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Leeds CITY COUNCIL

SCRUTINY BOARD (CITY DEVELOPMENT)

Meeting to be held in Civic Hall, Leeds on
Tuesday, 10th June, 2008 at 11.30 am

A pre-meeting will take place for ALL Members of the Board
in a Committee Room at 9.30 am

MEMBERSHIP

Councillors

R Pryke (Chair)	-	Burmantofts and Richmond Hill
C Beverley	-	Morley South
B Gettings	-	Morley North
R Harington	-	Gipton and Harehills
A Hussain	-	Gipton and Harehills
J Jarosz	-	Pudsey
M Lobley	-	Roundhay
R Procter	-	Harewood
N Taggart	-	Bramley and Stanningley
G Wilkinson	-	Wetherby
A Barker	-	Horsforth
J Matthews	-	Headingley
A Ogilvie	-	Beeston and Holbeck

Please note: Certain or all items on this agenda may be recorded on tape

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A G E N D A

Item No	Ward/Equal Opportunities	Item Not Open		Page No
7			**REVIEW OF CALLED - IN DECISION - SAVINS MILL GYRATORY - CAPITAL SCHEME NO. 01508/000/000** In accordance with the Scrutiny Procedure Rules, to review the attached delegated decision of the Director of City Development to receive the latest estimates and to incur additional expenditure for this scheme.	1 - 112

Extract from John Vernon's evidence: page 29 of JGV11.pdf Agenda Item 7

Weekday 17:00-18:00 hours, with Committed, with Development, "optimised" timings

original column number	1	2	3	4	12	13	15	16	17
link description	link num	flow in	satn flow	% sat	max Q	XS cars?	exit node	green start	green end
Bridge Road RT into BHS	77	47	715	9	0				
Bridge Road W-bound SA	101	**585<**	1900	85	15		1	60	8
Savins Mill Way LT into Bridge Road	102	779	1785	85	12	(0.0)*	1	16	56
Bridge Road E-bound RT into Savins Mill Way	103	413	1710	53	7	(0.0)*	1	27	8
Bridge Road E-bound SA	104	877	1915	75	12	(0.0)*	1	40	8
Savins Mill Way RT into Bridge Road	105	220	1785	76	6		1	13	25
Savins Mill Way W-bound through junction	202	720	1940	80	11		2	30	66
Savins Mill Way LT to Morrisons	203	423	1740	53	6		2	30	66
Morrisons right rurn out	204	300	1760	76	8	(0.0)*	2	7	24
Morrisons LT out into Savins Mill Way	205	269	1720	39	5		2	73	24
Savins Mill Way RT to Morrisons	206	176	1725	68	5		2	71	2
Savins Mill Way E-bound through junction	207	269	2000	21	1		2	32	2
Abbey Road SA then RT into Savins Mill Way	301	412	2300	48	7		3	79	28
Abbey Road S-bound SA & LT	302	803	3300	78	18		3	4	28
Kirkstall Lane W-bound RT	303	156	1675	53	4		3	35	74
Kirkstall Lane W-bound SA	304	**537<**	1790	60	8		3	35	74
Kirkstall Lane W-bound LT	305	153	1770	23	3		3	36	65
Commercial Road N-bound LT	306	46	1785	7	0		3	1	31
Commercial Road N-bound SA	307	1215	3970	79	13	(0.0)*	3	1	31
Bridge Road E-bound LT	308	597	2000	82	12	(0.0)*	3	37	65
Bridge Road E-bound SA	309	421	1785	65	6		3	37	65
Commercial Road RT into Savins Mill Way	401	468	3300	76	12	(0.0)*	4	38	52
Commercial Road S-bound SA	402	804	3300	41	1		4	6	53
Commercial Road N-bound SA	403	1002	3000	84	23		4	1	32
Commercial Road LT into Savins Mill Way	404	645	1710	60	9		4	65	34
Savins Mill Way E-bound RT	405	324	1900	76	8		4	57	74
Savins Mill Way E-bound LT	406	254	2000	68	7		4	62	76
Morris Lane RT into Kirkstall Lane	701	109	1600	19	2		7	29	56
Morris Lane S-bound SA & LT	702	286	1750	47	5		7	29	56
Kirkstall Lane W-bound all moves	703	518	1950	**106**	33		7	69	8
Kirkstall Hill N-bound all moves	704	694	1900	**104**	38	**+**	7	29	56
Kirkstall Lane E-bound RT	705	124	1800	42	2		7	61	13
Kirkstall Lane E-bound SA & LT	706	565	1900	88	15		7	62	8
Bridge Road W-bound into L&BR	901	408	1740	85	11		9	78	19
Bridge Road W-bound into Wyther Lane	902	**943<**	1740	75	10		9	42	19
Wyther Lane NE-bound all moves	903	741	1900	**98**	26	**+**	9	42	73
Leeds & Bradford Road all moves	904	482	1665	**93**	15		9	78	22
Wyther Lane SW-bound all moves	1001	**965<**	1845	**97**	31	**+**	10	63	25
Wyther Lane N-bound all moves	1002	451	1710	**96**	17		10	36	57
Broad Lane E-bound all moves	1003	324	1910	45	6		10	76	25
Bridge Road E-bound SA	1401	1156	1965	76	5	(0.0)*	14	55	36
BHS site exit RT	1402	50	1871	21	1		14	41	50
BHS site exit LT	1403	134	1791	60	4		14	41	50
Bridge Road W-bound SA	1404	**1320<**	3970	43	10		14	55	36

Abbreviations: SA – straight ahead, LT – left turn, RT – right turn

Comments: Columns 5-11 and 14 have been omitted. Please refer to the link diagram for junction numbers. A < symbol in column 2 means the computer model could not accept the requested flow, a + in column 13 means that the cars will not physically fit into the available road space, and will jam the upstream junction.

APPEAL BY ALLDERS DEPARTMENT STORES LTD (IN LIQUIDATION) LTD AGAINST THE DECISION OF THE LOCAL PLANNING AUTHORITY (LEEDS CITY COUNCIL) TO REFUSE TO GRANT PLANNING PERMISSION FOR THE REDEVELOPMENT OF THE FORMER ALLDERS STORE, BRIDGE ROAD, KIRKSTALL, LEEDS

PLANNING APPLICATION REF: 24/214/04/FU

PROOF OF EVIDENCE OF JOHN G VERNON MSC BA TRANSPORT AND HIGHWAYS MATTERS

January 2008
jgv/7043/POE/v1

Northern Transport Planning

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PLANNING APPLICATION REF: 24/214/04/FU

Document Status – Final

Produced by:	- - - - - -	John Vernon	Date:	21 January 2008
Checked by:	- - - - - -	Andy Kirby	Date:	21 January 2008
Approved by:	- - - - - -	John Vernon	Date:	21 January 2008

CONTENTS

TABLES

APPENDICES (Bound Separately)

JGV1: Letter from Leeds City Council dated 26th November 2007

JGV2: Plans

JGV3: Drawing Number DLT0072-37 Revision A

JGV4: Travel Plan Reference jgv/DLT0072/tp/v2 and Council Comments dated 16/01/08

JGV5: November 2004 TRANSYT Analysis

JGV6: Traffic Flow Diagrams provided by Council

JGV7: Site Access Traffic Survey Data

JGV8: Traffic Flow Diagrams:-

JGV9: TRICS Output

JGV10: Leeds City Council Existing TRANSYT Output and Summary Table

JGV11: NTP TRANSYT Analysis – Output and Summary Tables

1 NAME AND QUALIFICATIONS

1.1.1 I am John George Vernon and my evidence deals with transport and highway matters on behalf of the appellant. I am a Partner of Northern Transport Planning; a specialist consultancy that advises clients on the transport issues associated with development. I hold the degrees of Master of Science in Transport Planning and Bachelor of Arts in Economics. I represent Allders Department Stores Ltd (in Liquidation) and will present evidence on transport related matters in support of the appeal against refusal of planning permission given by the Planning Authority.

1.1.2 For the past 20 years I have worked as a consultant in the private sector dealing with a broad range of transport planning and development issues. My experience has been gained working with a number of transport planning consultancies. I have attended informal hearings and public inquiries as an expert witness presenting evidence on traffic, transport and highways issues.

1.1.3 I have been involved in the proposals to redevelop the Bridge Road site since November 2003, providing traffic and transport related advice initially to Allders, and more latterly to the appellant.

1.1.4 I am familiar with the site and the surrounding highway and transport network.

2 INTRODUCTION AND SCOPE OF EVIDENCE

2.1 Introduction

2.1.1 My evidence is submitted in support of an appeal by Allders Department Stores Ltd (in Liquidation) against the refusal of planning permission by Leeds City Council for the redevelopment of the former Allders Department Store site, which is now operated by BHS, located north of Bridge Road in Kirkstall, Leeds. My evidence relates to the transportation and highways aspects of the proposed redevelopment scheme.

2.2 Site Description and Location

2.2.1 The site is located in Kirkstall, approximately 5km northwest of the centre of Leeds, West Yorkshire. The location of the site is identified on the plans contained within **Appendix JGV1**. It is roughly triangular in shape, and is bounded to the south by Bridge Road, to the east by Kirkstall Valley Park and to the west by the River Aire and Sandford Place.

2.2.2 The site currently contains a department store operated by BHS. The existing buildings have a combined Gross Floor Area (GFA) of 12,730sq.m. Vehicular and pedestrian access is currently available from a number of locations on Bridge Road.

2.2.3 The Bridge Road site has been used for retail operations for many years, but more recently the character of the area, and specifically the nature of the local highway network, has changed. This is mainly the result of new development in the District Centre and beyond and, most notably, the construction of the nearby Morrison's Superstore and adjacent retail park, which opened in 2000. This development required the construction of a link road, Savins Mill Way, which connects Commercial Road to Bridge Road at a signal controlled junction along the frontage of the site.

2.3 Development Proposals

2.3.1 The relevant planning history and planning issues are fully addressed in the Planning Evidence of Julian N Stevenson. In short, a detailed planning application for redevelopment of the Bridge Road site was submitted to the Council in August 2004 (application reference: 24/413/04/FU). The development proposals had a total floorspace of 16,619sq.m. GFA, comprising a replacement department store of 6,382sq.m. GFA and associated retail and restaurant/café units totalling 10,237sq.m. GFA. Pedestrian access would be provided using a dedicated footpath link with Bridge Road. Vehicular access to the site would be provided via improved junctions with Bridge Road.

2.3.2 A Transport Assessment of the proposals for redevelopment was prepared by RPS Transport Planning in July 2004 (reference jgv/DLT0072/TA/v6) and submitted to the Council in support of the planning application. The Transport Assessment concluded that the proposed development was satisfactory from a transport policy, traffic and highways viewpoint and there were no transport-related reasons for withholding planning consent.

2.3.3 The application was held in abeyance when Allders went into receivership but was reactivated in 2006. No new highway assessment was provided or requested in 2006 and Leeds City Council Highways Officers did not object to the proposal subject to conditions and contributions to fund amendments to provide a right turn facility from Savins Mill Way onto Bridge Road. The application was subsequently refused by the Council on 18 May 2006 with two reasons for refusal, neither of the reasons being traffic, transport or highways related. The refusal was against the Officer's recommendation for approval.

2.3.4 The Council has indicated in a letter of 26th November 2007, provided as Appendix **JGV2**, that the position remains they raise no highway/transport objection and will not be calling highway evidence at the inquiry. However, in the same letter, the Council assert that the highway position has "materially changed" since the submission of the original transport assessment. They do not however explain the basis for any change:

"…although we do not intend to produce highway evidence as that issue did not form part of our reason for refusal, we will be bound to inform the Inquiry that the Council's position on highways is based on a transport assessment submitted with the application and that the highways position has subsequently materially changed."

2.3.5 Also, the Kirkstall Valley Community Association has been given Rule 6 status and has raised traffic/highway issues. A statement of case has been submitted by the Kirkstall Valley Community Association.

2.3.6 In this proof, I address both the question of changes in circumstances concerning traffic and transportation issues since the original Transport Assessment and certain relevant matters raised in the Kirkstall Valley Community Association's statement of case.

2.3.7 In addition, in the Proof of Evidence I consider the opportunities for walking, cycling and use of public transport to and from the proposed development site.

2.3.8 My evidence seeks to demonstrate how the proposed development fully accords with national and local transport related policies by:

- Being located within an established retail development site within the Kirkstall Town Centre.
- Being readily accessible by a range of transport modes.
- Being located where the need for people to travel, particularly by car, can be minimised.
- Providing adequate servicing and parking for motor vehicles and cycles.
- Facilitating multi-purpose trips, walking, cycling and the use of public transport.
- Helping to reduce the growth in the length and number of motorised journeys.
- Reducing reliance on the private car.
- Providing satisfactory access to the road network.

2.4 Scope of the Evidence

2.4.1 Subsequent sections of my evidence deal with the following matters:

- Section Three considers relevant transport related policy.
- Section Four considers the location of the site and the surrounding transport network.
- Section Five considers the traffic issues relating to the proposed development.
- Section Six provides an operational analysis of the highway network.
- Section Seven provides a summary and conclusion.

3 TRANSPORT RELATED POLICY AND GUIDANCE

3.1 Introduction

3.1.1 A consistent theme stated in Government Policy is the need for the integration of planning and transport at national, regional and local levels, with a view to achieving Government objectives for sustainable development. This section of my evidence reviews relevant transport related policy statements and guidance to establish the context within which the proposed development should be considered. The following documents are considered:

- Transport White Paper – A New Deal for Transport: Better for Everyone.
- Planning Policy Statement 1 – Delivering Sustainable Communities.
- Planning Policy Guidance Note 13 – Transport.
- Leeds UDP (Review 2006).
- Guidance on Transport Assessment.

3.2 Transport White Paper - A New Deal for Transport: Better for Everyone

3.2.1 The White Paper, published in July 1998, was the culmination of a fundamental review of transport policy and widespread consultation. The White Paper sets the framework within which detailed transport policies are to be taken forward.

3.2.2 The White Paper states that the Government wants transport to:

"contribute to our quality of life not detract from it. The way forward is through an integrated transport policy. By this we mean:

- Integration within and between different types of transport – so that each contributes its full potential and people can move easily between them;
- Integration with the environment – so that our transport choices support a better environment;
- Integration with land use planning – at national, regional and local level, so that transport and planning work together to support more sustainable travel choices and reduce the need to travel;
- Integration with our policies for education, health and wealth creation – so that transport helps to make a fairer, more inclusive society."

3.2.3 Key objectives of the new integrated transport policy are to:

- "improve choice in transport;
- reduce the need to travel while improving access to education, jobs, leisure and services;
- reduce environmental impacts from transport: on greenhouse gas emissions, air pollution and noise, habitats and wildlife;
- improve transport safety and security. "

3.3 Planning Policy Statement 1 – Delivering Sustainable Communities

3.3.1 PPS1, published in February 2005, sets out overarching policies on the delivery of sustainable development through the planning system. With regard to transport, paragraph 13 encourages Local Planning Authorities to bring forward Development Plan policies which reduce the need to travel by private car. Paragraph 27 encourages authorities to site new development where it can be well served by public transport, whilst also noting that planning should seek actively to bring vacant and underused previously developed land back into beneficial use.

3.4 Planning Policy Guidance Note 13 – Transport

3.4.1 The objectives of PPG13, published in March 2001, are "to integrate planning and transport at the national, regional, strategic and local level to:

- promote more sustainable transport choices for both people and for moving freight;
- promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling, and
- reduce the need to travel, especially by car."

3.4.2 PPG13 identifies in paragraph 19, a key planning objective:

- "To ensure that jobs, shopping, leisure facilities and services are accessible by public transport, walking and cycling. This is important for all, but especially for those who do not have regular use of a car and to promote social inclusion."

3.4.3 With specific relevance to Retail and Leisure is paragraph 35:

- "Policies for retail and leisure should seek to promote the vitality and viability of existing town centres, which should be the preferred locations for new retail and leisure developments. At the regional and strategic level, local authorities should establish a hierarchy of town centres, taking account of accessibility by public transport, to identify preferred locations for major retail and leisure investment. At the local level, preference should be given to town centre sites, followed by edge of centre and, only then, out of centre sites in locations which are (or will be) well served by public transport."

3.5 Leeds UDP Review 2006

3.5.1 The Leeds UDP Review 2006 was adopted in July 2006. The UDP states in paragraph 6.1.1:

"A co-ordinated approach to land-use and transport planning is integral to ensuring sustainable development and improving accessibility. The safe movement of goods and people is crucial to improving competitiveness in the local economy, whereas traffic congestion and consequent unreliable public transport increases the costs imposed on businesses thereby reducing competitiveness. Mobility enhances the quality of life, provides access to employment and other facilities, for example retail and leisure. However, transport has a major impact on the environment, particularly through the effect of road traffic on air quality. Continued road traffic growth and major road building is not sustainable in the longer term. The location and nature of development has a significant impact on the amount and mode of travel. An integrated approach is, therefore, required to tackle problems related to traffic and changes in travel behaviour, to achieve sustainable development, and to affect both travel demand, including the number and length of trips, and modal split."

3.5.2 In paragraph 6.1.2 it states that

"The UDP's strategic aim is thus:

SA2: to encourage development in locations that will reduce the need for travel, promote the use of public transport and other sustainable modes, reduce the journey lengths of those trips which are made by car, whilst promoting safe travel, economic development and protection of the environment"

3.5.3 In 6.1.3 it continues:

"New development should be encouraged into locations that are accessible by a range of travel modes. This will encourage the use of alternative modes of transport other than the private car and also improve access to facilities for those without a car. Public transport needs to be reliable, safe and attractive to users and the measures adopted need to ensure the best use of transport assets for the effective and efficient movement of people."

3.5.4 Policy T2 states that:

"T2: New development should normally:

I. Be served adequately by existing or programmed highways or by improvements to the highway network which are funded by the developer via planning conditions on planning permissions or planning obligations, and will not create or materially add to problems of safety, environment or efficiency on the highway network; and

II. Be capable of being adequately served by public transport and taxi services and should ensure that necessary infrastructure for new services is included in the development; and

III. Make adequate provision for easy, safe and secure cycle use and parking; and

IV. Additionally in the case of residential development, be within convenient walking distance of local facilities and does not create problems of personal accessibility."

3.6 Guidance on Transport Assessment

3.6.1 This document, published in March 2007, is not a statement of Government policy and therefore should be read in conjunction with, and in the context of, relevant Government policies, in particular those relating to transport and planning.

3.6.2 The guidance states in paragraph 1.19 that:

> "In preparing a transport assessment the following considerations will therefore be relevant:
>
> **Encouraging environmental sustainability**
>
> - **Reducing the need to travel, especially by car** – reducing the need for travel, reducing the length of trips, and promoting multi-purpose or linked trips by promoting more sustainable patterns of development and more sustainable communities that reduce the physical separation of key land uses.
> - **Tackling the environmental impact of travel** – by improving sustainable transport choices, and by making it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking, and cycling.
> - **The accessibility of the location** – the extent to which a site is, or is capable of becoming, accessible by non car modes, particularly for large developments that involve major generators of travel demand.
> - **Other measures which may assist in influencing travel behaviour (ITB)** – achieving reductions in car usage (particularly single occupancy vehicles), by measures such as car sharing/pooling, High Occupancy Vehicle (HOV) lanes and parking control.

Managing the existing network

- **Making best possible use of existing transport infrastructure** – for instance by low-cost improvements to the local public transport network and using advanced signal control systems, public transport priority measures (bus lanes), or other forms of Intelligent Transport Systems (ITS) to improve operations on the highway network. It should be noted that the capacity of the existing public transport infrastructure and footpaths is finite, and in some areas overcrowding already exists.
- **Managing access to the highway network** – taking steps to maximise the extent to which the development can be made to 'fit' within the available capacity by managing access from developments onto the highway network.

Mitigating residual impacts

- **Through demand management** – using traffic control measures across a wide network to regulate flows.
- **Through improvements to the local public transport network, and walking and cycling facilities** – for example, by extending bus routes and increasing bus frequencies, and designing sites to facilitate walking and cycling.
- **Through minor physical improvements to existing roads** – it may be possible in some circumstances to improve the capacity of existing roads by relatively minor physical adjustments such as improving the geometry of junctions etc. within the existing highway boundary.
- **Through provision of new or expanded roads** – it is considered good transport planning practice to demonstrate that the other opportunities above have been fully explored before considering the provision of additional road space such as new roads or major junction upgrades."

4 THE SURROUNDING TRANSPORT NETWORK

4.1 Introduction

4.1.1 This section of my evidence provides a description of the transport network surrounding the site, and considers the site's accessibility by a range of transport modes. The analysis first considers access by pedestrians, followed by people with disabilities, cyclists, public transport users and commercial vehicles. The analysis finally considers access by private cars and taxis.

4.2 Accessibility on Foot

4.2.1 Appropriate pedestrian access to and within the site will be available from Bridge Road. Within the site designated paths will be provided, with appropriate raised crossings of the internal road network. These routes are shown in an accessibility plan produced as an appendix to Mr Arthur's proof.

4.2.2 The infrastructure available for visitors accessing the appeal site on foot is excellent, with all highways in the vicinity of the site benefiting from a good standard of footways and street lighting, and numerous pedestrian crossing facilities being available.

4.2.3 Signal controlled pedestrian crossing facilities, identified on **Plan 03** within **Appendix JGV1**, are available as follows:

- across Bridge Road;
- across Savins Mill Way;
- across Commercial Road;
- across Abbey Road;
- across Kirkstall Lane.

4.2.4 Appropriate existing infrastructure is available for trips to be made on foot between the site and the surrounding residential, commercial and retail areas. Furthermore, as part of the development proposals an additional crossing facility, identified on **Plan 03**, would be provided to facilitate the safe movement of pedestrians across Bridge Road on the frontage of the site in the vicinity of the existing bus stops. This additional crossing point, together with existing routes, will ensure that there are several safe and direct opportunities for pedestrians to move between the appeal site and other parts of the District Centre.

4.2.5 PPG 13 states in paragraph 75 that "walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2 kilometres."

4.2.6 A large built-up part of northwest Leeds lies within a 2km walk from the site, this includes the whole of Kirkstall (east of the site), and virtually the whole of Hawksworth (north of the site) and Burley (southeast of the site). Large parts of Headingley (to the east), West Park (to the north) and Bramley (to the west) lie within a 2km walk from the site. These areas contain a significant number of residential properties, and therefore potential employees and customers, who can access the site on foot. There are direct and safe routes to the District Centre from these areas, with good quality footways and pedestrian crossing facilities being available.

4.2.7 Headingley railway station is located approximately 800m from the site; this represents a 10 minute walk assuming the typical average walk speed of 3mph/4.83kph. A couple of minutes walk away (160m), within the Kirkstall District Centre, is the entrance to Abbey Retail Park, where various retail units and the Morrison's superstore are located. The new crossing proposed as part of the appeal proposal will increase opportunities for linkage between the appeal site and the retail and other units on the opposite site of Bridge Road.

4.2.8 High quality routes within the site will be available for use by pedestrians, connecting the various elements of the development and linking to the external pedestrian infrastructure and bus stops. Pedestrian crossing facilities will be provided as shown on the architect's plans to facilitate easy and safe movement on foot across the more heavily trafficked links of the internal highway network.

4.2.9 I conclude that the site is accessible on foot from a sizeable catchment area.

4.3 Accessibility for People with Disabilities

4.3.1 Appropriate provision for disabled access into and within the site will be available as identified on the architect's plans. A total of 20 car parking spaces for people with disabilities will be available close to the entrances to the proposed units, in accordance with the Council's requirements.

4.4 Accessibility by Cycle

4.4.1 Cycle lanes, identified on **Plan 03** within **Appendix JGV1**, are available on both sides of Commercial Road/Kirkstall Road to the south of Bridge Road and on Abbey Road to the north of Bridge Road. Cycle lanes and advanced stop lines are also available on Bridge Road east of the site and on Savins Mill Way. The Leeds and Liverpool Canal Towpath is available for cycling to the west of the site accessed from Wyther Lane.

4.4.2 Cycle parking spaces would be available at appropriate locations within the site that are convenient for use by cyclists. A total of 66 short stay spaces and 33 long stay spaces, all being covered from the weather, would be provided in accordance with Leeds City Council guidelines.

4.4.3 PPG13 states in paragraph 78 that "Cycling also has potential to substitute for short car trips, particularly those under 5km, and to form part of a longer journey by public transport."

4.4.4 Within a 5km distance from the site lies a large part of the north west of Leeds, including the whole of Kirkstall, Headingley, Burley, Woodhouse, Armley, Wortley, Bramley, Hawksworth and parts of the City Centre, Pudsey, Meanwood and Horsforth.

4.4.5 I conclude that the site is highly accessible by cycle from a considerable catchment area.

4.5 Accessibility by Public Transport

4.5.1 The site benefits from its town centre location, being on or close to several bus routes. The bus stops and bus routes are identified respectively on **Plan 03** and **Plan 04** within **Appendix JGV1**. The opportunity will be available for bus passengers to wait in comfort at one of the cafés that are proposed as part of the development along the Bridge Road frontage. The developer of the site is willing to make a financial contribution towards public transport enhancements, which might be used for the provision of real time bus service information, bus stop improvements on Bridge Road, for example.

4.5.2 Bus stops are located on Bridge Road approximately 50m, or less than a one minute walk, from the site. From here the 15, 38, 49, 91/91A, 670 and 760 bus services are available.

4.5.3 Bus stops are located on Commercial Road/Abbey Road, approximately 200m from the site, representing a two minute walk. From here the 33/33A and 757 bus services are available.

4.5.4 Bus stops are located on Morris Lane, approximately 400m, or a five minute walk, from the site. From here the 50/50A bus services are available.

4.5.5 The bus services, the primary locations served, and the bus frequency are identified in **Table 4.01**:

SERVICE NUMBER	ROUTE	FREQUENCY (MINUTES)	
		Mon-Sat Daytime	Evenings and Sundays
15	Leeds – Kirkstall – Farsley – Thornbury – Bradford	30	60
33/33A	Leeds – Kirkstall – Horsforth – Guiseley – Otley	10	30
38	White Rose Centre – Wortley – Kirkstall – Headingley – Moortown Corner – Gledhow	30	60
49	Bramley – Kirkstall – Leeds – St James' Hospital – Harehills – Dib Lane – Monkswood Gate	10	30
50/50A	Horsforth – Hawksworth – Kirkstall – Leeds – St James' Hospital – Harehills – Dib Lane - Seacroft	10	30
91/91A	Pudsey – Bramley – Kirkstall – Chapeltown – Headingley – Osmondthorpe – Harehills – Halton Moor	30	30 Sunday 60 Evening
670	Leeds – Rodley – Calverley – Greengates – Bradford	30	None
757	Leeds – Kirkstall – Horsforth – Rawdon – L&B Airport – Pool – Otley	30	60
760	Leeds – Kirkstall – Calverley – Greengates – Shipley – Bingley – Keighley	30	60

Table 4.01 – Bus Services available from the Site

4.5.6 A summary of the frequency of Monday to Saturday daytime bus services available from the site to primary locations within Leeds and its surrounds is provided as follows:

- Central Leeds - 26 services per hour.
- Bradford - 4 services per hour.
- Otley - 8 services per hour.
- Keighley - 2 services per hour.
- Headingley - 4 services per hour.
- Meanwood - 2 services per hour.
- Wortley - 2 services per hour.
- Pudsey - 2 services per hour.
- Horsforth - 6 services per hour.
- Bramley - 8 services per hour.
- Calverley - 4 services per hour.
- Hawksworth - 6 services per hour.
- Harehills - 8 services per hour.
- Seacroft - 6 services per hour.
- Guiseley - 6 services per hour.

4.5.7 Local Transport Plan proposals in the vicinity of the appeal site include the proposed A65 Kirkstall Road Quality Bus Initiative. The A65 Quality Bus Corridor scheme has been developed to provide a high standard of bus service along this route into Leeds city centre. Government approval was recently granted for this scheme which covers the section of the route between the Inner Ring Road and Kirkstall Lane and comprises extensive bus priority measures together with significant measures to benefit pedestrians and cyclists.

4.5.8 The scheme will provide:

- 4 kilometres of new bus lane covering inbound and outbound journeys.
- Bus priority signal arrangements at two major junctions.
- Additional pedestrian and cycle crossing facilities and cycle lanes.
- Pre-signal arrangements to give buses priority at the exits from the bus lanes.
- Improvements to bus passenger facilities including new shelters and information displays (in real time at the busiest stops).

4.5.9 Benefits from the scheme include:

- Bus passenger journey time improvements of 4-6 minutes in the peak periods and up to 3 minutes in the off-peak periods.
- A projected increase of 9% in bus use.
- Improvements in the safety and movement of pedestrians, cyclists and traffic.

4.5.10 The Quality Bus scheme was identified in the Local Transport Plan 2001-06 and was granted major scheme "Programme Entry" status by the Department for Transport in the summer of 2006 with a programme for completion in the 2010-11 financial year. Total estimated cost is £21.580 million of which the Government contribution would be £20.746 million and to which Leeds City Council has committed £834,000.

4.5.11 Headingley railway station is approximately 800m, or a 10 minute walk, from the site. Also, 4 buses per hour provide a public transport link between the site and Headingley railway station.

4.5.12 Headingley railway station lies on the Harrogate Line. On Monday to Saturday daytimes a half-hourly service between Headingley and Leeds (in the south) via Burley Park is available. A half-hourly service is available between Headingley and Knaresborough (in the north) via a number of stations such as Horsforth and Weeton. One train per hour is available onwards to York. In peak hours there are extra services between Headingley and Leeds and between Headingley and Horsforth. Evenings and Sundays there is an hourly service in each direction.

4.5.13 Leeds Railway Station is located approximately 4.6km southeast of the site in the centre of Leeds. Whilst this is beyond a comfortable walking distance it is worth reiterating the guidance provided by PPG13 that "Cycling also has potential to substitute for short car trips, particularly those under 5km, and to form part of a longer journey by public transport."

4.5.14 A total of 26 bus services per hour provide a public transport link between the site and Leeds railway station during a typical Monday to Saturday daytime.

4.5.15 From Leeds railway station a considerable range of local and long distance train services are available.

4.5.16 I conclude that the site is accessible by public transport from a very wide and geographically spread catchment area.

4.6 Accessibility by Commercial Vehicles

4.6.1 The site would be safely and efficiently serviced using dedicated areas as shown on the architect's plans. The large retail units would be serviced from the rear (the extreme west of the site). The smaller units which provide a frontage to Bridge Road would be serviced using an area within the site accessed direct from the internal road network.

4.7 Accessibility by Private Car and Taxi

4.7.1 The site is well located for access by private car and taxi. Access and egress is presently available via three junctions with Bridge Road. I consider that the existing access arrangements are somewhat confusing, inefficient and poorly located. It is therefore proposed to rationalise the access arrangements by providing a priority controlled entry-only junction towards the far east of the site and a signal controlled exit-only junction towards the western end, as shown on **Drawing Number NTP/7043/01** within **Appendix JGV3**. Customers will be able to access and egress the site to and from the east and west.

4.7.2 The benefits of the proposed access arrangements are as follows:

- The scheme rationalises the site access arrangements, which are presently confusing, inefficient and poorly located.
- The scheme provides new signals at the site exit junction, which will enable Leeds UTC to coordinate and control traffic more efficiently.
- The scheme provides a new signal controlled pedestrian crossing of Bridge Road in the vicinity of the bus stops.
- The scheme provides a new signal controlled pedestrian crossing facility across the Bridge Road site exit junction – presently pedestrians are required to cross two uncontrolled junctions at the western end of the site.
- The scheme removes the right-turn manoeuvre from Bridge Road (west of Savins Mill Way) to the site thereby freeing up link capacity and improving road safety on this important link.

4.7.3 Off-site highway works consist of the pedestrian crossing of Bridge Road. The modifications to the junction of Savins Mill Way/Bridge Road, which are identified on **Drawing Number NTP/7043/01**, are to be carried out by the Council, forming part of the safety scheme which is considered in more detail in **Section 5** of my evidence. All off-site highway works take place wholly within highway land or land controlled by the Appellant and would be secured by a Section 278 agreement.

4.7.4 A total of 439 car parking spaces would be available for use by customers. This level of parking provision is in accordance with national and local guidelines. A total of 20 spaces would be designed and reserved for disabled users. In addition a small number of spaces would be provided to cater for staff car parking to the rear of the large retail units, at the extreme west of the site.

4.7.5 A car parking strategy has been agreed with the Council, as outlined below:

- The site management company will have a presence on site during opening hours. They will be responsible for all matters relating to the operation of the car parks.
- The site management company staff will be available to direct customer traffic to the most appropriate car parking area on busy shopping days.
- Staff working at the retail units will be positively discouraged from using a car to travel to work, but those who do travel to work by car, and do not have a space allocated in the staff parking area, will be instructed to park at the extreme northern end of the northern car park. Staff vehicles will be identified by a unique badge which would be displayed within the vehicle.
- A maximum parking stay of 4 hours would be imposed to discourage commuter parking but allow some use of the car for other/linked town centre uses.

4.7.6 A detailed consideration of the traffic implications of the proposed development is provided in Sections Five and Six of my evidence.

4.8 Travel Plan

4.8.1 The proposed development would be conditioned at the Planning Approval stage with the requirement to operate a Travel Plan.

4.8.2 The Travel Plan is a tool for building owners or occupiers to help reduce the environmental impact of travel. It analyses the key transport challenges and opportunities facing an employer, and provides the structure to develop an integrated, strategic response. The Plan relates to the management of all travel linked to the development. It is a package of practical measures aimed at encouraging staff and visitors to choose alternative modes of travel to that of the private car, particularly for single occupancy journeys.

4.8.3 A Travel Plan was prepared by RPS Transport Planning (Reference jgv/DLT0072/tp/v1) and submitted to the Council in support of the planning application in October 2004. The Travel Plan was subsequently amended following discussions and meetings with officers of the Council and resubmitted in November 2005 (Reference jgv/DLT0072/tp/v2). The Council made no further comments on Version 2 of the Travel Plan, which is provided as **Appendix JGV4**, until very recently. The recent comments, received on 16th January 2008, are also provided within **Appendix JGV4**. I have not been able to update the draft travel plan in light of these comments, however I will provide an updated travel plan at the inquiry which reflects these comments and the Appellant's response to them.

5 TRAFFIC-RELATED MATTERS

5.1 Introduction

5.1.1 This section of my evidence considers traffic-related matters.

5.1.2 The proposed development involves the demolition of the existing 12,730sq.m GFA department store, which will be replaced by buildings with a total floorspace of 16,619sq.m. GFA, comprising a department store of 6,382sq.m. GFA. and new retail and café units totalling 10,237 sq.m. GFA. The actual increase in proposed gross floor area compared with that already existing on site is therefore relatively modest, totalling 3,889sq.m.

5.2 July 2004 Transport Assessment

5.2.1 A Transport Assessment was prepared by RPS Transport Planning in July 2004 (reference jgv/DLT0072/TA/v6) and submitted in support of the planning application for redevelopment of the appeal site. The local highway network which was analysed by the Transport Assessment consisted of the site access junctions with Bridge Road and the junction of Bridge Road with Savins Mill Way. Officers of the Council's highways department had previously agreed the local highway network area of interest. This 'local highway network' is identified on **Plan 02** within **Appendix JGV1**.

5.2.2 The operation of this local highway network was tested using the TRANSYT program. The council requested amendments to the original submission as follows:

- The signal operation was changed to an 80 second cycle time.
- The give-way entrance to the site was modelled within TRANSYT.
- The time required for pedestrians to cross at the exit from the site was increased to a total of 20 seconds.
- Queue weightings were applied on the internal links.

5.2.3 This revised TRANSYT assessment was undertaken, as requested, and submitted to the Council on 5th November 2004 – the TRANSYT output and Link/Node Diagram is provided within **Appendix JGV5**.

5.3 The Wider Highway Network

5.3.1 After initial member comment was made regarding traffic concerns, Leeds City Council highway officers requested extensions to the TRANSYT model to include additional highway links and junctions. This 'wider highway network' is identified on **Plan 02** within **Appendix JGV1**. RPS however contended that the additional work was not required because the modest increase in traffic associated with the proposed development would not have a material effect on these junctions.

5.3.2 Leeds City Council officers subsequently carried out their own traffic assessment of the operation of the gyratory and concluded that the increase in trips could be accommodated on the gyratory, and therefore did not therefore persist in their request that the "wider highway network" be considered by the Appellant. Having regard to this, in relation to highways, the Report to Panel on 23rd March 2006 stated that:

"The junction of Bridge Road and Savins Mill Way is to be reconfigured as part of this scheme and an additional traffic signal junction is to be provided at the southern exit to application site. The applicants have provided modelling information regarding the capacity of the junction. The work being done as part of the application is considered reasonable and realistic given the capacity issues at the gyratory. Given the nature of the scheme it is unlikely to generate traffic to have a further significant impact at the morning peak and its busiest times are likely to be at the weekends. Highways officers have considered the impact of the scheme in the light of other developments in Kirkstall and are content with the scheme. The applicant has agreed to provide a contribution to public transport – the amount is still under discussion. The design of the scheme should ensure better integration with development on the other side of Bridge Road and footpath links have been provided from the car park to Kirkstall Abbey fields."

5.3.3 It can be seen, therefore, that the Council's highways officers did not raise any objection on traffic or transport related issue, nor did members decide to refuse the application on any matter related to traffic or transportation

5.4 Committed Development

5.4.1 Since the submission of the Transport Assessment, the proposed development at Kirkstall Forge has been granted planning permission. Kirkstall Forge is located west of the A65, approximately 1.5km northwest of the appeal site. The Kirkstall Forge development comprises some 1,385 new homes, 16,518sq.m. of office floorspace, a range of bars, restaurants, small-scale retail, health and fitness and spa, banking, a crèche, accommodation for social/community uses, and a riverside hotel. This proposal will have an effect on the levels of traffic using the local highway network in the vicinity of the appeal site.

5.4.2 In order to update the information contained within the traffic assessment, for the purposes of this proof of evidence I have considered the impact of the development at Kirkstall Forge, and the effect that traffic generated by that development will have on the impact of the appeal proposal.

5.4.3 It should however be noted in this context that when the Kirkstall Forge development planning application was submitted in 2005, it was accompanied by a Transport Assessment. The traffic analysis contained within the Kirkstall Forge Transport Assessment considered the additional traffic effect of the redevelopment of the Allders site which is currently proposed as at that time the Allders Planning Application had made sufficient progress through the planning system for the proposals to be considered by the Council as a 'committed development'.

5.4.4 Leeds City Council therefore considered the combined traffic effect of Kirkstall Forge and the Allders redevelopment and concluded that it was acceptable; the Council approved the Kirkstall Forge application in April 2006, subject to planning conditions and a Section 106 agreement.

5.4.5 I have considered the Kirkstall Forge development as a commitment and included the traffic which would be generated by that development in my updated traffic assessment.

5.5 Traffic Flows on The Wider Highway Network

5.5.1 I remain of the view that the traffic associated with the proposed development will not have a material impact on the wider highway network, however for completeness, as part of the traffic analysis in this Proof of Evidence I have made an assessment of the wider highway network, as well as the local network.

5.5.2 Weekday and Saturday traffic flows on the wider highway network have been provided by the Council, and are contained within **Appendix JGV6**.

5.5.3 The data provided by the Council has been supplemented by traffic flow data collected at the site accesses on Friday 5th December 2003 and Saturday 6th December 2003, which is provided within **Appendix JGV7**. At this time the site was operating as an Allders Department Store, plus various ancillary operations such as warehousing and an internet retailing business.

5.5.4 The observed levels of traffic associated with the site on those two dates are shown in **Table 5.01** and **Table 5.02** respectively:

	TRAFFIC FLOW		
Hour Ending	Arr	Dep	2 Way
17:00	66	86	152
18:00	49	77	126

Table 5.01 – Observed Traffic associated with Site on Friday December 2003.

	TRAFFIC FLOW		
Hour Ending	Arr	Dep	2 Way
14:00	193	179	372

Table 5.02 – Observed Traffic associated with Site on Saturday December 2003.

5.5.5 The above surveys were repeated in October 2007, when the site was operating as a BHS store. The data is provided within **Appendix JGV7**. The observed levels of traffic associated with the site on the Friday and Saturday are shown in **Table 5.03** and **Table 5.04** respectively:

	TRAFFIC FLOW		
Hour Ending	Arr	Dep	2 Way
17:00	35	48	83
18:00	23	43	66

Table 5.03 – Observed Traffic associated with Site on Friday October 2007.

	TRAFFIC FLOW		
Hour Ending	Arr	Dep	2 Way
14:00	130	156	286

Table 5.04 – Observed Traffic associated with Site on Saturday October 2007.

5.5.6 Comparing **Table 5.01** with **Table 5.03**, and **Table 5.02** with **Table 5.04**, it can be seen that when operated by BHS the site attracts around 45% less traffic during the weekday evening peak and around 25% less traffic during the Saturday peak, compared with its operation as an Allders department store. I consider the reasons for this are twofold:

- The December 2003 surveys were undertaken during the busy pre-Christmas trading peak, and it is anticipated that these would be somewhat higher than typical.
- A department store, when operated by BHS, generates a lower level of traffic than one operated as a traditional department store, such as an Allders, due to the different type of its customer base.

5.6 Assessment Periods

5.6.1 The Council have stated that the weekday evening peak hour 17:00 to 18:00 hours, and Saturday peak hour 13:00 to 14:00 hours, are appropriate for an assessment of the traffic effects of the proposed development.

5.7 Access Proposals

5.7.1 The proposed site access arrangements are identified on **Drawing Number DLT0072-37 Revision A** contained within **Appendix JGV3**. These arrangements were included in the traffic analysis section of the original Transport Assessment and are considered within my evidence.

5.8 Traffic Growth

5.8.1 There is little potential for peak hour traffic growth on the A65, although there is evidence of 'peak hour spreading', and this is agreed by the Council.

5.9 Committed Highways/Traffic Management Schemes

5.9.1 The Council has plans to amend the layout of the highway network in the vicinity of the site in order to improve road safety. This 'safety scheme' would include the banning of the right-turn movement from Commercial Road (south) to Kirkstall Lane (east). The right-turn manoeuvre would be achieved by travelling via a left-turn into Savins Mill Way, turning right onto Bridge Road and straight across Commercial Road to Kirkstall Lane.

5.9.2 Presently the right-turn movement from Savins Mill Way to Bridge Road is not permitted, and two lanes are available for the left-turn movement. Highway alterations at the junction of Savins Mill Way/Bridge Road are therefore required as part of the safety scheme, involving the formation of separate left-turn and right-turn lanes onto Bridge Road. Associated alterations to the layout of the junction of Bridge Road/Abbey Road/Commercial Street will also be made. These alterations have been approved by Leeds City Council and I have been informed by the Council that implementation of this scheme is imminent. I have therefore included these works in the updated traffic analysis.

5.10 Traffic Flows 'Without Development'

5.10.1 Using the data provided by the Council, and provided within **Appendix JGV6**, I have calculated the 'without proposed development' traffic flows. These flows include the committed development, the safety scheme redistribution and the observed flows associated with the appeal site allowing for the traffic redistribution effect of the proposed site access improvements, as shown on the traffic flow diagrams **Figure 01** and **Figure 02** – all traffic flow diagrams are contained within **Appendix JGV8**.

5.11 Traffic Flows associated with Proposed Development

5.11.1 The proposed development involves the demolition of the existing 12,730sq.m GFA department store, which will be replaced by buildings with a total floorspace of 16,619sq.m. GFA, comprising a department store of 6,382sq.m. GFA. and new retail and café units totalling 10,237 sq.m. GFA.

5.11.2 The methodology I have used to forecast the traffic associated with the proposed development, and which has been agreed with the Council, is as follows:

- The December 2003 traffic generated by the 12,730sq.m former Allders department store is assumed to remain constant, i.e. the same level of traffic is assumed to be generated by the new 6,382sq.m. department store. This traffic was at the time using the 'wider highway network' and is therefore included within the traffic flows which were observed in 2004 and which have been provided by the Council.
- The TRICS [Version 2007(b)] database (Retail Park – excluding food category) has been used to estimate the traffic associated with the additional 10,237 sq.m. GFA of retail and café units. All TRICS output is provided as **Appendix JGV9**.

5.11.3 I consider that use of the December 2003 observed traffic associated with the store when operated by Allders will ensure a particularly robust analysis of the traffic effects of the development for the following reasons:

- The traffic associated with the department store has not been reduced pro-rata (i.e. proposed 6,382sq.m. GFA compared with existing 12,730sq.m. GFA).
- The existing traffic movements were observed during the busy pre-Christmas trading peak.
- A department store, when operated by BHS, generates a considerably lower level of traffic than one operated as a traditional department store, such as an Allders.

5.11.4 A consideration of the TRICS database survey site information shows that of the 14 sites available for use in the Retail Park – Excluding Food category, the majority are in 'edge of town' locations where walking is typically a less convenient mode of transport. Only one TRICS site is located in a 'neighbourhood centre' similar to the Kirkstall proposed redevelopment site. The TRICS information also shows that the majority of sites are served by just two buses per hour, or less, during the daytime Monday to Saturday. In addition, it appears from the information available that none of the sites used for the TRICS analysis operate a Travel Plan.

5.11.5 Given that visitors to the majority of sites used for the TRICS traffic generation analysis have a high reliance on use of the private car, I anticipate that average TRICS trip rates will provide a particularly robust analysis, and probably an over-estimate, of the traffic generating characteristics of the proposed development; the appeal site is very well located for access by a range of transport modes, and there will be a requirement as part of any planning permission to implement a strong Travel Plan.

5.11.6 The following weekday and Saturday assessment period traffic flow forecasts for the proposed new non-food retail/restaurant units are based on TRICS average trip rates:

TRAFFIC FLOW ON WEEKDAY 17:00 to 18:00 HOURS			TRAFFIC FLOW ON SATURDAY 13:00 to 14:00 HOURS		
Arr	Dep	2 Way	Arr	Dep	2 Way
129	143	272	299	287	586

Table 5.05 – Assessment Period Forecast Traffic associated with 10,237sq.m. Non-Food Retail/Restaurant units.

5.11.7 I anticipate that a significant number of visitors to the new non-food retail and restaurant units would also visit the department store. I consider it is necessary to make an allowance for dual trip making, particularly given that the traffic generation forecasts are, to start off with, likely to be an overestimate. Consequently the level of traffic associated with the new non-food retail units has been reduced by 25%. This reduction has been agreed with the Council.

5.11.8 The DfT Guidance on Transport Assessment states in paragraph 4.67 that:

"In some circumstances, the extent of access by non-car modes of transport may suggest an adjustment of development-generated vehicle trips. This is likely to be the case where new sustainable transport infrastructure, such as cycleway or bus services, is proposed by the developer. It may also be appropriate when a proposed development is located where there is a particularly high-quality and accessible existing public transport system."

5.11.9 It continues in paragraph 4.71:

"It is important that the appropriate level of reduction, if any, should be agreed among the developer, the LHA and/or the HA preferably at the pre-application consultation stage."

5.11.10 The resulting assessment period traffic forecasts, allowing for dual-purpose trips, are provided in **Table 5.06** below:

TRAFFIC FLOW ON WEEKDAY 17:00 to 18:00 HOURS			TRAFFIC FLOW ON SATURDAY 13:00 to 14:00 HOURS		
Arr	Dep	2 Way	Arr	Dep	2 Way
97	107	204	224	216	440

Table 5.06 – Assessment Period Forecast Traffic associated with 10,237sq.m. Non-Food Retail/Restaurant units, with allowance for Dual-Purpose Trips.

5.12 Trip Distribution and Assignment

5.12.1 The DfT Guidance on Transport Assessment states in paragraph 4.64 that:

"As certain types of development, particularly retail, can have a significant effect on vehicular traffic, consideration may be given to the different types of vehicular trips that are likely to be generated, such as:

New trips – these are trips that do not appear anywhere on the road network prior to the opening of the development. For many types of development, this element of generated trips can be relatively small; however, it is customary to consider all trips from residential developments as being new to the network.

Pass-by trips – these are trips that are already present on the road network directly adjacent to the point(s) of access to the site, which will turn into the site. This type of trip is likely to be relevant only where the site is located on a major arterial route within an urban area. If it can be clearly demonstrated that there will be a proportion of true 'pass-by' trips that were already on the network, then these can be deducted from the calculated generation for the development.

Linked trips – these are trips that will have multiple destinations either within the proposed development site. Examples include trips to food and non-food retail, between both the development site and existing adjacent sites or between the development site and an established town centre. Where there is a high probability that there will be a proportion of linked trips between two uses on a development, it is customary only to 'count' those trips once for the development as a whole, and not effectively double-count them by attributing two visits and departures affecting the sections of highway network being assessed.

Diverted trips – these are trips that are already present on the local road network but not the road(s) from which site access is taken and will divert from their existing route to access the site. These are similar to pass-by trips, but they have to deviate to make use of the development under consideration. It is important to identify the potential for such diversion to occur so as to ensure that the correct flows are assessed at specific junctions on the highway network. Diverted trips will tend to return to their original route after visiting the development under consideration.

Transferred trips – these are trips that are already present on the local road network, accessing similar existing sites in close proximity to the proposed development and will have the potential to transfer their destination to the proposed development. Slightly different from diverted trips, these wholly transfer from using an existing development to a new one, e.g. shoppers switching to a new supermarket that is more conveniently located for them."

5.12.2 It continues in paragraph 4.65:

"The level of reduction in vehicular trip generation based on the mix of trips, as set out above, will be to a degree subjective and dependent on the specific characteristics and location of the proposed development. The methodology for deriving the development's vehicular trips and appropriate level of trip reduction, if any, should be agreed among the developer, the LHA and/or the HA during the pre-application consultations."

5.12.3 It is generally accepted that new retail development primarily results in a redistribution of existing shopping trips, rather than the creation of new trips. It is therefore anticipated that the trips attracted to the proposed development would be either redistributed trips which transfer from other similar destinations, or linked trips currently being made on the A65 and B6157.

5.12.4 The proposed development provides a local retail opportunity for people living or working in the North West Leeds area. Such a facility would reduce overall travel demand by reducing the need for local people to travel to similar destinations further away, thereby making car trips shorter, and allowing some customers to use walking and cycling as a replacement for the car as the mode of transport.

5.12.5 The proposed development site is ideally located for linked trip making, being in a designated town centre and on two busy traffic corridors. The opportunity will be available to extend existing trips associated with the adjacent Morrison's Superstore and associated retail park and other nearby shops and leisure facilities. The opportunity will also be available to divert existing trips (work to home trips home to shop trips for example) already being made on the A65 and B6157 into the proposed development. The ability to link trips provides scope to allow one trip to serve several purposes, thereby providing the potential to reduce overall travel demand.

5.12.6 Having regard to the location of the site and the guidance provided in the above publications, I consider the trip type proportions provided in **Table 5.07**, which have previously been agreed with the Council, are appropriate:

		WEEKDAY 17:00 to 18:00 HOURS		SATURDAY 13:00 to 14:00 HOURS	
Trip type	Proportion	Arrivals	Departures	Arrivals	Departures
Primary New	0%	0	0	0	0
Primary Transferred	35%	34	37	78	75
Linked Pass-by	35%	34	38	79	76
Linked Diverted	30%	29	32	67	65
	Total	97	107	224	216

Table 5.07 – Trip Type Proportions

5.12.7 I have used the same trip type proportions for the weekday and Saturday. This is partially because the levels of traffic observed on the wider highway network are similar on the weekday and the Saturday. I anticipate that on a weekday evening peak the linked trips will tend to be part of a work to home trip, whilst on a Saturday peak they will tend to be part of other trip types, such as home to shop, home to leisure, social visit to home, etc. I consider that overall the trip type proportions will be similar.

5.12.8 The trip distribution proportions shown in **Table 5.08** below, which is based on the existing trip making pattern at the Bridge Road store and has been agreed with the Council, has been used to assign the primary transferred trips to the local highway network:

To/From	Proportion
Bridge Road (West)	30%
Abbey Road (North)	25%
Kirkstall Lane (East)	20%
Commercial Road (South)	25%

Table 5.08 – Trip Distribution

5.12.9 The primary transferred trips are identified on **Figure 03/Figure 04**.

5.12.10 The linked pass-by trips are calculated based upon the levels of traffic passing the site on Bridge Road, and are identified on **Figure 05/Figure 06**. The linked diverted trips are calculated based upon the levels of traffic using Commercial Road, and are identified on **Figure 07/Figure 08**.

5.12.11 The total additional development trips are identified on **Figure 09/Figure 10**.

5.12.12 On the basis of the total additional trips shown on **Figures 09/10**, I consider that the net increases in traffic flows resulting from the proposed development are not material beyond the 'local highway network', typically being no higher than a two-way increase of 30 vehicles per hour; no more than an additional vehicle every two minutes.

5.12.13 Paragraph 2.11 of the DfT Guidance on Transport Assessment indicates that an increase of over 30 vehicles per hour is a useful 'rule of thumb' for considering materiality and triggering a requirement for a Transport Assessment:

"Appendix B provides suggested thresholds below which a formal assessment may not be needed, and above which the preparation of a TS or a TA would be appropriate. The thresholds in Appendix B are based upon scenarios which would typically generate 30 two-way peak hour vehicle trips. Whilst there is no suggestion that 30 two-way peak hour vehicle trips would, in themselves, cause a detrimental impact, it is a useful point of reference from which to commence discussions."

5.13 Traffic Flows 'With Development'

5.13.1 The 'with development' traffic flows are calculated by adding the total additional development trips shown on **Figure 09/Figure 10** to the base traffic flows (which includes the existing plus the redistributed department store traffic plus the Kirkstall Forge development traffic flows plus the traffic safety scheme redistribution effects) shown on **Figure 01/Figure 02**.

5.13.2 The 'with development' traffic flows are shown on **Figure 11/Figure 12**

6 OPERATIONAL ANALYSIS

6.1 Introduction

6.1.1 This section of my evidence provides an operational analysis of the traffic effects of the proposed development.

6.2 TRANSYT Analysis

6.2.1 The operation of the wider highway network, in the weekday evening and Saturday 'without development' and 'with development' scenarios, has been tested using the TRANSYT program.

6.2.2 The TRANSYT (Version 12) User Guide states that:

"TRANSYT is an off-line computer program for determining and studying optimum fixed time, co-ordinated, traffic signal timings in any network of roads for which the average traffic flows are know. A traffic model of the network calculates a Performance Index (PI) in monetary terms, which is the weighted sum of all vehicle delay and stops. An optimising routine systematically alters signal offsets and/or allocation of green times to search for the timings which reduce the PI to a minimum value. TRANSYT is the most widely used program of its type throughout the world."

6.2.3 I have undertaken my operational analysis using, as a basis, a TRANSYT model which was provided by the Council. This TRANSYT model has been used by the Council as a basis to consider a range of proposed developments and potential highway modifications in the vicinity of the Kirkstall District Centre. I am confident this is an appropriate model to be used to quantify the changes in operation of the wider highway network caused by the traffic effects of the proposed Bridge Road development.

6.2.4 The Link/Node diagram for the existing TRANSYT model is provided as **Figure 13** within **Appendix JGV8**.

6.2.5 The existing weekday evening peak and Saturday peak output from the TRANSYT model provided by the Council is contained within **Appendix JGV10**. These models use traffic data in the existing scenario, that is using data collected in 2004, without Kirkstall Forge and without the highway changes and traffic reassignment caused by the safety scheme. The Degree of Saturation and Mean Maximum Queue for each link which forms part of the wider highway network in the existing scenario are summarised in **Table 10.1** in **Appendix JGV10**.

6.2.6 I have then modified the Council's TRANSYT model to include the changes resulting from the safety scheme and to include the signal controlled site exit junction and the priority controlled right-turn entry into the site. All saturation flows, lags, etc., have been retained as provided by the Council, where these are available.

6.2.7 In the first set of TRANSYT analyses I have used the existing signal timings, these being provided by the Council within the TRANSYT model of the existing weekday evening peak and Saturday peak scenario. It has been necessary to input timings for the site access and to modify timings for the junction of Bridge Road/Commercial Road and Bridge Road/Savins Mill Way to allow for the changes brought about by the safety scheme. The TRANSYT output is provided as **Appendix JGV11**. The Degree of Saturation and Mean Maximum Queue for each link which forms part of the wider highway network, and the change in these values moving from the 'without development' scenario to the 'with development' scenario, are summarised in **Table 11.1/Table 11.2** provided in **Appendix JGV11**.

6.2.8 Taking the 90% Degree of Saturation (DoS) as a measure of a link approaching capacity it can be seen that using the Council's signal timings the local highway network is operating within capacity during the weekday evening and Saturday peak periods in both the 'without development' and 'with development' scenarios.

6.2.9 It can also be seen that the majority of links of the wider highway network are operating within capacity during the weekday evening and Saturday peak periods in both the 'without development' and 'with development' scenarios. The effect of the traffic associated with the proposed development is small, with some queues increasing slightly and others reducing slightly. Overall the impact is not material, even on the very robust basis arising from the inputs into the model.

6.2.10 It is clear to me that as a result of the changes in traffic volumes generated by the Kirkstall Forge development and changes in traffic assignment caused by the safety scheme, and indeed traffic generation and reassignment caused by the proposed Bridge Road development, it will be necessary to modify the traffic signal timings on the wider highway network to optimise signal co-ordination to maximise the throughput of traffic whilst minimising delays. In practice the Council's traffic signal engineer would iteratively change the signal timings as a result of on-site observations, as traffic volumes and traffic turning movements change over time, but using the existing timings and data provided by TRANSYT as a starting point.

6.2.11 Consequently in the second set of analyses I have allowed the TRANSYT program to fully optimise the timings in both the 'without development' scenario and the 'with development' scenario.

6.2.12 The Degree of Saturation and Mean Maximum Queue for each link which forms part of the wider highway network, and the change in these values moving from the 'without development' scenario to the 'with development' scenario, are summarised on **Table 11.3/Table 11.4** provided in **Appendix JGV11**.

6.2.13 It can be seen that the local highway network is operating within capacity during the weekday evening and Saturday peak periods in both the 'without development' and 'with development' scenarios using the optimised timings. Also the majority of links of the wider highway network are operating within capacity during the weekday evening and Saturday peak periods in both the 'without development' and 'with development' scenarios. The effect of the traffic associated with the proposed development is small, with some queues increasing slightly and others reducing slightly. I do not consider these changes to be material.

6.2.14 The TRANSYT analysis demonstrates that the local highway network will continue to operate satisfactorily after opening of the proposed redevelopment scheme, even with the Kirkstall Forge development in place. Furthermore the output of the TRANSYT analysis demonstrates that the proposed development will not have a material effect on the operation of the wider highway network.

7 SUMMARY AND CONCLUSION

7.1 Introduction

7.1.1 My evidence dealing with transport and highway matters is submitted in support of an appeal by Allders Department Stores Ltd (in Liquidation) against the refusal of planning permission by Leeds City Council for the redevelopment of the former Allders Department Store site, which is now operated by BHS, located north of Bridge Road in Kirkstall, Leeds.

7.2 Site Location and Description

7.2.1 The site is located in Kirkstall, approximately 5km northwest of the centre of Leeds.

7.2.2 The site currently contains a department store operated by BHS. The existing buildings have a combined Gross Floor Area of 12,730sq.m. Vehicular and pedestrian access is available from a number of locations on Bridge Road.

7.3 Proposed Development

7.3.1 The proposed development involves the demolition of the existing department store, which will be replaced by buildings with a total floorspace of 16,619sq.m. GFA, comprising a department store of 6,382sq.m. GFA. and new retail and café units totalling 10,237 sq.m. GFA. The actual increase in proposed gross floor area compared with that already existing on site is therefore relatively modest, totalling 3,889sq.m.

7.3.2 Pedestrian access would be provided using a dedicated footpath link with Bridge Road. Vehicular access to the site would be provided via improved junctions with Bridge Road.

7.4 Background

7.4.1 A Transport Assessment of the proposals for redevelopment was prepared by RPS Transport Planning in July 2004 and submitted to the Council in support of the planning application. Having considered that assessment, Leeds City Council Highways Officers did not object to the proposal. The application was subsequently refused by the Council on 18 May 2006 with two reasons for refusal, neither of the reasons being traffic, transport or highways related. The refusal was against the Officer's recommendation for approval.

7.4.2 The Council subsequently stated that the position remains they raise no highway or transport objection and will not be calling highway evidence at the inquiry. However, they have asserted that the "highway position has materially changed" since the submission of the original transport assessment. Also the Kirkstall Valley Community Association has been given Rule 6 status and has raised traffic/highway issues.

7.4.3 In this proof I have addressed both the question of changes in circumstances concerning traffic and transportation issues since the original Transport Assessment and certain relevant matters raised in the Kirkstall Valley Community Association's statement of case.

7.5 Transport Related Policy and Guidance

7.5.1 A consistent theme stated in Government Policy is the need for the integration of planning and transport at national, regional and local levels, with a view to achieving Government objectives for sustainable development.

7.5.2 PPS1 encourages authorities to site new development where it can be well served by public transport, whilst also noting that planning should seek actively to bring vacant and underused previously developed land back into beneficial use.

7.5.3 The objectives of PPG13 are "to integrate planning and transport at the national, regional, strategic and local level". PPG13 identifies a key planning objective:

- "To ensure that jobs, shopping, leisure facilities and services are accessible by public transport, walking and cycling. This is important for all, but especially for those who do not have regular use of a car and to promote social inclusion."

7.5.4 The Leeds UDP reflects national guidance, having the strategic aim "to encourage development in locations that will reduce the need for travel, promote the use of public transport and other sustainable modes, reduce the journey lengths of those trips which are made by car, whilst promoting safe travel, economic development and protection of the environment."

7.5.5 Policy T2 of the UDP states that new development should normally "be served adequately by existing or programmed highways or by improvements to the highway network which are funded by the developer via planning conditions on planning permissions or planning obligations, and will not create or materially add to problems of safety, environment or efficiency on the highway network.

7.5.6 The Department for Transport's Guidance on Transport Assessment reiterates the guidance provided by PPG13 in relation to making it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking, and cycling. It states that it is considered good transport planning practice to demonstrate that other opportunities "have been fully explored before considering the provision of additional road space such as new roads or major junction upgrades."

7.6 Accessibility

7.6.1 Within the site a high quality pedestrian network will be provided. The infrastructure available for visitors accessing the appeal site on foot is already excellent, and this will be improved as part of the development proposals, with an additional crossing facility being provided to facilitate the safe movement of pedestrians across Bridge Road on the frontage of the site in the vicinity of the existing bus stops. A large built-up part of northwest Leeds lies within walking distance of the site.

7.6.2 I conclude that the site is highly accessible on foot from a considerable catchment area.

7.6.3 A variety of cycle facilities are available in the vicinity of the site. Within the site covered cycle parking spaces, provided in accordance with Leeds City Council guidelines, would be available at appropriate locations within the site that are convenient for use by cyclists. A large part of the north west of Leeds lies within cycling distance of the site.

7.6.4 I conclude that the site is highly accessible by cycle from a considerable catchment area.

7.6.5 The site benefits from its town centre location, being on or close to several bus routes. The opportunity will be available for bus passengers to wait in comfort at one of the cafés that are proposed as part of the development along the Bridge Road frontage.

7.6.6 Access to the site is available from a large part of Leeds via 30 bus services per hour during the Monday to Saturday daytime. Bus access will be improved by the A65 Quality Bus Corridor scheme. The site is readily accessible from Headingley railway station. The site is also accessible from Leeds Railway Station via bus, local train and by cycle.

7.6.7 I conclude that the site is highly accessible by public transport from a very wide and geographically spread catchment area.

7.6.8 The site is well located for access by private car and taxi. It is proposed to rationalise the existing access arrangements by providing a priority controlled entry-only junction towards the far east of the site and a signal controlled exit-only junction towards the western end. The proposed site access scheme will provide significant benefits, not just for visitors to the redevelopment site, but for pedestrians, public transport users and vehicle users in general.

7.6.9 Within the site a car parking strategy has been agreed with the Council to ensure parking is sufficient without being excessive. The proposed development would be conditioned at the Planning Approval stage with the requirement to operate a Travel Plan to minimise the traffic associated with the site.

7.6.10 The proposed development provides a local retail opportunity for people living or working in the North West Leeds area. Such a facility would reduce overall travel demand by reducing the need for local people to travel to similar destinations further away, thereby making car trips shorter, and allowing some customers to use walking and cycling as a replacement for the car as the mode of transport. The proposed development site is ideally located for linked trip making, being in a designated town centre and on two busy traffic corridors. The ability to link trips provides scope to allow one trip to serve several purposes, thereby providing the potential to reduce overall travel demand.

7.7 Operational Analysis

7.7.1 Prior to the refusal of planning permission, Leeds City Council officers carried out their own traffic assessment of the proposed development, stating that:

"Highways officers have considered the impact of the scheme in the light of other developments in Kirkstall and are content with the scheme."

7.7.2 Since the submission of the original Transport Assessment, the development at Kirkstall Forge has been granted planning permission. Prior to granting planning permission for that, however, Leeds City Council considered the combined traffic effect of Kirkstall Forge and the Allders redevelopment and concluded that it was acceptable.

7.7.3 Notwithstanding the above, I have undertaken my own operational analysis of the wider highway network, including the impact of the recently committed development at Kirkstall Forge, and taking account of the Council's nearby highway safety scheme.

7.7.4 Weekday and Saturday traffic flows on the wider highway network have been provided by the Council. This has been supplemented by traffic flow data collected at the site accesses. Using this data I have calculated the 'without proposed development' traffic flows.

7.7.5 I have used a combination of observed traffic flow data and TRICS database data to forecast the traffic associated with the proposed development. I consider that my forecast is a particularly robust one.

7.7.6 The operation of the wider highway network, in the weekday evening and Saturday 'without development' and 'with development' scenarios, has been tested using the TRANSYT program. I have undertaken my operational analysis using, as a basis, a TRANSYT model which was provided by the Council.

7.7.7 The TRANSYT analysis demonstrates that the local highway network will continue to operate satisfactorily after opening of the proposed redevelopment scheme, even with the Kirkstall Forge development in place. Furthermore the output of the TRANSYT analysis demonstrates that the proposed development will not have a material effect on the operation of the wider highway network.

7.7.8 I conclude that the proposed development provides satisfactory access to the road network.

7.8 Overall Summary

7.8.1 My evidence has demonstrated how the proposed development fully accords with national and local transport related policies by:

- Being located within an established retail development site within the Kirkstall Town Centre.
- Being readily accessible by a range of transport modes.
- Being located where the need for people to travel, particularly by car, can be minimised.
- Providing adequate servicing and parking for motor vehicles and cycles.
- Facilitating multi-purpose trips, walking, cycling and the use of public transport.
- Helping to reduce the growth in the length and number of motorised journeys.
- Reducing reliance on the private car.
- Providing satisfactory access to the road network.

7.9 Overall Conclusion

7.9.1 Having regard to the above, it is respectfully requested that the appeal is allowed and that planning permission is granted subject to appropriate conditions.

JGV11

			Weekday 17:00-18:00 Hours No Development		Weekday 17:00-18:00 Hours With Development		Weekday 17:00-18:00 Hours Change With Development	
Junction	**Link Description**	**Link No.**	**DoS**	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
Bridge Road/site entry	Bridge Road right turn	77	2	0	9	0	7	0
Bridge Road/Savins Mill Way	Bridge Road westbound straight ahead	101	85	16	84	15	-1	-1
	Savins Mill Way left turn	102	86	12	85	12	-1	0
	Bridge Road right turn	103	50	7	52	7	2	0
	Bridge Road eastbound straight ahead	104	69	8	74	10	5	2
	Savins Mill Way right turn	105	66	5	76	6	10	1
Savins Mill Way/Morrisons	Savins Mill Way westbound through junction	202	78	17	80	18	2	1
	Savins Mill Way left turn to Morrisons	203	53	9	52	9	-1	0
	Morrisons right rurn out	204	85	9	85	9	0	0
	Morrisons left turn out	205	39	5	39	5	0	0
	Savins Mill Way right turn to Morrisons	206	58	4	58	4	0	0
	Savins Mill Way eastbound through junction	207	18	1	20	1	2	0
Commercial Road/Bridge Road	Abbey Rd Straight ahead then right to Savins Mill Way	301	44	7	46	7	2	0
	Abbey Rd straight ahead & left turn	302	76	18	75	17	-1	-1
	Kirkstall Lane right turn	303	53	4	54	4	1	0
	Kirkstall Lane straight ahead	304	60	9	61	9	1	0
	Kirkstall Lane left turn	305	23	3	23	3	0	0
	Commercial Road left turn	306	3	0	6	0	3	0
	Commercial Road straight ahead	307	76	11	75	10	-1	-1
	Bridge Road left turn	308	83	12	84	13	1	1
	Bridge Road straight ahead	309	63	7	66	7	3	0
Commercial Road/Savins Mill Way	Commercial Road right turn	401	47	9	49	10	2	1
	Commercial Road southbound straight ahead	402	40	0	39	0	-1	0
	Commercial Road northbound straight ahead	403	102	44	103	46	1	2
	Commercial Road left turn	404	72	12	72	12	0	0
	Savins Mill Way right turn	405	79	8	84	9	5	1
	Savins Mill Way left turn	406	78	7	78	7	0	0
Kirkstall Lane/Kirkstall Hill	Morris Lane right turn	701	18	2	19	2	1	0
	Morris Lane straight ahead & left turn	702	45	5	45	5	0	0
	Kirkstall Lane westbound all movements	703	110	40	112	43	2	3
	Kirkstall Hill all movements	704	100	29	101	30	1	1
	Kirkstall Lane eastbound right turn	705	41	2	41	2	0	0
	Kirkstall Lane eastbound straight ahead & right turn	706	89	15	91	16	2	1
Bridge Road/Wyther Lane	Bridge Road straight ahead	901	92	13	93	14	1	1
	Bridge Road left turn	902	74	12	74	11	0	-1
	Wyther Lane all movements	903	90	12	90	12	0	0
	Leeds & Bradford Road all movements	904	100	21	101	23	1	2
Broad Lane/Wyther Lane	Wyther Lane southbound all movements	1001	94	28	94	28	0	0
	Wyther Lane northbound all movements	1002	100	20	100	21	0	1
	Broad Lane all movements	1003	104	19	104	20	0	1
Bridge Road/Site Exit	Bridge Road eastbound straight ahead	1401	80	13	80	13	0	0
	Site Exit right turn	1402	6	0	15	1	9	1
	Site Exit left turn	1403	18	1	43	3	25	2
	Bridge Road westbound straight ahead	1404	46	15	46	15	0	0

Table 11.1
Weekday Evening Peak TRANSYT Summary
Original Timings

			Saturday 13:00-14:00 Hours No Development		Saturday 13:00-14:00 Hours With Development		Saturday 13:00-14:00 Hours Change With Development	
Junction	**Link Description**	**Link No.**	**DoS**	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
Bridge Road/site entry	Bridge Road right turn	77	11	0	30	0	19	0
Bridge Road/Savins Mill Way	Bridge Road westbound straight ahead	101	75	12	73	11	-2	-1
	Savins Mill Way left turn	102	75	10	73	10	-2	0
	Bridge Road right turn	103	68	8	73	9	5	1
	Bridge Road eastbound straight ahead	104	55	7	66	10	11	3
	Savins Mill Way right turn	105	61	7	76	9	15	2
Savins Mill Way/Morrisons	Savins Mill Way westbound through junction	202	88	18	94	22	6	4
	Savins Mill Way left turn to Morrisons	203	75	12	75	12	0	0
	Morrisons right rurn out	204	69	8	69	8	0	0
	Morrisons left turn out	205	36	4	36	4	0	0
	Savins Mill Way right turn to Morrisons	206	94	10	94	10	0	0
	Savins Mill Way eastbound through junction	207	29	2	33	2	4	0
Commercial Road/Bridge Road	Abbey Rd Straight ahead then right to Savins Mill Way	301	58	9	63	10	5	1
	Abbey Rd straight ahead & left turn	302	71	16	69	16	-2	0
	Kirkstall Lane right turn	303	39	3	41	3	2	0
	Kirkstall Lane straight ahead	304	42	5	45	6	3	1
	Kirkstall Lane left turn	305	34	5	34	5	0	0
	Commercial Road left turn	306	9	0	17	0	8	0
	Commercial Road straight ahead	307	67	17	65	15	-2	-2
	Bridge Road left turn	308	64	12	66	11	2	-1
	Bridge Road straight ahead	309	33	3	39	3	6	0
Commercial Road/Savins Mill Way	Commercial Road right turn	401	64	12	69	13	5	1
	Commercial Road southbound straight ahead	402	48	2	46	1	-2	-1
	Commercial Road northbound straight ahead	403	79	16	81	17	2	1
	Commercial Road left turn	404	72	12	72	12	0	0
	Savins Mill Way right turn	405	85	11	95	16	10	5
	Savins Mill Way left turn	406	59	6	59	6	0	0
Kirkstall Lane/Kirkstall Hill	Morris Lane right turn	701	34	3	34	3	0	0
	Morris Lane straight ahead & left turn	702	59	7	59	7	0	0
	Kirkstall Lane westbound all movements	703	91	15	94	17	3	2
	Kirkstall Hill all movements	704	83	13	84	13	1	0
	Kirkstall Lane eastbound right turn	705	54	3	57	3	3	0
	Kirkstall Lane eastbound straight ahead & right turn	706	75	12	78	12	3	0
Bridge Road/Wyther Lane	Bridge Road straight ahead	901	69	9	70	9	1	0
	Bridge Road left turn	902	79	13	80	14	1	1
	Wyther Lane all movements	903	70	11	71	11	1	0
	Leeds & Bradford Road all movements	904	71	9	73	9	2	0
Broad Lane/Wyther Lane	Wyther Lane southbound all movements	1001	59	1	60	1	1	0
	Wyther Lane northbound all movements	1002	76	7	78	8	2	1
	Broad Lane all movements	1003	79	11	80	11	1	0
Bridge Road/Site Exit	Bridge Road eastbound straight ahead	1401	78	18	79	18	1	0
	Site Exit right turn	1402	12	1	27	2	15	1
	Site Exit left turn	1403	37	3	82	8	45	5
	Bridge Road westbound straight ahead	1404	40	13	39	12	-1	-1

Table 11.2
Saturday Peak TRANSYT Summary
Original Timings

			Weekday 17:00-18:00 Hours No Development		Weekday 17:00-18:00 Hours With Development		Weekday 17:00-18:00 Hours Change With Development	
Junction	**Link Description**	**Link No.**	**DoS**	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
Bridge Road/site entry	Bridge Road right turn	77	2	0	9	0	7	0
Bridge Road/Savins Mill Way	Bridge Road westbound straight ahead	101	84	16	85	15	1	-1
	Savins Mill Way left turn	102	88	10	85	12	-3	2
	Bridge Road right turn	103	49	6	53	7	4	1
	Bridge Road eastbound straight ahead	104	67	12	75	12	8	0
	Savins Mill Way right turn	105	78	6	76	6	-2	0
Savins Mill Way/Morrisons	Savins Mill Way westbound through junction	202	78	12	80	11	2	-1
	Savins Mill Way left turn to Morrisons	203	53	6	53	6	0	0
	Morrisons right rurn out	204	76	8	76	8	0	0
	Morrisons left turn out	205	39	5	39	5	0	0
	Savins Mill Way right turn to Morrisons	206	68	5	68	5	0	0
		207	19	1	21	1	2	0
Commercial Road/Bridge Road	Abbey Rd Straight ahead then right to Savins Mill Way	301	46	7	48	7	2	0
	Abbey Rd straight ahead & left turn	302	79	18	78	18	-1	0
	Kirkstall Lane right turn	303	52	4	53	4	1	0
	Kirkstall Lane straight ahead	304	59	8	60	8	1	0
	Kirkstall Lane left turn	305	23	3	23	3	0	0
	Commercial Road left turn	306	3	0	7	0	4	0
	Commercial Road straight ahead	307	80	13	79	13	-1	0
	Bridge Road left turn	308	81	13	82	12	1	-1
	Bridge Roadstraight ahead	309	61	8	65	6	4	-2
Commercial Road/Savins Mill Way	Commercial Road right turn	401	78	12	76	12	-2	0
	Commercial Road southbound straight ahead	402	41	1	41	1	0	0
	Commercial Road northbound straight ahead	403	80	21	84	23	4	2
	Commercial Road left turn	404	59	9	60	9	1	0
	Savins Mill Way right turn	405	71	7	76	8	5	1
	Savins Mill Way left turn	406	68	7	68	7	0	0
Kirkstall Lane/Kirkstall Hill	Morris Lane right turn	701	19	2	19	2	0	0
	Morris Lane straight ahead & left turn	702	47	5	47	5	0	0
	Kirkstall Lane westbound all movements	703	105	30	106	33	1	3
	Kirkstall Hill all movements	704	104	37	104	38	0	1
	Kirkstall Lane eastbound right turn	705	41	2	42	2	1	0
	Kirkstall Lane eastbound straight ahead & right turn	706	86	15	88	15	2	0
Bridge Road/Wyther Lane	Bridge Road straight ahead	901	84	11	85	11	1	0
	Bridge Road left turn	902	74	7	75	10	1	3
	Wyther Lane all movements	903	97	21	98	26	1	5
	Leeds & Bradford Road all movements	904	92	15	93	15	1	0
Broad Lane/Wyther Lane	Wyther Lane southbound all movements	1001	97	29	97	31	0	2
	Wyther Lane northbound all movements	1002	95	16	96	17	1	1
	Broad Lane all movements	1003	45	6	45	6	0	0
Bridge Road/Site Exit	Bridge Road eastbound straight ahead	1401	73	4	76	5	3	1
	Site Exit right turn	1402	11	0	21	1	10	1
	Site Exit left turn	1403	32	1	60	4	28	3
	Bridge Road westbound straight ahead	1404	42	10	43	10	1	0

Table 11.3
Weekday Evening Peak TRANSYT Summary
Optimised

			Saturday 13:00-14:00 Hours No Development		Saturday 13:00-14:00 Hours With Development		Saturday 13:00-14:00 Hours Change With Development	
Junction	**Link Description**	**Link No.**	**DoS**	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
Bridge Road/site entry	Bridge Road right turn	77	11	0	30	0	19	0
Bridge Road/Savins Mill Way	Bridge Road westbound straight ahead	101	78	8	73	11	-5	3
	Savins Mill Way left turn	102	73	9	73	7	0	-2
	Bridge Road right turn	103	71	8	73	8	2	0
	Bridge Road eastbound straight ahead	104	57	11	66	12	9	1
	Savins Mill Way right turn	105	55	5	75	9	20	4
Savins Mill Way/Morrisons	Savins Mill Way westbound through junction	202	83	15	86	13	3	-2
	Savins Mill Way left turn to Morrisons	203	70	10	68	7	-2	-3
	Morrisons right rurn out	204	83	10	83	10	0	0
	Morrisons left turn out	205	38	5	39	5	1	0
	Savins Mill Way right turn to Morrisons	206	81	7	87	8	6	1
	Savins Mill Way eastbound through junction	207	27	3	31	3	4	0
Commercial Road/Bridge Road	Abbey Rd Straight ahead then right to Savins Mill Way	301	56	9	63	10	7	1
	Abbey Rd straight ahead & left turn	302	68	16	69	16	1	0
	Kirkstall Lane right turn	303	41	3	41	2	0	-1
	Kirkstall Lane straight ahead	304	43	6	45	6	2	0
	Kirkstall Lane left turn	305	35	5	34	5	-1	0
	Commercial Road left turn	306	9	0	17	0	8	0
	Commercial Road straight ahead	307	65	12	65	11	0	-1
	Bridge Road left turn	308	66	12	66	9	0	-3
	Bridge Road straight ahead	309	34	5	39	3	5	-2
Commercial Road/Savins Mill Way	Commercial Road right turn	401	74	13	73	13	-1	0
	Commercial Road southbound straight ahead	402	49	11	48	11	-1	0
	Commercial Road northbound straight ahead	403	73	15	85	18	12	3
	Commercial Road left turn	404	67	11	70	12	3	1
	Savins Mill Way right turn	405	81	11	86	12	5	1
	Savins Mill Way left turn	406	56	5	53	6	-3	1
Kirkstall Lane/Kirkstall Hill	Morris Lane right turn	701	35	3	36	3	1	0
	Morris Lane straight ahead & left turn	702	61	7	61	7	0	0
	Kirkstall Lane westbound all movements	703	87	14	90	15	3	1
	Kirkstall Hill all movements	704	87	13	87	14	0	1
	Kirkstall Lane eastbound right turn	705	52	3	55	2	3	-1
	Kirkstall Lane eastbound straight ahead & right turn	706	73	13	75	13	2	0
Bridge Road/Wyther Lane	Bridge Road straight ahead	901	55	6	58	8	3	2
	Bridge Road left turn	902	69	9	70	12	1	3
	Wyther Lane all movements	903	84	17	83	12	-1	-5
	Leeds & Bradford Road all movements	904	57	7	60	8	3	1
Broad Lane/Wyther Lane	Wyther Lane southbound all movements	1001	60	5	61	5	1	0
	Wyther Lane northbound all movements	1002	72	7	74	7	2	0
	Broad Lane all movements	1003	44	6	45	7	1	1
Bridge Road/Site Exit	Bridge Road eastbound straight ahead	1401	70	5	81	15	11	10
	Site Exit right turn	1402	19	1	26	2	7	1
	Site Exit left turn	1403	60	4	77	8	17	4
	Bridge Road westbound straight ahead	1404	36	8	40	8	4	0

Table 11.4
Saturday Peak TRANSYT Summary
Optimised

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

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Run with file:- "WEEKDAY 17-18 WITH COMMITTED NO DEV ORIGINAL TIMINGS.DAT" at 16:38 on 18/01/08

TRANSYT 12.0

Weekday 17:00-18:00 hours with Committed no Dev original timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS
.

DATA INPUT :-

CARD NO.	CARD TYPE														
(1)=	TITLE:- Weekday 17:00-18:00 hours with Committed no Dev original timings														
CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	EFFECTIVE-GREEN DISPLACEMENTS END (SEC)	EQUISAT 0=NO 1=YES	0=UNEQUAL 1=EQUAL CYCLE	FLOW SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	CRUISE-SPEEDS CARD32 0=TIMES 1=SPEEDS	OPTIMISE 0=NONE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB 0=FULL 1=FULL	DELAY VALUE P PER PCU-H	STOP VALUE P PER 100
2)=	1	80	80	60	2	3	0	0	0	0	1	0	0	0	1420	260
CARD NO.	CARD TYPE	LIST OF NODES TO BE OPTIMISED														
3)=	2	1	2	3	4	7	9	10	14	0	0	0	0	0	0	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	4						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7								
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	7	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	23								
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	32	63	15							
21)=	12	2	1	31	73	11							
22)=	12	3	1	74	29	45	65						
23)=	12	4	1	53	73	25							
24)=	12	7	1	54	63	5							
25)=	12	9	1	73	17								
26)=	12	10	1	21	39	70							
27)=	12	14	1	50	32								

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS LINK1 NO.	PRIORITY LINKS LINK2 NO.	LINK1 GIVEWAY COEFFS. ONLY % FLOW	A1 X100	A2 X100	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100

28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	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
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	15	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	10	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	9	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	2	23	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	23	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	3	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	11	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	6	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	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
75)=	32	101	617	0	304	592	43	306	25	43	0	0	0	0	0	0
76)=	32	102	790	0	202	571	43	205	219	43	0	0	0	0	0	0
77)=	32	103	391	0	1401	372	43	1403	19	43	0	0	0	0	0	0
78)=	32	104	811	0	1401	773	43	1403	38	43	0	0	0	0	0	0
79)=	32	105	191	0	202	138	43	205	53	43	0	0	0	0	0	0
80)=	32	202	702	0	401	289	43	404	413	43	0	0	0	0	0	0
81)=	32	203	424	0	401	174	43	404	250	43	0	0	0	0	0	0
82)=	32	204	300	0	0	0	43	0	0	0	0	0	0	0	0	0
83)=	32	205	269	0	0	0	43	0	0	0	0	0	0	0	0	0
84)=	32	206	177	0	101	19	43	103	158	43	0	0	0	0	0	0
85)=	32	207	249	0	101	26	43	103	223	43	0	0	0	0	0	0
86)=	32	301	395	0	0	0	43	0	0	0	0	0	0	0	0	0
87)=	32	302	814	0	0	0	43	0	0	0	0	0	0	0	0	0
88)=	32	303	163	0	701	20	43	703	85	43	704	57	43	0	0	0
89)=	32	304	552	0	701	69	43	703	289	43	704	194	43	0	0	0
90)=	32	305	161	0	701	31	43	703	130	43	0	0	0	0	0	0
91)=	32	306	23	0	403	23	43	0	0	0	0	0	0	0	0	0
92)=	32	307	1232	0	403	972	43	406	254	43	0	0	0	0	0	0
93)=	32	308	583	0	104	472	43	105	111	43	0	0	0	0	0	0
94)=	32	309	395	0	104	395	43	0	0	0	0	0	0	0	0	0
95)=	32	401	451	0	301	395	43	305	56	43	0	0	0	0	0	0
96)=	32	402	823	0	302	720	43	305	103	43	0	0	0	0	0	0
97)=	32	403	995	0	0	0	43	0	0	0	0	0	0	0	0	0
98)=	32	404	645	0	0	0	43	0	0	0	0	0	0	0	0	0
99)=	32	405	303	0	204	46	43	207	257	43	0	0	0	0	0	0
100)=	32	406	254	0	204	254	43	0	0	0	0	0	0	0	0	0
101)=	32	701	107	0	0	0	43	0	0	0	0	0	0	0	0	0
102)=	32	702	286	0	0	0	43	0	0	0	0	0	0	0	0	0
103)=	32	703	511	0	0	0	43	0	0	0	0	0	0	0	0	0
104)=	32	704	692	0	0	0	43	0	0	0	0	0	0	0	0	0
105)=	32	705	123	0	302	15	43	308	108	43	0	0	0	0	0	0
106)=	32	706	553	0	302	67	43	308	486	43	0	0	0	0	0	0
107)=	32	901	409	0	1402	10	43	1404	403	43	0	0	0	0	0	0
108)=	32	902	954	0	1402	14	43	1404	940	43	0	0	0	0	0	0
109)=	32	903	736	0	1002	445	43	1003	315	43	0	0	0	0	0	0
110)=	32	904	477	0	0	0	43	0	0	0	0	0	0	0	0	0
111)=	32	1001	976	0	902	954	43	904	22	43	0	0	0	0	0	0
112)=	32	1002	448	0	0	0	43	0	0	0	0	0	0	0	0	0
113)=	32	1003	322	0	0	0	43	0	0	0	0	0	0	0	0	0
114)=	32	77	10	0	0	0	43	0	0	0	0	0	0	0	0	0
115)=	32	1401	1145	0	903	706	43	904	439	43	0	0	0	0	0	0
116)=	32	1402	20	0	0	0	43	0	0	0	0	0	0	0	0	0
117)=	32	1403	57	0	0	0	43	0	0	0	0	0	0	0	0	0
118)=	32	1404	1361	0	101	571	43	102	790	43	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

.

80 SECOND CYCLE 80 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	3	32	63	15							
2	3	31	73	11							
3	4	74	29	45	65						
4	3	53	73	25							
7	3	54	63	5							
9	2	73	17								
10	3	21	39	70							
14	2	50	32								

LINK NUMBER	FLOW INTO LINK (PCU/H)	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN TIMES PER PCU CRUISE (SEC)	MEAN TIMES PER PCU DELAY (SEC)	DELAY (U+R+O=MEAN Q) (PCU-H/H)	DELAY COST OF DELAY ($/H)	STOPS MEAN STOPS /PCU (%)	STOPS COST OF STOPS ($/H)	QUEUE MEAN MAX. (PCU)	QUEUE AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF ( ) VALUES ($/H)	EXIT NODE	GREEN TIMES START 1ST (SECONDS)	GREEN TIMES END 1ST (SECONDS)	GREEN TIMES START 2ND (SECONDS)	GREEN TIMES END 2ND (SECONDS)
77	10	715	2	8.9	4.0	0.0 + 0.0	(0.1)	0	(0.0)	0		0.1					
101	587<	1900	85	12.6	34.9	2.9 + 2.7	(79.6)	111	(17.7)	16		97.3	1	67	15		
102	788	1785	86	8.9	28.9	3.3 + 3.0	(88.3)	68	(13.8)	12		102.1	1	23	63		
103	387	1710	50	7.6	24.3	2.1 + 0.5	(36.3)	90	(9.1)	7		45.4	1	34	15		
104	805	1915	69	7.6	14.5	2.0 + 1.1	(44.5)	46	(9.6)	8		54.1	1	47	15		
105	190	1785	66	8.9	54.5	1.9 + 0.9	(40.5)	117	(5.8)	5		46.2	1	20	32		
202	699	1940	78	11.8	32.1	4.4 + 1.7	(87.2)	107	(19.4)	17		106.6	2	37	73		
203	423	1740	53	11.8	23.4	2.1 + 0.6	(38.3)	89	(9.8)	9		48.0	2	37	73		
204	300	1760	85	17.2	62.8	2.6 + 2.6	(73.7)	127	(9.8)	9		83.6	2	16	31		
205	269	1720	39	17.2	21.9	1.3 + 0.3	(22.7)	71	(5.0)	5		27.6	2	0	31		
206	174	1725	58	7.2	47.4	1.6 + 0.7	(32.2)	109	(5.0)	4		37.1	2	78	11		
207	245	2000	18	7.2	5.4	0.2 + 0.1	(4.8)	18	(1.2)	1		5.9	2	39	11		
301	395	2300	44	17.2	22.2	2.0 + 0.4	(33.9)	74	(7.5)	7		41.4	3	79	29		
302	814	3300	76	17.2	31.6	5.5 + 1.6	(99.8)	93	(19.4)	18		119.2	3	4	29		
303	154	1675	53	19.8	35.4	0.9 + 0.6	(21.2)	97	(4.1)	4		25.3	3	36	74		
304	524<	1790	60	19.8	20.3	2.1 + 0.7	(40.8)	66	(9.4)	9		50.2	3	36	74		
305	149<	1770	23	19.8	23.6	0.8 + 0.2	(13.6)	79	(3.3)	3		16.8	3	37	65		
306	23	1785	3	5.1	3.7	0.0 + 0.0	(0.3)	4	(0.0)	0		0.3	3	1	32		
307	1212<	3970	76	5.1	7.9	0.9 + 1.6	(35.4)	29	(9.2)	11		44.6	3	1	32		
308	579	2000	83	8.9	40.9	4.2 + 2.3	(92.4)	91	(13.7)	12		106.1	3	38	65		
309	393	1785	63	8.9	35.3	3.0 + 0.8	(53.9)	77	(7.8)	7		61.7	3	38	65		
401	447	3300	47	5.9	24.4	2.5 + 0.4	(42.1)	92	(10.7)	9		52.8	4	31	53		
402	815	3300	40	5.9	2.2	0.1 + 0.3	(5.4)	3	(0.6)	0		5.9	4	5	54		
403	995	3000	102	17.2	106.8	7.8 + 21.5	(417.1)	171	(43.9)	44		460.9	4	0	25		
404	645	1710	72	17.2	22.0	2.6 + 1.3	(54.8)	78	(13.0)	12		67.8	4	66	27		
405	299	1900	79	12.2	38.4	1.4 + 1.8	(44.7)	107	(8.4)	8		53.1	4	58	73		
406	254	2000	78	12.2	56.3	2.2 + 1.7	(55.9)	128	(8.4)	7		64.3	4	63	75		
701	107	1600	18	17.2	21.7	0.5 + 0.1	(9.0)	69	(1.9)	2		10.9	7	26	54		
702	286	1750	45	17.2	25.1	1.5 + 0.4	(27.7)	77	(5.7)	5		33.4	7	26	54		
703	511	1950	110	17.2	239.0	5.4 + 28.4	(480.7)	233	(30.6)	40	+	511.3	7	67	5		
704	692	1900	100	17.2	99.0	4.9 + 14.0	(268.8)	167	(29.7)	29		298.5	7	26	54		
705	122	1800	41	20.6	20.8	0.3 + 0.3	(9.8)	90	(2.9)	2		12.6	7	59	10		
706	550	1900	89	20.6	34.2	1.5 + 3.7	(73.1)	96	(13.6)	15		86.7	7	60	5		
901	401	1740	92	18.1	66.2	2.7 + 4.7	(103.9)	131	(13.8)	13		117.7	9	78	17		
902	933<	1740	74	18.1	12.7	1.8 + 1.4	(44.8)	60	(14.9)	12		59.7	9	40	17		
903	725<	1900	90	6.4	28.9	1.7 + 4.0	(81.2)	70	(13.2)	12		94.4	9	40	73		
904	477	1665	100	17.2	108.3	3.8 + 10.5	(202.7)	172	(21.2)	21		223.9	9	78	20		
1001	955<	1845	94	5.5	45.6	5.5 + 6.5	(170.0)	125	(31.4)	28	+	201.4	10	76	39		
1002	448	1710	100	17.2	113.3	3.7 + 10.4	(199.3)	175	(20.3)	20		219.6	10	50	70		
1003	322	1910	104	17.2	173.6	3.1 + 12.3	(219.8)	210	(17.4)	19		237.2	10	27	39		
1401	1135	1965	80	12.2	8.3	0.5 + 1.9	(34.9)	32	(9.6)	13		44.5	14	55	32		
1402	20	1871	6	4.7	34.0	0.2 + 0.0	(2.6)	86	(0.4)	0		3.1	14	37	50		
1403	57	1791	18	4.7	35.7	0.4 + 0.1	(7.9)	90	(1.3)	1		9.2	14	37	50		
1404	1331<	3970	46	6.4	7.4	2.1 + 0.4	(36.3)	43	(15.1)	15		51.4	14	55	32		

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)	
3076.1	320.3	9.6	100.0	148.8	(3532.0) + (508.2)	+ (0.0)	= 4040.1	TOTALS	
								ROUTE	

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	165.0	+	286.0	+	231.6	=	682.6

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

PROGRAM TRANSYT FINISHED

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

Analysis Program Release 4 (March 2005)
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Run with file:- "WEEKDAY 17-18 WITH COMMITTED WITH DEV ORIGINAL TIMINGS.DAT" at 16:38 on 18/01/08

TRANSYT 12.0

Weekday 17:00-18:00 hours with Committed with Dev original timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS
.

DATA INPUT :-

CARD NO.	CARD TYPE	
(1)=	TITLE:-	Weekday 17:00-18:00 hours with Committed with Dev original timings

CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	EFFECTIVE-GREEN DISPLACEMENTS END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL 1=EQUAL CYCLE	FLOW SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	CRUISE-SPEEDS CARD32 0=TIMES 1=SPEEDS	OPTIMISE 0=NONE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB 0=FULL 1=FULL	DELAY VALUE P PER PCU-H	STOP VALUE P PER 100
2)=	1	80	80	60	2	3	0	0	0	0	1	0	0	0	1420	260

CARD NO.	CARD TYPE	LIST OF NODES TO BE OPTIMISED								
3)=	2	1	2	3	4	7	9	10	14	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	4						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7								
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	7	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	23								
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	32	63	15							
21)=	12	2	1	31	73	11							
22)=	12	3	1	74	29	45	65						
23)=	12	4	1	53	73	25							
24)=	12	7	1	54	63	5							
25)=	12	9	1	73	17								
26)=	12	10	1	21	39	70							
27)=	12	14	1	50	32								

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS LINK1 NO.	PRIORITY LINKS LINK2 NO.	LINK1 GIVEWAY COEFFS. ONLY % FLOW	A1 X100	A2 X100	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100

28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	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
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	15	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	10	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	9	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	2	23	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	23	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	3	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	11	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	6	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	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
75)=	32	101	610	0	304	564	43	306	46	43	0	0	0	0	0	0
76)=	32	102	780	0	202	569	43	205	212	43	0	0	0	0	0	0
77)=	32	103	413	0	1401	370	43	1403	43	43	0	0	0	0	0	0
78)=	32	104	876	0	1401	785	43	1403	91	43	0	0	0	0	0	0
79)=	32	105	220	0	202	161	43	205	60	43	0	0	0	0	0	0
80)=	32	202	722	0	401	305	43	404	417	43	0	0	0	0	0	0
81)=	32	203	424	0	401	179	43	404	245	43	0	0	0	0	0	0
82)=	32	204	300	0	0	0	43	0	0	0	0	0	0	0	0	0
83)=	32	205	269	0	0	0	43	0	0	0	0	0	0	0	0	0
84)=	32	206	177	0	101	18	43	103	159	43	0	0	0	0	0	0
85)=	32	207	271	0	101	27	43	103	244	43	0	0	0	0	0	0
86)=	32	301	412	0	0	0	43	0	0	0	0	0	0	0	0	0
87)=	32	302	803	0	0	0	43	0	0	0	0	0	0	0	0	0
88)=	32	303	163	0	701	20	43	703	85	43	704	57	43	0	0	0
89)=	32	304	562	0	701	71	43	703	295	43	704	197	43	0	0	0
90)=	32	305	161	0	701	31	43	703	130	43	0	0	0	0	0	0
91)=	32	306	46	0	403	46	43	0	0	0	0	0	0	0	0	0
92)=	32	307	1216	0	403	956	43	406	254	43	0	0	0	0	0	0
93)=	32	308	596	0	104	476	43	105	120	43	0	0	0	0	0	0
94)=	32	309	420	0	104	420	43	0	0	0	0	0	0	0	0	0
95)=	32	401	471	0	301	412	43	305	59	43	0	0	0	0	0	0
96)=	32	402	810	0	302	709	43	305	101	43	0	0	0	0	0	0
97)=	32	403	1002	0	0	0	43	0	0	0	0	0	0	0	0	0
98)=	32	404	645	0	0	0	43	0	0	0	0	0	0	0	0	0
99)=	32	405	325	0	204	46	43	207	279	43	0	0	0	0	0	0
100)=	32	406	254	0	204	254	43	0	0	0	0	0	0	0	0	0
101)=	32	701	109	0	0	0	43	0	0	0	0	0	0	0	0	0
102)=	32	702	286	0	0	0	43	0	0	0	0	0	0	0	0	0
103)=	32	703	518	0	0	0	43	0	0	0	0	0	0	0	0	0
104)=	32	704	694	0	0	0	43	0	0	0	0	0	0	0	0	0
105)=	32	705	125	0	302	15	43	308	110	43	0	0	0	0	0	0
106)=	32	706	564	0	302	67	43	308	496	43	0	0	0	0	0	0
107)=	32	901	416	0	1402	15	43	1404	401	43	0	0	0	0	0	0
108)=	32	902	961	0	1402	35	43	1404	926	43	0	0	0	0	0	0
109)=	32	903	741	0	1002	448	43	1003	317	43	0	0	0	0	0	0
110)=	32	904	482	0	0	0	43	0	0	0	0	0	0	0	0	0
111)=	32	1001	983	0	902	961	43	904	22	43	0	0	0	0	0	0
112)=	32	1002	451	0	0	0	43	0	0	0	0	0	0	0	0	0
113)=	32	1003	324	0	0	0	43	0	0	0	0	0	0	0	0	0
114)=	32	77	47	0	0	0	43	0	0	0	0	0	0	0	0	0
115)=	32	1401	1155	0	903	711	43	904	444	43	0	0	0	0	0	0
116)=	32	1402	50	0	0	0	43	0	0	0	0	0	0	0	0	0
117)=	32	1403	134	0	0	0	43	0	0	0	0	0	0	0	0	0
118)=	32	1404	1344	0	101	564	43	102	780	43	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

.

80 SECOND CYCLE 80 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	3	32	63	15							
2	3	31	73	11							
3	4	74	29	45	65						
4	3	53	73	25							
7	3	54	63	5							
9	2	73	17								
10	3	21	39	70							
14	2	50	32								

LINK NUMBER	FLOW INTO LINK (PCU/H)	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN TIMES PER PCU CRUISE (SEC)	MEAN TIMES PER PCU DELAY (SEC)	DELAY (U+R+O=MEAN Q) (PCU-H/H)	DELAY OVERSAT COST OF DELAY ($/H)	STOPS MEAN STOPS /PCU (%)	STOPS COST OF STOPS ($/H)	QUEUE MEAN MAX. (PCU)	QUEUE AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF ( ) VALUES ($/H)	EXIT NODE	GREEN TIMES START 1ST (SECONDS)	GREEN TIMES END 1ST (SECONDS)	GREEN TIMES START 2ND (SECONDS)	GREEN TIMES END 2ND (SECONDS)
77	47	715	9	8.9	4.5	0.0 + 0.1	(0.7)	0	(0.0)	0		0.7					
101	576<	1900	84	12.6	34.2	2.9 + 2.5	(76.6)	109	(17.1)	15		93.7	1	67	15		
102	778	1785	85	8.9	28.5	3.3 + 2.7	(86.1)	68	(13.6)	12		99.7	1	23	63		
103	407	1710	52	7.6	22.8	2.0 + 0.5	(35.8)	85	(9.0)	7		44.9	1	34	15		
104	865<	1915	74	7.6	15.7	2.3 + 1.4	(51.9)	51	(11.5)	10		63.4	1	47	15		
105	219	1785	76	8.9	61.7	2.2 + 1.5	(52.9)	125	(7.1)	6		60.0	1	20	32		
202	718	1940	80	11.8	33.1	4.5 + 2.0	(92.2)	108	(20.2)	18		112.4	2	37	73		
203	422	1740	52	11.8	23.0	2.1 + 0.5	(37.4)	88	(9.6)	9		47.0	2	37	73		
204	300	1760	85	17.2	62.8	2.6 + 2.6	(73.7)	127	(9.8)	9		83.6	2	16	31		
205	269	1720	39	17.2	21.9	1.3 + 0.3	(22.7)	71	(5.0)	5		27.6	2	0	31		
206	174	1725	58	7.2	47.2	1.6 + 0.7	(32.0)	109	(5.0)	4		37.0	2	78	11		
207	266	2000	20	7.2	5.5	0.2 + 0.1	(5.3)	19	(1.3)	1		6.6	2	39	11		
301	412	2300	46	17.2	22.5	2.1 + 0.4	(35.8)	74	(7.9)	7		43.7	3	79	29		
302	803	3300	75	17.2	31.2	5.4 + 1.5	(97.2)	92	(19.0)	17		116.3	3	4	29		
303	153	1675	54	19.8	36.2	0.9 + 0.6	(21.5)	98	(4.1)	4		25.7	3	36	74		
304	530<	1790	61	19.8	20.3	2.1 + 0.8	(41.4)	65	(9.5)	9		50.8	3	36	74		
305	147<	1770	23	19.8	23.5	0.8 + 0.1	(13.3)	78	(3.2)	3		16.6	3	37	65		
306	45	1785	6	5.1	3.7	0.0 + 0.0	(0.6)	4	(0.1)	0		0.6	3	1	32		
307	1189<	3970	75	5.1	7.7	0.9 + 1.5	(33.6)	29	(9.0)	10		42.6	3	1	32		
308	590	2000	84	8.9	43.8	4.5 + 2.6	(100.7)	96	(14.7)	13		115.4	3	38	65		
309	415	1785	66	8.9	38.3	3.4 + 1.0	(61.8)	79	(8.6)	7		70.4	3	38	65		
401	466	3300	49	5.9	24.6	2.6 + 0.5	(44.3)	92	(11.2)	10		55.4	4	31	53		
402	800	3300	39	5.9	2.2	0.1 + 0.3	(5.2)	3	(0.6)	0		5.8	4	5	54		
403	1002	3000	103	17.2	115.3	8.0 + 24.0	(453.9)	177	(45.7)	46		499.6	4	0	25		
404	645	1710	72	17.2	22.0	2.6 + 1.3	(54.8)	78	(13.0)	12		67.8	4	66	27		
405	320	1900	84	12.2	45.0	1.5 + 2.5	(56.2)	114	(9.6)	9		65.7	4	58	73		
406	254	2000	78	12.2	56.3	2.2 + 1.7	(55.9)	128	(8.4)	7		64.3	4	63	75		
701	109	1600	19	17.2	21.8	0.5 + 0.1	(9.1)	69	(1.9)	2		11.1	7	26	54		
702	286	1750	45	17.2	25.1	1.5 + 0.4	(27.7)	77	(5.7)	5		33.4	7	26	54		
703	518	1950	112	17.2	258.9	5.6 + 31.5	(528.0)	238	(31.8)	43	+	559.7	7	67	5		
704	694	1900	101	17.2	101.8	5.0 + 14.5	(277.2)	169	(30.2)	30		307.4	7	26	54		
705	123	1800	41	20.6	20.8	0.3 + 0.3	(9.9)	90	(2.9)	2		12.8	7	59	10		
706	560	1900	91	20.6	37.4	1.5 + 4.2	(81.5)	100	(14.6)	16		96.1	7	60	5		
901	406	1740	93	18.1	69.7	2.7 + 5.1	(110.9)	134	(14.4)	14		125.3	9	78	17		
902	937<	1740	74	18.1	12.5	1.7 + 1.4	(44.3)	58	(14.4)	11		58.8	9	40	17		
903	726<	1900	90	6.4	29.1	1.7 + 4.1	(82.0)	69	(13.3)	12		95.2	9	40	73		
904	482	1665	101	17.2	117.9	3.9 + 11.8	(223.2)	179	(22.3)	23		245.4	9	78	20		
1001	959<	1845	94	5.5	47.3	5.6 + 6.9	(177.0)	126	(31.9)	28	+	209.0	10	76	39		
1002	451	1710	100	17.2	119.2	3.7 + 11.2	(211.1)	180	(20.9)	21		232.0	10	50	70		
1003	324	1910	104	17.2	180.7	3.2 + 13.0	(230.2)	213	(17.8)	20		248.0	10	27	39		
1401	1138<	1965	80	12.2	8.4	0.5 + 2.0	(35.4)	33	(9.7)	13		45.1	14	55	32		
1402	50	1871	15	4.7	35.0	0.4 + 0.1	(6.8)	88	(1.1)	1		7.9	14	37	50		
1403	134	1791	43	4.7	39.9	1.1 + 0.4	(20.8)	97	(3.4)	3		24.2	14	37	50		
1404	1311<	3970	46	6.4	7.5	2.1 + 0.4	(36.0)	43	(14.8)	15		50.8	14	55	32		

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)	
3121.7	337.0	9.3	103.3	161.1	(3754.8) + (524.6)	+ (0.0)	=	4279.4	TOTALS

ROUTE

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	167.4	+	304.1	+	239.0	=	710.6

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

PROGRAM TRANSYT FINISHED

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

Analysis Program Release 4 (March 2005)
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Run with file:- "SATURDAY 13-14 WITH COMMITTED NO DEV ORIGINAL TIMINGS.DAT" at 16:38 on 18/01/08

TRANSYT 12.0

Saturday 13:00-14:00 hours with Committed no Dev original timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS

.

DATA INPUT :-

(1)= TITLE:- Saturday 13:00-14:00 hours with Committed no Dev original timings

CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	EFFECTIVE-GREEN DISPLACEMENTS END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL FLOW CYCLE	FLOW SCALE %	CRUISE-SPEEDS SCALE %	CARD32 0=TIMES 1=SPEEDS	OPTIMISE 0=NONE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB OUTPUT 1=FULL	DELAY VALUE P PER PCU-H	STOP VALUE P PER 100
2)=	1	80	80	60	2	3	0	0	0	0	1	0	0	0	1420	260

CARD NO.	CARD TYPE	LIST OF NODES TO BE OPTIMISED									
3)=	2	1	2	3	4	7	9	10	14	0	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	1						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7	7							
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	1	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	7	2							
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	35	61	10							
21)=	12	2	1	29	65	1							
22)=	12	3	1	76	27	43	70						
23)=	12	4	1	48	72	22							
24)=	12	7	1	51	60	6							
25)=	12	9	1	66	18	38							
26)=	12	10	1	10	35	57							
27)=	12	14	1	44	24								

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS LINK1 NO.	PRIORITY LINKS LINK2 NO.	LINK1 GIVEWAY COEFFS. ONLY % FLOW	A1 X100	A2 X100	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100

28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	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
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	2	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	5	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	8	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	3	20	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	7	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	0	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	6	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	2	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	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
75)=	32	101	465	0	304	407	43	306	58	43	0	0	0	0	0	0
76)=	32	102	734	0	202	507	43	205	227	43	0	0	0	0	0	0
77)=	32	103	466	0	1401	414	43	1403	52	43	0	0	0	0	0	0
78)=	32	104	714	0	1401	634	43	1403	80	43	0	0	0	0	0	0
79)=	32	105	283	0	202	195	43	205	88	43	0	0	0	0	0	0
80)=	32	202	660	0	401	297	43	404	363	43	0	0	0	0	0	0
81)=	32	203	503	0	401	226	43	404	277	43	0	0	0	0	0	0
82)=	32	204	365	0	0	0	43	0	0	0	0	0	0	0	0	0
83)=	32	205	296	0	0	0	43	0	0	0	0	0	0	0	0	0
84)=	32	206	243	0	101	35	43	103	208	43	0	0	0	0	0	0
85)=	32	207	328	0	101	47	43	103	281	43	0	0	0	0	0	0
86)=	32	301	447	0	0	0	43	0	0	0	0	0	0	0	0	0
87)=	32	302	790	0	0	0	43	0	0	0	0	0	0	0	0	0
88)=	32	303	128	0	701	26	43	703	69	43	704	33	43	0	0	0
89)=	32	304	406	0	701	83	43	703	218	43	704	105	43	0	0	0
90)=	32	305	270	0	701	74	43	703	196	43	0	0	0	0	0	0
91)=	32	306	58	0	403	58	43	0	0	0	0	0	0	0	0	0
92)=	32	307	937	0	403	655	43	406	251	43	0	0	0	0	0	0
93)=	32	308	560	0	104	401	43	105	159	43	0	0	0	0	0	0
94)=	32	309	265	0	104	265	43	0	0	0	0	0	0	0	0	0
95)=	32	401	551	0	301	447	43	305	104	43	0	0	0	0	0	0
96)=	32	402	910	0	302	739	43	305	171	43	0	0	0	0	0	0
97)=	32	403	713	0	0	0	43	0	0	0	0	0	0	0	0	0
98)=	32	404	673	0	0	0	43	0	0	0	0	0	0	0	0	0
99)=	32	405	404	0	204	114	43	207	290	43	0	0	0	0	0	0
100)=	32	406	251	0	204	251	43	0	0	0	0	0	0	0	0	0
101)=	32	701	168	0	0	0	43	0	0	0	0	0	0	0	0	0
102)=	32	702	320	0	0	0	43	0	0	0	0	0	0	0	0	0
103)=	32	703	511	0	0	0	43	0	0	0	0	0	0	0	0	0
104)=	32	704	494	0	0	0	43	0	0	0	0	0	0	0	0	0
105)=	32	705	176	0	302	20	43	308	156	43	0	0	0	0	0	0
106)=	32	706	534	0	302	62	43	308	472	43	0	0	0	0	0	0
107)=	32	901	417	0	1402	16	43	1404	401	43	0	0	0	0	0	0
108)=	32	902	705	0	1402	27	43	1404	678	43	0	0	0	0	0	0
109)=	32	903	699	0	1002	269	43	1003	450	43	0	0	0	0	0	0
110)=	32	904	413	0	0	0	43	0	0	0	0	0	0	0	0	0
111)=	32	1001	724	0	902	705	43	904	19	43	0	0	0	0	0	0
112)=	32	1002	276	0	0	0	43	0	0	0	0	0	0	0	0	0
113)=	32	1003	455	0	0	0	43	0	0	0	0	0	0	0	0	0
114)=	32	77	57	0	0	0	43	0	0	0	0	0	0	0	0	0
115)=	32	1401	1069	0	903	682	43	904	387	43	0	0	0	0	0	0
116)=	32	1402	45	0	0	0	43	0	0	0	0	0	0	0	0	0
117)=	32	1403	134	0	0	0	43	0	0	0	0	0	0	0	0	0
118)=	32	1404	1121	0	101	387	43	102	734	43	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

.

80 SECOND CYCLE 80 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	3	35	61	10							
2	3	29	65	1							
3	4	76	27	43	70						
4	3	48	72	22							
7	3	51	60	6							
9	3	66	18	38							
10	3	10	35	57							
14	2	44	24								

LINK NUMBER	FLOW INTO LINK (PCU/H)	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN TIMES PER PCU CRUISE (SEC)	MEAN TIMES PER PCU DELAY (SEC)	DELAY UNIFORM (PCU-H/H)	DELAY RANDOM+ OVERSAT (U+R+O=MEAN Q) (PCU-H/H)	DELAY COST OF DELAY ($/H)	STOPS MEAN STOPS /PCU (%)	STOPS COST OF STOPS ($/H)	QUEUE MEAN MAX. (PCU)	QUEUE AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF ( ) VALUES ($/H)	EXIT NODE	GREEN TIMES START 1ST (SECONDS)	GREEN TIMES END 1ST (SECONDS)	GREEN TIMES START 2ND (SECONDS)	GREEN TIMES END 2ND (SECONDS)
77	57	715	11	8.9	4.4	0.0 +	0.1	(0.9)	0	(0.0)	0		0.9					
101	465	1900	75	12.6	31.3	2.5 +	1.5	(56.6)	109	(13.0)	12		69.6	1	65	10		
102	734	1785	75	8.9	20.9	2.7 +	1.5	(59.1)	58	(11.0)	10		70.1	1	18	61		
103	467	1710	68	7.6	29.0	2.7 +	1.0	(52.4)	92	(11.0)	8		63.4	1	37	10		
104	716	1915	55	7.6	9.7	1.2 +	0.6	(26.0)	40	(7.3)	7		33.3	1	37	10		
105	284	1785	61	8.9	44.8	2.7 +	0.8	(49.6)	107	(7.8)	7		57.4	1	15	35		
202	661	1940	88	11.8	40.7	4.0 +	3.4	(104.9)	116	(19.8)	18		124.7	2	35	65		
203	503	1740	75	11.8	30.7	2.8 +	1.4	(59.9)	101	(13.1)	12		73.0	2	35	65		
204	365	1760	69	17.2	36.1	2.5 +	1.1	(51.3)	96	(9.1)	8		60.4	2	6	29		
205	296	1720	36	17.2	17.3	1.1 +	0.3	(19.6)	63	(4.8)	4		24.4	2	72	29		
206	244	1725	94	7.2	101.5	1.9 +	4.9	(97.2)	169	(10.6)	10		107.8	2	70	1		
207	330	2000	29	7.2	8.9	0.6 +	0.2	(11.0)	27	(2.3)	2		13.2	2	37	1		
301	447	2300	58	17.2	27.7	2.7 +	0.7	(48.0)	84	(9.7)	9		57.7	3	1	27		
302	790	3300	71	17.2	29.1	5.1 +	1.2	(89.1)	89	(18.0)	16		107.2	3	1	27		
303	128	1675	39	19.8	28.8	0.7 +	0.3	(14.3)	95	(3.1)	3		17.4	3	34	76		
304	405	1790	42	19.8	17.1	1.5 +	0.4	(26.5)	59	(6.1)	5		32.6	3	34	76		
305	270	1770	34	19.8	22.4	1.4 +	0.3	(23.3)	78	(5.4)	5		28.7	3	35	70		
306	58	1785	9	5.1	3.8	0.0 +	0.1	(0.8)	4	(0.1)	0		0.8	3	3	30		
307	937	3970	67	5.1	10.4	1.5 +	1.0	(36.5)	58	(14.0)	17		50.5	3	3	30		
308	562	2000	64	8.9	24.7	2.9 +	0.9	(53.6)	85	(12.3)	12		65.9	3	36	70		
309	266	1785	33	8.9	20.7	1.2 +	0.2	(21.2)	53	(3.6)	3		24.9	3	35	70		
401	551	3300	64	5.9	24.7	2.8 +	0.9	(52.7)	93	(13.2)	12		65.9	4	28	48		
402	911	3300	48	5.9	3.7	0.4 +	0.5	(11.6)	7	(1.8)	2		13.3	4	4	49		
403	713	3000	79	17.2	35.7	5.1 +	1.9	(98.9)	98	(18.0)	16		116.9	4	79	22		
404	673	1710	72	17.2	20.5	2.5 +	1.2	(53.2)	76	(13.1)	12		66.3	4	61	24		
405	405	1900	85	12.2	46.1	2.4 +	2.7	(72.9)	110	(11.4)	11		84.3	4	53	72		
406	251	2000	59	12.2	45.6	2.4 +	0.7	(44.6)	112	(7.3)	6		51.9	4	58	74		
701	168	1600	34	17.2	27.1	1.0 +	0.3	(17.6)	79	(3.4)	3		21.0	7	27	51		
702	320	1750	59	17.2	31.5	2.1 +	0.7	(39.2)	89	(7.3)	7		46.5	7	27	51		
703	511	1950	91	17.2	58.9	3.9 +	4.4	(117.6)	126	(16.6)	15		134.2	7	64	6		
704	494	1900	83	17.2	43.3	3.5 +	2.4	(83.4)	108	(13.7)	13		97.1	7	27	51		
705	177	1800	54	20.6	24.2	0.6 +	0.6	(16.6)	99	(4.5)	3		21.0	7	56	11		
706	535	1900	75	20.6	18.7	1.2 +	1.5	(38.4)	73	(10.1)	12		48.4	7	57	6		
901	417	1740	69	18.1	23.9	1.6 +	1.1	(38.5)	81	(8.7)	9		47.2	9	71	18		
902	704	1740	79	18.1	17.9	1.6 +	1.8	(48.3)	53	(9.6)	13		57.9	9	58	18		
903	699	1900	70	6.4	10.2	0.7 +	1.2	(26.8)	57	(10.3)	11		37.0	9	25	66		
904	413	1665	71	17.2	33.4	2.6 +	1.2	(53.7)	94	(10.0)	9		63.6	9	71	18		
1001	723	1845	59	5.5	4.1	0.0 +	0.7	(10.3)	5	(0.9)	1		11.2	10	63	35		
1002	276	1710	76	17.2	50.0	2.3 +	1.5	(53.9)	112	(8.0)	7		61.9	10	41	57		
1003	455	1910	79	17.2	41.0	3.3 +	1.9	(72.7)	104	(12.2)	11		84.9	10	12	35		
1401	1070	1965	78	12.2	13.3	2.1 +	1.7	(54.1)	67	(18.5)	18		72.6	14	49	24		
1402	45	1871	12	4.7	32.3	0.3 +	0.1	(5.6)	85	(1.0)	1		6.6	14	29	44		
1403	134	1791	37	4.7	36.2	1.0 +	0.3	(18.9)	92	(3.2)	3		22.0	14	29	44		
1404	1121	3970	40	6.4	8.3	2.1 +	0.3	(34.3)	44	(12.7)	13		47.0	14	49	24		

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)	
2906.3	206.0	14.1	87.1	51.3	(1965.3) + (397.6)	+ (0.0)	= 2362.9	TOTALS	
								ROUTE	

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	155.9	+	159.2	+	181.2	=	496.2

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

PROGRAM TRANSYT FINISHED

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

Analysis Program Release 4 (March 2005)
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Run with file:- "SATURDAY 13-14 WITH COMMITTED WITH DEV ORIGINAL TIMINGS.DAT" at 16:38 on 18/01/08

TRANSYT 12.0

Saturday 13:00-14:00 hours with Committed with Dev original timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS

.

DATA INPUT :-

(1)= TITLE:- Saturday 13:00-14:00 hours with Committed with Dev original timings

CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	EFFECTIVE-GREEN DISPLACEMENTS END (SEC)	EQUISAT 0=UNEQUAL FLOW SETTINGS 0=NO 1=EQUAL 1=YES	CYCLE 10-200 CYCLE	SCALE %	CRUISE-SPEEDS SCALE %	CARD32 0=TIMES 1=SPEEDS	OPTIMISE 0=NONE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB 0=FULL OUTPUT	DELAY VALUE P PER PCU-H	STOP VALUE P PER 100
2)=	1	80	80	60	2	3	0	0	0	0	1	0	0	0	1420	260

CARD NO.	CARD TYPE	LIST OF NODES TO BE OPTIMISED								
3)=	2	1	2	3	4	7	9	10	14	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	1						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7	7							
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	1	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	7	2							
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	35	61	10							
21)=	12	2	1	29	65	1							
22)=	12	3	1	76	27	43	70						
23)=	12	4	1	48	72	22							
24)=	12	7	1	51	60	6							
25)=	12	9	1	66	18	38							
26)=	12	10	1	10	35	57							
27)=	12	14	1	44	24								

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS LINK1 NO.	PRIORITY LINKS LINK2 NO.	LINK1 GIVEWAY COEFFS. ONLY % FLOW	A1 X100	A2 X100	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100

28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	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
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	2	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	5	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	8	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	3	20	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	7	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	0	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	6	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	2	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	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
75)=	32	101	451	0	304	361	43	306	90	43	0	0	0	0	0	0
76)=	32	102	712	0	202	502	43	205	210	43	0	0	0	0	0	0
77)=	32	103	513	0	1401	404	43	1403	109	43	0	0	0	0	0	0
78)=	32	104	850	0	1401	670	43	1403	180	43	0	0	0	0	0	0
79)=	32	105	354	0	202	250	43	205	104	43	0	0	0	0	0	0
80)=	32	202	709	0	401	334	43	404	375	43	0	0	0	0	0	0
81)=	32	203	503	0	401	237	43	404	266	43	0	0	0	0	0	0
82)=	32	204	365	0	0	0	43	0	0	0	0	0	0	0	0	0
83)=	32	205	296	0	0	0	43	0	0	0	0	0	0	0	0	0
84)=	32	206	243	0	101	32	43	103	211	43	0	0	0	0	0	0
85)=	32	207	376	0	101	50	43	103	326	43	0	0	0	0	0	0
86)=	32	301	488	0	0	0	43	0	0	0	0	0	0	0	0	0
87)=	32	302	764	0	0	0	43	0	0	0	0	0	0	0	0	0
88)=	32	303	128	0	701	26	43	703	69	43	704	33	43	0	0	0
89)=	32	304	429	0	701	87	43	703	232	43	704	110	43	0	0	0
90)=	32	305	270	0	701	74	43	703	196	43	0	0	0	0	0	0
91)=	32	306	107	0	403	107	43	0	0	0	0	0	0	0	0	0
92)=	32	307	904	0	403	622	43	406	251	43	0	0	0	0	0	0
93)=	32	308	581	0	104	410	43	105	171	43	0	0	0	0	0	0
94)=	32	309	313	0	104	313	43	0	0	0	0	0	0	0	0	0
95)=	32	401	600	0	301	488	43	305	112	43	0	0	0	0	0	0
96)=	32	402	877	0	302	713	43	305	163	43	0	0	0	0	0	0
97)=	32	403	729	0	0	0	43	0	0	0	0	0	0	0	0	0
98)=	32	404	673	0	0	0	43	0	0	0	0	0	0	0	0	0
99)=	32	405	452	0	204	114	43	207	338	43	0	0	0	0	0	0
100)=	32	406	251	0	204	251	43	0	0	0	0	0	0	0	0	0
101)=	32	701	172	0	0	0	43	0	0	0	0	0	0	0	0	0
102)=	32	702	320	0	0	0	43	0	0	0	0	0	0	0	0	0
103)=	32	703	527	0	0	0	43	0	0	0	0	0	0	0	0	0
104)=	32	704	498	0	0	0	43	0	0	0	0	0	0	0	0	0
105)=	32	705	180	0	302	20	43	308	160	43	0	0	0	0	0	0
106)=	32	706	552	0	302	62	43	308	490	43	0	0	0	0	0	0
107)=	32	901	428	0	1402	37	43	1404	391	43	0	0	0	0	0	0
108)=	32	902	716	0	1402	61	43	1404	654	43	0	0	0	0	0	0
109)=	32	903	711	0	1002	277	43	1003	454	43	0	0	0	0	0	0
110)=	32	904	425	0	0	0	43	0	0	0	0	0	0	0	0	0
111)=	32	1001	735	0	902	716	43	904	19	43	0	0	0	0	0	0
112)=	32	1002	284	0	0	0	43	0	0	0	0	0	0	0	0	0
113)=	32	1003	459	0	0	0	43	0	0	0	0	0	0	0	0	0
114)=	32	77	143	0	0	0	43	0	0	0	0	0	0	0	0	0
115)=	32	1401	1092	0	903	694	43	904	399	43	0	0	0	0	0	0
116)=	32	1402	102	0	0	0	43	0	0	0	0	0	0	0	0	0
117)=	32	1403	293	0	0	0	43	0	0	0	0	0	0	0	0	0
118)=	32	1404	1085	0	101	373	43	102	712	43	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

.

80 SECOND CYCLE 80 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	3	35	61	10							
2	3	29	65	1							
3	4	76	27	43	70						
4	3	48	72	22							
7	3	51	60	6							
9	3	66	18	38							
10	3	10	35	57							
14	2	44	24								

LINK NUMBER	FLOW INTO LINK (PCU/H)	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN TIMES PER PCU CRUISE (SEC)	DELAY (SEC)	DELAY UNIFORM (U+R+O=MEAN Q) (PCU-H/H)	RANDOM+ OVERSAT (PCU-H/H)	COST OF DELAY ($/H)	STOPS MEAN STOPS /PCU (%)	STOPS COST OF STOPS ($/H)	QUEUE MEAN MAX. (PCU)	QUEUE AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF ( ) VALUES ($/H)	EXIT NODE	GREEN TIMES START 1ST	GREEN TIMES END 1ST	GREEN TIMES START 2ND	GREEN TIMES END 2ND (SECONDS)
77	143	715	30	8.9	5.9	0.0 +	0.2	(3.0)	0	(0.0)	0		3.0					
101	450	1900	73	12.6	32.3	2.7 +	1.3	(56.5)	108	(12.5)	11		69.1	1	65	10		
102	712	1785	73	8.9	21.4	2.8 +	1.3	(58.8)	60	(11.0)	10		69.8	1	18	61		
103	513	1710	73	7.6	27.9	2.5 +	1.4	(55.4)	92	(12.2)	9		67.7	1	37	10		
104	851	1915	66	7.6	10.6	1.4 +	1.0	(34.0)	46	(10.0)	10		44.0	1	37	10		
105	354	1785	76	8.9	51.7	3.5 +	1.5	(71.5)	115	(10.5)	9		82.0	1	15	35		
202	709	1940	94	11.8	54.8	4.3 +	6.4	(151.7)	132	(24.2)	22		175.9	2	35	65		
203	504	1740	75	11.8	29.7	2.6 +	1.5	(58.1)	99	(12.9)	12		71.0	2	35	65		
204	365	1760	69	17.2	36.1	2.5 +	1.1	(51.3)	96	(9.1)	8		60.4	2	6	29		
205	296	1720	36	17.2	17.3	1.1 +	0.3	(19.6)	63	(4.8)	4		24.4	2	72	29		
206	243	1725	94	7.2	99.7	1.9 +	4.8	(95.1)	168	(10.5)	10		105.6	2	70	1		
207	376	2000	33	7.2	8.9	0.6 +	0.3	(12.5)	26	(2.5)	2		15.0	2	37	1		
301	488	2300	63	17.2	29.0	3.0 +	0.8	(54.9)	87	(10.9)	10		65.8	3	1	27		
302	764	3300	69	17.2	28.5	4.8 +	1.1	(84.3)	87	(17.1)	16		101.4	3	1	27		
303	128	1675	41	19.8	28.8	0.7 +	0.3	(14.3)	97	(3.2)	3		17.5	3	34	76		
304	428	1790	45	19.8	17.3	1.6 +	0.4	(28.4)	60	(6.6)	6		35.0	3	34	76		
305	270	1770	34	19.8	22.1	1.4 +	0.3	(23.1)	78	(5.4)	5		28.5	3	35	70		
306	106	1785	17	5.1	4.1	0.0 +	0.1	(1.5)	4	(0.1)	0		1.6	3	3	30		
307	905	3970	65	5.1	10.1	1.5 +	0.9	(34.3)	54	(12.6)	15		46.9	3	3	30		
308	581	2000	66	8.9	22.7	2.6 +	1.0	(50.8)	77	(11.5)	11		62.4	3	36	70		
309	313	1785	39	8.9	19.1	1.3 +	0.3	(23.0)	48	(3.9)	3		26.9	3	35	70		
401	600	3300	69	5.9	25.8	3.1 +	1.1	(59.9)	95	(14.7)	13		74.6	4	28	48		
402	877	3300	46	5.9	3.6	0.3 +	0.4	(10.9)	7	(1.7)	1		12.5	4	4	49		
403	729	3000	81	17.2	36.7	5.2 +	2.1	(104.0)	99	(18.7)	17		122.7	4	79	22		
404	673	1710	72	17.2	20.5	2.5 +	1.2	(53.2)	76	(13.1)	12		66.3	4	61	24		
405	452	1900	95	12.2	72.7	2.8 +	6.3	(128.6)	138	(16.1)	16		144.7	4	53	72		
406	251	2000	59	12.2	45.6	2.4 +	0.7	(44.6)	112	(7.3)	6		51.9	4	58	74		
701	172	1600	34	17.2	27.2	1.0 +	0.3	(18.1)	79	(3.5)	3		21.6	7	27	51		
702	320	1750	59	17.2	31.5	2.1 +	0.7	(39.2)	89	(7.3)	7		46.5	7	27	51		
703	527	1950	94	17.2	68.1	4.1 +	5.8	(140.5)	136	(18.5)	17		159.0	7	64	6		
704	498	1900	84	17.2	44.0	3.5 +	2.5	(85.5)	109	(14.0)	13		99.4	7	27	51		
705	180	1800	57	20.6	25.5	0.6 +	0.7	(17.7)	102	(4.7)	3		22.5	7	56	11		
706	553	1900	78	20.6	19.9	1.3 +	1.7	(42.3)	74	(10.5)	12		52.7	7	57	6		
901	428	1740	70	18.1	25.1	1.8 +	1.2	(41.6)	84	(9.3)	9		50.9	9	71	18		
902	716	1740	80	18.1	19.2	1.7 +	2.0	(52.9)	66	(12.1)	14		64.9	9	58	18		
903	711	1900	71	6.4	10.4	0.7 +	1.2	(27.8)	57	(10.4)	11		38.3	9	25	66		
904	425	1665	73	17.2	34.4	2.7 +	1.3	(56.9)	95	(10.4)	9		67.3	9	71	18		
1001	735	1845	60	5.5	4.2	0.0 +	0.8	(10.7)	5	(1.0)	1		11.7	10	63	35		
1002	284	1710	78	17.2	52.0	2.3 +	1.7	(57.7)	115	(8.4)	8		66.1	10	41	57		
1003	459	1910	80	17.2	41.6	3.3 +	1.9	(74.4)	105	(12.4)	11		86.8	10	12	35		
1401	1092	1965	79	12.2	13.9	2.1 +	1.9	(57.5)	68	(19.1)	18		76.7	14	49	24		
1402	102	1871	27	4.7	34.2	0.8 +	0.2	(13.6)	88	(2.3)	2		15.9	14	29	44		
1403	293	1791	82	4.7	57.0	2.5 +	2.1	(65.3)	121	(9.1)	8		74.5	14	29	44		
1404	1085	3970	39	6.4	8.5	2.1 +	0.3	(34.1)	45	(12.5)	12		46.6	14	49	24		

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)	
3003.3	226.1	13.3	91.9	64.3	(2218.9) + (428.6)	+ (0.0)	= 2647.5	TOTALS	
								ROUTE	

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	161.1	+	179.7	+	195.3	=	536.1

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

PROGRAM TRANSYT FINISHED

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

Analysis Program Release 4 (March 2005)
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Run with file:- "WEEKDAY 17-18 WITH COMMITTED NO DEV OPTIMISED TIMINGS.DAT" at 17:06 on 17/01/08

TRANSYT 12.0

Weekday 17:00-18:00 hours with Committed no Dev optimised timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS

.

DATA INPUT :-

CARD NO. (1)= CARD TYPE TITLE:- Weekday 17:00-18:00 hours with Committed no Dev optimised timings

CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL CYCLE	FLOW SCALE %	CRUISE-SPEEDS SCALE %	CARD32 1=SPEEDS	OPTIMISE 0=NONE 2=FULL	EXTRA COPIES OUTPUT	HILL-CLIMB 1=FULL	DELAY STOP VALUE P PER PCU-H	P PER 100
2)=	1	80	80	60	2	3	1	0	0	0	1	2	0	0	1420	260

CARD NO. 3)= CARD TYPE 2 — LIST OF NODES TO BE OPTIMISED

1	2	3	4	7	9	10	14	0	0	0	0	0	0	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	4						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7								
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	7	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	23								
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	51	1	34							
21)=	12	2	1	31	74	9							
22)=	12	3	1	74	28	45	65						
23)=	12	4	1	53	74	34							
24)=	12	7	1	54	63	6							
25)=	12	9	1	73	18								
26)=	12	10	1	21	56	8							
27)=	12	14	1	50	38								

LINK CARDS: GIVEWAY DATA

PRIORITY LINKS LINK1 GIVEWAY COEFFS.

CARD NO.	CARD TYPE	LINK NO.	LINK1	LINK2	ONLY % FLOW	A1 X100	A2 X100					LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	0	0

LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST GREEN START STAGE	FIRST GREEN START LAG	FIRST GREEN END STAGE	FIRST GREEN END LAG	SECOND GREEN START STAGE	SECOND GREEN START LAG	SECOND GREEN END STAGE	SECOND GREEN END LAG	LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	15	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	10	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	9	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	2	23	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	23	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	3	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	11	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	6	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	0	0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 ..... LINK NO.	ENTRY 1 ..... CRUISE SPEED	ENTRY 2 ..... LINK NO.	ENTRY 2 ..... CRUISE SPEED	ENTRY 3 ..... LINK NO.	ENTRY 3 ..... CRUISE SPEED	ENTRY 4 ..... LINK NO.	ENTRY 4 ..... CRUISE SPEED
75)=	32	101	617	0	304	43	306	25	0	0	0	0
76)=	32	102	790	0	202	43	205	219	0	0	0	0
77)=	32	103	391	0	1401	43	1403	19	0	0	0	0
78)=	32	104	811	0	1401	43	1403	38	0	0	0	0
79)=	32	105	191	0	202	43	205	53	0	0	0	0
80)=	32	202	702	0	401	43	404	413	0	0	0	0
81)=	32	203	424	0	401	43	404	250	0	0	0	0
82)=	32	204	300	0	0	43	0	0	0	0	0	0
83)=	32	205	269	0	0	43	0	0	0	0	0	0
84)=	32	206	177	0	101	43	103	158	0	0	0	0
85)=	32	207	249	0	101	43	103	223	0	0	0	0
86)=	32	301	395	0	0	43	0	0	0	0	0	0
87)=	32	302	814	0	0	43	0	0	0	0	0	0
88)=	32	303	163	0	701	43	703	85	704	43	0	0
89)=	32	304	552	0	701	43	703	289	704	43	0	0
90)=	32	305	161	0	701	43	703	130	0	0	0	0
91)=	32	306	23	0	403	43	0	0	0	0	0	0
92)=	32	307	1232	0	403	43	406	254	0	0	0	0
93)=	32	308	583	0	104	43	105	111	0	0	0	0
94)=	32	309	395	0	104	43	0	0	0	0	0	0
95)=	32	401	451	0	301	43	305	56	0	0	0	0
96)=	32	402	823	0	302	43	305	103	0	0	0	0
97)=	32	403	995	0	0	43	0	0	0	0	0	0
98)=	32	404	645	0	0	43	0	0	0	0	0	0
99)=	32	405	303	0	204	43	207	257	0	0	0	0
100)=	32	406	254	0	204	43	0	0	0	0	0	0
101)=	32	701	107	0	0	43	0	0	0	0	0	0
102)=	32	702	286	0	0	43	0	0	0	0	0	0
103)=	32	703	511	0	0	43	0	0	0	0	0	0
104)=	32	704	692	0	0	43	0	0	0	0	0	0
105)=	32	705	123	0	302	43	308	108	0	0	0	0
106)=	32	706	553	0	302	43	308	486	0	0	0	0
107)=	32	901	409	0	1402	43	1404	403	0	0	0	0
108)=	32	902	954	0	1402	43	1404	940	0	0	0	0
109)=	32	903	736	0	1002	43	1003	315	0	0	0	0
110)=	32	904	477	0	0	43	0	0	0	0	0	0

```
 111)=  32    1001     976       0     902     954      43     904      22      43       0       0       0       0       0       0
 112)=  32    1002     448       0       0       0      43       0       0       0       0       0       0       0       0       0
 113)=  32    1003     322       0       0       0      43       0       0       0       0       0       0       0       0       0
 114)=  32      77      10       0       0       0      43       0       0       0       0       0       0       0       0       0
 115)=  32    1401    1145       0     903     706      43     904     439      43       0       0       0       0       0       0
 116)=  32    1402      20       0       0       0      43       0       0       0       0       0       0       0       0       0
 117)=  32    1403      57       0       0       0      43       0       0       0       0       0       0       0       0       0
 118)=  32    1404    1361       0     101     571      43     102     790      43       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
 119)=  38     102      14   99999     103       9   99999     104      12   99999       0       0       0       0       0       0
 120)=  38     307      13   99999     308      13   99999    1401      18   99999       0       0       0       0       0       0
 121)=  38     204      10   99999     401      13   99999       0       0       0       0       0       0       0       0       0

 *****END OF SUBROUTINE TINPUT*****
.

      80 SECOND CYCLE  80 STEPS

 INITIAL SETTINGS
  - (SECONDS)

   NODE    NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE   STAGE   STAGE   STAGE
    NO    OF STAGES   1       2       3       4       5      6       7       8       9      10

     1       3      51       1      34
     2       3      31      74       9
     3       4      74      28      45      65
     4       3      53      74      34
     7       3      54      63       6
     9       2      73      18
    10       3      21      56       8
    14       2      50      38

  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)

    77      10    715       2    8.9    4.0     0.0 +  0.0  (  0.1)      0  (  0.0)       0                0.1
   101     595<  1900      84   12.6   49.2     5.6 +  2.4  (114.4)     112  ( 17.8)      16               132.2       1      5  34
   102     789   1785      88    8.9   28.6     2.6 +  3.6  ( 87.3)     101  ( 20.6)      21  ( 0.9)*     1036.8       1     42   1
   103     390   1710      51    7.6   16.8     1.2 +  0.5  ( 25.1)      61  (  6.1)       4  ( 0.0)*       31.2       1     53  34
   104     812   1915      69    7.6   11.7     1.4 +  1.1  ( 35.8)      55  ( 11.5)      12  ( 0.0)*       54.9       1     66  34
   105     190   1785      66    8.9   57.8     2.1 +  0.9  ( 42.9)     105  (  5.2)       5                48.1       1     39  51
   202     700   1940      76   11.8   26.1     3.4 +  1.6  ( 70.8)      91  ( 16.4)      17                87.2       2     37  74
   203     424   1740      51   11.8   19.9     1.8 +  0.5  ( 32.5)      61  (  6.7)       6                39.2       2     37  74
   204     300   1760      76   17.2   47.6     2.4 +  1.5  ( 55.8)     110  (  8.5)       8  ( 0.0)*       64.3       2     14  31
   205     269   1720      40   17.2   22.8     1.3 +  0.3  ( 23.7)      73  (  5.1)       5                28.8       2      1  31
   206     176   1725      74    7.2   53.2     1.2 +  1.4  ( 36.6)     119  (  5.4)       5                42.0       2     79   9
   207     247   2000      19    7.2    5.9     0.3 +  0.1  (  5.3)      25  (  1.6)       2                 6.9       2     39   9
   301     395   2300      46   17.2   23.2     2.1 +  0.4  ( 35.4)      75  (  7.7)       7                43.1       3     79  28
   302     814   3300      79   17.2   33.7     5.7 +  1.8  (106.7)      96  ( 20.1)      18               126.8       3      4  28
   303     157   1675      52   19.8   35.2     1.0 +  0.5  ( 21.5)      98  (  4.1)       4                25.6       3     35  74
   304     531<  1790      59   19.8   19.7     2.1 +  0.7  ( 40.2)      66  (  9.3)       9                49.5       3     35  74
   305     155   1770      23   19.8   22.6     0.8 +  0.2  ( 13.5)      82  (  3.4)       3                16.9       3     36  65
   306      24   1785       3    5.1    8.1     0.0 +  0.0  (  0.7)      15  (  0.1)       0                 0.8       3      1  31
   307    1232   3970      80    5.1   13.0     2.3 +  2.0  ( 60.9)      43  ( 13.7)      15  ( 0.1)*     135.8       3      1  31
   308     584   2000      81    8.9   40.4     4.5 +  2.0  ( 91.9)     111  ( 16.7)      15  ( 0.2)*     300.3       3     37  65
   309     396   1785      61    8.9   39.5     3.5 +  0.8  ( 60.9)     109  ( 11.1)      10                72.0       3     37  65
   401     449   3300      78    5.9   43.3     3.6 +  1.7  ( 75.7)     113  ( 13.1)      12  ( 0.0)*      88.8       4     40  53
   402     819   3300      41    5.9    2.3     0.1 +  0.3  (  5.7)       3  (  0.6)       1                 6.3       4      6  54
   403     995   3000      78   17.2   26.6     5.5 +  1.8  (102.6)      88  ( 22.5)      21               125.1       4      1  34
   404     645   1710      59   17.2   13.0     1.5 +  0.7  ( 31.7)      57  (  9.4)       9                41.2       4     66  36
   405     302   1900      75   12.2   51.6     2.8 +  1.4  ( 60.8)     110  (  8.6)       8                69.4       4     58  74
   406     254   2000      73   12.2   52.3     2.4 +  1.3  ( 51.9)     121  (  7.9)       7                59.8       4     63  76
   701     107   1600      19   17.2   22.6     0.5 +  0.1  (  9.3)      70  (  1.9)       2                11.3       7     27  54
   702     286   1750      47   17.2   26.2     1.6 +  0.4  ( 29.0)      80  (  5.9)       5                34.9       7     27  54
   703     511   1950     105   17.2  165.4     4.8 + 18.6  (332.3)     205  ( 27.0)      30               359.3       7     67   6
   704     692   1900     104   17.2  140.0     5.3 + 21.5  (380.7)     194  ( 34.6)      37     +         415.3       7     27  54
   705     123   1800      41   20.6   21.0     0.4 +  0.3  (  9.9)      92  (  2.9)       2                12.9       7     59  11
   706     554   1900      86   20.6   28.2     1.3 +  3.0  ( 60.6)      95  ( 13.5)      15                74.1       7     60   6
   901     404   1740      88   18.1   55.2     2.7 +  3.4  ( 87.1)     120  ( 12.7)      12                99.8       9     78  18
   902     939<  1740      74   18.1   11.3     1.4 +  1.4  ( 40.1)      49  ( 12.0)      11                52.0       9     41  18
   903     736   1900      94    6.4   64.9     7.0 +  6.2  (186.9)     131  ( 24.9)      22     +         211.8       9     41  73
   904     477   1665      95   17.2   78.2     3.6 +  6.7  (146.2)     146  ( 18.0)      17               164.2       9     78  21
  1001     960<  1845      97    5.5   58.1     5.8 +  9.5  (218.2)     114  ( 28.7)      26     +         246.9      10     14  56
  1002     448   1710      95   17.2   80.4     3.5 +  6.4  (141.1)     148  ( 17.1)      16               158.2      10     67   8
  1003     322   1910      45   17.2   23.9     1.7 +  0.4  ( 29.7)      76  (  6.3)       6                36.0      10     27  56
.

      80 SECOND CYCLE  80 STEPS

  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)

  1401    1146    1965      73   12.2    5.0     0.1 +  1.3  ( 20.5)      14  (  4.0)       7  ( 0.0)*      24.6      14     55  38
  1402      20    1871      11    4.7   44.1     0.2 +  0.1  (  3.4)     100  (  0.5)       0                 4.0      14     43  50
  1403      57    1791      32    4.7   48.7     0.5 +  0.2  ( 10.8)     107  (  1.6)       1                12.4      14     43  50
  1404    1340<  3970      42    6.4    2.2     0.3 +  0.4  (  9.1)      13  (  4.7)       6                13.8      14     55  38

    TOTAL          TOTAL       MEAN          TOTAL    TOTAL    TOTAL       TOTAL        PENALTY       TOTAL
   DISTANCE         TIME     JOURNEY        UNIFORM   RANDOM+   COST        COST          FOR       PERFORMANCE
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TRAVELLED (PCU-KM/H)	SPENT (PCU-H/H)	SPEED (KM/H)	DELAY (PCU-H/H)	OVERSAT DELAY (PCU-H/H)	OF DELAY ($/H)	OF STOPS ($/H)	EXCESS QUEUES ($/H)	INDEX ($/H)	
3076.1	283.2	10.9	102.0	109.7	(3005.6) + (469.3)	+ (1189.4)	= 4664.3		TOTALS

****

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	165.0	+	243.4	+	213.9	=	622.3

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12
- (SECONDS)

1	3	39	69	22
2	3	31	74	9
3	4	74	28	45 65
4	3	53	74	34
7	3	54	63	6
9	2	17	42	
10	3	77	32	64
14	2	62	50	

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)	
3076.1	276.7	11.1	95.4	109.7	(2913.3) + (458.7)	+ (192.0)	= 3564.1		TOTALS

NO. OF ENTRIES TO SUBPT = 21
NO. OF LINKS RECALCULATED= 329

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32
- (SECONDS)

1	3	39	69	22
2	3	31	74	9
3	4	74	28	45 65
4	3	53	74	34
7	3	54	63	6
9	2	17	42	
10	3	77	32	64
14	2	62	50	

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)	
3076.1	276.7	11.1	95.4	109.7	(2913.3) + (458.7)	+ (192.0)	= 3564.1		TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 298

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1
- (SECONDS)

1	3	37	70	22
2	3	31	73	9
3	4	74	28	44 65
4	3	53	75	34
7	3	54	63	6
9	2	16	42	
10	3	77	32	64
14	2	62	50	

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)	
3076.1	275.8	11.2	94.7	109.6	(2900.4) + (455.5)	+ (14.7)	= 3370.6		TOTALS

NO. OF ENTRIES TO SUBPT = 42
NO. OF LINKS RECALCULATED= 574

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1 12
- (SECONDS)

1	3	37	70	22
2	3	31	73	9

```
     3       4      74      28      44      65
     4       3      53      75      34
     7       3      54      63       6
     9       2      16      42
    10       3      77      32      64
    14       2      62      50

  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)

  3076.1         275.8       11.2         94.7    109.6    (2900.4) + (  455.5)  +  (  14.7)   =    3370.6      TOTALS

NO. OF ENTRIES TO SUBPT  =   17
NO. OF LINKS RECALCULATED=  344
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32
 - (SECONDS)

     1       3      37      70      22
     2       3      31      73       9
     3       4      74      28      44      65
     4       3      53      75      34
     7       3      54      63       6
     9       2      16      42
    10       3      77      32      64
    14       2      62      50

  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)

  3076.1         275.8       11.2         94.7    109.6    (2900.4) + (  455.5)  +  (  14.7)   =    3370.6      TOTALS

NO. OF ENTRIES TO SUBPT  =   17
NO. OF LINKS RECALCULATED=  366
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1
 - (SECONDS)

     1       3      36      69      21
     2       3      28      70       6
     3       4      74      28      44      65
     4       3      53      75      34
     7       3      56      65       8
     9       2      17      43
    10       3      76      31      63
    14       2      62      50

  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)

  3076.1         274.8       11.2         93.7    109.6    (2886.3) + (  451.6)  +  (   1.7)   =    3339.6      TOTALS

NO. OF ENTRIES TO SUBPT  =   23
NO. OF LINKS RECALCULATED=  431
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1  -1
 - (SECONDS)

     1       3      36      68      21
     2       3      28      70       6
     3       4      74      28      44      65
     4       3      53      75      34
     7       3      56      65       8
     9       2      17      43
    10       3      76      31      63
    14       2      62      50

  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)

  3076.1         274.7       11.2         93.5    109.6    (2884.4) + (  451.7)  +  (   1.7)   =    3337.9      TOTALS

NO. OF ENTRIES TO SUBPT  =   39
NO. OF LINKS RECALCULATED=  736
.

     80 SECOND CYCLE  80 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :-   12  32  -1  12  32   1  -1   1
 - (SECONDS)

  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE   STAGE   STAGE   STAGE
```

NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	3	36	68	21							
2	3	28	70	6							
3	4	74	28	44	65						
4	3	53	75	34							
7	3	56	65	8							
9	2	16	42								
10	3	75	30	62							
14	2	62	50								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	DELAY	DELAY (U+R+O=MEAN Q)	COST OF DELAY	MEAN STOPS	COST OF STOPS	MEAN MAX. QUEUE	AVERAGE QUEUE	PERFORMANCE INDEX. WEIGHTED SUM	EXIT NODE	GREEN TIMES START 1ST	GREEN TIMES START 2ND END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	($/H)	/PCU (%)	($/H)	(PCU)	EXCESS (PCU)	OF ( ) VALUES ($/H)		(SECONDS)	
77	10	715	2	8.9	4.0	0.0 + 0.0	(0.1)	0 (0.0)	0			0.1			
101	595<	1900	84	12.6	37.6	3.7 + 2.4	(87.1)	112 (17.8)	16			104.8	1	72	21
102	789	1785	88	8.9	25.5	1.9 + 3.6	(77.7)	54 (10.9)	10	(0.0)*		88.6	1	29	68
103	390	1710	49	7.6	16.7	1.3 + 0.5	(24.8)	78 (7.8)	6	(0.0)*		32.7	1	38	21
104	812	1915	67	7.6	16.6	2.6 + 1.0	(51.6)	64 (13.5)	12	(0.0)*		65.1	1	51	21
105	190	1785	78	8.9	74.9	2.3 + 1.6	(55.8)	133 (6.5)	6			62.3	1	26	36
202	700	1940	78	11.8	24.5	2.9 + 1.7	(66.4)	70 (12.6)	12			79.0	2	34	70
203	424	1740	53	11.8	18.7	1.6 + 0.6	(30.4)	59 (6.5)	6			36.8	2	34	70
204	300	1760	76	17.2	47.6	2.4 + 1.5	(55.8)	110 (8.5)	8	(0.0)*		64.3	2	11	28
205	269	1720	39	17.2	21.9	1.3 + 0.3	(22.7)	71 (5.0)	5			27.6	2	77	28
206	176	1725	68	7.2	52.3	1.5 + 1.0	(36.0)	120 (5.5)	5			41.5	2	75	6
207	247	2000	19	7.2	5.7	0.2 + 0.1	(5.1)	25 (1.6)	1			6.7	2	36	6
301	395	2300	46	17.2	23.2	2.1 + 0.4	(35.4)	75 (7.7)	7			43.1	3	79	28
302	814	3300	79	17.2	33.7	5.7 + 1.8	(106.7)	96 (20.1)	18			126.8	3	4	28
303	157	1675	52	19.8	33.2	0.9 + 0.5	(20.3)	96 (4.0)	4			24.3	3	35	74
304	531<	1790	59	19.8	19.1	2.0 + 0.7	(38.9)	64 (9.0)	8			47.9	3	35	74
305	155	1770	23	19.8	21.3	0.7 + 0.2	(12.7)	82 (3.4)	3			16.1	3	36	65
306	24	1785	3	5.1	8.3	0.0 + 0.0	(0.7)	15 (0.1)	0			0.8	3	1	31
307	1232	3970	80	5.1	13.1	2.3 + 2.0	(61.2)	39 (12.5)	13	(0.0)*		75.4	3	1	31
308	584	2000	81	8.9	41.2	4.6 + 2.0	(93.7)	98 (14.7)	13	(0.0)*		108.4	3	37	65
309	396	1785	61	8.9	38.5	3.4 + 0.8	(59.4)	89 (9.0)	8			68.4	3	37	65
401	449	3300	78	5.9	43.4	3.7 + 1.7	(76.0)	113 (13.1)	12	(0.0)*		89.1	4	40	53
402	819	3300	41	5.9	2.4	0.1 + 0.4	(6.0)	3 (0.7)	1			6.7	4	7	54
403	995	3000	80	17.2	28.5	5.7 + 2.0	(109.7)	91 (23.3)	21			133.0	4	2	34
404	645	1710	59	17.2	13.0	1.5 + 0.7	(31.7)	57 (9.4)	9			41.2	4	66	36
405	302	1900	71	12.2	30.3	1.3 + 1.2	(35.5)	88 (6.9)	7			42.3	4	58	75
406	254	2000	68	12.2	51.7	2.6 + 1.0	(51.3)	117 (7.7)	7			59.0	4	63	77
701	107	1600	19	17.2	22.6	0.5 + 0.1	(9.3)	70 (1.9)	2			11.3	7	29	56
702	286	1750	47	17.2	26.2	1.6 + 0.4	(29.0)	80 (5.9)	5			34.9	7	29	56
703	511	1950	105	17.2	165.3	4.8 + 18.6	(332.1)	205 (27.0)	30			359.1	7	69	8
704	692	1900	104	17.2	139.9	5.3 + 21.5	(380.5)	194 (34.6)	37	+		415.1	7	29	56
705	123	1800	41	20.6	20.5	0.3 + 0.3	(9.7)	90 (2.8)	2			12.5	7	61	13
706	554	1900	86	20.6	29.8	1.6 + 3.0	(64.0)	100 (14.3)	15			78.3	7	62	8
901	404	1740	84	18.1	44.8	2.4 + 2.5	(70.5)	115 (12.1)	11			82.6	9	21	42
902	939<	1740	74	18.1	9.1	0.8 + 1.4	(32.0)	36 (8.9)	7			40.9	9	65	42
903	736	1900	97	6.4	61.4	3.6 + 8.9	(176.8)	121 (22.9)	21	+		199.7	9	65	16
904	477	1665	92	17.2	61.3	3.5 + 4.6	(114.5)	129 (15.9)	15			130.4	9	21	45
1001	961<	1845	97	5.5	47.9	3.1 + 9.6	(179.7)	106 (26.6)	29	+		206.4	10	68	30
1002	448	1710	95	17.2	80.4	3.5 + 6.4	(141.1)	148 (17.1)	16			158.2	10	41	62
1003	322	1910	45	17.2	23.9	1.7 + 0.4	(29.7)	76 (6.3)	6			36.0	10	1	30
1401	1146	1965	73	12.2	6.2	0.5 + 1.3	(25.7)	15 (4.6)	4	(0.0)*		30.3	14	67	50
1402	20	1871	11	4.7	44.1	0.2 + 0.1	(3.4)	100 (0.5)	0			4.0	14	55	62
1403	57	1791	32	4.7	48.7	0.5 + 0.2	(10.8)	107 (1.6)	1			12.4	14	55	62
1404	1340<	3970	42	6.4	4.4	1.1 + 0.4	(20.7)	29 (10.3)	10			31.0	14	67	50

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	($/H)	($/H)	($/H)	($/H)	
3076.1	274.5	11.2	93.4	109.6	(2882.4) + (450.9)	+ (1.7)	= 3335.1	TOTALS	
								ROUTE	

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	165.0	+	233.4	+	205.5	=	603.9

NO. OF ENTRIES TO SUBPT = 19
NO. OF LINKS RECALCULATED= 395

PROGRAM TRANSYT FINISHED

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

Analysis Program Release 4 (March 2005)
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Run with file:- "WEEKDAY 17-18 WITH COMMITTED WITH DEV OPTIMISED TIMINGS.DAT" at 17:07 on 17/01/08

TRANSYT 12.0

Weekday 17:00-18:00 hours with Committed with Dev optimised timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS
.

DATA INPUT :-

CARD NO. / CARD TYPE

(1)= TITLE:- Weekday 17:00-18:00 hours with Committed with Dev optimised timings

CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	EFFECTIVE-GREEN DISPLACEMENTS END (SEC)	EQUISAT 0=NO 1=YES	0=UNEQUAL 1=EQUAL CYCLE	FLOW SCALE %	CRUISE-SPEEDS SCALE %	CRUISE-SPEEDS CARD32 1=SPEEDS	OPTIMISE 0=NONE 2=FULL	EXTRA COPIES OUTPUT	HILL-CLIMB 1=FULL	DELAY VALUE P PER PCU-H	STOP VALUE P PER 100
2)=	1	80	80	60	2	3	1	0	0	0	1	2	0	0	1420	260

CARD NO. / CARD TYPE — LIST OF NODES TO BE OPTIMISED

3)=	2	1	2	3	4	7	9	10	14	0	0	0	0	0	0	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	4						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7								
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	7	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	23								
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	51	1	34							
21)=	12	2	1	31	74	9							
22)=	12	3	1	74	27	45	65						
23)=	12	4	1	53	74	33							
24)=	12	7	1	54	63	6							
25)=	12	9	1	73	18								
26)=	12	10	1	21	56	8							
27)=	12	14	1	50	37								

LINK CARDS: GIVEWAY DATA

			PRIORITY LINKS		LINK1 GIVEWAY COEFFS.										
CARD NO.	CARD TYPE	LINK NO.	LINK1 NO.	LINK2 NO.	ONLY % FLOW	A1 X100	A2 X100					LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	0	0

LINK CARDS: FIXED DATA

				FIRST GREEN				SECOND GREEN								
CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	START STAGE	LAG	END STAGE	LAG	START STAGE	LAG	END STAGE	LAG	LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	15	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	10	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	9	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	2	23	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	23	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	3	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	11	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	6	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	0	0

LINK CARDS: FLOW DATA

					ENTRY 1			ENTRY 2			ENTRY 3			ENTRY 4		
CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED
75)=	32	101	610	0	304	564	43	306	46	43	0	0	0	0	0	0
76)=	32	102	780	0	202	569	43	205	212	43	0	0	0	0	0	0
77)=	32	103	413	0	1401	370	43	1403	43	43	0	0	0	0	0	0
78)=	32	104	876	0	1401	785	43	1403	91	43	0	0	0	0	0	0
79)=	32	105	220	0	202	161	43	205	60	43	0	0	0	0	0	0
80)=	32	202	722	0	401	305	43	404	417	43	0	0	0	0	0	0
81)=	32	203	424	0	401	179	43	404	245	43	0	0	0	0	0	0
82)=	32	204	300	0	0	0	43	0	0	0	0	0	0	0	0	0
83)=	32	205	269	0	0	0	43	0	0	0	0	0	0	0	0	0
84)=	32	206	177	0	101	18	43	103	159	43	0	0	0	0	0	0
85)=	32	207	271	0	101	27	43	103	244	43	0	0	0	0	0	0
86)=	32	301	412	0	0	0	43	0	0	0	0	0	0	0	0	0
87)=	32	302	803	0	0	0	43	0	0	0	0	0	0	0	0	0
88)=	32	303	163	0	701	20	43	703	85	43	704	57	43	0	0	0
89)=	32	304	562	0	701	71	43	703	295	43	704	197	43	0	0	0
90)=	32	305	161	0	701	31	43	703	130	43	0	0	0	0	0	0
91)=	32	306	46	0	403	46	43	0	0	0	0	0	0	0	0	0
92)=	32	307	1216	0	403	956	43	406	254	43	0	0	0	0	0	0
93)=	32	308	596	0	104	476	43	105	120	43	0	0	0	0	0	0
94)=	32	309	420	0	104	420	43	0	0	0	0	0	0	0	0	0
95)=	32	401	471	0	301	412	43	305	59	43	0	0	0	0	0	0
96)=	32	402	810	0	302	709	43	305	101	43	0	0	0	0	0	0
97)=	32	403	1002	0	0	0	43	0	0	0	0	0	0	0	0	0
98)=	32	404	645	0	0	0	43	0	0	0	0	0	0	0	0	0
99)=	32	405	325	0	204	46	43	207	279	43	0	0	0	0	0	0
100)=	32	406	254	0	204	254	43	0	0	0	0	0	0	0	0	0
101)=	32	701	109	0	0	0	43	0	0	0	0	0	0	0	0	0
102)=	32	702	286	0	0	0	43	0	0	0	0	0	0	0	0	0
103)=	32	703	518	0	0	0	43	0	0	0	0	0	0	0	0	0
104)=	32	704	694	0	0	0	43	0	0	0	0	0	0	0	0	0
105)=	32	705	125	0	302	15	43	308	110	43	0	0	0	0	0	0
106)=	32	706	564	0	302	67	43	308	496	43	0	0	0	0	0	0
107)=	32	901	416	0	1402	15	43	1404	401	43	0	0	0	0	0	0
108)=	32	902	961	0	1402	35	43	1404	926	43	0	0	0	0	0	0
109)=	32	903	741	0	1002	448	43	1003	317	43	0	0	0	0	0	0
110)=	32	904	482	0	0	0	43	0	0	0	0	0	0	0	0	0

111)=	32	1001	983	0	902	961	43	904	22	43	0	0	0	0	0	0
112)=	32	1002	451	0	0	0	43	0	0	0	0	0	0	0	0	0
113)=	32	1003	324	0	0	0	43	0	0	0	0	0	0	0	0	0
114)=	32	77	47	0	0	0	43	0	0	0	0	0	0	0	0	0
115)=	32	1401	1155	0	903	711	43	904	444	43	0	0	0	0	0	0
116)=	32	1402	50	0	0	0	43	0	0	0	0	0	0	0	0	0
117)=	32	1403	134	0	0	0	43	0	0	0	0	0	0	0	0	0
118)=	32	1404	1344	0	101	564	43	102	780	43	0	0	0	0	0	0

LINK DATA: QUEUE CONSTRAINTS

CARD NO.	CARD TYPE	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT
119)=	38	102	14	99999	103	9	99999	104	12	99999	0	0	0	0	0	0
120)=	38	307	13	99999	308	13	99999	1401	18	99999	0	0	0	0	0	0
121)=	38	204	10	99999	401	13	99999	0	0	0	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

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80 SECOND CYCLE 80 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	3	51	1	34							
2	3	31	74	9							
3	4	74	27	45	65						
4	3	53	74	33							
7	3	54	63	6							
9	2	73	18								
10	3	21	56	8							
14	2	50	37								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	DELAY	UNIFORM DELAY (U+R+O=MEAN Q)	RANDOM+ OVERSAT	COST OF DELAY	MEAN STOPS	COST OF STOPS	MEAN MAX.	AVERAGE	PERFORMANCE INDEX. WEIGHTED SUM	EXIT NODE	GREEN TIMES START	GREEN TIMES START END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)		($/H)	/PCU (%)	($/H)	(PCU)	EXCESS (PCU)	OF ( ) VALUES ($/H)		1ST (SECONDS)	2ND
77	47	715	9	8.9	4.5	0.0 + 0.1	(0.7)	0	(0.0)	0		0.7				
101	585<	1900	82	12.6	47.7	5.5 + 2.2	(108.9)	109	(17.1)	15		126.1	1	5	34	
102	779	1785	87	8.9	26.7	2.4 + 3.3	(80.4)	96	(19.3)	20	(0.8)*	869.2	1	42	1	
103	413	1710	54	7.6	16.4	1.2 + 0.6	(25.9)	63	(6.7)	5	(0.0)*	32.5	1	53	34	
104	877	1915	75	7.6	14.7	2.0 + 1.5	(49.1)	69	(15.5)	16	(0.3)*	350.7	1	66	34	
105	220	1785	76	8.9	65.0	2.4 + 1.5	(55.9)	114	(6.5)	6		62.4	1	39	51	
202	720	1940	78	11.8	27.4	3.6 + 1.8	(76.3)	96	(17.8)	17		94.1	2	37	74	
203	423	1740	51	11.8	19.8	1.7 + 0.5	(32.2)	60	(6.6)	6		38.8	2	37	74	
204	300	1760	76	17.2	47.6	2.4 + 1.5	(55.8)	110	(8.5)	8	(0.0)*	64.3	2	14	31	
205	269	1720	40	17.2	22.8	1.3 + 0.3	(23.7)	73	(5.1)	5		28.8	2	1	31	
206	176	1725	74	7.2	53.6	1.2 + 1.4	(36.9)	120	(5.5)	5		42.3	2	79	9	
207	269	2000	21	7.2	5.8	0.3 + 0.1	(5.7)	25	(1.8)	2		7.4	2	39	9	
301	412	2300	49	17.2	24.6	2.3 + 0.5	(39.1)	78	(8.3)	8		47.4	3	79	27	
302	803	3300	81	17.2	35.8	5.8 + 2.1	(111.9)	98	(20.4)	18		132.2	3	4	27	
303	156	1675	51	19.8	33.9	0.9 + 0.5	(20.6)	96	(4.0)	4		24.6	3	34	74	
304	537<	1790	58	19.8	18.7	2.0 + 0.7	(38.6)	63	(9.1)	8		47.7	3	34	74	
305	153	1770	22	19.8	21.5	0.7 + 0.1	(12.7)	80	(3.3)	3		16.0	3	35	65	
306	46	1785	7	5.1	8.7	0.1 + 0.0	(1.5)	15	(0.2)	0		1.7	3	1	30	
307	1215	3970	82	5.1	14.1	2.4 + 2.2	(65.0)	45	(14.0)	16	(0.1)*	149.1	3	1	30	
308	597	2000	80	8.9	38.0	4.3 + 1.9	(88.2)	109	(16.7)	15	(0.2)*	276.1	3	36	65	
309	421	1785	63	8.9	38.7	3.6 + 0.8	(63.4)	109	(11.8)	10		75.2	3	36	65	
401	468	3300	76	5.9	40.7	3.7 + 1.5	(74.3)	111	(13.4)	12	(0.0)*	87.7	4	39	53	
402	804	3300	40	5.9	2.2	0.1 + 0.3	(5.5)	3	(0.6)	1		6.1	4	6	54	
403	1002	3000	81	17.2	28.7	5.8 + 2.1	(111.6)	91	(23.6)	22		135.2	4	1	33	
404	645	1710	60	17.2	13.8	1.6 + 0.8	(33.8)	59	(9.8)	9		43.5	4	66	35	
405	324	1900	80	12.2	57.0	3.2 + 1.9	(72.1)	115	(9.7)	9		81.8	4	58	74	
406	254	2000	73	12.2	52.3	2.4 + 1.3	(51.9)	121	(7.9)	7		59.8	4	63	76	
701	109	1600	19	17.2	22.6	0.5 + 0.1	(9.5)	70	(2.0)	2		11.5	7	27	54	
702	286	1750	47	17.2	26.2	1.6 + 0.4	(29.0)	80	(5.9)	5		34.9	7	27	54	
703	518	1950	106	17.2	183.5	5.0 + 21.3	(373.9)	213	(28.5)	33		402.3	7	67	6	
704	694	1900	104	17.2	143.7	5.3 + 22.3	(391.9)	196	(35.0)	38	+	427.0	7	27	54	
705	124	1800	42	20.6	20.9	0.3 + 0.4	(10.0)	91	(2.9)	2		12.9	7	59	11	
706	565	1900	88	20.6	31.4	1.4 + 3.4	(68.8)	102	(14.9)	16		83.7	7	60	6	
901	408	1740	89	18.1	57.2	2.8 + 3.7	(91.2)	122	(13.1)	12		104.3	9	78	18	
902	943<	1740	75	18.1	11.1	1.3 + 1.5	(39.6)	47	(11.7)	11		51.3	9	41	18	
903	741	1900	95	6.4	67.0	7.1 + 6.6	(194.4)	133	(25.5)	23	+	219.9	9	41	73	
904	482	1665	96	17.2	83.7	3.7 + 7.4	(158.1)	151	(18.8)	18		176.9	9	78	21	
1001	965<	1845	97	5.5	60.7	5.9 + 10.2	(229.3)	117	(29.6)	27	+	258.9	10	14	56	
1002	451	1710	96	17.2	83.7	3.6 + 6.8	(148.0)	151	(17.5)	17		165.5	10	67	8	
1003	324	1910	45	17.2	23.9	1.7 + 0.4	(29.9)	76	(6.4)	6		36.3	10	27	56	

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80 SECOND CYCLE 80 STEPS

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	DELAY	UNIFORM DELAY (U+R+O=MEAN Q)	RANDOM+ OVERSAT	COST OF DELAY	MEAN STOPS	COST OF STOPS	MEAN MAX.	AVERAGE	PERFORMANCE INDEX. WEIGHTED SUM	EXIT NODE	GREEN TIMES START	GREEN TIMES START END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)		($/H)	/PCU (%)	($/H)	(PCU)	EXCESS (PCU)	OF ( ) VALUES ($/H)		1ST (SECONDS)	2ND
1401	1156	1965	75	12.2	5.5	0.1 + 1.5	(22.7)	15	(4.6)	9	(0.0)*	27.3	14	55	37	
1402	50	1871	24	4.7	44.1	0.4 + 0.2	(8.6)	100	(1.3)	1		9.9	14	42	50	
1403	134	1791	67	4.7	60.5	1.3 + 1.0	(31.7)	121	(4.2)	4		35.9	14	42	50	
1404	1320<	3970	42	6.4	2.3	0.3 + 0.4	(9.5)	14	(4.9)	6		14.4	14	55	37	

TOTAL DISTANCE	TOTAL TIME	MEAN JOURNEY	TOTAL UNIFORM	TOTAL RANDOM+	TOTAL COST	TOTAL COST	PENALTY FOR	TOTAL PERFORMANCE

TRAVELLED (PCU-KM/H)	SPENT (PCU-H/H)	SPEED (KM/H)	DELAY (PCU-H/H)	OVERSAT DELAY (PCU-H/H)	OF DELAY ($/H)		OF STOPS ($/H)		EXCESS QUEUES ($/H)		INDEX ($/H)	
3121.7	297.1	10.5	105.4	119.1	(3187.8)	+ (489.6)	+	(1296.8)	=	4974.3		TOTALS

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	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR	
FUEL CONSUMPTION PREDICTIONS	167.4	+	258.2	+	223.1	=	648.7	

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12
- (SECONDS)

1	3	27	57	10
2	3	31	74	9
3	4	74	27	45 65
4	3	53	74	33
7	3	54	63	6
9	2	73	18	
10	3	69	24	56
14	2	50	37	

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)	
3121.7	288.4	10.8	96.7	119.1	(3064.5)	+ (483.5)	+	(212.5)	=	3760.5		TOTALS

NO. OF ENTRIES TO SUBPT = 22
NO. OF LINKS RECALCULATED= 335

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32
- (SECONDS)

1	3	27	57	10
2	3	31	74	9
3	4	74	27	45 65
4	3	53	74	33
7	3	54	63	6
9	2	73	18	
10	3	69	24	56
14	2	50	37	

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)	
3121.7	288.4	10.8	96.7	119.1	(3064.5)	+ (483.5)	+	(212.5)	=	3760.5		TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 293

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1
- (SECONDS)

1	3	27	58	10
2	3	30	73	8
3	4	73	27	43 64
4	3	52	74	33
7	3	54	63	6
9	2	72	18	
10	3	69	24	56
14	2	50	36	

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)	
3121.7	287.1	10.9	96.3	118.2	(3046.3)	+ (480.1)	+	(0.0)	=	3526.3		TOTALS

NO. OF ENTRIES TO SUBPT = 45
NO. OF LINKS RECALCULATED= 613

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1 12
- (SECONDS)

1	3	27	58	10
2	3	30	73	8

```
     3       4      73      27      43      64
     4       3      52      74      33
     7       3      54      63       6
     9       2      72      18
    10       3      69      24      56
    14       2      50      36

  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)

  3121.7         287.1       10.9         96.3    118.2    (3046.3) + (  480.1)  +  (   0.0)   =    3526.3      TOTALS

NO. OF ENTRIES TO SUBPT  =   17
NO. OF LINKS RECALCULATED=  335
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32
 - (SECONDS)

     1       3      27      58      10
     2       3      30      73       8
     3       4      73      27      43      64
     4       3      52      74      33
     7       3      54      63       6
     9       2      72      18
    10       3      69      24      56
    14       2      50      36

  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)

  3121.7         287.1       10.9         96.3    118.2    (3046.3) + (  480.1)  +  (   0.0)   =    3526.3      TOTALS

NO. OF ENTRIES TO SUBPT  =   17
NO. OF LINKS RECALCULATED=  368
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1
 - (SECONDS)

     1       3      26      57       9
     2       3      25      68       3
     3       4      73      27      43      64
     4       3      52      74      33
     7       3      55      64       7
     9       2      73      19
    10       3      70      25      57
    14       2      50      36

  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)

  3121.7         285.4       10.9         94.6    118.2    (3021.3) + (  471.3)  +  (   0.0)   =    3492.6      TOTALS

NO. OF ENTRIES TO SUBPT  =   23
NO. OF LINKS RECALCULATED=  419
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1  -1
 - (SECONDS)

     1       3      25      56       8
     2       3      25      67       3
     3       4      73      27      43      64
     4       3      52      74      32
     7       3      55      64       7
     9       2      73      19
    10       3      70      25      57
    14       2      50      36

  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)

  3121.7         284.8       11.0         94.2    118.0    (3012.8) + (  470.3)  +  (   0.0)   =    3483.1      TOTALS

NO. OF ENTRIES TO SUBPT  =   43
NO. OF LINKS RECALCULATED=  770
.

     80 SECOND CYCLE  80 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :-   12  32  -1  12  32   1  -1   1
 - (SECONDS)

  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE   STAGE   STAGE   STAGE
```

NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	3	25	56	8							
2	3	24	66	2							
3	4	74	28	44	65						
4	3	52	74	32							
7	3	56	65	8							
9	2	73	19								
10	3	70	25	57							
14	2	50	36								

LINK NUMBER	FLOW INTO LINK (PCU/H)	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN TIMES PER PCU CRUISE (SEC)	DELAY (SEC)	DELAY (U+R+O=MEAN Q) (PCU-H/H)	DELAY ($/H)	STOPS MEAN STOPS /PCU (%)	STOPS COST OF STOPS ($/H)	QUEUE MEAN MAX. (PCU)	QUEUE AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. OF ( ) VALUES WEIGHTED SUM ($/H)	EXIT NODE	GREEN TIMES START 1ST (SECONDS)	GREEN TIMES START 2ND (SECONDS)	END
77	47	715	9	8.9	4.5	0.0 + 0.1	(0.7)	0	(0.0)	0		0.7				
101	585<	1900	85	12.6	30.0	2.1 + 2.7	(68.1)	103	(16.2)	15		84.3	1	60	8	
102	779	1785	85	8.9	29.5	3.5 + 2.8	(89.2)	70	(14.2)	12	(0.0)*	103.3	1	16	56	
103	413	1710	53	7.6	21.4	1.8 + 0.6	(34.0)	86	(9.2)	7	(0.0)*	43.2	1	27	8	
104	877	1915	75	7.6	16.4	2.4 + 1.5	(55.0)	59	(13.2)	12	(0.0)*	68.2	1	40	8	
105	220	1785	76	8.9	61.1	2.2 + 1.5	(52.6)	126	(7.1)	6		59.7	1	13	25	
202	720	1940	80	11.8	24.0	2.7 + 2.0	(66.8)	68	(12.6)	11		79.5	2	30	66	
203	423	1740	53	11.8	17.2	1.4 + 0.6	(27.9)	57	(6.2)	6		34.1	2	30	66	
204	300	1760	76	17.2	47.6	2.4 + 1.5	(55.8)	110	(8.5)	8	(0.0)*	64.3	2	7	24	
205	269	1720	39	17.2	21.9	1.3 + 0.3	(22.7)	71	(5.0)	5		27.6	2	73	24	
206	176	1725	68	7.2	55.4	1.6 + 1.0	(38.1)	120	(5.5)	5		43.6	2	71	2	
207	269	2000	21	7.2	5.8	0.3 + 0.1	(5.6)	19	(1.3)	1		6.9	2	32	2	
301	412	2300	48	17.2	23.5	2.2 + 0.5	(37.4)	76	(8.1)	7		45.5	3	79	28	
302	803	3300	78	17.2	33.3	5.6 + 1.7	(103.8)	95	(19.7)	18		123.4	3	4	28	
303	156	1675	53	19.8	33.9	0.9 + 0.6	(20.5)	96	(4.0)	4		24.6	3	35	74	
304	537<	1790	60	19.8	19.1	2.0 + 0.7	(39.4)	63	(9.1)	8		48.5	3	35	74	
305	153	1770	23	19.8	21.2	0.7 + 0.1	(12.5)	81	(3.3)	3		15.8	3	36	65	
306	46	1785	7	5.1	7.3	0.1 + 0.0	(1.2)	12	(0.1)	0		1.4	3	1	31	
307	1215	3970	79	5.1	12.0	2.0 + 1.9	(55.3)	39	(12.2)	13	(0.0)*	68.7	3	1	31	
308	597	2000	82	8.9	35.4	3.5 + 2.3	(82.1)	86	(13.1)	12	(0.0)*	95.3	3	37	65	
309	421	1785	65	8.9	28.8	2.4 + 0.9	(46.9)	61	(6.6)	6		53.6	3	37	65	
401	468	3300	76	5.9	39.8	3.6 + 1.5	(72.5)	110	(13.3)	12	(0.0)*	85.8	4	38	52	
402	804	3300	41	5.9	2.4	0.1 + 0.3	(6.0)	3	(0.7)	1		6.7	4	6	53	
403	1002	3000	84	17.2	31.0	6.0 + 2.5	(120.5)	95	(24.4)	23		145.0	4	1	32	
404	645	1710	60	17.2	13.8	1.6 + 0.8	(33.8)	59	(9.8)	9		43.5	4	65	34	
405	324	1900	76	12.2	35.0	1.6 + 1.5	(44.1)	109	(9.1)	8		53.2	4	57	74	
406	254	2000	68	12.2	54.7	2.8 + 1.0	(54.3)	117	(7.7)	7		62.0	4	62	76	
701	109	1600	19	17.2	22.6	0.5 + 0.1	(9.5)	70	(2.0)	2		11.5	7	29	56	
702	286	1750	47	17.2	26.2	1.6 + 0.4	(29.0)	80	(5.9)	5		34.9	7	29	56	
703	518	1950	106	17.2	183.4	5.0 + 21.3	(373.7)	213	(28.5)	33		402.1	7	69	8	
704	694	1900	104	17.2	143.6	5.3 + 22.3	(391.7)	196	(35.0)	38	+	426.7	7	29	56	
705	124	1800	42	20.6	20.6	0.3 + 0.4	(9.8)	90	(2.9)	2		12.7	7	61	13	
706	565	1900	88	20.6	32.4	1.6 + 3.4	(71.2)	104	(15.1)	15		86.3	7	62	8	
901	408	1740	85	18.1	46.4	2.5 + 2.7	(73.8)	110	(11.8)	11		85.6	9	78	19	
902	943<	1740	75	18.1	10.7	1.2 + 1.5	(37.9)	45	(11.1)	10		49.0	9	42	19	
903	741	1900	98	6.4	69.1	4.4 + 9.7	(200.4)	147	(28.1)	26	+	228.5	9	42	73	
904	482	1665	93	17.2	64.4	3.6 + 5.0	(121.5)	133	(16.5)	15		137.9	9	78	22	
1001	965<	1845	97	5.5	47.5	2.3 + 10.3	(178.8)	119	(30.1)	31	+	208.9	10	63	25	
1002	451	1710	96	17.2	83.7	3.6 + 6.8	(148.0)	151	(17.5)	17		165.5	10	36	57	
1003	324	1910	45	17.2	23.9	1.7 + 0.4	(29.9)	76	(6.4)	6		36.3	10	76	25	
1401	1156	1965	76	12.2	5.7	0.1 + 1.6	(23.6)	11	(3.3)	5	(0.0)*	27.0	14	55	36	
1402	50	1871	21	4.7	41.8	0.4 + 0.1	(8.1)	97	(1.3)	1		9.4	14	41	50	
1403	134	1791	60	4.7	53.3	1.2 + 0.7	(27.9)	113	(3.9)	4		31.8	14	41	50	
1404	1320<	3970	43	6.4	4.8	1.2 + 0.4	(22.6)	30	(10.4)	10		33.0	14	55	36	

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)	
3121.7	284.2	11.0	93.6	118.0	(3004.3) + (470.1)	+ (1.2)	= 3475.5	TOTALS	
								ROUTE	

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	167.4	+	243.3	+	214.2	=	624.9

NO. OF ENTRIES TO SUBPT = 18
NO. OF LINKS RECALCULATED= 392

PROGRAM TRANSYT FINISHED

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

Analysis Program Release 4 (March 2005)
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Run with file:- "SATURDAY 13-14 WITH COMMITTED NO DEV OPTIMISED TIMINGS.DAT" at 17:06 on 17/01/08

TRANSYT 12.0

Saturday 13:00-14:00 hours with Committed no Dev optimised timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS

.

DATA INPUT :-

CARD NO. = (1) TYPE = TITLE:- Saturday 13:00-14:00 hours with Committed no Dev optimised timings

CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	EFFECTIVE-GREEN DISPLACEMENTS END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL CYCLE	FLOW SCALE %	CRUISE-SPEEDS SCALE %	CRUISE-SPEEDS CARD32 1=SPEEDS	OPTIMISE 0=NONE 2=FULL	EXTRA COPIES OUTPUT	HILL-CLIMB 1=FULL	DELAY VALUE P PER PCU-H	STOP VALUE P PER 100
2)=	1	80	80	60	2	3	1	0	0	0	1	2	0	0	1420	260

CARD NO. = 3)= CARD TYPE = 2 — LIST OF NODES TO BE OPTIMISED

1	2	3	4	7	9	10	14	0	0	0	0	0	0	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	1						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7	7							
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	1	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	7	2							
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	76	23	52							
21)=	12	2	1	29	67	5							
22)=	12	3	1	60	13	37	54						
23)=	12	4	1	48	74	25							
24)=	12	7	1	51	60	7							
25)=	12	9	1	66	18	32							
26)=	12	10	1	10	51	77							
27)=	12	14	1	44	31								

LINK CARDS: GIVEWAY DATA

			PRIORITY LINKS		LINK1 GIVEWAY COEFFS.											
CARD NO.	CARD TYPE	LINK NO.	LINK1 NO.	LINK2 NO.	ONLY % FLOW	A1 X100	A2 X100					LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	0	0

LINK CARDS: FIXED DATA

				FIRST GREEN				SECOND GREEN								
CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	START STAGE	LAG	END STAGE	LAG	START STAGE	LAG	END STAGE	LAG	LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	2	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	5	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	8	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	3	20	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	7	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	0	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	6	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	2	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	0	0

LINK CARDS: FLOW DATA

					ENTRY 1			ENTRY 2			ENTRY 3			ENTRY 4		
CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	LINK NO.	CRUISE FLOW	CRUISE SPEED	LINK NO.	CRUISE FLOW	CRUISE SPEED	LINK NO.	CRUISE FLOW	CRUISE SPEED	LINK NO.	CRUISE FLOW	CRUISE SPEED
75)=	32	101	465	0	304	407	43	306	58	43	0	0	0	0	0	0
76)=	32	102	734	0	202	507	43	205	227	43	0	0	0	0	0	0
77)=	32	103	466	0	1401	414	43	1403	52	43	0	0	0	0	0	0
78)=	32	104	714	0	1401	634	43	1403	80	43	0	0	0	0	0	0
79)=	32	105	283	0	202	195	43	205	88	43	0	0	0	0	0	0
80)=	32	202	660	0	401	297	43	404	363	43	0	0	0	0	0	0
81)=	32	203	503	0	401	226	43	404	277	43	0	0	0	0	0	0
82)=	32	204	365	0	0	0	43	0	0	0	0	0	0	0	0	0
83)=	32	205	296	0	0	0	43	0	0	0	0	0	0	0	0	0
84)=	32	206	243	0	101	35	43	103	208	43	0	0	0	0	0	0
85)=	32	207	328	0	101	47	43	103	281	43	0	0	0	0	0	0
86)=	32	301	447	0	0	0	43	0	0	0	0	0	0	0	0	0
87)=	32	302	790	0	0	0	43	0	0	0	0	0	0	0	0	0
88)=	32	303	128	0	701	26	43	703	69	43	704	33	43	0	0	0
89)=	32	304	406	0	701	83	43	703	218	43	704	105	43	0	0	0
90)=	32	305	270	0	701	74	43	703	196	43	0	0	0	0	0	0
91)=	32	306	58	0	403	58	43	0	0	0	0	0	0	0	0	0
92)=	32	307	937	0	403	655	43	406	251	43	0	0	0	0	0	0
93)=	32	308	560	0	104	401	43	105	159	43	0	0	0	0	0	0
94)=	32	309	265	0	104	265	43	0	0	0	0	0	0	0	0	0
95)=	32	401	551	0	301	447	43	305	104	43	0	0	0	0	0	0
96)=	32	402	910	0	302	739	43	305	171	43	0	0	0	0	0	0
97)=	32	403	713	0	0	0	43	0	0	0	0	0	0	0	0	0
98)=	32	404	673	0	0	0	43	0	0	0	0	0	0	0	0	0
99)=	32	405	404	0	204	114	43	207	290	43	0	0	0	0	0	0
100)=	32	406	251	0	204	251	43	0	0	0	0	0	0	0	0	0
101)=	32	701	168	0	0	0	43	0	0	0	0	0	0	0	0	0
102)=	32	702	320	0	0	0	43	0	0	0	0	0	0	0	0	0
103)=	32	703	511	0	0	0	43	0	0	0	0	0	0	0	0	0
104)=	32	704	494	0	0	0	43	0	0	0	0	0	0	0	0	0
105)=	32	705	176	0	302	20	43	308	156	43	0	0	0	0	0	0
106)=	32	706	534	0	302	62	43	308	472	43	0	0	0	0	0	0
107)=	32	901	417	0	1402	16	43	1404	401	43	0	0	0	0	0	0
108)=	32	902	705	0	1402	27	43	1404	678	43	0	0	0	0	0	0
109)=	32	903	699	0	1002	269	43	1003	450	43	0	0	0	0	0	0
110)=	32	904	413	0	0	0	43	0	0	0	0	0	0	0	0	0

```
 111)=  32    1001     724       0     902     705      43     904      19      43       0       0       0       0       0       0
 112)=  32    1002     276       0       0       0      43       0       0       0       0       0       0       0       0       0
 113)=  32    1003     455       0       0       0      43       0       0       0       0       0       0       0       0       0
 114)=  32      77      57       0       0       0      43       0       0       0       0       0       0       0       0       0
 115)=  32    1401    1069       0     903     682      43     904     387      43       0       0       0       0       0       0
 116)=  32    1402      45       0       0       0      43       0       0       0       0       0       0       0       0       0
 117)=  32    1403     134       0       0       0      43       0       0       0       0       0       0       0       0       0
 118)=  32    1404    1121       0     101     387      43     102     734      43       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
 119)=  38     102      14   99999     103       9   99999     104      12   99999       0       0       0       0       0       0
 120)=  38     307      13   99999     308      13   99999    1401      18   99999       0       0       0       0       0       0
 121)=  38     204      10   99999     401      13   99999       0       0       0       0       0       0       0       0       0

 *****END OF SUBROUTINE TINPUT*****
.

      80 SECOND CYCLE  80 STEPS

 INITIAL SETTINGS
  - (SECONDS)

   NODE    NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE   STAGE   STAGE   STAGE
    NO    OF STAGES   1       2       3       4       5      6       7       8       9      10

     1       3      76      23      52
     2       3      29      67       5
     3       4      60      13      37      54
     4       3      48      74      25
     7       3      51      60       7
     9       3      66      18      32
    10       3      10      51      77
    14       2      44      31

  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)

    77      57    715     11    8.9   4.4    0.0 +  0.1  (  0.9)      0  (  0.0)       0                 0.9
   101     465   1900     75   12.6  29.0    2.2 +  1.5  ( 52.2)     83  (  9.9)      11                62.1      1     27  52
   102     734   1785     75    8.9  21.0    2.7 +  1.5  ( 59.3)     91  ( 17.3)      16  ( 0.1)*      209.2      1     60  23
   103     467   1710     66    7.6  16.8    1.2 +  0.9  ( 30.0)     86  ( 10.4)       7  ( 0.0)*       40.3      1     78  52
   104     716   1915     54    7.6  12.6    1.8 +  0.6  ( 34.3)     65  ( 12.0)      11  ( 0.0)*       46.3      1     78  52
   105     284   1785     64    8.9  32.0    1.6 +  0.9  ( 35.3)     99  (  7.2)       7                42.5      1     57  76
   202     661   1940     83   11.8  33.1    3.7 +  2.3  ( 85.0)    106  ( 18.0)      17               103.1      2     35  67
   203     503   1740     70   11.8  27.0    2.5 +  1.2  ( 52.5)     92  ( 12.0)      12                64.5      2     35  67
   204     365   1760     83   17.2  51.5    2.9 +  2.3  ( 73.4)    116  ( 10.9)      10  ( 0.0)*       84.3      2     10  29
   205     296   1720     38   17.2  18.9    1.2 +  0.3  ( 21.5)     66  (  5.0)       5                26.5      2     74  29
   206     244   1725     81    7.2  77.3    3.2 +  2.0  ( 73.9)    130  (  8.1)       7                82.0      2     72   5
   207     330   2000     27    7.2  18.9    1.5 +  0.2  ( 24.0)     75  (  6.4)       6                30.4      2     37   5
   301     447   2300     54   17.2  25.3    2.5 +  0.6  ( 43.8)     80  (  9.2)       8                53.0      3     65  13
   302     790   3300     66   17.2  26.3    4.7 +  1.0  ( 80.3)     84  ( 17.1)      16                97.4      3     65  13
   303     128   1675     43   19.8  27.4    0.6 +  0.4  ( 13.6)     82  (  2.7)       2                16.3      3     20  60
   304     405   1790     44   19.8  15.5    1.3 +  0.4  ( 23.9)     66  (  7.0)       6                30.8      3     20  60
   305     270   1770     36   19.8  16.8    0.9 +  0.3  ( 17.3)     79  (  5.5)       5                22.8      3     21  54
   306      58   1785      9    5.1  23.8    0.3 +  0.0  (  5.3)     48  (  0.7)       1                 6.1      3     67  16
   307     937   3970     63    5.1  21.1    4.5 +  0.8  ( 76.1)     59  ( 14.3)      13  ( 0.0)*      100.0      3     67  16
   308     562   2000     68    8.9  28.6    3.3 +  1.1  ( 62.3)    100  ( 14.5)      13  ( 0.0)*       76.8      3     22  54
   309     266   1785     35    8.9  12.7    0.6 +  0.3  ( 12.8)     72  (  4.9)       5                17.7      3     21  54
   401     551   3300     74    5.9  43.7    5.2 +  1.4  ( 93.8)    110  ( 15.6)      14  ( 0.1)*      182.8      4     31  48
   402     911   3300     50    5.9  15.5    3.3 +  0.5  ( 53.9)     85  ( 19.9)      18                73.8      4      6  49
   403     713   3000     76   17.2  33.2    4.9 +  1.6  ( 92.0)     94  ( 17.4)      16               109.3      4      1  25
   404     673   1710     67   17.2  17.1    2.1 +  1.0  ( 44.1)     68  ( 11.8)      11                55.9      4     61  27
   405     405   1900     78   12.2  28.9    1.5 +  1.7  ( 45.4)    102  ( 10.6)      10                56.0      4     53  74
   406     251   2000     53   12.2  39.6    2.2 +  0.6  ( 38.8)    110  (  7.1)       6                45.9      4     58  76
   701     168   1600     35   17.2  28.2    1.0 +  0.3  ( 18.3)     81  (  3.5)       3                21.8      7     28  51
   702     320   1750     61   17.2  33.2    2.1 +  0.8  ( 41.3)     91  (  7.5)       7                48.8      7     28  51
   703     511   1950     87   17.2  49.5    3.8 +  3.2  ( 98.7)    115  ( 15.2)      14               113.9      7     64   7
   704     494   1900     87   17.2  48.9    3.6 +  3.0  ( 94.4)    115  ( 14.6)      13               109.0      7     28  51
   705     177   1800     52   20.6  21.3    0.5 +  0.5  ( 14.5)    103  (  4.7)       4                19.2      7     56  12
   706     535   1900     73   20.6  25.6    2.4 +  1.3  ( 53.0)    105  ( 14.4)      13                67.4      7     57   7
   901     417   1740     69   18.1  30.7    2.4 +  1.1  ( 49.6)     84  (  9.0)       8                58.6      9     71  18
   902     704   1740     69   18.1  16.8    2.1 +  1.1  ( 45.4)     49  (  8.8)       8                54.2      9     52  18
   903     699   1900     70    6.4  23.3    3.3 +  1.2  ( 62.8)     86  ( 15.5)      14     +          78.3      9     25  66
   904     413   1665     71   17.2  33.4    2.6 +  1.2  ( 53.7)     94  ( 10.0)       9                63.6      9     71  18
  1001     723   1845     64    5.5  26.4    4.3 +  0.9  ( 73.9)    104  ( 19.5)      17     +          93.4     10      3  51
  1002     276   1710     61   17.2  36.8    2.0 +  0.8  ( 39.5)     96  (  6.8)       6                46.3     10     57  77
  1003     455   1910     48   17.2  17.2    1.7 +  0.5  ( 30.0)     65  (  7.6)       7                37.6     10     12  51
.

      80 SECOND CYCLE  80 STEPS

  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)

  1401    1070   1965     69   12.2  10.0    1.7 +  1.1  ( 40.3)     58  ( 15.9)      15  ( 0.0)*       56.2     14     49  31
  1402      45   1871     21    4.7  43.7    0.4 +  0.1  (  7.7)    100  (  1.2)       1                 8.8     14     36  44
  1403     134   1791     67    4.7  60.5    1.3 +  1.0  ( 31.7)    121  (  4.2)       4                35.9     14     36  44
  1404    1121   3970     36    6.4   4.6    1.0 +  0.3  ( 18.2)     31  (  8.9)       9                27.1     14     49  31

    TOTAL          TOTAL       MEAN          TOTAL    TOTAL    TOTAL       TOTAL        PENALTY       TOTAL
   DISTANCE         TIME     JOURNEY        UNIFORM   RANDOM+   COST        COST          FOR       PERFORMANCE
```

TRAVELLED (PCU-KM/H)	SPENT (PCU-H/H)	SPEED (KM/H)	DELAY (PCU-H/H)	OVERSAT DELAY (PCU-H/H)	OF DELAY ($/H)	OF STOPS ($/H)	EXCESS QUEUES ($/H)	INDEX ($/H)	
2906.3	209.8	13.9	98.7	43.4	(2018.8) + (442.6)	+ (215.4)	=	2676.8	TOTALS

****

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	155.9	+	163.5	+	201.7	=	521.1

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12
- (SECONDS)

1	3	64	11	40
2	3	41	79	17
3	4	72	25	49 66
4	3	48	74	25
7	3	51	60	7
9	3	78	30	44
10	3	78	39	65
14	2	56	43	

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)	
2906.3	197.9	14.7	86.9	43.4	(1850.1) + (387.7)	+ (0.0)	=	2237.8	TOTALS

NO. OF ENTRIES TO SUBPT = 19
NO. OF LINKS RECALCULATED= 335

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32
- (SECONDS)

1	3	64	11	40
2	3	41	79	17
3	4	72	25	49 66
4	3	48	74	25
7	3	51	60	7
9	3	78	30	44
10	3	78	39	65
14	2	56	43	

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)	
2906.3	197.9	14.7	86.9	43.4	(1850.1) + (387.7)	+ (0.0)	=	2237.8	TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 311

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1
- (SECONDS)

1	3	65	11	40
2	3	41	79	17
3	4	73	27	43 67
4	3	47	72	25
7	3	51	60	7
9	3	73	30	45
10	3	78	42	65
14	2	56	41	

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)	
2906.3	195.8	14.8	84.4	43.8	(1821.0) + (374.5)	+ (1.6)	=	2197.1	TOTALS

NO. OF ENTRIES TO SUBPT = 61
NO. OF LINKS RECALCULATED= 741

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1 12
- (SECONDS)

1	3	77	23	52
2	3	53	11	29

```
    3       4      73      27      43      67
    4       3      47      72      25
    7       3      51      60       7
    9       3      73      30      45
   10       3      78      42      65
   14       2      44      29

  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)

  2906.3         193.5       15.0         82.1     43.8    (1788.1) + (  373.0)  +  (   1.6)   =    2162.7      TOTALS

NO. OF ENTRIES TO SUBPT  =   18
NO. OF LINKS RECALCULATED=  369
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32
 - (SECONDS)

    1       3      77      23      52
    2       3      53      11      29
    3       4      73      27      43      67
    4       3      47      72      25
    7       3      51      60       7
    9       3      73      30      45
   10       3      78      42      65
   14       2      44      29

  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)

  2906.3         193.5       15.0         82.1     43.8    (1788.1) + (  373.0)  +  (   1.6)   =    2162.7      TOTALS

NO. OF ENTRIES TO SUBPT  =   17
NO. OF LINKS RECALCULATED=  372
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1
 - (SECONDS)

    1       3      77      23      52
    2       3      53      11      29
    3       4      72      26      42      66
    4       3      45      70      23
    7       3      54      63      10
    9       3      74      31      46
   10       3      79      43      66
   14       2      44      29

  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)

  2906.3         192.8       15.1         81.4     43.8    (1778.2) + (  371.0)  +  (   1.8)   =    2151.0      TOTALS

NO. OF ENTRIES TO SUBPT  =   22
NO. OF LINKS RECALCULATED=  451
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1  -1
 - (SECONDS)

    1       3      79      24      52
    2       3      53      11      29
    3       4      72      24      40      66
    4       3      45      70      22
    7       3      54      63      10
    9       3      73      32      46
   10       3      79      43      66
   14       2      44      30

  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)

  2906.3         191.9       15.1         79.9     44.4    (1765.7) + (  366.7)  +  (   0.0)   =    2132.5      TOTALS

NO. OF ENTRIES TO SUBPT  =   49
NO. OF LINKS RECALCULATED=  853
.

     80 SECOND CYCLE  80 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :-   12  32  -1  12  32   1  -1   1
 - (SECONDS)

  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE   STAGE   STAGE   STAGE
```

NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	3	79	24	52							
2	3	55	13	31							
3	4	72	24	40	66						
4	3	45	70	22							
7	3	57	66	13							
9	3	74	33	47							
10	3	0	44	67							
14	2	45	31								

LINK NUMBER	FLOW INTO LINK (PCU/H)	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN TIMES PER PCU CRUISE (SEC)	DELAY (SEC)	DELAY (U+R+O=MEAN Q) (PCU-H/H)	COST OF DELAY ($/H)	MEAN STOPS /PCU (%)	COST OF STOPS ($/H)	QUEUE MEAN MAX. (PCU)	QUEUE AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. OF ( ) VALUES WEIGHTED SUM ($/H)	EXIT NODE	GREEN TIMES START 1ST	GREEN TIMES START 2ND END (SECONDS)
77	57	715	11	8.9	4.4	0.0 + 0.1	(0.9)	0	(0.0)	0		0.9			
101	465	1900	78	12.6	36.0	2.8 + 1.8	(65.2)	75	(9.0)	8		74.1	1	28	52
102	734	1785	73	8.9	15.5	1.7 + 1.3	(43.5)	45	(8.4)	9	(0.0)*	52.0	1	60	24
103	467	1710	71	7.6	22.8	1.7 + 1.2	(41.1)	92	(11.0)	8	(0.0)*	52.1	1	1	52
104	716	1915	57	7.6	14.2	2.0 + 0.7	(38.6)	67	(12.4)	11	(0.0)*	51.0	1	1	52
105	284	1785	55	8.9	37.2	2.3 + 0.6	(41.1)	81	(5.9)	5		47.1	1	57	79
202	661	1940	83	11.8	31.5	3.4 + 2.3	(80.8)	93	(15.9)	15		96.7	2	61	13
203	503	1740	70	11.8	25.9	2.4 + 1.2	(50.4)	81	(10.4)	10		60.8	2	61	13
204	365	1760	83	17.2	51.5	2.9 + 2.3	(73.4)	116	(10.9)	10	(0.0)*	84.3	2	36	55
205	296	1720	38	17.2	18.9	1.2 + 0.3	(21.5)	66	(5.0)	5		26.5	2	20	55
206	244	1725	81	7.2	52.5	1.6 + 2.0	(50.1)	120	(7.5)	7		57.6	2	18	31
207	330	2000	27	7.2	8.6	0.6 + 0.2	(10.5)	36	(3.0)	3		13.5	2	63	31
301	447	2300	56	17.2	26.5	2.6 + 0.6	(45.8)	82	(9.4)	9		55.3	3	77	24
302	790	3300	68	17.2	27.6	4.9 + 1.1	(84.5)	86	(17.6)	16		102.1	3	77	24
303	128	1675	41	19.8	24.9	0.5 + 0.3	(12.3)	82	(2.7)	3		15.0	3	31	72
304	405	1790	43	19.8	14.4	1.2 + 0.4	(22.2)	61	(6.4)	6		28.6	3	31	72
305	270	1770	35	19.8	18.0	1.0 + 0.3	(18.6)	79	(5.5)	5		24.1	3	32	66
306	58	1785	9	5.1	4.1	0.0 + 0.0	(0.8)	5	(0.1)	0		0.9	3	79	27
307	937	3970	65	5.1	9.2	1.3 + 0.9	(32.1)	42	(10.2)	12	(0.0)*	42.3	3	79	27
308	562	2000	66	8.9	30.0	3.6 + 1.0	(65.4)	95	(13.7)	12	(0.0)*	79.2	3	33	66
309	266	1785	34	8.9	16.3	0.9 + 0.3	(16.6)	83	(5.7)	5		22.3	3	32	66
401	551	3300	74	5.9	31.4	3.3 + 1.4	(67.1)	100	(14.2)	13	(0.0)*	81.3	4	28	45
402	911	3300	49	5.9	3.9	0.4 + 0.5	(12.1)	18	(4.1)	11		16.3	4	2	46
403	713	3000	73	17.2	31.2	4.7 + 1.3	(86.4)	91	(16.8)	15		103.2	4	77	22
404	673	1710	67	17.2	17.1	2.1 + 1.0	(44.1)	68	(11.8)	11		55.9	4	58	24
405	405	1900	81	12.2	47.3	3.2 + 2.1	(74.8)	116	(12.1)	11		86.9	4	50	70
406	251	2000	56	12.2	13.4	0.3 + 0.6	(12.8)	63	(4.1)	5		16.9	4	55	72
701	168	1600	35	17.2	28.2	1.0 + 0.3	(18.3)	81	(3.5)	3		21.8	7	34	57
702	320	1750	61	17.2	33.2	2.1 + 0.8	(41.3)	91	(7.5)	7		48.8	7	34	57
703	511	1950	87	17.2	49.5	3.8 + 3.2	(98.7)	115	(15.2)	14		113.9	7	70	13
704	494	1900	87	17.2	48.9	3.6 + 3.0	(94.4)	115	(14.6)	13		109.0	7	34	57
705	177	1800	52	20.6	21.1	0.5 + 0.5	(14.3)	95	(4.3)	3		18.7	7	62	18
706	535	1900	73	20.6	22.2	1.9 + 1.3	(45.9)	99	(13.6)	13		59.5	7	63	13
901	417	1740	55	18.1	16.3	1.2 + 0.6	(26.1)	61	(6.5)	6		32.6	9	79	33
902	704	1740	69	18.1	12.1	1.2 + 1.1	(32.3)	48	(8.7)	9		40.9	9	67	33
903	699	1900	84	6.4	30.7	3.3 + 2.6	(83.3)	90	(16.2)	17	+	99.6	9	40	74
904	413	1665	57	17.2	23.0	1.9 + 0.7	(36.7)	76	(8.1)	7		44.8	9	79	33
1001	723	1845	60	5.5	4.4	0.0 + 0.8	(11.2)	10	(1.9)	5		13.2	10	73	44
1002	276	1710	72	17.2	45.3	2.2 + 1.2	(48.8)	107	(7.6)	7		56.4	10	50	67
1003	455	1910	44	17.2	14.9	1.4 + 0.4	(25.8)	59	(7.0)	6		32.8	10	2	44
1401	1070	1965	70	12.2	5.4	0.3 + 1.2	(20.9)	15	(4.1)	5	(0.0)*	25.0	14	50	31
1402	45	1871	19	4.7	41.4	0.4 + 0.1	(7.3)	97	(1.1)	1		8.4	14	36	45
1403	134	1791	60	4.7	53.3	1.2 + 0.7	(27.9)	113	(3.9)	4		31.8	14	36	45
1404	1121	3970	36	6.4	4.2	0.9 + 0.3	(16.2)	26	(7.6)	8		23.8	14	50	31

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)	
2906.3	191.7	15.2	79.7	44.4	(1762.3) + (365.3)	+ (0.0)	= 2127.6	TOTALS	
								ROUTE	

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	155.9	+	142.7	+	166.5	=	465.1

NO. OF ENTRIES TO SUBPT = 20
NO. OF LINKS RECALCULATED= 445

PROGRAM TRANSYT FINISHED

1 _____ T R A N S Y T 12 _____

Traffic Network Study Tool

Analysis Program Release 4 (March 2005)
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Run with file:- "SATURDAY 13-14 WITH COMMITTED WITH DEV OPTIMISED TIMINGS.DAT" at 17:06 on 17/01/08

TRANSYT 12.0

Saturday 13:00-14:00 hours with Committed with Dev optimised timings

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	= 8
NUMBER OF LINKS	= 44
NUMBER OF OPTIMISED NODES	= 8
MAXIMUM NUMBER OF GRAPHIC PLOTS	= 0
NUMBER OF STEPS IN CYCLE	= 80
MAXIMUM NUMBER OF SHARED STOPLINES	= 0
MAXIMUM NUMBER OF TIMING POINTS	= 4
MAXIMUM LINKS AT ANY NODE	= 9

CORE REQUESTED = 11940 WORDS
CORE AVAILABLE = 72000 WORDS

.

DATA INPUT :-

CARD NO.	CARD TYPE															
(1)=	TITLE:- Saturday 13:00-14:00 hours with Committed with Dev optimised timings															
CARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL CYCLE	FLOW SCALE 1=EQUAL CYCLE	CRUISE-SPEEDS SCALE 10-200 %	SCALE 50-200 %	OPTIMISE 0=TIMES 1=SPEEDS	EXTRA 0=NONE 1=O/SET 2=FULL	HILL- COPIES FINAL OUTPUT	CLIMB OUTPUT 1=FULL	DELAY STOP VALUE P PER PCU-H	VALUE P PER 100
2)=	1	80	80	60	2	3	1	0	0	0	0	1	2	0	0	1420	260
CARD NO.	CARD TYPE	LIST OF NODES TO BE OPTIMISED															
3)=	2	1	2	3	4	7	9	10	14	0	0	0	0	0	0	0	0

NODE CARDS: MINIMUM STAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
4)=	10	1	7	7	7							
5)=	10	2	7	7	7							
6)=	10	3	7	7	7	1						
7)=	10	4	7	7	7							
8)=	10	7	3	7	7							
9)=	10	9	7	7	7							
10)=	10	10	7	7	7							
11)=	10	14	7	7								

NODE CARDS: PRECEDING INTERSTAGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
12)=	11	1	2	4	8							
13)=	11	2	8	5	5							
14)=	11	3	7	9	1	5						
15)=	11	4	5	7	6							
16)=	11	7	6	4	21							
17)=	11	9	5	7	2							
18)=	11	10	2	6	6							
19)=	11	14	5	5								

NODE CARDS: STAGE CHANGE TIMES (WORKING)

CARD NO.	CARD TYPE	NODE NO.	Sgl/Dbl Cycled	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
20)=	12	1	1	76	21	50							
21)=	12	2	1	29	68	5							
22)=	12	3	1	60	12	37	54						
23)=	12	4	1	48	75	25							
24)=	12	7	1	51	60	7							
25)=	12	9	1	66	18	32							
26)=	12	10	1	10	51	77							
27)=	12	14	1	44	23								

LINK CARDS: GIVEWAY DATA

			PRIORITY LINKS		LINK1 GIVEWAY COEFFS.										
CARD NO.	CARD TYPE	LINK NO.	LINK1 NO.	LINK2 NO.	ONLY % FLOW	A1 X100	A2 X100					LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
28)=	30	77	105	104	0	22	19	0	0	0	0	100	0	715	0	0
29)=	30	103	101	0	0	50	100	0	0	0	0	100	0	1000	0	0
30)=	30	303	308	0	0	50	100	0	0	0	0	100	0	1000	0	0
31)=	30	705	703	0	0	50	100	0	0	0	0	100	0	1000	0	0

LINK CARDS: FIXED DATA

				FIRST GREEN				SECOND GREEN								
CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	START STAGE	LAG	END STAGE	LAG	START STAGE	LAG	END STAGE	LAG	LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
32)=	31	101	1	2	4	3	0	0	0	0	0	145	0	1900	0	0
33)=	31	102	1	3	8	2	0	0	0	0	0	100	0	1785	0	0
34)=	31	103	1	1	2	3	0	0	0	0	0	85	0	1710	0	0
35)=	31	104	1	1	2	3	0	0	0	0	0	85	0	1915	0	0
36)=	31	105	1	3	5	1	0	0	0	0	0	100	0	1785	0	0
37)=	31	202	2	1	6	2	0	0	0	0	0	135	0	1940	0	0
38)=	31	203	2	1	6	2	0	0	0	0	0	135	0	1740	0	0
39)=	31	204	2	3	5	1	0	0	0	0	0	200	0	1760	0	0
40)=	31	205	2	2	7	1	0	0	0	0	0	200	0	1720	0	0
41)=	31	206	2	2	5	3	0	0	0	0	0	80	0	1725	0	0
42)=	31	207	2	1	8	3	0	0	0	0	0	80	0	2000	0	0
43)=	31	301	3	1	5	2	0	0	0	0	0	200	0	2300	0	0
44)=	31	302	3	1	5	2	0	0	0	0	0	200	0	3300	0	0
45)=	31	303	3	2	7	1	0	0	0	0	0	230	0	1675	0	0
46)=	31	304	3	2	7	1	0	0	0	0	0	230	0	1790	0	0
47)=	31	305	3	2	8	4	0	0	0	0	0	230	0	1770	0	0
48)=	31	306	3	1	7	2	3	0	0	0	0	55	0	1785	0	0
49)=	31	307	3	1	7	2	3	0	0	0	0	55	0	3970	0	0
50)=	31	308	3	2	9	4	0	0	0	0	0	100	0	2000	0	0
51)=	31	309	3	2	8	4	0	0	0	0	0	100	0	1785	0	0
52)=	31	401	4	3	6	1	0	0	0	0	0	65	0	3300	0	0
53)=	31	402	4	2	12	1	1	0	0	0	0	65	0	3300	0	0
54)=	31	403	4	2	7	3	0	0	0	0	0	200	0	3000	0	0
55)=	31	404	4	1	13	3	2	0	0	0	0	200	0	1710	0	0
56)=	31	405	4	1	5	2	0	0	0	0	0	140	0	1900	0	0
57)=	31	406	4	1	10	2	2	0	0	0	0	140	0	2000	0	0
58)=	31	701	7	3	21	1	0	0	0	0	0	200	0	1600	0	0
59)=	31	702	7	3	21	1	0	0	0	0	0	200	0	1750	0	0
60)=	31	703	7	2	4	3	0	0	0	0	0	200	0	1950	0	0
61)=	31	704	7	3	21	1	0	0	0	0	0	200	0	1900	0	0
62)=	31	705	7	1	5	3	5	0	0	0	0	240	0	1800	0	0
63)=	31	706	7	1	6	3	0	0	0	0	0	240	0	1900	0	0
64)=	31	901	9	1	5	2	0	0	0	0	0	210	0	1740	0	0
65)=	31	902	9	3	20	2	0	0	0	0	0	210	0	1740	0	0
66)=	31	903	9	2	7	1	0	0	0	0	0	70	0	1900	0	0
67)=	31	904	9	1	5	2	0	0	0	0	0	200	0	1665	0	0
68)=	31	1001	10	3	6	2	0	0	0	0	0	60	0	1845	0	0
69)=	31	1002	10	2	6	3	0	0	0	0	0	200	0	1710	0	0
70)=	31	1003	10	1	2	2	0	0	0	0	0	200	0	1910	0	0
71)=	31	1401	14	1	5	2	0	0	0	0	0	140	0	1965	0	0
72)=	31	1402	14	2	5	1	0	0	0	0	0	50	0	1871	0	0
73)=	31	1403	14	2	5	1	0	0	0	0	0	50	0	1791	0	0
74)=	31	1404	14	1	5	2	0	0	0	0	0	70	0	3970	0	0

LINK CARDS: FLOW DATA

					ENTRY 1			ENTRY 2			ENTRY 3			ENTRY 4		
CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED
75)=	32	101	451	0	304	361	43	306	90	43	0	0	0	0	0	0
76)=	32	102	712	0	202	502	43	205	210	43	0	0	0	0	0	0
77)=	32	103	513	0	1401	404	43	1403	109	43	0	0	0	0	0	0
78)=	32	104	850	0	1401	670	43	1403	180	43	0	0	0	0	0	0
79)=	32	105	354	0	202	250	43	205	104	43	0	0	0	0	0	0
80)=	32	202	709	0	401	334	43	404	375	43	0	0	0	0	0	0
81)=	32	203	503	0	401	237	43	404	266	43	0	0	0	0	0	0
82)=	32	204	365	0	0	0	43	0	0	0	0	0	0	0	0	0
83)=	32	205	296	0	0	0	43	0	0	0	0	0	0	0	0	0
84)=	32	206	243	0	101	32	43	103	211	43	0	0	0	0	0	0
85)=	32	207	376	0	101	50	43	103	326	43	0	0	0	0	0	0
86)=	32	301	488	0	0	0	43	0	0	0	0	0	0	0	0	0
87)=	32	302	764	0	0	0	43	0	0	0	0	0	0	0	0	0
88)=	32	303	128	0	701	26	43	703	69	43	704	33	43	0	0	0
89)=	32	304	429	0	701	87	43	703	232	43	704	110	43	0	0	0
90)=	32	305	270	0	701	74	43	703	196	43	0	0	0	0	0	0
91)=	32	306	107	0	403	107	43	0	0	0	0	0	0	0	0	0
92)=	32	307	904	0	403	622	43	406	251	43	0	0	0	0	0	0
93)=	32	308	581	0	104	410	43	105	171	43	0	0	0	0	0	0
94)=	32	309	313	0	104	313	43	0	0	0	0	0	0	0	0	0
95)=	32	401	600	0	301	488	43	305	112	43	0	0	0	0	0	0
96)=	32	402	877	0	302	713	43	305	163	43	0	0	0	0	0	0
97)=	32	403	729	0	0	0	43	0	0	0	0	0	0	0	0	0
98)=	32	404	673	0	0	0	43	0	0	0	0	0	0	0	0	0
99)=	32	405	452	0	204	114	43	207	338	43	0	0	0	0	0	0
100)=	32	406	251	0	204	251	43	0	0	0	0	0	0	0	0	0
101)=	32	701	172	0	0	0	43	0	0	0	0	0	0	0	0	0
102)=	32	702	320	0	0	0	43	0	0	0	0	0	0	0	0	0
103)=	32	703	527	0	0	0	43	0	0	0	0	0	0	0	0	0
104)=	32	704	498	0	0	0	43	0	0	0	0	0	0	0	0	0
105)=	32	705	180	0	302	20	43	308	160	43	0	0	0	0	0	0
106)=	32	706	552	0	302	62	43	308	490	43	0	0	0	0	0	0
107)=	32	901	428	0	1402	37	43	1404	391	43	0	0	0	0	0	0
108)=	32	902	716	0	1402	61	43	1404	654	43	0	0	0	0	0	0
109)=	32	903	711	0	1002	277	43	1003	454	43	0	0	0	0	0	0
110)=	32	904	425	0	0	0	43	0	0	0	0	0	0	0	0	0

111)=	32	1001	735	0	902	716	43	904	19	43	0	0	0	0	0	0
112)=	32	1002	284	0	0	0	43	0	0	0	0	0	0	0	0	0
113)=	32	1003	459	0	0	0	43	0	0	0	0	0	0	0	0	0
114)=	32	77	143	0	0	0	43	0	0	0	0	0	0	0	0	0
115)=	32	1401	1092	0	903	694	43	904	399	43	0	0	0	0	0	0
116)=	32	1402	102	0	0	0	43	0	0	0	0	0	0	0	0	0
117)=	32	1403	293	0	0	0	43	0	0	0	0	0	0	0	0	0
118)=	32	1404	1085	0	101	373	43	102	712	43	0	0	0	0	0	0

LINK DATA: QUEUE CONSTRAINTS

CARD NO.	CARD TYPE	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT	LINK NO.	LIMIT QUEUE	QUEUE WEIGHT
119)=	38	102	14	99999	103	9	99999	104	12	99999	0	0	0	0	0	0
120)=	38	307	13	99999	308	13	99999	1401	18	99999	0	0	0	0	0	0
121)=	38	204	10	99999	401	13	99999	0	0	0	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

.

80 SECOND CYCLE 80 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	3	76	21	50							
2	3	29	68	5							
3	4	60	12	37	54						
4	3	48	75	25							
7	3	51	60	7							
9	3	66	18	32							
10	3	10	51	77							
14	2	44	23								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	DELAY	DELAY (U+R+O=MEAN Q) UNIFORM + RANDOM+ OVERSAT	COST OF DELAY	MEAN STOPS /PCU	COST OF STOPS	QUEUE MEAN MAX.	QUEUE AVERAGE	PERFORMANCE INDEX. WEIGHTED SUM	EXIT NODE	GREEN TIMES START 1ST	GREEN TIMES START 2ND
END	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	($/H)	(%)	($/H)	(PCU)	EXCESS (PCU)	OF ( ) VALUES ($/H)		(SECONDS)	
77	143	715	30	8.9	5.9	0.0 + 0.2	(3.0)	0	(0.0)	0		3.0			
101	450	1900	73	12.6	27.5	2.0 + 1.3	(47.9)	73	(8.5)	9		56.4	1	25	50
102	712	1785	73	8.9	18.3	2.2 + 1.3	(50.0)	83	(15.1)	14	(0.0)*	65.1	1	58	21
103	513	1710	76	7.6	23.8	1.8 + 1.5	(47.1)	92	(12.1)	9	(0.0)*	59.3	1	78	50
104	851	1915	67	7.6	13.9	2.2 + 1.0	(45.0)	68	(14.8)	14	(0.1)*	171.8	1	78	50
105	354	1785	72	8.9	32.0	1.8 + 1.3	(44.0)	97	(8.9)	9		52.9	1	55	76
202	709	1940	86	11.8	35.4	3.9 + 2.9	(97.5)	110	(20.0)	19		117.5	2	35	68
203	504	1740	68	11.8	25.2	2.4 + 1.1	(49.0)	87	(11.3)	12		60.3	2	35	68
204	365	1760	83	17.2	51.5	2.9 + 2.3	(73.4)	116	(10.9)	10	(0.0)*	84.3	2	10	29
205	296	1720	39	17.2	19.7	1.3 + 0.3	(22.5)	68	(5.2)	5		27.6	2	75	29
206	243	1725	87	7.2	92.4	3.4 + 2.8	(88.1)	143	(8.9)	8		97.0	2	73	5
207	376	2000	31	7.2	20.2	1.8 + 0.2	(29.3)	79	(7.7)	7		36.9	2	37	5
301	488	2300	61	17.2	27.6	2.9 + 0.8	(52.2)	84	(10.6)	10		62.7	3	65	12
302	764	3300	66	17.2	27.1	4.7 + 1.0	(80.1)	85	(16.7)	15		96.8	3	65	12
303	128	1675	42	19.8	26.0	0.5 + 0.4	(12.9)	79	(2.6)	2		15.5	3	19	60
304	428	1790	46	19.8	14.9	1.3 + 0.4	(24.4)	66	(7.3)	7		31.7	3	19	60
305	270	1770	35	19.8	15.6	0.9 + 0.3	(16.1)	77	(5.3)	5		21.4	3	20	54
306	106	1785	16	5.1	29.9	0.8 + 0.1	(12.3)	60	(1.6)	1		13.9	3	67	15
307	905	3970	63	5.1	25.6	5.5 + 0.8	(89.7)	69	(16.1)	15	(0.1)*	244.6	3	67	15
308	581	2000	68	8.9	26.3	3.1 + 1.1	(59.1)	93	(13.9)	12	(0.0)*	73.0	3	21	54
309	313	1785	40	8.9	10.7	0.6 + 0.3	(12.6)	60	(4.8)	5		17.5	3	20	54
401	600	3300	81	5.9	47.2	5.7 + 2.0	(110.5)	114	(17.6)	15	(0.5)*	616.3	4	31	48
402	877	3300	49	5.9	16.4	3.4 + 0.5	(55.0)	86	(19.4)	17		74.4	4	7	49
403	729	3000	81	17.2	36.7	5.2 + 2.1	(104.0)	99	(18.7)	17		122.7	4	2	25
404	673	1710	67	17.2	17.1	2.1 + 1.0	(44.1)	68	(11.8)	11		55.9	4	61	27
405	451	1900	83	12.2	31.3	1.6 + 2.3	(54.8)	108	(12.5)	12		67.4	4	53	75
406	251	2000	50	12.2	38.9	2.2 + 0.5	(38.0)	109	(7.0)	6		45.0	4	58	77
701	172	1600	36	17.2	28.3	1.0 + 0.3	(18.9)	81	(3.6)	3		22.5	7	28	51
702	320	1750	61	17.2	33.2	2.1 + 0.8	(41.3)	91	(7.5)	7		48.8	7	28	51
703	527	1950	90	17.2	54.6	3.9 + 4.0	(112.5)	122	(16.5)	15		129.1	7	64	7
704	498	1900	87	17.2	50.0	3.7 + 3.2	(97.3)	116	(14.9)	14		112.2	7	28	51
705	180	1800	55	20.6	22.9	0.5 + 0.6	(15.9)	107	(5.0)	4		20.9	7	56	12
706	553	1900	75	20.6	27.1	2.6 + 1.5	(58.1)	106	(15.1)	13		73.2	7	57	7
901	428	1740	70	18.1	29.5	2.3 + 1.2	(48.9)	83	(9.1)	8		58.0	9	71	18
902	716	1740	70	18.1	15.8	1.9 + 1.2	(43.2)	45	(8.3)	8		51.5	9	52	18
903	711	1900	71	6.4	23.9	3.4 + 1.2	(65.5)	87	(15.9)	14	+	81.5	9	25	66
904	425	1665	73	17.2	34.4	2.7 + 1.3	(56.9)	95	(10.4)	9		67.3	9	71	18
1001	735	1845	65	5.5	26.3	4.3 + 0.9	(74.7)	105	(19.8)	17	+	94.6	10	3	51
1002	284	1710	63	17.2	37.4	2.1 + 0.9	(41.3)	97	(7.1)	6		48.4	10	57	77
1003	459	1910	48	17.2	17.3	1.7 + 0.5	(30.4)	65	(7.7)	7		38.1	10	12	51

.

80 SECOND CYCLE 80 STEPS

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	DELAY	DELAY (U+R+O=MEAN Q) UNIFORM + RANDOM+ OVERSAT	COST OF DELAY	MEAN STOPS /PCU	COST OF STOPS	QUEUE MEAN MAX.	QUEUE AVERAGE	PERFORMANCE INDEX. WEIGHTED SUM	EXIT NODE	GREEN TIMES START 1ST	GREEN TIMES START 2ND
END	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	($/H)	(%)	($/H)	(PCU)	EXCESS (PCU)	OF ( ) VALUES ($/H)		(SECONDS)	
1401	1092	1965	81	12.2	15.3	2.4 + 2.1	(63.6)	69	(19.5)	18	(0.0)*	83.5	14	49	23
1402	102	1871	26	4.7	32.8	0.7 + 0.2	(13.0)	86	(2.3)	2		15.3	14	28	44
1403	293	1791	77	4.7	50.0	2.4 + 1.6	(57.2)	113	(8.5)	8		65.7	14	28	44
1404	1085	3970	40	6.4	5.9	1.3 + 0.3	(23.1)	34	(9.5)	9		32.6	14	49	23

TOTAL DISTANCE	TOTAL TIME	MEAN JOURNEY	TOTAL UNIFORM	TOTAL RANDOM+	TOTAL COST	TOTAL COST	PENALTY FOR	TOTAL PERFORMANCE

TRAVELLED (PCU-KM/H)	SPENT (PCU-H/H)	SPEED (KM/H)	DELAY (PCU-H/H)	OVERSAT DELAY (PCU-H/H)	OF DELAY ($/H)		OF STOPS ($/H)		EXCESS QUEUES ($/H)	INDEX ($/H)	
3003.3	226.5	13.3	105.2	51.5	(2224.5)	+ (	470.4)	+ (739.3)	=	3434.2	TOTALS

****

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	161.1	+	180.1	+	214.3	=	555.6

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 44

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12
- (SECONDS)

1	3	76	21	50
2	3	65	24	41
3	4	72	24	49 66
4	3	48	75	25
7	3	63	72	19
9	3	66	18	32
10	3	78	39	65
14	2	44	23	

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)	
3003.3	215.3	13.9	94.0	51.5	(2065.9)	+ (	436.1)	+ (289.1)	=	2791.1	TOTALS

NO. OF ENTRIES TO SUBPT = 20
NO. OF LINKS RECALCULATED= 334

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32
- (SECONDS)

1	3	28	53	2
2	3	17	56	73
3	4	72	24	49 66
4	3	48	75	25
7	3	63	72	19
9	3	66	18	32
10	3	46	7	33
14	2	28	7	

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)	
3003.3	212.0	14.2	90.7	51.5	(2019.2)	+ (	415.5)	+ (208.6)	=	2643.3	TOTALS

NO. OF ENTRIES TO SUBPT = 19
NO. OF LINKS RECALCULATED= 310

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1
- (SECONDS)

1	3	27	55	3
2	3	17	55	73
3	4	72	25	41 66
4	3	50	76	24
7	3	63	72	19
9	3	60	18	32
10	3	46	10	33
14	2	27	7	

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)	
3003.3	212.7	14.1	89.1	53.7	(2028.4)	+ (	411.3)	+ (8.4)	=	2448.1	TOTALS

NO. OF ENTRIES TO SUBPT = 70
NO. OF LINKS RECALCULATED= 847

.

80 SECOND CYCLE 80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 12 32 -1 12
- (SECONDS)

1	3	27	55	3
2	3	17	55	73

```
    3       4      72      25      41      66
    4       3      50      76      24
    7       3      51      60       7
    9       3      60      18      32
   10       3      34      78      21
   14       2      27       7
```

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)	
3003.3	211.5	14.2	87.9	53.7	(2010.9) + (	405.7) + (	15.3) =	2431.9	TOTALS

```
NO. OF ENTRIES TO SUBPT  =   19
NO. OF LINKS RECALCULATED=  388
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32
 - (SECONDS)

    1       3      27      55       3
    2       3      17      55      73
    3       4      72      25      41      66
    4       3      50      76      24
    7       3      51      60       7
    9       3      60      18      32
   10       3      34      78      21
   14       2      27       7
```

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)	
3003.3	211.5	14.2	87.9	53.7	(2010.9) + (	405.7) + (	15.3) =	2431.9	TOTALS

```
NO. OF ENTRIES TO SUBPT  =   17
NO. OF LINKS RECALCULATED=  386
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1
 - (SECONDS)

    1       3      32      60       8
    2       3      20      58      76
    3       4      77      30      46      71
    4       3      50      76      24
    7       3      58      67      14
    9       3      56      14      28
   10       3      34      78      21
   14       2      27       7
```

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)	
3003.3	209.1	14.4	85.5	53.7	(1977.8) + (	396.9) + (	0.0) =	2374.7	TOTALS

```
NO. OF ENTRIES TO SUBPT  =   37
NO. OF LINKS RECALCULATED=  716
.

     80 SECOND CYCLE  80 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-   12  32  -1  12  32   1  -1
 - (SECONDS)

    1       3      33      59       8
    2       3      20      59      76
    3       4      78      29      45      72
    4       3      50      76      25
    7       3      58      67      14
    9       3      56      14      28
   10       3      34      78      21
   14       2      28       7
```

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)	
3003.3	207.9	14.4	85.4	52.7	(1960.7) + (	392.4) + (	7.3) =	2360.4	TOTALS

```
NO. OF ENTRIES TO SUBPT  =   47
NO. OF LINKS RECALCULATED=  884
.

     80 SECOND CYCLE  80 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :-   12  32  -1  12  32   1  -1   1
 - (SECONDS)

  NODE   NUMBER   STAGE   STAGE   STAGE   STAGE   STAGE  STAGE   STAGE   STAGE   STAGE   STAGE
```

NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	3	37	63	12							
2	3	20	59	76							
3	4	78	29	45	72						
4	3	50	76	25							
7	3	60	69	16							
9	3	55	13	27							
10	3	34	78	21							
14	2	28	7								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER CRUISE	DELAY	DELAY (U+R+O=MEAN Q)	COST OF DELAY	MEAN STOPS	COST OF STOPS	MEAN MAX.	QUEUE AVERAGE EXCESS	PERFORMANCE INDEX. WEIGHTED SUM	EXIT NODE	GREEN TIMES START 1ST	START 2ND END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	($/H)	/PCU (%)	($/H)	(PCU)	(PCU)	OF ( ) VALUES ($/H)		(SECONDS)	
77	143	715	30	8.9	5.9	0.0 + 0.2	(3.0)	0 (0.0)		0		3.0			
101	450	1900	73	12.6	30.5	2.4 + 1.3	(53.2)	101 (11.7)		11		64.9	1	67	12
102	712	1785	73	8.9	15.0	1.6 + 1.3	(40.7)	41 (7.5)		7	(0.0)*	48.2	1	20	63
103	513	1710	73	7.6	21.3	1.6 + 1.4	(42.0)	77 (10.2)		8	(0.0)*	52.2	1	39	12
104	851	1915	66	7.6	10.2	1.3 + 1.0	(32.6)	49 (10.8)		12	(0.0)*	43.4	1	39	12
105	354	1785	75	8.9	53.6	3.7 + 1.5	(74.1)	107 (9.8)		9		83.9	1	17	37
202	709	1940	86	11.8	28.4	2.6 + 2.9	(78.0)	74 (13.5)		13		91.5	2	26	59
203	504	1740	68	11.8	20.1	1.7 + 1.1	(39.0)	62 (8.0)		7		47.0	2	26	59
204	365	1760	83	17.2	51.5	2.9 + 2.3	(73.4)	116 (10.9)		10	(0.0)*	84.3	2	1	20
205	296	1720	39	17.2	19.7	1.3 + 0.3	(22.5)	68 (5.2)		5		27.6	2	66	20
206	243	1725	87	7.2	67.0	1.7 + 2.8	(63.8)	138 (8.7)		8		72.4	2	64	76
207	376	2000	31	7.2	8.0	0.6 + 0.2	(11.1)	31 (3.0)		3		14.1	2	28	76
301	488	2300	63	17.2	29.0	3.0 + 0.8	(54.9)	87 (10.9)		10		65.8	3	3	29
302	764	3300	69	17.2	28.5	4.8 + 1.1	(84.3)	87 (17.1)		16		101.4	3	3	29
303	128	1675	41	19.8	22.8	0.5 + 0.3	(11.3)	76 (2.5)		2		13.8	3	36	78
304	428	1790	45	19.8	14.6	1.3 + 0.4	(23.7)	60 (6.6)		6		30.3	3	36	78
305	270	1770	34	19.8	18.3	1.1 + 0.3	(18.9)	78 (5.4)		5		24.3	3	37	72
306	106	1785	17	5.1	4.2	0.0 + 0.1	(1.6)	5 (0.1)		0		1.7	3	5	32
307	905	3970	65	5.1	9.6	1.4 + 0.9	(32.4)	41 (9.6)		11	(0.0)*	42.0	3	5	32
308	581	2000	66	8.9	18.8	2.0 + 1.0	(42.0)	65 (9.7)		9	(0.0)*	51.7	3	38	72
309	313	1785	39	8.9	15.0	0.9 + 0.3	(17.9)	38 (3.1)		3		21.0	3	37	72
401	600	3300	73	5.9	27.7	3.2 + 1.3	(64.4)	98 (15.1)		13	(0.0)*	86.5	4	31	50
402	877	3300	48	5.9	4.0	0.4 + 0.5	(12.1)	17 (3.9)		11		16.0	4	8	51
403	729	3000	85	17.2	40.3	5.4 + 2.6	(114.4)	104 (19.6)		18		134.1	4	3	25
404	673	1710	70	17.2	19.3	2.4 + 1.2	(49.9)	73 (12.7)		12		62.6	4	63	27
405	451	1900	86	12.2	47.2	2.9 + 2.9	(83.1)	109 (12.7)		12		95.8	4	55	76
406	251	2000	53	12.2	50.7	2.9 + 0.6	(49.7)	110 (7.1)		6		56.8	4	60	78
701	172	1600	36	17.2	28.3	1.0 + 0.3	(18.9)	81 (3.6)		3		22.5	7	37	60
702	320	1750	61	17.2	33.2	2.1 + 0.8	(41.3)	91 (7.5)		7		48.8	7	37	60
703	527	1950	90	17.2	54.6	3.9 + 4.0	(112.5)	122 (16.5)		15		129.1	7	73	16
704	498	1900	87	17.2	50.0	3.7 + 3.2	(97.3)	116 (14.9)		14		112.2	7	37	60
705	180	1800	55	20.6	22.7	0.5 + 0.6	(15.8)	99 (4.6)		2		20.3	7	65	21
706	553	1900	75	20.6	21.1	1.7 + 1.5	(45.0)	91 (12.9)		13		57.9	7	66	16
901	428	1740	58	18.1	22.0	1.9 + 0.7	(36.3)	79 (8.7)		8		45.0	9	60	13
902	716	1740	70	18.1	16.0	1.9 + 1.2	(43.9)	67 (12.4)		12		56.3	9	47	13
903	711	1900	83	6.4	26.4	2.7 + 2.4	(72.5)	76 (13.9)		12		86.5	9	20	55
904	425	1665	60	17.2	24.6	2.1 + 0.7	(40.4)	79 (8.7)		8		49.1	9	60	13
1001	735	1845	61	5.5	9.8	1.1 + 0.8	(26.9)	29 (5.5)		5		32.4	10	27	78
1002	284	1710	74	17.2	46.7	2.3 + 1.4	(51.8)	109 (8.0)		7		59.7	10	4	21
1003	459	1910	45	17.2	14.9	1.4 + 0.4	(26.1)	59 (7.0)		7		33.2	10	36	78
1401	1092	1965	81	12.2	11.2	1.2 + 2.1	(46.3)	49 (13.7)		15	(0.0)*	60.0	14	33	7
1402	102	1871	26	4.7	32.8	0.7 + 0.2	(13.0)	86 (2.3)		2		15.3	14	12	28
1403	293	1791	77	4.7	50.0	2.4 + 1.6	(57.2)	113 (8.5)		8		65.7	14	12	28
1404	1085	3970	40	6.4	4.7	0.9 + 0.3	(17.9)	26 (7.4)		8		25.3	14	33	7

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	($/H)	($/H)	($/H)	($/H)	
3003.3	207.7	14.5	85.1	52.7	(1956.9) + (391.6)	+ (7.0)	= 2355.6	TOTALS	
								ROUTE	

	CRUISE LITRES PER HOUR		DELAY LITRES PER HOUR		STOPS LITRES PER HOUR		TOTALS LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	161.1	+	158.5	+	178.4	=	498.0

NO. OF ENTRIES TO SUBPT = 22
NO. OF LINKS RECALCULATED= 478

PROGRAM TRANSYT FINISHED

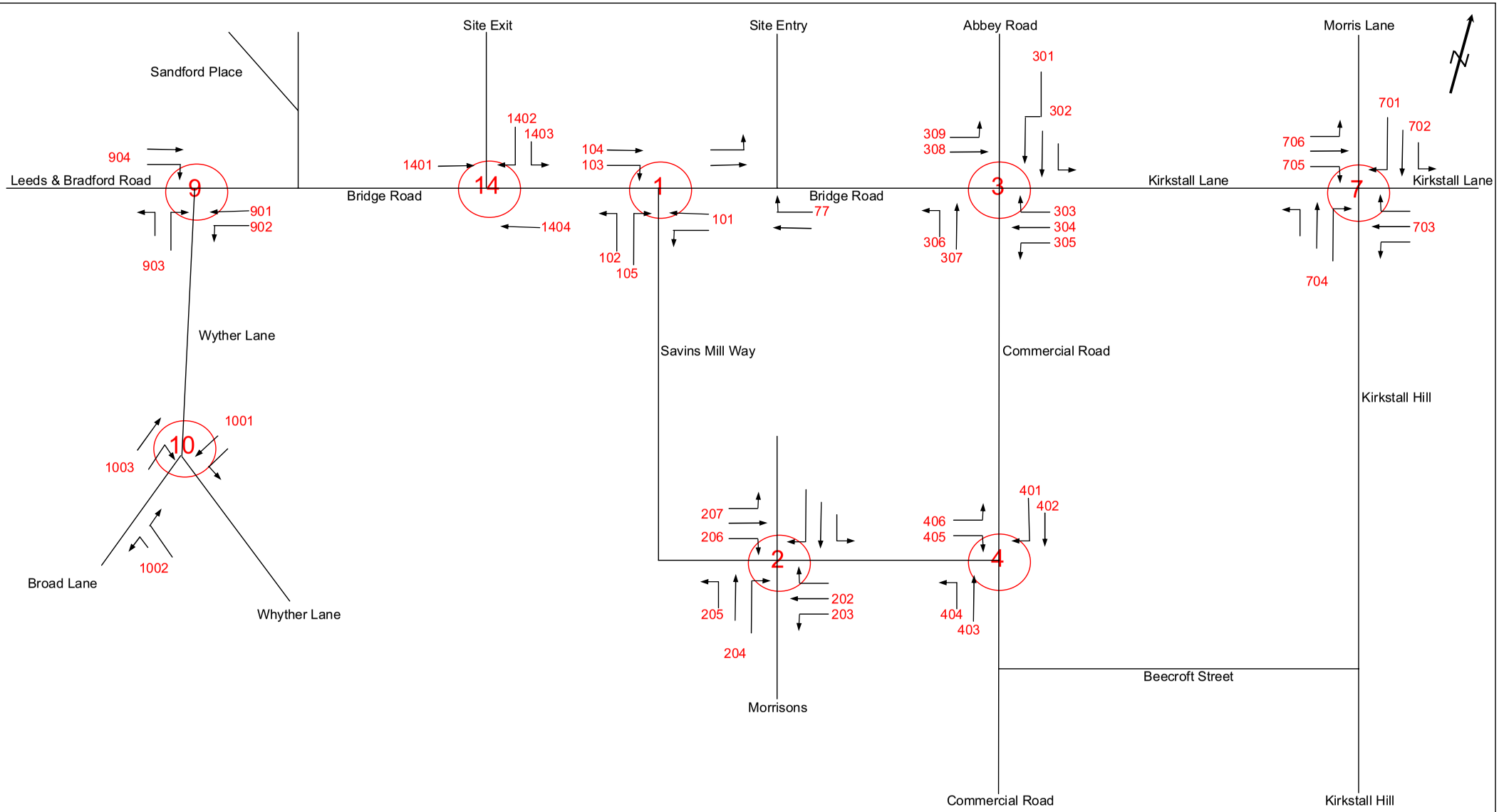

Figure 14.
TRANSYT Link/Node Diagram - Future

Northern Transport Planning
Suite 7, Vincent House
136 Westgate
WAKEFIELD
WF2 9SR
Tel: 01924 367460


River Aire
Leeds and Liverpool Canal
COMMERCIAL ROAD
Mill Race


YD07 AKP


Wicks
Engineering
Co Ltd
NV03 VLD
FL02 UME

Leeds CITY COUNCIL

Agenda Item:	
Originator:	P A Russell
Tel:	0113 247 6171

Report of the Director of City Development

Scrutiny Board (City Development)

Date: 10 June 2007

Subject: SAVINS MILL GYRATORY, SAFETY SCHEME

Electoral Wards Affected:	**Specific Implications For:**	
Kirkstall	Ethnic minorities	☐
	Women	☐
	Disabled people	☐
	Narrowing the Gap	☐

Executive Summary

Further to the item concerning this scheme considered at the Highways Board meeting of 12 May 2008,this report provides further information about the proposed scheme in terms of the original background, the development of the scheme and the desired outcomes.

1.0 Purpose Of This Report

1.1 This report provides additional information about the Savins Mill Gyratory, Safety Scheme.

1.2 It is important to consider the reasoning behind this scheme, and the fact that these proposals are intended to address the high number of accidents at this *site for concern*. Whilst account has been taken of the local highway network, the object of the scheme is to reduce accidents on the Savins Mill Gyratory. Measures to address other issues on the surrounding highway network are beyond the scope of these proposals.

2.0 Background Information

2.1 The A65 is one of the main arterial routes in and out of Leeds which experiences high volumes of traffic throughout the day and is prone to congestion and delays in the peak hours, especially at junctions.

2.2 In September 1998, committee approval (Highways and Transportation) was granted to implement highway improvement works at the junction of the A65 (Commercial Road / Abbey Road) and the B6157 Bridge Road / Kirkstall Lane. These works also included, a new link road - Savins Mill Way – which was constructed between the A65 Commercial Road and the B6157 Bridge Road, to

facilitate access to the Kirkstall Valley Development Scheme and Morrisons supermarket development forming a new gyratory system. This scheme was opened in May 2000.

2.3 Prior to this, the A65 / Bridge Road / Kirkstall Lane junction already experienced high volumes of traffic, and had a pre-existing accident problem. The above improvement works removed some of the conflicts from the existing junction but accident figures remained significantly high.

2.4 An Accident Study was undertaken for this location in July 2003 which clearly defines the problems and makes recommendations on measures to reduce the level of accidents.

2.5 Since the Accident Study was undertaken in 2003, the accident record at the junction has remained high with 9 accidents recorded in 2007. The accident figures for the last five full years are shown in the table below.

Year	Slight	Serious	Fatal	**Total**
2003	2	0	0	**2**
2004	4	1	0	**5**
2005	3	1	0	**4**
2006	5	0	0	**5**
2007	8	1	0	**9**
Total	**22**	**3**	**0**	**25**

3.0 Main Issues

3.1 The main issues relating to the scheme proposals have been covered by previous approvals given initially in May 2004 when £10,000 was approved for feasibility work, and more recently in December 2006 when the total budget estimate was £283,500.

3.2 The scheme proposals seek to address issues identified in the 2003 Accident Study by implementing the recommendations it makes. The main issues are,

i) Right Turn Conflicts;
ii) Nose-to-tail Collisions; and,
iii) Red Light Violations

3.3 The scheme proposals can be seen on Drawing Number HDC/298732/01/01. This scheme looks to address the issues above in line with the 2003 Accident Study.

3.4 The budget estimate, reported in December 2006 was produced at an early stage of design made up from general rates of similar work. As the detailed design progressed, the true nature of the implications of making these changes has become apparent.

3.5 In order to minimize disruption to the large volumes of traffic which travels through this junction, and also to protect the workforce during construction, it was clear that extensive traffic management and restrictions on working would be required. This was originally underestimated but has had a significant effect on the cost of the works.

3.6 The costs of the traffic signal works has also increased as detailed survey work and site inspection of the existing equipment has shown that assumptions made in December 06 were wrong.

3.7 This has had a significant impact on the December 06 estimate resulting in the May 2008 report requesting approval of the revised sum.

4 Implications For Council Policy And Governance

4.1 This report does not raise any issues for Council policy and governance other than those already considered by the Highways Board at their December 06 meeting.

5 Legal And Resource Implications

5.1 This report raises no specific legal and resource implications.

6 Conclusions

6.1 This report has outlined the reason for the initiation of this scheme which aims to address an existing accident problem, clearly identified in the 2003 Accident Study.

6.2 It has also provided the background context to the scheme development in terms of the initial feasibility and briefly explained the reasons behind the cost increases that arose during the detailed design process.

6.3 Advice from the Accident Studies Section within City Development puts an average cost estimate of £90,000 per accident in Leeds. Simply put, the cost of the accidents at this junction equates to £2,250,000 over a five year period period. It would suggest that this scheme still gives value for money, even at its latest estimated cost of £489,000.

7 Recommendations

7.1 Members are requested to note and comment on the contents of this report.

ACCIDENT STUDY

A65 COMMERCIAL ROAD / ABBEY ROAD

Junction with

B6157 BRIDGE ROAD / KIRKSTALL LANE

July 2003

Leeds City Council
Development Department

Jean Dent
Director

Accident Study

A65 Abbey Road / Commercial Road

Junction with

B6157 Bridge Road / Kirkstall Lane

1.0 INTRODUCTION

1.1 The purpose of this study is to identify the causes of, and if possible make recommendations to alleviate the accident problem at the above-named junction. The site has featured in the annual *Leeds Sites For Concern* listing, for a number of years and will appear this year, ranked at number six. A lack of clarity with regard to vehicular movement and the precise location of several accidents, indicated that an in-depth study would be advisable.

1.2 The study involved an examination of the documentation relating to the 28 personal injury accidents which occurred between 1st January 2000 and 31st December 2002. This analysis included scrutiny of the 24 available police files.

1.3 As is described below, the junction was subject to major improvements in 2000. Thus, 8 of the analysed accidents were recorded when the junction existed in its previous configuration.

1.4 A plan of the junction examined is appended as Figure 1.

2.0 SITE DESCRIPTION

2.1 The junction is a busy Traffic Signal controlled crossroads of modern design, which, in early 2000 underwent significant modification, to accommodate the Kirkstall Valley Development Scheme. This development is sited to the southwestern corner of the junction and is accessed from Bridge Road. The reconfiguration of the layout prohibited the right turn from Abbey Road into Bridge Road and the similar movement from Bridge Road into Commercial Road. Both of these manoeuvres are effected via the signals governing the new development. Pedestrians are catered for by means of extensive crossing facilities and measures to assist cyclists, including a coloured cycle lane are also comprehensive.

3.0 ACCIDENT STATISTICS

3.1 **ACCIDENT RECORD**

YEAR	SLIGHT	SERIOUS	FATAL	TOTAL
2000	8	0	0	8
2001	7	1	0	8
2002	10	2	0	12
TOTAL	25	3	0	28

3.2 Variables such as time of day, day of week, wet road surface, darkness accidents etc., were examined. It was found that the darkness rate was 39%, which is a figure 50% higher than the average expected for a Leeds Urban A Road. All of the remaining individual aspects were well below expected levels.

3.3 Accident types. The 28 recorded accidents were classified as follows:-

Right turn conflicts	10
Nose-to-tail collisions	7
Red Light Violations	7
Other types	4

3.4 Addresses of Drivers. Scrutiny of police files revealed that of the involved drivers who supplied addresses, the majority came either from areas in the vicinity of the junction, or elsewhere in the Leeds district. There was however, a notable number of students, who supplied “term time” Leeds addresses, whilst indicating that their permanent addresses were elsewhere in the UK. None of these though, cited unfamiliarity with the road layout as a reason for the occurrence of an accident.

4.0 ACCIDENT ANALYSIS

4.1 Right Turn Conflicts. Ten right turn conflicts were recorded, with original police data available for 9. Six of this number involved the turn from Kirkstall Lane into Abbey Road, with the remaining 4 being Commercial Road into Kirkstall Hill.

4.1.1 Of the 6 accidents involving the turn from Kirkstall Lane with available Police files, 2 drivers claimed they “Did not see” the car with which they collided. A further 2 also failed to give priority but with no clear reason for the driver error and in the final 2 cases, simple errors of misjudgement of speed and distance of approaching traffic, were cited. Four of these accidents occurred in darkness.

4.1.2 Of the 3 accidents involving the turn from Commercial Road into Kirkstall Lane with available Police files, it would appear that two drivers “lost” the green filter arrow before completing their turns, and that one turned without even noticing a filter aspect. Two of these accidents occurred in darkness.

4.2 Red Light Violations. There were seven accidents in this category, with police files available for 6. Two drivers admitted to “reading through” the signals, from a stationary position on Bridge Road to the lights governing the Pelican crossing immediately to the east of the junction on Kirkstall Hill.

4.3 Of the remaining four red light violations;
one involved an Ambulance struck whilst slowly negotiating the junction on an emergency call;
one was a hit and run occurrence by a driver who abandoned his vehicle immediately after impact and may have had a blood/alcohol level above the legal limit;
one involved a distracted driver who admitted to using his mobile telephone at the time of the accident, and;
one was a wilful act of ignoring a red light by a driver cited by witnesses as being solely to blame for the accident.

4.4 Nose To Tail Collisions. There were 7 nose to tail collisions, with files available for 4. All of these, with the exception of one involving a driver who committed a series of offences in an emotionally unstable state, were of the kind commonly experienced at junctions of this type with attendant levels of traffic and the potential for extensive queuing.

4.5 Other Accidents. Police files were available for all 4 of the remaining accidents. In two cases, pedal cycles were hit by cars which turned left into Kirkstall Lane from Abbey Road across the marked cycle lane. However, in both cases, independent witnesses stated that the respective car drivers behaved correctly in signalling appropriately and that it was the cyclist who was at fault. A third accident also involved a cyclist who was the struck by a car following a negligent lane changing manoeuvre. This accident occurred in heavy rain and before the junction refurbishment was completed; lane discipline being enforced by temporary concrete bollards. The final accident involved a single vehicle loss of control event when a fatigued driver collided with a central island reservation.

4.6 Darkness. Despite the aforementioned high level of accidents occurring in darkness, there was no comment by any involved drivers that darkness or poor streetlighting was a contributory factor in any of the accidents.

5.0 SITE OBSERVATION

5.1 A site visit, conducted in June 2003 revealed that drivers wishing to make the permitted but problematic right turn manoeuvres commonly displayed a hesitancy with regard to the correct way to complete their respective turns.

5.2 Kirkstall Lane into Abbey Road. The right turn filter assisting drivers to make this turn, appeared to be illuminated most commonly when either the right turners in any given cycle had cleared the junction, or none were poised to begin their manoeuvre. There has clearly been modification to the timing sequence at this location, as an ad-hoc sign bearing the legend "Signal Priorities Changed" has been fastened to an adjacent lighting column. This sign is not repeated and could easily be masked to drivers. Traffic effecting this turn is also indirectly hindered by vehicles which turn left from the opposite, nearside lane of Bridge Road. Immediately after clearing the signals, these left turners are forced to Give Way. As they do so, they mask any vehicles proceeding straight through the signals in the outside lane, making the "straight ahead" Bridge Road into Kirkstall Lane movement. The effect of this for a right turner from Kirkstall Lane is of a vehicle "appearing from nowhere," and presenting the possibility of a collision. Two drivers provided statements in which they claimed "not to have seen" the vehicle which hit them and it is likely that in other cases where a misjudgement of speed and distance was cited, the above scenario was also repeated. Figure 2 shows traffic queuing to turn left from Bridge Road, with the "Ahead Only" lane clear. Vehicles travelling in this lane are frequently confronted with another turning right into Abbey Road.

5.3 Commercial Road into Kirkstall Lane. The filter aspect governing this turn operates on an "early start" facility. However, the time afforded to right turners would appear to be approximately four seconds for each cycle. This results in the third or fourth vehicle in any queue of traffic having to either dash across the path of oncoming traffic which begins upon removal of the green filter, or, wait until the oncoming traffic halts and then clear the junction before Bridge Road / Kirkstall Lane traffic sets off. This reflects a situation identified in at least two driver's statements, who claimed to have "turned slowly" on a green arrow, but failed to complete their turn before they were hit by traffic oncoming from Abbey Road. The problems experienced by drivers at this point is illustrated by Figure 3, which shows a car "stranded;" the driver having initiated the turn on a green filter and then having to wait due to "losing" the filter and subsequently, the green signal completely.

6.0 DISCUSSION

6.1 There is clearly scope at this location to reduce accident levels by improving conditions for right turning traffic. There were no allegations regarding inconspicuity or malfunctioning signalling equipment or road layout in any of the other types of accidents, save for the “read-through” signal violations.

7.0 RECOMMENDATIONS

7.1 Right turn conflicts at Kirkstall Lane / Abbey Road. It is recommended that capacity be identified within the current set up to provide adequately for the separate signalling of the right turn manoeuvre from Kirkstall Lane into Abbey Road.

7.2 Right turn conflicts at Commercial Road / Kirkstall Lane. It is recommended that this turn be prohibited and that drivers wishing to access Kirkstall Lane be directed there via Savins Mill Way, turning right onto Bridge Road where the signals are to be amended to accommodate this move.

7.3 Red light violations. The problems associated with the “read through” red light violations can best be addressed by the complete removal of the signal heads pertaining to oncoming vehicles and the removal of the corresponding Stop line. These signals provide a suitable red/green man facility for pedestrians, but are never used to control traffic movement and their removal will prevent drivers from becoming confused.

Road Accident Unit.
Leeds (0113) 2476328
File MJC/ASU/264/21
July 2003

Commercial Road / Abbey Road j/w Kirkstall Lane / Bridge Road, Kirkstall

Ref No. : **LSC013** ***Rank this year :*** **22** ***(last) :*** **23** ***Grid Ref:*** ***426287 / 435583***

Description of Site

The junction is a busy traffic signal controlled crossroads of modern design, which, in early 2000 underwent significant modification, to accommodate the Kirkstall Valley Development Scheme. This development is sited to the south western corner of the junction and is accessed from Bridge Road. The reconfiguration of the layout prohibited the right turn from Abbey Road into Bridge Road and the similar movement from Bridge Road into Commercial Road. Both of these manoeuvres are effected via the signals governing the new development. Pedestrians are catered for by means of extensive crossing facilities and measures to assist cyclists, including a coloured cycle lane are also comprehensive.

Accident Record

Year	*Slight*	*Serious*	*Fatal*	*Total*
2003	2	0	0	**2**
2004	4	1	0	**5**
2005	3	1	0	**4**
2006	5	0	0	**5**
2007	8	1	0	**9**
Total	**22**	**3**	**0**	**25**

Accident Analysis

The principal accident types are turning conflicts [12], signal violations [6] and nose to tail collisions [3]. Of note is the fact that there has been only 1 pedestrian accident.

Recommendations

An accident reduction scheme involving the prohibiting of turning movements and reconfiguration of lane markings is awaiting implementation. Following introduction, close monitoring should ensue.

APPENDIX – JUNE 2008

In the five full years (2003 -2007,) that have elapsed since the above study was undertaken, twenty five accidents have been recorded. By type, these accidents are as follows;

Right turn conflicts – 13

Red Light Violations – 3

Nose to tail collisions – 3

Other turning conflicts – 2

Disparate types – 4

Right turn conflicts – According to the computer-held data, four of these involved the prohibited turn from Abbey Road into Bridge Road and a further 3 involved the similarly prohibited turn from Bridge Road into Commercial Road.
Four involved the right turn from Commercial Road into Kirkstall Lane, with the final two being the Kirkstall Lane into Abbey Road manoeuvre.

Red light violations – Two of the red light violations were “west/east versus south/north” manoeuvres and the third involved an “east/west versus south/north” manoeuvre. In none of these cases was the offending vehicle positively recorded.

Remaining accident types – There was no significant directional pattern to any of the remaining 2 turning conflicts, or 4 disparate types.


ABBEY ROAD
KIRKSTALL LEISURE CENTRE
REMAINS OF ABBEY BUILDINGS
ABBEY MILLS UNITS
ST47
ST01
ST02
ST04
ST46
BRIDGE ROAD
SAVINS MILL WAY
COMMERCIAL ROAD
ABBEY WEDDING WAREHOUSE
THE MILL RACE
VACANT
ABBEY BREWING
THE BOOKSHOP
GEMINI STUDIO
Shelter
Shelter
Liberal Club
SURVEILLANCE CAMERA
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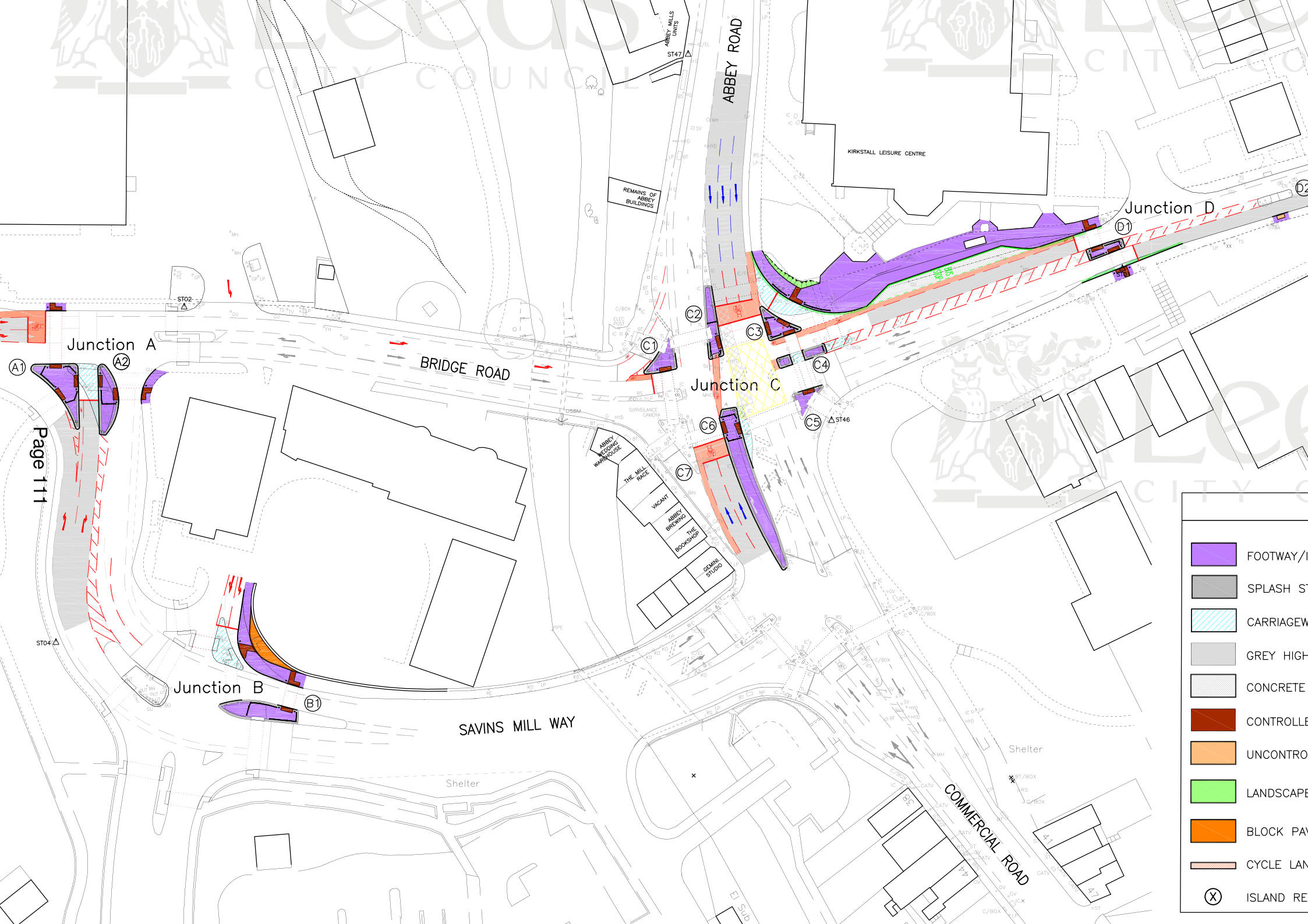
Junction A
A1
A2
BRIDGE ROAD
ST02
Junction B
B1
SAVINS MILL WAY
ST04
Junction C
C1
C2
C3
C4
C5
C6
C7
ST46
ABBEY ROAD
REMAINS OF ABBEY BUILDINGS
ABBEY MILLS UNITS
ST47
KIRKSTALL LEISURE CENTRE
Junction D
D1
D2
ABBEY WEDDING WAREHOUSE
THE MILL RACE
VACANT
ABBEY BREWING
THE BOOKSHOP
GEMINI STUDIO
Shelter
Shelter
COMMERCIAL ROAD
Page 111
FOOTWAY/
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