 0 0
85)= 32 401 372 0 0 0 48 0 0 0 0 0 0 0 0 0
86)= 32 402 160 0 0 0 48 0 0 0 0 0 0 0 0 0
87)= 32 403 601 0 0 0 48 0 0 0 0 0 0 0 0 0
88)= 32 404 444 0 0 0 48 0 0 0 0 0 0 0 0 0
89)= 32 450 654 0 302 654 40 0 0 0 0 0 0 0 0 0

90)= 32 451 296 0 370 149 40 371 148 48 0 0 0 0 0 0
91)= 32 460 632 0 302 436 40 303 196 48 0 0 0 0 0 0
92)= 32 461 313 0 370 132 40 371 98 48 380 83 48 0 0 0
93)= 32 470 583 0 303 583 40 0 0 0 0 0 0 0 0 0
94)= 32 471 124 0 380 124 40 0 0 0 0 0 0 0 0 0
95)= 32 501 453 0 0 0 48 0 0 0 0 0 0 0 0 0
96)= 32 502 464 0 0 0 48 0 0 0 0 0 0 0 0 0
97)= 32 503 936 0 0 0 48 0 0 0 0 0 0 0 0 0
98)= 32 550 223 0 402 223 40 0 0 0 0 0 0 0 0 0
99)= 32 551 447 0 460 344 40 461 104 48 0 0 0 0 0 0
100)= 32 560 449 0 403 449 40 0 0 0 0 0 0 0 0 0
101)= 32 561 263 0 470 263 40 0 0 0 0 0 0 0 0 0
102)= 32 570 532 0 404 532 40 0 0 0 0 0 0 0 0 0
103)= 32 571 173 0 470 173 40 0 0 0 0 0 0 0 0 0
0 LINK DATA: QUEUE CONSTRAINTS
CARD CARD LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT
QUEUE LINK LIMIT QUEUE
NO. TYPE NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO.
QUEUE WEIGHT NO. QUEUE WEIGHT
104)= 38 150 10 5000 151 10 5000 160 10 5000 161 10 5000 170 10
5000
105)= 38 250 19 5000 251 19 5000 260 19 5000 261 19 5000 270 19
5000
106)= 38 350 12 5000 351 12 5000 360 12 5000 361 12 5000 370 12
5000
107)= 38 371 12 5000 380 12 5000 450 13 5000 451 13 5000 460 13
5000
108)= 38 461 13 5000 470 13 5000 471 13 5000 550 13 5000 551 13
5000
109)= 38 560 13 5000 561 13 5000 570 13 5000 571 13 5000 0 0
0
0LINK 251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 214 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0 64 SECOND CYCLE 32 STEPS
0INITIAL SETTINGS
- (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

1 2 34 59
2 2 55 23
3 2 50 23
4 3 35 60 16
5 2 27 0
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END

```
                        DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS         EXCESS  OF ( ) VALUES
1ST     2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  101    967   1900    155    9   692   12.6 +173.2  (999.9)    263  ( 53.4)     196     +      1781.4     1    39
59
  102    635   2000    97    9   69    3.7 +  8.4  (112.5)    153  ( 20.4)     19           132.8     1    39  59
  103    246   2000    37    9   21    1.1 +  0.3  ( 13.2)    77  (  4.0)      4           17.2     1    39  59
  150     10   2000S    60    5   21    0.0 +  0.0  (  0.6)    94  (  0.1)      9  ( 0.0)*     0.7     1     0  34
  151    649<   150L    60    5    5    0.1 +  0.7  (  8.3)    22  (  2.3)      9  ( 0.0)*     10.6     1     0  34
  160    286   2000S    63    5   25    1.6 +  0.4  ( 18.3)    103  (  4.3)      6  ( 0.0)*     22.6     1     0  34
  161    406<   160L    63    5    5    0.0 +  0.5  (  4.9)     7  (  0.4)      6  ( 0.0)*     5.3     1     0  34
  170   1114   2000    102    5   102    9.0 + 22.4  (292.6)    185  ( 30.0)     42  (14.9)*    1069.2     1     0
34
  201    210   1875    26    15    14    0.7 +  0.2  (  7.8)     62  (  2.8)      3           10.6     2    60  23
  202     99   1975    11    15    13    0.3 +  0.1  (  3.3)    56  (  1.2)      1           4.5     2    60  23
  203    389   1975    45    15    16    1.4 +  0.4  ( 16.5)    70  (  5.7)      5           22.2     2    60  23
  250    262<  2000S   101    10    94    1.7 +  5.2  ( 63.7)    109  (  6.5)     33  ( 8.7)*    505.4     2    28
55
  251    623    250L   101    10    99    4.8 + 12.3  (159.7)    185  ( 16.8)     33  ( 8.7)*    611.8     2    28
55
  260    519   2000S   122    10   366    4.4 + 48.4  (490.6)    263  ( 19.9)    122  (13.2)*    1172.5     2
28  55
  261    549<   260L   122     8   360    3.8 + 51.1  (510.6)    267  ( 21.8)    122  (13.2)*    1194.4     2
28  55
  270    246   2000    28    10    14    0.7 +  0.2  (  8.6)     39  (  1.4)      2  ( 0.0)*     10.0     2    28  55
  301    201   1825    19    11     8    0.3 +  0.1  (  4.2)    43  (  1.8)      2           6.0     3    50  23
  302   1090   1900    111    11   218    6.4 + 59.7  (614.8)    245  ( 56.0)     80     +      670.8     3    55
23
  303    779   1900    80    11    22    2.8 +  1.9  ( 43.3)    86  ( 14.1)     13           57.4     3    55  23
  350     99   2000S    50    6    29    0.7 +  0.1  (  7.4)    105  (  1.5)      4  ( 0.0)*     9.0     3    28  50
  351    257<   350L    50    6    17    0.9 +  0.4  ( 11.6)    34  (  1.6)      4  ( 0.0)*     13.2     3    28  50
  360     99   2000S    50    6    27    0.6 +  0.1  (  6.9)    105  (  1.5)      4  ( 0.0)*     8.4     3    28  50
  361    257<   360L    50    6    17    0.9 +  0.4  ( 11.5)    34  (  1.6)      4  ( 0.0)*     13.2     3    28  50
  370    281   2000S    73    6    37    2.1 +  0.7  ( 26.6)    114  (  4.7)     11  ( 0.0)*     31.3     3    28  50
  371    246    370L    73    6    36    1.8 +  0.6  ( 23.1)    108  (  3.9)     11  ( 0.0)*     27.0     3    28  50
  380    207   2000    24    6    19    0.9 +  0.2  ( 10.1)    98  (  3.0)      4  ( 0.0)*     13.1     3    23  50
  401    372   1925    59    5    25    1.9 +  0.7  ( 23.9)    87  (  6.8)      6           30.7     4    60  16
  402    160   2000    12    5     6    0.2 +  0.1  (  2.5)    37  (  1.2)      1           3.8     4    40  60  60  16
  403    601   2000    47    5     9    1.0 +  0.4  ( 13.3)    52  (  6.5)      6           19.8     4    40  60  60
16
  404    444   2000    35    5     7    0.7 +  0.3  (  8.6)    46  (  4.3)      4           12.9     4    40  60  60  16
  450    588<  2000S   189    7   898    8.0 +138.7  (999.9)    206  ( 19.6)    231  (15.6)*    2162.0     4
21  35
  451    296    450L   189    6   899    4.1 + 69.8  (687.7)    300  ( 12.9)    231  (15.6)*    1478.5     4
21  35
  460    588<  2000S   192    6   918    8.3 +141.7  (999.9)    211  ( 19.4)    240  (16.5)*    2241.7     4
21  35
  461    313    460L   192    6   919    4.6 + 75.4  (743.2)    299  ( 13.7)    240  (16.5)*    1584.1     4
21  35
```

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  470    583   2000S   151     7   655    6.7 + 99.3  (986.5)    257  ( 21.9)     137  (11.3)*    1574.7     4
21  35
  471    124    470L   151     7   670    1.9 + 21.2  (214.7)    299  (  5.4)     137  (11.3)*     786.3     4    21
35
  501    453   1825    48    15    14    1.3 +  0.5  ( 16.0)    63  (  6.0)      6            22.0     5    32   0
  502    464   1900    47    15    13    1.3 +  0.4  ( 16.1)    62  (  6.0)      5            22.1     5    32   0
  503    936   1900    96    15    45    3.8 +  7.9  (109.0)    127  ( 25.0)     23            134.0     5    32   0
  550    223   2025S    57    11    22    1.0 +  0.4  ( 12.5)    88  (  2.9)      7  ( 0.0)*     15.3     5     5  27
  551    189<   550L    57    11    39    1.7 +  0.3  ( 18.9)    46  (  3.0)      7  ( 0.0)*     21.9     5     5  27
  560    450   2025S    83    11    31    2.1 +  1.8  ( 35.7)    109  (  7.2)     13  ( 0.0)*     42.8     5     5  27
  561    156<   560L    83    11    46    1.4 +  0.6  ( 18.4)    72  (  2.7)     13  ( 0.0)*     21.2     5     5  27
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU     UNIFORM RANDOM+ COST     MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF     STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS         EXCESS  OF ( ) VALUES
1ST     2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  570    532   2025S    87    11    35    2.5 +  2.7  ( 47.7)    116  (  9.0)     14  ( 0.1)*     60.5     5     5  27
  571    102<   570L    87    11    49    0.9 +  0.5  ( 12.9)    74  (  1.9)     14  ( 0.1)*     18.6     5     5  27
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF         OF         EXCESS      INDEX
                                         DELAY    DELAY      STOPS        QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)     (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       1115.0       1.9       116.7    950.6    (9925.8) + (  456.0)  +  (7291.6)   =   17673.4
TOTALS
0**************************************************************************
****************************************************
0                          CRUISE            DELAY            STOPS           TOTALS
                     LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       114.6        +    1227.4        +     317.8        =    1659.8
0
 NO. OF ENTRIES TO SUBPT  =    1
 NO. OF LINKS RECALCULATED=   45
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9
  - (SECONDS)

    1      2     61      22
    2      2      0     32
    3      2      4     41
    4      3     35     60      16
```

```
   5     2    18     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                      DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       1099.2       1.9       100.8    950.8    (9779.6) + (  457.7)  +  (5820.4)   =   16057.7
TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   15
 NO. OF LINKS RECALCULATED=  349
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25
  - (SECONDS)

   1     2    61     22
   2     2     0     32
   3     2     4     41
   4     3    35     60     16
   5     2    18     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                      DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       1099.2       1.9       100.8    950.8    (9779.6) + (  457.7)  +  (5820.4)   =   16057.7
TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  287
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1
  - (SECONDS)

   1     2     2     22
   2     2    11     32
   3     2     5     22
   4     3    47     60     16
   5     2    18     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                      DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       1032.6       2.1        87.5    897.4    (9159.6) + (  354.0)  +  ( 128.7)   =    9642.3     TOTALS
0
```

```
 NO. OF ENTRIES TO SUBPT  =   68
 NO. OF LINKS RECALCULATED= 1369
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9
  - (SECONDS)

    1      2      2     22
    2      2      2     23
    3      2      5     22
    4      3     47     60     16
    5      2     18     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                     DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       1030.4       2.1        85.3    897.4    (9139.1) + (  353.1)  +  ( 128.7)   =    9621.0     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   12
 NO. OF LINKS RECALCULATED=  348
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25
  - (SECONDS)

    1      2      2     22
    2      2      2     23
    3      2      5     22
    4      3     47     60     16
    5      2     18     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                     DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       1030.4       2.1        85.3    897.4    (9139.1) + (  353.1)  +  ( 128.7)   =    9621.0     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  327
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1
  - (SECONDS)

    1      2      2     22
    2      2      5     26
    3      2      5     22
    4      3     47     60     16
```

```
    5      2     18     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                     DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       1030.2       2.1        85.0    897.4    (9137.1) + (  351.3)  +  ( 128.7)   =    9617.1     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   13
 NO. OF LINKS RECALCULATED=  363
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1  -1
  - (SECONDS)

    1      2     60     22
    2      2      6     26
    3      2     57     22
    4      3     47     60     11
    5      2     23     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                     DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4        580.3       3.7        80.7    451.9    (4953.1) + (  401.6)  +  ( 335.9)   =    5690.7     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   47
 NO. OF LINKS RECALCULATED= 1215
.
0    64 SECOND CYCLE  32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :-    9  25  -1   9  25   1  -1   1
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
    NO   OF STAGES   1      2      3      4      5      6      7

    1      2     61     23
    2      2      4     24
    3      2     59     24
    4      3     49     62     13
    5      2     24     56
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                           DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
```

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 967 1900 148 9 627 10.0 +158.5 (999.9) 266 (53.9) 178 + 1620.6 1 2
23
102 635 2000 92 9 49 3.6 + 5.1 (80.3) 129 (17.1) 16 97.4 1 2 23
103 246 2000 36 9 20 1.1 + 0.3 (12.6) 74 (3.8) 3 16.4 1 2 23
150 10 2000S 69 5 14 0.0 + 0.0 (0.4) 83 (0.1) 14 (1.8)* 88.7 1 28 61
151 722 150L 69 5 30 5.0 + 1.1 (56.6) 107 (11.4) 14 (1.8)* 156.2 1 28 61
160 286 2000S 68 5 10 0.4 + 0.4 (7.3) 67 (2.8) 13 (0.3)* 24.6 1 28 61
161 437 160L 68 5 26 2.6 + 0.6 (29.7) 107 (6.9) 13 (0.3)* 51.0 1 28 61
170 989< 2000 93 5 26 1.2 + 5.8 (65.3) 58 (9.5) 21 (1.9)* 172.1 1 28 61
201 210 1875 45 15 27 1.2 + 0.4 (14.8) 89 (3.9) 3 18.7 2 9 24
202 99 1975 20 15 23 0.5 + 0.1 (6.0) 80 (1.7) 1 7.7 2 9 24
203 389 1975 79 15 39 2.4 + 1.8 (39.2) 111 (9.1) 8 48.3 2 9 24
250 274< 2000S 72 10 16 0.8 + 0.4 (11.3) 65 (3.9) 11 (0.0)* 15.2 2 29 4
251 624 250L 72 10 8 0.5 + 0.9 (13.1) 52 (4.7) 11 (0.0)* 17.8 2 29 4
260 519 2000S 81 10 23 2.2 + 1.1 (30.5) 110 (8.3) 16 (0.0)* 38.8 2 29 4
261 498< 260L 81 8 11 0.5 + 1.1 (14.3) 45 (3.7) 16 (0.0)* 18.0 2 29 4
270 246 2000 20 10 16 1.0 + 0.1 (10.3) 98 (3.5) 4 (0.0)* 13.8 2 29 4
301 201 1825 23 11 13 0.6 + 0.2 (6.7) 58 (2.4) 2 9.1 3 59 24
302 1090 1900 147 11 615 10.8 +175.5 (999.9) 266 (60.9) 199 + 1792.9 3
0 24
303 779 1900 105 11 142 4.7 + 25.9 (285.1) 213 (34.8) 40 + 319.9 3 0
24
350 99 2000S 41 6 18 0.4 + 0.1 (4.7) 102 (1.5) 3 (0.0)* 6.1 3 29 59
351 303< 350L 41 6 9 0.5 + 0.3 (6.7) 24 (1.1) 3 (0.0)* 7.9 3 29 59
360 99 2000S 41 6 15 0.3 + 0.1 (3.8) 97 (1.4) 3 (0.0)* 5.2 3 29 59
361 303< 360L 41 6 9 0.5 + 0.3 (6.7) 24 (1.1) 3 (0.0)* 7.9 3 29 59
370 281 2000S 54 6 17 1.0 + 0.3 (12.1) 102 (4.2) 10 (0.0)* 16.3 3 29 59
371 246 370L 54 6 8 0.2 + 0.3 (4.9) 71 (2.6) 10 (0.0)* 7.4 3 29 59
380 207 2000 18 6 9 0.4 + 0.1 (4.6) 83 (2.5) 4 (0.0)* 7.1 3 24 59
401 372 1925 77 5 38 2.3 + 1.7 (36.8) 110 (8.6) 8 45.4 4 62 13
402 160 2000 21 5 17 0.6 + 0.1 (6.9) 71 (2.4) 2 9.3 4 54 62 62 13
403 601 2000 80 5 30 3.0 + 2.0 (46.0) 115 (14.6) 11 60.6 4 54 62 62
13
404 444 2000 59 5 22 2.0 + 0.7 (25.2) 91 (8.5) 7 33.6 4 54 62 62
13
450 445< 2000S 74 7 13 0.7 + 0.9 (14.4) 55 (5.2) 9 (0.0)* 19.6 4 18 49
451 296 450L 74 6 10 0.3 + 0.6 (7.7) 21 (0.9) 9 (0.0)* 8.6 4 18 49
460 484< 2000S 80 6 16 0.9 + 1.2 (19.6) 72 (6.6) 12 (0.0)* 26.3 4 18 49
461 313 460L 80 6 11 0.2 + 0.8 (9.2) 34 (1.5) 12 (0.0)* 10.7 4 18 49
470 555< 2000S 68 7 12 1.0 + 0.9 (17.2) 84 (7.1) 13 (0.0)* 24.4 4 18 49
471 124 470L 68 7 8 0.1 + 0.2 (2.5) 56 (1.0) 13 (0.0)* 3.5 4 18 49
501 453 1825 57 15 19 1.7 + 0.7 (21.8) 76 (7.2) 7 29.1 5 29 56
502 464 1900 56 15 18 1.7 + 0.6 (21.9) 75 (7.3) 7 29.2 5 29 56
503 936 1900 113 15 240 5.8 + 56.5 (579.8) 251 (49.4) 75 + 629.2 5 29
56
550 223 2025S 67 11 13 0.5 + 0.4 (7.7) 82 (2.7) 11 (0.0)* 10.3 5 61 24
551 367< 550L 67 11 32 2.6 + 0.6 (30.3) 89 (5.8) 11 (0.0)* 36.2 5 61 24
560 450 2025S 79 11 13 0.4 + 1.2 (14.8) 62 (4.0) 13 (0.0)* 18.9 5 61 24

```
  561    251<   560L    79    11    37    1.9 +  0.7  ( 24.0)    109  (  4.2)     13  ( 0.0)*     28.1     5    61  24
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW    SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  570    532   2025S   79    11    13    0.5 +  1.4  ( 17.3)    69  (  5.3)     13  ( 0.0)*     22.7     5    61  24
  571    164   570L   79    11    35    1.2 +  0.4  ( 15.0)    108  (  2.7)     13  ( 0.0)*     17.7     5    61  24
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2122.4       579.3       3.7        79.7    451.9    (4944.0) + (  402.0)  +  ( 302.8)   =    5648.7     TOTALS
0*******************************************************************************
**************************************************
0                         CRUISE             DELAY             STOPS            TOTALS
                      LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       114.6        +     611.3        +     280.1        =    1006.1
0
 NO. OF ENTRIES TO SUBPT  =    15
 NO. OF LINKS RECALCULATED=  417

 PROGRAM TRANSYT FINISHED
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1 T R A N S Y T
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TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "AM_2032_DS.DAT" at 10:21 on 21/01/15
02032 AM DS

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~
0CARD CARD
NO. TYPE
(1)= TITLE:- 2032 AM DS
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

```
  5)=  7   260   261    0    0    0   350   351    0    0    0   360   361    0    0    0
  6)=  7   370   371    0    0    0   450   451    0    0    0   460   461    0    0    0
  7)=  7   470   471    0    0    0   550   551    0    0    0   560   561    0    0    0
  8)=  7   570   571    0    0    0    0    0    0    0    0    0    0    0    0    0
0                   NODE  CARDS:  STAGE  CHANGE  TIMES  AND  MINIMUM  STAGE  TIMES
 CARD   CARD   NODE      STAGE 1      STAGE 2      STAGE 3      STAGE 4      STAGE 5      STAGE 6
STAGE 7
 NO.  TYPE   NO.  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE
MIN  CHANGE   MIN  CHANGE   MIN
  9)=  12    1    34    12    59    12    0    0    0    0    0    0    0    0    0    0
 10)=  12    2    55    12    23    12    0    0    0    0    0    0    0    0    0    0
 11)=  12    3    50    12    23    12    0    0    0    0    0    0    0    0    0    0
 12)=  12    5    27    12    0    12    0    0    0    0    0    0    0    0    0    0
 13)=  13    4    35    12    60    0    16    12    0    0    0    0    0    0    0    0
0                            LINK  CARDS:  FIXED  DATA
                     FIRST   GREEN            SECOND  GREEN
 CARD   CARD   LINK    EXIT     START       END       START       END     LINK   STOP    SAT
DELAY   DISPSN
 NO.  TYPE   NO.   NODE   STAGE   LAG   STAGE   LAG   STAGE   LAG   STAGE   LAG  LENGTH
WT.X100  FLOW  WT.X100   X100
 14)=  31   101    1    1    5    2    0    0    0    0    0   120    0   1900    0    0
 15)=  31   102    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 16)=  31   103    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 17)=  31   150    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 18)=  31   151    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 19)=  31   160    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 20)=  31   161    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 21)=  31   170    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 22)=  31   201    2    1    5    2    0    0    0    0    0   200    0   1875    0    0
 23)=  31   202    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 24)=  31   203    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 25)=  31   250    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 26)=  31   251    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 27)=  31   260    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 28)=  31   261    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 29)=  31   270    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 30)=  31   301    3    1    0    2    0    0    0    0    0   145    0   1825    0    0
 31)=  31   302    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 32)=  31   303    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 33)=  31   350    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 34)=  31   351    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 35)=  31   360    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 36)=  31   361    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 37)=  31   370    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 38)=  31   371    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 39)=  31   380    3    2    0    1    0    0    0    0    0    70    0   2000    0    0
 40)=  31   401    4    2    0    3    0    0    0    0    0    70    0   1925    0    0
 41)=  31   402    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 42)=  31   403    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 43)=  31   404    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 44)=  31   450    4    3    5    1    0    0    0    0    0    75    0   2000    0    0
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 45)=  31    461     0     0     0     0     0     0     0     0     0    75     0     0     0     0
 46)=  31    460     4     3     5     1     0     0     0     0     0    75     0  2000     0     0
 47)=  31    451     0     0     0     0     0     0     0     0     0    75     0     0     0     0
 48)=  31    470     4     3     5     1     0     0     0     0     0    75     0  2000     0     0
 49)=  31    471     0     0     0     0     0     0     0     0     0    75     0     0     0     0
 50)=  31    501     5     1     5     2     0     0     0     0     0   200     0  1825     0     0
 51)=  31    502     5     1     5     2     0     0     0     0     0   200     0  1900     0     0
 52)=  31    503     5     1     5     2     0     0     0     0     0   200     0  1900     0     0
 53)=  31    550     5     2     5     1     0     0     0     0     0   125     0  2025     0     0
 54)=  31    561     0     0     0     0     0     0     0     0     0   125     0     0     0     0
 55)=  31    560     5     2     5     1     0     0     0     0     0   125     0  2025     0     0
 56)=  31    551     0     0     0     0     0     0     0     0     0   125     0     0     0     0
 57)=  31    570     5     2     5     1     0     0     0     0     0   125     0  2025     0     0
 58)=  31    571     0     0     0     0     0     0     0     0     0   125     0     0     0     0
0                                LINK CARDS:    FLOW DATA
                         ENTRY 1 ...........    ENTRY 2 ...........    ENTRY 3 ...........    ENTRY 4 ...........
 CARD   CARD   LINK   TOTAL  UNIFORM   LINK       CRUISE    LINK       CRUISE    LINK       CRUISE
LINK        CRUISE
 NO.   TYPE    NO.    FLOW    FLOW     NO.    FLOW   SPEED    NO.    FLOW   SPEED    NO.    FLOW
SPEED    NO.   FLOW   SPEED
 59)=  32    101    928     0     0     0    48     0     0     0     0     0     0     0     0     0
 60)=  32    102    674     0     0     0    48     0     0     0     0     0     0     0     0     0
 61)=  32    103    246     0     0     0    48     0     0     0     0     0     0     0     0     0
 62)=  32    150     10     0   502    10    40     0     0     0     0     0     0     0     0     0
 63)=  32    151    731     0   560   530    40   561   202    48     0     0     0     0     0     0
 64)=  32    160    237     0   502   237    40     0     0     0     0     0     0     0     0     0
 65)=  32    161    442     0   570   355    40   571    86    48     0     0     0     0     0     0
 66)=  32    170   1119     0   503  1119    40     0     0     0     0     0     0     0     0     0
 67)=  32    201    193     0     0     0    48     0     0     0     0     0     0     0     0     0
 68)=  32    202    107     0     0     0    48     0     0     0     0     0     0     0     0     0
 69)=  32    203    392     0     0     0    48     0     0     0     0     0     0     0     0     0
 70)=  32    250    351     0   101   351    40     0     0     0     0     0     0     0     0     0
 71)=  32    251    545     0   160   544    40   161    10    48     0     0     0     0     0     0
 72)=  32    260    574     0   102   574    40     0     0     0     0     0     0     0     0     0
 73)=  32    261    639     0   161    10    40   170   638    48     0     0     0     0     0     0
 74)=  32    270    246     0   103   246    40     0     0     0     0     0     0     0     0     0
 75)=  32    301    173     0     0     0    48     0     0     0     0     0     0     0     0     0
 76)=  32    302   1066     0     0     0    48     0     0     0     0     0     0     0     0     0
 77)=  32    303    781     0     0     0    48     0     0     0     0     0     0     0     0     0
 78)=  32    350    107     0   202   107    40     0     0     0     0     0     0     0     0     0
 79)=  32    351    414     0   260   212    40   261   203    48     0     0     0     0     0     0
 80)=  32    360    107     0   203   107    40     0     0     0     0     0     0     0     0     0
 81)=  32    361    414     0   260   212    40   261   203    48     0     0     0     0     0     0
 82)=  32    370    248     0   203   248    40     0     0     0     0     0     0     0     0     0
 83)=  32    371    246     0   270   246    40     0     0     0     0     0     0     0     0     0
 84)=  32    380    207     0   203   207    40     0     0     0     0     0     0     0     0     0
 85)=  32    401    374     0     0     0    48     0     0     0     0     0     0     0     0     0
 86)=  32    402    159     0     0     0    48     0     0     0     0     0     0     0     0     0
 87)=  32    403    601     0     0     0    48     0     0     0     0     0     0     0     0     0
 88)=  32    404    444     0     0     0    48     0     0     0     0     0     0     0     0     0
 89)=  32    450    640     0   302   640    40     0     0     0     0     0     0     0     0     0
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 90)= 32  451  279   0  370  132   40  371  148   48   0   0   0   0   0   0
 91)= 32  460  624   0  302  426   40  303  197   48   0   0   0   0   0   0
 92)= 32  461  297   0  370  116   40  371   98   48  380   83   48   0   0   0
 93)= 32  470  584   0  303  584   40   0   0   0   0   0   0   0   0   0
 94)= 32  471  124   0  380  124   40   0   0   0   0   0   0   0   0   0
 95)= 32  501  439   0   0   0   48   0   0   0   0   0   0   0   0   0
 96)= 32  502  393   0   0   0   48   0   0   0   0   0   0   0   0   0
 97)= 32  503  964   0   0   0   48   0   0   0   0   0   0   0   0   0
 98)= 32  550  223   0  402  223   40   0   0   0   0   0   0   0   0   0
 99)= 32  551  449   0  460  345   40  461  104   48   0   0   0   0   0   0
 100)= 32  560  449   0  403  449   40   0   0   0   0   0   0   0   0   0
 101)= 32  561  263   0  470  263   40   0   0   0   0   0   0   0   0   0
 102)= 32  570  532   0  404  532   40   0   0   0   0   0   0   0   0   0
 103)= 32  571  173   0  470  173   40   0   0   0   0   0   0   0   0   0
0                    LINK DATA:  QUEUE CONSTRAINTS
 CARD   CARD   LINK   LIMIT  QUEUE   LINK   LIMIT  QUEUE   LINK   LIMIT  QUEUE   LINK   LIMIT
QUEUE   LINK   LIMIT  QUEUE
  NO.  TYPE   NO.   QUEUE  WEIGHT   NO.   QUEUE  WEIGHT   NO.   QUEUE  WEIGHT   NO.
QUEUE  WEIGHT   NO.   QUEUE  WEIGHT
 104)= 38   150   10  5000   151   10  5000   160   10  5000   161   10  5000   170   10
5000
 105)= 38   250   19  5000   251   19  5000   260   19  5000   261   19  5000   270   19
5000
 106)= 38   350   12  5000   351   12  5000   360   12  5000   361   12  5000   370   12
5000
 107)= 38   371   12  5000   380   12  5000   450   13  5000   451   13  5000   460   13
5000
 108)= 38   461   13  5000   470   13  5000   471   13  5000   550   13  5000   551   13
5000
 109)= 38   560   13  5000   561   13  5000   570   13  5000   571   13  5000    0    0
0
0LINK   251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY  225 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0    64 SECOND CYCLE  32 STEPS
0INITIAL SETTINGS
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
   NO   OF STAGES   1     2     3     4     5     6     7

   1     2    34    59
   2     2    55    23
   3     2    50    23
   4     3    35    60    16
   5     2    27     0
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF    PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK       SAT    CRUISE          OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
```

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 928 1900 149 9 642 11.6 +153.8 (999.9) 265 (51.7) 176 + 1589.6 1 39
59
102 674 2000 103 9 119 4.1 + 18.2 (206.9) 198 (28.1) 30 + 234.9 1 39
59
103 246 2000 37 9 21 1.1 + 0.3 (13.2) 77 (4.0) 4 17.2 1 39 59
150 10 2000S 60 5 22 0.0 + 0.0 (0.6) 95 (0.1) 9 (0.0)* 0.7 1 0 34
151 649< 150L 60 5 5 0.1 + 0.7 (8.3) 22 (2.3) 9 (0.0)* 10.5 1 0 34
160 237 2000S 59 5 24 1.3 + 0.3 (14.7) 101 (3.5) 5 (0.0)* 18.2 1 0 34
161 406< 160L 59 5 4 0.0 + 0.4 (4.4) 6 (0.4) 5 (0.0)* 4.8 1 0 34
170 1118 2000 102 5 106 9.0 + 23.9 (305.9) 188 (30.7) 44 (14.9)* 1080.8 1 0
34
201 193 1875 24 15 14 0.6 + 0.2 (7.1) 61 (2.5) 2 9.5 2 60 23
202 107 1975 12 15 13 0.3 + 0.1 (3.6) 57 (1.3) 1 4.9 2 60 23
203 392 1975 45 15 16 1.4 + 0.4 (16.7) 70 (5.7) 5 22.4 2 60 23
250 236< 2000S 89 10 39 1.4 + 1.2 (24.0) 67 (3.4) 17 (0.0)* 27.4 2 28 55
251 545 250L 89 10 45 4.1 + 2.7 (62.7) 126 (10.0) 17 (0.0)* 72.7 2 28 55
260 559< 2000S 135 10 513 6.1 + 73.6 (741.3) 284 (23.7) 182 (16.5)* 1590.0 2
28 55
261 624< 260L 135 8 505 5.3 + 82.1 (813.3) 243 (22.7) 182 (16.5)* 1661.0 2
28 55
270 246 2000 28 10 14 0.7 + 0.2 (8.6) 39 (1.4) 2 (0.0)* 10.0 2 28 55
301 173 1825 16 11 8 0.3 + 0.1 (3.5) 43 (1.5) 1 5.1 3 50 23
302 1066 1900 109 11 184 5.9 + 48.6 (507.3) 233 (52.2) 68 + 559.5 3 55
23
303 781 1900 80 11 22 2.8 + 1.9 (43.6) 87 (14.2) 13 57.8 3 55 23
350 107 2000S 57 6 31 0.7 + 0.2 (8.5) 107 (1.7) 5 (0.0)* 10.2 3 28 50
351 304< 350L 57 6 19 1.1 + 0.5 (14.8) 34 (2.0) 5 (0.0)* 16.8 3 28 50
360 107 2000S 57 6 29 0.7 + 0.2 (7.9) 107 (1.7) 5 (0.0)* 9.6 3 28 50
361 304< 360L 57 6 19 1.1 + 0.5 (14.8) 34 (2.0) 5 (0.0)* 16.8 3 28 50
370 248 2000S 69 6 35 1.9 + 0.5 (22.3) 112 (4.0) 10 (0.0)* 26.3 3 28 50
371 246 370L 69 6 35 1.8 + 0.5 (22.0) 105 (3.8) 10 (0.0)* 25.7 3 28 50
380 207 2000 24 6 19 0.9 + 0.2 (10.1) 98 (3.0) 4 (0.0)* 13.1 3 23 50
401 374 1925 59 5 25 1.9 + 0.7 (24.1) 88 (6.9) 6 30.9 4 60 16
402 159 2000 12 5 6 0.2 + 0.1 (2.5) 37 (1.2) 1 3.7 4 40 60 60 16
403 601 2000 47 5 9 1.0 + 0.4 (13.3) 52 (6.5) 6 19.8 4 40 60 60
16
404 444 2000 35 5 7 0.7 + 0.3 (8.6) 46 (4.3) 4 12.9 4 40 60 60 16
450 588< 2000S 185 7 879 7.9 +135.7 (999.9) 213 (19.9) 222 (14.9)* 2102.2 4
21 35
451 279 450L 185 6 881 3.9 + 64.4 (635.1) 300 (12.2) 222 (14.9)* 1394.7 4
21 35
460 589< 2000S 189 6 901 8.1 +139.2 (999.9) 216 (19.7) 232 (16.0)* 2188.1 4
21 35
461 297 460L 189 6 903 4.4 + 70.1 (692.8) 299 (13.0) 232 (16.0)* 1503.9 4
21 35

470 584 2000S 151 7 658 6.8 +100.0 (993.0) 257 (21.9) 138 (11.4)* 1583.4 4
21 35
471 124 470L 151 7 673 1.9 + 21.3 (215.5) 299 (5.4) 138 (11.4)* 789.3 4 21
35
501 439 1825 47 15 13 1.2 + 0.4 (15.3) 62 (5.7) 5 21.0 5 32 0
502 393 1900 40 15 13 1.0 + 0.3 (12.7) 59 (4.8) 4 17.6 5 32 0
503 964 1900 98 15 60 4.1 + 12.1 (150.4) 147 (29.7) 28 180.1 5 32 0
550 223 2025S 58 11 22 1.0 + 0.4 (12.7) 88 (2.9) 8 (0.0)* 15.6 5 5 27
551 199< 550L 58 11 39 1.8 + 0.3 (20.0) 48 (3.2) 8 (0.0)* 23.2 5 5 27
560 450 2025S 83 11 31 2.1 + 1.8 (35.5) 109 (7.1) 13 (0.0)* 42.7 5 5 27
561 155< 560L 83 11 46 1.4 + 0.6 (18.3) 71 (2.7) 13 (0.0)* 21.1 5 5 27
.
0 64 SECOND CYCLE 32 STEPS
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END
DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

570 532 2025S 87 11 35 2.5 + 2.7 (47.7) 116 (9.0) 14 (0.1)* 60.5 5 5 27
571 102< 570L 87 11 49 0.9 + 0.5 (12.9) 74 (1.9) 14 (0.1)* 18.6 5 5 27
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 2108.3 1126.9 1.9 117.0 962.6 (******) + (455.5) + (6629.6) = 17125.0
TOTALS
0**
****

0 CRUISE DELAY STOPS TOTALS
LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS 113.9 + 1241.5 + 317.4 = 1672.8
0
NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 45
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9
- (SECONDS)

1 2 15 40
2 2 46 14
3 2 4 41
4 3 35 60 16

5 2 36 9
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 2108.3 1107.2 1.9 97.3 962.6 (9856.8) + (453.8) + (5360.3) = 15670.9
TOTALS
0
NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 402
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25
- (SECONDS)

1 2 15 40
2 2 46 14
3 2 4 41
4 3 35 60 16
5 2 36 9
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 2108.3 1107.2 1.9 97.3 962.6 (9856.8) + (453.8) + (5360.3) = 15670.9
TOTALS
0
NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 283
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1
- (SECONDS)

1 2 15 45
2 2 58 13
3 2 9 27
4 3 47 60 16
5 2 42 8
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 2108.3 848.8 2.5 83.5 718.0 (7453.3) + (366.3) + (216.7) = 8036.3 TOTALS
0

NO. OF ENTRIES TO SUBPT = 74
NO. OF LINKS RECALCULATED= 1664
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9
- (SECONDS)

```
   1     2    15    45
   2     2    49     4
   3     2     9    27
   4     3    47    60    16
   5     2    42     8
0  TOTAL       TOTAL     MEAN      TOTAL   TOTAL   TOTAL     TOTAL     PENALTY     TOTAL
 DISTANCE      TIME    JOURNEY     UNIFORM  RANDOM+   COST      COST       FOR
PERFORMANCE
 TRAVELLED     SPENT     SPEED      DELAY  OVERSAT    OF        OF       EXCESS     INDEX
                                    DELAY   DELAY     STOPS     QUEUES
 (PCU-KM/H)   (PCU-H/H)   (KM/H)   (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)      ($/H)
0  2108.3      848.6      2.5       83.3    718.0   (7451.6) + (  366.9)  +  ( 212.9)  =   8031.4    TOTALS
0
```

NO. OF ENTRIES TO SUBPT = 12
NO. OF LINKS RECALCULATED= 344
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25
- (SECONDS)

```
   1     2    15    45
   2     2    49     4
   3     2     9    27
   4     3    47    60    16
   5     2    42     8
0  TOTAL       TOTAL     MEAN      TOTAL   TOTAL   TOTAL     TOTAL     PENALTY     TOTAL
 DISTANCE      TIME    JOURNEY     UNIFORM  RANDOM+   COST      COST       FOR
PERFORMANCE
 TRAVELLED     SPENT     SPEED      DELAY  OVERSAT    OF        OF       EXCESS     INDEX
                                    DELAY   DELAY     STOPS     QUEUES
 (PCU-KM/H)   (PCU-H/H)   (KM/H)   (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)      ($/H)
0  2108.3      848.6      2.5       83.3    718.0   (7451.6) + (  366.9)  +  ( 212.9)  =   8031.4    TOTALS
0
```

NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 325
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25 1
- (SECONDS)

```
   1     2    16    46
   2     2    54     9
   3     2     9    27
   4     3    47    60    16
```

```
    5      2     42      8
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT     OF         OF        EXCESS      INDEX
                                  DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2108.3       848.2       2.5       82.9    718.0    (7447.9) + (  365.0)  +  ( 210.0)   =    8022.9     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   15
 NO. OF LINKS RECALCULATED=  455
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1  -1
  - (SECONDS)

    1      2     15     46
    2      2     53      9
    3      2     60     27
    4      3     47     60     11
    5      2     42      8
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT     OF         OF        EXCESS      INDEX
                                  DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  2108.3       477.0       4.4       79.0    350.6    (3995.5) + (  388.4)  +  ( 476.5)   =    4860.4     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   37
 NO. OF LINKS RECALCULATED= 1031
.
0    64 SECOND CYCLE  32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :-    9  25  -1   9  25   1  -1   1
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
   NO   OF STAGES   1      2      3      4      5      6      7

    1      2     15     46
    2      2     54     10
    3      2     59     26
    4      3     47     60     11
    5      2     42      8
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF    PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE          OVERSAT  OF    STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END     END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST     2ND
```

```
     (PCU/H) (PCU/H)  (%)  (SEC) (SEC)   (PCU-H/H)   ($/H)   (%)   ($/H)   (PCU)  (PCU)    ($/H)
(SECONDS)

  101   928  1900   116   9  281   5.8 + 66.7  (674.3)   259  ( 50.4)    84   +     724.7    1   20
46
  102   674  2000   80   9   27   3.0 +  1.9  ( 46.2)   95  ( 13.4)    12          59.6    1   20  46
  103   246  2000   29   9   15   0.8 +  0.2  (  9.7)   65  (  3.3)     3          13.0    1   20  46
  150    10  2000S   82   5   26   0.0 +  0.0  (  0.7)  108  (  0.2)    15  ( 3.1)*   156.7    1   51  15
  151   732   150L   82   5   44   6.7 +  2.2  ( 82.7)  116  ( 12.4)    15  ( 3.1)*   251.0    1   51  15
  160   237  2000S   75   5   17   0.6 +  0.5  ( 10.2)   91  (  3.1)    13  ( 0.5)*    39.6    1   51  15
  161   441   160L   75   5   36   3.5 +  1.0  ( 41.5)  112  (  7.2)    13  ( 0.5)*    75.0    1   51  15
  170   895<  2000   99   5   52   0.3 + 12.5  (119.3)   70  ( 11.4)    24  ( 2.2)*   242.9    1   51
15
  201   193  1875   41   15   27   1.1 +  0.3  ( 13.2)   88  (  3.6)     3          16.8    2   59  10
  202   107  1975   22   15   24   0.6 +  0.1  (  6.5)   80  (  1.8)     2           8.3    2   59  10
  203   392  1975   79   15   40   2.4 +  1.9  ( 40.0)  112  (  9.2)     8          49.3    2   59  10
  250   303<  2000S   68   10    7   0.2 +  0.4  (  5.6)   23  (  1.2)    12  ( 0.0)*     6.8    2   15  54
  251   546   250L   68   10   14   1.4 +  0.7  ( 19.3)   97  (  7.7)    12  ( 0.0)*    27.0    2   15  54
  260   574  2000S   87   10   13   0.3 +  1.7  ( 18.7)   39  (  3.3)    17  ( 0.0)*    21.9    2   15  54
  261   513<   260L   87    8   25   2.1 +  1.5  ( 33.4)   90  (  8.4)    17  ( 0.0)*    41.8    2   15  54
  270   246  2000   20   10    3   0.1 +  0.1  (  1.8)    8  (  0.3)     0  ( 0.0)*     2.0    2   15  54
  301   173  1825   19   11   11   0.4 +  0.1  (  5.0)   54  (  1.9)     2           7.0    3   59  26
  302  1066  1900   133   11  484   9.1 +134.2  (999.9)  269  ( 60.3)   156   +    1393.2    3    0
26
  303   781  1900   97   11   63   3.9 +  9.7  (127.3)  148  ( 24.3)    23         151.6    3    0  26
  350   107  2000S   53    6   34   0.9 +  0.1  (  9.3)  106  (  1.7)     6  ( 0.0)*    11.0    3   31  59
  351   373<   350L   53    6    9   0.5 +  0.4  (  8.3)   46  (  2.8)     6  ( 0.0)*    11.1    3   31  59
  360   107  2000S   53    6   30   0.8 +  0.1  (  8.3)  106  (  1.7)     6  ( 0.0)*    10.0    3   31  59
  361   373<   360L   53    6    9   0.5 +  0.4  (  8.3)   46  (  2.8)     6  ( 0.0)*    11.1    3   31  59
  370   248  2000S   54    6   33   1.9 +  0.3  ( 20.8)  107  (  3.9)     8  ( 0.0)*    24.7    3   31  59
  371   246   370L   54    6    8   0.3 +  0.3  (  5.2)   55  (  2.0)     8  ( 0.0)*     7.2    3   31  59
  380   207  2000   19    6   25   1.3 +  0.1  ( 13.2)  103  (  3.1)     4  ( 0.0)*    16.3    3   26  59
  401   374  1925   78    5   39   2.3 +  1.7  ( 37.3)  110  (  8.6)     8          46.0    4   60  11
  402   159  2000   21    5   17   0.6 +  0.1  (  6.9)   71  (  2.4)     2           9.2    4   52  60  60  11
  403   601  2000   80    5   30   3.0 +  2.0  ( 46.0)  115  ( 14.6)    11          60.6    4   52  60  60
11
  404   444  2000   59    5   22   2.0 +  0.7  ( 25.2)   91  (  8.5)     7          33.6    4   52  60  60
11
  450   481<  2000S   76    7   13   0.7 +  1.0  ( 15.5)   57  (  5.3)    11  ( 0.0)*    20.9    4   16  47
  451   279   450L   76    6   16   0.7 +  0.6  ( 11.7)   43  (  1.7)    11  ( 0.0)*    13.5    4   16  47
  460   517<  2000S   81    6   15   0.9 +  1.4  ( 20.7)   73  (  6.7)    13  ( 0.0)*    27.3    4   16  47
  461   297   460L   81    6   15   0.5 +  0.8  ( 11.8)   41  (  1.8)    13  ( 0.0)*    13.6    4   16  47
  470   584  2000S   71    7   10   0.7 +  1.0  ( 15.7)   74  (  6.3)    11  ( 0.0)*    22.1    4   16  47
  471   124   470L   71    7    7   0.0 +  0.2  (  2.1)   13  (  0.2)    11  ( 0.0)*     2.4    4   16  47
  501   439  1825   59   15   21   1.8 +  0.7  ( 23.6)   80  (  7.4)     7          31.0    5   47   8
  502   393  1900   51   15   19   1.6 +  0.5  ( 19.3)   76  (  6.2)     6          25.5    5   47   8
  503   964  1900   125   15  400   8.7 + 98.5  (996.7)  269  ( 54.4)   118   +    1051.1    5   47
8
  550   223  2025S   65   11   21   1.0 +  0.3  ( 12.3)  102  (  3.3)     7  ( 0.0)*    15.6    5   13  42
  551   389<   550L   65   11   15   1.0 +  0.6  ( 14.8)   35  (  2.3)     7  ( 0.0)*    17.1    5   13  42
  560   450  2025S   75   11   20   1.6 +  0.9  ( 23.6)  107  (  7.0)    11  ( 0.0)*    30.5    5   13  42
```

561 263 560L 75 11 13 0.4 + 0.5 (8.7) 35 (1.4) 11 (0.0)* 10.0 5 13 42
.
0 64 SECOND CYCLE 32 STEPS
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END
DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

570 532 2025S 74 11 23 2.3 + 1.1 (31.2) 109 (8.5) 12 (0.0)* 39.7 5 13 42
571 173 570L 74 11 13 0.3 + 0.3 (5.8) 43 (1.1) 12 (0.0)* 6.9 5 13 42
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 2108.3 476.4 4.4 78.5 350.6 (3990.7) + (388.9) + (476.5) = 4856.1 TOTALS
0**
****
0 CRUISE DELAY STOPS TOTALS
LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS 113.9 + 493.5 + 271.0 = 878.3
0
NO. OF ENTRIES TO SUBPT = 12
NO. OF LINKS RECALCULATED= 343

PROGRAM TRANSYT FINISHED

1 T R A N S Y T

~~~~~~~~~~~~~

TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK

0Implementation for IBM-PC or compatible, running under Microsoft Windows 95

0Program TRANSYT 11, Analysis Program Version 1.1

0Run with file:- "PM_2014OPT.DAT" at 11:21 on 15/04/14

02014 PM

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

~~~~~~

NUMBER OF NODES = 5

NUMBER OF LINKS = 45

NUMBER OF OPTIMISED NODES = 5

MAXIMUM NUMBER OF GRAPHIC PLOTS = 0

NUMBER OF STEPS IN CYCLE = 32

MAXIMUM NUMBER OF SHARED STOPLINES = 2

MAXIMUM NUMBER OF TIMING POINTS = 3

MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS

CORE AVAILABLE = 72000 WORDS

.

0   DATA INPUT :-

~~~~ ~~~~~

0CARD   CARD

NO.   TYPE

(1)= TITLE:- 2014 PM

0CARD   CARD   CYCLE NO. OF   TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW   CRUISE-SPEEDS   OPTIMISE EXTRA HILL-   DELAY   STOP

NO.   TYPE   TIME   STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE   SCALE   SCALE CARD32 0=NONE   COPIES CLIMB   VALUE   VALUE

PER   1-1200 START   END   0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER   P PER

(SEC)   CYCLE   MINS. (SEC)   (SEC)   1=YES CYCLE   %   %   1=SPEEDS 2=FULL   OUTPUT 1=FULL PCU-H   100

2)= 1   64   32   60   2   3   0   1   0   0   1   2   0   0   930   170

0CARD   CARD   LIST OF NODES TO BE OPTIMISED

NO.   TYPE

3)= 2   1   2   3   4   5   0   0   0   0   0   0   0   0   0   0

0   LINKS HAVING SHARED STOPLINES

CARD   CARD   FIRST SET........................   SECOND SET........................   THIRD SET........................

NO.   TYPE

4)= 7   150   151   0   0   0   160   161   0   0   0   250   251   0   0   0

5)= 7   260   261   0   0   0   350   351   0   0   0   360   361   0   0   0

6)= 7   370   371   0   0   0   450   451   0   0   0   460   461   0   0   0

7)= 7   470   471   0   0   0   550   551   0   0   0   560   561   0   0   0

8)= 7   570   571   0   0   0   0   0   0   0   0   0   0   0   0   0

0   NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES
~~~~

CARD CARD NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6 STAGE 7

NO. TYPE NO. CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN

9)= 12 1 8 12 33 12 0 0 0 0 0 0 0 0 0 0

10)= 12 2 55 12 19 12 0 0 0 0 0 0 0 0 0 0

11)= 12 3 59 12 21 12 0 0 0 0 0 0 0 0 0 0

12)= 12 5 33 12 0 12 0 0 0 0 0 0 0 0 0 0

13)= 13 4 27 12 49 0 10 12 0 0 0 0 0 0 0 0

0 LINK CARDS: FIXED DATA

FIRST GREEN SECOND GREEN

CARD CARD LINK EXIT START END START END LINK STOP SAT DELAY DISPSN

NO. TYPE NO. NODE STAGE LAG STAGE LAG STAGE LAG STAGE LAG LENGTH WT.X100 FLOW WT.X100 X100

14)= 31 101 1 1 5 2 0 0 0 0 0 120 0 1900 0 0

15)= 31 102 1 1 5 2 0 0 0 0 0 120 0 2000 0 0

16)= 31 103 1 1 5 2 0 0 0 0 0 120 0 2000 0 0

17)= 31 150 1 2 5 1 0 0 0 0 0 60 0 2000 0 0

18)= 31 151 0 0 0 0 0 0 0 0 0 60 0 0 0 0

19)= 31 160 1 2 5 1 0 0 0 0 0 60 0 2000 0 0

20)= 31 161 0 0 0 0 0 0 0 0 0 60 0 0 0 0

21)= 31 170 1 2 5 1 0 0 0 0 0 60 0 2000 0 0

22)= 31 201 2 1 5 2 0 0 0 0 0 200 0 1875 0 0

23)= 31 202 2 1 5 2 0 0 0 0 0 200 0 1975 0 0

24)= 31 203 2 1 5 2 0 0 0 0 0 200 0 1975 0 0

25)= 31 250 2 2 5 1 0 0 0 0 0 110 0 2000 0 0

26)= 31 251 0 0 0 0 0 0 0 0 0 110 0 0 0 0

27)= 31 260 2 2 5 1 0 0 0 0 0 110 0 2000 0 0

28)=	31	261	0	0	0	0	0	0	0	0	0	110	0	0	0	0
29)=	31	270	2	2	5	1	0	0	0	0	0	110	0	2000	0	0
30)=	31	301	3	1	0	2	0	0	0	0	0	145	0	1825	0	0
31)=	31	302	3	1	5	2	0	0	0	0	0	145	0	1900	0	0
32)=	31	303	3	1	5	2	0	0	0	0	0	145	0	1900	0	0
33)=	31	350	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
34)=	31	351	0	0	0	0	0	0	0	0	0	70	0	0	0	0
35)=	31	360	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
36)=	31	361	0	0	0	0	0	0	0	0	0	70	0	0	0	0
37)=	31	370	3	2	5	1	0	0	0	0	0	70	0	2000	0	0
38)=	31	371	0	0	0	0	0	0	0	0	0	70	0	0	0	0
39)=	31	380	3	2	0	1	0	0	0	0	0	70	0	2000	0	0
40)=	31	401	4	2	0	3	0	0	0	0	0	70	0	1925	0	0
41)=	31	402	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
42)=	31	403	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
43)=	31	404	4	1	5	2	0	2	0	3	0	70	0	2000	0	0
44)=	31	450	4	3	5	1	0	0	0	0	0	75	0	2000	0	0
45)=	31	461	0	0	0	0	0	0	0	0	0	75	0	0	0	0
46)=	31	460	4	3	5	1	0	0	0	0	0	75	0	2000	0	0
47)=	31	451	0	0	0	0	0	0	0	0	0	75	0	0	0	0
48)=	31	470	4	3	5	1	0	0	0	0	0	75	0	2000	0	0
49)=	31	471	0	0	0	0	0	0	0	0	0	75	0	0	0	0
50)=	31	501	5	1	5	2	0	0	0	0	0	200	0	1825	0	0
51)=	31	502	5	1	5	2	0	0	0	0	0	200	0	1900	0	0
52)=	31	503	5	1	5	2	0	0	0	0	0	200	0	1900	0	0
53)=	31	550	5	2	5	1	0	0	0	0	0	125	0	2025	0	0
54)=	31	561	0	0	0	0	0	0	0	0	0	125	0	0	0	0

55)= 31 560 5 2 5 1 0 0 0 0 0 125 0 2025 0 0

56)= 31 551 0 0 0 0 0 0 0 0 0 125 0 0 0 0

57)= 31 570 5 2 5 1 0 0 0 0 0 125 0 2025 0 0

58)= 31 571 0 0 0 0 0 0 0 0 0 125 0 0 0 0

0 LINK CARDS: FLOW DATA

ENTRY 1 .... ENTRY 2 .... ENTRY 3 .... ENTRY 4 ....

CARD CARD LINK TOTAL UNIFORM LINK CRUISE LINK CRUISE LINK CRUISE LINK CRUISE

NO. TYPE NO. FLOW FLOW NO. FLOW SPEED NO. FLOW SPEED NO. FLOW SPEED NO. FLOW SPEED

59)= 32 101 412 0 0 0 48 0 0 0 0 0 0 0 0 0

60)= 32 102 435 0 0 0 48 0 0 0 0 0 0 0 0 0

61)= 32 103 185 0 0 0 48 0 0 0 0 0 0 0 0 0

62)= 32 150 10 0 502 10 40 0 0 0 0 0 0 0 0 0

63)= 32 151 427 0 560 366 40 561 61 48 0 0 0 0 0 0

64)= 32 160 490 0 502 490 40 0 0 0 0 0 0 0 0 0

65)= 32 161 95 0 570 95 40 0 0 0 0 0 0 0 0 0

66)= 32 170 522 0 503 522 40 0 0 0 0 0 0 0 0 0

67)= 32 201 372 0 0 0 48 0 0 0 0 0 0 0 0 0

68)= 32 202 320 0 0 0 48 0 0 0 0 0 0 0 0 0

69)= 32 203 650 0 0 0 48 0 0 0 0 0 0 0 0 0

70)= 32 250 256 0 101 256 40 0 0 0 0 0 0 0 0 0

71)= 32 251 634 0 160 568 40 161 66 48 0 0 0 0 0 0

72)= 32 260 409 0 102 409 40 0 0 0 0 0 0 0 0 0

73)= 32 261 468 0 161 28 40 170 439 48 0 0 0 0 0 0

74)= 32 270 185 0 103 185 40 0 0 0 0 0 0 0 0 0

75)= 32 301 160 0 0 0 48 0 0 0 0 0 0 0 0 0

76)= 32 302 591 0 0 0 48 0 0 0 0 0 0 0 0 0

77)= 32 303 403 0 0 0 48 0 0 0 0 0 0 0 0 0

78)= 32 350 320 0 202 320 40 0 0 0 0 0 0 0 0 0

79)= 32 351 303 0 260 204 40 261 98 48 0 0 0 0 0 0

80)= 32 360 320 0 203 320 40 0 0 0 0 0 0 0 0 0

81)= 32 361 303 0 260 204 40 261 98 48 0 0 0 0 0 0

82)= 32 370 10 0 203 10 40 0 0 0 0 0 0 0 0 0

83)= 32 371 185 0 270 185 40 0 0 0 0 0 0 0 0 0

84)= 32 380 330 0 203 330 40 0 0 0 0 0 0 0 0 0

85)= 32 401 284 0 0 0 48 0 0 0 0 0 0 0 0 0

86)= 32 402 205 0 0 0 48 0 0 0 0 0 0 0 0 0

87)= 32 403 388 0 0 0 48 0 0 0 0 0 0 0 0 0

88)= 32 404 278 0 0 0 48 0 0 0 0 0 0 0 0 0

89)= 32 450 414 0 302 414 40 0 0 0 0 0 0 0 0 0

90)= 32 451 94 0 370 10 40 371 92 48 0 0 0 0 0 0

91)= 32 460 246 0 302 177 40 303 68 48 0 0 0 0 0 0

92)= 32 461 259 0 370 10 40 371 92 48 380 165 48 0 0 0

93)= 32 470 335 0 303 335 40 0 0 0 0 0 0 0 0 0

94)= 32 471 165 0 380 165 40 0 0 0 0 0 0 0 0 0

95)= 32 501 275 0 0 0 48 0 0 0 0 0 0 0 0 0

96)= 32 502 409 0 0 0 48 0 0 0 0 0 0 0 0 0

97)= 32 503 604 0 0 0 48 0 0 0 0 0 0 0 0 0

98)= 32 550 205 0 402 205 40 0 0 0 0 0 0 0 0 0

99)= 32 551 336 0 460 171 40 461 165 48 0 0 0 0 0 0

100)= 32 560 388 0 403 388 40 0 0 0 0 0 0 0 0 0

101)= 32 561 202 0 470 202 40 0 0 0 0 0 0 0 0 0

102)= 32 570 278 0 404 278 40 0 0 0 0 0 0 0 0 0

103)= 32 571 31 0 470 30 40 0 0 0 0 0 0 0 0 0

0*****END OF SUBROUTINE TINPUT*****

.

0 64 SECOND CYCLE 32 STEPS

0INITIAL SETTINGS

- (SECONDS)

0 NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
1	2	8	33					
2	2	55	19					
3	2	59	21					
4	3	27	49	10				
5	2	33	0					

0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START

LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES 1ST 2ND

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H) (SECONDS)

101 412 1900 66 9 27 2.1 + 1.0 (28.6) 92 (8.0) 7 36.6 1 13 33

102 435 2000 66 9 27 2.2 + 1.0 (29.8) 92 (8.4) 7 38.2 1 13 33

103 185 2000 28 9 20 0.8 + 0.2 (9.4) 74 (2.9) 3 12.3 1 13 33

150 10 2000S 39 5 5 0.0 + 0.0 (0.1) 38 (0.1) 8 0.2 1 38 8

151 412< 150L 39 5 27 2.8 + 0.3 (29.2) 100 (6.2) 8 35.4 1 38 8

160	490	2000S	53	5	4	0.0 + 0.5 (4.8)	9 (0.7)	4		5.5	1	38	8		
161	95	160L	53	5	27	0.6 + 0.1 (6.6)	103 (1.4)	4		8.0	1	38	8		
170	522	2000	48	5	3	0.0 + 0.5 (4.4)	5 (0.4)	0		4.8	1	38	8		
201	372	1875	53	15	21	1.6 + 0.6 (20.2)	79 (6.2)	6		26.4	2	60	19		
202	320	1975	43	15	19	1.3 + 0.4 (15.9)	74 (5.0)	4		20.9	2	60	19		
203	650	1975	88	15	37	3.4 + 3.3 (62.4)	112 (15.3)	14		77.7	2	60	19		
250	256	2000S	89	10	27	0.8 + 1.1 (17.8)	114 (4.3)	17		22.1	2	24	55		
251	634	250L	89	10	37	3.8 + 2.7 (60.7)	96 (8.9)	17		69.6	2	24	55		
260	409	2000S	88	10	24	1.1 + 1.6 (25.3)	111 (6.6)	16		31.9	2	24	55		
261	468	260L	88	8	34	2.6 + 1.8 (41.3)	92 (6.3)	16		47.6	2	24	55		
270	185	2000	19	10	3	0.0 + 0.1 (1.5)	25 (0.7)	2		2.2	2	24	55		
301	160	1825	21	11	15	0.5 + 0.1 (6.1)	63 (2.1)	2		8.2	3	59	21		
302	591	1900	90	11	46	3.3 + 4.2 (69.5)	124 (15.4)	14		84.9	3	0	21		
303	403	1900	62	11	25	2.0 + 0.8 (25.7)	87 (7.4)	7		33.1	3	0	21		
350	320	2000S	59	6	27	2.0 + 0.4 (22.4)	106 (4.9)	8		27.3	3	26	59		
351	303	350L	59	6	5	0.1 + 0.3 (4.2)	20 (0.9)	8		5.1	3	26	59		
360	320	2000S	59	6	23	1.7 + 0.4 (19.3)	106 (4.9)	8		24.2	3	26	59		
361	303	360L	59	6	5	0.1 + 0.3 (4.2)	20 (0.9)	8		5.1	3	26	59		
370	10	2000S	18	6	18	0.0 + 0.0 (0.5)	100 (0.1)	0		0.6	3	26	59		
371	185	370L	18	6	2	0.0 + 0.1 (1.0)	3 (0.1)	0		1.1	3	26	59		
380	330	2000	27	6	16	1.3 + 0.2 (13.9)	100 (4.8)	6		18.7	3	21	59		
401	284	1925	36	5	17	1.0 + 0.3 (12.3)	69 (4.1)	4		16.4	4	49	10		
402	205	2000	16	5	6	0.2 + 0.1 (2.9)	36 (1.6)	1		4.5	4	32	49	49	10
403	388	2000	30	5	6	0.5 + 0.2 (6.3)	40 (3.3)	3		9.6	4	32	49	49	10
404	278	2000	21	5	6	0.3 + 0.1 (4.2)	37 (2.2)	2		6.3	4	32	49	49	10
450	414	2000S	125	7	396	2.1 + 43.4 (423.0)	257 (15.5)	63	+	438.5	4	15	27		
451	94	450L	125	6	420	1.1 + 9.9 (102.1)	290 (4.0)	63	+	106.0	4	15	27		

460 246 2000S 124 6 392 1.5 + 25.3 (249.2) 258 (9.2) 62 + 258.5 4 15 27

461 260 460L 124 6 416 3.3 + 26.7 (279.5) 278 (10.5) 62 + 290.0 4 15 27

470 335 2000S 123 7 378 1.9 + 33.2 (326.9) 259 (12.6) 59 + 339.5 4 15 27

471 165 470L 123 7 404 2.1 + 16.4 (172.0) 283 (6.8) 59 + 178.8 4 15 27

501 275 1825 36 15 16 1.0 + 0.3 (11.6) 68 (3.9) 4 15.5 5 38 0

502 409 1900 51 15 18 1.6 + 0.5 (19.2) 74 (6.3) 6 25.6 5 38 0

503 604 1900 75 15 25 2.6 + 1.5 (38.5) 91 (11.5) 10 50.0 5 38 0

550 205 2025S 52 11 22 1.0 + 0.2 (11.7) 87 (2.6) 5 14.4 5 5 33

551 269< 550L 52 10 16 0.9 + 0.3 (11.3) 35 (1.7) 5 13.0 5 5 33

560 388 2025S 59 11 24 2.1 + 0.5 (24.4) 97 (5.5) 9 29.9 5 5 33

561 150< 560L 59 11 22 0.7 + 0.2 (8.5) 44 (1.3) 9 9.8 5 5 33

.

0 64 SECOND CYCLE 32 STEPS

0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START

LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES 1ST 2ND

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H) (SECONDS)

570 278 2025S 33 11 19 1.3 + 0.2 (14.0) 85 (3.4) 5 17.4 5 5 33

571 23 570L 33 11 19 0.1 + 0.0 (1.2) 42 (0.2) 5 1.3 5 5 33

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1622.8 277.5 5.8 59.9 181.3 (2243.3) + (228.9) + (0.0) = 2472.2 TOTALS

0***

0 CRUISE DELAY STOPS TOTALS

LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR

0FUEL CONSUMPTION PREDICTIONS 87.6 + 277.4 + 159.5 = 524.5

0

NO. OF ENTRIES TO SUBPT = 1

NO. OF LINKS RECALCULATED= 45

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9

- (SECONDS)

1 2 8 33

2 2 9 37

3 2 59 21

4 3 27 49 10

5 2 42 9

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1622.8 270.8 6.0 53.2 181.3 (2180.8) + (219.9) + (0.0) = 2400.7 TOTALS

0

NO. OF ENTRIES TO SUBPT = 12

NO. OF LINKS RECALCULATED= 316

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25

- (SECONDS)

1 2 8 33

2 2 34 62

3 2 59 21

4 3 27 49 10

5 2 42 9

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1622.8 268.6 6.0 51.0 181.3 (2160.4) + (218.0) + (0.0) = 2378.3 TOTALS

0

NO. OF ENTRIES TO SUBPT = 11

NO. OF LINKS RECALCULATED= 285

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1

- (SECONDS)

1 2 6 34

2 2 34 62

3 2 57 21

4 3 36 49 4

5 2 41 8

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1622.8 110.6 14.7 47.0 27.3 (690.7) + (182.2) + (0.0) = 872.9 TOTALS

0

NO. OF ENTRIES TO SUBPT = 38

NO. OF LINKS RECALCULATED= 813

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9

- (SECONDS)

1 2 6 34

2 2 34 62

3 2 57 21

4 3 36 49 4

5 2 41 8

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1622.8 110.6 14.7 47.0 27.3 (690.7) + (182.2) + (0.0) = 872.9 TOTALS

0

NO. OF ENTRIES TO SUBPT = 11

NO. OF LINKS RECALCULATED= 323

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25

- (SECONDS)

1	2	6	34	
2	2	34	62	
3	2	57	21	
4	3	36	49	4
5	2	41	8	

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1622.8 110.6 14.7 47.0 27.3 (690.7) + (182.2) + (0.0) = 872.9 TOTALS

0

NO. OF ENTRIES TO SUBPT = 11

NO. OF LINKS RECALCULATED= 325

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25 1

- (SECONDS)

1	2	6	34	
2	2	31	59	
3	2	58	22	
4	3	37	50	5
5	2	37	4	

0	TOTAL DISTANCE TRAVELLED (PCU-KM/H)	TOTAL TIME SPENT (PCU-H/H)	MEAN JOURNEY SPEED (KM/H)	TOTAL UNIFORM DELAY (PCU-H/H)	TOTAL RANDOM+ OVERSAT DELAY (PCU-H/H)	TOTAL COST OF DELAY ($/H)	TOTAL COST OF STOPS ($/H)	PENALTY FOR EXCESS QUEUES ($/H)	TOTAL PERFORMANCE INDEX ($/H)
0	1622.8	110.0	14.8	46.4	27.2	(685.1) +	(180.3) +	(0.0) =	865.4 TOTALS

0

NO. OF ENTRIES TO SUBPT = 18

NO. OF LINKS RECALCULATED= 488

.

0 64 SECOND CYCLE 32 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25 1 -1

- (SECONDS)

1	2	5	34
2	2	31	59

3 2 57 22

4 3 37 50 3

5 2 36 4

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR PERFORMANCE

TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX

DELAY DELAY STOPS QUEUES

(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)

0 1622.8 109.6 14.8 46.6 26.7 (682.0) + (179.4) + (0.0) = 861.5 TOTALS

0

NO. OF ENTRIES TO SUBPT = 22

NO. OF LINKS RECALCULATED= 599

.

0 64 SECOND CYCLE 32 STEPS

0FINAL SETTINGS OBTAINED WITH INCREMENTS :- 9 25 -1 9 25 1 -1 1

- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE

NO OF STAGES 1 2 3 4 5 6 7

1 2 4 33

2 2 29 57

3 2 58 23

4 3 37 50 3

5 2 34 2

0 LINK FLOW SAT DEGREE MEAN TIMES --------DELAY-------- ----STOPS---- ----QUEUE---- PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN INDEX. NODE START START

LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES 1ST 2ND

(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H) (SECONDS)

101	412	1900	56	9	21	1.7 + 0.6	(21.9)	79	(6.8)	6	28.7	1	9	33
102	435	2000	56	9	20	1.8 + 0.6	(22.9)	79	(7.2)	6	30.0	1	9	33
103	185	2000	24	9	16	0.7 + 0.2	(7.7)	66	(2.6)	2	10.3	1	9	33
150	10	2000S	45	5	7	0.0 + 0.0	(0.2)	38	(0.1)	8	0.2	1	38	4
151	427	150L	45	5	27	2.8 + 0.4	(30.0)	105	(6.5)	8	36.5	1	38	4
160	490	2000S	60	5	6	0.2 + 0.6	(8.1)	15	(1.0)	3	9.2	1	38	4
161	95	160L	60	5	28	0.6 + 0.1	(6.9)	107	(1.5)	3	8.3	1	38	4
170	522	2000	54	5	6	0.2 + 0.6	(7.7)	12	(0.9)	1	8.6	1	38	4
201	372	1875	53	15	21	1.6 + 0.6	(20.2)	79	(6.2)	6	26.4	2	34	57
202	320	1975	43	15	19	1.3 + 0.4	(15.9)	74	(5.0)	4	20.9	2	34	57
203	650	1975	88	15	37	3.4 + 3.3	(62.4)	112	(15.3)	14	77.7	2	34	57
250	256	2000S	89	10	24	0.6 + 1.1	(16.0)	64	(2.4)	17	18.4	2	62	29
251	634	250L	89	10	29	2.4 + 2.7	(47.8)	119	(11.0)	17	58.7	2	62	29
260	409	2000S	88	10	22	1.0 + 1.6	(23.7)	52	(3.1)	14	26.8	2	62	29
261	468	260L	88	8	26	1.6 + 1.8	(32.0)	115	(7.8)	14	39.8	2	62	29
270	185	2000	18	10	9	0.3 + 0.1	(4.2)	29	(0.8)	1	5.0	2	62	29
301	160	1825	19	11	13	0.4 + 0.1	(5.2)	56	(1.9)	2	7.1	3	58	23
302	591	1900	80	11	29	2.8 + 1.9	(44.0)	98	(12.2)	11	56.2	3	63	23
303	403	1900	54	11	20	1.7 + 0.6	(21.2)	79	(6.6)	6	27.8	3	63	23
350	320	2000S	64	6	7	0.2 + 0.5	(6.1)	15	(0.7)	7	6.8	3	28	58
351	303	350L	64	6	19	1.2 + 0.4	(14.9)	98	(4.3)	7	19.3	3	28	58
360	320	2000S	64	6	8	0.3 + 0.5	(6.8)	18	(0.8)	7	7.6	3	28	58

361 303 360L 64 6 19 1.2 + 0.4 (15.1) 99 (4.4) 7 19.5 3 28 58

370 10 2000S 20 6 6 0.0 + 0.0 (0.1) 14 (0.0) 3 0.2 3 28 58

371 185 370L 20 6 12 0.5 + 0.1 (5.7) 78 (2.1) 3 7.8 3 28 58

380 330 2000 29 6 5 0.2 + 0.2 (4.0) 13 (0.6) 1 4.7 3 23 58

401 284 1925 52 5 26 1.5 + 0.5 (19.3) 88 (5.2) 5 24.6 4 50 3

402 205 2000 25 5 16 0.7 + 0.2 (8.2) 70 (3.0) 3 11.2 4 42 50 50 3

403 388 2000 48 5 18 1.5 + 0.5 (18.3) 80 (6.5) 5 24.8 4 42 50 50
3

404 278 2000 34 5 16 1.0 + 0.3 (11.8) 73 (4.2) 4 16.1 4 42 50 50
3

450 414 2000S 54 7 5 0.1 + 0.5 (5.0) 18 (1.1) 3 6.1 4 8 37

451 94 450L 54 6 13 0.2 + 0.1 (3.1) 37 (0.5) 3 3.6 4 8 37

460 246 2000S 54 6 7 0.2 + 0.3 (4.6) 51 (1.8) 6 6.4 4 8 37

461 260 460L 54 6 19 1.1 + 0.3 (12.9) 74 (2.8) 6 15.7 4 8 37

470 335 2000S 53 7 8 0.4 + 0.4 (6.9) 65 (3.2) 8 10.0 4 8 37

471 165 470L 53 7 20 0.7 + 0.2 (8.6) 95 (2.3) 8 10.9 4 8 37

501 275 1825 34 15 15 0.9 + 0.3 (10.9) 65 (3.8) 3 14.7 5 39 2

502 409 1900 49 15 17 1.5 + 0.5 (18.1) 72 (6.2) 6 24.3 5 39 2

503 604 1900 73 15 23 2.5 + 1.3 (35.4) 86 (10.9) 10 46.3 5 39 2

550 205 2025S 61 11 23 1.0 + 0.3 (12.0) 102 (3.1) 6 15.1 5 7 34

551 337 550L 61 10 13 0.7 + 0.5 (11.0) 33 (1.6) 6 12.6 5 7 34

560 388 2025S 67 11 23 1.9 + 0.7 (23.5) 107 (6.0) 8 29.6 5 7 34

561 202 560L 67 11 12 0.3 + 0.3 (6.1) 27 (0.8) 8 6.9 5 7 34

.

0 64 SECOND CYCLE 32 STEPS

0 LINK FLOW SAT DEGREE MEAN TIMES --------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START

```
      LINK        SAT    CRUISE            OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END     END

                        DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST     2ND

      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)    ($/H)
(SECONDS)


  570    278   2025S    35    11    19    1.2 +  0.2  ( 13.5)     99  (  4.0)      5            17.5      5     7  34

  571     31    570L    35    11     9    0.0 +  0.0  (  0.7)     22  (  0.1)      5            0.8      5     7  34

0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL

 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE

 TRAVELLED      SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX

                                    DELAY    DELAY      STOPS       QUEUES

 (PCU-KM/H)    (PCU-H/H)    (KM/H)     (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)

0  1622.8       109.5       14.8        46.5     26.7    ( 680.6) + (  178.9)  +  (   0.0)   =    859.5     TOTALS

0*********************************************************************************
***************************************************

0                         CRUISE            DELAY            STOPS            TOTALS

                     LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR     LITRES PER HOUR

0FUEL CONSUMPTION PREDICTIONS       87.6         +      84.2        +     124.7        =     296.4

0

 NO. OF ENTRIES TO SUBPT  =   16

 NO. OF LINKS RECALCULATED=  458


 PROGRAM TRANSYT FINISHED
```

1 T R A N S Y T
~~~~~~~~~~~~~

TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "PM_2017_DM.DAT" at 10:21 on 21/01/15
02017 PM DM

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~
0CARD CARD
NO. TYPE
(1)= TITLE:- 2017 PM DM
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

```
  5)=  7    260    261     0     0     0    350    351     0     0     0    360    361     0     0     0
  6)=  7    370    371     0     0     0    450    451     0     0     0    460    461     0     0     0
  7)=  7    470    471     0     0     0    550    551     0     0     0    560    561     0     0     0
  8)=  7    570    571     0     0     0     0     0     0     0     0     0     0     0     0     0
0                       NODE  CARDS:  STAGE  CHANGE  TIMES  AND  MINIMUM  STAGE  TIMES
 CARD   CARD   NODE      STAGE 1       STAGE 2       STAGE 3       STAGE 4       STAGE 5       STAGE 6
STAGE 7
 NO.  TYPE   NO.  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE
MIN  CHANGE   MIN  CHANGE   MIN
  9)=  12     1    34    12    59    12     0     0     0     0     0     0     0     0     0     0
 10)=  12     2    55    12    23    12     0     0     0     0     0     0     0     0     0     0
 11)=  12     3    50    12    23    12     0     0     0     0     0     0     0     0     0     0
 12)=  12     5    27    12     0    12     0     0     0     0     0     0     0     0     0     0
 13)=  13     4    35    12    60     0    16    12     0     0     0     0     0     0     0     0
0                               LINK  CARDS:  FIXED  DATA
                          FIRST   GREEN             SECOND  GREEN
 CARD   CARD  LINK    EXIT      START        END        START        END      LINK   STOP    SAT
DELAY   DISPSN
 NO.  TYPE   NO.    NODE   STAGE   LAG   STAGE   LAG   STAGE   LAG   STAGE   LAG  LENGTH
WT.X100  FLOW  WT.X100   X100
 14)=  31    101    1    1    5    2    0    0    0    0    0   120    0   1900    0    0
 15)=  31    102    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 16)=  31    103    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 17)=  31    150    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 18)=  31    151    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 19)=  31    160    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 20)=  31    161    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 21)=  31    170    1    2    5    1    0    0    0    0    0    60    0   2000    0    0
 22)=  31    201    2    1    5    2    0    0    0    0    0   200    0   1875    0    0
 23)=  31    202    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 24)=  31    203    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 25)=  31    250    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 26)=  31    251    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 27)=  31    260    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 28)=  31    261    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 29)=  31    270    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 30)=  31    301    3    1    0    2    0    0    0    0    0   145    0   1825    0    0
 31)=  31    302    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 32)=  31    303    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 33)=  31    350    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 34)=  31    351    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 35)=  31    360    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 36)=  31    361    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 37)=  31    370    3    2    5    1    0    0    0    0    0    70    0   2000    0    0
 38)=  31    371    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 39)=  31    380    3    2    0    1    0    0    0    0    0    70    0   2000    0    0
 40)=  31    401    4    2    0    3    0    0    0    0    0    70    0   1925    0    0
 41)=  31    402    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 42)=  31    403    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 43)=  31    404    4    1    5    2    0    2    0    3    0    70    0   2000    0    0
 44)=  31    450    4    3    5    1    0    0    0    0    0    75    0   2000    0    0
```

```
 45)= 31  461   0   0   0   0   0   0   0   0   0   75   0    0    0   0
 46)= 31  460   4   3   5   1   0   0   0   0   0   75   0  2000   0   0
 47)= 31  451   0   0   0   0   0   0   0   0   0   75   0    0    0   0
 48)= 31  470   4   3   5   1   0   0   0   0   0   75   0  2000   0   0
 49)= 31  471   0   0   0   0   0   0   0   0   0   75   0    0    0   0
 50)= 31  501   5   1   5   2   0   0   0   0   0  200   0  1825   0   0
 51)= 31  502   5   1   5   2   0   0   0   0   0  200   0  1900   0   0
 52)= 31  503   5   1   5   2   0   0   0   0   0  200   0  1900   0   0
 53)= 31  550   5   2   5   1   0   0   0   0   0  125   0  2025   0   0
 54)= 31  561   0   0   0   0   0   0   0   0   0  125   0    0    0   0
 55)= 31  560   5   2   5   1   0   0   0   0   0  125   0  2025   0   0
 56)= 31  551   0   0   0   0   0   0   0   0   0  125   0    0    0   0
 57)= 31  570   5   2   5   1   0   0   0   0   0  125   0  2025   0   0
 58)= 31  571   0   0   0   0   0   0   0   0   0  125   0    0    0   0
0                               LINK CARDS:   FLOW DATA
                        ENTRY 1 ...........   ENTRY 2 ...........   ENTRY 3 ...........   ENTRY 4 ...........
 CARD  CARD  LINK  TOTAL  UNIFORM  LINK      CRUISE   LINK      CRUISE   LINK      CRUISE
LINK      CRUISE
 NO.  TYPE   NO.   FLOW   FLOW   NO.   FLOW  SPEED   NO.   FLOW  SPEED   NO.   FLOW
SPEED   NO.  FLOW  SPEED
 59)= 32  101  362   0   0   0   48   0   0   0   0   0   0   0   0   0
 60)= 32  102  583   0   0   0   48   0   0   0   0   0   0   0   0   0
 61)= 32  103  173   0   0   0   48   0   0   0   0   0   0   0   0   0
 62)= 32  150   10   0  502   10   40   0   0   0   0   0   0   0   0   0
 63)= 32  151  219   0  560  178   40  561   41   48   0   0   0   0   0   0
 64)= 32  160  253   0  502  253   40   0   0   0   0   0   0   0   0   0
 65)= 32  161  175   0  570  158   40  571   17   48   0   0   0   0   0   0
 66)= 32  170  885   0  503  885   40   0   0   0   0   0   0   0   0   0
 67)= 32  201  420   0   0   0   48   0   0   0   0   0   0   0   0   0
 68)= 32  202  328   0   0   0   48   0   0   0   0   0   0   0   0   0
 69)= 32  203  704   0   0   0   48   0   0   0   0   0   0   0   0   0
 70)= 32  250  225   0  101  225   40   0   0   0   0   0   0   0   0   0
 71)= 32  251  617   0  160  589   40  161   27   48   0   0   0   0   0   0
 72)= 32  260  519   0  102  519   40   0   0   0   0   0   0   0   0   0
 73)= 32  261  560   0  161   12   40  170  549   48   0   0   0   0   0   0
 74)= 32  270  173   0  103  173   40   0   0   0   0   0   0   0   0   0
 75)= 32  301  152   0   0   0   48   0   0   0   0   0   0   0   0   0
 76)= 32  302  709   0   0   0   48   0   0   0   0   0   0   0   0   0
 77)= 32  303  385   0   0   0   48   0   0   0   0   0   0   0   0   0
 78)= 32  350  328   0  202  328   40   0   0   0   0   0   0   0   0   0
 79)= 32  351  359   0  260  211   40  261  148   48   0   0   0   0   0   0
 80)= 32  360  328   0  203  328   40   0   0   0   0   0   0   0   0   0
 81)= 32  361  359   0  260  211   40  261  148   48   0   0   0   0   0   0
 82)= 32  370   10   0  203   10   40   0   0   0   0   0   0   0   0   0
 83)= 32  371  173   0  270  173   40   0   0   0   0   0   0   0   0   0
 84)= 32  380  376   0  203  376   40   0   0   0   0   0   0   0   0   0
 85)= 32  401   66   0   0   0   48   0   0   0   0   0   0   0   0   0
 86)= 32  402   84   0   0   0   48   0   0   0   0   0   0   0   0   0
 87)= 32  403  233   0   0   0   48   0   0   0   0   0   0   0   0   0
 88)= 32  404  188   0   0   0   48   0   0   0   0   0   0   0   0   0
 89)= 32  450  425   0  302  425   40   0   0   0   0   0   0   0   0   0
```

90)= 32 451 104 0 370 10 40 371 104 48 0 0 0 0 0 0
91)= 32 460 414 0 302 284 40 303 131 48 0 0 0 0 0 0
92)= 32 461 220 0 370 10 40 371 69 48 380 150 48 0 0 0
93)= 32 470 254 0 303 254 40 0 0 0 0 0 0 0 0 0
94)= 32 471 226 0 380 226 40 0 0 0 0 0 0 0 0 0
95)= 32 501 294 0 0 0 48 0 0 0 0 0 0 0 0 0
96)= 32 502 421 0 0 0 48 0 0 0 0 0 0 0 0 0
97)= 32 503 717 0 0 0 48 0 0 0 0 0 0 0 0 0
98)= 32 550 118 0 402 118 40 0 0 0 0 0 0 0 0 0
99)= 32 551 417 0 460 229 40 461 188 48 0 0 0 0 0 0
100)= 32 560 169 0 403 169 40 0 0 0 0 0 0 0 0 0
101)= 32 561 121 0 470 121 40 0 0 0 0 0 0 0 0 0
102)= 32 570 217 0 404 217 40 0 0 0 0 0 0 0 0 0
103)= 32 571 35 0 470 35 40 0 0 0 0 0 0 0 0 0
0 LINK DATA: QUEUE CONSTRAINTS
CARD CARD LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT
QUEUE LINK LIMIT QUEUE
NO. TYPE NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO.
QUEUE WEIGHT NO. QUEUE WEIGHT
104)= 38 150 10 5000 151 10 5000 160 10 5000 161 10 5000 170 10
5000
105)= 38 250 19 5000 251 19 5000 260 19 5000 261 19 5000 270 19
5000
106)= 38 350 12 5000 351 12 5000 360 12 5000 361 12 5000 370 12
5000
107)= 38 371 12 5000 380 12 5000 450 13 5000 451 13 5000 460 13
5000
108)= 38 461 13 5000 470 13 5000 471 13 5000 550 13 5000 551 13
5000
109)= 38 560 13 5000 561 13 5000 570 13 5000 571 13 5000 0 0
0
0LINK 251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 233 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0 64 SECOND CYCLE 32 STEPS
0INITIAL SETTINGS
- (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

1 2 34 59
2 2 55 23
3 2 50 23
4 3 35 60 16
5 2 27 0
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 362 1900 58 9 25 1.8 + 0.7 (23.1) 87 (6.6) 6 29.7 1 39 59
102 583 2000 89 9 43 3.3 + 3.6 (64.4) 120 (14.6) 13 79.0 1 39 59
103 173 2000 26 9 20 0.8 + 0.2 (8.7) 74 (2.7) 2 11.4 1 39 59
150 10 2000S 21 5 19 0.0 + 0.0 (0.5) 90 (0.1) 0 (0.0)* 0.6 1 0 34
151 219 150L 21 5 2 0.0 + 0.1 (1.2) 4 (0.1) 0 (0.0)* 1.3 1 0 34
160 253 2000S 39 5 23 1.4 + 0.2 (14.8) 99 (3.7) 5 (0.0)* 18.5 1 0 34
161 175 160L 39 5 3 0.0 + 0.1 (1.3) 5 (0.1) 5 (0.0)* 1.4 1 0 34
170 885 2000 81 5 36 6.8 + 2.1 (82.6) 113 (14.5) 18 (4.3)* 312.1 1 0 34
201 420 1875 51 15 18 1.5 + 0.5 (19.0) 73 (6.4) 6 25.4 2 60 23
202 328 1975 38 15 16 1.1 + 0.3 (13.2) 66 (4.6) 4 17.7 2 60 23
203 704 1975 81 15 27 3.1 + 2.1 (48.5) 95 (14.1) 13 62.6 2 60 23
250 225 2000S 96 10 51 1.0 + 2.2 (29.9) 109 (3.6) 22 (1.1)* 87.5 2 28 55
251 616 250L 96 10 62 4.4 + 6.1 (98.1) 148 (13.3) 22 (1.1)* 165.4 2 28 55
260 519 2000S 123 10 379 4.3 + 50.4 (508.3) 261 (19.7) 128 (13.7)* 1212.0 2
28 55
261 560 260L 123 8 377 4.3 + 54.4 (545.7) 275 (22.5) 128 (13.7)* 1252.1 2
28 55
270 173 2000 20 10 12 0.5 + 0.1 (5.4) 35 (0.9) 1 (0.0)* 6.2 2 28 55
301 152 1825 14 11 8 0.2 + 0.1 (3.0) 42 (1.3) 1 4.4 3 50 23
302 709 1900 72 11 19 2.4 + 1.3 (34.0) 79 (11.7) 11 45.7 3 55 23
303 385 1900 39 11 12 1.0 + 0.3 (12.4) 59 (4.8) 4 17.1 3 55 23
350 328 2000S 85 6 43 2.4 + 1.5 (36.1) 124 (5.9) 13 (0.0)* 44.3 3 28 50
351 285< 350L 85 6 30 1.1 + 1.3 (22.0) 71 (3.7) 13 (0.0)* 28.0 3 28 50
360 328 2000S 85 6 39 2.1 + 1.5 (33.1) 124 (5.9) 13 (0.0)* 41.3 3 28 50
361 285< 360L 85 6 30 1.1 + 1.3 (22.0) 71 (3.7) 13 (0.0)* 28.0 3 28 50
370 10 2000S 25 6 21 0.0 + 0.0 (0.5) 99 (0.1) 2 (0.0)* 0.7 3 28 50
371 173 370L 25 6 28 1.2 + 0.2 (12.6) 72 (1.8) 2 (0.0)* 14.5 3 28 50
380 376 2000 43 6 19 1.7 + 0.4 (18.9) 103 (5.6) 7 (0.0)* 24.6 3 23 50
401 66 1925 10 5 18 0.3 + 0.1 (3.1) 68 (0.9) 1 4.1 4 60 16
402 84 2000 7 5 6 0.1 + 0.0 (1.3) 37 (0.6) 1 2.0 4 40 60 60 16
403 233 2000 18 5 6 0.3 + 0.1 (3.9) 40 (2.0) 2 5.9 4 40 60 60 16
404 188 2000 15 5 6 0.2 + 0.1 (3.0) 39 (1.6) 1 4.6 4 40 60 60 16
450 425 2000S 113 7 251 2.2 + 27.4 (275.5) 263 (16.3) 43 (4.4)* 513.9 4 21
35
451 104 450L 113 6 270 1.1 + 6.7 (72.5) 223 (3.4) 43 (4.4)* 298.1 4 21 35
460 414 2000S 135 6 509 3.1 + 55.4 (544.4) 276 (16.6) 98 (7.6)* 942.3 4 21
35
461 220 460L 135 6 525 2.6 + 29.4 (298.1) 258 (8.3) 98 (7.6)* 687.6 4 21
35
470 254 2000S 102 7 127 1.4 + 7.5 (83.3) 209 (7.7) 23 (4.4)* 308.6 4 21
35
471 226 470L 102 7 136 1.8 + 6.7 (79.4) 187 (6.2) 23 (4.4)* 303.2 4 21 35
501 294 1825 31 15 12 0.7 + 0.2 (8.9) 55 (3.4) 3 12.3 5 32 0
502 421 1900 43 15 13 1.1 + 0.4 (14.0) 61 (5.4) 5 19.4 5 32 0
503 717 1900 73 15 19 2.4 + 1.4 (34.9) 80 (12.0) 11 46.9 5 32 0
550 118 2025S 58 11 23 0.6 + 0.2 (7.2) 89 (1.5) 8 (0.0)* 8.7 5 5 27

```
  551    301<  550L   58   10   41   2.9 +  0.5  ( 31.9)    79  (  4.8)      8  ( 0.0)*     36.7     5     5  27
  560    169   2025S   40   11   18   0.6 +  0.2  (  7.7)    80  (  2.0)      5  ( 0.0)*      9.6     5     5  27
  561    121   560L   40   11   35   1.0 +  0.1  ( 11.0)   106  (  1.9)      5  ( 0.0)*     12.8     5     5  27
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END     END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS         EXCESS  OF ( ) VALUES
1ST     2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  570    217   2025S   35   11   16   0.7 +  0.2  (  8.9)    76  (  2.4)      4  ( 0.0)*     11.3     5     5  27
  571     35   570L   35   11   33   0.3 +  0.0  (  3.0)   106  (  0.5)      4  ( 0.0)*      3.5     5     5  27
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1647.6       375.6       4.4        71.2    267.7    (3151.4) + (  269.7)  +  (3342.0)   =    6763.1     TOTALS
0*****************************************************************************
*************************************************
0                         CRUISE             DELAY             STOPS            TOTALS
                     LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       88.9        +     389.7        +     187.9        =     666.5
0
 NO. OF ENTRIES TO SUBPT  =    1
 NO. OF LINKS RECALCULATED=   45
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9
  - (SECONDS)

    1      2      6     31
    2      2     55     23
    3      2     50     23
    4      3     35     60     16
    5      2     27      0
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1647.6       369.4       4.5        64.3    268.5    (3094.5) + (  261.7)  +  (2962.9)   =    6319.1     TOTALS
0
```

NO. OF ENTRIES TO SUBPT = 14
NO. OF LINKS RECALCULATED= 352
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25
- (SECONDS)

```
   1     2     6    31
   2     2    55    23
   3     2    11    48
   4     3    35    60    16
   5     2    27     0
```

```
0  TOTAL      TOTAL     MEAN      TOTAL   TOTAL   TOTAL     TOTAL     PENALTY     TOTAL
 DISTANCE      TIME   JOURNEY    UNIFORM  RANDOM+   COST      COST       FOR
PERFORMANCE
 TRAVELLED      SPENT    SPEED      DELAY  OVERSAT    OF        OF       EXCESS     INDEX
                                   DELAY   DELAY     STOPS      QUEUES
 (PCU-KM/H)   (PCU-H/H)  (KM/H)   (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)      ($/H)
0  1647.6      367.7      4.5       62.4   268.5   (3078.0) + (  258.9)  +  (2938.9)  =   6275.8    TOTALS
0
```

NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 297
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1
- (SECONDS)

```
   1     2     6    31
   2     2     0    22
   3     2    14    48
   4     3    47    60     4
   5     2    27     1
```

```
0  TOTAL      TOTAL     MEAN      TOTAL   TOTAL   TOTAL     TOTAL     PENALTY     TOTAL
 DISTANCE      TIME   JOURNEY    UNIFORM  RANDOM+   COST      COST       FOR
PERFORMANCE
 TRAVELLED      SPENT    SPEED      DELAY  OVERSAT    OF        OF       EXCESS     INDEX
                                   DELAY   DELAY     STOPS      QUEUES
 (PCU-KM/H)   (PCU-H/H)  (KM/H)   (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)      ($/H)
0  1647.6      193.3      8.5       51.8   104.8   (1456.2) + (  212.5)  +  (  13.1)  =   1681.8    TOTALS
0
```

NO. OF ENTRIES TO SUBPT = 57
NO. OF LINKS RECALCULATED= 1154
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9
- (SECONDS)

```
   1     2     6    31
   2     2    55    13
   3     2    14    48
   4     3     1    14    22
```

```
   5     2     27     1
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                   DELAY    DELAY     STOPS      QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1647.6       190.3       8.7       48.8    104.8    (1428.4) + (  203.7)  +  (  14.7)   =    1646.8     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   13
 NO. OF LINKS RECALCULATED=  358
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25
  - (SECONDS)

   1     2     6     31
   2     2     55     13
   3     2     14     48
   4     3     1     14     22
   5     2     27     1
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                   DELAY    DELAY     STOPS      QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1647.6       190.3       8.7       48.8    104.8    (1428.4) + (  203.7)  +  (  14.7)   =    1646.8     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  325
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1
  - (SECONDS)

   1     2     3     28
   2     2     56     14
   3     2     15     49
   4     3     1     14     22
   5     2     26     0
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                   DELAY    DELAY     STOPS      QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1647.6       189.2       8.7       47.7    104.8    (1418.2) + (  202.0)  +  (  11.6)   =    1631.8     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   15
 NO. OF LINKS RECALCULATED=  404
```

.
0   64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9 25 -1   9 25   1 -1
  - (SECONDS)

1	2	2	28	
2	2	55	15	
3	2	17	49	
4	3	1	14	21
5	2	25	0	

0 TOTAL   TOTAL   MEAN   TOTAL   TOTAL   TOTAL   TOTAL   PENALTY   TOTAL
  DISTANCE   TIME   JOURNEY   UNIFORM   RANDOM+   COST   COST   FOR
PERFORMANCE
 TRAVELLED   SPENT   SPEED   DELAY   OVERSAT   OF   OF   EXCESS   INDEX
                                   DELAY   DELAY   STOPS   QUEUES
 (PCU-KM/H)   (PCU-H/H)   (KM/H)   (PCU-H/H)(PCU-H/H)   ($/H)   ($/H)   ($/H)   ($/H)
0 1647.6   162.4   10.1   47.1   78.5   (1168.5) + (204.0) + (131.9)   =   1504.3   TOTALS
0
 NO. OF ENTRIES TO SUBPT =   24
 NO. OF LINKS RECALCULATED= 648
.
0   64 SECOND CYCLE 32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :-   9 25 -1   9 25   1 -1   1
  - (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
1	2	2	28					
2	2	55	15					
3	2	17	49					
4	3	63	12	19				
5	2	25	0					

0 LINK   FLOW   SAT   DEGREE MEAN TIMES -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW   OF   PER PCU   UNIFORM RANDOM+ COST   MEAN   COST   MEAN
INDEX.   NODE   START START
        LINK   SAT   CRUISE   OVERSAT OF   STOPS   OF   MAX. AVERAGE WEIGHTED SUM
END   END
                             DELAY (U+R+O=MEAN Q) DELAY   /PCU   STOPS   EXCESS OF ( ) VALUES
1ST   2ND
      (PCU/H) (PCU/H) (%) (SEC) (SEC)   (PCU-H/H)   ($/H)   (%)   ($/H)   (PCU) (PCU)   ($/H)
(SECONDS)

   101   362   1900   55   9   23   1.7 + 0.6 (21.7)   84 (6.4)   6   28.1   1   7 28
   102   583   2000   85   9   36   3.1 + 2.7 (54.0)   109 (13.3)   12   67.3   1   7 28
   103   173   2000   25   9   19   0.7 + 0.2 (8.3)   72 (2.6)   2   10.9   1   7 28
   150   10   2000S   22   5   5   0.0 + 0.0 (0.1)   31 (0.0)   4 (0.0)*   0.2   1   33   2
   151   219   150L   22   5   18   1.0 + 0.1 (10.4)   101 (3.2)   4 (0.0)*   13.6   1   33   2
   160   253   2000S   40   5   5   0.2 + 0.2 (3.6)   36 (1.3)   6 (0.0)*   4.9   1   33   2
   161   175   160L   40   5   18   0.8 + 0.1 (8.3)   102 (2.6)   6 (0.0)*   10.9   1   33   2
   170   885   2000   83   5   12   0.5 + 2.4 (27.5)   38 (5.0)   13 (0.2)*   42.1   1   33   2

```
  201   420  1875   72   15   30   2.3 +  1.2  ( 32.8)    98  (  8.7)     8           41.4    2   60  15
  202   328  1975   53   15   24   1.7 +  0.6  ( 20.7)    86  (  5.9)     5           26.6    2   60  15
  203   704  1975  114   15  270   5.7 + 47.1  (491.2)   256  ( 37.9)    60    +      529.1    2   60
15
  250   225  2000S   75   10   14   0.5 +  0.4  (  8.4)    89  (  2.9)    10  ( 0.0)*    11.3    2   20  55
  251   616   250L   75   10   18   2.0 +  1.1  ( 28.5)    66  (  6.0)    10  ( 0.0)*    34.5    2   20  55
  260   519  2000S   96   10   38   1.4 +  4.1  ( 51.3)   131  (  9.9)    26  ( 1.2)*   122.1    2   20  55
  261   560   260L   96    8   41   1.9 +  4.5  ( 59.2)   105  (  8.6)    26  ( 1.2)*   128.8    2   20  55
  270   173  2000    15   10    4   0.1 +  0.1  (  1.8)    42  (  1.1)     2  ( 0.0)*     2.8    2   20  55
  301   152  1825    16   11   10   0.3 +  0.1  (  4.1)    50  (  1.6)     1            5.7    3   17  49
  302   709  1900    85   11   30   3.2 +  2.8  ( 55.4)   102  ( 15.2)    14           70.6    3   22  49
  303   385  1900    46   11   17   1.4 +  0.4  ( 16.7)    70  (  5.7)     5           22.3    3   22  49
  350   328  2000S   78    6   12   0.2 +  0.9  ( 10.1)    37  (  1.8)    12  ( 0.0)*    12.0    3   54  17
  351   359   350L   78    6   27   1.8 +  0.9  ( 25.1)   111  (  5.8)    12  ( 0.0)*    31.1    3   54  17
  360   288<  2000S   74    6   14   0.5 +  0.6  ( 10.3)    30  (  1.4)     9  ( 0.0)*    11.7    3   54  17
  361   359   360L   74    6   26   1.9 +  0.8  ( 24.5)   110  (  5.7)     9  ( 0.0)*    30.3    3   54  17
  370     9  2000S   21    6    8   0.0 +  0.0  (  0.2)    18  (  0.0)     3  ( 0.0)*     0.2    3   54  17
  371   173   370L   21    6   29   1.3 +  0.1  ( 13.0)   104  (  2.6)     3  ( 0.0)*    15.6    3   54  17
  380   330<  2000    32    6    8   0.5 +  0.2  (  6.5)    18  (  1.0)     1  ( 0.0)*     7.5    3   49  17
  401    66  1925    27    5   36   0.5 +  0.2  (  6.1)    99  (  1.4)     1            7.5    4   12  19
  402    84  2000    17    5   23   0.4 +  0.1  (  5.0)    86  (  1.5)     1            6.5    4    4  12  12  19
  403   233  2000    47    5   27   1.3 +  0.4  ( 16.3)    99  (  4.9)     4           21.2    4    4  12  12
19
  404   188  2000    38    5   26   1.0 +  0.3  ( 12.5)    94  (  3.7)     3           16.2    4    4  12  12
19
  450   425  2000S   42    7    3   0.0 +  0.3  (  2.8)     4  (  0.3)     1  ( 0.0)*     3.1    4   24  63
  451   103   450L   42    6    7   0.1 +  0.1  (  1.9)    27  (  0.4)     1  ( 0.0)*     2.4    4   24  63
  460   415  2000S   49    6    3   0.0 +  0.3  (  3.1)     6  (  0.4)     3  ( 0.0)*     3.5    4   24  63
  461   201<  460L   49    6   11   0.4 +  0.2  (  5.5)    56  (  1.8)     3  ( 0.0)*     7.3    4   24  63
  470   254  2000S   36    7    2   0.0 +  0.2  (  1.5)     4  (  0.1)     3  ( 0.0)*     1.7    4   24  63
  471   198<  470L   36    7   10   0.4 +  0.1  (  5.2)    66  (  2.2)     3  ( 0.0)*     7.3    4   24  63
  501   294  1825    29   15   10   0.6 +  0.2  (  7.9)    51  (  3.2)     3           11.1    5   30   0
  502   421  1900    41   15   11   1.0 +  0.3  ( 12.4)    56  (  4.9)     5           17.3    5   30   0
  503   717  1900    69   15   16   2.1 +  1.1  ( 29.9)    73  ( 10.9)    10           40.8    5   30   0
  550   118  2025S   78   11   19   0.2 +  0.4  (  5.8)    81  (  1.4)    11  ( 0.0)*     7.2    5    5  25
  551   402<  550L   78   10   37   2.8 +  1.4  ( 38.9)   112  (  6.8)    11  ( 0.0)*    45.7    5    5  25
  560   169  2025S   44   11    9   0.2 +  0.2  (  4.0)    18  (  0.5)     3  ( 0.0)*     4.4    5    5  25
  561   121   560L   44   11   27   0.7 +  0.2  (  8.4)   104  (  1.8)     3  ( 0.0)*    10.2    5    5  25
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------  ----STOPS----  ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF    PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE            OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)
```

```
  570    217   2025S   38    11    8    0.2 +  0.3  (  4.7)    17  (  0.5)      1  ( 0.0)*      5.2      5      5  25
  571     35    570L   38    11   25    0.2 +  0.0  (  2.3)   102  (  0.5)      1  ( 0.0)*      2.8      5      5  25
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1647.6        162.3       10.2        47.0     78.5    (1167.6) + (  203.4)  +  ( 131.9)   =    1502.8     TOTALS
0*******************************************************************************
****************************************************
0                          CRUISE             DELAY             STOPS            TOTALS
                      LITRES PER HOUR     LITRES PER HOUR    LITRES PER HOUR     LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       88.9        +     144.4        +     141.7        =     375.0
0
 NO. OF ENTRIES TO SUBPT  =   13
 NO. OF LINKS RECALCULATED=  377

 PROGRAM TRANSYT FINISHED
```

1 T R A N S Y T
~~~~~~~~~~~~~

TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "PM_2017_DS.DAT" at 10:21 on 21/01/15
02017 PM DS

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~
0CARD CARD
NO. TYPE
(1)= TITLE:- 2017 PM DS
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

```
  5)=  7   260   261    0    0    0   350   351    0    0    0   360   361    0    0    0
  6)=  7   370   371    0    0    0   450   451    0    0    0   460   461    0    0    0
  7)=  7   470   471    0    0    0   550   551    0    0    0   560   561    0    0    0
  8)=  7   570   571    0    0    0    0    0    0    0    0    0    0    0    0    0
0                    NODE  CARDS:  STAGE  CHANGE  TIMES  AND  MINIMUM  STAGE  TIMES
 CARD   CARD   NODE      STAGE 1      STAGE 2      STAGE 3      STAGE 4      STAGE 5      STAGE 6
STAGE 7
 NO.  TYPE   NO.  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE   MIN  CHANGE
MIN  CHANGE   MIN  CHANGE   MIN
  9)=  12    1    34    12    59    12    0    0    0    0    0    0    0    0    0    0
 10)=  12    2    55    12    23    12    0    0    0    0    0    0    0    0    0    0
 11)=  12    3    50    12    23    12    0    0    0    0    0    0    0    0    0    0
 12)=  12    5    27    12    0    12    0    0    0    0    0    0    0    0    0    0
 13)=  13    4    35    12    60    0    16    12    0    0    0    0    0    0    0    0
0                              LINK  CARDS:  FIXED  DATA
                      FIRST   GREEN            SECOND  GREEN
 CARD   CARD  LINK    EXIT     START        END        START        END      LINK   STOP    SAT
DELAY   DISPSN
 NO.  TYPE   NO.    NODE   STAGE   LAG   STAGE   LAG   STAGE   LAG   STAGE   LAG  LENGTH
WT.X100  FLOW  WT.X100   X100
 14)=  31   101    1    1    5    2    0    0    0    0    0   120    0   1900    0    0
 15)=  31   102    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 16)=  31   103    1    1    5    2    0    0    0    0    0   120    0   2000    0    0
 17)=  31   150    1    2    5    1    0    0    0    0    0    60    0  2000    0    0
 18)=  31   151    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 19)=  31   160    1    2    5    1    0    0    0    0    0    60    0  2000    0    0
 20)=  31   161    0    0    0    0    0    0    0    0    0    60    0    0    0    0
 21)=  31   170    1    2    5    1    0    0    0    0    0    60    0  2000    0    0
 22)=  31   201    2    1    5    2    0    0    0    0    0   200    0   1875    0    0
 23)=  31   202    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 24)=  31   203    2    1    5    2    0    0    0    0    0   200    0   1975    0    0
 25)=  31   250    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 26)=  31   251    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 27)=  31   260    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 28)=  31   261    0    0    0    0    0    0    0    0    0   110    0    0    0    0
 29)=  31   270    2    2    5    1    0    0    0    0    0   110    0   2000    0    0
 30)=  31   301    3    1    0    2    0    0    0    0    0   145    0   1825    0    0
 31)=  31   302    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 32)=  31   303    3    1    5    2    0    0    0    0    0   145    0   1900    0    0
 33)=  31   350    3    2    5    1    0    0    0    0    0    70    0  2000    0    0
 34)=  31   351    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 35)=  31   360    3    2    5    1    0    0    0    0    0    70    0  2000    0    0
 36)=  31   361    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 37)=  31   370    3    2    5    1    0    0    0    0    0    70    0  2000    0    0
 38)=  31   371    0    0    0    0    0    0    0    0    0    70    0    0    0    0
 39)=  31   380    3    2    0    1    0    0    0    0    0    70    0  2000    0    0
 40)=  31   401    4    2    0    3    0    0    0    0    0    70    0  1925    0    0
 41)=  31   402    4    1    5    2    0    2    0    3    0    70    0  2000    0    0
 42)=  31   403    4    1    5    2    0    2    0    3    0    70    0  2000    0    0
 43)=  31   404    4    1    5    2    0    2    0    3    0    70    0  2000    0    0
 44)=  31   450    4    3    5    1    0    0    0    0    0    75    0  2000    0    0
```

45)= 31 461 0 0 0 0 0 0 0 0 0 75 0 0 0 0
46)= 31 460 4 3 5 1 0 0 0 0 0 75 0 2000 0 0
47)= 31 451 0 0 0 0 0 0 0 0 0 75 0 0 0 0
48)= 31 470 4 3 5 1 0 0 0 0 0 75 0 2000 0 0
49)= 31 471 0 0 0 0 0 0 0 0 0 75 0 0 0 0
50)= 31 501 5 1 5 2 0 0 0 0 0 200 0 1825 0 0
51)= 31 502 5 1 5 2 0 0 0 0 0 200 0 1900 0 0
52)= 31 503 5 1 5 2 0 0 0 0 0 200 0 1900 0 0
53)= 31 550 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
54)= 31 561 0 0 0 0 0 0 0 0 0 125 0 0 0 0
55)= 31 560 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
56)= 31 551 0 0 0 0 0 0 0 0 0 125 0 0 0 0
57)= 31 570 5 2 5 1 0 0 0 0 0 125 0 2025 0 0
58)= 31 571 0 0 0 0 0 0 0 0 0 125 0 0 0 0
0 LINK CARDS: FLOW DATA
ENTRY 1 .... ENTRY 2 .... ENTRY 3 .... ENTRY 4 ....
CARD CARD LINK TOTAL UNIFORM LINK CRUISE LINK CRUISE LINK CRUISE
LINK CRUISE
NO. TYPE NO. FLOW FLOW NO. FLOW SPEED NO. FLOW SPEED NO. FLOW
SPEED NO. FLOW SPEED
59)= 32 101 346 0 0 0 48 0 0 0 0 0 0 0 0 0
60)= 32 102 569 0 0 0 48 0 0 0 0 0 0 0 0 0
61)= 32 103 173 0 0 0 48 0 0 0 0 0 0 0 0 0
62)= 32 150 10 0 502 10 40 0 0 0 0 0 0 0 0 0
63)= 32 151 217 0 560 183 40 561 34 48 0 0 0 0 0 0
64)= 32 160 225 0 502 225 40 0 0 0 0 0 0 0 0 0
65)= 32 161 156 0 570 141 40 571 15 48 0 0 0 0 0 0
66)= 32 170 914 0 503 914 40 0 0 0 0 0 0 0 0 0
67)= 32 201 399 0 0 0 48 0 0 0 0 0 0 0 0 0
68)= 32 202 339 0 0 0 48 0 0 0 0 0 0 0 0 0
69)= 32 203 715 0 0 0 48 0 0 0 0 0 0 0 0 0
70)= 32 250 203 0 101 203 40 0 0 0 0 0 0 0 0 0
71)= 32 251 539 0 160 526 40 161 13 48 0 0 0 0 0 0
72)= 32 260 511 0 102 511 40 0 0 0 0 0 0 0 0 0
73)= 32 261 619 0 161 10 40 170 613 48 0 0 0 0 0 0
74)= 32 270 173 0 103 173 40 0 0 0 0 0 0 0 0 0
75)= 32 301 88 0 0 0 48 0 0 0 0 0 0 0 0 0
76)= 32 302 590 0 0 0 48 0 0 0 0 0 0 0 0 0
77)= 32 303 321 0 0 0 48 0 0 0 0 0 0 0 0 0
78)= 32 350 339 0 202 339 40 0 0 0 0 0 0 0 0 0
79)= 32 351 406 0 260 212 40 261 194 48 0 0 0 0 0 0
80)= 32 360 339 0 203 339 40 0 0 0 0 0 0 0 0 0
81)= 32 361 406 0 260 212 40 261 194 48 0 0 0 0 0 0
82)= 32 370 10 0 203 10 40 0 0 0 0 0 0 0 0 0
83)= 32 371 173 0 270 173 40 0 0 0 0 0 0 0 0 0
84)= 32 380 376 0 203 376 40 0 0 0 0 0 0 0 0 0
85)= 32 401 184 0 0 0 48 0 0 0 0 0 0 0 0 0
86)= 32 402 112 0 0 0 48 0 0 0 0 0 0 0 0 0
87)= 32 403 264 0 0 0 48 0 0 0 0 0 0 0 0 0
88)= 32 404 172 0 0 0 48 0 0 0 0 0 0 0 0 0
89)= 32 450 354 0 302 354 40 0 0 0 0 0 0 0 0 0

90)= 32 451 104 0 370 10 40 371 104 48 0 0 0 0 0 0
91)= 32 460 345 0 302 236 40 303 109 48 0 0 0 0 0 0
92)= 32 461 220 0 370 10 40 371 69 48 380 150 48 0 0 0
93)= 32 470 212 0 303 212 40 0 0 0 0 0 0 0 0 0
94)= 32 471 226 0 380 226 40 0 0 0 0 0 0 0 0 0
95)= 32 501 294 0 0 0 48 0 0 0 0 0 0 0 0 0
96)= 32 502 376 0 0 0 48 0 0 0 0 0 0 0 0 0
97)= 32 503 764 0 0 0 48 0 0 0 0 0 0 0 0 0
98)= 32 550 156 0 402 156 40 0 0 0 0 0 0 0 0 0
99)= 32 551 378 0 460 190 40 461 188 48 0 0 0 0 0 0
100)= 32 560 189 0 403 189 40 0 0 0 0 0 0 0 0 0
101)= 32 561 101 0 470 101 40 0 0 0 0 0 0 0 0 0
102)= 32 570 202 0 404 202 40 0 0 0 0 0 0 0 0 0
103)= 32 571 29 0 470 29 40 0 0 0 0 0 0 0 0 0
0 LINK DATA: QUEUE CONSTRAINTS
CARD CARD LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT QUEUE LINK LIMIT
QUEUE LINK LIMIT QUEUE
NO. TYPE NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO. QUEUE WEIGHT NO.
QUEUE WEIGHT NO. QUEUE WEIGHT
104)= 38 150 10 5000 151 10 5000 160 10 5000 161 10 5000 170 10
5000
105)= 38 250 19 5000 251 19 5000 260 19 5000 261 19 5000 270 19
5000
106)= 38 350 12 5000 351 12 5000 360 12 5000 361 12 5000 370 12
5000
107)= 38 371 12 5000 380 12 5000 450 13 5000 451 13 5000 460 13
5000
108)= 38 461 13 5000 470 13 5000 471 13 5000 550 13 5000 551 13
5000
109)= 38 560 13 5000 561 13 5000 570 13 5000 571 13 5000 0 0
0
0LINK 251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 233 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0 64 SECOND CYCLE 32 STEPS
0INITIAL SETTINGS
- (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

1 2 34 59
2 2 55 23
3 2 50 23
4 3 35 60 16
5 2 27 0
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 346 1900 55 9 24 1.7 + 0.6 (21.5) 86 (6.2) 6 27.8 1 39 59
102 569 2000 87 9 39 3.2 + 3.0 (58.0) 114 (13.6) 12 71.6 1 39 59
103 173 2000 26 9 20 0.8 + 0.2 (8.7) 74 (2.7) 2 11.4 1 39 59
150 10 2000S 21 5 19 0.0 + 0.0 (0.5) 87 (0.1) 0 (0.0)* 0.6 1 0 34
151 217 150L 21 5 2 0.0 + 0.1 (1.2) 4 (0.1) 0 (0.0)* 1.3 1 0 34
160 225 2000S 35 5 22 1.2 + 0.2 (13.0) 99 (3.2) 4 (0.0)* 16.3 1 0 34
161 156 160L 35 5 3 0.0 + 0.1 (1.1) 4 (0.1) 4 (0.0)* 1.2 1 0 34
170 914 2000 84 5 37 7.0 + 2.5 (88.3) 115 (15.3) 19 (4.8)* 343.9 1 0 34
201 399 1875 49 15 17 1.4 + 0.5 (17.7) 71 (5.9) 5 23.6 2 60 23
202 339 1975 39 15 16 1.2 + 0.3 (13.7) 67 (4.7) 4 18.5 2 60 23
203 715 1975 83 15 28 3.2 + 2.3 (51.0) 97 (14.6) 13 65.6 2 60 23
250 203 2000S 85 10 27 0.8 + 0.7 (14.3) 66 (1.9) 14 (0.0)* 16.2 2 28 55
251 539 250L 85 10 38 3.7 + 1.9 (52.5) 119 (9.4) 14 (0.0)* 61.8 2 28 55
260 511 2000S 129 10 446 4.8 + 58.6 (588.9) 275 (20.5) 154 (15.0)* 1358.3 2
28 55
261 619 260L 129 8 442 5.1 + 70.9 (706.6) 265 (23.9) 154 (15.0)* 1479.4 2
28 55
270 173 2000 20 10 12 0.5 + 0.1 (5.4) 35 (0.9) 1 (0.0)* 6.2 2 28 55
301 88 1825 8 11 7 0.1 + 0.0 (1.7) 40 (0.7) 1 2.4 3 50 23
302 590 1900 60 11 15 1.8 + 0.8 (23.6) 70 (8.7) 8 32.3 3 55 23
303 321 1900 33 11 12 0.8 + 0.2 (9.7) 56 (3.8) 3 13.5 3 55 23
350 339 2000S 91 6 52 2.5 + 2.4 (45.6) 135 (6.7) 15 (0.5)* 75.4 3 28 50
351 317< 350L 91 6 40 1.3 + 2.2 (32.7) 83 (4.9) 15 (0.5)* 60.7 3 28 50
360 339 2000S 91 6 48 2.2 + 2.4 (42.4) 135 (6.7) 15 (0.5)* 72.0 3 28 50
361 317< 360L 91 6 40 1.3 + 2.2 (32.6) 83 (4.9) 15 (0.5)* 60.5 3 28 50
370 10 2000S 25 6 21 0.0 + 0.0 (0.5) 101 (0.1) 2 (0.0)* 0.7 3 28 50
371 173 370L 25 6 28 1.2 + 0.2 (12.6) 72 (1.8) 2 (0.0)* 14.5 3 28 50
380 376 2000 43 6 19 1.6 + 0.4 (18.8) 103 (5.6) 7 (0.0)* 24.4 3 23 50
401 184 1925 29 5 20 0.8 + 0.2 (9.5) 75 (2.9) 3 12.4 4 60 16
402 112 2000 9 5 6 0.1 + 0.0 (1.7) 37 (0.9) 1 2.6 4 40 60 60 16
403 264 2000 21 5 7 0.4 + 0.1 (4.5) 40 (2.2) 2 6.7 4 40 60 60 16
404 172 2000 13 5 6 0.2 + 0.1 (2.7) 39 (1.4) 1 4.1 4 40 60 60 16
450 354 2000S 98 7 83 1.8 + 6.4 (76.1) 176 (9.1) 16 (0.7)* 117.8 4 21 35
451 104 450L 98 6 92 0.8 + 1.9 (24.6) 147 (2.2) 16 (0.7)* 59.4 4 21 35
460 345 2000S 121 6 347 2.0 + 31.2 (309.0) 281 (14.1) 62 (5.4)* 594.7 4 21
35
461 220 460L 121 6 360 2.1 + 19.9 (204.7) 241 (7.7) 62 (5.4)* 484.1 4 21
35
470 212 2000S 93 7 63 1.2 + 2.6 (34.7) 152 (4.7) 12 (0.0)* 39.4 4 21 35
471 226 470L 93 7 71 1.7 + 2.8 (41.5) 123 (4.1) 12 (0.0)* 45.6 4 21 35
501 294 1825 31 15 12 0.7 + 0.2 (8.9) 55 (3.4) 3 12.3 5 32 0
502 376 1900 38 15 12 1.0 + 0.3 (12.0) 58 (4.6) 4 16.6 5 32 0
503 764 1900 78 15 21 2.7 + 1.7 (41.0) 85 (13.6) 13 54.6 5 32 0
550 156 2025S 62 11 25 0.8 + 0.3 (9.9) 92 (2.1) 9 (0.0)* 12.0 5 5 27
551 297< 550L 62 10 41 2.9 + 0.5 (31.8) 86 (4.8) 9 (0.0)* 36.6 5 5 27
560 189 2025S 40 11 17 0.7 + 0.2 (8.4) 79 (2.2) 5 (0.0)* 10.6 5 5 27

561 101 560L 40 11 35 0.9 + 0.1 (9.2) 106 (1.6) 5 (0.0)* 10.8 5 5 27
.
0 64 SECOND CYCLE 32 STEPS
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END
DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

570 202 2025S 32 11 15 0.7 + 0.2 (8.1) 75 (2.2) 3 (0.0)* 10.3 5 5 27
571 29 570L 32 11 33 0.2 + 0.0 (2.5) 105 (0.4) 3 (0.0)* 2.9 5 5 27
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1605.2 326.4 4.9 69.0 221.7 (2703.7) + (251.3) + (2438.8) = 5393.8 TOTALS
0***
****
0 CRUISE DELAY STOPS TOTALS
LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS 86.6 + 334.3 + 175.2 = 596.1
0
NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 45
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9
- (SECONDS)

1 2 7 32
2 2 37 5
3 2 50 23
4 3 35 60 16
5 2 36 9
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1605.2 314.2 5.1 58.4 220.0 (2589.5) + (238.6) + (1934.1) = 4762.2 TOTALS
0
NO. OF ENTRIES TO SUBPT = 16
NO. OF LINKS RECALCULATED= 404

```
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25
  - (SECONDS)

    1     2     7    32
    2     2    37     5
    3     2    50    23
    4     3    35    60    16
    5     2    36     9
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE        TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                 DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1605.2       314.2       5.1       58.4    220.0    (2589.5) + (  238.6)  +  (1934.1)   =    4762.2     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  299
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1
  - (SECONDS)

    1     2     7    32
    2     2    39     4
    3     2    60    23
    4     3    47    60     7
    5     2    36     8
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE        TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                 DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1605.2       193.7       8.3       47.2    110.9    (1469.6) + (  210.3)  +  (1146.3)   =    2826.1     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   53
 NO. OF LINKS RECALCULATED= 1079
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9
  - (SECONDS)

    1     2     7    32
    2     2    39     4
    3     2     5    32
    4     3    47    60     7
    5     2    36     8
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
```

```
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST      COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                  DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1605.2       193.0       8.3       46.4    110.9    (1462.5) + (  207.1)  +  (1146.3)   =    2815.8     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  321
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25
  - (SECONDS)

    1      2      7     32
    2      2     39      4
    3      2      5     32
    4      3     47     60      7
    5      2     36      8
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST      COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                  DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1605.2       193.0       8.3       46.4    110.9    (1462.5) + (  207.1)  +  (1146.3)   =    2815.8     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  321
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1
  - (SECONDS)

    1      2      7     32
    2      2     39      4
    3      2      5     32
    4      3     47     60      7
    5      2     36      8
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST      COST        FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF        OF        EXCESS      INDEX
                                  DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1605.2       193.0       8.3       46.4    110.9    (1462.5) + (  207.1)  +  (1146.3)   =    2815.8     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  317
.
0    64 SECOND CYCLE  32 STEPS
```

```
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1  -1
  - (SECONDS)

    1      2      7     32
    2      2     46      4
    3      2      3     32
    4      3     47     60      9
    5      2     34      9
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY     UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT    OF         OF        EXCESS      INDEX
                                      DELAY    DELAY      STOPS      QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)      ($/H)       ($/H)       ($/H)
0  1605.2       195.4       8.2       48.5    111.1    (1484.6) + (  204.4)  +  ( 136.9)   =    1825.9     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   33
 NO. OF LINKS RECALCULATED=  858
.
0    64 SECOND CYCLE  32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :-    9  25  -1   9  25   1  -1   1
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
   NO   OF STAGES   1      2      3      4      5      6      7

    1      2     14     39
    2      2     44      2
    3      2      5     34
    4      3     47     60      9
    5      2     36     11
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF     STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST     2ND
     (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

   101    346   1900    55    9    24    1.7 +  0.6  ( 21.5)    86  (  6.2)      6            27.8     1    19  39
   102    569   2000    87    9    39    3.2 +  3.0  ( 58.0)   114  ( 13.6)     12            71.6     1    19  39
   103    173   2000    26    9    20    0.8 +  0.2  (  8.7)    74  (  2.7)      2            11.4     1    19  39
   150     10   2000S   21    5     4    0.0 +  0.0  (  0.1)    26  (  0.0)      4  ( 0.0)*     0.1     1    44  14
   151    217    150L   21    5    23    1.3 +  0.1  ( 12.9)   103  (  3.3)      4  ( 0.0)*    16.2     1    44  14
   160    225   2000S   35    5     4    0.1 +  0.2  (  2.6)    29  (  1.0)      5  ( 0.0)*     3.6     1    44  14
   161    156    160L   35    5    24    0.9 +  0.1  (  9.5)   103  (  2.4)      5  ( 0.0)*    11.9     1    44  14
   170    914   2000    84    5    11    0.4 +  2.5  ( 26.8)    34  (  4.5)     13  ( 0.2)*    41.0     1    44  14
   201    399   1875    76   15    35    2.3 +  1.5  ( 35.8)   105  (  8.8)      8            44.5     2    49   2
   202    339   1975    61   15    28    1.9 +  0.8  ( 24.7)    93  (  6.6)      6            31.3     2    49   2
```

```
  203   715  1975   129   15  451   7.6 + 81.9  (833.0)   270  ( 40.5)    97    +     873.5    2   49
2
  250   203  2000S   62   10    6   0.1 +  0.2  (  3.4)    17  (  0.5)    10  ( 0.0)*     3.9    2    7  44
  251   539   250L   62   10   17   1.9 +  0.6  ( 23.4)    97  (  7.6)    10  ( 0.0)*    31.0    2    7  44
  260   511  2000S   95   10   29   0.6 +  3.5  ( 38.4)    59  (  4.4)    22  ( 0.3)*    59.9    2    7  44
  261   619   260L   95    8   41   2.8 +  4.2  ( 65.1)   132  ( 12.0)    22  ( 0.3)*    94.2    2    7  44
  270   173  2000    15   10    4   0.1 +  0.1  (  1.8)    13  (  0.3)     0  ( 0.0)*     2.1    2    7  44
  301    88  1825    10   11   12   0.2 +  0.1  (  2.7)    54  (  1.0)     1               3.7    3    5  34
  302   590  1900    79   11   29   2.8 +  1.9  ( 43.9)    98  ( 12.1)    11              56.0    3   10  34
  303   321  1900    43   11   19   1.3 +  0.4  ( 15.4)    73  (  4.9)     4              20.3    3   10  34
  350   339  2000S   77    6    9   0.1 +  0.7  (  8.1)    16  (  0.8)     9  ( 0.0)*     8.9    3   39   5
  351   406   350L   77    6   22   1.6 +  0.9  ( 23.4)   103  (  6.1)     9  ( 0.0)*    29.5    3   39   5
  360   263<  2000S   69    6   10   0.3 +  0.4  (  6.9)    17  (  0.9)     9  ( 0.0)*     7.7    3   39   5
  361   406   360L   69    6   21   1.7 +  0.7  ( 22.1)   101  (  6.0)     9  ( 0.0)*    28.1    3   39   5
  370     8  2000S   19    6    6   0.0 +  0.0  (  0.1)    13  (  0.0)     3  ( 0.0)*     0.1    3   39   5
  371   173   370L   19    6    9   0.3 +  0.1  (  3.8)    66  (  1.7)     3  ( 0.0)*     5.5    3   39   5
  380   292<  2000    26    6    6   0.3 +  0.2  (  4.3)    13  (  0.7)     1  ( 0.0)*     5.0    3   34   5
  401   184  1925    44    5   29   1.1 +  0.4  ( 13.9)    92  (  3.6)     3              17.4    4   60   9
  402   112  2000    16    5   18   0.5 +  0.1  (  5.2)    74  (  1.7)     1               6.9    4   52  60  60   9
  403   264  2000    38    5   20   1.2 +  0.3  ( 13.7)    83  (  4.6)     4              18.3    4   52  60  60
9
  404   172  2000    25    5   19   0.7 +  0.2  (  8.3)    76  (  2.7)     2              11.0    4   52  60  60   9
  450   354  2000S   43    7    3   0.0 +  0.3  (  2.8)     5  (  0.3)     1  ( 0.0)*     3.1    4   14  47
  451   102   450L   43    6   13   0.3 +  0.1  (  3.3)    41  (  0.6)     1  ( 0.0)*     3.9    4   14  47
  460   345  2000S   50    6    4   0.0 +  0.3  (  3.4)    15  (  0.8)     4  ( 0.0)*     4.2    4   14  47
  461   186<   460L   50    6   14   0.5 +  0.2  (  6.7)    59  (  1.9)     4  ( 0.0)*     8.6    4   14  47
  470   212  2000S   36    7    3   0.0 +  0.2  (  1.7)    13  (  0.4)     4  ( 0.0)*     2.1    4   14  47
  471   176<   470L   36    7   12   0.5 +  0.1  (  5.5)    64  (  2.1)     4  ( 0.0)*     7.6    4   14  47
  501   294  1825    29   15   10   0.6 +  0.2  (  7.9)    52  (  3.2)     3              11.1    5   41  11
  502   376  1900    36   15   11   0.9 +  0.3  ( 10.6)    54  (  4.2)     4              14.8    5   41  11
  503   764  1900    74   15   17   2.3 +  1.4  ( 34.5)    77  ( 12.3)    12              46.8    5   41  11
  550   156  2025S   76   11   31   0.8 +  0.5  ( 12.3)   114  (  2.6)     9  ( 0.0)*    14.9    5   16  36
  551   349<   550L   76   10   26   1.4 +  1.1  ( 23.3)    64  (  3.5)     9  ( 0.0)*    26.8    5   16  36
  560   189  2025S   44   11   20   0.8 +  0.3  (  9.9)   103  (  2.8)     4  ( 0.0)*    12.7    5   16  36
  561   101   560L   44   11   19   0.4 +  0.1  (  4.8)    45  (  0.7)     4  ( 0.0)*     5.5    5   16  36
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF    PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)   (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  570   202  2025S   35   11   20   0.9 +  0.2  ( 10.4)   102  (  3.0)     4  ( 0.0)*    13.4    5   16  36
  571    29   570L   35   11   18   0.1 +  0.0  (  1.3)    44  (  0.2)     4  ( 0.0)*     1.5    5   16  36
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL       PENALTY      TOTAL
```

```
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST      COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED        DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1605.2        194.4       8.3        47.6    111.1    (1476.0) + (  199.7)  +  (  43.9)   =    1719.6     TOTALS
0*****************************************************************************
**************************************************
0                          CRUISE            DELAY            STOPS          TOTALS
                        LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       86.6       +     182.5       +     139.2       =    408.3
0
 NO. OF ENTRIES TO SUBPT  =   21
 NO. OF LINKS RECALCULATED=  593

 PROGRAM TRANSYT FINISHED
```

1 T R A N S Y T
~~~~~~~~~~~~~

TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "PM_2032_DM.DAT" at 10:21 on 21/01/15
02032 PM DM

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~

0CARD CARD
NO. TYPE
(1)= TITLE:- 2032 PM DM
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

5)= 7 260 261 0 0 0 350 351 0 0 0 360 361 0 0 0
6)= 7 370 371 0 0 0 450 451 0 0 0 460 461 0 0 0
7)= 7 470 471 0 0 0 550 551 0 0 0 560 561 0 0 0
8)= 7 570 571 0 0 0 0 0 0 0 0 0 0 0 0 0
0 NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES
CARD CARD NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6
STAGE 7
NO. TYPE NO. CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE
MIN CHANGE MIN CHANGE MIN
9)= 12 1 34 12 59 12 0 0 0 0 0 0 0 0 0 0
10)= 12 2 55 12 23 12 0 0 0 0 0 0 0 0 0 0
11)= 12 3 50 12 23 12 0 0 0 0 0 0 0 0 0 0
12)= 12 5 27 12 0 12 0 0 0 0 0 0 0 0 0 0
13)= 13 4 35 12 60 0 16 12 0 0 0 0 0 0 0 0
0 LINK CARDS: FIXED DATA
FIRST GREEN SECOND GREEN
CARD CARD LINK EXIT START END START END LINK STOP SAT
DELAY DISPSN
NO. TYPE NO. NODE STAGE LAG STAGE LAG STAGE LAG STAGE LAG LENGTH
WT.X100 FLOW WT.X100 X100
14)= 31 101 1 1 5 2 0 0 0 0 0 120 0 1900 0 0
15)= 31 102 1 1 5 2 0 0 0 0 0 120 0 2000 0 0
16)= 31 103 1 1 5 2 0 0 0 0 0 120 0 2000 0 0
17)= 31 150 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
18)= 31 151 0 0 0 0 0 0 0 0 0 60 0 0 0 0
19)= 31 160 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
20)= 31 161 0 0 0 0 0 0 0 0 0 60 0 0 0 0
21)= 31 170 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
22)= 31 201 2 1 5 2 0 0 0 0 0 200 0 1875 0 0
23)= 31 202 2 1 5 2 0 0 0 0 0 200 0 1975 0 0
24)= 31 203 2 1 5 2 0 0 0 0 0 200 0 1975 0 0
25)= 31 250 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
26)= 31 251 0 0 0 0 0 0 0 0 0 110 0 0 0 0
27)= 31 260 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
28)= 31 261 0 0 0 0 0 0 0 0 0 110 0 0 0 0
29)= 31 270 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
30)= 31 301 3 1 0 2 0 0 0 0 0 145 0 1825 0 0
31)= 31 302 3 1 5 2 0 0 0 0 0 145 0 1900 0 0
32)= 31 303 3 1 5 2 0 0 0 0 0 145 0 1900 0 0
33)= 31 350 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
34)= 31 351 0 0 0 0 0 0 0 0 0 70 0 0 0 0
35)= 31 360 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
36)= 31 361 0 0 0 0 0 0 0 0 0 70 0 0 0 0
37)= 31 370 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
38)= 31 371 0 0 0 0 0 0 0 0 0 70 0 0 0 0
39)= 31 380 3 2 0 1 0 0 0 0 0 70 0 2000 0 0
40)= 31 401 4 2 0 3 0 0 0 0 0 70 0 1925 0 0
41)= 31 402 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
42)= 31 403 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
43)= 31 404 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
44)= 31 450 4 3 5 1 0 0 0 0 0 75 0 2000 0 0

```
 45)= 31  461  0  0  0  0  0  0  0  0  0  75  0  0  0  0
 46)= 31  460  4  3  5  1  0  0  0  0  0  75  0 2000  0  0
 47)= 31  451  0  0  0  0  0  0  0  0  0  75  0  0  0  0
 48)= 31  470  4  3  5  1  0  0  0  0  0  75  0 2000  0  0
 49)= 31  471  0  0  0  0  0  0  0  0  0  75  0  0  0  0
 50)= 31  501  5  1  5  2  0  0  0  0  0  200  0 1825  0  0
 51)= 31  502  5  1  5  2  0  0  0  0  0  200  0 1900  0  0
 52)= 31  503  5  1  5  2  0  0  0  0  0  200  0 1900  0  0
 53)= 31  550  5  2  5  1  0  0  0  0  0  125  0 2025  0  0
 54)= 31  561  0  0  0  0  0  0  0  0  0  125  0  0  0  0
 55)= 31  560  5  2  5  1  0  0  0  0  0  125  0 2025  0  0
 56)= 31  551  0  0  0  0  0  0  0  0  0  125  0  0  0  0
 57)= 31  570  5  2  5  1  0  0  0  0  0  125  0 2025  0  0
 58)= 31  571  0  0  0  0  0  0  0  0  0  125  0  0  0  0
0                      LINK CARDS:   FLOW DATA
                     ENTRY 1 ...........   ENTRY 2 ...........   ENTRY 3 ...........   ENTRY 4 ...........
 CARD  CARD  LINK  TOTAL  UNIFORM  LINK     CRUISE   LINK     CRUISE   LINK     CRUISE
LINK     CRUISE
 NO.  TYPE   NO.   FLOW   FLOW   NO.   FLOW  SPEED   NO.   FLOW  SPEED   NO.   FLOW
SPEED   NO.  FLOW  SPEED
 59)= 32  101  413  0  0  0  48  0  0  0  0  0  0  0  0  0
 60)= 32  102  668  0  0  0  48  0  0  0  0  0  0  0  0  0
 61)= 32  103  198  0  0  0  48  0  0  0  0  0  0  0  0  0
 62)= 32  150  10  0  502  10  40  0  0  0  0  0  0  0  0  0
 63)= 32  151  265  0  560  209  40  561  55  48  0  0  0  0  0  0
 64)= 32  160  280  0  502  280  40  0  0  0  0  0  0  0  0  0
 65)= 32  161  231  0  570  208  40  571  24  48  0  0  0  0  0  0
 66)= 32  170  1037  0  503  1037  40  0  0  0  0  0  0  0  0  0
 67)= 32  201  500  0  0  0  48  0  0  0  0  0  0  0  0  0
 68)= 32  202  364  0  0  0  48  0  0  0  0  0  0  0  0  0
 69)= 32  203  794  0  0  0  48  0  0  0  0  0  0  0  0  0
 70)= 32  250  260  0  101  260  40  0  0  0  0  0  0  0  0  0
 71)= 32  251  701  0  160  654  40  161  48  48  0  0  0  0  0  0
 72)= 32  260  593  0  102  593  40  0  0  0  0  0  0  0  0  0
 73)= 32  261  684  0  161  20  40  170  663  48  0  0  0  0  0  0
 74)= 32  270  198  0  103  198  40  0  0  0  0  0  0  0  0  0
 75)= 32  301  161  0  0  0  48  0  0  0  0  0  0  0  0  0
 76)= 32  302  845  0  0  0  48  0  0  0  0  0  0  0  0  0
 77)= 32  303  508  0  0  0  48  0  0  0  0  0  0  0  0  0
 78)= 32  350  364  0  202  364  40  0  0  0  0  0  0  0  0  0
 79)= 32  351  433  0  260  241  40  261  192  48  0  0  0  0  0  0
 80)= 32  360  364  0  203  364  40  0  0  0  0  0  0  0  0  0
 81)= 32  361  433  0  260  241  40  261  192  48  0  0  0  0  0  0
 82)= 32  370  10  0  203  10  40  0  0  0  0  0  0  0  0  0
 83)= 32  371  198  0  270  198  40  0  0  0  0  0  0  0  0  0
 84)= 32  380  430  0  203  430  40  0  0  0  0  0  0  0  0  0
 85)= 32  401  197  0  0  0  48  0  0  0  0  0  0  0  0  0
 86)= 32  402  117  0  0  0  48  0  0  0  0  0  0  0  0  0
 87)= 32  403  291  0  0  0  48  0  0  0  0  0  0  0  0  0
 88)= 32  404  243  0  0  0  48  0  0  0  0  0  0  0  0  0
 89)= 32  450  507  0  302  507  40  0  0  0  0  0  0  0  0  0
```

```
 90)= 32   451   119    0   370    10    40   371   119    48     0     0     0     0     0     0
 91)= 32   460   510    0   302   338    40   303   172    48     0     0     0     0     0     0
 92)= 32   461   251    0   370    10    40   371    79    48   380   172    48     0     0     0
 93)= 32   470   336    0   303   336    40     0     0     0     0     0     0     0     0     0
 94)= 32   471   258    0   380   258    40     0     0     0     0     0     0     0     0     0
 95)= 32   501   343    0     0     0    48     0     0     0     0     0     0     0     0     0
 96)= 32   502   467    0     0     0    48     0     0     0     0     0     0     0     0     0
 97)= 32   503   850    0     0     0    48     0     0     0     0     0     0     0     0     0
 98)= 32   550   163    0   402   163    40     0     0     0     0     0     0     0     0     0
 99)= 32   551   515    0   460   300    40   461   215    48     0     0     0     0     0     0
100)= 32   560   210    0   403   210    40     0     0     0     0     0     0     0     0     0
101)= 32   561   160    0   470   160    40     0     0     0     0     0     0     0     0     0
102)= 32   570   277    0   404   277    40     0     0     0     0     0     0     0     0     0
103)= 32   571    47    0   470    47    40     0     0     0     0     0     0     0     0     0
0                          LINK DATA:  QUEUE CONSTRAINTS
 CARD  CARD  LINK   LIMIT  QUEUE  LINK   LIMIT  QUEUE  LINK   LIMIT  QUEUE  LINK   LIMIT
QUEUE  LINK   LIMIT  QUEUE
 NO.  TYPE   NO.   QUEUE  WEIGHT   NO.   QUEUE  WEIGHT   NO.   QUEUE  WEIGHT   NO.
QUEUE  WEIGHT   NO.   QUEUE  WEIGHT
 104)= 38   150    10   5000   151    10   5000   160    10   5000   161    10   5000   170    10
5000
 105)= 38   250    19   5000   251    19   5000   260    19   5000   261    19   5000   270    19
5000
 106)= 38   350    12   5000   351    12   5000   360    12   5000   361    12   5000   370    12
5000
 107)= 38   371    12   5000   380    12   5000   450    13   5000   451    13   5000   460    13
5000
 108)= 38   461    13   5000   470    13   5000   471    13   5000   550    13   5000   551    13
5000
 109)= 38   560    13   5000   561    13   5000   570    13   5000   571    13   5000     0     0
0
0LINK   251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY  233 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0    64 SECOND CYCLE  32 STEPS
0INITIAL SETTINGS
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
   NO   OF STAGES  1      2      3      4      5      6      7

    1      2     34     59
    2      2     55     23
    3      2     50     23
    4      3     35     60     16
    5      2     27      0
0 LINK   FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW   OF    PER PCU   UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.    NODE   START  START
       LINK       SAT    CRUISE          OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
```

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 413 1900 66 9 27 2.1 + 1.0 (28.7) 92 (8.0) 7 36.7 1 39 59
102 668 2000 102 9 109 4.0 + 16.2 (188.0) 191 (26.8) 28 + 214.8 1 39
59
103 198 2000 30 9 20 0.9 + 0.2 (10.2) 74 (3.1) 3 13.3 1 39 59
150 10 2000S 25 5 20 0.0 + 0.0 (0.5) 92 (0.1) 0 (0.0)* 0.6 1 0 34
151 261 150L 25 5 2 0.0 + 0.2 (1.5) 4 (0.1) 0 (0.0)* 1.7 1 0 34
160 280 2000S 47 5 23 1.6 + 0.2 (16.9) 101 (4.1) 5 (0.0)* 21.0 1 0 34
161 229 160L 47 5 3 0.0 + 0.2 (1.9) 5 (0.2) 5 (0.0)* 2.1 1 0 34
170 1037 2000 95 5 54 8.2 + 7.3 (144.3) 136 (20.5) 26 (10.5)* 689.5 1 0
34
201 500 1875 61 15 19 1.9 + 0.8 (25.1) 78 (8.2) 7 33.3 2 60 23
202 364 1975 42 15 16 1.3 + 0.4 (15.1) 68 (5.2) 5 20.2 2 60 23
203 794 1975 92 15 39 3.7 + 5.0 (80.9) 117 (19.5) 18 100.4 2 60 23
250 260 2000S 110 10 202 1.6 + 13.0 (135.8) 216 (8.2) 66 (11.1)* 698.1 2 28
55
251 701 250L 110 10 208 5.4 + 35.1 (376.9) 251 (25.7) 66 (11.1)* 956.7 2 28
55
260 583 2000S 145 10 603 6.9 + 90.7 (908.4) 292 (25.3) 227 (19.0)* 1882.0 2
28 55
261 683 260L 145 8 597 6.9 +106.4 (999.9) 240 (24.0) 227 (19.0)* 2026.4 2
28 55
270 198 2000 23 10 12 0.5 + 0.1 (6.3) 36 (1.0) 1 (0.0)* 7.3 2 28 55
301 161 1825 15 11 8 0.3 + 0.1 (3.2) 42 (1.4) 1 4.7 3 50 23
302 845 1900 86 11 26 3.2 + 3.0 (57.4) 97 (17.1) 16 74.5 3 55 23
303 508 1900 52 11 14 1.4 + 0.5 (18.4) 65 (6.9) 6 25.3 3 55 23
350 364 2000S 95 6 63 2.8 + 3.6 (59.4) 149 (7.9) 18 (2.0)* 167.8 3 28 50
351 318< 350L 95 6 51 1.3 + 3.2 (41.8) 89 (5.6) 18 (2.0)* 147.9 3 28 50
360 364 2000S 95 6 58 2.3 + 3.6 (55.0) 148 (7.9) 18 (1.7)* 149.3 3 28 50
361 318< 360L 95 6 51 1.3 + 3.2 (41.7) 89 (5.6) 18 (1.7)* 133.7 3 28 50
370 10 2000S 29 6 21 0.0 + 0.0 (0.5) 97 (0.1) 3 (0.0)* 0.7 3 28 50
371 198 370L 29 6 28 1.4 + 0.2 (14.5) 72 (2.1) 3 (0.0)* 16.6 3 28 50
380 430 2000 49 6 20 1.9 + 0.5 (21.8) 104 (6.5) 8 (0.0)* 28.3 3 23 50
401 197 1925 31 5 20 0.9 + 0.2 (10.3) 76 (3.1) 3 13.5 4 60 16
402 117 2000 9 5 6 0.1 + 0.1 (1.8) 37 (0.9) 1 2.7 4 40 60 60 16
403 291 2000 23 5 7 0.4 + 0.1 (5.0) 41 (2.5) 2 7.5 4 40 60 60 16
404 243 2000 19 5 7 0.3 + 0.1 (4.1) 40 (2.1) 2 6.1 4 40 60 60 16
450 507 2000S 133 7 493 4.3 + 65.1 (645.2) 264 (19.5) 94 (7.8)* 1055.7 4 21
35
451 118 450L 133 6 514 1.7 + 15.2 (156.8) 293 (5.1) 94 (7.8)* 552.9 4 21
35
460 510 2000S 162 6 736 5.7 + 98.6 (969.9) 244 (18.1) 165 (12.0)* 1590.3 4
21 35
461 250 460L 162 6 750 3.6 + 48.4 (484.2) 295 (10.8) 165 (12.0)* 1097.3 4
21 35
470 336 2000S 127 7 419 2.2 + 36.9 (363.5) 282 (13.8) 77 (6.8)* 715.4 4 21
35

```
  471    258   470L   127    7   435    2.9 + 28.3  (290.2)    254  (  9.6)     77  ( 6.8)*    637.9     4    21
35
  501    343   1825    36    15    12    0.9 +  0.3  ( 10.9)    58  (  4.2)      4            15.1     5    32   0
  502    467   1900    48    15    13    1.3 +  0.5  ( 16.3)    62  (  6.1)      6            22.3     5    32   0
  503    850   1900    87    15    27    3.2 +  3.1  ( 58.9)    98  ( 17.4)     16            76.4     5    32   0
  550    163   2025S    69    11    27    0.9 +  0.4  ( 11.5)    97  (  2.3)     10  ( 0.0)*     13.8     5     5  27
  551    340<   550L    69    10    44    3.4 +  0.7  ( 38.4)    74  (  5.6)     10  ( 0.0)*     44.0     5     5  27
  560    210   2025S    49    11    19    0.8 +  0.3  ( 10.4)    84  (  2.6)      6  ( 0.0)*     13.0     5     5  27
  561    146<   560L    49    11    34    1.2 +  0.2  ( 13.0)    98  (  2.3)      6  ( 0.0)*     15.3     5     5  27
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF     STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END     END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS         EXCESS  OF ( ) VALUES
1ST     2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  570    277   2025S    44    11    17    1.0 +  0.3  ( 12.2)    80  (  3.2)      5  ( 0.0)*     15.4     5     5  27
  571     43   570L    44    11    32    0.3 +  0.1  (  3.6)    97  (  0.7)      5  ( 0.0)*      4.3     5     5  27
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM    RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1949.6        733.2        2.7         96.2    593.6    (6414.6) + (  370.8)  +  (6566.4)   =   13351.8
TOTALS
0*****************************************************************************************
*****************************************************
0                         CRUISE             DELAY             STOPS            TOTALS
                      LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR     LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS       105.2        +     793.2        +     258.4        =    1156.8
0
 NO. OF ENTRIES TO SUBPT  =    1
 NO. OF LINKS RECALCULATED=   45
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9
  - (SECONDS)

    1      2     61      22
    2      2     55      23
    3      2      4     41
    4      3     44       5      25
    5      2     18      55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
```

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1949.6 711.4 2.7 80.3 587.6 (6211.7) + (358.1) + (5260.4) = 11830.2
TOTALS
0
NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 349
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25
- (SECONDS)

```
 1   2   61   22
 2   2   55   23
 3   2    4   41
 4   3   44    5   25
 5   2   18   55
```

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1949.6 711.4 2.7 80.3 587.6 (6211.7) + (358.1) + (5260.4) = 11830.2
TOTALS
0
NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 299
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1
- (SECONDS)

```
 1   2    9   22
 2   2   60   22
 3   2    7   42
 4   3   56    5   15
 5   2   19   54
```

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1949.6 472.8 4.1 66.0 363.4 (3993.1) + (281.2) + (62.9) = 4337.1 TOTALS
0
NO. OF ENTRIES TO SUBPT = 62
NO. OF LINKS RECALCULATED= 1330

```
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9
  - (SECONDS)

    1     2     9     22
    2     2     5     31
    3     2    62     33
    4     3    47     60     6
    5     2    19     54
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                      DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1949.6       469.8       4.2       63.1    363.3    (3964.9) + (  281.5)  +  (  66.9)   =    4313.3     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   13
 NO. OF LINKS RECALCULATED=  371
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25
  - (SECONDS)

    1     2     9     22
    2     2     5     31
    3     2    62     33
    4     3    47     60     6
    5     2    19     54
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT     SPEED       DELAY   OVERSAT     OF        OF        EXCESS      INDEX
                                      DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1949.6       469.8       4.2       63.1    363.3    (3964.9) + (  281.5)  +  (  66.9)   =    4313.3     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  339
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1   9  25   1
  - (SECONDS)

    1     2    10     23
    2     2     3     29
    3     2    60     31
    4     3    47     60     6
    5     2    20     55
0  TOTAL       TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
```

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1949.6 468.5 4.2 61.8 363.3 (3953.2) + (279.0) + (62.7) = 4294.9 TOTALS
0
NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 407
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25 1 -1
- (SECONDS)

```
   1    2    7   23
   2    2    3   29
   3    2   61   31
   4    3   47   60    4
   5    2   20   55
```

0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1949.6 387.3 5.0 61.3 282.5 (3198.1) + (292.3) + (141.9) = 3632.3 TOTALS
0
NO. OF ENTRIES TO SUBPT = 25
NO. OF LINKS RECALCULATED= 691
.
0 64 SECOND CYCLE 32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :- 9 25 -1 9 25 1 -1 1
- (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

```
   1    2    8   24
   2    2    3   29
   3    2   60   30
   4    3   47   60    4
   5    2   20   55
```

0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END
DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

```
  101    413   1900    116    9   308    3.7 + 31.6  (328.4)    262  ( 22.8)     39     +       351.2     1     13
24
  102    668   2000    178    9   841    8.4 +147.6  (999.9)    256  ( 35.9)     161     +      1487.0     1     13
24
  103    198   2000     53    9    34    1.3 +  0.6  ( 17.2)    100  (  4.2)      4            21.3     1     13  24
  150     10   2000S    20    5     2    0.0 +  0.0  (  0.1)     10  (  0.0)      2  ( 0.0)*      0.1     1     29   8
  151    266    150L    20    5     9    0.6 +  0.1  (  6.3)     47  (  1.8)      2  ( 0.0)*      8.1     1     29   8
  160    280   2000S    37    5     2    0.0 +  0.2  (  1.7)     10  (  0.4)      2  ( 0.0)*      2.1     1     29   8
  161    231    160L    37    5     8    0.4 +  0.1  (  4.8)     40  (  1.3)      2  ( 0.0)*      6.2     1     29   8
  170   1037   2000     75    5     7    0.4 +  1.5  ( 18.1)     44  (  6.6)     17  ( 1.1)*     80.5     1     29   8
  201    500   1875     78   15    31    2.6 +  1.7  ( 40.0)    100  ( 10.5)      9            50.6     2      8  29
  202    364   1975     54   15    23    1.7 +  0.6  ( 21.3)     82  (  6.3)      6            27.6     2      8  29
  203    794   1975    117   15   303    6.0 + 60.8  (621.7)    262  ( 43.6)     75     +       665.3     2      8
29
  250    224<  2000S    87   10    23    0.6 +  0.8  ( 13.3)     95  (  3.6)     18  ( 0.0)*     16.9     2     34   3
  251    701    250L    87   10    19    1.2 +  2.5  ( 33.8)     85  (  8.7)     18  ( 0.0)*     42.5     2     34   3
  260    333<  2000S    96   10    41    1.1 +  2.7  ( 35.2)     76  (  6.6)     24  ( 0.7)*     74.4     2     34   3
  261    684    260L    96    8    35    1.2 +  5.5  ( 62.5)    103  ( 10.2)     24  ( 0.7)*    105.4     2     34   3
  270    198   2000     19   10    12    0.6 +  0.1  (  6.2)     93  (  2.7)      4  ( 0.0)*      8.9     2     34   3
  301    161   1825     16   11     9    0.3 +  0.1  (  3.9)     48  (  1.6)      1             5.5     3     60  30
  302    845   1900     95   11    46    3.8 +  7.1  (101.2)    128  ( 22.7)     21           123.9     3      1  30
  303    508   1900     57   11    17    1.7 +  0.7  ( 22.3)     72  (  7.7)      7            30.1     3      1  30
  350    364   2000S    85    6    38    2.4 +  1.4  ( 35.5)    121  (  6.4)     14  ( 0.2)*     50.3     3     35  60
  351    327<   350L    85    6    27    1.2 +  1.3  ( 22.8)     68  (  4.3)     14  ( 0.2)*     35.5     3     35  60
  360    311<  2000S    78    6    29    1.6 +  0.9  ( 23.1)     98  (  5.2)     12  ( 0.0)*     28.3     3     35  60
  361    327<   360L    78    6    22    1.1 +  0.9  ( 18.6)     58  (  3.7)     12  ( 0.0)*     22.3     3     35  60
  370      8   2000S    25    6    14    0.0 +  0.0  (  0.3)     71  (  0.1)      0  ( 0.0)*      0.4     3     35  60
  371    198    370L    25    6     3    0.0 +  0.2  (  1.5)      5  (  0.1)      0  ( 0.0)*      1.7     3     35  60
  380    368<  2000     38    6    15    1.2 +  0.3  ( 13.8)     83  (  5.2)      7  ( 0.0)*     19.0     3     30  60
  401    197   1925     73    5    50    1.4 +  1.3  ( 25.4)    124  (  5.1)      5            30.5     4     60   4
  402    117   2000     22    5    23    0.6 +  0.1  (  6.9)     86  (  2.1)      2             9.0     4     52  60  60   4
  403    291   2000     55    5    28    1.6 +  0.6  ( 20.8)    101  (  6.2)      5            27.0     4     52  60  60
4
  404    243   2000     46    5    26    1.3 +  0.4  ( 16.3)     97  (  4.9)      4            21.2     4     52  60  60
4
  450    507   2000S    51    7     3    0.0 +  0.4  (  4.3)     10  (  0.7)      2  ( 0.0)*      5.0     4      9  47
  451    117    450L    51    6    12    0.3 +  0.1  (  3.7)     45  (  0.8)      2  ( 0.0)*      4.5     4      9  47
  460    510   2000S    60    6     4    0.1 +  0.5  (  5.7)     20  (  1.5)      4  ( 0.0)*      7.2     4      9  47
  461    225<   460L    60    6     8    0.2 +  0.2  (  4.5)     21  (  0.8)      4  ( 0.0)*      5.3     4      9  47
  470    336   2000S    46    7     3    0.0 +  0.3  (  2.6)     12  (  0.6)      2  ( 0.0)*      3.2     4      9  47
  471    221<   470L    46    7     6    0.2 +  0.2  (  3.7)     18  (  0.7)      2  ( 0.0)*      4.3     4      9  47
  501    343   1825     39   15    14    1.0 +  0.3  ( 12.2)     62  (  4.5)      4            16.7     5     25  55
  502    467   1900     51   15    15    1.5 +  0.5  ( 18.4)     67  (  6.6)      6            24.9     5     25  55
  503    850   1900     92   15    38    3.6 +  5.3  ( 82.7)    116  ( 20.6)     19           103.3     5     25  55
  550    163   2025S    83   11    23    0.5 +  0.6  (  9.9)    108  (  2.6)     13  ( 0.0)*     12.5     5     60  20
  551    492<   550L    83   10    37    3.3 +  1.8  ( 47.2)    104  (  7.8)     13  ( 0.0)*     55.1     5     60  20
  560    210   2025S    47   11     6    0.1 +  0.2  (  3.1)     34  (  1.1)      5  ( 0.0)*      4.1     5     60  20
  561    160    560L    47   11    31    1.2 +  0.2  ( 12.9)     95  (  2.2)      5  ( 0.0)*     15.1     5     60  20
.
0     64 SECOND CYCLE  32 STEPS
```

```
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE           OVERSAT  OF    STOPS    OF    MAX.  AVERAGE  WEIGHTED SUM
END    END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS        EXCESS  OF ( ) VALUES
1ST    2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)    ($/H)
(SECONDS)

  570    277   2025S    41    11     4    0.0 +  0.3  (  3.0)     9  (  0.3)      2  ( 0.0)*      3.3     5    60  20
  571     47    570L    41    11    30    0.3 +  0.1  (  3.6)    94  (  0.6)      2  ( 0.0)*      4.2     5    60  20
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF         OF        EXCESS      INDEX
                                     DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)     (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1949.6       386.6       5.0        60.6    282.5    (3191.5) + (  291.9)  +  ( 137.9)   =    3621.3     TOTALS
0******************************************************************************
************************************************
0                        CRUISE            DELAY            STOPS           TOTALS
                     LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS      105.2        +     394.7        +     203.4        =     703.3
0
 NO. OF ENTRIES TO SUBPT  =   12
 NO. OF LINKS RECALCULATED=  357

 PROGRAM TRANSYT FINISHED
```

1 T R A N S Y T
~~~~~~~~~~~~~

TRAffic Network StudY Tool

(C) COPYRIGHT 1996 - TRL Ltd., Crowthorne, Berkshire, RG45 6AU, UK
0Implementation for IBM-PC or compatible, running under Microsoft Windows 95
0Program TRANSYT 11, Analysis Program Version 1.1
0Run with file:- "PM_2032_DS.DAT" at 10:21 on 21/01/15
02032 PM DS

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :
~~~~~~

NUMBER OF NODES = 5
NUMBER OF LINKS = 45
NUMBER OF OPTIMISED NODES = 5
MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
NUMBER OF STEPS IN CYCLE = 32
MAXIMUM NUMBER OF SHARED STOPLINES = 2
MAXIMUM NUMBER OF TIMING POINTS = 3
MAXIMUM LINKS AT ANY NODE = 7

CORE REQUESTED = 7834 WORDS
CORE AVAILABLE = 72000 WORDS
.
0 DATA INPUT :-
~~~~ ~~~~~

0CARD CARD
NO. TYPE
(1)= TITLE:- 2032 PM DS
0CARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT P PER P PER
(SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
2)= 1 64 32 60 2 3 0 1 0 0 1 2 0 0 930 170
0CARD CARD LIST OF NODES TO BE OPTIMISED
NO. TYPE
3)= 2 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0
0 LINKS HAVING SHARED STOPLINES
CARD CARD FIRST SET........................ SECOND SET........................ THIRD SET........................
NO. TYPE
4)= 7 150 151 0 0 0 160 161 0 0 0 250 251 0 0 0
~~~~

5)= 7 260 261 0 0 0 350 351 0 0 0 360 361 0 0 0
6)= 7 370 371 0 0 0 450 451 0 0 0 460 461 0 0 0
7)= 7 470 471 0 0 0 550 551 0 0 0 560 561 0 0 0
8)= 7 570 571 0 0 0 0 0 0 0 0 0 0 0 0 0
0 NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES
CARD CARD NODE STAGE 1 STAGE 2 STAGE 3 STAGE 4 STAGE 5 STAGE 6
STAGE 7
NO. TYPE NO. CHANGE MIN CHANGE MIN CHANGE MIN CHANGE MIN CHANGE
MIN CHANGE MIN CHANGE MIN
9)= 12 1 34 12 59 12 0 0 0 0 0 0 0 0 0 0
10)= 12 2 55 12 23 12 0 0 0 0 0 0 0 0 0 0
11)= 12 3 50 12 23 12 0 0 0 0 0 0 0 0 0 0
12)= 12 5 27 12 0 12 0 0 0 0 0 0 0 0 0 0
13)= 13 4 35 12 60 0 16 12 0 0 0 0 0 0 0 0
0 LINK CARDS: FIXED DATA
FIRST GREEN SECOND GREEN
CARD CARD LINK EXIT START END START END LINK STOP SAT
DELAY DISPSN
NO. TYPE NO. NODE STAGE LAG STAGE LAG STAGE LAG STAGE LAG LENGTH
WT.X100 FLOW WT.X100 X100
14)= 31 101 1 1 5 2 0 0 0 0 0 120 0 1900 0 0
15)= 31 102 1 1 5 2 0 0 0 0 0 120 0 2000 0 0
16)= 31 103 1 1 5 2 0 0 0 0 0 120 0 2000 0 0
17)= 31 150 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
18)= 31 151 0 0 0 0 0 0 0 0 0 60 0 0 0 0
19)= 31 160 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
20)= 31 161 0 0 0 0 0 0 0 0 0 60 0 0 0 0
21)= 31 170 1 2 5 1 0 0 0 0 0 60 0 2000 0 0
22)= 31 201 2 1 5 2 0 0 0 0 0 200 0 1875 0 0
23)= 31 202 2 1 5 2 0 0 0 0 0 200 0 1975 0 0
24)= 31 203 2 1 5 2 0 0 0 0 0 200 0 1975 0 0
25)= 31 250 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
26)= 31 251 0 0 0 0 0 0 0 0 0 110 0 0 0 0
27)= 31 260 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
28)= 31 261 0 0 0 0 0 0 0 0 0 110 0 0 0 0
29)= 31 270 2 2 5 1 0 0 0 0 0 110 0 2000 0 0
30)= 31 301 3 1 0 2 0 0 0 0 0 145 0 1825 0 0
31)= 31 302 3 1 5 2 0 0 0 0 0 145 0 1900 0 0
32)= 31 303 3 1 5 2 0 0 0 0 0 145 0 1900 0 0
33)= 31 350 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
34)= 31 351 0 0 0 0 0 0 0 0 0 70 0 0 0 0
35)= 31 360 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
36)= 31 361 0 0 0 0 0 0 0 0 0 70 0 0 0 0
37)= 31 370 3 2 5 1 0 0 0 0 0 70 0 2000 0 0
38)= 31 371 0 0 0 0 0 0 0 0 0 70 0 0 0 0
39)= 31 380 3 2 0 1 0 0 0 0 0 70 0 2000 0 0
40)= 31 401 4 2 0 3 0 0 0 0 0 70 0 1925 0 0
41)= 31 402 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
42)= 31 403 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
43)= 31 404 4 1 5 2 0 2 0 3 0 70 0 2000 0 0
44)= 31 450 4 3 5 1 0 0 0 0 0 75 0 2000 0 0

```
 45)=  31   461    0    0    0    0    0    0    0    0    0    75    0    0    0    0
 46)=  31   460    4    3    5    1    0    0    0    0    0    75    0  2000    0    0
 47)=  31   451    0    0    0    0    0    0    0    0    0    75    0    0    0    0
 48)=  31   470    4    3    5    1    0    0    0    0    0    75    0  2000    0    0
 49)=  31   471    0    0    0    0    0    0    0    0    0    75    0    0    0    0
 50)=  31   501    5    1    5    2    0    0    0    0    0   200    0  1825    0    0
 51)=  31   502    5    1    5    2    0    0    0    0    0   200    0  1900    0    0
 52)=  31   503    5    1    5    2    0    0    0    0    0   200    0  1900    0    0
 53)=  31   550    5    2    5    1    0    0    0    0    0   125    0  2025    0    0
 54)=  31   561    0    0    0    0    0    0    0    0    0   125    0    0    0    0
 55)=  31   560    5    2    5    1    0    0    0    0    0   125    0  2025    0    0
 56)=  31   551    0    0    0    0    0    0    0    0    0   125    0    0    0    0
 57)=  31   570    5    2    5    1    0    0    0    0    0   125    0  2025    0    0
 58)=  31   571    0    0    0    0    0    0    0    0    0   125    0    0    0    0
0                             LINK CARDS:   FLOW DATA
                      ENTRY 1 ...........   ENTRY 2 ...........   ENTRY 3 ...........   ENTRY 4 ...........
 CARD  CARD  LINK  TOTAL  UNIFORM  LINK       CRUISE   LINK       CRUISE   LINK       CRUISE
LINK       CRUISE
 NO.  TYPE   NO.   FLOW   FLOW    NO.   FLOW  SPEED    NO.   FLOW  SPEED    NO.   FLOW
SPEED    NO.   FLOW  SPEED
 59)=  32   101   407    0    0    0   48    0    0    0    0    0    0    0    0    0
 60)=  32   102   673    0    0    0   48    0    0    0    0    0    0    0    0    0
 61)=  32   103   198    0    0    0   48    0    0    0    0    0    0    0    0    0
 62)=  32   150    10    0   502   10   40    0    0    0    0    0    0    0    0    0
 63)=  32   151   263    0   560  218   40  561   46   48    0    0    0    0    0    0
 64)=  32   160   267    0   502  267   40    0    0    0    0    0    0    0    0    0
 65)=  32   161   195    0   570  175   40  571   20   48    0    0    0    0    0    0
 66)=  32   170  1050    0   503  1050   40    0    0    0    0    0    0    0    0    0
 67)=  32   201   498    0    0    0   48    0    0    0    0    0    0    0    0    0
 68)=  32   202   365    0    0    0   48    0    0    0    0    0    0    0    0    0
 69)=  32   203   795    0    0    0   48    0    0    0    0    0    0    0    0    0
 70)=  32   250   252    0   101  252   40    0    0    0    0    0    0    0    0    0
 71)=  32   251   644    0   160  623   40  161   21   48    0    0    0    0    0    0
 72)=  32   260   601    0   102  601   40    0    0    0    0    0    0    0    0    0
 73)=  32   261   703    0   161   10   40  170  694   48    0    0    0    0    0    0
 74)=  32   270   198    0   103  198   40    0    0    0    0    0    0    0    0    0
 75)=  32   301   117    0    0    0   48    0    0    0    0    0    0    0    0    0
 76)=  32   302   788    0    0    0   48    0    0    0    0    0    0    0    0    0
 77)=  32   303   428    0    0    0   48    0    0    0    0    0    0    0    0    0
 78)=  32   350   365    0   202  365   40    0    0    0    0    0    0    0    0    0
 79)=  32   351   460    0   260  247   40  261  214   48    0    0    0    0    0    0
 80)=  32   360   365    0   203  365   40    0    0    0    0    0    0    0    0    0
 81)=  32   361   460    0   260  247   40  261  214   48    0    0    0    0    0    0
 82)=  32   370    10    0   203   10   40    0    0    0    0    0    0    0    0    0
 83)=  32   371   198    0   270  198   40    0    0    0    0    0    0    0    0    0
 84)=  32   380   430    0   203  430   40    0    0    0    0    0    0    0    0    0
 85)=  32   401   254    0    0    0   48    0    0    0    0    0    0    0    0    0
 86)=  32   402   149    0    0    0   48    0    0    0    0    0    0    0    0    0
 87)=  32   403   331    0    0    0   48    0    0    0    0    0    0    0    0    0
 88)=  32   404   212    0    0    0   48    0    0    0    0    0    0    0    0    0
 89)=  32   450   473    0   302  473   40    0    0    0    0    0    0    0    0    0
```

```
 90)= 32  451  119   0  370   10   40  371  119   48   0   0   0   0   0   0
 91)= 32  460  460   0  302  315   40  303  145   48   0   0   0   0   0   0
 92)= 32  461  251   0  370   10   40  371   79   48  380  172   48   0   0   0
 93)= 32  470  283   0  303  283   40   0   0   0   0   0   0   0   0   0
 94)= 32  471  258   0  380  258   40   0   0   0   0   0   0   0   0   0
 95)= 32  501  343   0   0   0   48   0   0   0   0   0   0   0   0   0
 96)= 32  502  445   0   0   0   48   0   0   0   0   0   0   0   0   0
 97)= 32  503  872   0   0   0   48   0   0   0   0   0   0   0   0   0
 98)= 32  550  209   0  402  209   40   0   0   0   0   0   0   0   0   0
 99)= 32  551  469   0  460  254   40  461  215   48   0   0   0   0   0   0
 100)= 32  560  235   0  403  235   40   0   0   0   0   0   0   0   0   0
 101)= 32  561  135   0  470  135   40   0   0   0   0   0   0   0   0   0
 102)= 32  570  248   0  404  248   40   0   0   0   0   0   0   0   0   0
 103)= 32  571   39   0  470   39   40   0   0   0   0   0   0   0   0   0
0                    LINK DATA:  QUEUE CONSTRAINTS
 CARD  CARD  LINK   LIMIT  QUEUE  LINK   LIMIT  QUEUE  LINK   LIMIT  QUEUE  LINK   LIMIT
QUEUE  LINK   LIMIT  QUEUE
  NO.  TYPE   NO.   QUEUE  WEIGHT   NO.   QUEUE  WEIGHT   NO.   QUEUE  WEIGHT   NO.
QUEUE  WEIGHT   NO.   QUEUE  WEIGHT
 104)= 38   150   10  5000   151   10  5000   160   10  5000   161   10  5000   170   10
5000
 105)= 38   250   19  5000   251   19  5000   260   19  5000   261   19  5000   270   19
5000
 106)= 38   350   12  5000   351   12  5000   360   12  5000   361   12  5000   370   12
5000
 107)= 38   371   12  5000   380   12  5000   450   13  5000   451   13  5000   460   13
5000
 108)= 38   461   13  5000   470   13  5000   471   13  5000   550   13  5000   551   13
5000
 109)= 38   560   13  5000   561   13  5000   570   13  5000   571   13  5000    0    0
0
0LINK  251 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY  233 PER CENT
0*****END OF SUBROUTINE TINPUT*****
.
0   64 SECOND CYCLE  32 STEPS
0INITIAL SETTINGS
  - (SECONDS)
0  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE
    NO   OF STAGES  1     2     3     4     5     6     7

   1    2    34    59
   2    2    55    23
   3    2    50    23
   4    3    35    60    16
   5    2    27     0
0 LINK   FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW   OF    PER PCU   UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.    NODE   START  START
        LINK        SAT    CRUISE          OVERSAT  OF    STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END    END
```

DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 407 1900 65 9 27 2.1 + 0.9 (28.0) 92 (7.8) 7 35.8 1 39 59
102 673 2000 103 9 117 4.1 + 17.8 (203.6) 197 (27.8) 30 + 231.5 1 39
59
103 198 2000 30 9 20 0.9 + 0.2 (10.2) 74 (3.1) 3 13.3 1 39 59
150 10 2000S 25 5 19 0.0 + 0.0 (0.5) 88 (0.1) 0 (0.0)* 0.6 1 0 34
151 263 150L 25 5 2 0.0 + 0.2 (1.6) 4 (0.1) 0 (0.0)* 1.7 1 0 34
160 267 2000S 42 5 23 1.5 + 0.2 (15.8) 101 (3.9) 5 (0.0)* 19.8 1 0 34
161 195 160L 42 5 3 0.0 + 0.2 (1.5) 5 (0.1) 5 (0.0)* 1.6 1 0 34
170 1050 2000 96 5 58 8.3 + 8.6 (157.3) 141 (21.6) 27 (11.7)* 766.1 1 0
34
201 498 1875 61 15 19 1.9 + 0.8 (24.9) 78 (8.2) 7 33.1 2 60 23
202 365 1975 42 15 16 1.3 + 0.4 (15.1) 68 (5.2) 5 20.3 2 60 23
203 795 1975 92 15 40 3.7 + 5.0 (81.5) 118 (19.6) 18 101.2 2 60 23
250 252 2000S 102 10 105 1.3 + 6.0 (68.2) 172 (6.3) 37 (9.8)* 566.3 2 28
55
251 644 250L 102 10 113 4.9 + 15.3 (187.6) 198 (18.6) 37 (9.8)* 697.9 2 28
55
260 587< 2000S 147 10 626 7.1 + 95.0 (949.8) 291 (25.5) 239 (20.1)* 1979.4 2
28 55
261 703 260L 147 8 621 7.4 +113.9 (999.9) 239 (24.5) 239 (20.1)* 2156.5 2
28 55
270 198 2000 23 10 12 0.5 + 0.1 (6.3) 36 (1.0) 1 (0.0)* 7.3 2 28 55
301 117 1825 11 11 8 0.2 + 0.1 (2.3) 40 (1.0) 1 3.3 3 50 23
302 788 1900 80 11 22 2.8 + 2.0 (44.8) 88 (14.5) 13 59.3 3 55 23
303 428 1900 44 11 13 1.1 + 0.4 (14.3) 60 (5.4) 5 19.7 3 55 23
350 365 2000S 96 6 70 2.8 + 4.3 (66.2) 157 (8.3) 20 (3.1)* 227.6 3 28 50
351 328< 350L 96 6 58 1.4 + 3.9 (49.4) 93 (6.3) 20 (3.1)* 208.7 3 28 50
360 366 2000S 97 6 66 2.3 + 4.4 (62.6) 157 (8.4) 20 (2.7)* 207.7 3 28 50
361 328< 360L 97 6 59 1.4 + 3.9 (49.8) 94 (6.3) 20 (2.7)* 192.9 3 28 50
370 10 2000S 29 6 21 0.0 + 0.0 (0.5) 97 (0.1) 3 (0.0)* 0.7 3 28 50
371 198 370L 29 6 28 1.4 + 0.2 (14.5) 72 (2.1) 3 (0.0)* 16.6 3 28 50
380 429 2000 49 6 20 1.9 + 0.5 (21.7) 104 (6.5) 8 (0.0)* 28.2 3 23 50
401 254 1925 40 5 21 1.2 + 0.3 (14.1) 79 (4.2) 4 18.3 4 60 16
402 149 2000 12 5 6 0.2 + 0.1 (2.3) 37 (1.2) 1 3.5 4 40 60 60 16
403 331 2000 26 5 7 0.5 + 0.2 (5.9) 43 (3.0) 3 8.9 4 40 60 60 16
404 212 2000 17 5 6 0.3 + 0.1 (3.5) 40 (1.8) 2 5.3 4 40 60 60 16
450 473 2000S 126 7 413 3.4 + 50.9 (504.5) 266 (18.4) 76 (6.6)* 851.5 4 21
35
451 118 450L 126 6 436 1.6 + 12.7 (132.9) 280 (4.9) 76 (6.6)* 466.5 4 21
35
460 460 2000S 151 6 654 4.5 + 79.1 (777.0) 255 (17.1) 138 (10.2)* 1306.3 4
21 35
461 250 460L 151 6 667 3.3 + 43.0 (430.8) 281 (10.3) 138 (10.2)* 953.4 4 21
35
470 283 2000S 115 7 285 1.7 + 20.7 (208.3) 271 (11.2) 50 (5.8)* 507.2 4 21
35

```
  471    258   470L   115     7   300    2.7 + 18.8  (199.8)    245  (  9.2)      50  ( 5.8)*     496.7      4     21
35
  501    343   1825     36    15    12    0.9 +  0.3  ( 10.9)     58  (  4.2)       4              15.1      5     32   0
  502    445   1900     45    15    13    1.2 +  0.4  ( 15.2)     61  (  5.7)       5              20.9      5     32   0
  503    872   1900     89    15    30    3.4 +  3.8  ( 66.5)    103  ( 18.8)      18              85.2      5     32   0
  550    209   2025S    73    11    28    1.1 +  0.5  ( 15.3)     99  (  3.0)      10  ( 0.0)*      18.4      5      5  27
  551    322<   550L    73    10    45    3.2 +  0.8  ( 37.3)     78  (  5.3)      10  ( 0.0)*      42.6      5      5  27
  560    235   2025S    51    11    19    0.9 +  0.3  ( 11.6)     84  (  2.9)       6  ( 0.0)*      14.5      5      5  27
  561    133    560L    51    11    35    1.1 +  0.2  ( 12.0)    106  (  2.1)       6  ( 0.0)*      14.1      5      5  27
.
0    64 SECOND CYCLE  32 STEPS
0 LINK    FLOW   SAT   DEGREE  MEAN TIMES  -------DELAY--------   ----STOPS----   ----QUEUE----
PERFORMANCE   EXIT   GREEN TIMES
 NUMBER   INTO   FLOW    OF     PER PCU    UNIFORM RANDOM+ COST    MEAN   COST    MEAN
INDEX.     NODE   START  START
       LINK        SAT    CRUISE            OVERSAT  OF     STOPS    OF     MAX.  AVERAGE  WEIGHTED SUM
END     END
                         DELAY  (U+R+O=MEAN Q) DELAY    /PCU   STOPS         EXCESS  OF ( ) VALUES
1ST     2ND
      (PCU/H) (PCU/H)  (%)  (SEC) (SEC)    (PCU-H/H)    ($/H)    (%)    ($/H)    (PCU)  (PCU)     ($/H)
(SECONDS)

  570    248   2025S    39    11    16    0.8 +  0.3  ( 10.5)     78  (  2.8)       4  ( 0.0)*      13.3      5      5  27
  571     39    570L    39    11    32    0.3 +  0.0  (  3.2)    105  (  0.6)       4  ( 0.0)*       3.8      5      5  27
0  TOTAL        TOTAL      MEAN       TOTAL   TOTAL   TOTAL      TOTAL       PENALTY      TOTAL
  DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST       COST        FOR
PERFORMANCE
 TRAVELLED       SPENT      SPEED       DELAY   OVERSAT     OF        OF         EXCESS      INDEX
                                    DELAY    DELAY      STOPS       QUEUES
 (PCU-KM/H)    (PCU-H/H)    (KM/H)    (PCU-H/H)(PCU-H/H)   ($/H)      ($/H)       ($/H)       ($/H)
0  1912.7        652.0        2.9        92.6    516.8    (5667.6) + (  359.0)  +  (6415.9)   =   12442.5
TOTALS
0*******************************************************************************
*************************************************
0                         CRUISE            DELAY            STOPS            TOTALS
                     LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR    LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS      103.2        +     700.8        +     250.2        =    1054.2
0
 NO. OF ENTRIES TO SUBPT  =    1
 NO. OF LINKS RECALCULATED=   45
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9
  - (SECONDS)

    1      2     61      22
    2      2     55      23
    3      2      4     41
    4      3     35      60     16
    5      2     18      55
0  TOTAL        TOTAL      MEAN       TOTAL   TOTAL   TOTAL      TOTAL       PENALTY      TOTAL
```

```
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST      COST       FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF       OF       EXCESS     INDEX
                                 DELAY    DELAY     STOPS      QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)     ($/H)
0  1912.7       632.1       3.0        79.2    510.3    (5482.7) + (  345.1)  +  (4893.9)   =   10721.6
TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   15
 NO. OF LINKS RECALCULATED=  347
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25
  - (SECONDS)

    1      2     61     22
    2      2     55     23
    3      2      4     41
    4      3     35     60     16
    5      2     18     55
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY     TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST      COST       FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF       OF       EXCESS     INDEX
                                 DELAY    DELAY     STOPS      QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)     ($/H)
0  1912.7       632.1       3.0        79.2    510.3    (5482.7) + (  345.1)  +  (4893.9)   =   10721.6
TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   11
 NO. OF LINKS RECALCULATED=  289
.
0    64 SECOND CYCLE  32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    9  25  -1
  - (SECONDS)

    1      2      8     22
    2      2     55     17
    3      2      7     42
    4      3     47     60      9
    5      2     19     54
0  TOTAL        TOTAL      MEAN       TOTAL    TOTAL    TOTAL      TOTAL      PENALTY     TOTAL
 DISTANCE       TIME    JOURNEY      UNIFORM   RANDOM+    COST      COST       FOR
PERFORMANCE
 TRAVELLED      SPENT     SPEED       DELAY   OVERSAT    OF       OF       EXCESS     INDEX
                                 DELAY    DELAY     STOPS      QUEUES
 (PCU-KM/H)    (PCU-H/H)   (KM/H)    (PCU-H/H)(PCU-H/H)  ($/H)     ($/H)      ($/H)     ($/H)
0  1912.7       444.2       4.3        66.2    335.5    (3735.2) + (  277.6)  +  (  64.6)   =    4077.5     TOTALS
0
 NO. OF ENTRIES TO SUBPT  =   60
 NO. OF LINKS RECALCULATED= 1241
```

.
0   64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9 25 -1   9
 - (SECONDS)

    1   2   8   22
    2   2   55   17
    3   2   7   42
    4   3   56   5   18
    5   2   19   54

0 TOTAL   TOTAL   MEAN   TOTAL   TOTAL   TOTAL   TOTAL   PENALTY   TOTAL
 DISTANCE   TIME   JOURNEY   UNIFORM   RANDOM+   COST   COST   FOR
PERFORMANCE
 TRAVELLED   SPENT   SPEED   DELAY   OVERSAT   OF   OF   EXCESS   INDEX
 DELAY   DELAY   STOPS   QUEUES
 (PCU-KM/H)   (PCU-H/H)   (KM/H)   (PCU-H/H)(PCU-H/H)   ($/H)   ($/H)   ($/H)   ($/H)
0 1912.7   441.7   4.3   63.6   335.5   (3711.8) + (280.0) + (60.7) =   4052.4   TOTALS
0
 NO. OF ENTRIES TO SUBPT =   11
 NO. OF LINKS RECALCULATED= 317
.
0   64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9 25 -1   9 25
 - (SECONDS)

    1   2   8   22
    2   2   55   17
    3   2   7   42
    4   3   56   5   18
    5   2   19   54

0 TOTAL   TOTAL   MEAN   TOTAL   TOTAL   TOTAL   TOTAL   PENALTY   TOTAL
 DISTANCE   TIME   JOURNEY   UNIFORM   RANDOM+   COST   COST   FOR
PERFORMANCE
 TRAVELLED   SPENT   SPEED   DELAY   OVERSAT   OF   OF   EXCESS   INDEX
 DELAY   DELAY   STOPS   QUEUES
 (PCU-KM/H)   (PCU-H/H)   (KM/H)   (PCU-H/H)(PCU-H/H)   ($/H)   ($/H)   ($/H)   ($/H)
0 1912.7   441.7   4.3   63.6   335.5   (3711.8) + (280.0) + (60.7) =   4052.4   TOTALS
0
 NO. OF ENTRIES TO SUBPT =   11
 NO. OF LINKS RECALCULATED= 339
.
0   64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   9 25 -1   9 25   1
 - (SECONDS)

    1   2   9   23
    2   2   54   16
    3   2   9   44
    4   3   59   8   21
    5   2   19   54

0 TOTAL   TOTAL   MEAN   TOTAL   TOTAL   TOTAL   TOTAL   PENALTY   TOTAL

DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1912.7 440.4 4.3 62.3 335.5 (3699.4) + (278.1) + (56.4) = 4033.8 TOTALS
0
NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 424
.
0 64 SECOND CYCLE 32 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 9 25 -1 9 25 1 -1
- (SECONDS)

1 2 7 23
2 2 55 16
3 2 11 44
4 3 59 8 21
5 2 19 55
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1912.7 395.8 4.8 60.7 292.6 (3285.2) + (281.1) + (110.9) = 3677.3 TOTALS
0
NO. OF ENTRIES TO SUBPT = 26
NO. OF LINKS RECALCULATED= 707
.
0 64 SECOND CYCLE 32 STEPS
0FINAL SETTINGS OBTAINED WITH INCREMENTS :- 9 25 -1 9 25 1 -1 1
- (SECONDS)
0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

1 2 7 23
2 2 56 17
3 2 12 45
4 3 59 8 21
5 2 19 55
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES
NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END
DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

101 407 1900 114 9 287 3.6 + 28.9 (302.0) 259 (22.2) 36 + 324.1 1 12
23
102 673 2000 179 9 849 8.6 +150.1 (999.9) 255 (36.1) 164 + 1512.0 1 12
23
103 198 2000 53 9 34 1.3 + 0.6 (17.2) 99 (4.1) 4 21.3 1 12 23
150 10 2000S 20 5 2 0.0 + 0.0 (0.1) 14 (0.0) 3 (0.0)* 0.1 1 28 7
151 263 150L 20 5 9 0.5 + 0.1 (6.2) 62 (2.4) 3 (0.0)* 8.5 1 28 7
160 267 2000S 34 5 3 0.1 + 0.1 (1.9) 22 (0.8) 5 (0.0)* 2.8 1 28 7
161 195 160L 34 5 10 0.4 + 0.1 (5.2) 69 (2.0) 5 (0.0)* 7.1 1 28 7
170 1050 2000 76 5 7 0.4 + 1.6 (18.6) 42 (6.4) 18 (1.1)* 81.7 1 28 7
201 498 1875 81 15 34 2.7 + 2.1 (44.4) 106 (11.1) 10 55.5 2 61 17
202 365 1975 56 15 24 1.8 + 0.6 (22.7) 86 (6.6) 6 29.3 2 61 17
203 795 1975 123 15 376 7.0 + 76.1 (772.8) 268 (44.7) 91 + 817.5 2 61
17
250 221< 2000S 79 10 10 0.2 + 0.5 (5.9) 52 (1.9) 9 (0.0)* 7.7 2 22 56
251 644 250L 79 10 14 1.2 + 1.4 (24.1) 58 (5.4) 9 (0.0)* 29.5 2 22 56
260 335< 2000S 95 10 33 0.7 + 2.4 (28.9) 68 (6.0) 23 (0.5)* 57.5 2 22 56
261 703 260L 95 8 37 2.3 + 5.0 (67.7) 99 (10.2) 23 (0.5)* 100.6 2 22 56
270 198 2000 18 10 2 0.0 + 0.1 (1.2) 12 (0.3) 1 (0.0)* 1.5 2 22 56
301 117 1825 12 11 10 0.2 + 0.1 (2.9) 47 (1.2) 1 4.1 3 12 45
302 788 1900 92 11 38 3.6 + 4.8 (77.7) 116 (19.1) 17 96.8 3 17 45
303 428 1900 50 11 16 1.5 + 0.5 (18.2) 70 (6.3) 6 24.5 3 17 45
350 365 2000S 85 6 20 0.7 + 1.4 (19.3) 41 (2.2) 10 (0.0)* 21.4 3 50 12
351 351< 350L 85 6 28 1.4 + 1.3 (25.1) 86 (5.7) 10 (0.0)* 30.9 3 50 12
360 298< 2000S 77 6 26 1.4 + 0.8 (20.0) 52 (2.8) 11 (0.0)* 22.8 3 50 12
361 351< 360L 77 6 26 1.6 + 0.9 (23.2) 83 (5.6) 11 (0.0)* 28.7 3 50 12
370 8 2000S 24 6 18 0.0 + 0.0 (0.4) 42 (0.1) 4 (0.0)* 0.4 3 50 12
371 198 370L 24 6 24 1.2 + 0.2 (12.4) 104 (3.0) 4 (0.0)* 15.4 3 50 12
380 350< 2000 35 6 17 1.4 + 0.3 (15.6) 44 (2.7) 3 (0.0)* 18.4 3 45 12
401 254 1925 60 5 33 1.6 + 0.8 (21.8) 100 (5.3) 5 27.1 4 8 21
402 149 2000 22 5 18 0.6 + 0.1 (7.0) 75 (2.4) 2 9.4 4 0 8 8 21
403 331 2000 48 5 22 1.5 + 0.5 (18.4) 88 (6.1) 5 24.5 4 0 8 8 21
404 212 2000 31 5 19 0.9 + 0.2 (10.5) 79 (3.5) 3 14.1 4 0 8 8 21
450 473 2000S 55 7 4 0.1 + 0.5 (5.1) 14 (0.9) 2 (0.0)* 6.1 4 26 59
451 117 450L 55 6 12 0.3 + 0.1 (3.6) 35 (0.6) 2 (0.0)* 4.2 4 26 59
460 460 2000S 64 6 7 0.3 + 0.6 (8.0) 42 (2.8) 7 (0.0)* 10.7 4 26 59
461 218< 460L 64 6 13 0.5 + 0.3 (7.1) 43 (1.6) 7 (0.0)* 8.7 4 26 59
470 283 2000S 46 7 5 0.2 + 0.2 (3.9) 45 (1.8) 6 (0.0)* 5.8 4 26 59
471 210< 470L 46 7 11 0.5 + 0.2 (5.9) 47 (1.8) 6 (0.0)* 7.7 4 26 59
501 343 1825 38 15 13 0.9 + 0.3 (11.6) 60 (4.3) 4 15.9 5 24 55
502 445 1900 47 15 14 1.3 + 0.4 (16.1) 63 (5.9) 5 22.0 5 24 55
503 872 1900 92 15 35 3.6 + 5.0 (79.4) 112 (20.5) 19 100.0 5 24 55
550 209 2025S 85 11 25 0.5 + 0.9 (13.4) 77 (2.3) 13 (0.0)* 16.5 5 60 19
551 440< 550L 85 10 33 2.1 + 1.9 (37.6) 111 (7.6) 13 (0.0)* 45.9 5 60 19
560 235 2025S 49 11 14 0.6 + 0.3 (8.6) 34 (1.2) 4 (0.0)* 9.8 5 60 19
561 135 560L 49 11 22 0.6 + 0.2 (7.6) 102 (2.0) 4 (0.0)* 9.6 5 60 19
.
0 64 SECOND CYCLE 32 STEPS
0 LINK FLOW SAT DEGREE MEAN TIMES -------DELAY-------- ----STOPS---- ----QUEUE----
PERFORMANCE EXIT GREEN TIMES

NUMBER INTO FLOW OF PER PCU UNIFORM RANDOM+ COST MEAN COST MEAN
INDEX. NODE START START
LINK SAT CRUISE OVERSAT OF STOPS OF MAX. AVERAGE WEIGHTED SUM
END END
DELAY (U+R+O=MEAN Q) DELAY /PCU STOPS EXCESS OF ( ) VALUES
1ST 2ND
(PCU/H) (PCU/H) (%) (SEC) (SEC) (PCU-H/H) ($/H) (%) ($/H) (PCU) (PCU) ($/H)
(SECONDS)

570 248 2025S 38 11 12 0.6 + 0.3 (7.8) 30 (1.1) 2 (0.0)* 8.9 5 60 19
571 39 570L 38 11 20 0.2 + 0.0 (2.0) 97 (0.5) 2 (0.0)* 2.5 5 60 19
0 TOTAL TOTAL MEAN TOTAL TOTAL TOTAL TOTAL PENALTY TOTAL
DISTANCE TIME JOURNEY UNIFORM RANDOM+ COST COST FOR
PERFORMANCE
TRAVELLED SPENT SPEED DELAY OVERSAT OF OF EXCESS INDEX
DELAY DELAY STOPS QUEUES
(PCU-KM/H) (PCU-H/H) (KM/H) (PCU-H/H)(PCU-H/H) ($/H) ($/H) ($/H) ($/H)
0 1912.7 395.8 4.8 60.6 292.6 (3284.9) + (281.2) + (103.5) = 3669.5 TOTALS
0***
****

0 CRUISE DELAY STOPS TOTALS
LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS 103.2 + 406.2 + 195.9 = 705.3
0
NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 337

PROGRAM TRANSYT FINISHED